FARMBOOK

JUNE 2024

The book that briefly presents our 121 European dairy farms

link to the website

Resilience for Dairy (R4D) has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101000770

Contents

What about this project ?

Resilience 4 Dairy is a European project to contribute to the social, economic and environmental development of dairy farming. The project, funded by the **EU Horizon 2020 programme**, was launched in January 2021. During the last three and half years, **18 organisations** from **15 European countries** were cooperating under the leadership of the French Institut de l'Élevage IDELE.

R4D is a thematic network on innovations and aims to support EU dairy farming in these regions where dairy farming is a main economic activity. R4D was focused on three knowledge areas in order to enhance dairy farms' sustainability:

- **Economic and social resilience**
- **Technical efficiency**
- **Environment, animal welfare and society friendly production systems.**

R4D DAIRY FARM NETWORK

In few facts and figures

121 R4D Pilots Farms

Global production of all pilots farms

23,750 Dairy cows

240,000,000 litres of milk produced in 2021

Average production of a R4D pilots farms

Average of 8,980 litres of milk per cow

Average of 1,970,000 litres of milk per farm

Average dairy cows per farm: 194 cows/farm

A huge diversity amongst farms and countries

From 8 cows in Lithuania to 1 700 in Hungary

From 64 000 litres/farm/year to 23 000 000 litres/farm/year

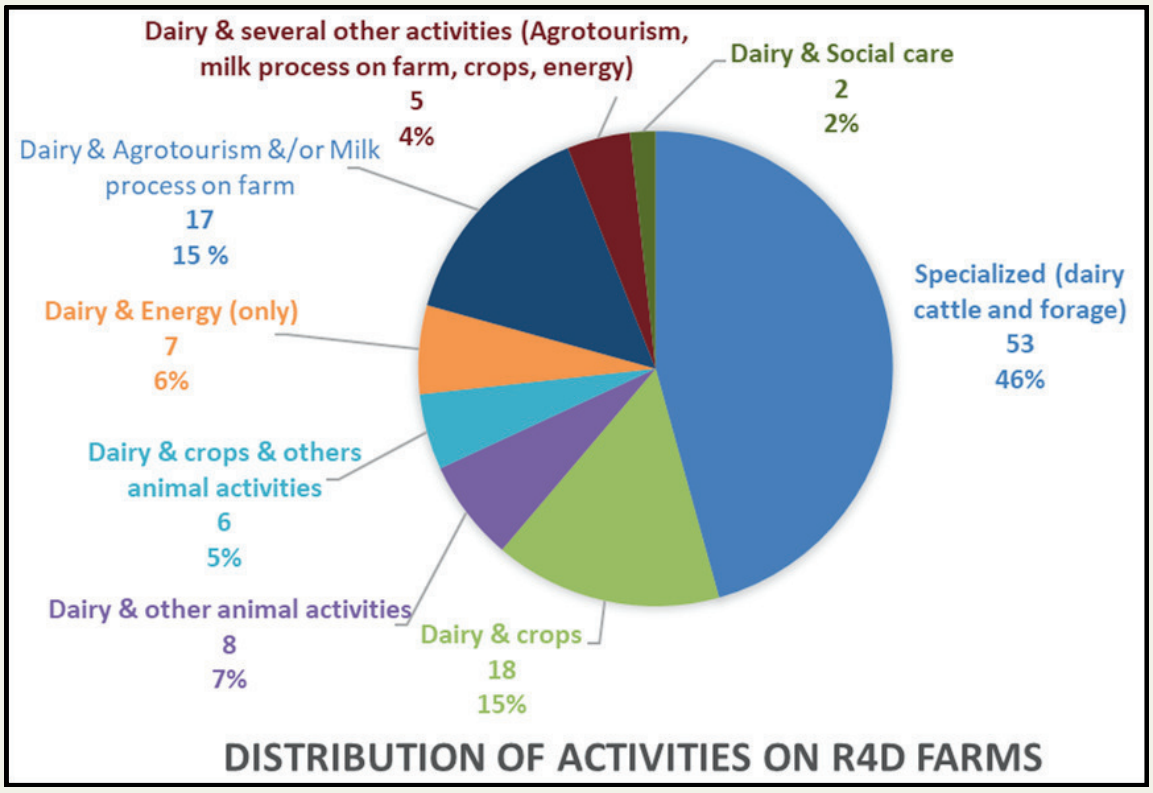
From 1 Workforce to 130

54 % Pilot farm with dairy activity and one or several additional activities per farm

milk, dairy cattle and forage production

46 % Pilot farm are specialized in dairy production

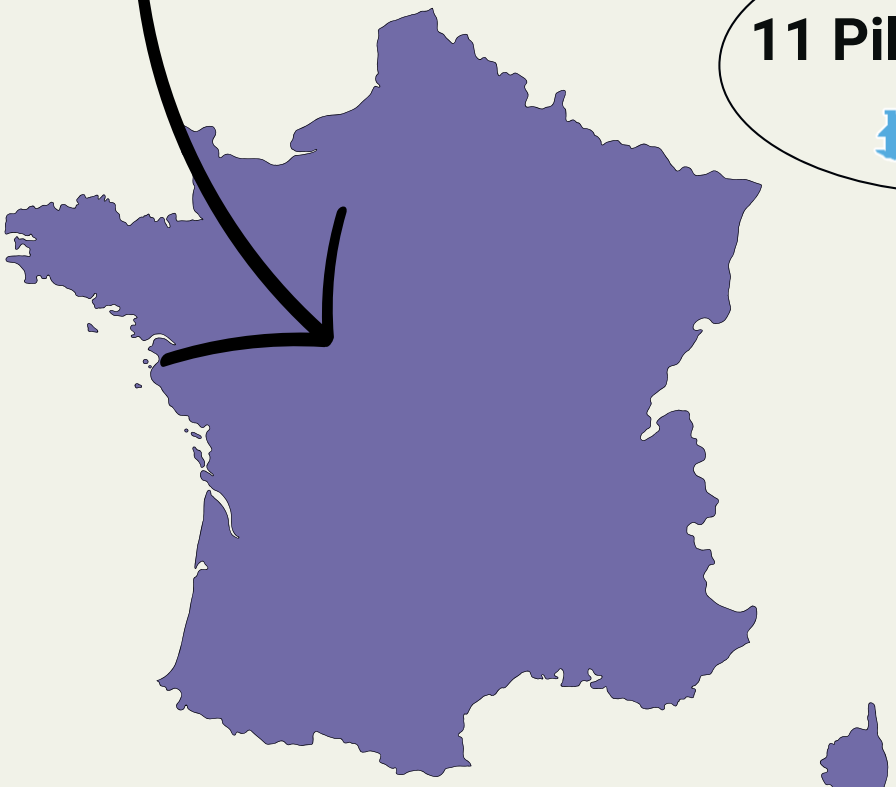
cereals, milk processing and direct sales (yogurt, cheese, ice cream...), energy production (solar panels, biogas units), and agrotourism (farm visits, rural hostels, restaurants...).



R4D DAIRY FARM NETWORK

Farm's presentations

11 Pilots Farms



FRANCE

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EARL DE LA LANDERIE

Pilot Farm description

Savigny (Normandy)– 2022

France

Innovations

Socio-economic Resilience /

Farming milestones

1996
Rodolphe's establishment

2000
Aurélie's arrival as collaborating partner

2005
Creation of the EARL and building of the milking parlour

2009
Opening of 2 farm gite

2013
Built two treehouses

2015
Barn and manure area expansions+ building of a pool

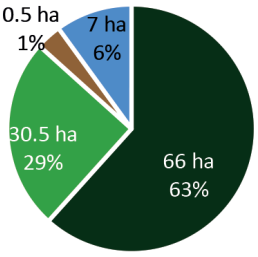
The herd

- 134 LU
- 85 dairy cows
  Breed: **Normande (100%)**
- 25% replacement rate
- average calving rank 3.4
- Calving period: grouped
- Age at first calving: 29 months
- Sexual seed, genotype (100%)

Agricultural Area

104 ha AA (2022)

- 57 ha permanent grassland
- 9 ha temporary grassland
- 30.5 ha maize silage
- 7 ha wheat
- 0.5 ha of orchard



Workforces

- 2 MWU
- 42 cows & 300 000 l/MWU

Areas of interest

- Pastures
- Work organization
- Genotyping / A2A2

Main buildings and Equipment

- Building of piled litter
- Dynamic rotational grazing for DCs (0.6 ha of paddocks)
- 2x6 TPA milking parlour, single output
- MilkTaxi
- CUMA
- ETA

Production / Technical results

- 604,000 liters of milk produced
- 46 g/l fat & 37 g/l protein content
- Load: 1.4 LU/ha main forage area
- 7,000 l/DC/year of raw milk and 7,800 l/DC of corrected milk
- 6,230 l/ha main forage area

Strengths
-High economic efficiency
-Good technical skills level (pastures, healthcare)
-Agrotourism

Weaknesses
-Limited area accessible for dairy cows (grazing)
-Size of the milking parlour

Opportunities
-Strong participation in networks and partnerships
...

Threats
-Weather conditions that could lead to a reduction of the tourism part

Farmer's strategy for a "resilient" system:

In order to have a resilient system, the farmers have developed a family-based production system that values milk production, with a majority share of grass, by a Norman herd. With the development of farm tourism activity with gites and tree houses, a particular attention is paid to the acceptability of this traditional Norman system to welcome a urban audience (food autonomy, animal welfare, proximity and positive attitude). A high level of resilience for this farm with an efficient organization, a technical and organizational anticipation at its best, a natural propensity for exchanges and self-questioning.

Aspirations / Needs for the future

Maintaining the high economic efficiency of the system by reinforcing the share of food autonomy, the quality of the pastures and milk. By targeting tourists, farmers wish to reinforce the attractiveness of the farming profession and especially their positive communication.

Projects - Objectives

ECONOMY & LABOUR
- Maintain the added value per hour worked
- Installation of their son

- Improve the quality of grasslands
- Reinforce food autonomy
- Improve milk quality

PROJECTS

- Increase animal welfare
- Develop positive communication
- Reduce energy consumption

TECHNICAL EFFICIENCY

ENVIRONMENT ANIMAL WELFARE

Partners

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R4D pilot farmers are involved in a National Dairy Akis group where needs, solutions and knowledge are exchanged with other farmers, advisors and scientists on their way to build a resilient system.
More information https://resilience4dairy.eu/

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GAEC de Faouët
Pilot Farm description
Hillion– 2024

France

Innovations

Socio economic Resilience / Environment

Farming milestones

2017
Farm set up by Olivier and Valérie, 25 ha, poultry production

January 2018
Ferme de la Retenue taken over, 73 dairy cows, 55 ha

March 2019
Organic milk deliveries

2019
Employment of Valentin Collet

September 2022
Creation of Laiterie des Voisins: partners

May 2017
Conversion to organic farming started by the previous owners of the Ferme de la Retenue, adhesion to French environnmental measures (MEC SPE 18/65)

2019
Calving period set to autumn

March 2024
100% of the farm's milk is delivered to Laiterie des Voisins

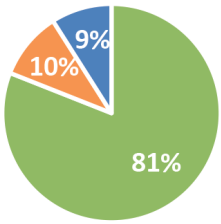
The herd

- 88LU
- 70 dairy cows
  Breeds: Holstein 3-way crossing (Montbéliarde, Scandinavian Red)
- Replacement rate: 17%
- Calving period: 53% autumn
- Age at first calving: 28 months
- Suckling heifers (100 %)

Agricultural Area

85 ha AA

- 50 ha temporary grassland
- 20 ha permanent grassland
- 8 ha maize silage
- 7 ha cereal-protein crops (grains)
- 78 ha forage area
- Grass: 90% / forage area

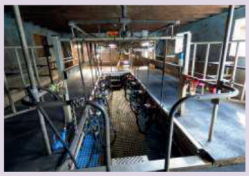


Workforce

- **2 associates-partners and 1 employee**
- **3 FTE** for dairy (2) & poultry production (1) = 70 **dairy cows** & 375 000 L milk
- 4 weeks of holidays / year and 2 out of 3 weekends free
- Co-creators and partners of Laiterie des Voisins: local delivery and outlets

Areas of interest

- Grazing
- Cost-effective system
- Added-value
- Territorial independance



Main buildings and Equipment

- Free-stall housing with cubicles, 70 places
- Swing-over parlour, 2x5
- 24 paddocks ranging from 0.8 to 2 ha. 19 ha accessible to dairy cows
- 3.5 km of stabilised roads
- Poultry 100 days: 4,200 per year

Production/ Technical results

- 405,000 L produced (dairy coop « Biolait »)
- 42,7 g/l fat & 32 g/l protein content
- Stocking rate: 1,1 LU/ha forage area
- 5 785l/cow/year 5 190 l/ha forage area
- 270 days/year of grazing and feeding
- Feed cost = 60€/1000 L
- 210 kg of concentrate/cow/year (auto-production)
- Operating costs = 29% of gross product

Strengths
- Good economic efficiency
- Technical skills
- Creators and partners of their own dairy, in the short supply chain
- Complementary productions

Weaknesses
- Few areas accessible for grazing (27 ares/DC at spring and 57 ares/DC in summer
- Long working hours due to the fragmentation of the land
- Dry area

Opportunities
- Strong involvement in networks and partnerships
- Transmission of the farm
- Close to Saint Brieuc - dynamic sector

Threats
- Climatic hazards in the dry area could lead to a reduction in the number of animals
- Loss of land in urban areas

Farmer's strategy for a resilient system

To build a resilient organic system, the farm owners have come up with a cost-effective and self-sufficient way of being less dependant on input price (feed, fuel, etc.). Calving occurs at autumn to liberate grasslands and ease the workload during summer. Also,having two productions (milk & poultry) diversifies their income. The farm's good economic results make it possible for the owners to hire an employee and free up their own personal time to engage in their own personal commitments.

Aspirations/Needs for the future

They are now preparing the transfer of the farm to their employee by training and helping him with his succession plan. They want to perpetuate the farm's current model by passing it on.

Improvement project - objectives

ECONOMY & LABOUR
- Diversify sources of income
- Increase the added value per hour worked

RESOURCE Efficiency
- Better use of multi-species grasslands
- Increase protein self-sufficiency

ENVIRONMENT ANIMAL WELLBEING
- Improve animal welfare
- Develop biodiversity
- Reduce energy consumption

PROJECT

Partners

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More information https://resilience4dairy.eu/

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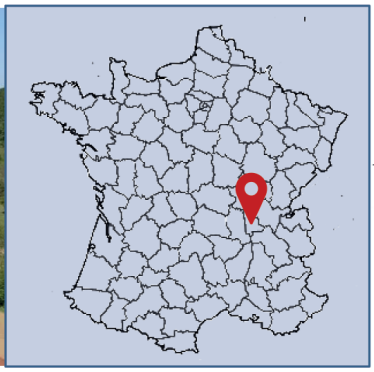
Ferme des deux vallées
Pilot Farm description
Saint Romain de Popey – 2022

France

Innovations

Socio economic Resilience / Environment



Farming milestones

2006
Arrival of Alexandre. Farm with a huge diversity of production (25 dairy cows, vegetable and fruit, 60 sheeps)

2007
Arrival of Amandine, Alexander's wife. Building of the goat barn and the cheese dairy.

2013
Retire of Alexander's father. Arrival of his mother. Stop the legume productions and regrowth of the dairy goats unit (180 dairy goats).

2020
Arrival of Simon, the neighboor of the farm. Merge of the 2 dairys cows farms and recovery of hens (250). New activity of fatting calves.

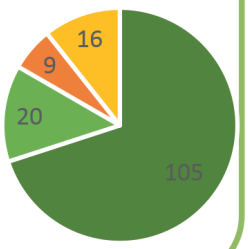
The dairy cows herd

- 45 Prim'Holstein dairy cows
- 260 kL sold to a dairy industry (Sodiaal) et 40 kL transformed in cheese on the farm
- Sexed-AI for the replacement and beef cross breed (Charolais ou Limousin)
- Calving period: all year
- 30 % of replacement rate
- Age at first calving : 32 years

Agricultural area

162 ha AA

- 115 ha of permanent grassland
- 22 ha of temporary grassland
- 9 ha of maize silage
- 16 ha of cereals
- 93 % grass / main forage area
- 1 ha of cherry trees



Workforce

- **4 partners**
- **1 full time employee**
- **Hire regularly internshipers**
- **Aim :** 4 weeks of holidays

Areas of interest

- Grazing
- Added-value
- Low inputs and efficiency

Main buildings and equipment

For dairy cows:

- Freestall housing on straw
- 12 ha of grazing for dairy cows
- 2 x 3 milking parlour

For the other activities:

- Barn drying for dairy goats
- Mobile hen house
- Cheese dairy unit : 130,000 L of milk transformed in cheese (70 % of goat and 30 % of cows)

Production / Technical results

- 310,000 L produced
- 39 g/L fat & 32 g/L protein content
- 6 900 L/cow/year
- 204 days/year of grazing
- 215 g/L de concentrés
- Operational load = 29 % of gross product
- Net profit : 37 % of gross product

Strenght

- Huge diversity of productions (Dairy cows and goats, hen, sheep…)
- Added-value
- Good relationship with partners

Weakness

- Large amount of work
- Sandy and drying soil
- Altitude

Opportunites

- Slaughter house close from the farm
- Farmers shop and market at 8 km from the farm

Threats

- Climatic disorder
- Health problem on one of the partner

Farmer's strategy for a resilient system

To build a resilient system, farmers went to a feed self-sufficiency system and work on complementary of their productions. Thanks to the cheese dairy unit and the meat production, they decide the price of their product in order to cover the cost of production and to pay the labour forces.

Aspirations/needs for the future

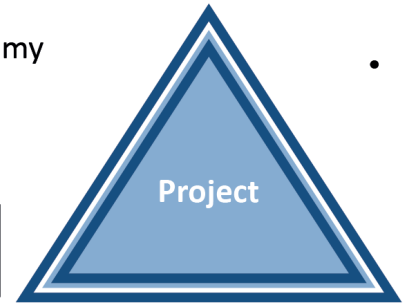
Farmers would like to reduce the use of chimical fertilizer by decreasing maize production and increasing multispecies pasture. Also, they keep improving the adaptation of their system to climate change.

Improvement project - objectives

- Better use of multi-species grasslands
- Reinforce protein autonomy
- Planting trees for hens

Economy and labour

- Adaptation to economic fluctuation
- Improve animal welfare (stop dehorning)



Ressource efficiency

Environment and animal welfare

Partenaires

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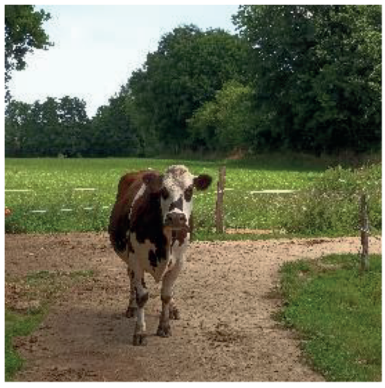
GAEC de la FROMAGÈRE
Pilot Farm description
St Martin d'Aubigny – 2021

France

Innovations

Socio-economic Resilience/ Environment



Farming milestones

1993 and 1995
Arrivals of Sandra and then Vincent

2006
Reduction of tillage
Start of no-till

2008
Standardization
64 DC/5 5 00 L/DC

2016
Implementation of dynamic grazing
Measurement of grass height once a week

2020
96 DC/5 4 00 L/DC

2021
Arrival of Astrid
Organization of the grazing system
Installation of 1 boviduc

2022
2 milking robots
Objectives: 120 DCs (dairy cows)

The herd

- 165 LU including 96% milk LU
- 104 dairy cows
  Breed: Normande (100%)
- Replacement rate: 20%
- Calving period: all year round expected
- Age at first calving: 35 months
- AI on Dairy Cows and bull for heifers

Agricultural Area 2021

99.8 ha AA - 97% of main forage area

- 51.9 ha permanent grassland
- 30.9 corn silage
- 6.3 ha temporary grassland
- 3 ha lucerne
- 1 ha meslin for seeds
- 1.1 ha soft wheat
- 5.5 ha corn grain

Workforce & Farm structure

3 HTU (human time unit) and 1 employee

Progressive stop of the oxen because more milk has to be produced. Delegation of desilting and spreading of liquid slurry to a coop (Cuma)
Delivery of milk to the Réo cheese factory for processing PDO products (raw milk camembert, butter, cream)

Areas of interest

- Maximized grazing (good soil conditions) and monitoring of grass growth
- Conservation agriculture
- PDO added value
- Automated milking

Main buildings and equipments

- Building 120 cubicles for DCs + 30 cubicles for 1/2 years old heifers and a mulched litter for heifers over 2 years old
- 29 paddocks of 1 to 2 ha for grazing
- 1.5 km of dirt and/or stabilized roads + water in the plots
- 2 dairy robot stalls since 15/06/2022

Production / Technical results 2021

- 595,000 liters of milk produced
- 41.54 g/l fat & 35.2 protein content
- Stocking rate: 1.79 LU/ha main forage area
- 5,729 l/DC/year and 6,690 l/ha main forage area
- 200 days/year of integral grazing
- 3.7 t DM of stored fodder/LU
- 624kg of concentrates/DC/year (109g/l)
- Operating expenses: 34% gross revenue

Strengths
- PDO
- Fodder autonomy
- Economic efficiency

Weaknesses
- Purchase of concentrates and straw

Opportunities
- Strong involvement in networks and partnerships, especially in PDO

Threats
Climatic hazards
No-till cultures and glyphosate removal may affect
plot contamination

Farmer's strategy for a "resilient" system

Grazing has been a focus for several years: implementation of dynamic grazing since 2016, measurement of grass heights once a week in the 29 paddocks during the grazing/grass harvest season, increase of areas for legume cultures... This focus makes it possible to reduce the dependence on concentrates.

Aspirations / Needs for the future

With the arrival of Astrid in 2021, to continue with the same objective: for this purpose, installation of boviduc to facilitate the access of the DCs to the pasture, starting of 2 stalls milking robot during 2022 with of course, a strong interest for grazing: in parallel, work on the ways to access the pasture, watering, quality of the crops...

These boviduc and milking robots will facilitate the management and the organization of work, which will allow to produce an additional volume with less work for the milking of course, but also for the management of the pasture with the sorting gates!

Projects - Objectives

ECONOMY & LABOUR
- Arrange the labour organization with robot
- Continue to maximize grazing

TECHNICAL EFFICIENCY
- Improve the use of grasslands to integrate more grass in food intake
- Renew temporary grasslands

PROJECTS

ENVIRONMENT ANIMAL WELFARE
- Reinforce animal welfare
- Develop biodiversity
- Reduce energy consumption

Partners

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GAEC Pré en Bulles
Pilot Farm description
Hillion – 2021

France

Innovations

Socio economic Resilience / Environment

Farming milestones

2018 Organic farming

2019 Adhesion to French environmental measures MAEC SPE 12/70

2019 Dominique Madec and Benoit Cabaret take over the farm

2020 Suckling calves

2022 1 employee hired - adhesion to a group of employers

2022 Orchard planting

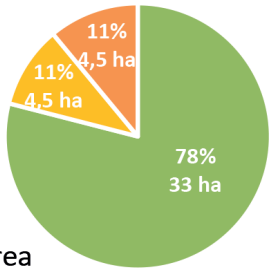
The herd

- 61 LU
- 53 dairy cows
  Breed: crossbreeds with a Holstein basis
- Replacement rate: 15%
- Calving period: all year
- First calving : 30 months
- Suckling calve rearing and heifer production transferred from 4 to 28 months

Agricultural Area

44 ha AA

- 30 ha temporary grassland
- 4 ha permanent grassland
- 4 ha of meslin (grain)
- 4 ha maize silage
- 38 ha forage area
- Grass: 89% / main forage area
- 2 ha of orchards

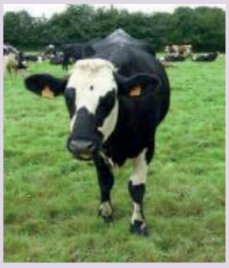


Workforce

- **2 partners** and 35 days of hired farm labour (2 FTE)
- **53 dairy cows** & 248 000 L milk sold
- **Free time: 3** weeks of holidays (aim : 5 weeks)/ year and 1 weekend out of 2

Areas of interest

- Grazing
- Cost-effective system
- Cider and apple juice production
- Added-value



Main buildings and Equipment

- Freestall housing on straw 58 places
- 25 paddocks of 1 ha =23 for dairy cows
- 1.2 km of flattened tracks
- 2x4 Milking parlour, double-up system
- Cider (10,000 bottles/year) and apple juice (4000/year)

Production/ Technical results

- 302,000 L produced (dairy coop « Biolait »)
- 42 g/l fat & 32 g/l protein content
- Stocking rate: 1.6 LU/ha forage area
- 5700 l/cow/year 7950 l/ha forage area
- 245 days/year of grazing
- Feed cost = €59/ 1000L
- 180 kg of concentrate/cow/year (autoproduction)
- Operating costs = 37% of gross product

Strengths

- Economic efficiency
- Recent set-up - 3 years
- Diverse production systems
- Accessible area (23 ha)
- Percentage of milk sold directly (ice cream parlour)

Weaknesses

- Not quite self-sufficient in fodder : buy 8TDM /year
- High stocking density in dry areas

Opportunities

- Strong involvement in networks and partnerships
- Direct sale of cider and apple juice

Threats

- Climatic hazards could lead to a reduction in the number of animals
- Urban land pressure

Farmer's strategy for a resilient system

To build a resilient system, Benoît and Dominique went for a cost-effective and independent strategy to be less dependent on the input prices (feed, fuel, etc.) found in organic farming by diversifying their income (long supply chain milk and short supply-chain cider). In order to further develop this protein and fodder autonomy, they have been testing new fodders: sorghum, rapeseed, trees, etc. and are also diversifying their grasslands to compensate for drier areas: cocksfoot, Ray-grass, clover, alfalfa, plantain, fescue, etc.

Aspirations/Needs for the future

Both farmers wish to continue with this autonomy and climatic resilience by focusing on hedges and fodder trees: planting, fodder testing, etc., as well as on reducing GHGs on the farm.

Improvement project - objectives

ECONOMY & LABOUR

- Diversify production
- Increase the added value per hour worked
- More free time

RESOURCE Efficiency

- Better use of multi-species grasslands
- Diversify fodder production
- Reinforce protein autonomy
- Planting fodder trees

PROJECT

ENVIRONMENT ANIMAL WELLBEING

- Improve animal welfare
- Develop biodiversity
- Reduce energy consumption

Partners

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GAEC Vert de Lait
Pilot Farm description
Haut-Corlay – 2021

France

Innovations

Socio economic Resilience / Environment

Farming milestones

2012 Franck Le Breton takes over the family farm

2016 Conversion to organic farming started for the rest of the farm - 100% grass-based system

2017 Maud Cloarec partners

2012 Creation of a dairy cow building and a milking parlour - adhesion to MAEC SFEI

2016 Calving period set to autumn First closing of the milking parlour - adhesion to French environmental measures (MAEC SPE 12/70)

2018–2019 3 km of hedges planted

2020 Eating apple orchard planted

2021 Considering creating a vineyard

The herd

- 70 LU
- 45 dairy cows + 10 females crossed with Belgian Blue or Charolaises for meat
  Breeds: Crossbreeds (100%)
- Replacement rate: 23%
- Calving period: Spring (March-April)
- Age at first calving: 24 months
- Milking OAD all year round

Agricultural Area

68 ha AA

- 68 ha perm. grassland
- 250 apple trees
  + 25 juice apple tree
- 68 ha forage area
- Grass: 100% / forage area

Workforce

- **2 partners and 1 employee (50%)**
- **2.50 work units - FTE**
- **45dairy cows** & **155,000** L
- **Holidays :** 8 weeks of holiday/year, free time available, No work on 2/3Wednesdays and 1/2Saturdays

Areas of interest

- 100% grass and hay-based
- Cost-effective system
- Grouped calving period
- Milking OAD
- Added-value
- Agroforestery

Main buildings and Equipment

- Freestall housing, cubicles on dolomite sand
- 20 paddocks of 1,5 ha to 3 ha – 38-40 ha for dairy cows
- 3.5 km of stabilised roads
- 2x5 Milking parlour

Production/ Technical results

- 180,000 L produced (dairy coop « Biolait »)
- 45 g/l fat & 36 g/l protein content
- Stocking rate: 1 LU/ha forage area
- 4,000 l/cow/year 2,650 l/ha forage area
- OAD milking for 270 days (=9 months) of lactation
- 310 days/year of grazing
- < 1t DM of stocked fodder/LU
- 0 kg of concentrate/cow/year
- Operating costs = 6% of gross product

Strengths
- Economic efficiency
- Technical skills
- Less worktime
- Low load (adapted, room to manoeuvre)
- Little dependence on inputs and price volatility

Weaknesses
- Milk is mostly the source of income
- Reproductive diseases more troublesome in group calving system

Opportunities
- Strong involvement in networks and partnerships
- Knowledge sharing through communication and bookwriting
- Diversification of workshops (meat, honey, apples, vines, etc.)

Threats
- Increasing effects of climate change
- Context of the dairy industry

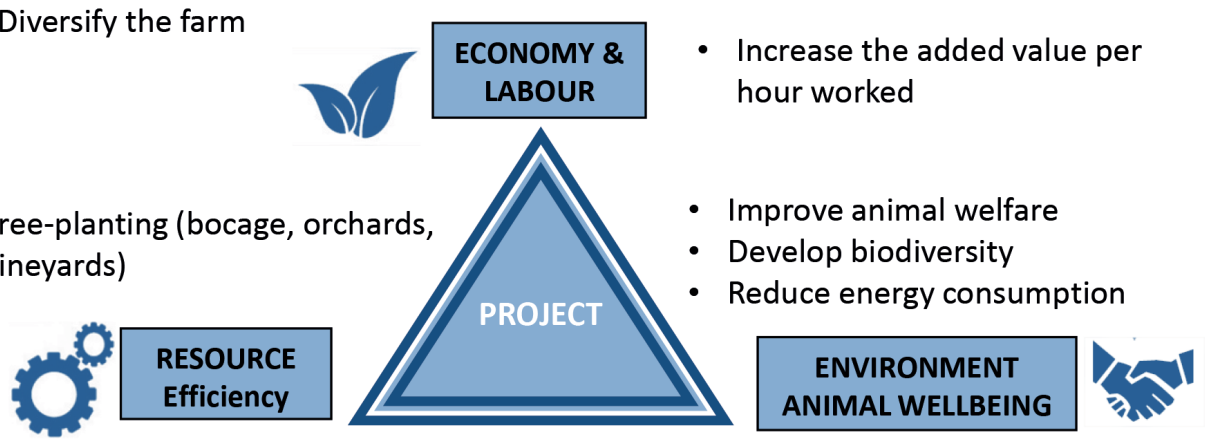
Farmer's strategy for a resilient system

To build a resilient system, both farmers went for a cost-effective and independent strategy by grouping all calving over 9 weeks at springtime. By milking once a day and closing the milking parlour 2.5 months in winter, they both fulfil their aim of limited working hours ranging from 10h/week to 70h/week (at peak) for 2.5 labour units. The grass-based system contributes to limit their environmental impact by reducing their GHG emissions. Carbon emissions are thus reduced thanks to grasslands and hedges, and by limiting the number of unproductive animals on the farm.

Aspirations/Needs for the future

Farmers are seeking to go ever further towards energy self-sufficiency. They also aim to gain greater control over the future of the farm's production (milk and meat). The GAEC now wants to communicate widely, highlighting their quality of life, the excellent economic results and the low environmental impact of the system. By reaching out to non-farmers in particular, the farmers hope to make the farming profession more attractive.

Improvement project - objectives



Partners

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More information https://resilience4dairy.eu/

Resilience for Dairy (R4D) has received funding from the European Union's Horizon 2020 research and innovation program under grant agreement No 101000770

GAEC DOUILLET
Pilot Farm description
Val D'Izé – 2021

France

Innovations

Socio-economic Resilience / Environment

Farming milestones

2013
Romain works with his father 92 ha – 530 000 l - Agri-environmental measure with low-input forage

2014
Expansion building, 125 cubicles with mattresses, manure pit

2016
Conversion to organic farming
2 ways crossbreeding Holstein x Norwegian Red

2017
Switch to a milking robot
Heifer breeding delegation

2018
Switch to organic farming

2021
Acquisition of 20 ha
Fodder shed with photovoltaic panels

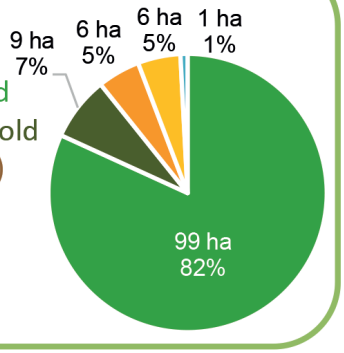
The herd

- 119 LU
- 112 dairy cows
  Breed: Holstein x Norwegian Red
- Replacement rate: 27%
- Calving period: all year
- Age at first calving: 28 months
- 100% AI + Angus bull

Agricultural Area

121ha AA

- 95ha Temp. + 4ha Perm. Grassland
- 9ha hybrid ryegrass & red clover sold
- 6ha of dehydrated corn (full plant)
- 114ha main fodder area
  95% grass /main fodder area
- 6ha dehydrated corn cob
- 1ha English ryegrass seeding



Workforces

- **3 labor units including 1 employee**
- **2.95 labor units** assigned to milk activities
  = **38 cows** & **231,000** l/labor unit
- **0.05 labor units assigned to sales crops**
- **Objectives:** 1/5 days off + 1 week-end off /3 + 4 weeks off per year.
- Daily routine work in winter: 15 min/cow/week

Areas of interest

- Milking robot and grassland
- Grazing improvement
- Food autonomy
- Genetic crossing
- Added value
- Animal welfare
- Heifer breeding delegation

Main buildings and equipment

- Barn: cubicles with mats and slurry outlet for 125 cows
- 23 rectangular paddocks of 2–3 days with front/rear wire and day/night paddocks
- 600m of hardened paths
- 2 Lely Milking robots
- Individual boxes for calves on a platform with an outdoor park
- Heifers collective boxes up to 3 months old

Production/Technical results

- 692,000 liters of milk produced (99% sold)
- 40.9 g/l fat & 32.6 g/l protein content
- Stocking rate: 1LU/ha main fodder area
- 6,200 l/cow/year - 6,060 l/ha fodder area
- 270 days/year/complete grazing year
- 3.2 t of dry stored forage/LU
- 450kg of concentrates/ cow/year (dehydrated corn on the cob, foods with vitamins and minerals)
- Feeding costs for the herd: 59 €/1000 l
- Milk gross margin = 395 €/1000 l
- Operating costs = 21% of total product

Strengths

- Reduced working time
- High economic efficiency
- Good technical skills (grazing, care)
- Grouped parcels
- Good land potential
- 10 years farm business plan

Weaknesses

- Some parcels are humid
- Only one organic breeder for the delegation of heifer breeding in the department for now

Opportunities

- DESHYOUEST company is nearby (dehydrated corn and ryegrass for robot)
- Farm seeds adapted to soils for farm modernization plan
- Involvement in his dairy company

Threats

- Climate hazards
- Context of the organic dairy industry
- Farm transfer

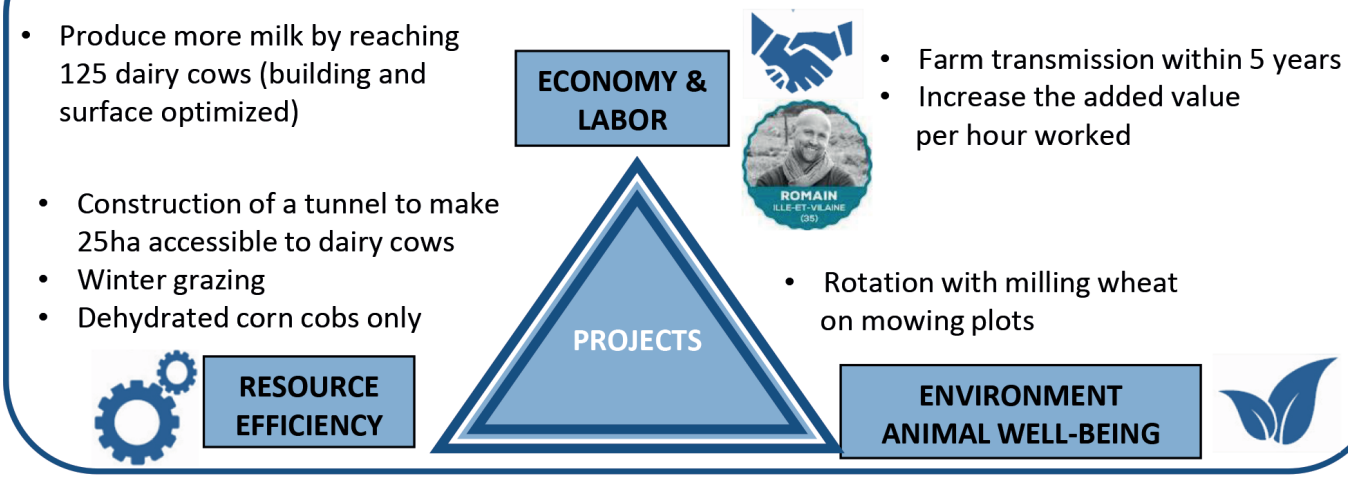
Farmer's strategy for a "resilient" system

To build a resilient system in organic agriculture, the farmers adopted a cost-saving and self-sufficient strategy in order to be less dependent on the price of inputs (feed, fuel, etc.). The fodder is mainly made of grazed and stored grass with dehydrated corn before being distributed by the robot. Crossbreeding provides cows that are strong and adapted to grazing while maintaining milk productivity. By maximizing grazing, implementing milking robots and delegating the breeding of heifers to an outside farm, the farmers have reached their work objectives with less than 35 hours/week/partner.

Aspirations/Needs for the future

The farmers wish to maintain the economic efficiency of the farm with an self-sufficient grassland system. After the retirement of his father, Romain wishes to keep his working time objectives in order to keep his commitments and projects outside of the farm.

Projects-Objectives



- Produce more milk by reaching 125 dairy cows (building and surface optimized)
- Farm transmission within 5 years
- Increase the added value per hour worked
- Construction of a tunnel to make 25ha accessible to dairy cows
- Winter grazing
- Dehydrated corn cobs only
- Rotation with milling wheat on mowing plots

Partners

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GAEC LE TROUENCON
Pilot Farm description
Val Couesnon – 2022

France

Innovations

Socio-economic Resilience / Environment

Farming milestones

1989
Third party installation by the parents Philippe and Claudie – 35ha – 180,000 l of milk

2005
Expansion
60ha and 260,000 l

2007
Standardization – 50 slot DC stables AP+AE, nursery, 2x6 milking parlour

2014
Milk return, transition to cubicles (70 cows) - 60ha AA and 380,000 l

2017
Expansion and renewal of the cattle building
87ha and 725,000 l

2018
Expansion of the DC stables (110 sleeping areas)

2019
Beginning of the Holstein x Viking Red x Normande dairy cross

2020
Arrival of Arnaud and departure of Claudie
92ha AA and 725,000 l

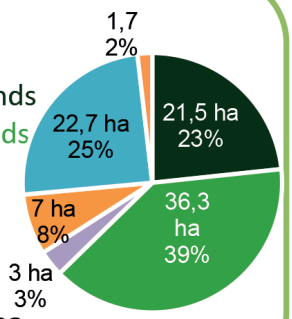
The herd

- **120 dairy LU**
- **98 dairy cows**
  Breed: Holstein x Viking Red x Normande
- Replacement rate: 28%
- Calving period: autumn–winter
- Calving age: 28 months
- 80% AI and 20% Limousin bull
- **15 LU for meat:** 10 crossbred bull calves kept each year for 30-36 months beefproduction

Agricultural Area

92ha AA

- 21.5ha permanent grasslands
- 36.3ha temporary grasslands
- 3ha lucerne, 7ha hybrid ryegrass & red clover
- 22.7ha corn silage
- 1.7ha beet



74% grass/main fodder area
Grassland planted under cover of mixed grain

Workforces

- **2 labour units**
- **2 labour units** assigned to milk activity
  => **49 cows** & **362,000 l**/labour unit
- **Objectives:** to simplify work, 1 milking/person in the morning or the evening, take time off if needed — 2 weeks of per year

Areas of interest

- Grazing management
- Mown grasslands
- **Three-way crossbreeding**
- Feeding self-sufficiency
- Added value on farm
- Blocked calving in autumn
- Valuation of livestock effluents

Main buildings and equipment

- Dairy cows stables with 80 cubicles and 30 straw-lined stalls – 110 headlocks
- Thirty paddocks of 1ha for dairy cows and paved paths
- 2x6 milking parlour
- Nursery in collective boxes
- Straw-bedded barn: 45 stalls for heifers, dry cows, feeder cows, steers

Production/Technical results

- 731,000 l of milk produced (98% sold)
- 43,8 g/l fat & 33,6 g/l protein content
- Stocking rate: 1.5 LU/ha main fodder area
- 7,500 l/cow/year & 7,950 l/ha fodder area
- Dynamic rotational grazing without silo closure
- 700kg of concentrates/cow/year
- Grazing of heifers and steers as early as the 1st year
- Gross margin = 73% of cattle product – 372 €/1000 l
- Herd feed cost = 90 €/1000 l

Strengths
- Grouped parcels with 84ha available for cows
- Solid economic efficiency
- Complementarity of dairy & meat activities
- All Farms' equipment is owned & managed within cooperatives

Weaknesses
- Low potential of lowlands or remote plots
- some of the land are not fit for manure/slurry spreading
- need to purchase nitrogen corrector to balance rations

Opportunities
- Feeder cows for calves sold at 15 days
- Use of chipped wood from hedges as litter for non dairy livestock units
- 25% corn silage hoed

Threats
- Philippe's retirement within 5-6 years
- Climate events impacting grass and corn fodder yields

Farmer's strategy for a "resilient" system

In order to build a resilient system, the farmers have set up a low-cost, autonomous system to reduce their dependence on the cost of inputs (feed, fertilizer, fuel, etc.). The milk is produced by balanced fodder without energy concentrate. Nitrogen-rich grazing and early mowings of lucerne as well as hybrid ryegrass and red clover grasslands reduce the use of nitrogen correctors. Technically, crossbreeding is meant to improve cows' longevity and health while maintaining a satisfactory productivity per cow. The cultivation of corn, the valuation of animal manure throughout the agriculture area, the rotations with grasslands as break crops, and antibiotic-free drying contribute to environmental resilience.

Aspirations / Needs for the future:

The farmers wish to continue and cement the latest actions implemented such as crossbreeding and block calving in autumn. They wish to maintain the economic efficiency of the farm, maintain a milk production per cow and gain in protein autonomy.

Projects – objectives

ECONOMY & LABOUR
- Passing on within 5 years
- Improve comfort at work
- Keep a good economic efficiency

RESOURCE EFFICIENCY
- Planting meslin grain to reduce the purchase of nitrogen correctors
- Building stabilized paths to facilitate grazing

PROJECTS

ENVIRONMENT ANIMAL WELL-BEING
- Continue hedge planting
- All calves with feeder cows?
- Switching to organic farm?

Partners

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BURETTE Jean-Marc
Pilot farm description

France

Innovations

Socio economic resilience / Environment / Work organization / Communication

Farming milestones

1990 Set up by Jean-Marc on the family farm (30 cows –220 000l - 25ha)

1993 Set up by Elisabeth (+240 000l, +24ha)

1994 Change of status - EARL (2UMO)

1996 Change in work organization : reduction of unpaid worker, work simplification (crop delegation, group calving, mutual aid)

2006 Pursuit of work organization : feed simplification, machineries, no tillage, field exchange)

2011 End of the EARL status, Elisabeth employee

2012 Low volume practice (pesticide)

2015 End of mutual aid, work with contractor

2017 Alexis come back in partial time

2021 Savoir vert : Farm educational tour

Alexis full time

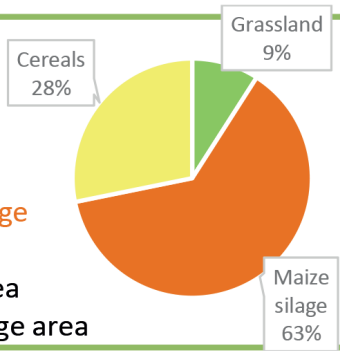
The herd

- 101 LU
- 76 Prim'Hosltein dairy cows
- 30% replacement rate
- Calving period: grouped (80% between june and september)
- Age at 1st calving : 24 months
- IA

Agricultural area

62 ha AA

- 5,4 ha permanent grassland
- 37,4 ha maize silage
- 16,8ha cereals
- 45,5 ha forage area
- 82 % maize / forage area



Workforce

- 1 farmer,
- 2 employees (Elisabeth, Alexis)
- Alexis employee to anticipate farm transmission
- Harvest delegation to a contractor

Areas of interest

- Work simplification
- Environmental friendly practice : no tillage, cover crops, low volume, alternative medicines, carbon footprint
- Communication toward general public : open days, local newspaper, events…

Main buildings and equipment

- Cows : strawed cubibles
- Heifers : free stall housing
- Milking parlour 2 x 5
- Few machineries

DANONE

Production / Technical results

- 720 000 l produced milk
- 39 g/l fat & 33,7 g/l protein
- Stocking rate : 2,3 LU / ha forage area
- 9 355 l/cow/year - 15 846 l/ ha forage area
- Winter 2023 feed cost 111€/1000L
- 1750 kg concentrate/cow/year
- 570 kg concentrate/heifer/year (milk yogourt)
- Production cost 2021 414€/1000l, balance price 356€/ 1000l
- Carbon foot print : 0,9 kg eq CO2/l

Strenghts

- Consideration about farm strategy,
- Anticipation about expectation (environment, social), work force evolution
- Technical and economical efficiency

Weaknesses

- Feed system reliant on meal (and price
  Limited area, which lead to a high productivity/ha

Opportunities

- Strong involvement in networks, partnerships and training
- Come back of Alexis with news project, but following on the farm strategy

Threats

- Pressure on land (price, with resident)
  Dairy specialised system : precarious if price instability

Farmer's strategy for a « resilient » system

To built a resilient system, the farmers have adopted a spesialization strategy in dairy and work simplification (cattle and crops).
They focus mainly on 2 topics : 1st the environment with no tillage practice, the use of cover crop, alternative medicines. The farm is involved in Law carbon label. The 2nd one is about social expectations with a lot of communication actions : Savoir vert, open days, articles…

Aspirations for the future

Jean-Marc and Elisabeth anticipate the farm transmission to Alexis : transfert of responsability, decisions making…

Improvement project - Objectives

- Work balance

ECONOMY & LABOUT

- Economical efficiency to pull a revenue
- Soil fertility
- Reduce use of pesticide
- Mix productivity and efficiency

PROJECT

- Low carbon approach
- Actions for social expectations

RESSOURCE EFFICIENCY

ENVIRONMENT ANIMAL WELFAIR

Partenaires

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EARL TRAULLE-CORBIN
Pilot farm description
Coulonvillers

France

Inovations

Socio economic résilience / Environment

1994
Farm take over by the father (50 ha, 35 cows)

2001
80ha – 50 cows
New building strawed free stall, milking parlour 2*6

2011
Photovoltaïc building

2014
1st milking robot

2019
Simon arrival with the take over of a 2nd farm
= 160ha – 650 000l

2020
2nd milking robot, slatted floor in the feeding corridor, 150 places

2021
New forage pit
Hiring of an apprentice
994 000l

2022
Collective digester
1 190 000l

Milestone

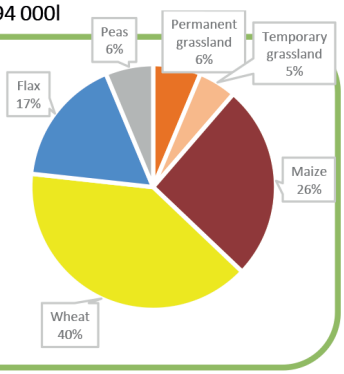
The herd

- 183LU
- 125 Prim'Hosltein cows
- 42% replacement rate
- Calving period: all year
- Age at 1st calving : 30 months
- AI

Agricultural area

160 ha AA (17ha own)

- 10 ha permanent grassland
- 8ha temporary grassland
- 41 ha maize silage
- 63 ha wheat
- 27 ha flax
- 10 ha peas



Work force

- 2 full times (father and son)
- 1 apprentice (=0,5 LU)

Areas of interest

- Productivity of the farm
- Productivity of the work force
- Simplification of the work organization (balance profit/risk)

Main buildings and equipment

- Cows : Straw free stall, slatted floor in the feedig corridor
- Heifers : Straw free stall
- 2 milking robots (Lely A4 and A5)
- Own machineries except for silage and harvest
- In CUMA : slurry spreader, windrower
- Feed mixer wagon

Production / Technical results 2021

- 954 000l produced milk (359€/1000l 21/22)
- 39,29g/l fat & 32,94 g/l protein
- Stocking rate : 2,90 LU / ha forage area
- 9500l/cow/year - 15000l/ ha forage

- 1600kg concentrate/cow/year
- 180g concentrate/l milk
- 330kg concentrate/heifer/year
- Gross margin 2020/21: 199 €/1000L
- Carbon footprint : 1kg eq CO2/l

Strenghts

- Work productivity
- One free week-end out of 2
- Diversified system in case of market instability

Weakness

- Intensif system, dépendance to input (and price)

Farm in the middle of the village, few expansion options

Land dividing up (50 plots)

Opportunities

- Good land potential
- Close to an urban area with consumers

Threats

- Input price
- Regional dynamic in dairy farming

Farmer's strategy for a resilient system

A farm with attractive work conditions : on-call daily work can be done alone, alternate week-ends and vacations

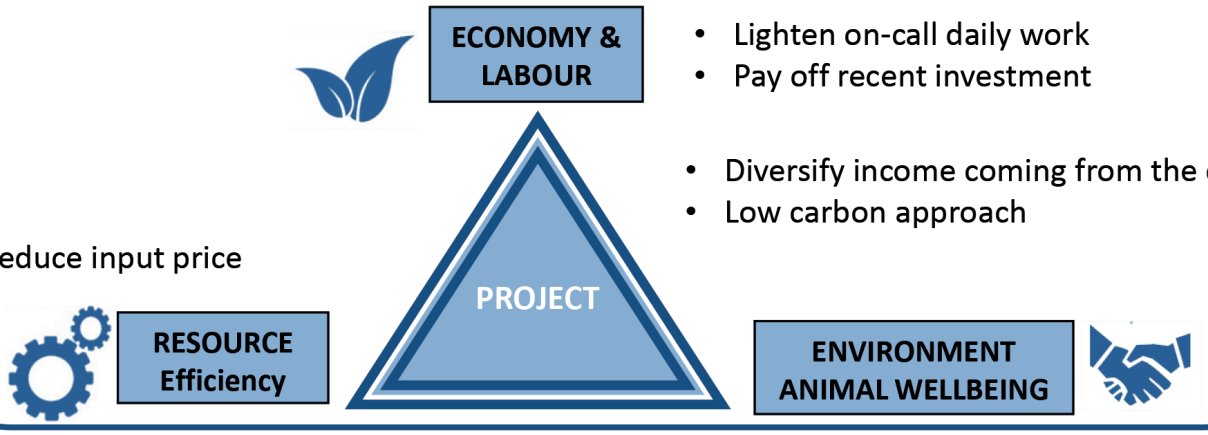
Economics : Reasoned investment, Secured income (using/recycling old barns to limit the investment, labour tool not full crowded, diversified income)

Develop activities to strenghten the dairy unit : digester unit nowadays, milk processing maybe tomorrow

Aspirations/Needs for the future

Maintain good work conditions and in the same time prepare the retirement of the father

Improvement project - objectives



Partenaires

"Resilience 4 Dairy" est un projet européen impliquant 15 pays européens et 18 partenaires. R4D est un réseau thématique visant à soutenir l'élevage laitier européen dans les régions où l'élevage laitier est une activité économique importante.

Les fermes pilotes de R4D sont impliquées dans un groupe de travail national visant à partager avec d'autres éleveurs, conseillers et scientifiques les besoins et solutions pour construire des systèmes laitiers résilients.

Plus d'informations https://resilience4dairy.eu/

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Domaine de Merval
Pilot Farm description
Brémontier-Merval - 2021

France

Innovations

Socio-economic Resilience / Environment

Farming milestones

1988 Creation of the pedagogical farm

2013 Organic conversion of orchards

2015 Start of organic conversion of the rest of the farm

2017 **Global rethinking of the farm.** Search for synergies between productions and circular economy

2019 Land development to extend the grazing area

2021 Milking parlour extension + implementation of agroforestry on 17 ha

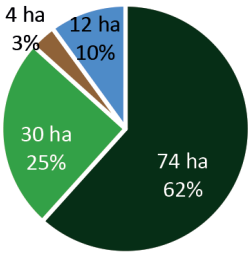
The herd

- 150 Livestock Units (LU)
- 116 dairy cows
  Breeds : Normande (100%)
- 20 % of replacement rate
- Calving period : all year round
- Age at first calving : 28 months
- Using bull for reproduction (100%)

Agricultural Area

120 ha AA

- 74 ha perm. grassland
- 30 ha temp. grassland
- 4 ha triticale-pea mix crop (grain)
- 104 ha main fodder area
- 100 % of grassland / forage area
- 12 ha of orchards



Workforces

- **11 labour units of the farm**
- **2,5 FTE** allocated to dairy production
  = **39** dairy cows & **158 000** l /FTE
- **4,5 FTE** allocated to cheese processing
- **Aims** : all hours worked are paid or recovered, 5 weeks of vacation per year, 10% of profits shared with employees

Areas of interest

- Grazing
- Low-cost system
- Circular economy
- Added value
- Agroforestry
- Self-sufficiency (local and territorial)

Main buildings and equipments

- Sleeping area on wood chips litter
- > 60 paddocks of 1-2 ha each
- 3,5 km of stabilized paths for grazing
- 2 x 8 milking parlour
- Cheesery and ripening cellar (180 – 220 000 Neufchâtel produced/year)
- Cider and Calvados factory (18 000 bottles of cider/an)

Production / Technical results

- 470 000 liters of milk produced (75% processed)
- 42,5 % fat & 34,6 % protein content
- Stocking rate: 1.3 LU / ha forage area
- 4 000 l/cow/year & 3 660 l/ha forage area
- 270 d/year of 100% grazing
- 1,7 t DM of stored fodder / LU
- 85 kg of concentrate/cow/year
- Operating costs = 12% of Revenues

Strengths

- High economic efficiency
- Good technical skills (grazing, health statue) Polyvalent labour
- Polyvalent labour
- Strong complementarity of the productions

Weaknesses

- Not 100% self-sufficient in fodder

Opportunities

- Strong involvement in networks and partnerships
- To disseminate innovation via the high school
- To distribute products in important cities (Rouen, Caen, Paris)

Threats

- Climatic hazards may require to reduce stocking rate

Farmer's strategy for a "resilient" system

To build a resilient system, the farmers have adopted a strategy of autonomy and low-cost in order to be less dependent on the input prices (feed, fuel, etc.). By transforming the milk on the farm, they can fixe sales prices to cover the production costs and to ensure a good remuneration of the workforce. The complementarity of the productions allows a better valorization of the by-products (wood chips, whey, etc.) and thus to accentuate this resilience.

Aspirations / Needs for the future

The farmers now wish to communicate widely on the transition approach achieved on the farm, highlighting the very good economic results. By addressing in particular the students at the high school, the farmers want to strengthen the attractiveness of the farmer's profession.

Improvement project - objectives

- Create local and remunerative employment

ECONOMY & LABOUR

- Increase the added value per working hour
- Enhance multi-species grassland valorisation
- Improve protein autonomy
- Search for fodder tree essence

PROJECT

- Enhance animal welfare
- Develop the biodiversity
- Reduction of energy use

RESSOURCE Efficiency

ENVIRONMENT ANIMAL Wellbeing

Partners

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R4D DAIRY FARM NETWORK

Farm's presentations

7 Pilots Farms

BELGIUM FL

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Fam. D'Hooghe
Karel en Sofie
Pilot Farm Discription
Zele

Belgium

Innovations

Socio-economic Resilience / Environment

Farming milestones

2005
Started in side business
27 cows

2010
Expansion to 55 cows

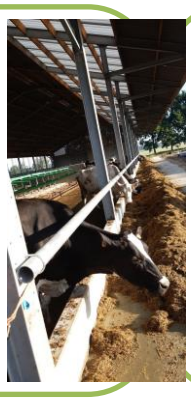
2011
adapt youngstock barn +shed + continue grow

2022
New low-emission dairy barn
84 cows

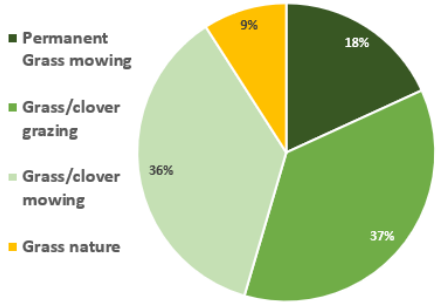
The herd (2020)

- 152 Livestock Units
- 84 Holstein
- 68 Young stock

- Calving period : all year round
- Age at first calving: 25,2months
- Calving interval : 417 days



Cropping Plan



Workforces

- 1 labor units : Karel + help from family
- **Aims** : Generate income, climate friendly production, optimalisation and private time

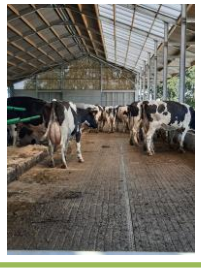
Areas of interest

- Animal welfare
- Rotational grazing
- More own protein production
- Robot milking

Main buildings and Equipment

dairy cows

- Cubicle barn for cows
- Milking: 2 x 3 (Packo)
- Low-emission barn with solid floor
- Dry cows on sand



Production / Technical results (2020)

- 884 000 liters of milk produced
- Fat : 46,9 % & protein: 37,4 %
- Replacement Rate: 18 %
- 10 500 kg of milk /cow /year (FPCM)
- 1 132 kg of concentrate/cow/year
- 2 279 kg of concentrated feed/cow/year
- Return over feed cost : 31 €/100 l
- CFP: 1,01 CO_2 eq./kg FPCM (2021)

Strenghts

- Efficiency
- Labour planning
- Good technical key-results
- Grassmanagement

Weaknesses

- Pressure of nature areas

Opportunities

- Interest in nature
- Interest in robotmilking
- Interest in biodigester

Threats

- Rapidly changing legislation
- Increased feed and fertiliser costs
- Climate change, drought

Strategy of the farmer to improve resilience

The company wants to work on its climate impact. A carbon footprint calculation was carried out for this purpose. As measures, a new stable (low-emission stable) and committing to maximum grassland, grass/clover (no maize in the ration) are the most important measures. Other important things are separate group housing on sand for dry cows, antibiotic use is close to zero. And the farmer is also member of Ben&Jerry's caring dairy project.

Areas of interest / Aspirations / Needs for the future

Karel has further interest and ambition to invest in milking robot and bio-digester

Improvement project - objectives

- Reduce work load
- Reduction of cost production

ECONOMY & LABOUR

- Private time and family

- As much milk as possible with the fewest cows

PROJECT

- Energy-efficiency

RESSOURCE Efficiency

ENVIRONMENT ANIMAL Wellbeing

Partners

inagro
ONDERZOEK & ADVIES IN LAND- & TUINBOUW

BOEREN BOND

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Fam. Op 't Roodt
Koen en Celine
Pilot Farm Discription
Olen

Belgium

Innovations

Socio-economic Resilience / Environment

Farming milestones

2001
Koen works on the parents' farm. First step from 100 to 150 cows.

2005
Koen steps into co-habitations with parents

2009
construction of new barn with sand in cubicles (240 cows)

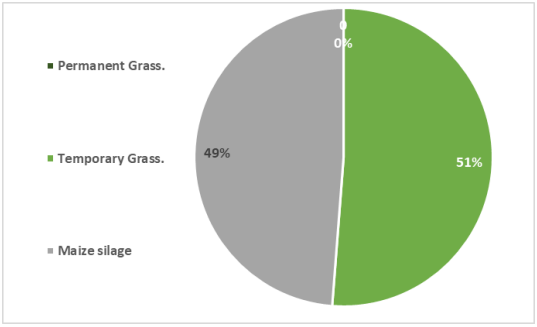
2018
Expansion to 300 cows and annual production increase

The herd (2022)

- 550 Livestock Units
- 322 Holstein
- 228 Young stock

- Calving period : all year round
- Age at first calving : 25 months
- Calving interval : 379 days

Cropping Plan



Workforces

- 2 labor units : Koen & Celine & parents
- 1 external worker
- **Aims** : high production, quality forage and top genetics

Areas of interest

- Animal welfare & health
- Genetics
- Top quality for grass (possibility of irrigation)

Main buildings and Equipment

dairy cows

- Cubicle barn for cows
- Milking: 5 robots (Lely)
- Sand in cubicles

Production / Technical results (2022)

- 4 286 000 liters of milk produced
- Fat : 3,87 g/l & protein: 3,42 g/l
- Age of cows: 4Y 3M
- 13 200 kg of milk /cow /year (FPCM)
- 3 400 kg of concentrate/cow/year
- 4 908 kg of concentrated feed/cow/year
- Replacement Rate: 29 %
- Return over feed cost : 32 €/100 l
- CFP: 0,87 CO_2 eq./kg FPCM (2021)

Strenghts

- Efficiency
- High production
- Good technical key-results
- large areas of good quality grassland

Weaknesses

- Pressure of nature areas

Opportunities

- Interest in genetics
- High cow welfare

Threats

- Rapidly changing legislation
- Increased feed and fertiliser costs
- Climate change, drought

Strategy of the farmer to improve resilience

The company chooses high production. They are very much into breeding with focus on production, good health and condition. The stables are equipped with deep sand boxes, full manure floor and manure sliders. Because of the good grasslands on low lying polder, the aim is to be able to mow every 4 weeks so that top quality and top productions are also achieved here. The grassland consists of grass clover with also soft-leaved reed fescue which gives more structure. Mowing, picking up and ensiling is done very labour-efficiently with attention to good pressing of the grass.

Areas of interest / Aspirations / Needs for the future

The company is currently facing a lot of questions about the future at their current location and thus needs clarity.

Improvement project - objectives

- High production
- Efficient labour

ECONOMY & LABOUR

- A lot of own roughage

RESSOURCE Efficiency

PROJECT

- Healthy cows
- Sustainable use of grassland

ENVIRONMENT ANIMAL Wellbeing

Partners

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ONDERZOEK & ADVIES IN LAND- & TUINBOUW

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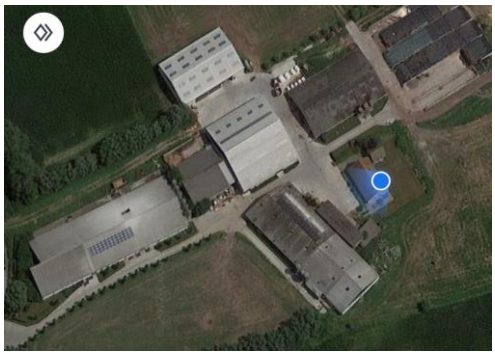
Fam. Van Hecke - Cornu
Geert en Carine
Pilot Farm Discription
Oudenburg

Belgium

Innovations

Socio-economic Resilience / Environment



Farming milestones

2001
Geert en Carine take over a mixed farm

2005 – 2007
dairybarn: new milking parlour, cubicles, mattresses and wind screens

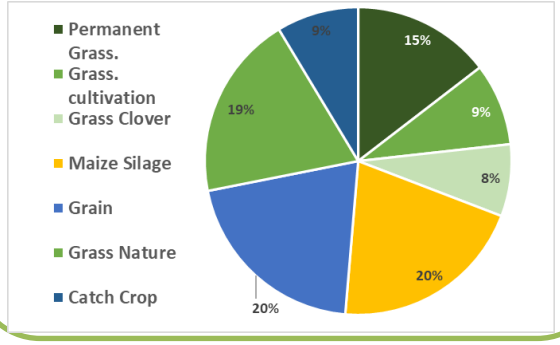
2018
young livestock: new roof and new equipment

2022
one of the sons is considering joining the company

The herd (2021)

- 145 Livestock Units
- 88 Holstein
- 57 Young stock
- Calving period : all year round
- Age at first calving : 24 months
- Calving interval : 380 days

Cropping Plan



Workforces

- 2 labor units : Geert & Senne
- **Aims** : Generate income, low cost production, optimisation and private time
- Also sows and porkers on the farm

Areas of interest

- Animal welfare
- Work efficiency : LEAN techniques
- More own protein production
- Own concentrate extraction

Main buildings and Equipment

dairy cows
- Cubicle barn for cows
- Milking: 2 x 7 (fullwood Packo)

Young stock
- < 5 months : straw

Production / Technical results (2021)

- 820 000 liters of milk produced
- Fat : 4,4 g/l & protein: 3,6 g/l
- Replacement Rate: 26 %
- 9 640 kg of milk /cow /year (FPCM)
- 1 770 kg of concentrate/cow/year
- 2 490 kg of concentrated feed/cow/year
- Return over feed cost : 21 €/100 l

Strenghts

- Efficiency
- Labour planning
- Good technical key-results
- Mixed farm : risk management

Weaknesses

- Pressure of nature areas
- Mixed farm : more investments, more knowledge needed

Opportunities

- Improvement technical results

Threats

- Rapidly changing legislation
- Increased feed and fertiliser costs
- Climate change, drought

Strategy of the farmer to improve resilience

This company is focused on cost control. Top production is not the objective. Less focus on production means significantly lower vet costs, which improves the health and wellbeing of the cows. As managers, they are also always looking for more work efficiency. In doing so, they use LEAN where very simple techniques can ensure very simple work and quick overview.

Areas of interest / Aspirations / Needs for the future

Continue working on LEAN techniques for further optimisation and possibly interest in small wind turbine to increase energy efficiency.

Improvement project - objectives

- Reduce work load
- Reduction of cost production

ECONOMY & LABOUR

- Private time and family

- More own protein production

PROJECT

- Animal welfare

RESSOURCE Efficiency

ENVIRONMENT ANIMAL Wellbeing

Partners

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ONDERZOEK & ADVIES IN LAND- & TUINBOUW

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Fam. Van Hecke -Tamsyn Johan en Maria Pilot Farm Discription Maldegem

Belgium

Innovations

Socio-economic Resilience / Environment

Farming milestones

1987
Johan en Maria take over a mixed farm

2012
new barn built over the older barn

2019
Investment in robotmilking

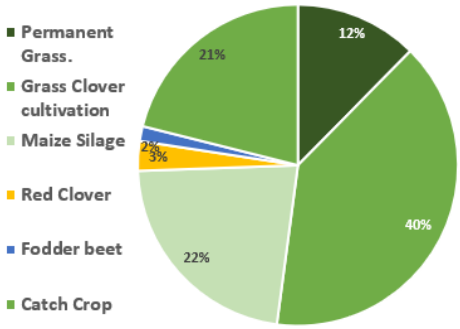
1987-2023
always been involved in testing and research

The herd (2021)

- 96 Livestock Units
- 64 Holstein
- 32 Young stock

- Calving period : all year round
- Age at first calving : 25 months
- Calving interval : 410 days

Cropping Plan



Workforces

- 2 labor units : Johan & Maria
- **Aims** : Generate income, low cost production

Areas of interest

- Animal welfare
- Work efficiency
- Roughage milk
- Research topics

Main buildings and Equipment

dairy cows

- Cubicle barn for cows
- Milking: robot (Lely)

Young stock

- < 5 months : straw

Production / Technical results (2021)

- 600 000 liters of milk produced
- Fat : 4,2 g/l & protein: 3,4 g/l
- Replacement Rate: 13 %
- 9 690 kg of milk /cow /year (FPCM)
- 1 940 kg of concentrate/cow/year
- 2 340 kg of concentrated feed/cow/year
- Return over feed cost : 21 €/100 l

Strenghts

- Efficiency
- Labour planning
- Good technical key-results

Weaknesses

- Pressure of nature areas

Opportunities

- Improvement technical results

Threats

- Rapidly changing legislation
- Increased feed and fertiliser costs
- Climate change, drought

Strategy of the farmer to improve resilience

This company is focused on cost control. Top production is not the objective. Johan and Maria have a very strong social commitment. Their motto is 'farming to live, not living to farm'. They have always been involved in working groups and research. They are very strongly open to sharing knowledge and have done so throughout their careers. Last they developed a machine to crush and feed fodder beet automatically via the milking robot.

Areas of interest / Aspirations / Needs for the future

They feel that young farmers are not given enough space in Flanders today and that it is therefore difficult to motivate them. This is very unfortunate.

Improvement project - objectives

- Reduce work load
- Reduction of cost production

ECONOMY & LABOUR

- Less concentrate

RESSOURCE Efficiency

PROJECT

- Animal welfare

ENVIRONMENT ANIMAL Wellbeing

Partners

inagro
ONDERZOEK & ADVIES IN LAND- & TUINBOUW

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Fam. Vanneste
Nico en Veerle
Pilot Farm Discription
Oedelem

Belgium

Innovations

Socio-economic Resilience / Environment

Farming milestones

2003
Cooperating company with parents + new dairy barn

2015
Complete take over of farm + construction of new hangar for storage

2021/2022
Want to build new dairy barn but face permit freeze

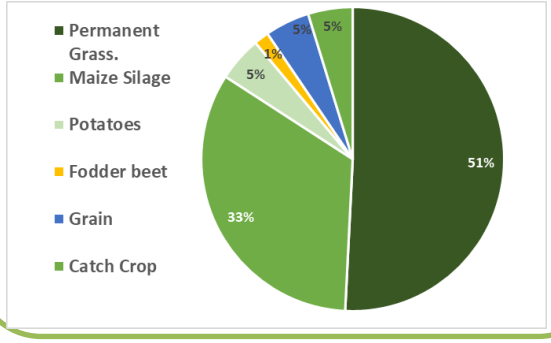
2023
Challenge to buy a farm in Wallonië (move in aug 2023)

The herd (2021)

- 182 Livestock Units
- 101 Holstein
- 81 Young stock

- Calving period : all year round
- Age at first calving : 25 months
- Calving interval : 418 days

Cropping Plan



Workforces

- 1,5 labor units : Nico & Veerle
- **Aims** : Generate income, low cost production, optimalisation and private time for taking care of the children

Areas of interest

- Animal welfare
- Labour organisation

Main buildings and Equipment

dairy cows

- Cubicle barn for cows
- Milking: herringbone parlour 7 & 8

Young stock

- < 6 months : straw

Production / Technical results (2021)

- 905 000 liters of milk produced
- Fat : 4,6 g/l & protein: 3,5 g/l
- Replacement Rate: 34 %
- 9 550 kg of milk /cow /year (FPCM)
- 1 140 kg of concentrate/cow/year
- 2 050 kg of concentrated feed/cow/year
- Return over feed cost : 21,5 €/100 l

Strenghts

- Efficiency
- Labour planning
- Good technical key-results

Weaknesses

- Pressure of nature areas
- necessary replacement of barns is not possible.

Opportunities

- Open minded for relocation of the farm

Threats

- Rapidly changing legislation
- Increased feed and fertiliser costs
- Climate change, drought

Strategy of the farmers to improve resilience

The business leader is convinced of the 'what you do yourself you do better' strategy. So he fully commits to own labour and good organisation. The company can only grow until its own labour is saturated. This means, among other things, that land work is done in-house, repairs are done during quiet periods on the farm and renovations are also done in-house as much as possible.

Areas of interest / Aspirations / Needs for the future

Continue working on further optimization.

Improvement project - objectives

- Reduce work load
- Reduction of cost production

ECONOMY & LABOUR

- **Private time and family**

- More own protein production

PROJECT

- Animal welfare

RESSOURCE Efficiency

ENVIRONMENT ANIMAL Wellbeing

Partners

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ONDERZOEK & ADVIES IN LAND- & TUINBOUW

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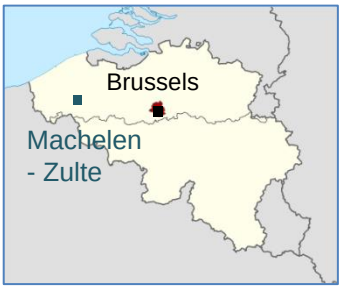
Fam. Van Parys
Steven en Fien
Pilot Farm Discription
Machelen - Zulte

Belgium

Innovations

Socio-economic Resilience / Environment



Farming milestones

2005
Steven graduates and starts a technology company

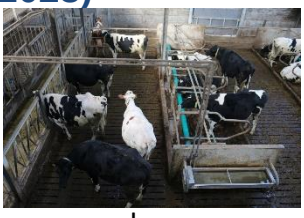
2018
Taking over the family farm together with Fien

2019
Specialization through the construction of a new dairy barn

2022-2023
Expansion to 230 cows and optimisation of youngstock barn

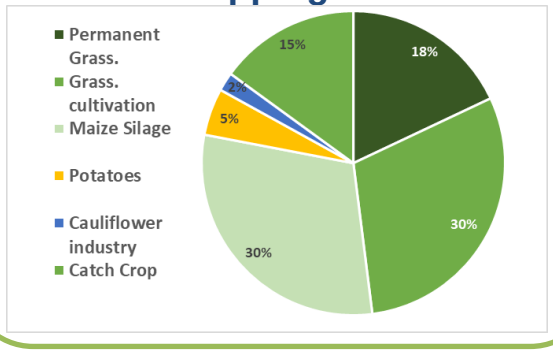
The herd (2023)

- 360 Livestock Units
- 230 Holstein
- 130 Young stock



- Calving period : all year round
- Age at first calving : 25 months
- Calving interval : 402 days

Cropping Plan



Workforces

- 2 labor units : Steven & Fien
- **Aims** : Generate income, automatization, optimalisation and private time

Areas of interest

- Automatization
- Energie-efficiency
- Genetics

Main buildings and Equipment

dairy cows

- Cubicle barn for cows
- Milking: 4 robots GEA
- Automatic feeding with feed kitchen - own design
- Pocket digester

Production / Technical results (2022)

- 1 350 000 liters of milk produced
- Fat : 3,9 g/l & protein: 3,5 g/l
- Age of cows: 4Y 6M
- 11 800 kg of milk /cow /year (FPCM)
- 1 920 kg of concentrate/cow/year
- Replacement Rate: 15 % (young farm and growing)
- Return over feed cost : 27 €/100 l

Strenghts

- Efficiency
- Labour planning
- Good technical key-results
- Energy optimalisation

Weaknesses

- Fast growth in the short term

Opportunities

- Interest in genetics

Threats

- Rapidly changing legislation
- Increased feed and fertiliser costs
- Climate change, drought

Strategy of the farmer to improve resilience

The manager works very mathematically and reasoned. Ease of work is central to the choice of certain techniques. Repetitive work such as feeding and shuffling feed was something Steven wanted to avoid as much as possible. The barn layout combined with 100% controlled cow traffic ensures healthier animals and peace and quiet in the barn. The extra cost of automation is offset by the smaller barn, savings on other equipment and time savings. Electricity consumption is also constantly monitored and smartly adjusted.

Areas of interest / Aspirations / Needs for the future

Reasoned and calculated are 2 key words at this company. The main focus should be on the cows and producing milk. Therefore, they want to further focus on ration knowledge and genetics. Family life also gets an important place on this farm.

Improvement project - objectives

- Reduce work load
- Reduction of cost production

ECONOMY & LABOUR

- Private time and family

- As much milk as possible with the fewest cows

PROJECT

- Energy-efficiency

RESSOURCE Efficiency

ENVIRONMENT ANIMAL Wellbeing

Partners

inagro
ONDERZOEK & ADVIES IN LAND- & TUINBOUW

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Fam. Vandecandelaere Dirk en Griet
Pilot Farm Description
Wervik

Belgium

Innovations

Socio-economic Resilience / Environment

Farming milestones

1994
Dirk started working at the farm of his parents

1996
Building of a loose barn for 50 cows

1997
Taking over the family farm together with Griet

2010
Expansion to 120 cows and youngstock

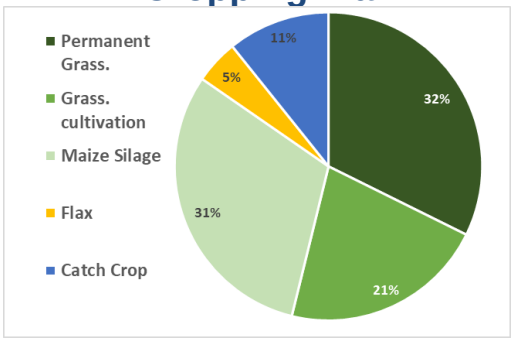
2013
new GEA milking machine 2 x 10

The herd (2021)

- 155 Livestock Units (LU)
- 110 Holstein
- 45 young stock

- Calving period : all year round
- Age at first calving : 23 months
- Calving interval : 391 days

Cropping Plan



Workforces

- 2 labor units : Dirk & Griet
- **Aims** : Generate income, optimalisation and work-life balance

Areas of interest

- Grass management
- Care farm
- Commitment to benefit the sector through representation in various structures

Main buildings and Equipment

dairy cows, heifers and calves

- Cubicle barn for dairy cows and for heifers
- Milking : 2x10 herringbone parlour
- 3 Concentrate feeders of GEA

Production / Technical results (2021)

- 990 000 liters of milk produced/year
- Fat: 4,67 g/l & Protein: 3,56 g/l
- CFP: 0,85 CO_2 eq./kg FPCM
- Age of cows: 4Y 6M
- 9 860 kg of milk /cow /year (FPCM)
- Use of 50% beef cattle for surplus youngstock
- 1 653 kg concentrate/cow/year
- 3 345 kg concentrated feed/cow/year
- Replacement Rate: 20 %
- Return over feed cost: 21 €/100 l

Strenghts

- Low replacement rate
- Livestock management
- Efficiency
- Labour planning
- Good economic results

Weaknesses

- Rent land
- Limited possibilities for additional ha

Opportunities

- Choice of dairy
- Low Carbon Farm

Threats

- Rapidly changing legislation
- Increased feed, fertiliser and energetic costs
- Climate change, drought

Strategy of the farmers to improve resilience

The business leader wants to achieve high returns with relatively modest resources and simple operations. They try to keep up with all the challenges facing the industry. They also try to avoid unexpected situations through continuous monitoring of the animals. They have integrated this way of working after following a LEAN thinking training. Doing the work at the right time pays off. For mental resilience, they make sure they also have a network outside agriculture.

Areas of interest / Aspirations / Needs for the future

Efficiency and a thoughtful approach are 2 keywords at this company. The computer is important to keep track of everything. They also pay attention to the social aspect in the family situation and as a care farm.

Improvement project - objectives

- Reduce workload
- Reduction of production cost

ECONOMY & LABOUR

- Single raw materials

RESSOURCE Efficiency

PROJECT

- Care farm
- Low number of youngstock

ENVIRONMENT ANIMAL Wellbeing

Partners

inagro
ONDERZOEK & ADVIES IN LAND- & TUINBOUW

BOEREN BOND

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R4D DAIRY FARM NETWORK

Farm's presentations

BELGIUM WL

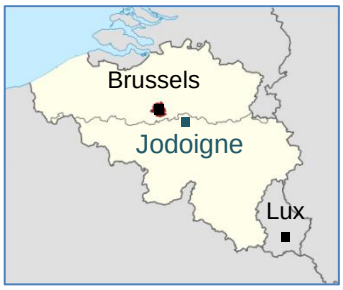
Resilience for Dairy (R4D) has received funding from the European Union's Horizon 2020 research and innovation program under grant agreement No 101000770

Decoster-Paris Farm

Belgium

Innovations

Socio-economic Resilience / Environment / technical efficience



Farming milestones

- **1982** — Installation in the family farm
- **1989** Milking parlor increasing
- **1995** New tunnel silo
- **2000** New stable and new milking parlor
- **2007** Son arrival
- **2016** Windmill compensation

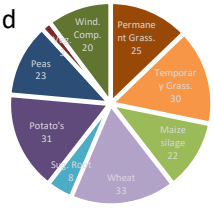
The herd

- 360 Livestock Units (LU)
- 200 Prim'Holstein (100 %)
- 260 dairy heifers
- Calving period : all year round
- Age at first calving : 26 months
- Calving interval : 400 days

Agricultural Area

197 ha AA

- 25 ha permanent grassland
- 30 ha temporary grassland
- 22 ha maize
- 8 ha sugar root
- 33 ha wheat
- 31 ha potatoes
- 23 ha peas
- 20 ha windmill compensation
- 3 ha vegetable and flowers



Workforces

- labor units : 5 LU (3 family LU– 2 employs)
- **Aims** : Transmission of the farm, biodiversity, transmission of knowledge

Areas of interest

- Calves management
- Farm transmission
- Biodiversity : Windmill compensation

Main buildings and Equipment

Dairy cows

- Cheap building : sleeping area on slurry
- Milking parlor : 2*8 herringbone MP
- Automatic Feed Station : 2 station

Heifers and calves

- Individual boxes for young calves
- Young heifers together

Production / Technical results

- 2186000 liters of milk produced
- 4,4% fat & 3,5 % protein content
- 8400 l of milk /cow /year & l /ha forage area
- Stocking rate: 4,2 LU / ha forage area
- 1893 kg of concentrate/cow/year

Strength

- Calves management
- Son transmission
- Tasks repartition
- Forage autonomy

Weakness

- Lack of workforce

Opportunity

- Windmill compensation
- School knowledge transmission
- External certification

Threat

- Legislation (loss of decision-making autonomy)
- advising independance

Strategy of the farmers / Resilience

Calves management is an important part of the farm. Indeed, a good control of the growth of the calves and the young animals conditions the productive life of the cows. The presence of the son on the farm, with a view to his takeover, provides additional manpower in addition to a long-term vision. Biodiversity is also very present on the farm through the implementation of bushes and a wind compensation area (20ha).

Areas of interest / Aspirations / Needs for the future

A serene transmission of the farm remains a point of attention of the farm. Biodiversity, how to preserve it and how to improve it?

Improvement project - objectives

- Workforce management

ECONOMY & LABOUR

- Farm transmission
- Tasks repartition

- Waste management
- Energy prodcution

RESSOURCE Efficiency

PROJECT

- Calve management
- Windmill compensation

ENVIRONMENT ANIMAL Wellbeing

Partners

Wallonie recherche CRA-W

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Divoy Farm

Belgium

Innovations

Socio-economic Resilience / technical efficience

Farming milestones

1982 Family farm takeover

1997 New milking parlor

2003 Son arrival

2004 New milking parlor

2017 New stable for calves

2022 Vegetable production

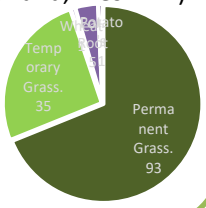
The herd

- 55 Normande
- 150 suckling cows (Crossing with Normande+BB; Piedmontaise)
- Calving period : sep-june
- Age at first calving : 34 months
- Calving interval : 370 days

Agricultural Area

135 ha AA

- 93ha permanent grassland
- 35 ha temporary grassland (alfalfa, meslin ...)
- 1 ha wheat
- 1 ha potatoes (direct selling)
- 5 ha forage root



Workforces

- labor units : 3 family LU
- **Aims** : terminal crossing with calves fattening, diversification, farm transmission

Areas of interest

- Diversification: vegetable production
- Farm transmission

Main buildings and Equipment

Dairy cows

- Cheap building : straw bedding
- Milking parlor : 1*8 rear-mounted milking

Heifers and calves

- Individual boxes for calves
- Males fattening with suckling herd

Production / Technical results

- 220 000 liters of milk produced
- 4,6% fat & 4,2 % protein content
- 4000 l of milk /cow /year
- Stocking rate: LU / ha forage area
- kg of concentrate/cow/year

Strength

- Son transmission
- Diversification
- Forage autonomy

Weakness

- Diversification: multiplication of knowledge, materials and tasks
- Workforce

Opportunity

- Adaptability according the market

Threat

- Legislation

Strategy of the farmers

Diversification of production is an essential point of the farm. In addition to dairy and meat production, the farmer has started in 2022 to vegetable production by offering potatoes and vegetables on direct sale. The animals obtained by terminal crossing of his Normandes with Piedmontese are fattened with suckling herd (calf under mother)

Areas of interest / Aspirations / Needs for the future

The farmer take careful about diversification of his production : milk and beef production with terminal crossing and fattening the calves. They started to production vegetable, potato's and flowers with selling directly or on local markets.

Improvement project - objectives

- Diversification : vegetable and flowers production
- Forage autonomy

ECONOMY & LABOUR

- Farm transmission

PROJECT

- Calves under mother
- Terminal crossing with calves fattening

RESSOURCE Efficiency

ENVIRONMENT ANIMAL Wellbeing

Partners

Wallonie recherche CRA-W

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D'Esclaye farm
Henin family

Belgium

Innovations

Socio-economic Resilience / Environment / technical efficience

Farming milestones

2007 Taking over the family farm

2009 Organic farming

2015 Arrival of the sister and Brother on farm

2015 Milk transformation : cheese

2021 Calves under mother

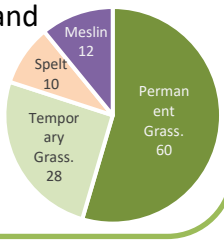
The herd

- 85 Prim'Holstein (100 %)
- 51 dairy heifers
- Calving period : winter and spring
- Age at first calving : 25 months
- Calving interval : 365 days
- Terminal crossing (Montbeliard) except on primiparous cow

Agricultural Area

110 ha AA

- 60 ha permanent grassland
- 28 ha temporary grassland
- 10 ha spelt
- 12 ha meslin (triticale/oats/peas)



Workforces

- 3,5 labor units : 3 children + 0,5 father
- **Aims** : Save time, be efficient, task repartition

Areas of interest

- Milk transformation
- Seasonal calving : spring
- Mono milking
- Calves fattening and calves under mother

Main buildings and Equipment

Dairy cows

- Cheap building : straw bedding
- Milking parlor : stanchion cows with pipeline

Heifers and calves

- Calves under mother

Production

- 396 000 liters of milk produced
- 3,8% fat & 3,36% protein content
- 6600 l of milk /cow /year
- 500 kg of concentrate/cow/year

Strenghts

- Calves management
- Family farm
- Mono milking
- Transfromation
- Open mind

Weaknesses

- old building
- Milking system

Opportunities

- Organic market
- Direct sales

Threats

- Legislation
- Climate change

Strategy of the farmers

Herd management is one of the main innovative aspects of the farm. In fact, group calving in spring to make the most of grass growth for mono milking.
The development of a family farm involving several members of the brotherhood has enabled a new vision and division of tasks, as well as freeing up time for everyone's family life to flourish.

Areas of interest / Aspirations / Needs for the future

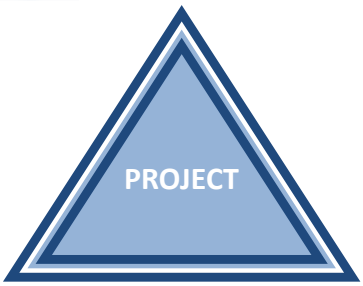
On-farm processing and direct sales are being developed following the arrival of the sister on the farm. The breeding of calves under mother's milk with grass fattening is also being tested on the farm.

Improvement project - objectives

- Mono milking
- Forage autonomy

ECONOMY & LABOUR

- Task repartition
- Milk transformation
- Spent time for family



RESSOURCE Efficiency

- Calves under mother
- Calves fattening

ENVIRONMENT ANIMAL Wellbeing

Partners

Wallonie recherche CRA-W

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Didier Thiry Farm
Organic farming

Belgium

Innovations

Socio-economic Resilience / Environment

Farming milestones

1999 Taking over the family farm

2000 Upgrading building

2008 New milking pallor

2013 Concrete access way to grassland

2018 Start the transition period to organic farming

2021 Organic farming

The herd

- 200 Livestock Units (LU)
- 90 Prim'Holstein (100 %)
- 30 dairy heifers
- Calving period : all year round
- Age at first calving : 30 months
- Calving interval : 440 days
- Terminal crossing except on primiparous cow

Agricultural Area

91,62 ha AA

- 60,15 ha permanent grassland
- 26 ha temporary grassland
- 5,47 ha of meslin
- 100 % of forage area

Workforces

- 2 labor units : farmer + 0,5 wife + 0,5 mother
- 45 dairy cows & 308 000l /FTE
- **Aims** : Save time, be efficient

Areas of interest

- Grass management
- Agroforestry: Nuts production

Main buildings and Equipment

Dairy cows

- Cheap building : sleeping area on slurry
- Milking parlor : 2x6 side opening
- Automatic Feed Station : 2 stations

Heifers and calves

- Individual boxes for calves
- Collective boxes on slurry
- Terminal crossing

Production / Technical results

- 615 000 liters of milk produced
- 20 liters / 2 days to local bakery
- 4,36 % fat & 3,30 % protein content
- Stocking rate: 2,36 LU / ha forage area
- 6 550 l of milk /cow /year & 6780l /ha forage area
- Terminal crossing on cows
- 1100kg of concentrate/cow/year
- Long milking period: 400 days
- Operational cost : 30% of production

Strenghts

- Good skills to valorise grass
- Continuing training
- Large reflection about the management
- Economic performance

Weaknesses

- Old buildings
- Mother's retirement
- Rent land

Opportunities

- Organic market

Threats

- Not owner of his land (concrete access way)
- Dairy landscape is moving fast, with number of dairy cattle decreasing
- Natura 2000 area

Strategy of the farmers

The choice of organic farming was motivated by the desire to valorize the farm's own production, i.e. grass. The farmer defends the more intensive use of concentrates than a classic organic system because of the need to add nitrogen and minerals to his plots through fertilization. The terminal cross is also an opportunity to increase his revenue. The diminution of the cow production has the aim to reduce the work load, epically the milking and the possibility to manage the farm alone (retirement of the farmer'mother)

Areas of interest / Aspirations / Needs for the future

The development of agroforestry, especially nut cultivation, was motivated by the presence of some trees on his plots but also by the implementation of an oil press in the area.

Improvement project - objectives

- Reduce work load
- Reduction of cost production

ECONOMY & LABOUR

- Valorisation of farm production

- Energy reduction

PROJECT

- Organic farming
- Surry valorisation

RESSOURCE Efficiency

ENVIRONMENT ANIMAL Wellbeing

Partners

Wallonie recherche CRA-W

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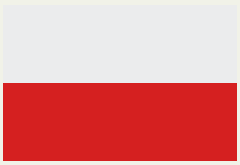
R4D DAIRY FARM NETWORK

Farm's presentations

10 Pilots Farms



POLAND

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Swędrowski Michał
Pilot Farm description
Jaroszewo – 2021 (R4D-PL-01)

Poland

Innovations

Technical & socio-economic efficiency

Farming milestones

- **2004** – expansion dairy production with 20 cows
- **2011** – next generation take over the farm
- **2017** – direct sale of milk
- **2020** – direct sales of own cheese and beef

The herd

- 90 cattle heads
- 33 dairy cows
  Breeds : HF
- 20 dairy heifers
- Calving period: all year round (unintentional 33% in December)
- Age at first calving: 24 months

Agricultural Area

70 ha

- 20 ha perm. grassland
- 5 ha temp. grassland
- 13 ha maize silage
- 26 ha wheat
- 5 ha triticale
- ***44 ha forage area***

Workforces

- 4 family labour units (FTE)
- 1 employee (FTE)

Areas of interest

- Improving labor efficiency
- Biogas plant / photovoltaic panels
- Milk hygiene
- Economic use of cows

Main buildings and equipments

- Freestall housing with deep bedding
- Outdoor corral for cattle
- Milking robot
- TMR feeding system
- Boxes for calves
- Heifers in outdoor corral

Production / Technical results

- 250 000 liters of milk produced (99% sold)
- 4,1 % fat & 3,7 % protein content
- 170 000 liters for direct sale
- 7500 l of milk /cow /year
- Traditional breeding
- Quality of milk
- Economics

Strengths

- Direct sales
- Self-sufficiency in farm management
- Precision farming
- Family support
- Willingness to learn

Weaknesses

- Work organization
- Lack of financial stability (permanent investment, loans)

Opportunities

- Direct sale of milk and beef
- Customer demand for local products
- Cooperation in direct sales among producers

Threats

- Climate change - droughts
- Restrictions on CO2 emissions
- Frequent changes in legislation

Farmer's strategy for a "resilient" system

Diversified activities and create multiple sources of income:

- **Dairy production**
- **Beef production**
- **Milk, cottage cheese and beef direct sales**

Aspirations / Needs for the future

- **Improving resource efficiency**
- **Biogas plant**
- **A2 milk production**

Improvement project - objectives

- Better management of family labor resources (less input)

ECONOMY & LABOUR

- High profit diversification from dairy production (milk and dairy products, beef)

- Machinery modernisation

PROJECT

- Increasing cow longevity
- Traditional dairy farming

RESOURCE Efficiency

ENVIRONMENT ANIMAL Wellbeing

Partners

West Pomeranian University of Technology in Szczecin

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Serówka Piotr
Pilot Farm description
Skoraczewo – 2021 (R4D-PL-02)

Poland

Innovations

Technical efficiency & animal wellbeing

2004
next generation take over the mixed farm

regular investment in machinery, only dairy production

2019
built a new 100-head barn

Farming milestones

The herd

- 200 cattle heads
- 100 dairy cows
  Breeds : HF + 4 cows Simmental
- 100 dairy heifers
- Calving period: all year round (higher intensity in IX-XII)
- Age at first calving: 24 months

Agricultural Area

90 ha

- 35 ha perm. grassland
- 33 ha maize silage
- 22 ha cereals
- ***90 ha forage area***

Workforces

- 4 family labour units (FTE)
- 225 hours for seasonal workers

Areas of interest

- Investments in machinery and buildings
- Biogas plant / photovoltaic panels
- Animal welfare

Main buildings and equipments

- Freestall housing
- Paddock for cattle
- Fishbone milking system 2x7

Production / Technical results

- 720 000 liters of milk produced (99% sold)
- 4,1 % fat & 3,32 % protein content
- 8000 l of milk /cow /year
- Quality of milk (fat & protein)
- High herd health (< 80 000 somatic cells)

Strengths

- Financial independence – self-financing of investments
- Young successor on the farm

Weaknesses

- High labour input
- Lack of heifer barn
- Lack of silos for silage

Opportunities

- Sale of heifers

Threats

- Climate change and carbon regulation
- Restrictions linked to crop production

Farmer's strategy for a "resilient" system

- **Liability-free farm**
- **Financial buffer in the event of a market crisis**
- **Investments in machinery and buildings**

Aspirations / Needs for the future

- **Building heifer barn**
- **Biogas plant**
- **Returns diversification – heifers sale**
- **Reducing labour input**

Improvement project - objectives

- Reduce of family labour input

ECONOMY & LABOUR

- Loan elimination
- Savings

- Machinery and buildings modernisation

RESOURCE Efficiency

PROJECT

- Dairy cow welfare

ENVIRONMENT ANIMAL Wellbeing

Partners

West Pomeranian University of Technology in Szczecin

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Bączkowski Ryszard
Pilot Farm description
Jastrzębiec – 2021 (R4D-PL-03)

Poland

Innovations

Technical efficiency & cow longevity

2001
next generation take over the mixed farm

2006
quit pig production and switching to beef production

2011
focusing on dairy production

Farming milestones

The herd

- 180 cattle heads
- 93 dairy cows
  Breeds : HF
- 87 dairy heifers
- Calving period: all year round
- Age at first calving: 26-28 months
- Increasing the cow herd - evaluation of the breeding value of cows

Agricultural Area

100 ha

- 15 ha perm. grassland
- 15 ha temp. grassland
- 37 ha maize silage
- 33 ha cereals
- ***100 % forage area***

Workforces

- 1 family labour unit (FTE)
- 1 employee (FTE)
- 1000 hours for seasonal workers (600-700 hours in crop production)

Areas of interest

- Increase milk cow yield
- Investment in machinery
- Increasing the cow herd

Main buildings and equipment

- Freestall housing
- Loose keeping of calves
- Fishbone milking system 2x8
- TMR feeding system

Production / Technical results

- 900 000 liters of milk produced (99% sold)
- 4,0 % fat & 3,2 % protein content
- 11 000 l of milk /cow /year

- Focus on cow longevity
- Milk yield

Strengths

- Cow herd
- Barn - reducing labour input
- Milk yield
- Manure removal system

Weaknesses

- Calving house - no "real building"
- Limited forage area

Opportunities

- Biogas plant

Threats

- Changing agricultural policy and its requirements
- Unstable cooperation with dairies

Farmer's strategy for a "resilient" system

- **Diversification in income sources - not directly linked to agricultural production (e.g. machinery services)**
- **Farm generating an income**

Aspirations / Needs for the future

- **Increasing resource efficiency**
- **Income from the sale of milk by-products**
- **Improving mechanisation of production**

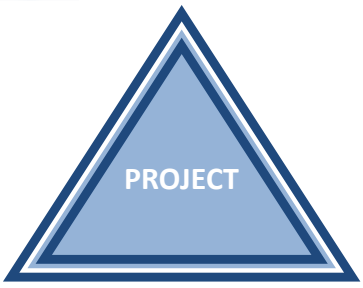
Improvement project - objectives

- Reduce of labour input

ECONOMY & LABOUR

- Diversification of income sources
- Investment in machinery and buildings

RESOURCE Efficiency



- Dairy cow longevity

ENVIRONMENT ANIMAL Wellbeing

Partners

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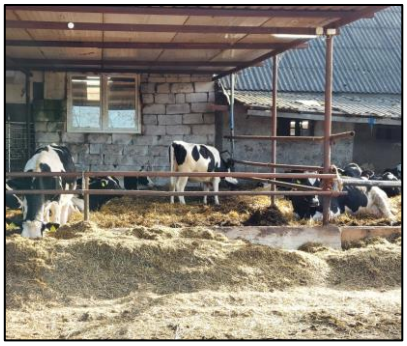
Szymańska Anna
Pilot Farm description
Trzebień – 2021 (R4D-PL-04)

Poland

Innovations

Technical efficiency & cow healthy



2009
next generation take over the pig farm

2012
dairy production with 8 cows and beef production and rabbit farming (10 ha AA)

2021
dairy production and sale of grain maize

Farming milestones

The herd

- 102 cattle heads
- 52 dairy cows
  Breeds : HF
- 50 dairy heifers
- Calving period: all year round
- Age at first calving: 24 months

Agricultural Area

92 ha

- 12 ha perm. grassland
- 10 ha temp. grassland
- 35 ha maize silage
- 35 ha cereals
- ***57 ha forage area***
- 83% rented area

Workforces

- 5 family labour unit (FTE)

Areas of interest

- Purchase of a milking robot
- Building a new barn
- Purchase of AA

Main buildings and equipments

- Freestall housing
- TMR feeding system
- Young cattle kept loose
- Milking parlour

Production / Technical results

- 500 000 liters of milk produced (99% sold)
- 3,9 % fat & 3,5 % protein content
- 11 000 l of milk /cow /year
- Focus on animal welfare
- Quality of milk

Strengths

- Willingness to gain knowledge (distance not a problem)

Weaknesses

- Small space barn limiting the activities

Opportunities

- Introduction of new production system practices e.g. milking, feeding

Threats

- Increase input prices
- Low trust in inputs producers = on-farm product testing

Farmer's strategy for a "resilient" system

- Financial security buffer to survive milk market crises

Aspirations / Needs for the future

- New dairy barn
- AA purchase
- Improving mechanisation of production

Improvement project - objectives

- Reduce of labour input
- Testing innovations in milk production
- Investment in milking robot and dairy barn
- Keeping cows healthy

ECONOMY & LABOUR

PROJECT

RESOURCE Efficiency

ENVIRONMENT ANIMAL Wellbeing

Partners

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Saganowski Artur
Pilot Farm description
Gądecz – 2021 (R4D-PL-05)

Poland

Innovations

Machinery investment & production increase

1991
18 ha pig farm with 8 cows

2000
decision to develop dairy production, purchased 10 cows and milk tank

2009
dairy herd increasing and start building dairy barn for 68 cows

2012
welcome new barn

2020
added wing for 26 cows

Farming milestones

The herd

- 240 cattle heads
- 86 dairy cows
  Breeds : HF
- 96 dairy heifers
- Calving period: all year round (usually autumn-winter)
- Age at first calving: 23-24 months
- Beef production with 59 bulls

Agricultural Area

150 ha

- 15 ha perm. grassland
- 15 ha temp. grassland
- 30 ha maize silage
- 15 ha rapeseed
- 60 ha cerelas (20 maize grain)

Workforces

- 3 family labour unit (FTE)

Areas of interest

- Reduction of cow health problems
- Increase of the dairy herd (60 cows)

Main buildings and equipments

- Freestall housing
- TMR feeding system
- Tandem parlour
- Calves in pens

Production / Technical results

- 800 000 liters of milk produced (99% sold)
- 3,8 % fat & 3,4 % protein content
- 10 200 l of milk /cow /year

- Focus on cow healthy
- Milk yield

Strengths

- Work organization
- Good production results
- Investments in machinery in crop production

Weaknesses

- Cow health problems – legs and hoof condition

Opportunities

- Increasing the dairy herd
- Potential to grow

Threats

- Environmental restrictions limiting the possibility of increasing production

Farmer's strategy for a "resilient" system

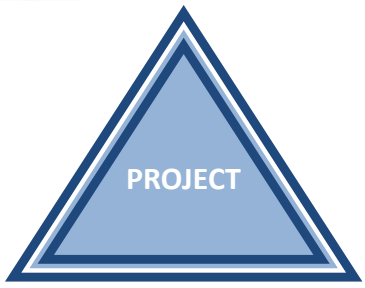
- Growth of dairy production
- Diversification of production: beef and crop

Aspirations / Needs for the future

- Improving mechanisation of production
- Solution of the cow health problem (legs, hoof)

Improvement project - objectives

- Reduce of input costs
- Testing innovations in crop production
- Investment in crop machinery
- Reduce cows health problem



Partners

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Kaźmierczak Marek
Pilot Farm description
Wójcin – 2021 *(R4D-PL-06)*

Poland

Innovations

Machinery investment & production increase

2006
the farm in the possession of the current owner

2006
new barn for 100 cows was completed, and it housed 26 cows

2009
100% of livestock production = milk production

Farming milestones

The herd

- 186 cattle heads
- 95 dairy cows
  Breeds : HF
- 90 dairy heifers
- Calving period: all year round (ca. 10 calves per month)
- Age at first calving: 24 months

Agricultural Area

216 ha

- 60 ha perm. grassland
- 12 ha temp. grassland
- 40 ha maize silage
- 47 ha cereals
- 35 ha sugar beets

Workforces

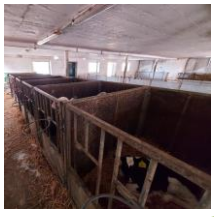
- 3 family labour unit (FTE)
- 1.5 employees (FTE)

Areas of interest

- Improving production/farm organization
- Implementing a milking robot to reduce labor input

Main buildings and equipments

- Freestall housing / deep bedding
- Automatic feed machine
- Fishbone milking system 2x5 air-conditioned
- Calves in boxes



Production / Technical results

- 1 000 000 liters of milk produced (99% sold)
- 4,0 % fat & 3,5 % protein content
- 10 000 l of milk /cow /year

Strengths

- Good work organization and care of cows
- Healthy cow herd
- Easy births (cows and heifers)

Weaknesses

- Deep bedding = somatic cell problem
- Successor rather oriented to non-dairy production

Opportunities

- Possibilities of diversification of production
- Additional source of income e.g. trading/drying

Threats

- Fluctuations in milk prices/market instability

Farmer's strategy for a "resilient" system

- **Good management of labor resources (mechanization of production)**
- **Farm independent of the use of external resources**

Aspirations / Needs for the future

- **Improving the organisation of production**
- **Ownership of a larger area of land**
- **Improving mechanisation of crop production**

Improvement project - objectives

- Reduce of labour costs

ECONOMY & LABOUR

- Purchase of land
- Investment in crop machinery

RESOURCE Efficiency

PROJECT

- Replacement bedding system

ENVIRONMENT ANIMAL Wellbeing

Partners

West Pomeranian University of Technology in Szczecin

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Klupczyński Waldemar
Pilot Farm description
Głogówiec – 2021 (R4D-PL-07)

Poland

Innovations

Machinery investment & animal health

1993
dairy-crop farm rented from national agency (founded company)

2005-2006
dairy herd from 200 to 50 due to leukaemia virus

2015
CEO change, dairy herd reactivation , the barn conversion

2018
completely removed dairy tethering system, new freestall barn completed

2018-2021
the dairy herd was enlarged from 50 to 130 cows

Farming milestones

The herd

- 240 cattle heads
- 130 dairy cows
  Breeds : HF
- 70 dairy heifers
- Calving period: all year round
- Age at first calving: 26 months
- All male calves sold after 2 weeks

Agricultural Area

430 ha

- 20 ha temp. grassland
- 130 ha maize silage
- 220 ha cereals (wheat + barley)
- 60 ha rapeseed
- 99 % rented land

Workforces

- 15 employees (FTE)

Areas of interest

- Improving animal welfre
- Sale of breeding heifers to generate additional income

Main buildings and equipments

- Freestall housing / deep bedding
- Fishbone milking system 2x5
- Feeding table
- Heifer barn

Production / Technical results

- 1 100 000 liters of milk produced (99% sold)
- 3,83 % fat & 3,37 % protein content
- 9 500 l of milk /cow /year

Strengths

- High motivation for change and agility
- Skills of reorganization of the enterprise

Weaknesses

- Rental costs from national agency
- Unstable rental creates investment risk

Opportunities

- Constantly improving production
- Production of breeding heifers

Threats

- Permanent decrease in work resources
- Dependence on the national agency

Farmer's strategy for a "resilient" system

- Independent of financial external sources
- Well-managed farm (economical, rational, not over-invested)

Aspirations / Needs for the future

- Providing modern machinery for crop production
- Improving dairy productivity

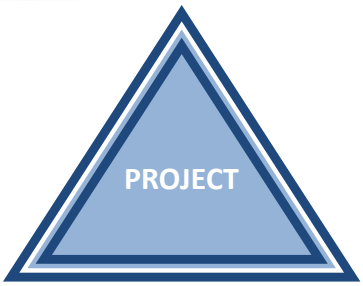
Improvement project - objectives

- Keeping the employment, reduced labour input

ECONOMY & LABOUR

- Investment in machinery for crop production

RESOURCE Efficiency



- High animal welfare and cattle health

ENVIRONMENT ANIMAL Wellbeing

Partners

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Bereźnicki Marcin
Pilot Farm description
Słębowo – 2021 (R4D-PL-08)

Poland

Innovations

Machinery and building investments & animal health

mixed farm with dairy, pig and sheep

2001 enlarged the farm to 13 ha

2003 18 cows and eliminated pig production

2005 freestall housing for 30 cows

2010 current owner takes over the farm

2010 extension to the barn for 70 cows and fattening bulls

2022 new barn for 120 cows in progress

Farming milestones

The herd

- 230 cattle heads
- 90 dairy cows
  Breeds : HF
- 110 dairy heifers
- Calving period: all year round
  Age at first calving: 24 months
- 30 fattening bulls

Agricultural Area

70 ha

- 4 ha perm. grassland
- 15 ha temp. grassland
- 48 ha maize silage
- 13 ha cereals
- ***100 % forage area***

Workforces

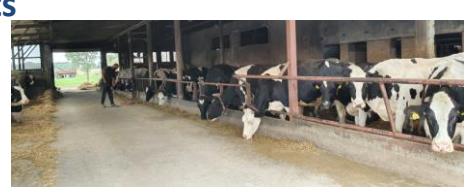
- 3 family labour unit (FTE)
- 1 employee (FTE)

Areas of interest

- Improving animal welfare
- Investments in herd increase/buildings and machinery
- Biogas plant

Main buildings and equipments

- Freestall housing / slatted floor
- 2 milking robots, milking parlour
- Fedd mixer wagon



Production / Technical results

- 700 000 liters of milk produced (99% sold)
- 3,6 % fat & 3,4 % protein content
- 8200 l of milk /cow /year

Strengths

- Hard-working
- Knowledge and skills
- Prospective thinking

Weaknesses

- Poor organization of work
- Not keeping to deadlines (workload)
- Animal health problems

Opportunities

- On-farm milk processing factory - selling products with longer expiry dates
- Direct sale

Threats

- Overproduction on the market and purchase prices decrease
- Increase in loan interest rates

Farmer's strategy for a "resilient" system

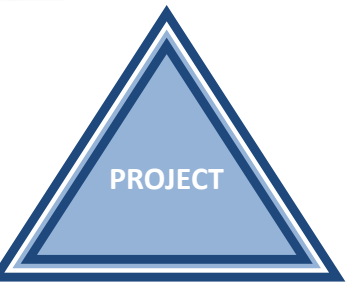
- Possession of financial protection
- Good labour input management

Aspirations / Needs for the future

- Biogas plant
- Maximizing effects of slurry application
- Improving mechanisation of crop production

Improvement project - objectives

- Better management of labour (no time)
- Enlargement of the dairy herd
- Investment in crop machinery
- Improvement of cow health



Partners

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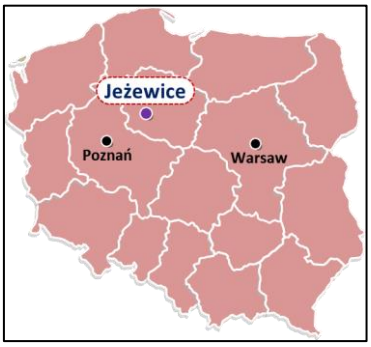
Kadow Mariusz
Pilot Farm description
Jeżewice – 2021 (R4D-PL-09)

Poland

Innovations

Profitability & cow health and longevity



A multi-generation farm, the dairy herd has grown over the years from 3 cows to 200 head

Farming milestones

2014
dairy barn modernisation, milking system fishbone 2x7

The herd

- 300 cattle heads
- 93 dairy cows
  Breeds : HF
- 100 dairy heifers
- Calving period: seasonal - resulting from the natural calving cycle (pasture)
- Age at first calving: 24 months
- Dairy grazing system

Agricultural Area

230 ha

- 180 ha perm. grassland
- 10 ha temp. grassland
- 40 ha maize silage
- ***100 % forage area***
- 200 ha rented

Workforces

- 2 family labour unit (FTE)
- 1200 h/year temporary workforce

Areas of interest

- Longevity and cow health
- Economics of milk production

Main buildings and equipments

- Freestall housing
- Fishbone milking system 2x7
- TMR feeding system
- Calves in boxes

Production / Technical results

- 1 000 000 liters of milk produced (99% sold)
- 4,2 % fat & 3,4 % protein content
- 6 500 l of milk /cow /year

- Focus on cow longevity

Strengths

- Passion of dairy production
- Location near the natural forests

Weaknesses

- Poor soil

Opportunities

- Increase in importance of grassland-based dairy production

Threats

- High risk of firess
- Climate change - prolonged droughts and falling yields

Farmer's strategy for a "resilient" system

- Financial comfort - ability to repay loans from current operations
- Savings - opportunities to create a financial buffer for times of crisis

Aspirations / Needs for the future

- Improving buildings
- Maintenance of the land in good condition
- Less environmental impact

Improvement project - objectives

- Reduce of labour input
- Investment in buildings

ECONOMY & LABOUR

RESOURCE Efficiency

PROJECT

- High profitability of milk production
- Dairy cow health & longevity

ENVIRONMENT ANIMAL Wellbeing

Partners

West Pomeranian University of Technology in Szczecin

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Dąbrowski Paweł
Pilot Farm description
Łabiszyn-Wieś – 2021 (R4D-PL-10)

Poland

Innovations

Investment in machinery, land & cow longevity

Farming milestones

A barn was built, the feeding system was changed, the machinery was modernised, a fodder mixing wagon, new tractors

The herd

- 200 cattle heads
- 100 dairy cows
  Breeds : HF
- 70 dairy heifers
- Calving period: seasonal
- Age at first calving: 24 months

Agricultural Area

120 ha

- 30 ha perm. grassland
- 60 ha maize silage
- 20 ha cereals
- ***100 % forage area***

Workforces

- 2 family labour unit (FTE)
- 2 employees (FTE)

Areas of interest

- Cow longevity
- Animal welfare
- Maintaining cow yields

Main buildings and equipments

- Freestall housing / deep bedding
- Tandem parlour
- TMR feeding system
- Calves in boxes and loose

Production / Technical results

- 900 000 liters of milk produced (99% sold)
- 4,1 % fat & 3,4 % protein content
- 10 000 l of milk /cow /year

Strengths

- Financial independence
- Ability to adapt to changing environmental conditions

Weaknesses

- Limitations related to land scarcity

Opportunities

- Production of milk A2A2

Threats

- COVID-19
- Climate changes - droughts

Farmer's strategy for a "resilient" system

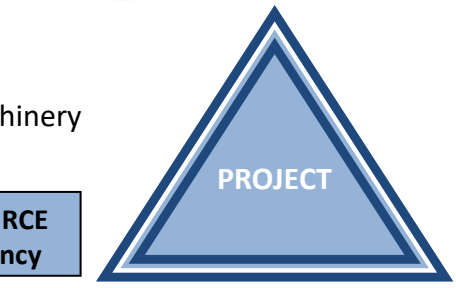
- **Financially protected - the family has the means to freely meet its needs**
- **Loan-free farm - possibility to invest based on equity and subsidies without the participation of banks**

Aspirations / Needs for the future

- **Improvement machinery**
- **Acreage increase**

Improvement project - objectives

- More time for rest
- Financially protected
- Investment in machinery and land purchase
- Dairy cow health & longevity



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R4D DAIRY FARM NETWORK

Farm's presentations

10 Pilots Farms

ITALY

Resilience for Dairy (R4D) has received funding from the European Union's Horizon 2020 research and innovation program under grant agreement No 101000770

Soc. Agr. Cervi Ciboldi Ernesto, Maria Cecilia e Maria Paola S.S.

LOMBARDY – Cremona

Italy

Innovations

Socio-econimic efficiency & Technical efficiency

Farming milestones

XVIII century Foundation

2010 Photovoltaic system

2016 New barn

2017 -2020 Automatic Feeding System

The herd

- 700 Livestock Units (LU): 600 (milk) + 100 (beef)
- 360 dairy cows
  Breeds : Italian Frisian + beef breeds
- 137 dairy heifers
- Calving period : all year round
- Age at first calving : 22 months

Agricultural Area

200 ha AA

- 130 ha maize
- 38 ha alfa alfa
- 32 ha barley
- 30 ha grassland/Lolium
- 24 ha sorghum

Workforces

8 labour units (Full Time Equivalent)

Areas of interest

- Energy self-sufficiency
- Raw materials self-sufficiency
- Automation

Main buildings and equipments

- Free walk housing
- Cubicles + Permanent bedding
- 16+16 milking parlor
- Unifeed: Automatic Feed Mixer and feed pusher robot
- Individual + collective boxes for young calves
- Collective boxes on straw litter for heifers

Production / Technical results

- 4400000 liters of milk produced
- 4,27 % fat & 3,52 % protein content
- 41 liters of milk /cow / day (average)
- 100% to Latteria Soresina Cooperative Cheese Factory

Strengths	Weaknesses	Opportunities	Threats
• Innovation • Raw materials self-sufficiency	• Generation renewal	• Agricultural area and many discussion opportunities	• Cooperatives weaknesses

Farmer's strategy for a "resilient" system

- **Technical efficiency: automation (automatic TMR mixing wagon, feed pusher robot, calf rail)**
- **Socio-econimic efficiency: raw material self-sufficiency**

Aspirations / Needs for the future

- **Energy self-sufficiency**
- **Improve raw material self-sufficiency**
- **Automation**

Partners

CRPA Centro Ricerche Produzioni Animali

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Società Agricola *Ponte Vecchio*

Veneto - Treviso

Italy

Innovations

Technical efficiency & Economic resilience

Farming milestones

1945 Foundation

2000 mountain pasture in summer

2004-2006 cheese factories

2010 photovoltaic system

2012: FIRE

2014-2015 AFS, milking robots, automatic milk dispenser for calves

2018 e-commerce

2021 new cooling system

The herd

- 280 Livestock Units (LU)
- 120 dairy cows
- Breeds: Bruna Alpina (90%), Italian Frisian and Jersey (10%)
- 90 dairy heifers
- Calving period : autumn, winter, spring
- Age at first calving : 26 months

Workforces

- Family-run business
- 3 labour units: farm/fields
- 2 labour units: cheese factory
- 2 labour units: shop
- 20 labour units: at "malga" (summer)

Agricultural Area

30 + 150 ha AA

- 10 ha maize + sorghum
- 20 ha grassland
- 150: alpine pasture

Main buildings and equipments

- Free walk housing
- Straw cubicles
- 2 milking robots
- Unifeed (TMR): Automatic Feeding System (Lely Vector)
- Individual + collective boxes for young calves
- Collective boxes on straw litter cubicles for heifers

Production / Technical results

- 50000 liters of milk produced
- 4,1 % fat & 3,8 % protein content
- 36 liters /cow/day (Oct-May) + 30 liters/cow/day (June-Sept)
- Products: milk, cheese, yogourt, butter …
- Other products/activities: meat, agritourism at malga

Areas of interest

- Management
- Marketing
- Market strategies

Strengths
-Very good management and economic skills

Weaknesses
-Prosecco area – few surface for other productions
-Few opportunities of discussion
-High diversification

Opportunities
Tourism, export, e-commerce

Threats
Lack of land for future expansion

"The innovation of yesterday is the tradition of today "

- **Farmer's strategy for a "resilient" system**
  - Technical efficiency: milking robot, AFS, sexed semen
  - Social/environmental sustainability: summer alpine pasture, automatic milk dispenser for calves
  - Economic resilience: generation continuity, multi-purpose farm, management
- **Aspirations / Needs for the future:**
  - Grow in marginality

Partners

CRPA
Centro Ricerche Produzioni Animali

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Società Agricola *Ca' Notari*

Parma – Emilia Romagna

Italy

Innovations

Technical efficiency

Farming milestones

2017
Foundation

2019
Free walking housing, TMR mixer wagon, new barn for hifers

The herd

- 200 Livestock Units (LU)
- 100 dairy cows
- Breeds: Holstein
- 70 dairy heifers
- Calving period: all year round
- Age at first calving: 24 months

Agricultural Area

90 ha AA

- Alpha alpha
- Wheat
- Grassland
- Pasture

Main buildings and equipments

- Free walk housing
- Straw cubicles
- 3+3 tandem
- Unifeed (TMR): mixer wagon
- Individual + collective boxes for young calves
- Collective boxes on straw litter for heifers

Workforces

- 3 labour units

Areas of interest

- Genetics and technical efficiency

Production / Technical results

- 1000000 liters of milk produced
- 3,90 % fat & 3,40 % protein content
- 35 liters /cow/day
- Products: Parmigiano Reggiano

Forces	Faiblesses	Opportunités	Menaces
- Genetic - Welfare	- Area subject to drought and landslides	- PDO product	Hydrogeological problems

- **Farmer's strategy for a "resilient" system**

Technical efficiency: genomic, cooling system

Social/environmental sustainability: genetic selection for health

Economic resilience: selection for congenital diseases and mastitis

- **Aspirations / Needs for the future:**

Management skills

Partners

CRPA Centro Ricerche Produzioni Animali

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AZ. AGR. LA MOLINA DI DELLAI GIORGIO E FRANCESCO

ITALY

Innovations

Socio-economic Resilience / Environment

Farming milestones

1970
Bought 5 ha of land

1976
30 cows in Tie Stall Barn and 50 meat bulls

1988
80 milk cows in Tie Stall & stop meat bulls

2002
Free housing barn with 80 straw cubicles and milking room 8+8 in parlour system

2010
New barn for haifers and dry cows, 104 cubicles on gum carpet, photovoltaic system for 58 KWH on barn roof

The herd

- 250 Livestock Units (LU)
- 115 dairy cows
- Breed: Frisian
- Calving period : all year round
- In spring and autumn heifers and dry cows are outdoor for 70/80 days

Agricultural Area

70 ha AA (12 property + 58 rented)

- 39 ha hay
- 12 ha maize
- 19 ha double crop:

IN SPRING: 6 ha ryegrass, 6 ha grain silage, 4 ha barley silage, 3 ha pasture
IN AUTUMN: 9 ha sorghum silage, 8 ha grain sorghum for mash, 2 ha soybean

Workforces

- Family-run business
- 3 labour units (Full Time Equivalent)

Areas of interest

- Technical efficiency: cooling system, slurry management, electric mixing wagon
- Genetics: milk quality for PDO products (casein)
- Optimization of milk price
- Animal welfare and sustainability

Resilience for Dairy (R4D) has received funding from the European Union's Horizon 2020 research and innovation program under grant agreement No 101000770

AZ. AGR. LA MOLINA DI DELLAI GIORGIO E FRANCESCO

ITALY

Main buildings and Equipment

- Free housing
- Milking cows: 80 straw cubicles
- Haifers and dry cows: 104 cubicles on gum carpet
- Milking parlor: 8+8 in parlour system
- Photovoltaic system for 58 KWH on barn roof

Production / Technical results

- 1310 tons of milk produced, 100% delivered to cooperative Lattebusche for PDO cheeses production (eg. Grana Padano and Asiago Cheese)
- 3,92 % fat & 3,32 % protein
- 37 l of milk /cow /day

Strengths

- Good skills to project themselves, rigorous, follow their objectives
- Adaptability
- High-performance & modernized equipment

Weaknesses

- Sensitive area with duty to maintain permanent grassland
- Geneviève's retirement in short term

Opportunities

- Proximity of dairy plants
- local dynamism allowing common work & collective investment

Threats

- Frequent weather hazards
- Dairy landscape is moving fast, with number of dairy cattle decreasing

Improvement project - objectives

- Reduce work load

ECONOMY & LABOUR

- Optimize dairy gross margin
- Keep a good global profitability for a knowledge transfer centre

- Reduce concentrate for cow
- Save water consumption

RESSOURCE Efficiency

PROJECT

- Keep a good mineral balance
- Improve forage self-sufficiency

ENVIRONMENT ANIMAL Wellbeing

Farmer's strategy for a "resilient" system

- 19 ha **double crop**: PRING (ryegrass, grain silage, barley silage, pasture)and AUTUMN (sorghum silage, grain sorghum for mash, soybean)
- All the **hay and silages are self-produced** (only flours and concentrates are purchased)
- All **land work to produce hay is done by the farm**

Aspirations / Needs for the future

- Keep the same number of animals, but modernize the **cooling system** and adopt new techniques/technologies for **slurry/manure management**
- Collaborate with the Cooperative to **improve quality of milk,** particularly using **genetic research** and bulls for the improvement of **casein content**
- Collaborate with the Cooperative to **improve animal welfare and environmental sustainability**
- At the moment the **price of milk** is 0,36 € excluding quality and VAT, but the farm hopes to have a balance at the beginning of 2022 (In 2020 the final price was 0,46 €/lt including quality and VAT)
- Purchase an **electric mixing wagon**

Partners CRPA Centro Ricerche Produzioni Animali

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Farm: SOC. AGR. DELSANTE ELVEZIO E SAVERIO & Cheese Factory: CASEIFICIO SAN PIER DAMIANI

ITALY
Emilia-Romagna Region

Innovations

Socio-econimic efficiency & Technical efficiency

Farming milestones with regard to resilience

2012
- Herd management sofware
- Photovoltaic system

2015
- Farm balance / economic performance

2018
- Automatic feeder
- Creation and developing of an e-commerce web-site and use of social media and web marketing

2019
- Cow's DNA and milk tests

2020
- Heifers monitoring with collar sensor
- A2A2 productions

2021
- improved cooling system in the barn (ventilation)
- new machine to optimize the cheese yield – automatic skimming system
- product innovation with the 1° Parmigiano Reggiano PDO A2A2

Resilience for Dairy (R4D) has received funding from the European Union's Horizon 2020 research and innovation program under grant agreement No 101000770

Farm: SOC. AGR. DELSANTE ELVEZIO E SAVERIO & Cheese Factory: CASEIFICIO SAN PIER DAMIANI

ITALY
Emilia-Romagna Region

The herd

- 350 Livestock Units (LU)
- 182 dairy cows
  Breeds : Italian Frisian
- 120 dairy heifers
- Calving period : all year round
- Age at first calving : 24.5 months

Agricultural Area

120 ha AA

- Alfa-alfa grass, wheat, ryegrass

Areas of interest

- Technical efficiency
- Milk quality

Workforces

- Family-run business
- 6 labour units (Full Time Equivalent):
  - 2 partners
  - 4 employees

Main buildings and equipments

- Indoor tied up stall on straw
- Milk Pipeline
- Automatic feeder
- Individual + collective boxes for young calves
- Collective boxes on straw litter for heifers
- Herd management sofware
- Photovoltaic system
- Heifers monitoring with collar sensor
- Improved cooling system in the barn (ventilation)
- Machine to optimize the cheese yield – automatic skimming system

Production / Technical results

- 1550000 liters of milk produced
- 4 % fat & 3,45 % protein content
- 30 liters of milk /cow / day (average)
- Parmigiano Reggiano Cheese; fresh cheese "Damianino"
- Parmigiano Reggiano "only brown- cows" and "naturally A2A2 protein

Strengths	Weaknesses	Opportunities	Threats
Good management skills, exploitation of commercial niches and new sales media	Sensitivity to climate change (hot summers with few rain)	PDO – Parmigiano Reggiano Cheese	Weather hazards: drought and heat

Farmer's strategy for a "resilient" system

FARM

1. **Animal health and welfare** → Reduction of antibiotics starting from calves (vax) and optimize the proportion dairy cows/heifers
2. To be **self sufficient for forage production**
3. DNA Tests and genetic **selection of A2A2** cows.

DAIRY PLANT:

1. Make the **milk price stable** increasing **direct sales** in-store and **on-line**, profiled **marketing strategy** and **tourist reception** with new **shop and tasting room** (2019: >7.000 visitors)
2. Diversifying the production looking for **market niches** such as Parmigiano Reggiano **"only brown- cows"** and **"naturally A2A2 protein"** (first PDO certified), **fresh cheese "Damianino"** out from quota system
3. **Control the full production** process from the land to milk to cheese to the final consumers.

Aspirations / Needs for the future

FARM

2023: build a new barn with **milking robot system**

DAIRY PLANT

Increasing direct sales via B2B and B2C targets to cover the **100% of the production**

Partners CRPA Centro Ricerche Produzioni Animali

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Soc. Agr. Capitello

VENETO – Vicenza

Italy

Innovations

Technical efficiency

&

Environment and animal welfare

Farming milestones

1912 Foundation

1978 Associate to Cooperative Cheese Factory

1998 TMR mixer wagon

1999 From Tied-up to free-walk housing

2015 Management from father to sons

The herd

- 200 Livestock Units (LU)
- 108 dairy cows

Breeds : Italian Frisian (36%), Montbèliarde + Swedish Red and White (35%), Alpine Bruna (29%)

- 78 dairy heifers
- Calving period: 35% all year round, 65% Sept-Dec
- Age at first calving : 25 months

Workforces

3 labour units (Full Time Equivalent): family run business

Areas of interest

- Milk quality improvement
- Genetic improvement
- Hey quality improvement
- Marketing

Agricultural Area

48 ha AA

- 20.5 ha maize
- 15 ha wheat and grassland
- 2,5 ha vineyard

Main buildings and eqipments

- Free walk housing
- Cubicles with mats
- 10+10 milking parlor
- Unifeed: TMR mixer wagon
- Individual + collective boxes with cubicles for young calves
- Collective boxes on straw litter with cubicles for heifers

Production / Technical results

- 1230000 liters of milk produced
- 4,20 % fat & 3,6 % protein content
- 36 liters of milk /cow / day (average)
- 100% to Caseificio sociale di Ponte di Barbarano, Cooperative Cheese Factory

Strengths

- Good management, agricultural, good animal husbandry skills

Weaknesses

- Climate

Opportunities

- Improvement oriented management
- Generational renewal

Threats

Farmer's strategy for a "resilient" system

- **Technical efficiency: cross-breeding, hey maturation system**
- **Socio-econimic efficiency: generational integration and renewal, strong link with local citizens/young generations**
- **Sustainability and animal welfare: colostrum bank, mats, refrigeration system, organic manuring and reduction of inputs**

Aspirations / Needs for the future

- **Improve Carbon footprint and water input , improve management and marketing skills, reduce work load**

La mia passione è il mondo degli animali....specialmente le mucche.
Vi porto nel mio grande mondo....

Razze, alimentazione e i «sensi» della mucca

Partners

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Centro Ricerche Produzioni Animali

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Società Agricola *Minelli Aristide e Pincella Cesarina SS*

LOMBARDY - Mantua

Italy

Innovations

Social and environmental sustainability & Technical efficiency

Farming milestones

1952 Foundation

1979 AI

1995 from tied up to free walking stall

1996 TMR

2000 : ET

2010: heat detectors

From 2014 to 2018: milking robot

2019 photovoltaic system

The herd

- 340 Livestock Units (LU)
- 170 dairy cows
  Breeds : Italian Frisian, Bruna Alpina, Jersey
- 170 dairy heifers
- Calving period : all year round
- Age at first calving : 24 months

Agricultural Area

110 ha AA

- 80 ha alfa alfa
- 30 ha grassland

Workforces

- Family-run business
- 3,5 labour units (Full Time Equivalent)

Areas of interest

- Genetic/genomic
- Environmental impact reduction

Main buildings and equipments

- Free walk housing
- Straw cubicles
- milking robots
- Unifeed (TMR): Feed Mixer Wagon
- Individual + collective boxes for young calves
- Collective boxes on straw litter cubicles for heifers

Production / Technical results

- 1800000 liters of milk produced
- 3,80 % fat & 3,40 % protein content
- 38 liters of milk /cow / day (average)
- PDO Parmigiano Reggiano Cheese production

Strengths

- Good management and economic assessment skills

Weaknesses

- Area with high risk of Nitrates concentration

Opportunities

- PDO production (Parmigiano Reggiano Cheese)

Threats

- Lack of land for future expansion

Farmer's strategy for a "resilient" system

- **Technical efficiency: milking robot, genetic/genomic, AI and ET**
- **Social/environmental sustainability: manure separator, strong commitment to enhancing farmers reputation at civil society**

Aspirations / Needs for the future

- **Reduce emissions and environmental impact**

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Farm Giovannini Galdino e Pecchini Drusilla S.S.

Italy

Innovations

Technical efficiency

Farming milestones

1960 Foundation

2014 Milking robot

2016 Automatic feed pusher

2020 Automatic Feed System

The herd

- 460 Livestock Units (LU)
- 400 dairy cows
  Breeds : Italian Frisian
- No heifers – The farm by directly milking cows
- Calving period : all year round
- Age at first calving : NA (the farm buys pregnant first calving cows)

Agricultural Area

150 ha AA

- 100 ha maize
- 150 ha wheat

(rotation)

Workforces

- Family-run business + employees
- 6 labour units (Full Time Equivalent)

Areas of interest

- Saving energy
- Renewable energy production

Main buildings and equipments

- Free walk housing
- Cubicles with mats + deep litter
- 1 milking robots for 60 cows + 8+8 parlor system for 340 cows
- AFS: Automatic Feed System + Feed pusher
- Individual boxes for calves

Production / Technical results

- 40000 liters of milk produced
- 4.3 % fat & 3.7 % protein content
- 35 liters of milk /cow / day (average)
- Grana Padano PDO

Strengths	Weaknesses	Opportunities	Threats
▪ Good management skills			

Farmer's strategy for a "resilient" system

- **Technical efficiency: milking robot, Automatic Feed System (preparation + distribution) and TMR pusher robot**

Aspirations / Needs for the future

- **Saving energy and production of renewable energy**

Partners

CRPA Centro Ricerche Produzioni Animali

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Società Agricola *Penati Luigi e C. S.S.*

LOMBARDY - Milan

Italy

Innovations

Social and environmental sustainability & Technical efficiency

Farming milestones

1996 Foundation

2000 Milking robot

2019 Manure separator and Alligator bag

The herd

- 200 Livestock Units (LU)
- 100 dairy cows
  Breeds : Italian Frisian
- 50 dairy heifers
- Calving period : all year round
- Age at first calving : 24 months

Agricultural Area

110 ha AA

- 50 ha rice
- 20 ha maize
- 10 ha alfa alfa
- 30 ha grassland

Workforces

- Family-run business
- 3 labour units (Full Time Equivalent)

Areas of interest

- Genetic improvement
- Milk quality

Main buildings and equipments

- Free walk housing
- Sand and straw cubicles
- 2 milking robots
- Unifeed: Automatic Feed Mixer
- Individual + collective boxes for young calves
- Collective boxes on straw litter for heifers

Production / Technical results

- 1100000 liters of milk produced
- 3,94 % fat & 3,29 % protein content
- 37,7 liters of milk /cow / day (average)
- Fluid milk (for direct consumption)

Strengths

- Good management skills

Weaknesses

- Slightly high stoking density

Opportunities

- Crops diversification

Threats

- Frequent weather hazards
- Hail, flooding

Farmer's strategy for a "resilient" system

- **Technical efficiency: milking robot**
- **Social/environmental sustainability: manure separator and slurry storage (Alligator bag)**

Aspirations / Needs for the future

- **Improve dimensions**

Partners

CRPA
Centro Ricerche Produzioni Animali

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STALLA SOCIALE SAN MARTINO

EMILIA-ROMAGNA - Parma

Italy

Innovations

Technical efficiency
Social/environmental sustainability

Socio-Economic efficiency

Farming milestones

1971
Foundation

2008
cubicles

2009
Unifeed mixer wagon

2017-18
new ventilation system

The herd

- 770 Livestock Units (LU)
- 350 dairy cows
  Breeds : Italian Frisian
- 370 dairy heifers
- Calving period : all year round
- Age at first calving : 24 months

Agricultural Area

None

COOPERATIVE-FARM: the Partners commit fodder

Workforces

- 6 labour units (Full Time Equivalent)

Areas of interest

- Improvement of feed efficiency

Main buildings and equipments

- Free walk housing
- Cubicles
- Milking parlor: 12+12 in parlour system
- Unifeed: Automatic Feed Mixer
- Collective boxes for young calves
- Collective boxes on straw litter for heifers

Production / Technical results

- 4100000 liters of milk produced
- 3,9 % fat & 3,4 % protein content
- 33 liters of milk /cow / day (average)
- 100% PDO Parmigiano Reggiano Cheese

Strengths	Weaknesses	Opportunities	Threats
▪ Cooperative system with young partners	▪ Lac of agricultural area	▪ Cooperative System	▪ Market instability

Farmer's strategy for a "resilient" system:

- **Technical efficiency: Remote control of unifeed mixer wagon and milking parlour**
- **Social/environmental sustainability: manure separator, biogas (not of farm's property), compost barn**
- **Socio-Economic efficiency: cooperative system**

Aspirations / Needs for the future

Improve farm dimension and farm efficiency

Partners

CRPA Centro Ricerche Produzioni Animali

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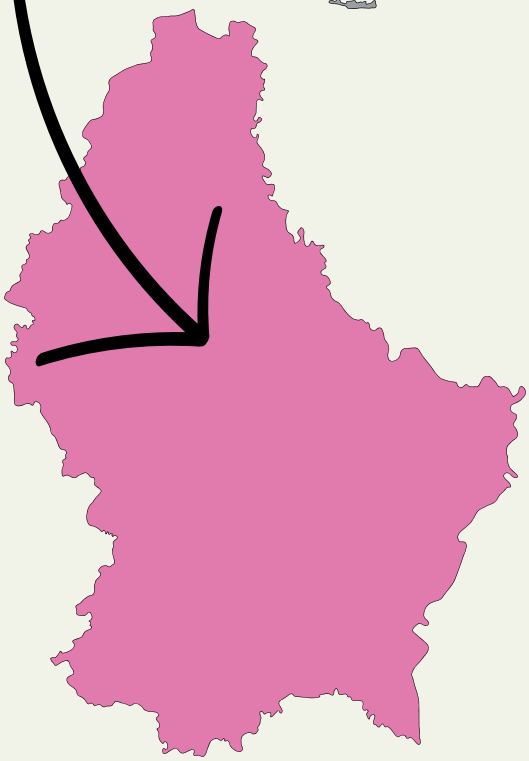
R4D DAIRY FARM NETWORK

Farm's presentations

6 Pilots Farms



LUXEMBOURG

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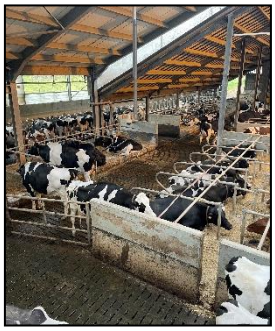
Holstein Bosseler
Pilot Farm description
Limpach - 2021

Luxembourg

Innovations



Farming milestones

1956: Purchase of the farm

1959: Move to new farm with 40 dairy cows & 20 Ardennes breeding horses

1965: Takeover by his grandfather; 80 dairy cows & 4 horses

1990: Takeover by his father Carlo Bosseler

2002: optimisation of milk production & focus on show cows

2014: new investments & robotisation

2020: Takeover by Pit Bosseler

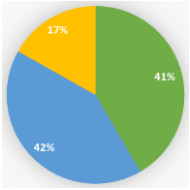
The herd

- 200 Livestock Units (LU)
- 65 dairy cows
  Breeds : Holstein Friesian
- 120 dairy heifers & 30 bulls
- Calving period : all year
- Age at first calving : 25 months

Agricultural Area

120 ha AA

- 50 ha perm. grassland
- 50 ha temp. grassland
- 20 ha Maize silage
- 120 ha main fodder area
- **83 % of grassland** / forage area



Workforces

- 1,5 labour units (Full Time Equivalent)
- 43 dairy cows/FTE & 533.333 l /FTE
- **Aims** : - economic optimum

Areas of interest

- Power supply

Main buildings and Equipment

- Free stall barn for dairy cows
- Milking robot, feeding robot, cleaning robot
- Calf and young heifer barn with collective boxes on straw

Production / Technical results

- 800.000 liters of milk produced (96 % sold)
- 3,95 % fat & 3,40 % protein content
- Stocking rate: 1,6 LU / ha forage area
- 11815 l of milk /cow /year & 9846 l/ha forage area

Strengths

- broadly positioned with competent staff
- always well organised

Weaknesses

- little property; much leased land

Opportunities

- new construction makes it more flexible to milk more cows without new investments

Threats

- society and suburban issus
- quality of forage due to weather

Farmer's strategy for a "resilient" system

- Achievieng the best possible result with little manpower
- Maximum self-production of the feed

Aspirations / Needs for the future

- Own power supply
- Improvement of forage

Improvement project - objectives

- Reduce workload
- Optimize dairy gross margin

ECONOMY & LABOUR

- Keep a good global rentability for a knowledge transfer centre

- Drastically reduce concentrate for cow
- Reduce water consumption

RESSOURCE Efficiency

PROJECT

- Keep a good mineral balance
- Improve forage self-sufficiency

ENVIRONMENT ANIMAL Wellbeing

Project

Lycée Technique Agricole

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SOPIBO
Pilot Farm description
Waldbillig - 2021

Luxembourg

Innovations

1985: Foundation of the merger by Pinnel and Boonen

1986: Resettlement farm for 100 dairy cows

2010: Major fire and reconstruction of the stables

2020: Farm takeover

2020: Conversion and new construction of a dairy cow barn

2022: Completion of the new cow barn for 380 animals

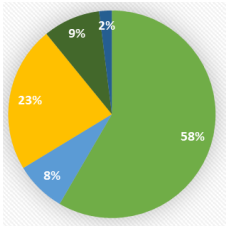
The herd

- 480 Livestock Units (LU)
- 290 dairy cows
  Breeds : Holstein Friesian
- 300 dairy heifers
- Calving period : all year
- Age at first calving : 27 months

Agricultural Area

330 ha AA

- 195 ha perm. grassland
- 25 ha temp. grassland
- 75 ha Maize silage
- 5 ha fodder beet
- 15 ha barley/ 15 ha wheat
- 300 ha main fodder area
- 75 % of grassland / forage area



Workforces

- 7 labour units (Full Time Equivalent)
- 69 dairy cows/FTE & 550.000 l /FTE
- **Aims**: - increase to 400 cows
  - increase efficiency & performance

Areas of interest

- Milk production
- Main fodder quality
- Biogas production

Main buildings and Equipment

- Conversion of the old dairy cow barn into a dry cow and young heifer barn
- New dairy cow barn with 5 milking robots
- Calf and young heifer barns
- Fodder hall, machine hall & workshop

Production / Technical results

- 2.500.000 liters of milk produced (100 % sold)
- 4,3 % fat & 3,52 % protein content
- Stocking rate: 1,6 LU / ha forage area
- 8.800 l of milk /cow /year & 6.500 l/ha forage area

Strengths

- specialisation in milk production
- simple workflows

Weaknesses

- only one mainstay
- 130ha in the water protected area
- LU stocking at maximum

Opportunities

- food shortage
- large area structure
- good cooperation with neighbour farms

Threats

- price fluctuations on the world market
- feed shortage during dry years
- heavy rainfall events reduce forage quality

Farmer's strategy for a "resilient" system

- *Develop a plan for all known recurring risk situations*
- *For unforeseen situations, reduce the risk of harm through replacement*
- *Respond more quickly to situations through better collaboration between administrations and practitioners*

Aspirations / Needs for the future

- *Exclusive milk production in a state-of-the-art robot barn with 400 dairy cows*
- *Entry into biogas production in the future*

Improvement project - objectives

ECONOMY & LABOUR

- Labour saving
- More free time

- Increase milk performance
- Increase efficiency, cost saving, profit increase

PROJECT

RESSOURCE Efficiency

- Improve main fodder quality

ENVIRONMENT ANIMAL Wellbeing

- Increase animal welfare in the barn
- Manure application at the optimal time

Project

Lycée Technique Agricole

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Michel Mensen
Pilot Farm description
Hautbellain - 2021

Luxembourg

Innovations

Year: 2009
Construction of the dairy cow barn

Year: 2014
Expansion of the cow barn and commissioning of the 2nd milking robot

Farming milestones

Year: 2011
Commissioning of 1st milking robot and reconstruction of young cattle barn

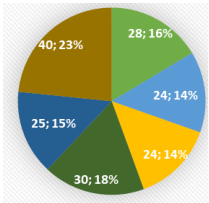
Year: 2019
Construction of a new calf barn

The herd

- 176 Livestock Units (LU)
- 119 dairy cows
  Breeds : Holstein Friesian
- 93 dairy heifers
- Calving period : all year
- Age at first calving : 25 months

Agricultural Area

171 ha AA



- 28 ha perm. grassland
- 24 ha temp. grassland
- 24 ha Maize silage
- 30 ha barley/ 25 ha wheat
- 40 ha rapeseed and potatoes
- 76 ha main fodder area
- 68 % of grassland / forage area

Workforces

- 2 labour units (Full Time Equivalent)
- 60 dairy cows/FTE & 550.000 l /FTE
- **Aims** : - increase efficiency
  - Work facilitation

Areas of interest

- Digitalisation
- Data synchronization
- Staff management

Main buildings and Equipment

- Cubicle walk-in barn with 2 milking robots
- Cubicle walk-in barn for young cattle
- Straw barn for calves with single and group boxes

Production / Technical results

- 1.100.000 liters of milk produced (99 % sold)
- 4,1 % fat & 3,42 % protein content
- Stocking rate: 2,3 LU / ha forage area
- 9.250 l of milk /cow /year & 14.470 l/ha forage area

Strengths

- Organisation (standard operating procedures)
- many different pillars of income
- many workforces, a lot of family members involved

Weaknesses

- administrative expenses (land in 2 countries)
- diversification (interest not 100 % focused)

Opportunities

- good location (soil, precipitation)
- located near border, available land abroad
- interest in digitalization

Threats

Farmer's strategy for a "resilient" system

- Diversification (several pillars)
- Cost Savings
- Increase efficiency
Long crop rotation

Aspirations / Needs for the future

- Drive digitalisation forward
- Increase automation

Improvement project - objectives

- Reduce workload
- Hire workers

ECONOMY & LABOUR

- Increase efficiency

- Save concentrates
- Reduce Energy

RESSOURCE Efficiency

PROJECT

- Increase animal welfare
- Reduce environmental impacts

ENVIRONMENT ANIMAL Wellbeing

Project

Lycée Technique Agricole

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Leider Gilbert
Pilot Farm description
Erpeldange-sur-Sûre - 2021

Luxembourg

Innovations



Farming milestones

- **2007:** Milestone: Business takeover & classroom
- **2011:** Modification of young cattle barn
- **2017:** new dairy cow barn
- **2019:** pedagogical farm
- **2022:** farm manager 60 years old, son 18 years old

The herd

- 1,3/1,4 GVE
- 60 dairy cows
  Breed : Holstein Friesian
- 70 heifers
- Calving period : all year
- Age at first calving : 25-26 months

Agricultural Area

90 ha AA

- 60 ha permanent grassland
- 10 ha silage maize
- 10 ha barley 10 ha Wheat
- 13 ha forest
- 70 ha main forage area
- **85 % of grassland** / forage area

Workforces

- 1 labour unit (Full Time Equivalent)
- 60 dairy cows/FTE & 600.000 l /FTE
- **Aim** : outsourcing field work

Areas of interest

- breeding
- digitalisation

Main buildings and Equipment

- Milking robot
- Young cattle in older buildings (deep straw & cubicles)
- Slurry stockage (capacity for 11 months)

Production / Technical results

- 600.000 liters of produced milk (100% sold)
- 4,2 % fat & 3,3 –3,4 % protein content
- Stocking rate: 1,3 LU / ha forage area
- 10000l of milk /cow /year & 8571 l /ha forage area

Strengths
- Cattleman
- classroom, group activities

Weaknesses
- not every AA or farm site near the barn

Opportunities
- visit of LTA

Threats
- no expansion possible at the site
- land loss

Farmer's strategy for a "resilient" system

- Sustainable management: water protection, optimal spreading of slurry
- Pedagogical farm will be extended
- Low mineral nitrogen fertilisation (12 t KAS), 17 ha in agri-environmental and climate measures

Aspirations / Need for the future

- Plant some fruit trees → make apple juice with the classes

Improvement project - objectives

- More free time
- Young cattle on pasture

ECONOMY & LABOUR

- 10.000 l, milking milk profitably
- Better forage

PROJECT

RESSOURCE Efficiency

- Water protection → optimisation of slurry spreading

ENWIRONMENT & ANIMAL Wellbeing

Partners

Lycée Technique Agricole

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Franky Peller
Pilot Farm description
Keispelt - 2021

Luxembourg

Innovations




Farming milestones

1999: Death of his father Rene Peller

2001: Establishment of cooperation

2016: Dissolution of cooperation

2016: Conversion of deep litter to free stall barn

2016: Beginning of direct marketing with eggs

2020: Construction of a driving silo and a dung plate

2020: Flowers to cut yourself

2021: Construction of a new calf and young heifer barn (finalized 2022)

2021: Self picker garden

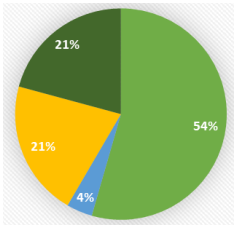
The herd

- 100 Livestock Unites (LU)
- **70 dairy cows**
  Breeds : Prim Holstein
- 70 dairy heifers
- Calving period: **all year**
- Age at first: **27- 28** months

Agricultural Area

102 ha AA

- 56 ha perm. grassland
- 3,8 ha temp. grassland
- 21 ha Maize silage
- 21 ha others*
- 80,8 ha main fodder area
- 74 % of grassland / forage area



* triticale, spelt, vegetables, potatoes, flowers

Workforces

- 1,8 labour units (Full Time Equivalent)
- 39 dairy cows/FTE & 595.000l /FTE
- **Aims**: sustainable management, efficient use of operating resources

Areas of interest

- Effective workflows
- Sustainable management
- Integration of direct marketing into farm structure

Main buildings and Equipment

- 3-row free stall barn with 60 cubicles, DeLaval milking robot
- Calf and young heifer barn with automatic milk distributer (from 2022)
- Multi-purpose hall for fodder storage and dry cows on straw
- machine hall with workshop (from 2022)

Production/ Technical results

- 590.000 liters of milk produced (ca. 95 % sold)
- **4,1 % fat** & **3,45 %** protein content
- Stocking rate: 1,23 LU/ ha forage area
- **8.500 l of milk/cow/year** & **7.283 l/ha main fodder area**

Strengths

- very low farm-to-field distances
- high proportion of land owned by family members
- versatile interests

Weakness

- high fix cost burden due to new investments
- attention not 100% focused on dairy cattle due to the direct marketing branch

Opportunities

- favourable location for direct marketing
- equipment enables easy conversion from dairy cows to just young cattle rearing

Threats

- increasingly large cuts due to water protection areas
- liquidity bottleneck in case of prolonged low price phase

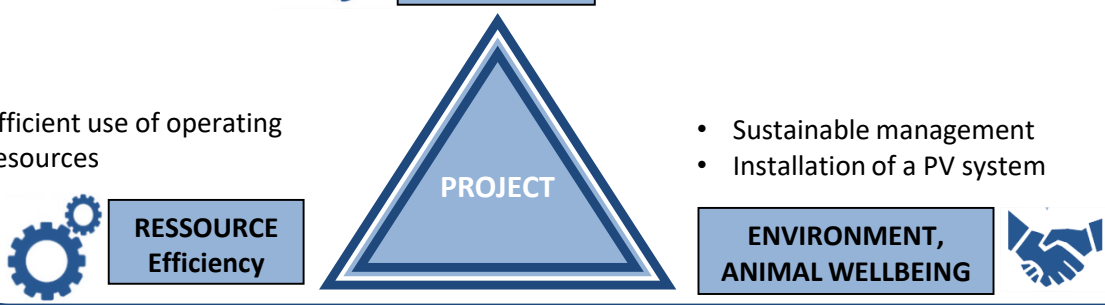
Farmer's strategy for a "resilient" system

To be in a strong/stable position financially, as well as in the areas of nature, climate and water protection, through the diverse business branches
"Dare the new and preserve the old"

Aspirations/Needs for the future

Learn more about different contexts
Improve performance, efficiency and remounting

Improvement project - Objectives



Project

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Lycée Technique Agricole

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Thirifay Daniel
Pilot Farm description
Landscheid - 2023

Luxembourg

Innovations

Farming milestones

2012: Start 8 year crop rotation

2019: Start genomic testing of heifers (program KuhVision)

2020: Takeover of the farm by Daniel; Re-start self-marketing of beef

The herd

- 90 GVE
- 48 dairy cows
  Breeds : Holstein Friesian (black & red), some Jerseys
- 50 dairy heifers + 20 beef heifers
- Calving period : all year
- Age at first calving : 24-26 months

Agricultural Area (2023)

105 ha AA

- 45 ha perm. grassland
- 55 ha cropland
- **Main crops:** grassseeds/grass-clover mix, maize, wheat, rye, barley, peas, rapeseed etc. in an 8 year rotation

Workforces

- 1 labour unit (Full Time Equivalent) and many voluntaries
- **Aims:** Improving the work-life balance

Areas of interest

- Reduction of concentrate use
- Increase of protein self-sufficiency

Housing system

- Free-ranging indoor system
- Milking parlour
- Early-summer pasturing
- Young cattle mostly on low-input grassland

Production / Technical results

- 480.000 liters of milk produced (90 % sold)
- 4,34 % fat & 3,51 % protein content
- Stocking rate: 1,3 GVE/ha forage area
- 9900 L of milk /cow /year & 6800 L/ha forage area
- 40000 L milk performance of departure cows; 17kg lifetime performance

Strengths

- Land availability
- Mixed farm (arable, milk & beef cattle)
- Self-mechanisation
- Basic fodder production
- Calf rearing

Weaknesses

- "Mapower unit per hour" availability
- Workload
- Obsolescence rate of the buildings
- High costs due to mechanisation and area requirements

Opportunities

- flexible allocation of land when fodder shortage
- Availability of temporary staff
- Optimisation of premiums

Threats

- climate change – drought
- Imminent invest
- Responsibility and work weighs on one person

Farmer's strategy for a "resilient" system

- Resist the **climat change** with its capricious weather conditions (crop rotations, legumes …)
- Improve the degree of **self-sufficieny** of espescially crude-protein (CONVIS)
- Improve the **longevity** of the cows (less heifers – more Beef-on Dairy)
- Increase the **efficiency** of the whole system (CONVIS); Breed a more **efficient cow**!
- Reduce **losses** on all sectors (Feeding, Fertilisation, Cattle-Stock)

Main innovations used to be a resilient farm

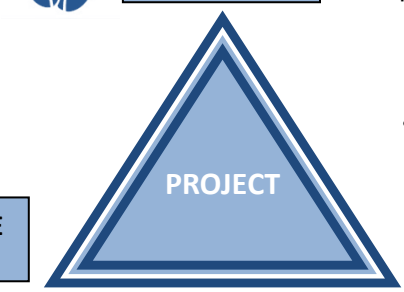
- **High quality silage** preparation (layers, silage additives etc.)
- **Beef-on Dairy** with partly self-processing (BBB, Limousin, INRA, Angus)
- Zero-loss goal on calf-rearing to reach a **high health status**
- **Extended Crop-Rotation** to minimize the risk of capricious weather conditions
- **Heath-Detection** System MEDRIA (France)
- **Genomic-Testing** of young cattle

Improvement project - objectives

- possibly higher feed-efficiency through **block-calving** in autumn

ECONOMY & LABOUR

- **Higher added value** of the milk through processing and high-quality products



- Adaptation of **breeding programms** to changing conditions

RESSOURCE Efficiency

ENVIRONMENT ANIMAL Wellbeing

Project

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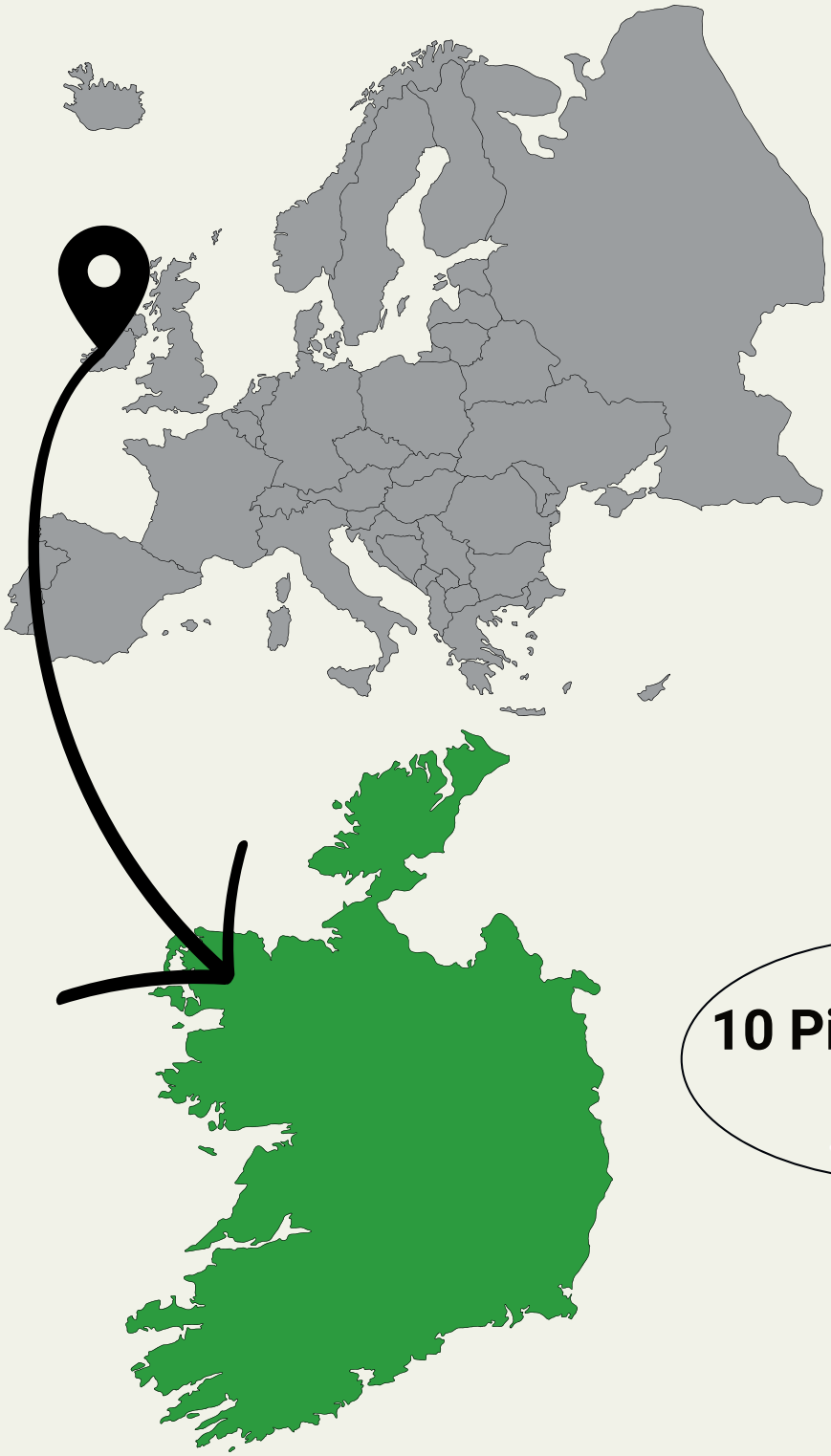
R4D DAIRY FARM NETWORK

Farm's presentations



10 Pilots Farms

IRELAND

Resilience for Dairy (R4D) has received funding from the European Union's Horizon 2020 research and innovation program under grant agreement No 101000770

Bryan & Gail Daniels
Pilot Farm description
Kilmoganny, Co. Kilkenny

Ireland

Innovations

Environment / Precision

Farming milestones

1995 Started farming

2013 Leased land

2014 New milking parlour

2015 Quota removal, Land leased

2021 Calf and calving accommodation

The herd

- 370 Livestock Units (LU)
- 290 dairy cows
  Breed: Holstein-Friesian/British Friesian
- 65 dairy heifers
- 65 dairy heifer calves
- Compact spring calving system
- Age at first calving : 24 months
- 2 times a day milking

Agricultural Area

140 ha Farm

- 65 ha rented
- All in permanent grassland
- Stocking rate: 2.7 LU/ha forage area
- Cows graze from February to November
- Calves & heifers graze from March to November

Workforces

- Farmer
- 1 full time & 1 student in spring
- 1 relief milker for weekend work
- **Aims: Reduce labour**

Areas of interest

- Forage quality
- Sustainability
- Environment
- Animal genetic quality

Main buildings and Equipment

- Low emission slurry spreading – trailing shoe & dribble bar
- Variable rate fertiliser spreading
- GPS fertiliser application
- 50 point Delaval rotary parlour
- Cubicle housing for cows
- Calves winter on mats on slats
- Slatted & concrete slurry stores

Production / Technical results

- Yield – 5,500 litres
- Feed – 530 kg
- Milk from forage: 4,440 litres
- 4.36% butterfat, 3.72% protein
- Milk solids – 530 kg
- Grass based dairying
- Milk sold to Tirlan
- €0.33/litre cost of production (Including all labour)

Strengths

- Good quality land
- Herd genetic quality
- Innovative –
  - Breeding - beef calves, sexed semen
  - Pasture - red and white clover reseeding

Weaknesses

- High altitude (300m above sea level)
- Dependent on leased land

Opportunities

- Trying to reduce Carbon footprint
- Genetics – more tailored use of sexed and beef semen

Threats

- Increasing costs
- Public misconception of farming practices
- Environmental legislation

Farmer's strategy for a "resilient" system

Focussing on breeding a productive, healthy and fertile herd

Reseeding and oversowing with high clover swards.

Making use of precision GPS programming to improve fertiliser efficiency.

Aspirations / Needs for the future

Focused on reducing fertiliser N dependency – by incorporating clover in pasture.

Breeding strategy change to reduce number of dairy breed calves born and increase the value of the beef cross calves born on the farm.

Improvement project - objectives

- Maintain a labour efficient work load

ECONOMY & LABOUR

- Optimize dairy gross margin

- Maintain a low level of concentrate input per cow while increasing milk yield

RESOURCE Efficiency

PROJECT

- Reduce fertiliser N use
- Breed healthy productive cows
- Breed quality surplus calves

ENVIRONMENT ANIMAL Wellbeing

Partners

Teagasc
Agriculture and Food Development Authority

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Dermot O Connor
White Fort Dairies Ltd
Shanagolden, Co. Limerick

Ireland

Innovations

Environment / Precision

Farming milestones

2007 Started farming

2008 Milk Production Partnership with Father

2012 Farm Transferred

2012 Won FBD Young Farmer of the Year

2014 New milking parlour

2015 Quota removal Land leased

2016 Heifers Contract Reared

2019 Purchased additional Farm Land

The herd

- 220 Livestock Units (LU)
- 220 dairy cows
  Breed: Cross Bred Herd
- 50 dairy heifers (Reared off farm)
- 50 dairy heifer calves (Reared off farm)
- Compact spring calving system
- Age at first calving : 24 months
- 2 times a day milking

Agricultural Area

91 ha Farm

- 31 ha Leased
- All in permanent grassland
- Stocking rate: 2.4 LU/ha forage area
- Cows graze from February to December
- Calves & heifers graze from March to November (Off Farm)

Workforces

- Farmer
- 1 full time & 1 student in spring
- 1 relief milker for weekend work
- **Aims: More Family Time**

Areas of interest

- Forage quality
- Sustainability
- Environment
- Animal genetic quality

Main buildings and Equipment

- Two Tractors for light work
- Contractors carry out majority of work
- Automatic Calf Feeder
- 18 point Dairymaster parlour
- Cubicle housing for cows
- Calf and Calving Facilities
- Slatted & concrete slurry stores

Production / Technical results

- Yield – 5900 litres
- Feed – 1000 kg
- Milk from forage: 4,500 litres
- 4.76% butterfat, 3.82% protein
- Milk solids – 535 kg
- Grass based dairying
- Milk sold to Kerry
- €0.34/litre cost of production (Including all labour)

Strengths

- Focus on Soil Fertility
- Extended days at grass
- Innovative:
- Use of Protected Urea
- Improving Clover content
- Knowledge sharing with like minded farmers

Weaknesses

- Prone to light droughts in the summer
- Higher stock replacement rate due to Herd Health Issues

Opportunities

- Knowledge transfer
- Adapting new technologies to improve performance
- Genetics
- increasing use of sexed semen to improve herd resilience

Threats

- Increasing costs
- Time sensitive pressures caused by EU legislation changes.
- Social media mis-conception of farming practices

Farmer's strategy for a "resilient" system

Reseeding and oversowing with high clover swards.

Collaborating with like minded farmers to improve implementation of the new technologies

Using Protected urea to improve fertiliser efficiency

Aspirations / Needs for the future

Focused on improving forage quality while reducing fertiliser N dependency – by incorporating clover in pasture.

Improvement project - objectives

- Maintain a labour efficient work load

ECONOMY & LABOUR

- Optimise dairy gross margin
- Adopting new technologies to reduce fertiliser N use
- Improved genetics to lower carbon footprint over time

PROJECT

- Maintain a high level of animal nutrition with better utilization of forage while reducing dependency on high levels of concentrates

RESOURCE Efficiency

ENVIRONMENT ANIMAL Wellbeing

Partners

Teagasc
Agriculture and Food Development Authority

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Niall Callanan
Pilot Farm description
Craughwell Co Galway 2022

Ireland

Innovations

Environment/ Efficiency

Farming milestones

2005
Bought 20 ha

2020- 60 extra cubicles added

2021- Silage pit slab

2002- Started farming. 70 cows

2017
Purchased additional 18ha
Built slurry lagoon, extra cubicles, calving pad

2022 & 2023
Rotary parlour & new calf shed

The herd

- 290 dairy cows
  Breed: Friesian Jersey cross
- 60 dairy
- Spring calving system
- Age at first calving : 24 months
- All AI

Agricultural Area

150 ha Farm
- 65 ha Leased
- All in permanent grassland
- Stocking rate: 2.4 LU/ha forage area
- Cows & heifers graze from February to November
- Calves graze from 17th March to December

Workforces

- Farmer
- 1 full time farm worker
- 1 full time calf rearer
- 4 or 5 floating farm workers

Areas of interest

- Genetics
- Grassland Management

Main buildings and equipment

- Cubicle shed for 260 cows
- Calf shed, calf accommodation on rented farm
- 44 bail rotary parlour & drafting unit
- Cow monitoring collars
- Machinery: JCB loader, 2 tractors, mower, sprayer, feed wagon
- Fertiliser & slurry is contracted out

Production / Technical results

- Yield – 5,200 litres
- Feed – 600 kg
- Milk from forage: 4,720 litres
- 4.77% butterfat, 3.82% protein
- Milk solids – 440 kg
- Grass based dairying
- Milk sold to Aurivo
- €0.37/litre cost of production (incl. labour)

Strengths
•Grassland management- Grass10 finalist
•Animal husbandry
•Environment- hedgerows

Weaknesses
• 6 ha prone to flooding during the winter

Opportunities
Using sexed semen • Availing of technologies through collars Attracting labour- promoting good farming practises- community involvement •

Threats
Social media pedalling false information Can only control what's inside the farm gate

Farmer's strategy for a "resilient" system

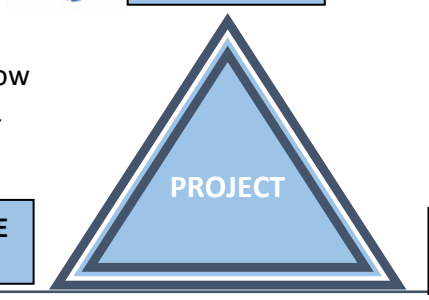
Attractions of labour- been involved in the local community, been approachable and willing to change

Aspirations / Needs for the future

Using best genetics
Availing of technologies
Promoting good mental health & time away from the farm, hobbies outside of the farm

Improvement project - objectives

- Lean efficiency- simple system
- Continue using technologies such cow monitoring collars & drafting unit
- Continue to improve sustainability on the farm- planting more hedgerows, putting in bee boxes & planting wild flowers



Partners

Agriculture and Food Development Authority

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David Brady
Pilot Farm description
Stradone Co Cavan

Ireland

Innovations

Genetics/ Environment

Farming milestones

1997- Starting farming with parents

2008- Construction of slatted shed & silage walls

2015- Quota removal

→ Expanded from 70 to 110 cows →

2016- Joined Teagasc Heavy Soils Programme

The herd

- 110 Dairy cows
  Breed: High E.B.I Holstein Friesian
- 25 dairy heifers
- 25 dairy heifer calves
- Compact Spring calving system
- Age at first calving : 24 months

Agricultural Area

80 ha Farm

- 20 ha rented
- All in permanent grassland
- Stocking rate:1.9 LU/ha forage area
- Cows graze from February – November (weather depend)
- Calves & heifers graze from March - November

Workforce

- Farmer
- Parents
- Student during the springtime

Areas of interest

- Genetics/breeding
- Heavy soils
- Sustainability/environment

Main buildings and Equipment

- 10 unit parlour
- Cubicle housing for cows
- Calf shed with timber slats
- Slatted & concrete slurry store
- Cow monitoring collars
- Tractor & loader
- Low emission slurry spreading
- GPS fertilizer application
- Track machine

Production / Technical results

- Yield – 6515 litres
- Feed – 1.1 tonne
- 4.44 % butterfat, 3.63% protein
- Milk solids – 545 kg
- Grass based dairying
- Milk sold to Lakeland Dairies
- €0.41 litre cost of production (Incl. all labour)

Strengths
- Excellent management of herd
- Herd genetic quality
- Genomic testing of herd
- White & red clover reseeding

Weaknesses
- High rainfall area
- Heavy soils farm
- Fragmented yards
- Crossing 2 roads

Opportunities
- Trying to reduce carbon footprint
- More selective breeding
- Using more sexed semen
- Use of SenseHub cow monitoring collar system

Threats
- Labour
- Increasing costs
- Banding/renting land
- Environmental legislation

Farmer's strategy for a "resilient" system

Breeding a productive healthy herd with high kgs of milk solids
Continuing to reseed every year, including white & red clover

Aspirations / Needs for the future

To have a central farmyard and construct two underpasses

Improvement project - objectives

ECONOMY & LABOUR
- Full time employee on the farm

RESOURCE Efficiency
- Genomic testing of all herd
- Installing solar panels & plate cooler
- Doubling up 10 unit parlour

PROJECT

ENVIRONMENT ANIMAL Wellbeing
- Planting more parcel areas for forestry
- Hedge cutting plan
- Breeding better stock - making use of genomics

Partners

Teagasc
Agriculture and Food Development Authority

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David Fennelly
Pilot Farm description
Emo, Co. Laois

Ireland

Innovations

Environment / resilience

Farming milestones

2010 Mixed farm enterprise

2013 New milking facilities

2015 Quota removal

2015 – present Gradual expansion

2016 David at University

2020 David farming full time

The herd

- 370 Livestock Units (LU)
- 310 dairy cows
  Breed: Holstein-Friesian
- 80 dairy heifers
- 70 dairy heifer calves
- Compact spring calving system
- Age at first calving : 24 months
- 2 times a day milking

Agricultural Area

152 ha Farm

- 64 ha rented
- All in permanent grassland
- Stocking rate: 2.5 LU/ha forage area
- Cows graze from February to November
- Calves & heifers graze from Late January to November

Workforces

- Father & Son Partnership
- 1 full time
- 2 relief milkers for weekend work

Areas of interest

- Reduction in chemical N
- Optimum stocking rate
- Biodiversity improvement

Main buildings and Equipment

- Low emission slurry spreading – trailing shoe & dribble bar
- GPS fertilizer application
- Cow monitoring collars
- 20 unit Dairymaster parlour
- Cubicle housing for cows
- Calves winter on mats on slats
- Slatted & concrete slurry stores

Production / Technical results

- Yield – 6,108 liters
- Feed – 945 kg
- Milk from forage: 4,216 liters
- 4.55% butterfat, 3.70% protein
- Milk solids – 519 kg
- Grass based dairying
- Milk sold to Tirlan
- €0.34 litre cost of production (Incl. all labour)

Strengths

- Good quality land
- Herd genetic quality
- Innovative –
  - Breeding –compact calving.
  - Pasture – MSS, red/ white clover reseeding

Weaknesses

- Low rainfall area and light land
- High fixed costs

Opportunities

- Trying to reduce Carbon footprint
- Genetics – more tailored use of sexed and beef semen

Threats

- Increasing costs
- Public misconception of farming practices
- Environmental legislation

Farmer's strategy for a "resilient" system

Focussing on breeding a productive, healthy and fertile herd

Reseeding and oversowing with high clover swards.

Making use of multi species swards and to improve drought resilience.

Aspirations / Needs for the future

Focused on improving soil health and biodiversity on farm.

Breeding strategy change to reduce number of dairy breed calves born and increase the value of the beef cross calves born on the farm.

Improvement project - objectives

- Maintain a labour efficient work load

ECONOMY & LABOUR

- Optimize dairy gross margin
- Maintain a low level of concentrate input per cow while increasing milk yield

RESOURCE Efficiency

PROJECT

- Reduce fertiliser N use
- Breed healthy productive cows
- Breed quality surplus calves

ENVIRONMENT ANIMAL Wellbeing

Partners

eagasc
Agriculture and Food Development Authority

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Eoghan McCarthy
Pilot Farm description
Milltown Co Kerry
- 2022

Ireland

Innovations

Environment

Farming milestones

1994
Started Farming

1996-1999
Rented land

2006
Bought milk quotas-increased from 70 to 100 cows.
Built 120 cow cubicle shed

2015
Milk quota removal-increased to 120 cows

2020 & 2021
Bought 60 acre farm & added additional cubicles

The herd

- 160 dairy cows
- Breeds: Holstein Friesian
- Calving period: Compact spring calving
- Age at first calving: 24 months
- All AI

Agricultural Area

92 ha farm

- All in permanent grassland
- Stocking rate: 2.1 LU/ha forage area
- Cows graze from Mid February to Mid November
- Heifers graze from March to November
- Calves have access to paddock from calf shed after 4 weeks age

Workforce

- Farmer & family
- 1 farm employee
- Student

Areas of interest

- Genetics- E.B.I & genotyping
- Grassland management
- Environment

Main buildings and equipment

- Cubicle shed- 187 cubicles, all underground tanks
- Large pens for calving
- 18 unit parlour- ACRs, dumpline, automatic washer
- Slatted shed & mats (outfarm)- young stock & cull cows
- 18 unit parlour – ACRs, dumbline,automatic washer
- Equipment- 2 tractors, dribble bar slurry tank, fertiliser spreader, mower
- Contractor does majority of slurry & fertiliser

Production / Technical results

- 6200 litres of milk produced/cow
- 4.32% fat & 3.68 % protein content
- Milk solids 500 kg per cow
- Feed: 900 kg concentrate per cow
- Milk from forage: 87-90%
- Grass based dairying
- Milk sold to Kerry
- €0.31/litre total dairy cost production

Strengths

- Good land base
- Good healthy, high E.B.I cows

Weaknesses

- High rainfall area – average 1.6m rain every year
- Heavy soils farmed with ½ farm below sea level

Opportunities

- Growing home grown feed- big advantage, only buying in meal
- High environment status

Threats

- Can't control cost outside the farm gate
- Disease risk

Farmer's strategy for a "resilient" system

Continuing to use protected area to improve fertiliser efficiency

Being 'Report Rich' -utilising every report (e.g. milking recording & breeding reports), understanding reports & been involved in discussion groups & with advisors

Aspirations / Needs for the future

To be a good operating farmer, keep making improvements to help the next generation and have a good work life balance.

Improvement project - objectives

- Maintain a labour efficient work load

ECONOMY & LABOUR

- Continuing to incorporate clover
- Focus on sustainability- continue to plant more hedgerow, using protected urea & using soil fertility reports

- Installed the Sensehub health monitoring collars
- Look into using sexed semen
- Continue focussing on producing quality calves

PROJECT

RESSOURCE Efficiency

ENVIRONMENT ANIMAL Wellbeing

Partners

Teagasc
Agriculture and Food Development Authority

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Killian Brennan
Pilot Farm description
Kilcogy Co Cavan

Ireland

Innovations

Grassland /Environment

Farming milestones

2000- Started farming

2015- Milk quota removal

2019- Rented extra land & built 52 more cubicles

The herd

- 120 dairy cows
  Breeds : Crossbreeds
- Replacement heifers: 29
- Calving period : Spring
- Age at first calving : 22-24 months
- All AI
- All heifer calves go contract rearer

Agricultural Area

- Own 22 ha
- Renting 33 ha
- All permanent grassland
- Stocking rate: 3.5ha milking platform, 2.2 overall farm
- Grazing season: February to Nov

Workforce

- Farmer & family
- Relief milker- some weekdays, 2 weekends every month
- Student starting in March for 8 weeks

Areas of interest

- Grassland management- reseeding & clover incorporation
- Labour efficiency
- Breeding- E.B.I & sexed semen

Main buildings and equipment

- 12 unit parlour
- Cubicle shed for 150 cows with calving bay for 30 cows
- Calf house- 20 individual pens, automatic calf feeder
- Allflex cow monitoring collars & drafting gate
- Slurry & fertiliser is contracted out

Production / Technical results

- Yield – 6,000 litres/cow
- Feed – 770kg/cow
- 4.55% butterfat, 3.70% protein
- Milk solids - 488 kg/head
- Grass based dairying
- Milk sold to Lakeland dairies
- €0.38 litre cost of production (Incl. all labour)

Strengths

- Cow type
- Grassland management-white clover reseeding
- Labour efficiency- work life balance

Weaknesses

- Rented land is a big expense every year

Opportunities

- Breeding - use of sexed semen
- Trying to reduce Carbon footprint- clover incorporation, LESS
- Renewable energy - solar panels

Threats

- Cost of land, fertiliser, meal
- Milk prices going to fall
- Environmental legislation- need tanks for washings/slurry

Farmer's strategy for a "resilient" system

Reseeding & incorporate white clover

Using a contractor to apply fertiliser using GPS system, more accurate

Using cow collars for monitoring cow health, heat & reproduction

Aspirations / Needs for the future

Continuing to reseed with white clover and try incorporate red clover into silage ground

Look into installing solar panels to generate renewable energy on the farm.

Improvement project - objectives

ECONOMY & LABOUR

- Maintain a labour efficient work load

- Installing automatic washer in the dairy
- Keep working on herd fertility

RESSOURCE Efficiency

PROJECT

- Reduce fertiliser N use
- Breed healthy productive cows
- Use solar energy on the farm

ENVIRONMENT ANIMAL Wellbeing

Partners

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Philip Donohoe
Pilot Farm description
Goresbridge, Co. Carlow

Ireland

Innovations

Environment / Precision

Farming milestones

1995 Started farming

2013 Leased land

2014 New milking parlour

2015 Quota removal, Land leased

2021 Calf and calving accommodation

The herd

- 220 Livestock Units (LU)
- 180 dairy cows
  Breed: Holstein-Friesian
- 40 dairy heifers
- 40 dairy heifer calves
- Compact spring calving system
- Age at first calving : 24 months
- 2 times a day milking

Agricultural Area

85 ha Farm

- 37 ha rented
- All in permanent grassland
- Stocking rate: 2.5 LU/ha forage area
- Cows graze from February to November
- Calves & heifers graze from March to November

Workforces

- Farmer
- 1 full time & 1 student in spring
- 1 relief milker for weekend work
- **Aims: Reduce labour**

Areas of interest

- Forage quality
- Sustainability
- Environment
- Animal genetic quality

Main buildings and Equipment

- Low emission slurry spreading – trailing shoe & dribble bar
- Variable rate fertiliser spreading
- GPS fertiliser application
- 20 points Dairymaster parlour
- Cubicle housing for cows
- Calves winter on mats on slats
- Slatted & concrete slurry stores

Production / Technical results

- Yield – 6,300 liters
- Feed – 850 kg
- Milk from forage: 4,600 liters
- 4.27% butterfat, 3.88% protein
- Milk solids – 530 kg
- Grass based dairying
- Milk sold to Tirlan
- €0.37/litre cost of production (Including all labour)

Strengths

- Good quality land
- Herd genetic quality
- Innovative –
  - Breeding - Wagyu calves, sexed semen
  - Pasture - red and white clover reseeding

Weaknesses

- Low rainfall area and light land
- Dependent on leased land

Opportunities

- Trying to reduce Carbon footprint
- Genetics – more tailored use of sexed and beef semen

Threats

- Increasing costs
- Public misconception of farming practices
- Environmental legislation

Farmer's strategy for a "resilient" system

Focussing on breeding a productive, healthy and fertile herd

Reseeding and oversowing with high clover swards.

Making use of precision GPS programming to improve fertiliser efficiency.

Aspirations / Needs for the future

Focused on reducing fertiliser N dependency – by incorporating clover in pasture.

Breeding strategy change to reduce number of dairy breed calves born and increase the value of the beef cross calves born on the farm.

Improvement project - objectives

- Maintain a labour efficient work load

ECONOMY & LABOUR

- Optimize dairy gross margin

- Maintain a low level of concentrate input per cow while increasing milk yield

RESOURCE Efficiency

PROJECT

- Reduce fertiliser N use
- Breed healthy productive cows
- Breed quality surplus calves

ENVIRONMENT ANIMAL Wellbeing

Partners

Teagasc
Agriculture and Food Development Authority

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Sean O'Donnell
Pilot Farm description
Ballina, Co Mayo

Ireland

Innovations

Grassland

Farming milestones

- **2009** Starting farming
- **2010** New parlour
- **2015** Quota removal, Land leased
- **2017** New parlour & slatted shed built
- **2019** Underpass installed
- **2020** Calving shed built

The herd

- 210 dairy cows

  Breeds : Crossbred Jersey
- Calving period : 7th Feb- 15th April
- Age at first calving : 22-24 months
- All AI

Agricultural Area

- 70 ha of milking platform across two milking platforms
- All permanent grassland
- Mixed Soils Grassland Farmer Year in 2021
- Stocking rate 2.5 LU/ha forage area
- Cows graze from February to middle November
- Calves & heifers graze from end February to end October/November

Workforces

- Farmer
- 1 full time
- 2 milkers

Areas of interest

- Animal Breeding
- Grassland management
- Labour efficiency

Main buildings and equipment

- 2 Milking parlours - 16 and 12 unit
- Cubicle housing for 200 cows
- Calf shed
- Calving accommodation
- Tractor & loader, fertiliser spreader
- Uses contractor

Production / Technical results

- 1.1 million litres of milk produced
- 4.87 % fat & 3.84 % protein content
- Feed - 780kg /head
- Milk solids 506kg / cow
- Grass based dairying
- Milk sold to Aurivo

Strengths

- Herd genetic quality
- Growing 14T grass/ha
- Innovative:
- Breeding crossbred Jerseys
- Pasture – clover reseeding

Weaknesses

- High rainfall area
- Dependent on leased land

Opportunities

- Genetics- more tailored use of sexed & beef semen
- Next generation are interested in dairy farming

Threats

- Environmental legislation
- Cost of leased land

Farmer's strategy for a "resilient" system

Focusing on breeding healthy, productive, high solid cow

Reseeding- clover

Low cost system

Aspirations / Needs for the future

Using all sexed & beef semen from this year on

Being environmental compliant

Improvement project - objectives

ECONOMY & LABOUR

- Maintain labour efficient work load
- Work life balance

- Reduce fertiliser N use- clover, plantain
- Breed healthy productive cows
- Breed quality heifer & beef calves

- Maintaining a heathy herd

PROJECT

RESSOURCE Efficiency

ENVIRONMENT ANIMAL Wellbeing

Partners

eagasc
Agriculture and Food Development Authority

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Steven Fitzgerald
Pilot Farm description
Aglish Co.Waterford– 2022

Ireland

Innovations

Environment / resilience

Farming milestones

2006
Kildalton Ag College

Farm Manager at Teagasc farm for 9 years

2008
Partnership with father

2017
Full time farming

2019
More cubicles added.
Increased cow numbers

2022
New parlour

The herd

- Dairy beef farm
- 185 dairy cows
  Breeds : Holstein Friesian
- Dairy heifers 40
- Compact spring calving system
- Age at first calving : 24 months
- All beef calves are brought to stores for sale
- AI & Stock bull

Agricultural Area

132 ha farm

- 63 ha rented
- All permanent grassland
- Stocking rate: 2.2LU/ha forage area
- Grazing : 1st Feb- 1st Dec

Workforce

- Steven & father full time
- His mother & wife help out
- Student for 3 months in spring

Areas of interest

- Genetics- improving EBI
- Grassland- reduce fertiliser N, incorporate more clover

Main buildings and equipment

- 25 units parlour with drafting system
- Cubicle housing for cows
- Calf accommodation for 190 calves and Calving Facilities
- 3 tractors
- Low emission slurry spreading
- GPS fertiliser application

Production / Technical results

- Yield – 6100 litres/cow
- Feed – 850kg/head
- Milk from forage: 90%
- 4.48% butterfat, 3.72% protein
- Milk solids – 500 kg/cow
- Grass based dairying
- Milk sold to Tirlan

Strengths

- Growing 13/14 t tonnes/DM per ha
- Long grazing season
- Good herd fertility

Weaknesses

- Fragmented farm

Opportunities

- Grow the farm further in future years

Threats

- Increasing costs outside the farm gate
- Environment legislation

Farmer's strategy for a "resilient" system

Breeding the most efficient cow, focussing on EBI & the size of the cow, more solids from a smaller cow

Aspirations / Needs for the future

Maintaining cow numbers & improving yield

Improvement project - objectives

Long term- improve infrastructure further

ECONOMY & LABOUR

- Breed healthy productive cows
- Keep doing small things to improve biodiversity on the farm

Adapting new technologies such as health monitoring collars for cows

RESSOURCE Efficiency

PROJECT

ENVIRONMENT ANIMAL Wellbeing

Partners

Teagasc
Agriculture and Food Development Authority

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R4D DAIRY FARM NETWORK

Farm's presentations

10 Pilots Farms

NETHERLAND

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De Marke
Pilot Farm description
Hengelo – 2022

NL

Innovations

Environment / Resource efficiency

Farming milestones

1991 Start innovation farm on N/P targets

1996 Low emission floor

1997 Additional 2 hectares of nature area

2001 Digester generated energy

Emission low floor, catch crops, own production, fodder beets, crop rotation grass/maize/3 yrs

2012 Solar panels installed

2018 Herb rich grassland

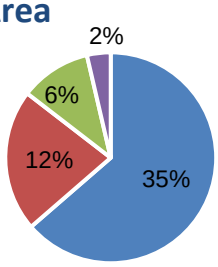
The herd

- 96 Livestock Units (LU)
- 80 dairy cows (42 young stock, 20 calves)
  Breeds : HF + Montbeliarde and Swiss Red
  - now rebreeding to HF
- 20 dairy heifers
- Calving period : all year round
- Age at first calving : 24 months

Agricultural Area

Total 55 ha AA

- 35 ha grassland
- 12 ha corn production
- 6 ha for corn cob silage
- 2 ha grain



Workforces

- 1 labour units (Full Time Equivalent)
- 80 dairy cows & 800000 l / FTE

Areas of interest

- Climate
- Nature
- Sustainable circularity

Main buildings and equipments

- 1 free stall barn, office buildings
- Robot milking system– Two-box GEA MiOne
- Manure separation digester, solar panels
- Manure and feed storage units

Production / Technical results

- 842831 liters of milk produced
- 4.47 % fat & 3.61 % protein content
- Stocking rate: 1.74 LU / ha forage area
- 10291 l of milk /cow /year & 15333 l /ha forage area
- Intercalving interval: 381 days
- Insemination rate: 1.8

Strengths

- Craftsmanship
- Integral approach
- Room for innovation
- Authority/role model
- 30 year data pool
- Broad support base within sector

Weaknesses

- Part of WUR: slow decision making
- Openness may feed undesired policy making
- Representativeness vs practice
- Dry soil on 1 location

Opportunities

- Education
- Cooperation
- Future prospecting
- Agriculture to support nature
- Building blocks for new financial models

Threats

- Climate change
- Public/sector opinion and view
- Gap between city/rural areas
- Low rewards for taken measures
- Government policy changes

Farmer's strategy for a "resilient" system

1) Work on soil improvement (diversity of crops, green manure, drip irrigation),
2) Develop the building blocks for and/or adopt new financial models (that connect to societal desire/wish),
3) Work on circular agriculture

Aspirations / Needs for the future

Knowledge. Regional reward systems based on KPI's. More intense collaboration with local community, government, the entirety of the supply chain, NGO's, national organizations, basically all stakeholders. Constant renovation/innovation of buildings and infrastructure

Improvement project - objectives

ECONOMY & LABOUR

- Base for new financial model

- Strive for circularity
- Optimization of feed and land use
- Multifunctional use of the environment (agroforestry)

PROJECT

- Increased herbs
- Soil quality and health

RESOURCE Efficiency

ENVIRONMENT ANIMAL Wellbeing

Partners

WAGENINGEN UNIVERSITY & RESEARCH

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Bosman
Pilot Farm description
De Krim – 2022

NL

Innovations

Environment / Resource efficiency

Farming milestones

2012 Pedometers

2014 New robot and grazing management

2015 New management of farm

2016 Deep straw bedding

2018 Weir

2018 Water infiltration system

2020 Focus on presence on farm and additional labour support

2020 Oxygenation of the soil

2022 New floor

2022 New feeding system

Following the 'New Dutch Pasturing' concept

Combination of knowledge and traits regarding entrepreneurship and farming capabilities

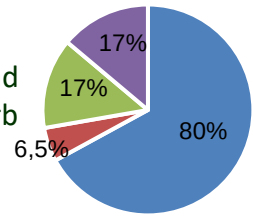
The herd

- 130 dairy cows (28 young stock, 32 calves)
  Breeds : HF + Brown Swiss/Swiss Red
- Calving period : all year round, some peaks at the end of the year
- Age at first calving : 24 months

Agricultural Area

Total 70 ha AA

- 58 ha grassland
- 4,5 ha herb rich grassland
- 2023: another 12 ha herb rich (clover, plantain)
- 12 ha corn production



Workforces

- 1,5 labour units (Full Time Equivalent)
- Flexible support
- 130 dairy cows & 800000 l / FTE

Areas of interest

- Soil quality and management
- Strong cows, breeding for utility
- Barn design in favour of manure requirements

Main buildings and equipments

- 1 x free stall barn with automated feeding system
- 3 robots (3 box GEA)
- 2 concentrate feeders
- Water infiltration system

Production / Technical results

- 1200000 liters of milk produced, with 5,7 average present vs 6,8 (average total)
- 4.56 % fat & 3.60 % protein content, 24kg concentrate / 100kg milk
- Stocking rate: 1.86 LU / ha forage area,
- 9000 l of milk /cow /year & 15333 l /ha forage area

Strengths

- Creativity, innovation driven
- Do-mentality, integrally approached
- Resolute and enthousiasm

Weaknesses

- Communication skills
- Relative chaos
- Keep focus

Opportunities

- Networking for integral solutions
- Policies that direct consumer behaviour
- Application of (supported) biodiversity

Threats

- Public view
- Ever-changing policy
- N-space
- Lack of open mindedness with policy makers
- Lack of rewarding extensive systems

Farmer's strategy for a "resilient" system

1) Work on soil quality, using smallest amount of energy as possible, get the most out of the soil. (O2, water, nutrition). 2) reduction of labour intensity 3) Circular approach, less external input and more output, lower footprint, better farming, reduction of losses. Primary separation of manure for targeted application. 4) Low budget

Aspirations / Needs for the future

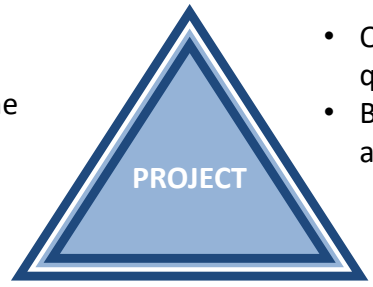
Knowledge (from different disciplines). SBV (subsidized research) request to new Dairy Welfare floor and capture the barn air. Connect captured air with water infiltration system. Manure robot with brushes to better clean floor grooves. Room for experimentation. Time to show and prove innovations, that include testing, monitoring and leniance towards failure.

Improvement project - objectives

ECONOMY & LABOUR

- Labour flexibility (automatization)
- Community fall back systems

- Reduction of diesel use
- Small animals, feeding efficiency adapt cow to the barn



- Oxygenation of the soil to improve quality
- Being active in local community activities

RESOURCE Efficiency

ENVIRONMENT ANIMAL Wellbeing

Partners

WAGENINGEN UNIVERSITY & RESEARCH

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Tilburg
Pilot Farm description
Siddeburen – 2022

NL

Innovations

Environment / Resource efficiency

Farming milestones

2003 Start dairy farm on an original arable farm. Including a new barn, focus on self-development & management (feeding, cost price efficiency)

2007 Cow comfort + focus on longevity + dry cow ration. Improving (udder) health

2009 Youngstock rearing improvement

2012 Focus on cow comfort, housing improvements. Increase bed sizes, calving pen increase, removing walls

2015 Farmwalk (more milk from grass)

2020 Biodiversity and energy (mills/panels, self suffiency)

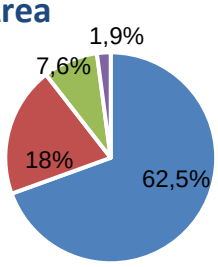
The herd

- 130 dairy cows (42 young stock, 20 calves)
  Breeds : HF + FH
- Calving period : close to all year round (except July/August due to insemination stop)
- Age at first calving : 25 months

Agricultural Area

Total 95 ha AA

- 66 ha grassland
- 19 ha nature grass
- 8 ha corn
- 2 ha arable



Workforces

- 1,5 labour units (Full Time Equivalent)
- 130 dairy cows & 766666 l / FTE
- Support from in-house sustainability and grazing coach

Areas of interest

- Societal acceptance
- Optimalization of (farm) management; land (soil/crops/herbs), cow and energy production, biodiversity

Main buildings and equipments

- 1 x barn (3 x 3 free stall)
- Separate barn for youngstock
- 2x12 parallel milking parlor
- Blueprints for H2 – Electrolyser
- Windmills and solar panels

Production / Technical results

- 1150000 liters of milk produced
- 4.47 % fat & 3.61 % protein content
- Stocking rate: 1.74 LU / ha forage area
- 8800 l of milk /cow /year & 15333 l /ha forage area

Strengths

- Balanced approach towards cow, land, barn
- Strong, optimistic team
- Work pleasure
- Self sufficient
- Externally and society focused

Weaknesses

- Heavy financing
- Possible balance between ideology and economy
- Need to be in control
- Sense of powerlessness

Opportunities

- Contributing to many projects that help development, open to change
- Regional support
- The province desires to be agriculturally focused

Threats

- Public opinion
- Framing of NGO's
- Unbridled, unilateral negative communication
- Lack of focus
- Shortage of time
- Insecurity regarding licensing and policy making

Farmer's strategy for a "resilient" system

1) Sustainability with regards to energy (towards community). 2) Self-sufficiency and reduce external dependence (commercial advisor, feed, input, soil) 3) Animal welfare focus 4) Being open to change, balance between ideology and economy

Aspirations / Needs for the future

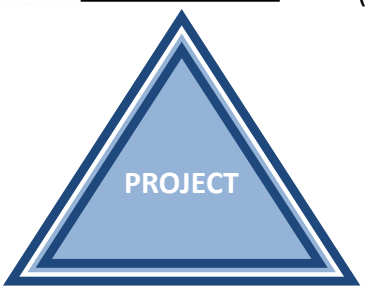
Knowledge (about policy and legislation, innovations, agricultural developments (i.e. on soil/herbs)). License to keep producing as a dairy farm and priority on the N-space.

Improvement project - objectives

ECONOMY & LABOUR

- Thinking about future prospective on economic models (open minded)

- H2 conversion
- Artificial N reduction
- Reduce external input



- Increased herbs
- Longevity (6,7 yr on average)

RESOURCE Efficiency

ENVIRONMENT ANIMAL Wellbeing

Partners

WAGENINGEN UNIVERSITY & RESEARCH

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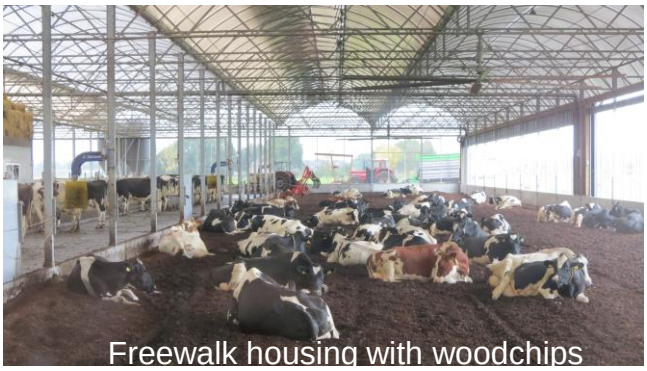
Koonstra
Pilot Farm description
Vinkebuurt – 2022

NL

Innovations

Environment / Resource efficiency


Freewalk housing with woodchips

Farming milestones

2014 Use of new Freewalk barn

2019 'Weldaad' Freewalk cheesery

2021 A2 Milk

2022 1 Star better life quality branding

2021 Compost/manure combination sales

By selection of cows on BB milk genetics

Reception and house

By selection of cows on A2 milk genetics

2021 Kappa Casein BB Milk

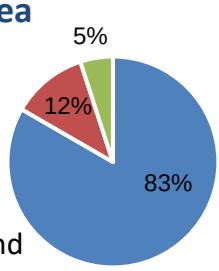
The herd

- 92 dairy cows (18 young stock, 18 calves)
  Breeds : HF + few Brown Swiss/Swiss Red
- Calving period : all year round
- Age at first calving : 26 months

Agricultural Area

Total 60+19 ha AA

- 50 ha grassland
- 7 corn cob mix
- 3 Fodder beats
- 7 ha natural land
- 12 ha additional natural land



Workforces

- 1,4 labour units (Full Time Equivalent)
- Flexible support
- 130 dairy cows & 617857 l / 1,4 FTE

Areas of interest

- Animal welfare
- Circularity
- Increasing value of bedding
- Increasing value of milk (health (breeding)/cheese)
- Very low input of concentrates

Main buildings and equipments

- Freewalk housing barn
- Roof with solar panels
- Automatic feeding system (Vector)
- 2 x 10 rapid exit
- Reception area with floor heating from the barn

Production / Technical results

- 865000 liters of milk produced, with 6.11 average present vs 7 (average total)
- 4.39 % fat & 3.50 % protein content,
- Stocking rate: 1.53 LU / ha forage area,
- 9400 l of milk /cow /year & 15333 l /ha forage area

Strengths

- High soil organic matter
- Enthusiasm
- Circular mentality
- Creative with secondary income sources (humest, AA milk, cost savings)
- Wood chip bedding

Weaknesses

- Chaotic nature
- Additional inherent costs of farming system
- Keeping focus
- Low P-space
- Level of financing

Opportunities

- Breeding
- Image building
- Improvement of soil
- Developments in human health
- Scaling up of secondary income sources
- Adapt to society wishes

Threats

- CH4 levels of freewalk farming system is higher
- Slothness of policy makers
- No rewarding systems for innovators
- Economic situation (inflation)
- Illogical policies and regulations
- One-issue solutions

Farmer's strategy for a "resilient" system

1) Possibly becoming organic 2) Value increase on farm for milk (cheesery, direct farm sales to consumer, branding (health/animal welfare)) and manure (humest). 3) Strive to be fully self sufficiency.

Aspirations / Needs for the future

Policy that is comprehensible and can therefore be implemented. Rewarding all sustainability measures (reward for CO2-storage). Interest discount at financer (bank). Additional land and land ownership/use and tenancy stability, especially on upgraded land/soil.

Improvement project - objectives

ECONOMY & LABOUR

- Added value of manure and milk

- More organic matter in soil
- No internal input of fertilizers and concentrates

PROJECT

- A2 Milk / BB Milk
- Organic farming as an option

RESOURCE Efficiency

ENVIRONMENT ANIMAL Wellbeing

Partners

WAGENINGEN UNIVERSITY & RESEARCH

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Grondman
Pilot Farm description
Witharen – 2022

NL

Innovations

Environment / Resource efficiency

Farming milestones

2008 Participant Ben & Jerry's supplier

2015 (Re)start dairy farm
New barn with sand and rubber flooring, rotary parlor

2015 Cooperation with other dairy and calf rearer
To increase P-space

2016 Herd increased from 90 to 210

2017 Start new feeding strategy
Increased grazing and summer barn feeding

2021 Additional land purchase

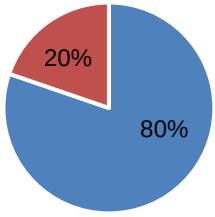
The herd

- 220 dairy cows (28 young stock, 32 calves)
  Breeds : HF + Brown Swiss/Swiss Red
- Calving period : all year round,
- Age at first calving : 24 months

Agricultural Area

Total 119 ha AA

- 95.5 ha grassland
- 23.5 ha corn production
- +5,5 ha grassland to be added



Workforces

- 1,5 labour units (Full Time Equivalent)
- 220 dairy cows & 1426000 l / 1,5 FTE
- Succession guaranteed

Areas of interest

- Energy transition
- More milk from grass
- Complexity of the system (soil/animal)

Main buildings and equipments

- 1 x 36 stall rotary
- 1 main free stall 2+3 with sand bedding with concentrate feeding
- Sand filtering and urine storage

Production / Technical results

- 2140000 liters of milk produced, with 5,7 average present vs 6,8 (average total)
- 4.3 % fat & 3.60 % protein content, 22kg concentrate / 100kg milk
- Stocking rate: 1.85 LU / ha forage area,
- 9737 l of milk /cow /year & 18000 l /ha forage area

Strengths

- Location and flexibility
- Modest, yet curious
- Secondary incomes that connect to society
- Reception/workshop area
- Good (internal/external) cooperation, trustworthy
- Stress resilient

Weaknesses

- Discipline
- Need for additional irrigation of the soil
- Too easy going
- Little room to manoeuvre

Opportunities

- Influence on public
- Succession guaranteed
- Farmers quitting business, allow for room and expansion
- Potential positive outcome of court case (compensation P)
- Interest in data and innovations

Threats

- Unpredictable and erratic policy making
- Trust-based cooperation with partners
- Derogation reduction
- Public opinion and distance with rural areas

Farmer's strategy for a "resilient" system

1) Low energy, energy savings / L milk. 2) Focus on how to keep youngstock rearing outsourced to partner (no youngstock on site in Witharen) 3) Focus on short term strategies and actions to cope with today, opportunistic attitude towards change and future prospective (for succession). Be part of the 25% best in the country on all farm aspects .

Aspirations / Needs for the future

Rewarding systems for innovative applications. Predictable and not changing politics. Political vision. Desires and vision of succession.

Improvement project - objectives

ECONOMY & LABOUR

- Energy (savings)
- Succession

- Milk from fresh grass (summer-grass) feeding
- Technical efficiency

RESOURCE Efficiency

PROJECT

- Increased grazing
- Sand bedding and rubber
- Dry cow management DCAD

ENVIRONMENT ANIMAL Wellbeing

Partners

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Kohne

Pilot Farm description

Middenbeemster– 2022

NL

Innovations

Environment / Resource efficiency

Farming milestones

2013	2020	2021	2021	2021	2022
New free walk barn with wood chips	lower and longer silage storage walls	Change of feed strategy without corn	More grassland, less tulips and field beans	Feed strategy changed to herb rich feeding	Change of ownership
	To reduce silage losses				

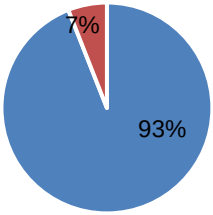
The herd

- 105 dairy cows (44 young stock)
  Breed : HF
- Calving period : all year round
- Age at first calving : 25 months
- Calving interval: 420 days

Agricultural Area

Total 68 total ha AA

- 63 ha grassland
- 5 ha corn



Workforces

- 1,5 labour units (Full Time Equivalent)
- 102 dairy cows & 620000 l / 1,5 FTE
- Succession is likely

Areas of interest

- Circularity; soil quality
- Feed efficiency
- More natural methods of feeding and manure application

Main buildings and equipments

- 1 main free walk stall with wood chips
- 2x Milking robots
- Air ventilation engine/system

Production / Technical results

- 930000 liters of milk produced, with 5,2 average present age (42500 L at culling)
- 4.3% Fat, 3,5% Protein
- Stocking rate: 1.5 LU / ha forage area, 6kg concentrate / cow day
- 9100 l of milk /cow /year & 13600 l /ha forage area

Strengths

- Critical entrepreneurship
- Focus and investment in soil quality and health
- Low protein in rations
- Animal health status
- Circular system (youngstock for own herd)
- Free walk barn

Weaknesses

- Requirement to purchase expensive materials
- Size of the allotment
- Work/house area distance from land
- Organic feeding strategy
- Low permanent grassland

Opportunities

- Planet Proof
- Healthy soil/cows
- Adopting to societal desires
- Higher value manure/compost
- Exception rule for free walk systems in regulation
- No fertilizer use
- Organic farming

Threats

- Unclear/insecure policy making
- Public opinion and specific group opinion
- Subsidy on biomass competes with bedding supply
- Framing of agriculture
- Barn type due to novelty not always incorporated in all systems

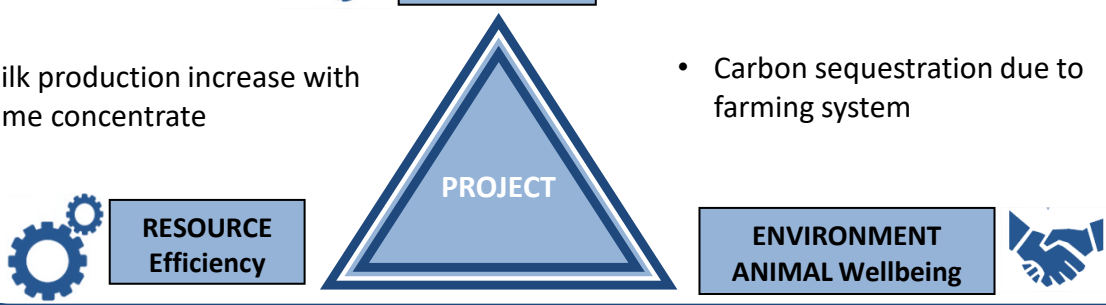
Farmer's strategy for a "resilient" system

1) Work on soil/cow quality and health to work towards organic/fertilizer free 2) Free walking system to support farming philosophy 3) Reduction of derogation will lead to having less livestock and sales of higher value composting material

Aspirations / Needs for the future

Clear policy (regional) and security of those, abiltity to make sustainable plans. Free walking system recognized as an emission low farming system.

Improvement project - objectives



Partners

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Vlaming
Pilot Farm description
De Waal – 2022

NL

Innovations

Environment / Resource efficiency

Farming milestones

2016 Start change to organic farming

2017 Move of farm to new location

Old farm has become natural land and 40 ha of additional natural land on new farm

2017 Building of new barn

Low emission freewalk artificial floor

2019 Herb rich grassland

2019 Oxes on farm

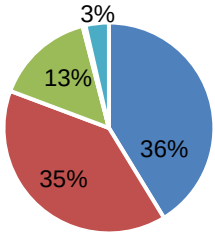
The herd

- 110 dairy cows (30 oxes, 90 young stock)
  Breed : HF
- Calving period : all year round, steering at seasonal calving
- Age at first calving : 27 months

Agricultural Area

Total 111 total ha AA

- 46 ha grassland
- 44 ha natural grassland
- 17 ha temporary grassland
- 0.5 ha herb rich grass
- 4 ha corn



Workforces

- 1,1 labour units (Full Time Equivalent)
- 110 dairy cows & 454545 l / 1,1 FTE
- Aim is to get more support in labour

Areas of interest

- Circularity
- Energy transition
- Soil, fertilization
- Own production, cheese making, meat
- Tourism

Main buildings and equipments

- 1 main free walk stall with manure separation floor
- Separate storage for slurry manure and urine
- 2x Milking robots

Production / Technical results

- 500000 liters of milk produced, with 5,1 average present age
- Stocking rate: 1 LU / ha forage area, 2-3kg concentrate / cow day
- 5000 l of milk /cow /year & 4500 l /ha forage area

Strengths

- Grassland management professionality
- Practical thinker
- Innovation focus
- In-house interdisciplinary knowledge on mechanics and business

Weaknesses

- Labour requirement
- N permit space
- Low production per cow
- Stability of income

Opportunities

- Regional pilot on water infiltration
- Tourism on the island
- Farm/business flexibility towards arable
- Rewarding system for organic style farming

Threats

- P, N – spaces
- Low rewarding for circular systems/thinking
- N permit limits
- No investment possibilities
- Increasing sea water level (land salination)
- Drought for longer periods

Farmer's strategy for a "resilient" system

1) **Focus on public awareness and exposure (cheesery) and additional income from tourism.**
2) **Soil and grassland management – as much from own land, increased quality, fertilization, organic and circular agriculture**
3) **Increase production (in robot + cow toilet) and connection with the public using innovations**

Aspirations / Needs for the future

Cheesery knowledge/investment, Cow Toilet, improve freewalk artificial floor

Improvement project - objectives

ECONOMY & LABOUR

- Need for support and invest in labour
- Focus on tourism

- Low input, increase output
- 6000-7000 L / cow
- Improve grassland management

PROJECT

RESOURCE Efficiency

- Floor quality and bedding
- Being/remain self-sufficient
- Additional nature land for oxes/young stock

ENVIRONMENT ANIMAL Wellbeing

Partners

WAGENINGEN UNIVERSITY & RESEARCH

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JONGBLOED
Pilot Farm description
Wytgaard – 2022

NL

Innovations

Environment / Resource efficiency

Farming milestones

1917 Farm starts under grand - grandfather (4th generation)

1978 Free stall built

1992 Increase barn size

2006 Youngstock barn + additional owners

2015 No more corn production due to soil quality

2012 All brothers in the farm ownership

2016 Increase barn size (License for 160 cows, but due to regulation back to 125 (leased P-space))

2017 New/changed milk parlor

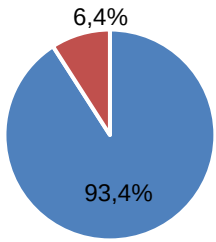
The herd

- 150 dairy cows (60 young stock)
  Breed : HF + Jersey/Fleckvieh/Noors RB
- Calving period : all year round
- Age at first calving : 24 months
- Calving interval: 441 days

Agricultural Area

Total 80 total ha AA

- 80 ha grassland
- Of which 8 ha herb rich



Workforces

- 3 labour units (Full Time Equivalent)
- 150 dairy cows & 466666 l / 3 FTE
- Succession has recently occurred and family is very supportive to farming

Areas of interest

- Self supportive, grass management
- Production from own roughage / grass
- Year round grazing (195 days) / 10 hours / day
- 25% best regarding cow health

Main buildings and equipments

- 2x2 side-by-side, with movable floor
- New young stock barn
- Low emission floor (eco) –
- 2+2 free stall barn
- Lots of self-owned machinery

Production / Technical results

- 1.4 M liters of milk produced, with 5,3 average present age (7 years at culling)
- 10 cows > 100.000L production, some health issues with mycoplasma
- 4.54% Fat, 3.64% Protein
- Stocking rate: 1.8 LU / ha forage area, 2400+350kg – 6.7 concentrate / cow day / yr
- 9400 l of milk /cow /year & 13600 l /ha forage area

Strengths

- In top 25% best performers (good technical results)
- Strong family cooperation
- Self –sustainable and adaptive
- Location and land close to farm
- Good genetics cows
- Sharing of land

Weaknesses

- Risk of friction in the family
- Fertility, Claw health
- Time to adapt/evolve
- Lack of time for social/work balance
- Lack of focus on own farm due to work other farms
- Efforts going into old herd

Opportunities

- Being a pioneer
- Potential succession within neighbour(ing) farm(s)
- New Dutch rewarding system (GLB)
- Planet Proof

Threats

- Government uncertain/unpredictable policy
- Animal health issues
- Reduction of derogation
- Society view/opinion and distance between rural areas and city
- Small market for higher value milk
- Stability of income
- City expansion

Farmer's strategy for a "resilient" system

1) Focus on genetics 2) Focus on technical soil/grassland and animal management (health) using interdisciplinary strength within the family 3) Feed and manure management 4) Keep an eye open for entrepreneurial opportunities, as a team, yet still independent (internally and externally). 5) Exposure to the community to improve goodwill and image of the sector (transparency)

Aspirations / Needs for the future

Space to purchase and expand to other nearby farm, national government vision (long term vision), clarity and consistent policies.

Improvement project - objectives

ECONOMY & LABOUR

- Getting into higher reward systems (Dutch 'GLB')
- Balance between farm/external labour

- Different crops (Luzern?)
- Milk solids, fertility

PROJECT

- Improve genetics
- Improve claw health

RESOURCE Efficiency

ENVIRONMENT ANIMAL Wellbeing

Partners

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VAN ROESSEL
Pilot Farm description
Haarsteeg – 2022

NL

Innovations

Environment / Resource efficiency

Farming milestones

2004	2014	2017	2019	2021	2022
Start social care farm	Low emission floor installed	Social care branch privatized	Gas production and flaring	Purchase of P-space	Gas collection

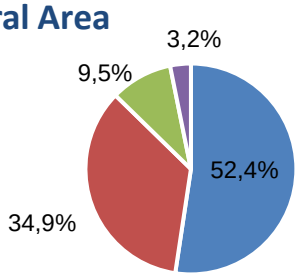
The herd

- 64 dairy cows (44 young stock)
  Breed : HF
- Calving period : all year round
- Age at first calving : 25 months

Agricultural Area

Total 63 total ha AA

- 33 ha grassland
- 22 natural grassland
- 6 maize
- 2 arable



Workforces

- 1,5 for the cows labour units (Full Time Equivalent) + 1 FTE volunteers
- 2 FTE total for the human care
- 64 dairy cows & 176465 l / 1 FTE

Areas of interest

- Energy transition and production
- Technical and creative development
- Inventions

Main buildings and equipments

- 1 Boumatic double milking robot with 3D cameras
- Mobile biogas production and compactor installation
- Low emission floor to separate feces and urine. And mechanical separator to separate feces in liquid and solids.

Production / Technical results

- 0.53 M liters of milk produced
- 4,47% Fat, 3,59% Protein
- Stocking rate: 1.3 LU / ha forage area
- 8270 l of milk /cow /year & 9625 l /ha forage area

Strengths

- Optimal barn with low NH3 emissions
- Technical efficiency and self sufficency
- Creative, entrepreneurial spirit
- High quality roughage
- Human care branch

Weaknesses

- Danger of focus loss, due to having two business branches
- Chaotic management and character

Opportunities

- Availability of additional land plots nearby
- Potential to become (more) extensive
- Business opportunities regarding methane
- Expand the human care branch with care professionals

Threats

- Size of the investment
- Continuity of the human care branch
- Lack of government vision
- Pressure on the sector and expectations on successor

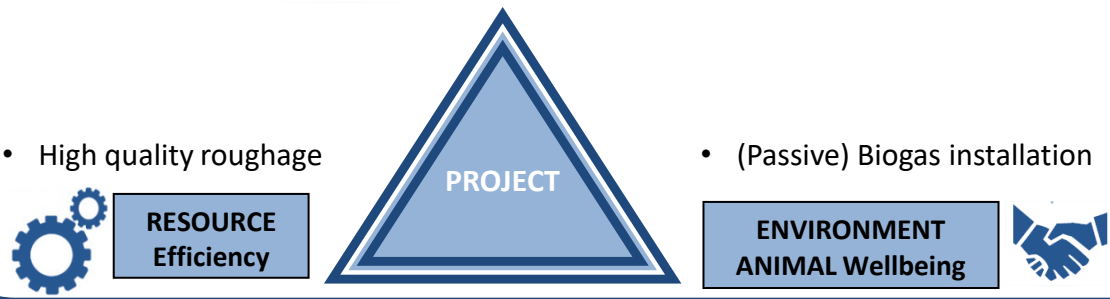
Farmer's strategy for a "resilient" system

1) Focus on potential valorization of methane 2) expansion, professionalization of the human care branch 3) extensivation, more ha's

Aspirations / Needs for the future

1) Availability of land plots 2) clarity and vision on regulation and future perspective

Improvement project - objectives



Partners

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VLIERT
Pilot Farm description
Biddinghuizen – 2023

NL

Innovations

Environment / Resource efficiency

Farming milestones

2006	2006	2010	2014	2019	2021	2022
Setup farm at new location with new barn	Increase in herd size and cooperation with neighbouring arable farm	New young stock barn	Puchase of 12 ha more land	Solar panels, Start grazing	Introduction of herb rich grassland	Increase in cooperation with arable farm

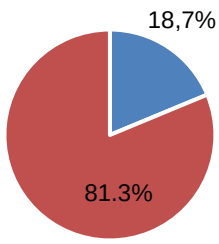
The herd

- 120 dairy cows (80 young stock)
  Breed : HF
- Calving period : all year round
- Age at first calving : 23 months
- Calving interval: 450 – but this is not an item on the farm (insemination is around 100 days)

Agricultural Area

Total 64 total ha AA

- 12 ha herb rich grassland
- 52 in rotation with the arable farm



Workforces

- 1,6 FTE

Areas of interest

- Circular farming
- Cooperation with arable farm
- Breeding and genetics
- Animal welfare

Main buildings and equipments

- Robots
- Milk cow barn
- New young stock barn

Production / Technical results

- 1.24 M liters of milk produced, with 7,5 years at culling
- Few last years (about 16) > 100.000L production
- 4.42% Fat, 3.38% Protein
- Stocking rate: 2.23 LU / ha forage area,
- 10333 l of milk /cow /year & 19375 l /ha forage area

Strengths

- Longevity of the cows
- Cooperation with arable farm
- Focus on animal welfare
- High labour efficiency
- Passion for dairy farming
- Succession guaranteed

Weaknesses

- Claw health
- Feeding management
- Emotions regarding nitrogen and
- Legal nitrogen status and permits ('PAS-melder')

Opportunities

- Land is a solid investment
- Neighbouring arable farms
- Open mindedness
- Secondary income source
- Quality animals
- Crossbreeding beef
- Reduction of grazing time no problem Milk processor

Threats

- Interest increase
- Nitrogen regulations
- Climate (change) policies
- Investment for succession
- Government vision/clarity on regulations

Farmer's strategy for a "resilient" system

1) Focus on genetics 2) Cooperation with arable farms, improve regional circularity 3) improve milk production (liters/values) 3) focus on cost price reduction: mechanization, animal health

Aspirations / Needs for the future

Clarity on vision of regulations and good relationship with arable farms

Improvement project - objectives

ECONOMY & LABOUR

- Low cost price – mechanization
- Succession guaranteed

- Cooperation with arable farms
- Use of clover to reduce artificial manure

RESOURCE Efficiency

PROJECT

- Genetics
- Longevity
- High quality animals

ENVIRONMENT ANIMAL Wellbeing

Partners

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R4D DAIRY FARM NETWORK

Farm's presentations

6 Pilots Farms

NORTHEM IRELAND

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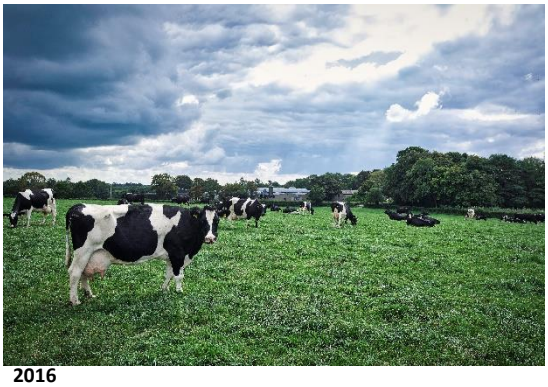
Hugh Harbison
Pilot Farm description
Aghadowey - 2022

N. Ireland

Innovations

Socio-economic Resilience / Environment



Farming milestones

2015
New calf house

2016
Joined Grasscheck

2017
Updated milking parlour with Feed to Yield

2020
Joined ARCZero

2021
New heifer house

The herd

- 240 Livestock Units (LU)
- 180 dairy cows
  Breed: Holstein-Cross
- 50 dairy heifers
- 50 calves
- Calving period : Block Calving - autumn
- Age at first calving : 24 months

Agricultural Area

108 ha Farm
80 ha owned
28 ha rented
Stocking rate: 2.85LU/ha forage area
Permanent grassland
Multi Species Swards – 7ha
Rotational/strip grazing system
Grazing 4.5 CE/ha

Workforce

- Farmer (Full time)
- Family help – e.g. Father
- 1 man full time labour
- 1 man part time labour

Areas of interest

- Sustainability
- Conservation
- Forage quality
- Milk quality

Main buildings and Equipment

- Low emissions slurry spreading equipment – trailing shoe
- 20 points swingover – automatic drafting
- 220 full size cubicles
- AG Duo sawdust bedder
- Platemeter
- 28 teat batch calf feeder
- Automatic scrapers

Production / Technical results

- Yield – 8626 litres
- 4.40% butterfat and 3.54% protein
- Feed – 2.51T
- Milk from forage – 3216kg
- Milk solids – 685kg
- Milk sold to Dale Farm Cooperative
- Cost of production – £0.321/litre (incl family
- Labour)
- Rotational/strip grazing system

Strengths

- Innovative - willing to try new things and take part in R&D.

Weaknesses

- Heavy land – very high clay content, black peat type soils
- High rainfall – over 1000mm annual rainfall

Opportunities

- Net Zero Farming – already ahead of most farms
- Renewables

Threats

- Increasing Feed and Fertiliser costs
  Energy costs
- Decreased milk payments from pre price rise milk contract

Farmer's strategy for a "resilient" system

Making use of good quality grazed and conserved forage
Reducing artificial fertiliser usage through the use of clover and multi-species swards
Operates a compact autumn block calving system, with a 88% in calf rate

Aspirations / Needs for the future

Continue to reduce fertiliser usage through more use of clover and multi species swards
Aiming to reach Net Zero carbon emissions on farm through reducing cow size, reduced fertiliser usage, and continuing to maximise technical efficiency

Improvement project - objectives

- Reduce work load

ECONOMY & LABOUR

- Optimize dairy gross margin
- Keep a good global profitability for a knowledge transfer centre

- Reduce concentrate for cow
- Save water consumption
- Reduce cow size
- Reducing artificial fertiliser use

RESOURCE Efficiency

PROJECT

- Keep a good mineral balance
- Improve forage self-sufficiency

ENVIRONMENT ANIMAL Wellbeing

Partners

AgriSearch NI
Driving Excellence & Innovation

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Ian McClelland
Pilot Farm description
Banbridge - 2022

N. Ireland

Innovations

Socio-economic Resilience / Environment

Farming milestones

2015 Started Milking with 56 Cows

2016 Joined GrassCheck

2017 Built Cubicle House

2018 Built Calf House

2021 Joined 2 x EIP groups

2021 Became R4D Pilot Farm

The herd

- 120 Livestock Units (LU)
- 90 dairy cows
  Breed: Holstein
- 25 dairy heifers
- 25 calves
- Calving period : Block Calving - autumn
- Age at first calving : 24 months

Agricultural Area

50 ha Farm

- Own 46ha
- Rent 4ha
- All permanent grassland
- Stocking rate: 2.2 LU / ha forage area
- Extended Grazing System
- Grazing 5 CE/ha

Workforces

- Farmer (Full-Time)
- Relief Milker (Part-Time)
- Family help e.g. children
- **Aims** : Efficiency, Make best use of time

Areas of interest

- Economic efficiency
- Grassland Management
- Forage Quality
- Sustainability

Main buildings and Equipment

- 12 Point Swing-over Parlor
- 136 Full Size Cubicles
- Generous Sawdust Bedding for Cows & Calves – Free from Local Mill
- Platemeter
- Low emission slurry spreading – Dribble Bar
- Variable rate fertiliser Sower and GPS

Production / Technical results

- Yield - 10,017 litres
- Feed – 3.14T
- Milk from Forage – 3028 litres
- 3.86 % Butter Fat & 3.21 % protein
- Milk solids – 708kg
- Extended grazing system
- Milk sold to Lakeland Dairies
- £0.189/lire cost of production (inc. family labour)
- £1312 Net Profit per cow (avg. £875)

Strengths

- Innovative - willing to try new things and take part in R&D
- New entrant – committed to business objectives

Weaknesses

- Restricted by Farm Size – additional hectarage difficult to obtain in Northern Ireland

Opportunities

- Net Zero Farming – already ahead of most farms

Threats

- Increasing Feed and Fertiliser costs

Farmer's strategy for a "resilient" system

Aspirations / Needs for the future

Improvement project - objectives

- Reduce work load

ECONOMY & LABOUR

- Optimize dairy gross margin
- Keep a good global profitability for a knowledge transfer centre

- Reduce concentrate for cow
- Save water consumption

RESSOURCE Efficiency

PROJECT

- Keep a good mineral balance
- Improve forage self-sufficiency

ENVIRONMENT ANIMAL Wellbeing

Partners

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Jack Johnston
Pilot Farm description
Ahoghill, Co. Antrim - 2022

N. Ireland

Innovations

Socio-economic Resilience / Environment

Farming milestones

2005 – New dairy unit built

2007 – Cow numbers increased from 120 to 200

2017 – Mark and Jack came home to farm

2017 – Joined Grasscheck

2021 – 26ha purchased

2022 – Parlour extension for extra 4 units

The herd

- 417 Livestock Units (LU)
- 275 dairy cows
  Breed: Holstein-Friesian
- 100 dairy heifers
- 100 calves
- 55 beef cattle
- Calving period : Block Calving – autumn, calving over 6 months
- Age at first calving : 24-25 months

Agricultural Area

198 ha Farm

- 68ha rented
- Mainly permanent grassland, 16ha used for growing barley, 7ha used for growing wholecrop rye
- Stocking rate: 2.4LU/ha forage area
- Rotational grazing system
- Autumn calving cows kept in from September, turned out in March

Workforces

- Farmer (Full time), Father and Brother
- 3 relief milkers
- **Aims:** Using technology to reduce labour

Areas of interest

- Forage quality
- Grassland management
- Sustainability

Main buildings and Equipment

- Wind turbine and solar panels
- Low emission slurry spreading – dribble bar
- GPS fertiliser application
- 24 point Dairymaster swingover parlour
- 20 cubic metre Trioliet diet feeder
- 2x Volac automatic calf feeders
- Delaval robotic scrapers

Production / Technical results

- Yield – 8433 litres
- Feed – 2.91T
- Milk from forage: 3050 litres
- 4.06% butterfat, 3.36% protein
- Milk solids – 626kg
- Milk sold to Dale Farm Cooperative
- Rotational grazing system
- Cost of production - £0.31
- Net profit - £887 per cow
- Dairymaster Moomonitor heat detection system

Strengths

- Good grazing platform – able to get cows out early to grass
- Innovative – willing to try new technology and take part in projects

Weaknesses

- Lacking cubicle space for herd expansion
- More part time labour required

Opportunities

- Net Zero Farming – already ahead of most farms
- Improving cow fertility
- Renewables – solar panels and wind turbine on farm

Threats

- Increasing Feed and Fertiliser costs
- Large amount of land on short term lease

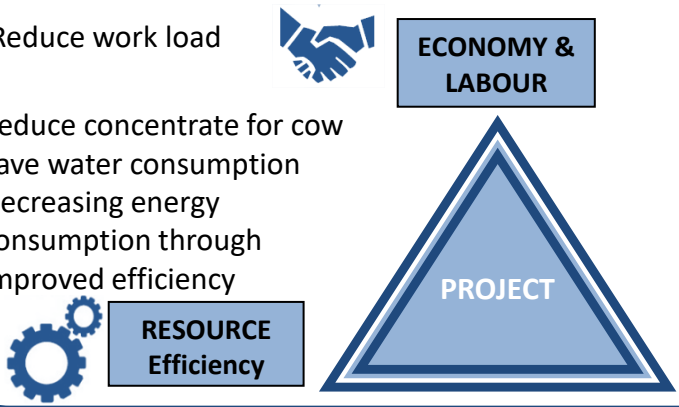
Farmer's strategy for a "resilient" system

Using more home grown feed, including grassland, wholecrop and cereals to reduce bought in concentrate usage. Focussing on longevity of cows through improving fertility and milk solids. Looking to introduce more clover into the grassland swards. Regular reseeding of grassland to maintain grass quality.

Aspirations / Needs for the future

Wanting to increase herd size, however infrastructure and staffing will need to be updated and increased. Wanting to introduce more clover into the grassland swards, however this will require a change in management style to make clover incorporation effective.

Improvement project - objectives



Partners

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Driving Excellence & Innovation

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John Rafferty
Pilot Farm description
Poyntzpass, Co.Down - 2022

N. Ireland

Innovations

Socio-economic Resilience / Precision

Farming milestones

2008 Started Zero Grazing

2010 2x Lely Astronaut Milking robots installed

2012 Lely Vector automated diet feeder installed

2013 Added 20kw solar PV panels

2020 New dry cow house built

2021 Additional farm 14 acres

The herd

- 210 Livestock Units (LU)
- 150 dairy cows, milking 115 year round
  Breed: Holstein
- 44 dairy heifers
- 40 calves
- 40 beef cattle
- All year round calving
- Age at first calving : 26 months
- Full confinement system

Agricultural Area

72 ha Farm

- 62ha permanent grassland, 10ha used for growing wholecrop rye
- Stocking rate: 2.9LU/ha forage area
- Zero grazing system being changed to full TMR system
- Regular reseeding of grassland taking place to improve grass sward quality

Workforces

- Farmer (Full time)
- Family help (Father)
- CAFRE Student
- **Aims –** using technology to reduce labour

Areas of interest

- Forage quality
- Grassland management
- Sustainability
- Automation

Main buildings and Equipment

- Low emission slurry spreading – dribble bar
- Lely automatic calf feeders
- Slurry bubbler system
- 2x Lely Milking robots
- Lely Vector automated diet feeding
- Lely automated scraper
- COSMIX Out of parlour feeders

Production / Technical results

- Yield – 10076 litres
- Feed – 3877kg
- Milk from forage: 1460 litres
- 4.13% butterfat, 3.38% protein
- Milk solids – 757kg
- Milk sold to Lakeland Dairies
- Margin over concentrate – £1748
- Gross Margin per cow - £1468
- Full confinement system fed TMR

Strengths

- Fully automated dairy – offers flexibility
- Good land base - All Land within 2 miles of home farm

Weaknesses

- Land is quite hilly, but can still be managed effectively

Opportunities

- Net Zero Farming – already ahead of most farms
- Renewables- wind on farm

Threats

- Increasing Feed and Fertiliser costs

Farmer's strategy for a "resilient" system

Breeding strategy has been focussed on producing smaller cows to reduce maintenance requirements and for easier management. Other breeding focuses include improving fert ility, reducing lameness and improving locomotion, and improving milk components. There is a focus on improving grass silage quality to increase production and cut concentrate costs.

Aspirations / Needs for the future

Any developments in automation in the future that can improve business efficiency will be adapted on farm. Investment in silage storage is required to cut the risk of any environmental damage. Investment in renewable energy on farm will be important in the future to reduce energy consumption from the Grid.

Improvement project - objectives

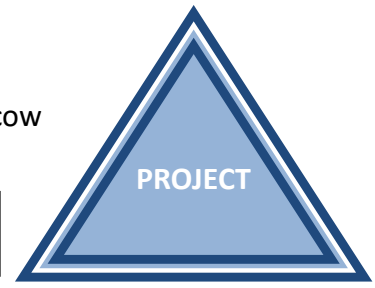
- Reduce work load

ECONOMY & LABOUR

- Optimize dairy gross margin
- Keep a good global profitability for a knowledge transfer centre

- Reduce concentrate for cow
- Save water consumption

RESSOURCE Efficiency



- Keep a good mineral balance
- Improve forage self-sufficiency

ENVIRONMENT ANIMAL Wellbeing

Partners

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Samantha McCarroll
Pilot Farm description
Fintona, Co. Tyrone - 2022

N. Ireland

Innovations

Socio-economic Resilience/ Environment

Farming milestones

2015 Purchased farm

2015 Installed Dairymaster parlour

2016 Joined Business Development Group

2021 Installed Lely robotic scraper

2022 Increased grass grown on farm from 6.5t/DM/ha/year to 10.5t/DM/ha/year since starting the farm

The herd

- 137 Livestock Units (LU)
- 95 dairy cows
  Breed: Jersey x Friesian and Irish Holstein Friesian
- 20 dairy heifers
- 28 dairy calves
- Calving period : Block Calving – Spring calving over 10 weeks
- Age at first calving : 24 months

Agricultural Area

66 ha Farm

- 19ha rented
- All permanent grassland
- Stocking rate: 2.08LU/ha forage area
- Extended grazing system – cows grazing by day from mid February weather permitting
- 12 hour strip grazing during summer

Workforces

- Farmer (Full time)
- Farming Partnership with Husband
- Casual labour – relief milkers
- **Aims: Make best use of time**

Areas of interest

- Forage quality
- Grassland management – milk from forage
- Sustainability

Main buildings and Equipment

- Low emission slurry spreading – dribble bar, done by contractor
- Dairymaster 10 point swingover, plate cooler, variable rate milk pump
- Lely Robotic scraper
- Cut and weigh equipment for measuring grass, used with Agrinet to optimally utilise grass
- 110 full size cubicles

Production / Technical results

- Yield – 5460 litres
- Feed – 0.699T
- Milk from forage: 3907 litres
- 4.65% butterfat, 3.71% protein
- Milk solids – 456.46kg
- Milk sold to Glanbia Milk
- Cost of production - £0.317/litre (including family labour and finance)
- Net Profit - £394/cow
- Sexed semen used for 3 weeks, beef bull after

Strengths

- Maximising grassland utilisation through extended grazing
- Excellent cow fertility
- Excellent milk from forage and milk solids

Weaknesses

- High rainfall area and farm is considered wet
- Lower cow yield compared to other systems

Opportunities

- Net Zero Farming – already ahead of most farms
- Grow more grass – increased soil fertility

Threats

- Increasing Feed and Fertiliser costs

Farmer's strategy for a "resilient" system

Maximising use of grass through extended grazing and strip grazing herd. Excellent herd fertility with good quality cows, use of sexed semen in first 3 weeks of breeding to breed replacements, with other cows put to the bull to breed beef calves for sale.

Aspirations / Needs for the future

Increase grass production through improved soil fertility and similar amount of chemical nitrogen, increasing milk production – components and litres. Strategising meal use through increasing feeding during peak milk production.

Improvement project - objectives

- Reduce work load

ECONOMY & LABOUR

- Optimize dairy gross margin
- Keep a good global profitability for a knowledge transfer centre

- Keep concentrate/cow similar
- Save water consumption

RESOURCE Efficiency

PROJECT

- Keep a good mineral balance
- Improve forage self-sufficiency

ENVIRONMENT ANIMAL Wellbeing

Partners

AgriSearch NI
Driving Excellence & Innovation

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Thomas Steele
Pilot Farm description
Kircubbin, Co.Down - 2022

N. Ireland

Innovations

Socio-economic Resilience / Precision

Farming milestones

2010 Started Milking in new unit

2013 New straights shed

2018 Additional farm with 30 acres

2019 Additional farm with 50 acres

2019 Moved towards GPS Mapping of fields

The herd

- 750 Livestock Units (LU)
- 520 dairy cows
  Breed: Holstein-Friesian
- 200 dairy heifers
- 200 calves
- Autumn to spring calving system
- Age at first calving : 23.5 months
- 3 times a day milking

Agricultural Area

303 ha Farm

- 140ha rented
- 200ha permanent grassland, 48ha forage maize,10ha lucerne, 44ha wheat and barley
- Stocking rate: 2.14LU/ha forage area
- Fully housed dairy system on TMR
- Mix all straights for cow diets

Workforces

- Farmers – Father and 2 brothers
- 5 full time
- 5 relief milkers
- **Aims:** Using technology to reduce labour

Areas of interest

- Forage quality
- Sustainability
- Automation
- Animal genetic quality

Main buildings and Equipment

- Low emission slurry spreading – trailing shoe
- Variable rate fertiliser spreading, GPS fertiliser application
- Straights store
- 60 point Fullwood rotary parlour
- Lely automated silage pusher
- Slurry bubbler system
- Strautmann 28 cubic metre diet feeder
- Solar panels

Production / Technical results

- Yield – 10400 litres
- Feed – 2.8T
- Milk from forage: 3500 litres
- 3.99% butterfat, 3.24% protein
- Milk solids – 752kg
- Full indoors TMR system
- Milk sold to Lakeland Dairies
- £0.34/litre cost of production (Including family labour)
- AfiFarm Herd Management system

Strengths

- Good land base, all land within 5 miles of farm
- Herd genetic quality
- Innovative - willing to try new things and take part in R&D

Weaknesses

- Low rainfall area and light land
- Lacking skilled labour
- Farm infrastructure investment required

Opportunities

- Home grown proteins
- Trying to reduce Carbon footprint
- Renewables – solar panels on farm
- Genetics – more tailored use of sexed and beef semen

Threats

- Increasing Feed and Fertiliser costs
- Public misconception of farming practices

Farmer's strategy for a "resilient" system

Focussing on longevity of the herd – breeding for fertility, good feet, and cell count More dependency on home grown proteins. Making more use of measured data to improve performance. Making use of Precision GPS mapping to improve record keeping.

Aspirations / Needs for the future

Need to breed the low maintenance cow. Investment in staff training to upskill staff to improve daily management. Investment in infrastructure required in the future to continue to build and improve the business. To make more use of automation

Improvement project - objectives

- Reduce work load

ECONOMY & LABOUR

- Optimize dairy gross margin
- Keep a good global profitability for a knowledge transfer centre
- Educating the public on farm practices and quality of welfare

- Reduce concentrate for cow
- Make more use of rainwater harvesting

RESOURCE Efficiency

PROJECT

- Keep a good mineral balance
- Improve forage self-sufficiency and protein self sufficiency

ENVIRONMENT ANIMAL Wellbeing

Partners AgriSearch NI Driving Excellence & Innovation

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R4D DAIRY FARM NETWORK

Farm's presentations

7 Pilots Farms

FINLAND

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Koivurannan tila

Niko & Hanna Mähönen

Maaninka 2022

Finland

Innovations

Resource efficiency /Socio-economic Resilience

Farming milestones

2008
First loose housing barn built with milking parlour (Now the barn is used by heifers)

2018
New barn and AMS (milking robot)

2020
3 feed silos built

2021
Separate barns renovated and expanded for heifers and calves

The herd

- 470 Livestock Units (LU)
- 285 dairy cows
  Breeds : Holstein (85%)
  Nordic Red (15%)
- 180 dairy heifers
- Calving period : all year round
- Age at first calving : 24.5 months

Agricultural Area

380 ha AA

- 280 ha grass silage
- 10 ha pastures
- 10 ha other grasses
- 80 ha cereal grains

Workforces

- 2 farmer
- 3.5 employees + 2 during harvest season
- Machinery cooperation and working together with Kuikkalahti dairy during harvest season

Areas of interest

- New manure separation systems
- Cooperation and networking with other farms
- Continuous development of the business

Main buildings and equipment

- Loose housing barn for dairy cows, water beds
- 4 milking robot (Lely Astronaut A5)
- Feed mixer wagon (TMR feeding)
- Lely Juno- Automatic feed pusher
- Individual boxes for young calves
- Heifers and calves in separate barns, deep straw bedded lying area for calves

Production / Technical results

- 3 050 000 liters of milk produced per year
- 4.21 % fat & 3.4 % protein content
- Stocking rate: 1.6 LU / ha forage area
- 10 500 l of milk /cow /year & 6 382 l / ha forage area
- Carbon footprint 1.16 kg CO_2 e/kg ECM

Strengths

- A modern farm that is rapidly developing and capable of rapid changes
- Good availability of labour

Weaknesses

-
-

Opportunities

- Good field/animal relationship → easier to plan farm expansion

Threats

- Agricultural policy
- High prices of inputs (e.g. fertilisers, concentrate feeds)

Farmer's strategy for a "resilient" system

Continuing business development and keeping up-to date.
Well prepared for time of crisis.

Aspirations / Needs for the future

Expansion on the farm in the future.

Improvement project - objectives

ECONOMY & LABOUR

- Excellent harvesting machines
- Excellent milking system

- Responsibility compensation (Valio dairy company)
- Compensation for welfare and environment (Valio)
- Carbon footprint calculations

PROJECT

RESSOURCE Efficiency

ENVIRONMENT ANIMAL Wellbeing

Partners

Luke
NATURAL RESOURCES INSTITUTE FINLAND

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Kuikkalahti Dairy

Markus & Heli Rytkönen

Maaninka

Facebook: Kuikkalahti Dairy

Finland

Innovations

Resource efficiency / Socio-economic Resilience / Environment

Farming milestones

2015
New barn and AMS (milking robot)

2018
850 000 kg milk / one robot

2020
12 000 ECM / cow / year
Calvings / cow 3.0

2023
Recycled manure solids as a bedding material, automated spreading system

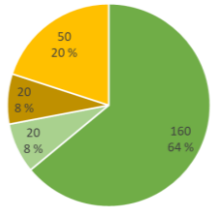
The herd

- 285 Livestock Units (LU)
- 210 dairy cows
  Breeds : Holstein 85%, Nordic Red 15 %
- 130 dairy heifers
- Calving period : all year round
- Age at first calving : 23 months

Agricultural Area

250 ha AA

- 160 ha grass silage
- 20 ha pastures
- 20 ha whole crop cereal
- 50 ha barley grains



Workforce

- 2 farmers
- 3 employees
- Machinery cooperation and working together with Koivuranta dairy during harvesting season.

Areas of interest

- Increasing utilization of technology
- Communication towards general public; student groups, training days…
- Cow breeding (Semex company)

Main buildings and equipment

- Loose housing barn for dairy cows
- 3 milking robots (Lely Astronaut A4)
- Feed mixer wagon (TMR feeding)
- Recycled manure solid bedding spread automatically
- Heifers and calves in separate barns, deep straw bedded lying area for calves

Production / Technical results

- 2 300 000 liters of milk produced
- 4.25 % fat & 3.33 % protein content
- Stocking rate: 1.4 LU / ha forage area
- 11 500 l of milk /cow/305 d & 11 500 l / ha forage area
- Carbon foot print: 0.86 kg CO_2 e/kg ECM (energy corrected milk)

Valio

Strengths

- Modern farm
- Good cooperation network
- Enthusiasm for the development of the whole dairy sector

Weaknesses

- Lack of field area

Opportunities

- Open minds for change
- Social media

Threats

- Agricultural policy
- High prices of inputs (e.g. fertilisers, concentrate feeds)

Farmer's strategy for a "resilient" system

Enthusiasm for development
Well prepared for time of crisis
Good network and enough resources

Aspirations / Needs for the future

Expansion of the farm in the future / fourth milking robot

Improvement project - objectives

- Recycled manure solids as a bedding material
- Ventilation in barn
- Improvements in the conditions of dry cows

ECONOMY & LABOUR

- Responsibility compensation (Valio dairy company)
- Compensation for welfare and environment (Valio)
- Carbon footprint calculations

PROJECT

RESSOURCE Efficiency

ENVIRONMENT ANIMAL Wellbeing

Partners

Luke
NATURAL RESOURCES INSTITUTE FINLAND

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Kuukkajärvi

Pellervo Kässi & Ulla Heinonen

Uurainen 2022

Finland

Innovations

Technical efficiency

Farming milestones

2000
Build loose-house barn for cows

2006
Barn extension and two milking robots

2015
Generation change

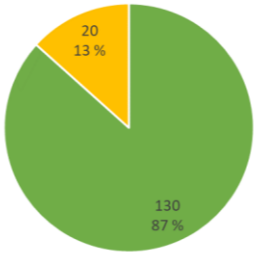
The herd

- 135 Livestock Units (LU)
- 95 dairy cows
  Breeds : Holstein (60%), Nordic Red (30%), Finncattle (9%), Jersey (1%)
- 48 dairy heifers
- Calving period : all year round
- Age at first calving : 26 months

Agricultural Area

150 ha AA

- 130 ha grassland
- 20 ha cereal grains



Workforces

- 1 full time, summer intern 3 months and one employee in the barn
- **Aims** : Labour efficiency

Areas of interest

- Labour organization solutions
- Feeding: total mixed ration

Main buildings and equipments

- Half warm loose housing dairy barn
- 2 milking robots
- Slatted floors

Production / Technical results

- 826 400 liters of milk produced
- 5.00 % fat & 3.97 % protein content
- Stocking rate: 0,9 LU / ha forage area
- 8 700 l of milk /cow /year & 5 509 l / ha forage area
- The breeding criteria: easy calvings and genetically polled animals
- All animals grazing for 5 months

Strengths

- Relatively little work in the barn.
- Grazing all animals
- Use of a mixture of 8 grass species

Weaknesses

- Production level has not worked as desired
- Would need some employee to 1/3 part-time.
- Motivational problems

Opportunities

- Change of production direction, plant cultivation
- Good location
- Development of responsible production

Threats

- Weather risks

Farmer's strategy for a "resilient" system

- The aim is to keep legumes in cultivation -> nitrogen fixation, savings in fertilization costs

Aspirations / Needs for the future

- Modern data management of milking robot

Improvement project - objectives

- Increasing the amount of employees

ECONOMY & LABOUR

- Biogas plant

RESSOURCE Efficiency

PROJECT

- Ethics of production
- Reduction of environmental load

ENVIRONMENT ANIMAL Wellbeing

Partners

Luke
NATURAL RESOURCES INSTITUTE FINLAND

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Nikkanen
Juho Nikkanen
Somero 2022

Finland

Innovations

Socio-economic Resilience / Environment

Farming milestones

2013
Started farming with family members

2016
Farm type changed to limited company

2020
New loose-housing barn

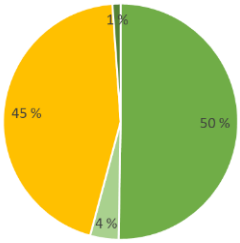
The herd

- 184 Livestock Units (LU)
- 125 dairy cows
  Breed : Holstein 70 %, Nordic Red 30%
- 50 dairy heifers + calves 75
- Calving period : all year round
- Age at first calving : 24.1 months

Agricultural Area

177 ha AA

- 90 ha grass silage
- 7 ha Clover-grass
- 2 ha pasture
- 80 ha cereals



Workforces

- 3 labour units (Full Time Equivalent)
- 41.7 dairy cows & 500 000 l / FTE

Areas of interest

- Transparency of production towards consumers
- Carbon farming
- Quality of grass silage
- Animal welfare

Main buildings and equipments

- Loose housing barn with curtain walls
- Resting cubicles 3x2, cow mattresses with peat bedding
- 2 milking robots
- Heifers and calves in separate building

Production / Technical results

- 1 500 000 l of milk produced (98 % sold)
- 4.29 % fat & 3.53 % protein content
- Stocking rate: 1.9 LU / ha forage area
- 12 500 l of milk /cow /year & 15 152 l / ha forage area
- Breeding cows of high genetic merit for energy corrected milk

Strengths

- Enough field area
- Good attitude and open mind of the young farmer
- Entrepreneurship skills

Weaknesses

- Labour availability

Opportunities

- All fields are situated near the barn
- Agricultural friendly society

Threats

- New Forest Damages Prevention Act
- Climate extremes (drought)
- War in Europe
- Price fluctuations

Farmer's strategy for a "resilient" system

Animal monitoring and utilisation of the data from AMS
Simple feeding with TMR system + supplement from AMS
Good quality grass silage based systems
Solar panels, own bore wells, backup electricity system with tractor powered aggregate

Aspirations / Needs for the future

Feed and energy self sufficiency
Need for extra labour in the future

Improvement project - objectives

- More labour

ECONOMY & LABOUR

- Energy self-sufficiency
- Backup electricity and water systems

RESSOURCE Efficiency

PROJECT

- Reintroduction of grazing
- Carbon farming

ENVIRONMENT ANIMAL Wellbeing

Partners

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Pohjois-Korven tila

Raimo & Riitta Haapalainen

Maaninka

Finland

Innovations

Resilience / Environment/ Animal Wellbeing

Farming milestones

1993 Rotational grazing

1996 Generation change

2000 Extension of the barn

2015 The first cow exceeded 100 000 kg of life time milk yield

2021 Silver medal for 20 years of milk produced in an exellent quality class

The herd

- 80 Livestock Units (LU)
- 40 dairy cows
  Breeds : Holstein (56%)
  Nordic Red (23%) Jersey (3%)
- 30 dairy heifers and 10 calves
- Calving period : all year round
- Age at first calving : 27 months

Agricultural Area

65 ha AA

- 38 ha grass silage
- 22 ha pastures
  (15 ha perennial timothy grass, 7 ha annual Italian ryegrass)
- 5 ha cereal grains

Workforces

- 2 farmers
- 1 employed during harvest season

Areas of interest

- Maximising the benefits of grazing
- Welfare of calves
- Higher milk production / cow

Main buildings and equipment

- Tie stall barn, 40 stalls
- Milking system: 6x milk master DeLaval
- Solid manure
- Individual boxes for young calves
- Calves 2 months whole milk 9 l/d
- Winter: Silage + high-protein compound feed + cereal
- Summer: Pasture + compound feed

Production / Technical results

- 348 000 liters of milk produced
- 4.8 % fat & 3.6% protein content
- Stocking rate: 1.1 LU / ha forage area
- 10 000 l of milk /cow /year & 5800 l /ha forage area
- Summertime; Rotational grazing
  (Grazing time 21 h /d, cows change the grazing zone every day)

Strengths

- A stable economic situation
- Long experience
- Healthy cattle

Weaknesses

- Farm requires investments if we want to make a generation change.

Opportunities

- Special knowledge of grazing

Good fields and good growing conditions

Threats

- Agricultural policy
- The maintenance of farm and ageing of farmers

Farmer's strategy for a "resilient" system

Maintenance of the financial buffer
Effective exploitation of grazing

Aspirations / Needs for the future

Increasing the milk yield of cows by investing in breeding and feed quality

Improvement project - objectives

- Carbon footprint calculations
- Keep the machines operational

ECONOMY & LABOUR

- Responsibility compensation (Valio dairy company)
- Compensation for welfare and environment (Valio)

PROJECT

RESSOURCE Efficiency

- Take care of the health of cows and calves by supporting species-typical behaviour

ENVIRONMENT ANIMAL Wellbeing

Partners

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Satulin tila
Marko ja Marianne Mänki
Jokioinen 2022

Finland

Innovations

Socio-economic Resilience / Environment

Farming milestones

1994 Starting farming

2000 Barn for 45 cows

2005 Enlargement of the barn for 90 cows

2014 New loose-housing barn

2018 2 milking robots

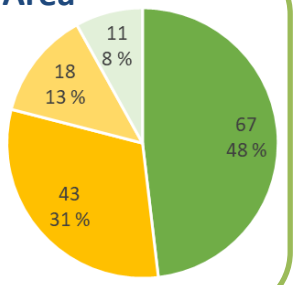
The herd

- 187 Livestock Units (LU)
- 130 dairy cows
  Breed : Nordic Red 87 %, Holstein 12 %, Finncattle 1 %
- 95 heifers and calves
- Calving period : all year round
- Age at first calving : 25.4 months

Agricultural Area

160 ha AA

- 100 ha grass for silage
- 15 ha grass for hay
- 5 ha natural biotopes
- 40 ha barley, oats



Workforce

- 3.5 labour units (Full Time Equivalent; FTE)
- 42.3 dairy cows & 369 700 l / FTE

Areas of interest

- Animal and human welfare
- Renewable energy and energy self sufficiency
- Feeding & management of calves and heifers
- Carbon farming

Main buildings and equipments

- Free ranging barn, cubicles
- 2 milking robots
- Separate building for young stock

Production / Technical results

- 1 150 580 l of milk produced (97 % sold)
- 4.62 % fat & 3.73 % protein content
- Stocking rate: 1.63 LU / ha forage area
- 8851 l of milk /cow /year & 10 005 l / ha forage area
- Maintaining high genetic value in breeding of cows

Strengths

- Good co-operational farms
- Cows are of high genetic value
- Good attitude and open minds of farmers

Weaknesses

- Field area quite low
- Generational change
- Availability of workforce changes

Opportunities

- Good availability of labour so far
- Open minds for change

Threats

- Weather extremes
- Change in consumption habits of dairy products
- Generational change
- Price fluctuations

Farmer's strategy for a "resilient" system

Long experience in farming, open minds, readiness to face new things
No opposition to changes has been tradition in this farm for many generations
Active participation in farmers peer-groups

Aspirations / Needs for the future

Improvement of working conditions
Generational change

Improvement project - objectives

ECONOMY & LABOUR

- Improvement of working conditions

- Lowering the feeding costs
- Building more storage space
- Preparing for power blackouts

RESSOURCE Efficiency

PROJECT

- Economic monitoring

- Carbon farming
- Increasing renewable energy sources
- Improvements of feeding and housing of heifers and calves

ENVIRONMENT ANIMAL Wellbeing

Partners

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Tarinaharju
Jaana & Juha Roivainen
Kuopio 2022

Finland

Innovations

Economy and labour/ technical efficiency

Farming milestones

1993 Starting the farm of 20 ha

2003 Walter Ehrström's gold medal for milk quality

2016 Farm expanded to 100 ha

2022 Farm expanded to 170 ha

2023 Generational change

The herd

- 38 Livestock Units (LU)
- 29 dairy cows

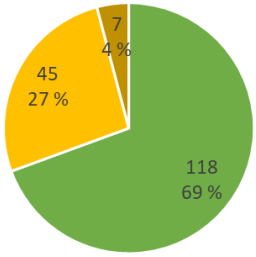
Breeds : Holstein (81%), Nordic Red (12%), Crossbreeds (7%).

- 17 dairy heifers
- Calving period : all year around
- Age at first calving : 26.1 months

Agricultural Area

170 ha AA

- 118 ha grassland
- 45 ha barley grains
- 7 ha other



Workforce

- 2 labour units (Full Time Equivalent)
- **Aims** : Efficient cultivation, improving average milk yield

Areas of interest

- self-sufficient energy production
- Cultivation of special crops (pea and faba bean)

Main buildings and equipment

- 1x4 herringbone milking station
- Unlimited outdoor access during summer and winter

Production / Technical results

- 305 500 liters of milk produced
- 4.29 % fat & 3.43 % protein content
- Stocking rate: 0.22 LU / ha forage area
- 10 357 l of milk /cow / year & 1 796 l / ha forage area

- Breeding criteria
- Feeding results
- Economics
- Feed only first cut silage

Strengths

- Enough field area for expansion
- good machinery
- good location of the fields
- Replaced by a new generation

Weaknesses

- Sometimes too little labour force
- Old barn -> have to build a new one.

Opportunities

- Good starting points for the development of the farm

Threats

- Weather
- World situation, energy and fertilizer crisis

Farmer's strategy for a "resilient" system

Amount of arable land for the current number of animals, even in bad years there will be enough grass to harvest

Good machinery

Remote manure tanks enable to storage the manure for the actual need for the next growing season, and optimization of fertilization

Self-sufficient grain production, purchased feed costs can be kept in a minimum

Aspirations / Needs for the future

Generation change and building a new barn

Improvement project - objectives

- Intensification of cultivation
- Precision farming

ECONOMY & LABOUR

- Optimization of feeding

- Increasing energy self-sufficiency

RESSOURCE Efficiency

PROJECT

- Possibility of walking in the outdoor yard all year round
- Decrease of milk fever in cows

ENVIRONMENT ANIMAL Wellbeing

Partners

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R4D DAIRY FARM NETWORK

Farm's presentations

6 Pilots Farms

HUNGARY

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Zsadanyi Malom 95 Ltd
Pilot Farm description
Zsadány – 2021 (R4D-HUN-01)

Hungary

Innovations

Technical efficiency

Farming milestones

1997: Zsadanyi Malom 95 Ltd was established

2012: Building of milking barn and new barn (506 stocking capacity)

2018: Start of the embryo programme

2021: New calf barn for calves and new maternity barn

The herd

- 650 dairy cows
  Breeds: Holstein-Friesian
- 800 heifers
- Calving period: all year
- Age at first calving: 23.3 months

Agricultural Area

1100 ha

- 800 ha arable land:
  - 200 ha wheat, 100 ha sunflower
  - 160 ha corn, 100 ha silage corn
  - 30 ha lucerne, 40 ha Italian ryegrass
  - 170 ha others
- 300 ha grassland

Workforces

- 63 employees (FTE)

Areas of interest

- Excellent breeding, biotechnology (embryo transfer)

Main buildings and equipments

- Free stall barn,
- Aquaboard, automatic feed pusher
- Carousel milking, milk taxi
- Technology avoid heat stress (ventilation, bedding)

Production / Technical results

- 7 500 000 liters of milk produced (100% sold)
- 3.84 % fat & 3.40 % protein content
- 11.060 l of milk /cow /year
- Extra milk quality

Strengths

- The genetic value of the herd
- Modern buildings
- Mechanization, automation
- Excellent milk quality

Weaknesses

- Stocking capacity
- Shortage of labour

Opportunities

- Herd development
- Project
- Promoting the consumption of dairy products

Threats

- Climate change - droughts
- Low purchase price
- Few own forage area

Farmer's strategy for a "resilient" system

Embryo programme (embryo washing and implantation within the herd)
Beef on dairy

Aspirations / Needs for the future

A2 milk production
Increase production efficiency

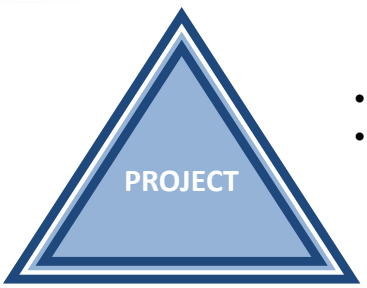
Improvement project - objectives

- Increasing the quality of production

ECONOMY & LABOUR

- Improving the genetic quality of the herd

RESOURCE Efficiency



- Aquaboard, climate protection
- Separation of manure

ENVIRONMENT ANIMAL WELLBEING

Partners

UNIVERSITY of DEBRECEN

Project

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Geo Milk Ltd
Pilot Farm description
Sárospatak – 2021
(R4D-HUN-02)

Hungary

Innovations

Technical & socio-economic efficiency

1992: Geo Milk Ltd was established

2012: New milking barn

2015: Building of new barn (406 stocking capacity)

2018: Building of 2 new barns (306 stockig capacity)

2020: Building of new maternity stable (220 stocking capacity)

Farming milestones

The herd

- 1200 dairy cows
  Breeds: Holstein-Friesian
- 1300 heifers
- Calving period: all year
- Age at first calving: 23.9 months

Agricultural Area

3400 ha land:

- 2475 ha arable land:
  - 850 ha wheat, 130 ha barley
  - 140 ha Italian ryegrass
  - 380 ha corn, 510 ha silage corn,
  - 360 ha lucerne, 105 ha forage sorghum
- 950 ha grassland

Workforces

- 115 employees (FTE)

Areas of interest

- Intensive production
- Rye and triticale silage for dairy cows

Main buildings and equipments

- Free stall barn, laying boxes, matrasses,
- 3 barn for milking cows, 1 maternity stable, 2 rearing centre (capacity: 600 and 700),
- Parallel milking parlour,
- Technology avoid heat stress (ventilation, bedding)

Production / Technical results

- 12 000 000 liters of milk produced (100% sold)
- 3.61 % fat & 3.26 % protein content
- 11 500 l of milk /cow /lactation
- Extra milk quality

Strengths

- The genetic value of the herd
- The genomic breeding value of the whole herd is known
- Modern technology
- Quality of production

Weaknesses

- Shortage of labour
- Only leased land

Opportunities

- The production of milk for cheese-making

Threats

- Climate change - droughts
- New diseases
- Lack of own forage area

Farmer's strategy for a "resilient" system

Only milk production with excellent management
Improving the quality of forage
Modernisation of the sowing structure

Aspirations / Needs for the future

- **Increase production efficiency**

Improvement project - objectives

- Cost reduction
- Increase profitability

ECONOMY & LABOUR

- Increasing production efficiency

RESOURCE Efficiency

PROJECT

- Aquaboard, climate protection
- Use of feed supplements to reduce methane emissions
- Separation of manure

ENVIRONMENT ANIMAL WELLBEING

Partners

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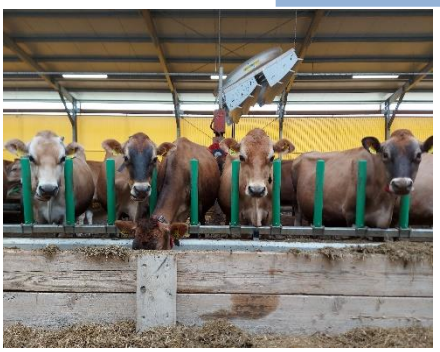
István Kocsis
Pilot Farm description
Szuhafő – 2021
(R4D-HUN-03)

Hungary

Innovations

Technical efficiency



Farming milestones

2010 Purchase of the farm

2016 Purchase of import Jersey

2018 Building new barn and technology

2021 Construction of a milk processing plant

The herd

- 55 dairy cows
  Breeds: Jersey
- Others animals: beef cattle

- 100 heifers
- Calving period: all year
- Age at first calving: 23.8 months

Agricultural Area

700 ha land

- 200 ha arable land
  - 50 ha wheat/corn
  - 150 ha roughage
- 500 ha grassland

Workforces

- 4 employees (FTE)
- 1 owner (FTE)

Areas of interest

- Excellent breeding
- Milk processing
- Modern technology

Main buildings and equipments

- Milking robot,
- Automated feeding,
- Free stall barn,
- Laying boxes,
- Slatted floor with low emission,
- Robot to clean the barn,
- Ventillation,
- Low stress by technology

Production / Technical results

- 450 000 liters of milk produced
- 50 000 liters for own processing (yoghurt, cheese)
- 5.4 % fat & 4.3 % protein content
- 5600 l of milk /cow /lactation

Strengths

- The genetic value of the herd
- Modern technology
- Automation
- Milk processing

Weaknesses

- Geographical location
- Few young workers
- Limited market opportunities

Opportunities

- A2 milk production
- Increase production

Threats

- Animal health risk
- Increase interest on the loan
- Rising input prices

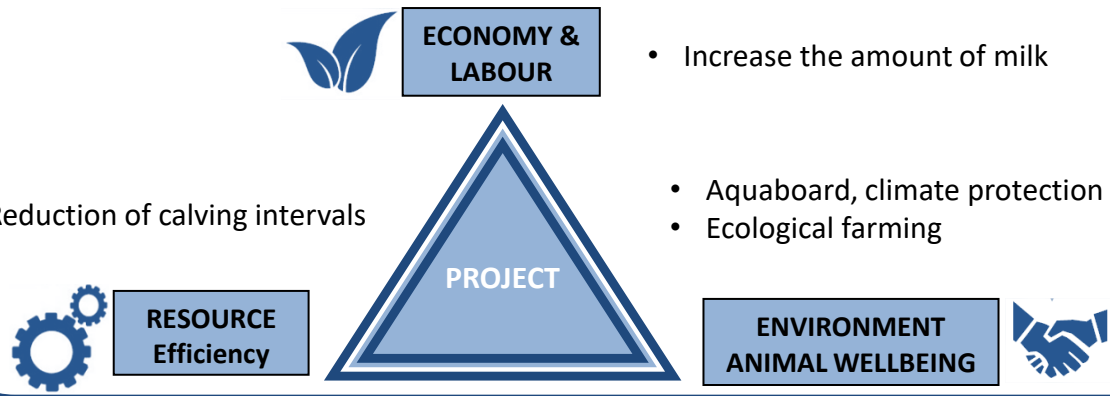
Farmer's strategy for a "resilient" system

Not common breed, modern technology, milk processing
Rationalisation of water use
Solar panels

Aspirations / Needs for the future

Increase production efficiency

Improvement project - objectives



Partners

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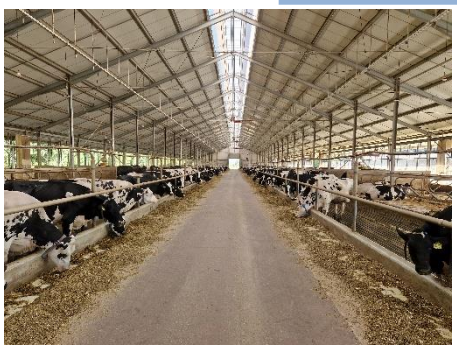
Kasz-Farm Ltd
Pilot Farm description
Derecske – 2021
(R4D-HUN-05)

Hungary

Innovations

Technical & socio-economic efficiency



Farming milestones

1997: The purchase of the „Vöröscsillag Tsz" and the establishment of KaszCoop Ltd

2006: Kasz Farm Ltd was established

2006: Renovation of the milking barn

2006: Barn extension to 700 places

2021: New young barn (100 stocking capacity)

2021: New young barn (300 stocking capacity)

The herd

- 700 dairy cows
  Breeds: Holstein-Friesian
- 650 heifers
- Calving period: all year
- Age at first calving: 23.2 months

Agricultural Area

550 ha land:

- 150 ha lucerne,
- 250 ha corn, silage corn
- 150 ha others (triticale, autumn mixed fodder etc.)

Workforces

- 45 employees (45 FTE)

Areas of interest

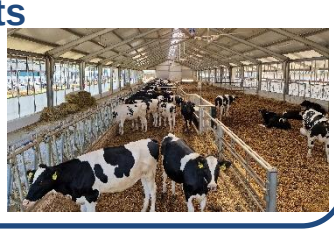
- Innovation
- Good genetics
- Efficient production
- High quality breeding programme

Main buildings and equipments

- Barn for milking cows (capacity: 640 cows)
- Calf barn for calves,
- 200 steinmann pen; barn for 650 heifers
- Free stall barn,
- Laying boxes (clay, aquaboard),
- Parallel milking parlour (2x16, Fullwood)
- Forced ventillation, autofeeder cart
- Modern slurry storage

Production / Technical results

- 8 000 000 liters of milk produced (100% sold)
- 3.74 % fat & 3.35 % protein content
- 11 900 l of milk /cow /lactation
- Extra milk quality



Strengths

- The genetic value of the herd
- Stable, experienced employees

Weaknesses

- Little forage-growing area

Opportunities

- Beef on dairy
- Livestock slaughter and meat sale

Threats

- Climate change – droughts
- Low milk price

Farmer's strategy for a "resilient" system

High quality breeding programme
Meat processing
Embryo production

Aspirations / Needs for the future

Increase production efficiency

Improvement project - objectives

- Rationalise the use of input products

ECONOMY & LABOUR

- Mechanisation, automation (milking robot)

RESOURCE Efficiency

PROJECT

- Animal welfare (aquaboard, climate protection)

ENVIRONMENT ANIMAL Wellbeing

Partners

UNIVERSITY of DEBRECEN

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Berek Farm Ltd
Pilot Farm description
Tisztaberek – 2021
(R4D-HUN-06)

Hungary

Innovations

Technical efficiency

1993: The establishment of Berek Farm Ltd

1996: Starting of dairy cattle breeding

2006: Splitting of the company, Berek Farm Ltd continues milk production with half the herd

2008: Reconstruction of the farm

2019: Building of 3 new barns and 1 milking barn

2020: Robot feeding

2022: Building of new barn

Farming milestones

The herd

- 860 dairy cows
  Breeds: Holstein-Friesian
- 860 dairy heifers
- Calving period: all year
- Age at first calving: 23 months

Agricultural Area

750 ha land for feed production:

- 200 ha for corn silage,
- 150 ha corn,
- 150 ha grass,
- 250 ha lucerne

Workforces

- 26 employees (FTE)

Areas of interest

- Intensive production,
- Precision technology in dairy and crop production

Main buildings and equipments

- 4 Free stall barn (capacity: 900),
- Laying boxes (aquaboard),
- Feeding and bedding robot,
- Herringbone milking parlour (2x15)
- Tools avoid heat stress,
- Ventillation

Production / Technical results

- 12 000 000 liters of milk produced (100% sold)
- 4,0 % fat & 3,5 % protein content
- 12 500 l of milk /cow /lactation
- Extra quality milk

Strengths

- The genetic value of the herd
- Automation, precision farming
- Quality of forage production
- Excellent milk yield

Weaknesses

- Lack of heifer barns
- Few and fragmented forage area

Opportunities

- A2 milk production

Threats

- Climate change - droughts

Farmer's strategy for a "resilient" system

Precision technology in dairy and crop production
Increase the forage area
Reasonable crop rotation, second crops
Reducing the amount of forage purchased, increasing own production
Solar panels

Aspirations / Needs for the future

Increasing production efficiency

Improvement project - objectives

ECONOMY & LABOUR

- Increasing production efficiency

RESOURCE Efficiency

- Machinery modernisation
- Automation

PROJECT

ENVIRONMENT ANIMAL WELLBEING

- Aquaboard, climate protection
- conservation tillage
- Reducing emissions of pollutants
- Organic manure instead of fertilizer

Partners

UNIVERSITY of DEBRECEN

Project

"Resilience 4 Dairy" is a European project involving 15 European countries and 18 partners. R4D is a thematic network on innovations and aims to support EU dairy farming in these regions where dairy farming is a main economic activity.

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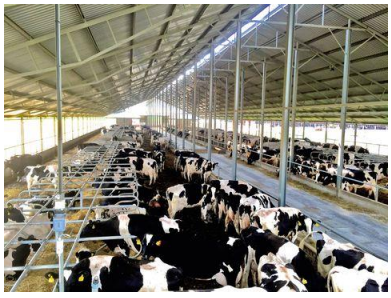
Nyakas Farm
Pilot Farm description
Hajdúnánás – 2021
(R4D-HUN-07)

Hungary

Innovations

Technical efficiency



1995: The establishment of Berek Farm Ltd.

2007: Farm reconstruction, new milking barn (carousel)

2014: Building of new barn

2015: Building of new barn (capacity: 300)

Farming milestones

The herd

- 1726 dairy cows
  Breed: Holstein-Friesian
- 1882 heifers
- 336 calves
- Calving period: all year

Agricultural Area

1900 ha land

- 800 ha silage corn,
- 180 ha lucerne,
- 250 ha sunflower,
- 200 ha wheat,
- 140 ha corn,
- 330 ha grassland

Workforces

- 130 employees (FTE)

Areas of interest

- Excellent breeding
- Modern technology
- Intensive production

Main buildings and equipments

- Free stall barn, laying boxes
- 2x12 fish-bone milking parlour
- Carousel milking parlour (capacity: 40)
- 3 barns for milking cows, 1 maternity stable, 1 rearing centres

Production / Technical results

- 21 000 000 liters of milk produced
- 3.6 % fat & 3.2 % protein content
- 11 427 l of milk /cow /lactation

Strengths
- Family farm
- Modern technology
- Appreciation and training of employees

Weaknesses
- Lack of labour and specialist

Opportunities
- Project and support

Threats
- Climate change - droughts
- High input prices
- Damage caused by war

Farmer's strategy for a "resilient" system

Modern technology
Appreciation of employees
Solar panel

Aspirations / Needs for the future

Improving production efficiency

Improvement project - objectives

- Better management of labor resources

ECONOMY & LABOUR

- Reducing energy consumption

- Machinery modernisation
- Purchase of machines

RESOURCE Efficiency

PROJECT

- Building of modern barn for dairy cows

ENVIRONMENT ANIMAL Wellbeing

Partners

UNIVERSITY of DEBRECEN

Project

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R4D DAIRY FARM NETWORK

Farm's presentations

6 Pilots Farms

LITHUANIA

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Audronė Rudienė

LITHUANIA

Innovations

Socio-economic Resilience / Environment

Farming milestones

2017
Audronė and her family started farming

2018
Renew grassland with alfa grass

2019
Included corn in cows ration/ work with genomic testing and working for cow genetic

2020
Lupin beans changed soy beans

2021
learning and knowledge development for farmers

The herd

- 90 Livestock Units (LU)
- 35 dairy cows
- Breeds holstein/lithiuanian mix
- 55 dairy heifers
- Calving period : all year round
- Age at first calving : 26 months

Agricultural Area

80 ha AA

- 35 ha perm. grassland(alfa alfa/ mix)
- 15 ha Maize silage
- 30 ha lupin/beans / barley /wheat

Workforces

- 1 labour units (Full Time Equivalent)
- 43.5 dairy cows & 265 000 l /FTE
- Aims : Save time, be efficient,
- Aware of society and suburban issues

Areas of interest

- Look for the economic optimum
- Resist to changing climate and economic coming crises
- Quality of forage due to weather

Main buildings and equipments

- Sleeping area on straw litter
- Exercise area producing solid manure
- Individual boxes for young calves
- Collective boxes on straw litter for heifers

Production / Technical results

- 310 000 liters of milk produced (98 % sold)
- 4.3 % fat & 3,7% protein content
- 8780 l of milk /cow /year & 4 050 l /ha forage area

Strengths

- Years of experience
- A desire and love for farming
- Family business
- Suitable land for farming

Weaknesses

- Government's lack of action on dairy issues
- Lack of digitisation

Opportunities

- Aquiring new knowledge
- Cooperation
- Traineeships abroad, implementation of foreign technologies

Threats

- Adverse weather conditions
- Unfavourable economic situation in the country

Farmer's strategy for a "resilient" system

Adhere to high standards of animal welfare, providing a comfortable and stress-free environment for dairy cows. This includes ensuring proper housing, access to clean water, regular veterinary care, and promoting behaviors that reduce cow stress, such as avoiding overcrowding and harmful handling practices.

Aspirations / Needs for the future

To create good conditions for both farm animals and farm workers. To automate farm operations and improve the quality of milk production.

Improvement project - objectives

- Reduce work load

ECONOMY & LABOUR

- Optimize dairy gross margin
- Reduce concentrate for cow

RESSOURCE Efficiency

PROJECT

- Keep a good mineral balance
- Improve forage self-sufficiency

ENVIRONMENT ANIMAL Wellbeing

Partners

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Donatas Kaktys
Pilot Farm description
2022

Lithuania

Innovations

Socio-economic Resilience / Environment

Farming milestones

2013
Donatas started working at the farm of his parents

2018
Renovated old farm for cows

2017
new housing stable for heifers and dairy cows

2022
Start new farm building for heifers

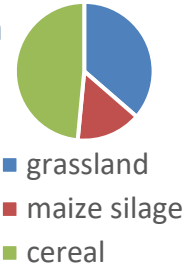
The herd

- 190 Livestock Units (LU)
- 90 dairy cows
- 100 dairy heifers
- Calving period : all year round
- Age at first calving : 29 months

Agricultural Area

183 ha AA

- 100 ha perm. grassland
- 23 ha Maize silage
- 60ha of barley, wheat, rapeseed and beans



Workforces

- 5 labour units (Full Time Equivalent)
- **Aims** : generate income, automatization, genetics

Areas of interest

- Grass management
- Automatization
- Robot milking

Main buildings and equipment

- Cubicle barn for cows
- 2 Automatic calves Feed Stations
- Milking parlour 2x3
- Individual boxes for young calves
- Collective boxes on straw litter for heifers

Production / Technical results

- 711 000 liters of milk produced (100% sold)
- 4.4 % fat & 3,30 % protein content

Strengths

- Labour planning
- Good technical key-results
- High-performance & modernized equipment

Weaknesses

- Limited possibilities for additional ha.
Weight of employed wor force
-

Opportunities

- Interest in genetics
- local dynamism allowing common work & collective investment

Threats

- Pressure on landprice, resident.
- Dairy landscape is moving fast, with number of dairy cattle decreasing

Farmer's strategy for a "resilient" system

Raising a healthy, productive cow herd starts with a healthy calf, genetics and the right growing conditions.

Aspirations / Needs for the future

To build a new calving parlour and install two milking robots in the cowshed.

Improvement project - objectives

- Reduce workload
- Economical efficiency to get an income
- Mix productivity and efficiency
- Diversify income coming from the dairy

ECONOMY & LABOUR

RESSOURCE Efficiency

PROJECT

ENVIRONMENT ANIMAL Wellbeing

Partners

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Ieva Bitaitytė
Pilot Farm description
2022

LITUHUANIA

Innovations

Socio-economic Resilience / Environment

Farming milestones

2015
Ieva started working at the farm of her mother

2016
joined the milk buying cooperative

2018
Rotating grazing

2019
extensive management of grasslands with cattle grazing

2022 new Lely milking robots

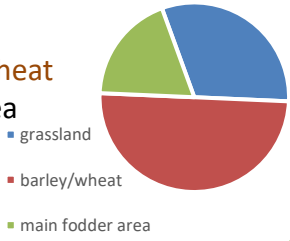
The herd

- 60 Livestock Units (LU)
- 60 Holstein
- 35 dairy heifers
- Calving period : all year round
- Age at first calving : 26 months

Agricultural Area

80 ha AA

- 25ha perm. grassland
- 40 ha of barley and wheat
- 15 ha main fodder area



Workforces

- 4 labour units (Full Time Equivalent)
- 60 dairy cows
- **Aims** : Save time, be efficient, generate bigger income, automatization

Areas of interest

- Automatization
- Milk quality
- Genetics
- Quality of forage due to weather

Main buildings and Equipment

- Cubicle barn for cows
- Milking: 2 robots Lely
- Feeding: 1 Lely Juno feed pusher
- Heifers : Free stall housing

Production / Technical results

- 420 000 l. sold milk
- 4.70 % fat & 3.40 % protein content
- Stocking rate: 1.1 LU / ha forage area
- 7000l of milk /cow /year

Strengths

- Good skills to project themselves, rigorous, follow their objectives
- Labour planning
- High-performance & modernized equipment

Weaknesses

- Sensitive area with duty to maintain permanent grassland

Feed system reliant on meal.

Opportunities

- Proximity of dairy plants
- local dynamism allowing common work & collective investment

Threats

- Frequent weather hazards
- Dairy landscape is moving fast, with number of dairy cattle decreasing

Farmer's strategy for a "resilient" system

Leva want to achieve high returns with relatively modest resources and simple operations. She try to keep up with all the challenges facing industry.
Strengthen grass part in in the cattle feed. A farm with attractive work conditions.

Aspirations / Needs for the future

Maintain good work conditions.
The main focus is on the cows and producing good quality milk.

Improvement project - objectives

- Reduce work load

ECONOMY & LABOUR

- Optimize dairy gross margin
- Reduce concentrate for cow

PROJECT

- Keep a good mineral balance
- Improve forage self-sufficiency

RESSOURCE Efficiency

ENVIRONMENT ANIMAL Wellbeing

Partners

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Saulius Gaidžiūnas
Pilot Farm description
2022

Lithuania

Innovations

Socio-economic Resilience / Environment

Farming milestones

2005
Saulius started working at the farm of his parents

2007
Renovated old farm

2017
new housing stable for heifers and dairy cows

2022
Start new farm building

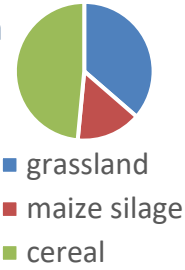
The herd

- 250 Livestock Units (LU)
- 125 dairy cows
- 100 dairy heifers
- Calving period : all year round
- Age at first calving : 29 months

Agricultural Area

330 ha AA

- 120 ha perm. grassland
- 50 ha Maize silage
- 160ha of barley, wheat, rapeseed and beans



Workforces

- 10 labour units (Full Time Equivalent)
- **Aims** : generate income, automatization, genetics

Areas of interest

- Land restoration
- Grass management
- Automatization

Main buildings and Equipments

- Cubicle barn for cows
- 3 Automatic calves Feed Stations
- Milking parlour 2x7
- Individual boxes for young calves
- Collective boxes on straw litter for heifers

Production / Technical results

- 960 000 liters of milk produced (100% sold)
- 4.3 % fat & 3,20 % protein content

Strengths

- Labour planning
- Good technical key-results
- High-performance & modernized equipment

Weaknesses

- Limited possibilities for additional ha.
- Weight of employed workforce

Opportunities

- Interest in genetics
- local dynamism allowing common work & collective investment

Threats

- Pressure on land – price, resident.
- Dairy landscape is moving fast, with number of dairy cattle decreasing

Farmer's strategy for a "resilient" system

To build resilient system Saulius have adopted a specialization strategy in dairy and work simplification. The new barn is controlled cow traffic ensures healthier animals and peace and quiet in the barn.

Aspirations / Needs for the future

Creation of cheese processing unit.
Installing two Lely milking robots.
Pay more to cows genetics

Improvement project - objectives

- Reduce work load
- Economical efficiency to pull a revenue
- Mix productivity and efficiency
- Diversify income coming from the dairy

ECONOMY & LABOUR

PROJECT

RESSOURCE Efficiency

ENVIRONMENT ANIMAL Wellbeing

Partners

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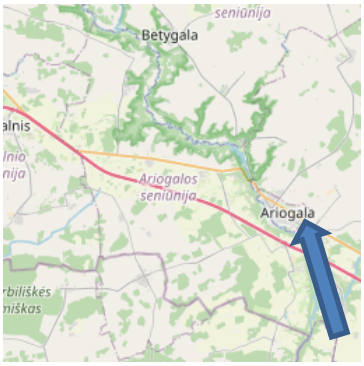
Viktorija Švedienė
Pilot Farm description
2022

LITHUANIA

Innovations

Socio-economic Resilience / Environment



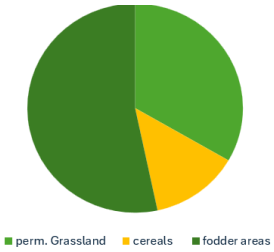
The herd

- 20 Livestock Units (LU)
- 10 Holstein
- 5 mix breeds
- 5 dairy heifers
- Calving period : all year round
- Age at first calving : 26 months

Agricultural Area

15 ha AA

- 5ha perm. grassland
- 2 ha of barley and wheat
- 8 ha main fodder area



Workforces

- 1 labour units (Full Time Equivalent)
- 15 dairy cows
- **Aims** : generate bigger income, automatization

Areas of interest

- Milk quality
- Genetics

Main buildings and equipments

- Cubicle barn for cows
- DeLaval cooling fans
- DeLaval mobile robot milking unit
- Heifers : Free stall housing

Production / Technical results

- 63 800 l. sold milk
- 4.15 % fat & 3.40 % protein content
- 6 000l of milk /cow /year

Strengths

- Good skills to project themselves, rigorous, follow their objectives
- Labour planning
- Good technical key-results

Weaknesses

- Sensitive area with duty to maintain permanent grassland
- Feed system reliant on meal.

Opportunities

- Proximity of dairy plants
- local dynamism allowing common work & collective investment

Threats

- Pressure on land – price, resident.
- Dairy landscape is moving fast, with number of dairy cattle decreasing

Farmer's strategy for a "resilient" system

Reduce the use of mineral fertilisers. To reduce nitrogen emissions, manure is treated with probiotic products Strengthen grass part in in the cattle feed. Viktorija want to achieve high returns with relatively modest resources and simple operations.

Aspirations / Needs for the future

Improving the dairy performance of livestock and increase cow longevity with a focus on their genetics.

Improvement project - objectives

- Reduce work load
- Economical efficiency to improve income

ECONOMY & LABOUR

PROJECT

- Mix productivity and efficiency

RESSOURCE Efficiency

- Keep a good mineral balance
- Improve forage self-sufficiency

ENVIRONMENT ANIMAL Wellbeing

Partners

Baltic Agro

LITGENAS

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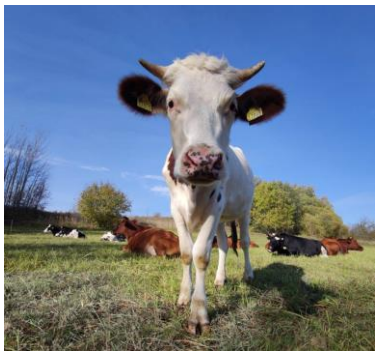
Vilmantas Navickas Pilot Farm description 2022

Lithuania

Innovations

Socio-economic Resilience / Environment



Farming milestones

2005
Saulius started working at the farm of his parents

2007
Renovated old farm

2017
new housing stable for heifers and dairy cows

2022
Start new farm building

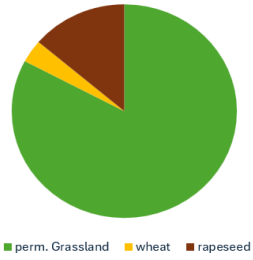
The herd

- 49 Livestock Units (LU)
- 30 dairy cows
- 11 dairy heifers
- Calving period: all year round

Agricultural Area

145 ha

- 120 ha perm. grassland
- 5 ha wheet
- 20ha of rapeseed



Workforces

- 2,25 labour units (Full Time Equivalent)
- **Aims** : generate income, automatization, genetics

Areas of interest

- Land restoration
- Grass management
- Automatization

Main buildings and equipments

- Deep bedding shed for cattle (access to field all year round)
- Calf feeding milk
- Milking parlour 1X7
- Individual boxes for young calves
- Collective boxes on deep straw bedding for heifers

Production / Technical results

- 30 00 litres (100% sold)
- 4.3 % fat & 3,20 % protein content
- Cheese fermented: 6000kg sold

Strengths

- Labour planning
- Good technical key-results
- High-performance & modernized equipment

Weaknesses

- Limited possibilities for additional ha.
- Weight of employed wor force

Opportunities

- Interest in genetics
- local dynamism allowing common work & collective investment

Threats

- Pressure on land – price, resident.
- Dairy landscape is moving fast, with number of dairy cattle decreasing

Farmer's strategy for a "resilient" system

To process on-farm produce and sell it directly from the farm. Follow a farm-to-table strategy. To take care of the welfare of the cows, improving feed quality, housing conditions, etc.

Aspirations / Needs for the future

Creation of cheese processing unit. Installing milking robot.
Pay more to cows genetics, grassland management

Improvement project - objectives

- Reduce work load

ECONOMY & LABOUR

- Economical efficiency to improve income
- Mix productivity and efficiency

PROJECT

- Diversify income coming from the dairy

RESSOURCE Efficiency

ENVIRONMENT ANIMAL Wellbeing

Partners

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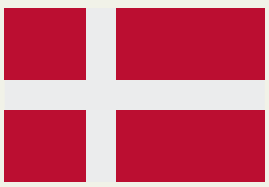
R4D DAIRY FARM NETWORK

Farm's presentations

6 Pilots Farms



DENMARK

Resilience for Dairy (R4D) has received funding from the European Union's Horizon 2020 research and innovation program under grant agreement No 101000770

Grøndalsgård
Nørager
Pilot farm description
2022

Denmark




2015 Fire in feed barn & equipment building

2016 New cow barn & 2 grain silos. Demolished fire site

2017 New calf housing & collection area

2018 New feed storage

2019 Changed to solid concrete floors & deep bedded sand cubicles

2020 Reconstructed crop storage into 2 slaughter calf pens

2021 Expanded crop storage & built gas leakage proof grain silo

Innovative features
- Organic production
- High % crossbreeding
- Legumes in crop rotation
- Tractor traffic GPS
- Rubber walkways between pastures

Buildings & Equipment
- Modern indoor housing
- Deep sand cubicles
- Rotary milking parlour
- Individual calving pens
- Manure scraper
- Individual calf housing & group housing
- Own claw trimming equipment

Labour force
- 10 employees
- 2 students

Areas of interest
- Environment & ecology
- Animal nutrition
- Societal issues

The herd

415 cows in total
375 cows in milk
310 dairy heifers

All-year-round calving
Age at first calving: 24.5 mo
Summer grazing (7h x 150d)

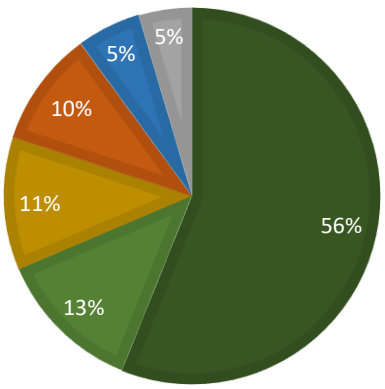
Breeds: 57% Holstein
43% Holstein x Danish Red x Montbéliarde


Milk production: 11,341 kg ECM per cow per year

Agricultural area

318 ha grass/clover
71 ha winter rye (harvest)
65 ha barley/pea mix
56 ha winter rye (graze)
31 ha spring barley
26 ha perennial grass

Total: 567 ha



Strengths

- Low debt
- High crop yields
- High milk production
- N-fixation from legumes in crop rotation (peas)
- High proportion crossbred cows

Weaknesses

- Relatively high bulk tank SCC
- X

Opportunities

- X
- X

Threats

- Climate adaption
- Increasing regulations & limits
- Land rented for limited period only

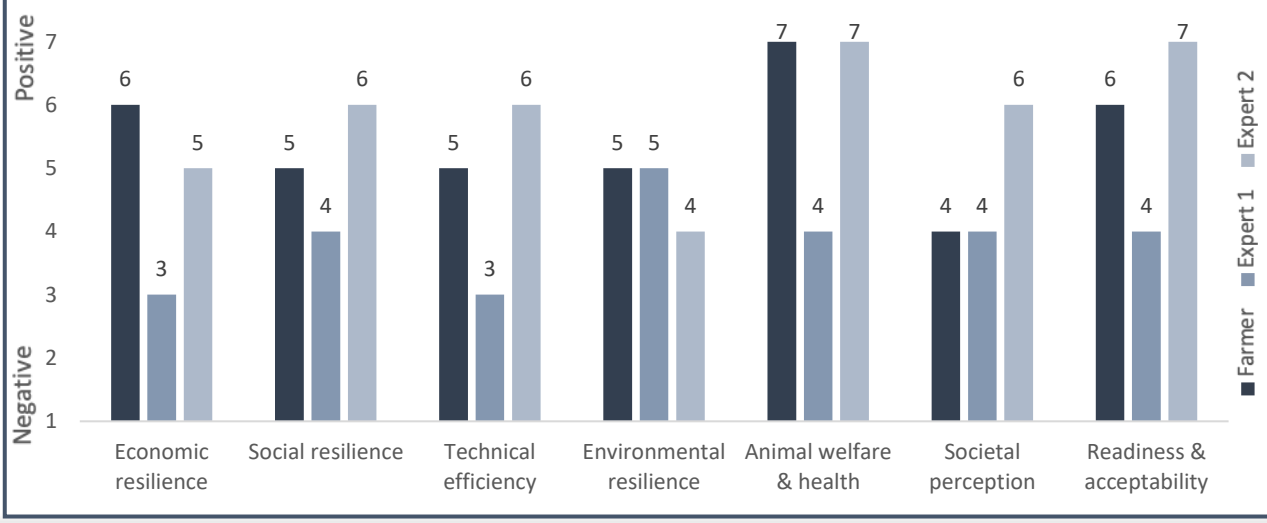
Innovative practice

Install deep bedded sand cubicles & V-shaped solid concrete floor with automatic manure scraper as strategy for improving economic resilience through improved animal welfare

Potential future solutions

- Strategic leadership
- Self-sufficiency in feed production
- Decrease debt

Effects of innovative practice on resilience



Partners :

AARHUS UNIVERSITY

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Store Blæsbjerg

Holstebro

Pilot farm description

2022

Denmark

2010 Bought farm for arable land

2012 Bought *Store Blæsbjerg* farm (430 cows & 6 milking robots)

2014 Bought *Gammelmølle* farm for Heifers

2014 Start common field management

2015 Built calf stables, 2 new milking robots & 575 cows

2018 Replaced all milking robots

2021 Bought Ålykke & Borris pig farms

Innovative features

- Highly mechanised
- Embryo transfer
- DNA testing heifers
- Manure treatment to reduce NH_3 emissions

Buildings & Equipment

- Cubicles with mattress & rubber mat
- Group calving pens
- Group housing of calves on straw
- 8 x milking robots
- Manure robot
- Feed collector robot
- Bedding robot

Labour force

- 5 full time employees
- 3 students

Areas of interest

- Environmental impact
- Welfare of employees
- Economic efficiency

The herd

590 cows in total
530 cows in milk
560 dairy heifers

All-year-round calving
Age at first calving: 22 mo
Fulltime indoor housing

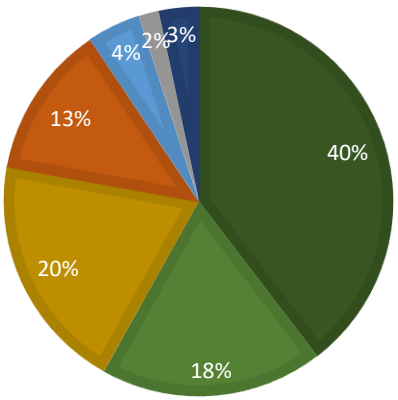
Breeds: 30% Holstein
15% Danish Red
55% Holstein x Danish Red x Montbéliarde

Milk production: 11,330 kg ECM per cow per year

Agricultural area

331 ha spring barley
155 ha silage maize
107 ha maize (corn)
165 ha grass/clover
37 ha winter rye
14 ha sugar beet
28 ha other

Total: 837 ha



Strengths

- Able to find low-cost production methods
- Does 80% of field work self
- Modern equipment in barn
- DNA testing & embryo transfer to improve herd

Weaknesses

- No pasture access
- Sandy soils
- Building for calving and close-up cows is outdated

Opportunities

- Upgrade barn for heifers, dry cows & close-ups
- Install automatic feed mixers
- Select positive herd traits via DNA testing

Threats

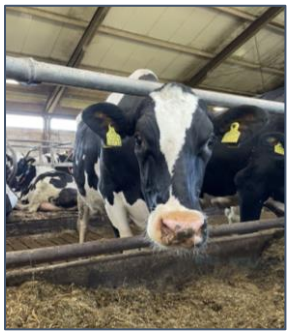
- More strict environmental regulations
- War in Eastern Europe
- Low field yields because of sandy soils

Innovative practice

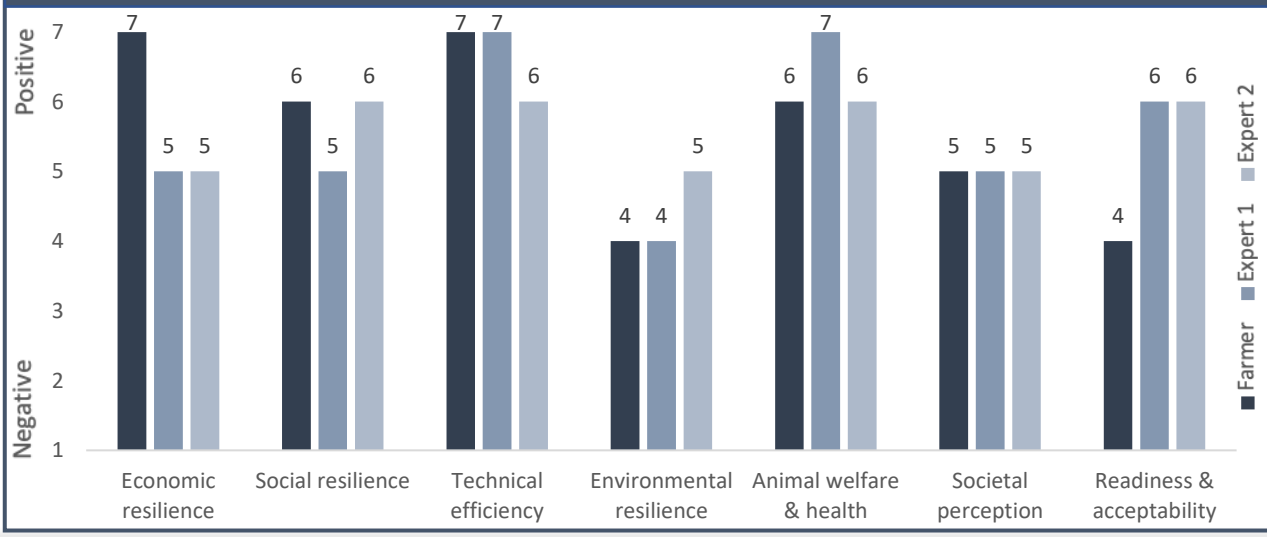
New & improved calf housing as strategy for improving animal welfare & economic resilience. Individual housing 1st wk, then group housing (6-7 calves) on straw

Potential future solutions

- Reduce ammonia emissions
- Closed feed storage
- Feed additives to reduce emissions



Effects of innovative practice on resilience



Partners :

AARHUS UNIVERSITY

"Resilience 4 Dairy" is a European project involving 15 European countries and 18 partners. R4D is a thematic network on innovations and aims to support EU dairy farming in these regions where dairy farming is a main economic activity.

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Resilience for Dairy (R4D) has received funding from the European Union's Horizon 2020 research and innovation program under grant agreement No 101000770

Elmegården

Karup J

Pilot farm description

2022

Denmark

2006 – Bought Elmegården farm

2007 – Built new housing facilities with 4 x milking robots, feed robots & bedding robot

2008 – Bought 100 ha arable land

2015 – Replaced milking robots with milking parlour. Built heifer & dry cows housing & increased herd to 900 cows

Innovative features

- Modern housing
- Pair- & group-housing calves
- Precision feed management system (online)

Buildings & Equipment

- 2 x 150m long buildings
- Deep bedded sand cubicles
- Group calving pens
- Group housing of calves on straw
- Milking parlour (2 x 24)
- Manure robot (12x p/d)

Labour force

- 15 full time employees
- 5 part-time students

Areas of interest

- Social welfare
- Animal nutrition
- Environmental welfare

The herd

910 cows in total
805 cows in milk
570 dairy heifers

All-year-round calving
Age at first calving: 22 mo
Fulltime indoor housing

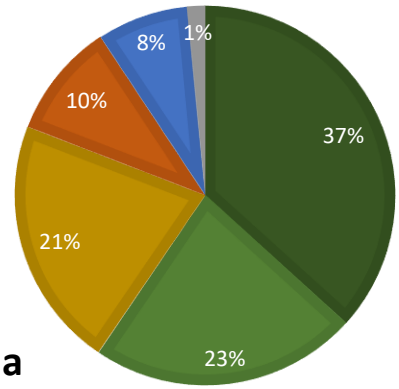
Breeds: 40% Holstein
60% Holstein x Belgian Blue & Angus

Milk production: 12,831 kg ECM per cow per year

Agricultural area

245 ha grassland
152 ha maize (corn)
143 ha silage maize
66 ha sugar beet
52 ha barley
10 ha grass (hay)

Total: 668 ha



Strengths

- 4x larger herd than average in Denmark
- Very high milk yield per cow
- All arable land located close by
- Modern equipment in barn
- High labour force

Weaknesses

- Milking parlour requires more labour
- x
- x

Opportunities

- Connect with others to install biogas plant
- x
- x

Threats

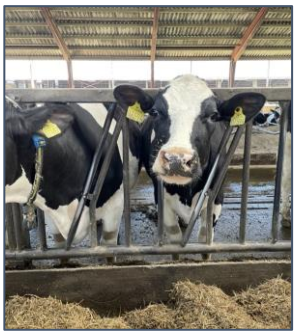
- More strict environmental regulations
- Periods of drought because of high altitude

Innovative practice

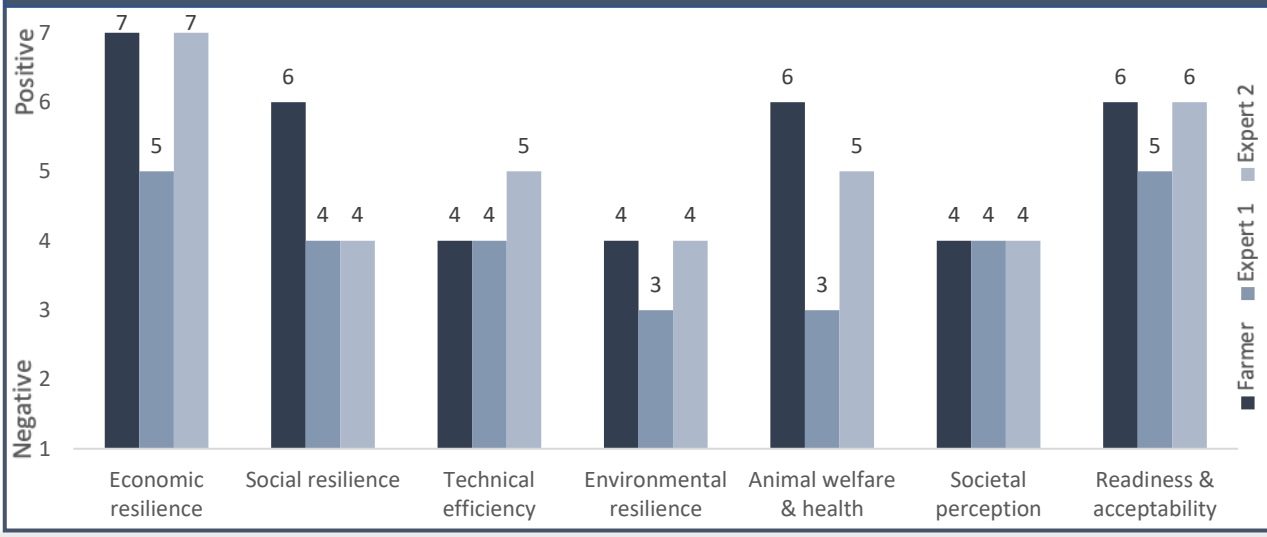
Replace 4 milking robots with a 24:24 milking parlour as a strategy for improving economic resilience.

Potential future solutions

- Energy production (biogas, wind or solar
- Feed additive to reduce methane
- Self-sufficiency in feed production



Effects of innovative practice on resilience



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Lykkegården
Ørsted
Pilot farm description
2022

Denmark




2009 Bought farm (120 cows, 430 sows); new barn & 3 milking robots

2010 Bought new milking robot & more arable land

2014 Stopped pig production

2015 Bought new milking robot

2019 Invested in LED lights

2020 Sold 35ha, added blowers in cow barn, CowConnect feed management & started with embryo transfer

2021 Replaced 4 milking robots, replaced all lights with LED

2022 Started with pea production

Innovative features

- Embryo transfer
- Wagyu semen for beef
- Larger cubicles to reduce risk of injuries

Buildings & Equipment

- Modern indoor housing
- Deep sand cubicles
- 5 x milking robots
- Individual calving pens
- Manure scraper
- Individual calf housing & group housing

Labour force

- 4 employees
- 1 student

Areas of interest

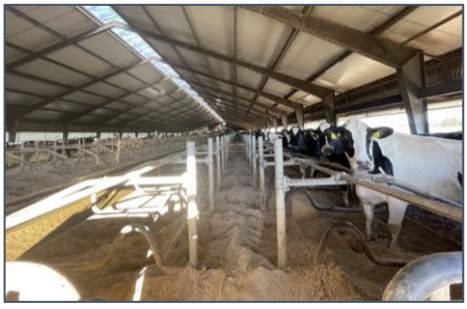
- Animal health & welfare
- Animal nutrition
- Society-friendly system

The herd

330 cows in total
300 cows in milk
290 dairy heifers

All-year-round calving
Age at first calving: 23 mo
Pasture access for pregnant heifers

Breeds: 97% Holstein
3% Holstein x Belgian Blue & Holstein x Wagyu

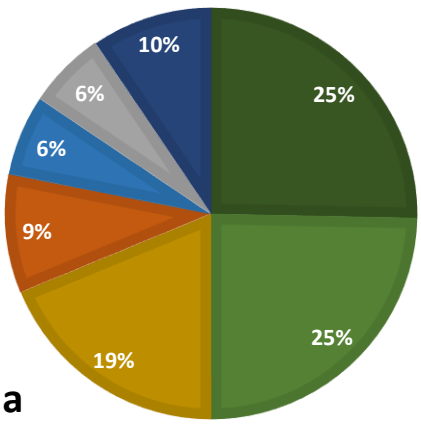



Milk production: 12,653 kg ECM per cow per year

Agricultural area

101 ha silage maize
99 ha winter wheat
75 ha grass/clover (silage)
37 ha spring barley
25 ha winter rye
24 ha winter rapeseed
39 ha other

Total: 400 ha



Strengths

- Young farmers with highly adaptable mentalities
- High level of education
- High milk production
- Highly productive grain lands

Weaknesses

- High labour costs
- Lack of computerised herd management

Opportunities

- Crossbreeding
- Labelling if cows graze nature area

Threats

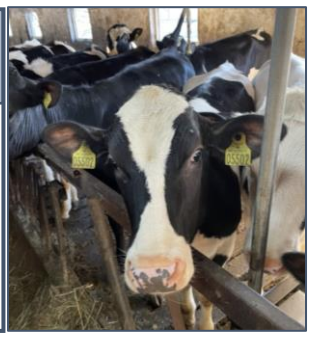
- War in Eastern Europe
- Unpredictable future
- Increasing regulations & limits
- CO_2 tax

Innovative practice

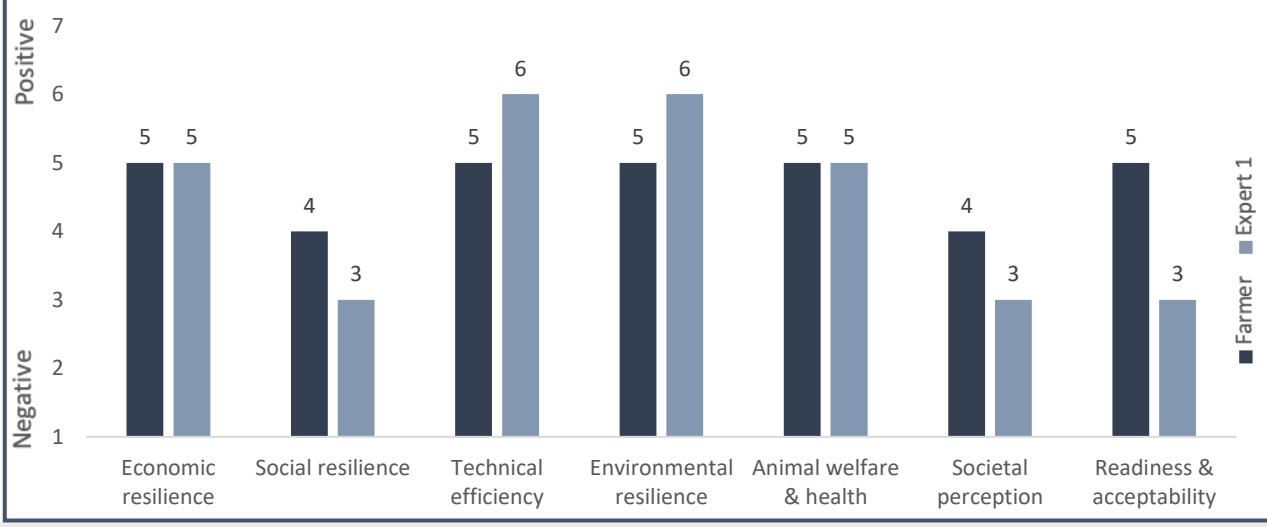
Embryo transfer of top cows as strategy for improving economic and animal welfare resilience

Potential future solutions

- She mentioned strategies that she already implemented



Effects of innovative practice on resilience



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Ny Dyrvig
Tarm
Pilot farm description
2022

Denmark

2016 – Bought farm (organic dairy production)

2018 – Started renting 90 ha arable land

2019 – Replaced milking parlour with 2 milking robots

2020 – Converted to foster cow-calf contact system

Innovative features

- Cow-calf contact (CCC)
- Striving for self-sufficient feed production
- 3-way rotation crossbreeding (AA breeding)

Buildings & Equipment

- Indoor housing
- Free-walk straw yards
- 2 x milking robots
- Feed pusher robot
- Straw bedding robot
- Pens equipped for gradual weaning from foster cow

Labour force

- 3 employees

Areas of interest

- Animal health & welfare
- Labour conditions
- Environmental impact

The herd

150 cows in total
140 cows in milk
120 dairy heifers

All-year-round calving
Mortality rate: 3%

Pasture access for all calves, heifers & cows

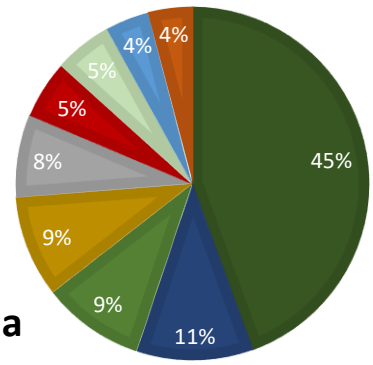
Crossbreeding :
Holstein x Jersey x Scandinavian Red

Milk production: 9,074 kg ECM per cow per year

Agricultural area

100 ha grass/clover
24 ha spring barley/oats
21 ha spring grain/legume
21 ha winter rye/grass
17 ha spring grain mix
12 ha woods & tree line
12 ha perennial grass
9 ha peas/grass/clover
9 ha peas/chicory/plantago/grass

Total: 225 ha



Strengths

- Young farmers
- Milk sold under CCC label
- Low disease incidence
- Crossbreeding
- No antibiotics for mastitis
- High animal welfare

Weaknesses

- Relatively low milk yield per cow
- Relatively low pregnancy rate

Opportunities

- Labelling subsidy
- x

Threats

- Economic efficiency
- x
- x
- x

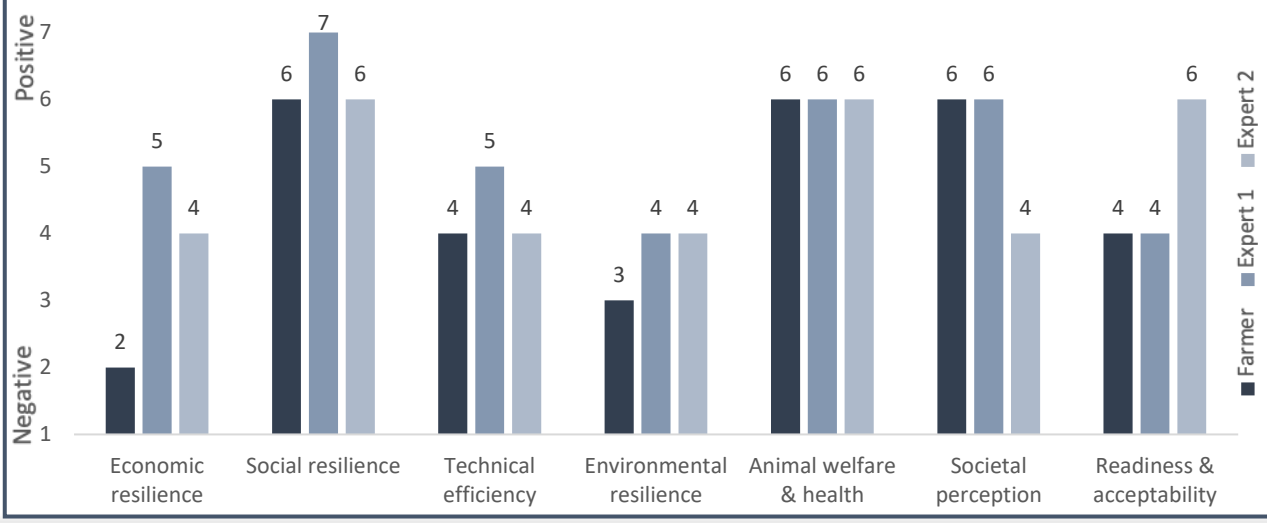
Innovative practice

Cow-calf contact as strategy for improving animal welfare resilience. Dam-calf contact for 1 wk, then foster groups until 3 mo

Potential future solutions

- On farm sale of dairy products
- Multi-cropping
- Free living housing

Effects of innovative practice on resilience



Partners :

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Fårup Overgaard
Rødkærsbro
Pilot farm description
2022

Denmark

1995 Bought farm (50 cows, 55ha). Developed farm

2001 Increased to 500 cows

2003 Built new cow barn

2004 Collaboration neighbour, bought dairy new farm (130 cows, 170ha)

2006 Adapted new farm for youngstock

2007 Built new cow barn

2008 Bought pig farm (150ha)

2009 Built feed storage facilities

2016 Installed biogas plant

2017 Bought 90ha land

Innovative features

- Biogas facilities
- Large area arable land located closely
- 100% sexed semen

Buildings & Equipment

- Cubicles with rubber mat or water mattress
- Individual calving pens
- Milking parlour (2 x 20)
- Manure scraper
- Individual calf housing & group housing
- Separate location for youngstock & far-off cows

Labour force

- 6 employees

Areas of interest

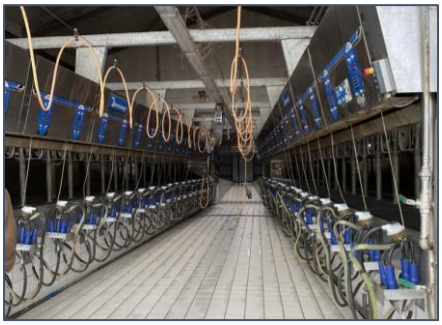
- Environmental impact
- International relations among dairy farmers

The herd

415 cows in total
365 cows in milk
405 dairy heifers

All-year-round calving
Age at first calving: 24 mo
Fulltime indoor housing

Breeds: 98% Holstein
2% Holstein x Belgian Blue

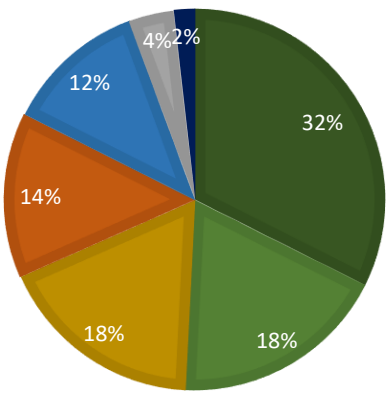


Milk production: 12,608 kg ECM per cow per year

Agricultural area

162 ha silage maize
92 ha grains
88 ha rapeseed
70 ha grassland
60 ha winter wheat
19 ha 'braak'
9 ha other

Total: 500 ha



Strengths

- High milk production per cow
- Biogas production
- Farm machinery is leased
- Low tax per kg milk produced
- Low debt

Weaknesses

- No pasture access
- Concrete, rubber matted cubicles for youngstock

Opportunities

- Member of European Dairy Association
- x
- x

Threats

- War in Eastern Europe
- Lack of reliable employees

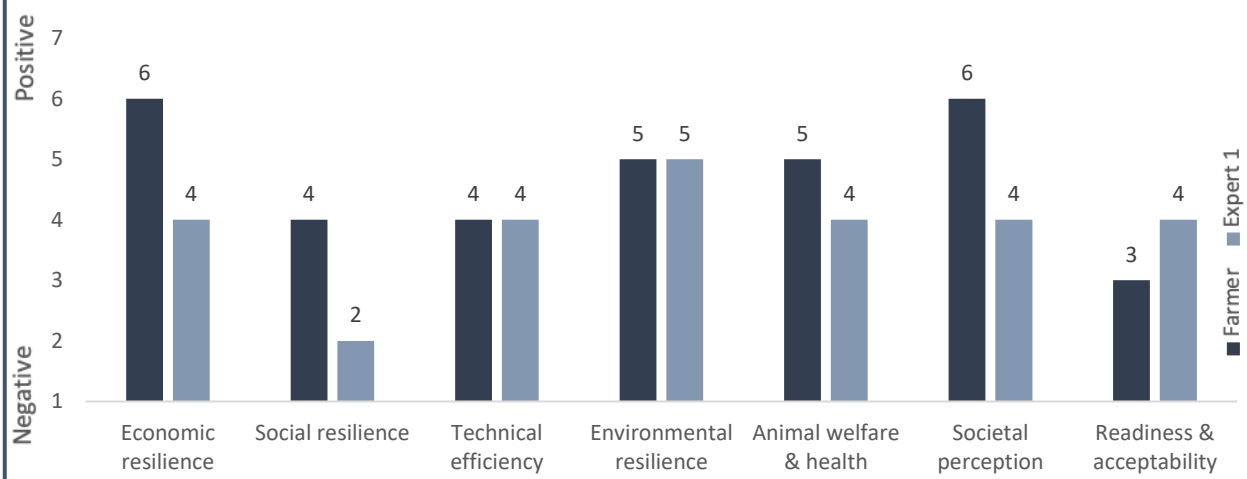
Innovative practice

Installing a biogas plant as strategy for improving environmental resilience. Co-digestion of cattle and pig manure & maize silage

Potential future solutions

- Employee cooperation
- Self-sufficiency in feed production

Effects of innovative practice on resilience



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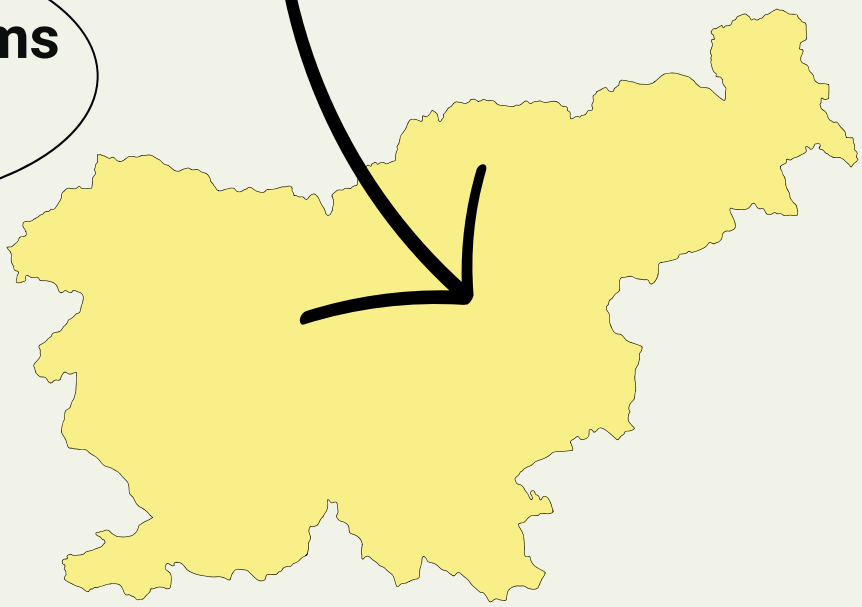
R4D DAIRY FARM NETWORK

Farm's presentations

5 Pilots Farms



SLOVENIA

Resilience for Dairy (R4D) has received funding from the European Union's Horizon 2020 research and innovation program under grant agreement No 101000770

Fam. Simon ČRETNIK
Pilot Farm Description
Pernovo 12, 3310 Žalec

Slovenia

Innovations

Socio-economic Resilience / Environment / Animal welfare

Farming milestones

2012 – Stop using of plough for soil preparation

2016 – Taking over family farm from parents

2021 – New Free-Walk barn for dairy cows

2022 – High increase in milk yield

2023

The herd

- 72 Livestock Units (LU)
- 55 dairy cows
  Breeds: Holstein & Brown
- 21 dairy heifers
- Calving period: all year round
- Age at first calving: 26 months

Agricultural Area

40 ha AA

- 20 ha Perm. Grassland
- 6 ha Wheat
- 12 ha Maize silage
- 2 ha Temp. Grassland
- 5 ha Forest

Workforces

- 2 labour units (Full Time Equivalent)
- 27 dairy cows & 313 885 kg /FTE
- **Aims**: Save time, be efficient,
- Aware of animal and environmental friendly housing system for dairy cows

Areas of interest

- Feed management
- Genetics
- High production
- Sensors for early detection of changes

Main buildings and equipment

- FreeWalk barn without cubicles with permeable floor for dairy cows
- Fullwood Milking Robot
- 1 Feed Automat for concentrate
- Individual boxes for young calves
- Collective boxes for calves and heifers

Production / Technical results

- 627 770 kg of milk produced (98 % sold via cooperative)
- 3.90 % fat & 3.48 % protein content
- Stocking rate: 2.1 LU / ha forage area
- 11 694 kg of milk /cow /year & 18 464 kg /ha forage area
- 1800 kg concentrate/cow/year
- Replacement rate: 22 %
- Breeding criteria
- High-production

Strengths

- Family – 2 generations
- High productive cows
- Healthy cows
- High animal wellbeing
- Farmer and consumer friendly housing system
- Low emission system

Weaknesses

- A lot of rented land
- Price for buying land is high
- Small parcels – average less than 1 ha

Opportunities

- Improvement in breeding, production and forage quality

Threats

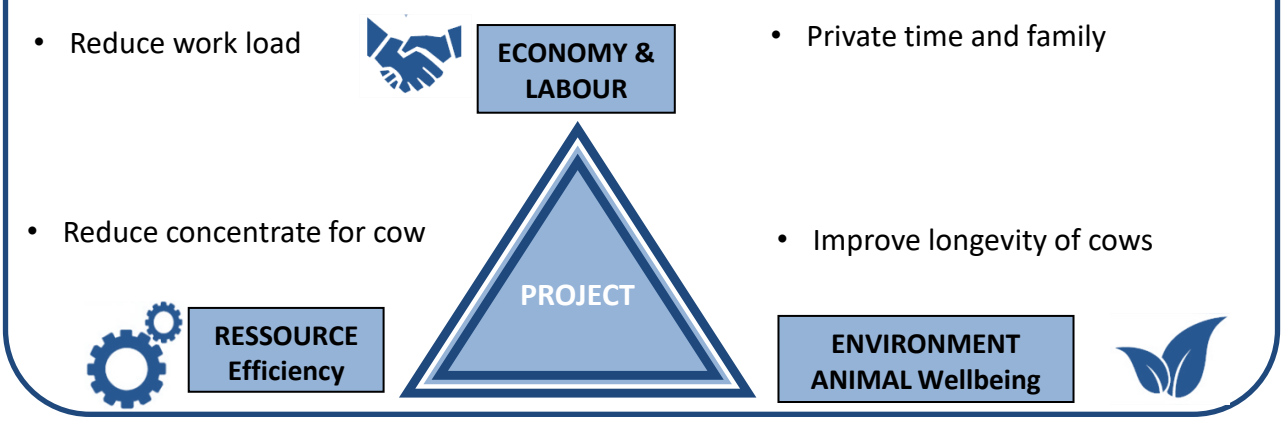
- Climate changes (drought, storms …)
- Political situation
- Environment impact – negative opinion of society, restrictions on farming

Strategy of the farmers / Resilience

Healthy high production cows with low CO_2 footprint per litre of milk. Using sensors for early detection of diseases. Best welfare possible to achieve max. production with optimal health

Area of interest / Aspirations / Needs for the future

Improving grassland management. Possibility of using alternative medicine for cows because of early detection of changes.
Good balance between work and free time.



Partner

University *of Ljubljana*

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Fam. Jakob DOLINAR

Pilot Farm Description

Stara Oselica 2, 4225 Sovodenj

Slovenia

Innovations

Socio-economic Resilience / Environment

Farming milestones

2008 New free-barn for dairy cows & increase the herd

2009 Start processing of milk

2014 Construction of milk processing place & farm shop

2015 Taking over the farm from father

2018 Hot air haystack

2023 Solar power plant on the roof

The herd

- 42 Livestock Units (LU)
- 30 dairy cows
  Breed: Simmental
- 11 dairy heifers
- Calving period: all year round
- Age at first calving: 28 months

Agricultural Area

30 ha AA

- 30 ha perm. grassland
- 30 ha Forest

Workforces

- 2 labour units (Full Time Equivalent)
- 15 dairy cows & 108 000 l /FTE
- **Aims**: Save time, be efficient,
- Aware of society and consumers

Areas of interest

- Grass management
- Milk processing to the cheese
- Genetics – genotype & suitable cows for grazing

Main buildings and equipment

- Barn for dairy cows with cubicles & slatted floor & old barn for dry-off cows
- Milking parlour: Auto-tandem: 5 units
- 1 Feed Station for concentrate
- Individual boxes for young calves
- Collective boxes on slatted floor for heifers

Production / Technical results

- 215 676 kg of milk produced (50 % sold, 50 % processed on the farm)
- 4.03 % fat & 3.49 % protein content
- Stocking rate: 1.4 LU / ha forage area
- 7 423 kg of milk /cow /year & 7.189 kg /ha forage area
- 1.350 kg concentrate/cow/year
- Replacement rate: 33 %
- Breeding criteria (BB, A2A2)
- Grass-based production

Strengths

- Family – 3 generations
- All land is in one piece
- Grass based milk production
- Processing of own milk and direct selling
- Rich biodiversity

Weaknesses

- Sloped land – a lot of hand work / danger
- No arable land - no maize / no corn
- Very much depend on the purchase of energy components

Opportunities

- Genetic improvements of dairy cows
- Improvement of grass management
- Society is in favour of their farming system

Threats

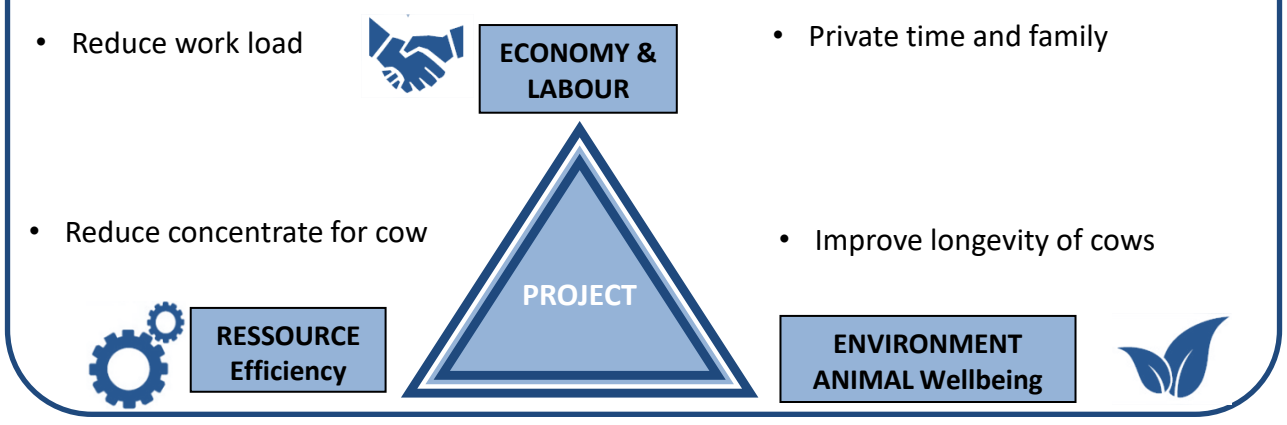
- Legislation which is not in favour of farming
- Climate changes (drought, storms …)
- Politic situation
- Lower consumption of milk and dairy products

Strategy of the farmers / Resilience

Production of high-quality grass-based milk, which is the basis for processing of high-quality dairy products. Improvement of health and longevity of dairy cows. Added value and direct selling of dairy products in farm shop.

Area of interest / Aspirations / Needs for the future

Efficiency and improvement of grassland management are 2 keywords of this farm. Reducing of hard manual work and simplification of work tasks. They also pay attention to the balance between work and free time. Family life is important for this family.



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Nada & Martin JAMŠEK
Pilot Farm Description
Moste 103, 1218 Komenda

Slovenia

Innovations

Socio-economic Resilience / Environment

Farming milestones

2008 Purchase of a new 150 HP tractor, which is still the biggest today

2012 Starting selling milk directly to schools

Completion of extra barn building

2006 Purchase of a new forage mixer

2009 Opening of milk vending machines in Kamnik and Ljubljana

2018 Started mixing our own concentrate

The herd

- 87 Livestock Units (LU)
- 53 dairy cows
  Breed: Holstein
- 39 dairy heifers
- Calving period: all year round
- Age at first calving: 29 months

Agricultural Area

- 35 ha Permanent Grassland
- 8 ha Forest
- 61 ha Arable land:
  - 21 ha Maize
  - 8 ha Soybeans
  - 10 ha Barley
  - 13 ha Alfalfa
  - 9 ha Grass

Workforces

- 3,5 labour units (Full Time Equivalent)
- 53 dairy cows
- **Aims** : Be more efficient, automatise more
- Aware of society and consumers

Areas of interest

- Optimal feeding at all stages of cow life
- Cow comfort and wellbeing
- Automation in dairy farming
- Using AI in areas of dairy farming

Main buildings and equipment

- Tied-in barn for dairy cows
- Pipeline milking system: 8 units
- 1 Feed Automat for concentrate on rail
- Individual boxes for young calves
- Collective boxes on slatted floor for heifers

Production / Technical results

- 722 853 kg of milk produced (85 % sold via cooperative, 10 % sold via Milk vending machines, 5 % to schools)
- 3.47 % fat & 3.44 % protein content
- Stocking rate: 1.12 LU / ha forage area
- 13 117 kg of milk /cow /year & 9.267 kg /ha forage area
- 2.350 kg concen./cow/year
- Replacement rate: 32 %
- Breeding criteria
- High-production

Strengths

- Location: Proximity to Ljubljana
- Good land distribution
- Good cow genetics
- Good knowledge on production practices
- Diversified Milk Distribution Channels

Weaknesses

- Tied-in barn with inappropriate dimensions
- Bad cow comfort
- Expensive land

Opportunities

- Genetic improvements of dairy cows
- Direct sales of milk
- Better cow practices
- AI Implementation
- Innovation: Taking advantage of wide-spread knowledge

Threats

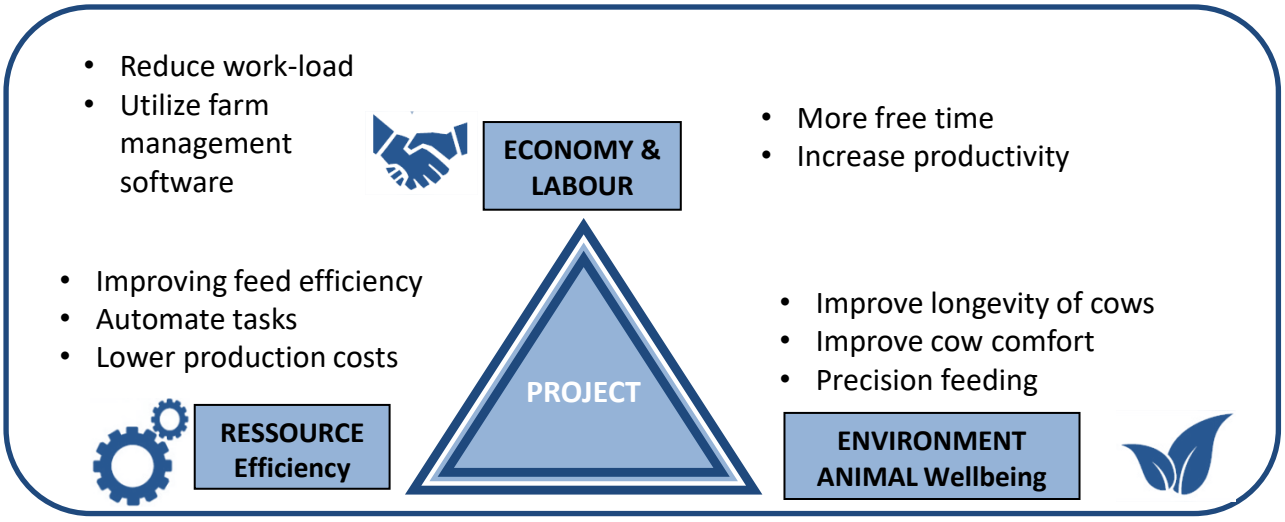
- Legislation which is not in favour of farming
- Community Complaints: Negative attitudes or complaints from the public
- Lower consumption of milk and dairy products

Strategy of the farmers / Resilience

In the future, we aim to heighten our farm's resilience through sustainable farming and optimized resource use, ensuring the long-term health of our land and livestock. We will diversify our milk distribution channels to mitigate market risks and sustain high productivity by investing in robust genetics. Embracing AI technology is an opportunity to increase operational efficiency and adaptability. Lastly, we plan to foster stronger community relations to maintain harmonious coexistence, thereby securing our farm's resilience and long-term prosperity

Area of interest / Aspirations / Needs for the future

Our objective is to enhance operational efficiency and prioritize cow comfort, aiming to thoughtfully automate routine tasks to lessen our workload. In all our transformations, the welfare of our livestock remains a key focus. Achieving these goals will require ongoing learning, adaptability, and strategic improvements. Furthermore, the exchange of knowledge and experiences with other farms on similar paths is invaluable to us.



Partner

University *of Ljubljana*

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Resilience for Dairy (R4D) has received funding from the European Union's Horizon 2020 research and innovation program under grant agreement No 101000770

Fam. Toni KUKENBERGER
Pilot Farm Description
Gorenje Ponikve 20, 8210 Trebnje

Slovenia

Innovations

Socio-economic Resilience / Environment / Animal welfare

Farming milestones

2010 Taking over the farm from parents

2013 Transition to organic farming

2014 New FreeWalk barn for dairy cows

2016 Certificated Hay milk

2017 New Dairy Plant

2023 Expanding dairy processing

The herd

- 29 Livestock Units (LU)
- 24 dairy cows
  Breed: Brown
- 3 dairy heifers
- Calving period: all year round
- Age at first calving: 27 months

Agricultural Area

28 ha AA

- 15 ha Perm. Grassland
- 13 ha Arable land

- 50 % rented
- 50 % own land
- 11 ha Forest

Workforces

- 6 labour units (Full Time Equivalent)
- **Aims**: Save time, be efficient,
- Aware of animal and environmental friendly farming system and people friendly working shifts

Areas of interest

- Processing of milk
- Grassland management
- Genetics
- Organic / Hay production

Main buildings and equipment

- Freestall barn with cubicles and slatted floor for dairy cows
- Compost bedded pack barn during grazing season
- Milking: 1x4 side by side
- FULL TMR all time
- Individual boxes for new calves
- Group boxes for calves and heifers

Production / Technical results

- 180 809 kg of milk produced (90 % processed on the farm)
- 4.02 % fat & 3.82 % protein content
- Stocking rate: 1,04 LU / ha forage area
- 8.716 kg of milk /cow /year
- 1.450 kg concentrate/cow/year
- Replacement rate: 33 %
- Breeding criteria: BB, A2A2, high protein, longevity, good udder
- Organic / Hay milk

Strengths

- Fields nearly all together
- Healthy cows
- Quality hay
- High animal wellbeing
- Very loyal and devoted co-workers

Weaknesses

- Insufficient arable land
- Severe droughts
- Too heavy work load for family members
- Too small drying facility
- Too small barn in the middle of village

Opportunities

- Nice landscape
- Possibility for agro-tourism
- High quality products
- Very good trade mark

Threats

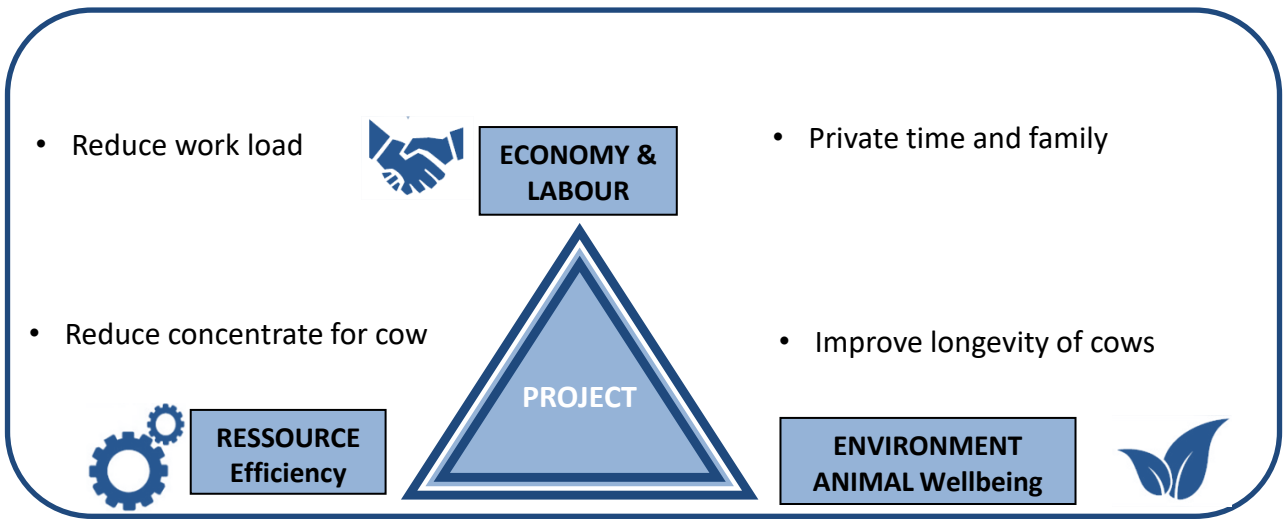
- Climate changes (drought, storms …)
- Political situation
- Environment impact – negative opinion of society, restrictions on farming

Strategy of the farmers / Resilience

Producing high quality hay and corn and provide good grazing management. Breeding of BB / AB & A2A2 genotype of Brown cows. Processing organic hay milk to high quality dairy products – e.g. cheese Prosenik. Direct marketing of milk and dairy products. To have good relations with co-workers, consumers and society.

Area of interest / Aspirations / Needs for the future

Efficiency and improvement of grassland management are 2 keywords of this farm. Reducing of hard manual work and simplification of work tasks, managed by a loyal and devoted team of co-workers. They also pay attention to the balance between work and free time. Family life is important for this family.



Partner

University *of Ljubljana*

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Gregor & Marta ROČNIK
Pilot Farm Description
Zavodnje 31, 3325 Šoštanj

Slovenia

Innovations

Socio-economic Resilience / Environment / Animal welfare

Farming milestones

2010
Taking over the farm from parents

2012
New barn for 125 animals

2014

2020
New barn for dry-off cows

2022

2024
Robotic feeding - VECTOR

The herd

- 140 Livestock Units (LU)
- 66 dairy cows
  Breeds: Holstein & Brown
- 31 dairy heifers
- Calving period: all year round
- Age at first calving: 24 months

Agricultural Area

40 ha AA

- 24 ha Perm. Grassland
- 11 ha Maize - silage
- 5 ha Pasture

- 16 ha Forest

Workforces

- 2 labour units (Full Time Equivalent)
- 33 dairy cows & 424 911 kg /FTE
- **Aims**: Save time, be efficient,
- Aware of society and consumers

Areas of interest

- Feed management
- Genetics
- High production

Main buildings and equipment

- Free barn with cubicles and slatted floor for dairy cows
- Lely Milking Robot
- Individual boxes for young calves
- Collective boxes on deep straw for heifers and dry-off cows

Production / Technical results

- 849 822 kg of milk produced (98 % sold via cooperative)
- 3.99 % fat & 3.34 % protein content –
- Stocking rate: 3.5 LU / ha forage area
- 13 899 kg of milk /cow /year & 21.246 kg /ha forage area
- 2.350 kg concentrate/cow/year
- Replacement rate: 34 %
- Breeding criteria
- High-production

Strengths

- Family – 2 generations
- High productive cows
- Healthy cows
- Grass silage with high protein level
- High animal wellbeing

Weaknesses

- Insufficient arable land

Opportunities

- Nice landscape
- Possibility for agro-tourism

Threats

- Climate changes (drought, storms …)
- Political situation
- Environment impact – negative opinion of society, restrictions on farming

Strategy of the farmers / Resilience

High production of milk with lower costs. Selling of breeding animals for good price.

Area of interest / Aspirations / Needs for the future

Use of anolyte – anionic water. Treatment of somatic cells with garlic boluses.
Reduce working hours – more free time.

- Reduce work load
- Private time and family
- Reduce concentrate for cow
- Improve longevity of cows

ECONOMY & LABOUR

RESSOURCE Efficiency

PROJECT

ENVIRONMENT ANIMAL Wellbeing

Partner

University *of Ljubljana*

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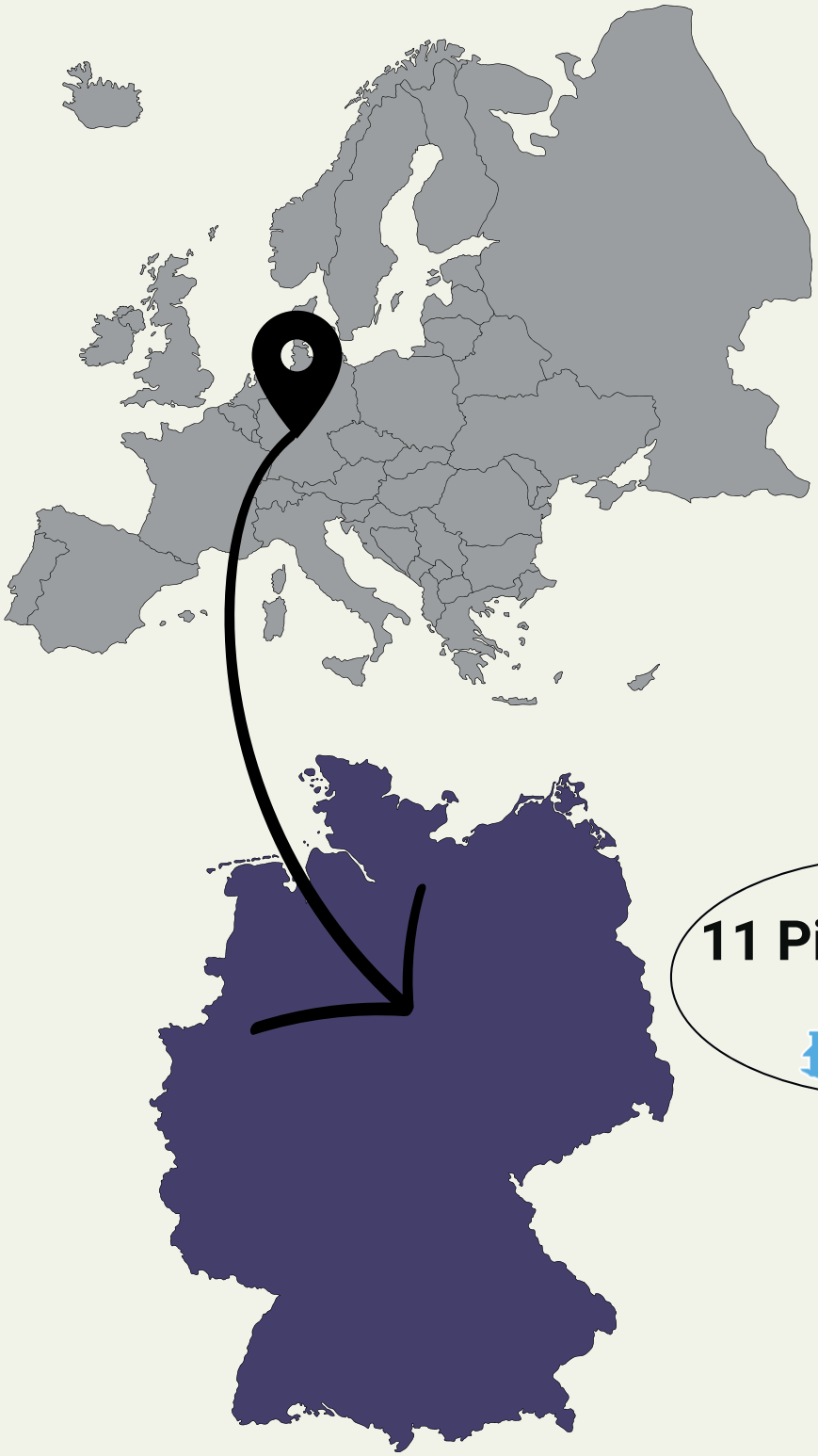
R4D DAIRY FARM NETWORK

Farm's presentations



GERMANY

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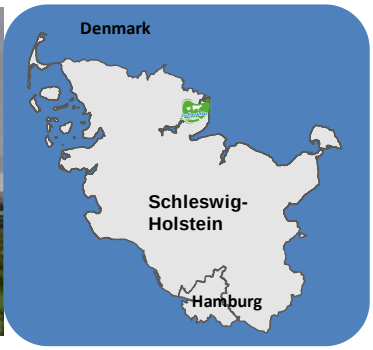
Andreas Hobus
Dörphof, Schleswig-Holstein
Pilot Farm description

Germany

Innovations

Socio-economic Resilience / Animal welfare



Farming milestones

2011 Andreas is starting to take over the farm from his parents

2013 Building new barn for 250 cows with 408 KW solar panels

2014 Biogas plant based on manure and feed waste 170 KW flexibel

2016 **3** mobile houses for laying hens, farm shop with vending maschines also for fresh milk

2021 30 ha grass-clover and reintroduction of grazing

2024 Diversification of crop rotation with 6 different crops

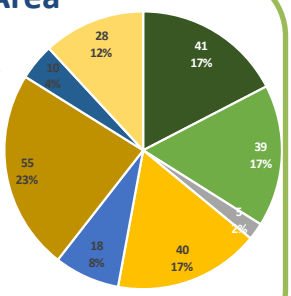
The herd

- 314 Livestock Units (LU)
- 235 dairy cows
  Breed: Holstein Frisian
  30% – replacement rate
- 140 dairy heifers
- Calving period: all year round calving (so far)
- Age at first calving : 26.8 months +
  600 laying hens in mobile houses (2 LU)

Agricultural Area

236 ha

- 41 ha perm. grassland
- 39 ha temp. grass/clover
- 40 ha Silage maize
- 5 ha Flowering strips
- 18 ha Spring oats
- 55 ha Winter Wheat
- 10 ha Oil seed rape
- 28 ha Winter barley
- 120 ha main forage area 51 % of AA



Workforces

- 5.5 labour units (Full Time Equivalent)
- 3 for dairy farm, 2 for cash crops + biogas
- + 0.5 farm shop and hens + ice cream prod.
- 78.3 dairy cows & 810.750 kg /FTE

Areas of interest

- Regional based agricutral production
  Home grown protein and concentrates based on regonal production
- Closing the cycle diversification
- Direct sal

Main buildings and equipments

- Cubicle house for 250 cows with rotary milking system flexible that 2 persons can mange the cows, deep litter boxes with straw + chalk
- Old cubicle house for heifers above 0.6 month
- Fresh calves in single huts and the calf pen in groups with straw
- 400 KW photo voltaics, 170 KW biogas, 24/7 Farm shop with 4 vending machines
- 3 movable houses for laying hens, always fresh grass (rotational grazing :))

Production / Technical results

- 2.432 250 kg of milk produced (97 % sold)
- 4,03 % fat & 3,37 % protein content
- Stocking rate: 1.78 LU / ha forage area
- 10 350 kg of milk /cow /year & 14 474 l /ha forage area
- 210 gr. Concentrates / kg milk

Strengths

- Strong family 4.5 FTE are family
- Diverse mixed farm spreading risks over
  1. Milk production
  2. Renewable energy
  3. Cash crops
  4. Farm shop and laying hens

Weaknesses

- too many projects at the same time
- Family is getting old
- High investments and high loans have to be met by high productivity

Opportunities

- Bild up ideas to streamline the farm, shift to a low input grazing system around
- Touristic region – Sell more products directly
- Open minded looking for opportunities

Threats

- Future agricultural politics is unpredict-table
- too much burocracy
- Very high land prices, both to buy or to rent
- climatic change

Farmer's strategy for a "resilient" system

Working on beeing independent from external purchases, even as conventionel farmer growing grass red clover for silage making and grass white clover for grazing, this leads to reduction of protein rich concentrates and artificial nitrogen-fertilisers.
Efficient rotational grazing system under devellopment. 2.5 cent /kg milk less feeding costs compared to neigbours. Bio-diversity as opportunity. Crop rotations with clover and 5 other criops allow for special subsidies, but also leads to carbon sequestration.
With financial support from partners(companies + private people) growing 5 ha wild flowers

Aspirations / Needs for the future

Further development of the grazing system: changing from all year round calving to autumn block calving. More own products in the farm shop sofar also meat and ice cream

Improvement project - objectives

- Reduce work load by shifting to a low-cost grazing system

ECONOMY & LABOUR

- More legumes (clovers + pulses) to be less dependent on concentrates + artificial N

RESSOURCE Efficiency

PROJECT

- Growing biodiversity for others
- Further development of farm shop
- Shift to autumn block calving
- Improve grazing system better cow roads

ENVIRONMENT ANIMAL Wellbeing

Partners

Kiel University
Christian-Albrechts-Universität zu Kiel

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Bent Jensen-Nissen
Jübek, Schleswig-Holstein
Pilot Farm description

Germany

Innovations

Socio-economic Resilience / Efficiency

1999
Foundation of civil law partnership with a neighbor merging the dairy herd to 95 cows

2000
Extending the central barn of 60 with 150 cow spaces

2003
Renting a farm in Eastern Germany with additional 135 cows

2006
65 additional spaces + calving area at Jübeck, now 270 cows there

2018
Building 110 additional spaces and focus only on farm at Jübek

2021
New barn for heifers

2023/24
Bent buys his partner's shares in the business

Farming milestones

The herd

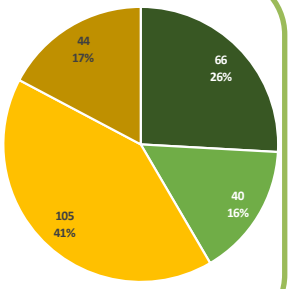
- 541 Livestock Units (LU)
- 400 dairy cows, breeds: Holsteins (36 Red + 330 Black) + 38 Angeln Cattle
- Replacement rate: 32 %
- 256 heifers
- Calving period : all year round calving
- Age at first calving : 23,5 months

Agricultural Area

255 ha AA

- 66 ha perm. grassland
- 40 ha temp. grassland
- 105 ha Silage maize
- 44 ha Winter rye

211 ha main forage area
= 83 % of AA



Workforces

- 6.5 labour units (Full Time Equivalent)
- 62 dairy cows & 675 700 kg milk /FTE
- **Aims** : Cost degression by size be efficient

Areas of interest

- Efficient management, rentability
- Healthy cows through good welfare
- Exchange with other farmers
- Good personnel management

Main buildings and equipment

- Efficient barn for 440 with additional 50 cubicles outside, barn is result of feed a basic barn that was extended 3 times, high share of self construction
- Depreciated effective milking facilities
- Photovoltaics (151 KW), Cooperative Biogasplant (600 KW), 16.5% shares owned

Production / Technical results

- 4 392 000 liters of milk produced (97 % sold)
- 4,05 % fat & 3,46 % protein content
- Stocking rate: 2.56 LU / ha forage area; 2.12 LU / ha agricultural area
- 10 980 kg of milk /cow /year & 20,815 kg /ha forage area
- Concentrates: 305 gr. per kg milk

Strengths

- Good personnel management
- Good to talk to other people
- Efficient organisation of the farm
- Building construction

Weaknesses

- Dependence on a good herdsmanager
- High proportion of borrowed capital after the former partner's payout

Opportunities

- Just the right size, no pressure to continue growing at any cost
- Creating the possibility to generate wind and solar energy on own land (with partners)

Threats

- Future agricultural politics, Time consuming bureaucracy
- Skilled labor shortage

Farmer's strategy for a "resilient" system

Foundation of civil law partnership with a neighbor and merging the farms was the key to the actual effective farming enterprise, due to generations shift after a very good partnership the former is bought out. Now the farm has just the right size, no pressure to continue growing at any cost. Consolidation is now in the focus, aim to have less than 2 cent capital costs per kg Milk
Rearing of heifers is now contratced to a neighbor farm
Good personnel management.
Focus on animal welfare access to 18 ha pasture for cows in the second half of lactation

Aspirations / Needs for the future

Exploring possibilities to spread the risks by financial investments in renewable energy produced on farm, focus will not be on biogas but wind and solar energy

Aims and planned projects for further improvement

- Reduce work load as important part of the consolidation process
- Investments in solar and wind energy projects

ECONOMY & LABOUR

Renewable energy

PROJECT

- Growth only when there are good opportunities
- Outsourcing of heifers, focus on dairy cows, calves and animals in preparation for calving

RESSOURCE Efficiency

Partners

VRS Schleswig e.V.

EUROPEAN DAIRY FARMERS

C A U
Kiel University
Christian-Albrechts-Universität zu Kiel

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Christian Cordes
Wanderup, Schleswig-Holstein
Pilot Farm description

Germany

Innovations

Socio-economic Resilience / Animal welfare

2004 New loose housing barn 166 cubicles

2006 Solar panels 220 KW

2010 Biogas plant 400 KW

2017 Upgrade: flexibilization of biogas plant to 950 KW, Reintroduction of grazing

2019 Upgrade of barn to Animal welfare barn

2020 New barn for calving + young stock

2021 Neighbour farm bought = + 340 KW Biogas and large pig barn

Farming milestones

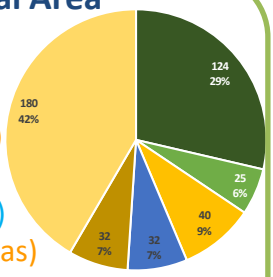
The herd

- 213 Livestock Units (LU)
- 175 dairy cows
  Breeds: Holstein Frisian
  22% – replacement rate
- 35 + 35 dairy heifers
- Calving period : autumn block calving
- Age at first calving : 25 months
- + 2500 piglets (7- 30 kg) = 18 000 per year

Agricultural Area

433 ha AA

- 124 ha perm. grassland
- 25 ha temp. grassland
- 40 ha Silage maize(cows)
- 32 ha Winter rye
- 32 ha sugar beet (biogas)
- 180 ha Silage maize (biogas)



130 ha main fodder area
69 % of grassland / forage area

Workforces

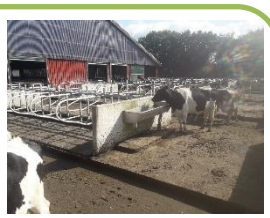
- 5 FT-labour units (3 Dairy production 2 Biogas + piglets)
- 58.3 dairy cows & 583 300 l /FTE + 18 000 piglets fed from7 to 30 kg

Aim/pressure: We have to be efficient

Areas of interest

- Healthy cows, animal welfare
- Cost efficient feeding
- Exchange of experiences with other farmers (EIP-Operational Groups, EDF)

Main buildings and equipment



- Animal welfare barn, 1.1 feeding places, 175 cubicles with straw + 42 cubicles outside. New calving barn and pen for calves
- Under installation 3 milking robots in combination with AB-grazing system
- 220 KW Photovoltaics, 740 KW Biogas, heating with excess heat
- Barn for piglet rearing from 7 to 30 kg for 2500 piglets

Production / Technical results

- 1.750 000 kg of milk produced (97 % sold)
- 4.1 % fat & 3.4 % protein content
- Stocking rate: 1.63 LU / ha forage area
- 10 050 kg of milk /cow /year & 13 461 kg /ha forage area
- 18 000 piglets (7- 30 kg) per year
- Veterinary costs: 0.99 cent /kg milk
- 213 gr. Concentrates / kg milk

Strengths

- Open minded
- Strong family 3.5 FTE are family
- Very good co-workers
- Spreading risks via
  1. Milk production
  2. Reneable energy
  3. Piglet rearing

Weaknesses

- Too many working hours per family member
- High investments and high share of loans
- Coarse sandy soils with low water storage capacity

Opportunities

- 2 sons are willing to take over as partners
- Dairy company pays extra for animal welfare milk from pasture

Threats

- Weather dependency, climatic change because of coarse sandy soils
- Future interest rate developments

Farmer's strategy for a "resilient" system

Diversification with three main branches of the farm enterprise
Reintroduction of grazing in combination with minor investments to increase animal welfare in the barn, gave possibility for a special contract with a dairy company (+ 4 cent/kg)
More animal wellfare + pasture increased cow health.
Based on grazing lower costs for concentrates (- 1.5 kg ECM)

Aspirations / Needs for the future

After fast growth of the farm, the farm has just the right size, no pressure to continue growing at any cost. Consolidation is now in the focus.
Reduction of work load via changing to automatic milking system (3 robots)

Improvement project - objectives

- Reduce work load via shift to automatic milking system in late summer 2024

ECONOMY & LABOUR

- Base biogas production more on residuals and manure instead of silage maize

RESSOURCE Efficiency

PROJECT

- Installation of 3 milking robots and make them work in combination with AB-grazing system
- Optimisation of grazing infrastructure – challenge: a lot of potential pasture is separated from the farm by a small public road

ENVIRONMENT ANIMAL Wellbeing

Partners

Kiel University
Christian-Albrechts-Universität zu Kiel

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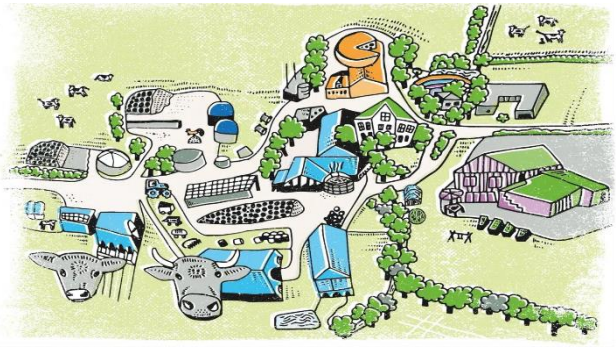
Hof Backensholz

Jasper + Thilo Metzger Petersen
Oster Ohrstedt, North Frisia

Germany

Innovations

Socio-economic Resilience / Animal welfare



Farming milestones

1989 Conversion to organic farming

1991 Start cheese making

2002 1st biogas plant 140KW

2006 Biogas upgrade to 720 KW + Solar panels (200 kw)

2018 Opening of Farm-Kindergarden

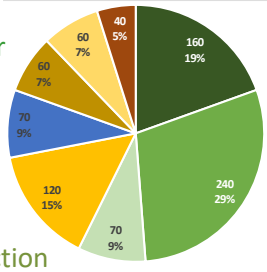
2019 New Farm shop and restaurant

The herd

- 880 Livestock Units (LU)
- 520 dairy cows
  Breeds: 90 %Frisian + some Brown Swiss & German Red
- replacement rate 23%
- Calving period: all year
- Age at first calving : 25 months
- Average calving rank: 3.9 lactations
  Breeding aim: hornless, high Kappa-casein

820 ha Agricultural Area

- 160 ha perm. grassland
- 240 ha temp. grass/clover
- 120 ha Silage maize
- 70 ha Whole crop silage
- 40 ha Potatoes
- 70 ha Faba beans
- 60 ha Spring oats
- 60 ha Grass seed production
- 590 ha main forage area 78 % of AA



Workforces

- 12 farm workers (Full Time Equivalent)
- 9 for dairy farm, 3 for cash crops + biogas
- 58 dairy cows & 750 000 l /FTE
- 28 people find their work in the cheese manufactory, restaurant and farm shop

Areas of interest

- Organic farming, animal welfare
- Milk processing
- Direct sale via farm shop and internet
- Electricity production for 2000 households
- Information transfer to many visitors

Main buildings and equipment

- Historic grown farm, 1991 build new barn for 100 dairy cows, additionally 2006 barn with 256 cubicles + 2018 animal welfare barn for 250 cows
- 2018 new Calf pen for 150 calves with access to the outside
- 2002 + 2006 Biogas plant in addition photovoltaics.
- Since 1991 constantly expanding cheese factory now 14.000 kg milk/day

Production / Technical results

- 4 940 000 kg of milk produced (94 % to own cheese factory) 13.500 kg milk per day
- 4.2 % fat & 3.5 % protein content
- Stocking rate: 1.49 LU / ha forage area
- 9,525 l of milk /cow /year & 8,474 l /ha forage area
- Production of 1150 kg of raw milk cheese daily

Strengths

- Mixed farm, most forage area around the farm allows to graze 500 cows
- Independency from classic milk marked

Weaknesses

- Inflation had and can have negative impact on organic cheese
- Grown family farm we have to organize secondary leadership

Opportunities

- Take opportunities as they come, there are lots of opportuinities
- Spreading financial risks by diversi-fication

Threats

- Weather dependency (because of grazing)
- Very high land prices, both to buy or to rent

Farmer's strategy for a "resilient" system

Early converted to organic farming and built up large experience.
Good mechanisation especially with farm machinery for organic weed management.
Deep rooting red clover as drougt tolerant main protein (XP) and nitrogen (N) source.
Good working atmosphere, good relations to co-workers, good team of co-workers.
Self sufficieny with electricity and especially heat used for the cheese manufactory.
High self sufficiency with XP and N and grazing are the base for a low Carbon-footprint

Aspirations / Needs for the future

Expand direct sale of products via web-shop
Cheese factory needs to be extended and modernized
Estimation of the environmental footprint of own cheese-production as base for marketing

Aims and planned projects for further improvement

- Automatic feeding system
- Purification of Biogas to methane for feeding it into the public gas network

ECONOMY & LABOUR

RESSOURCE Efficiency

PROJECT

- Development to be a transparent farm to maximize customer trust.
- Establishment of a biological wastewater treatment for the cheese factory based on willows (Dual purpose: wood chips)
- Professionalisation of the grazing system

ENVIRONMENT ANIMAL wellbeing

Partners: Bioland; 2024 Wir unterstützen die Idee von Slow Food Deutschland; Wir fördern den ländlichen Raum EU.SH; eip-agri; C A U Kiel University Christian-Albrechts-Universität zu Kiel

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Resilience for Dairy (R4D) has received funding from the European Union's Horizon 2020 research and innovation program under grant agreement No 101000770

Hof Brehmhöft
Hanno and Max Lammers
Winnert, Region North Frisia

Germany

Innovations

Socio-economic Resilience / Animal welfare

1970
Intensified grazing inspired under Max's internship in Ireland

1978
new barn for 70 cows

1984
Shift to seasonal spring calving, at least one month without milking around Christmas

2010
Renovation of barn to fit to HF-size

2019
Upgrade and extension of barn to house 150 cows

2020
Rebuilding a pig barn to house 100 heifers

2022
new milking parlour and fresh calvers area + hospital pens (to house 40 cows

Farming milestones

The herd

- 155 dairy cows + 130 heifers
- 236 Livestock Units (LU)

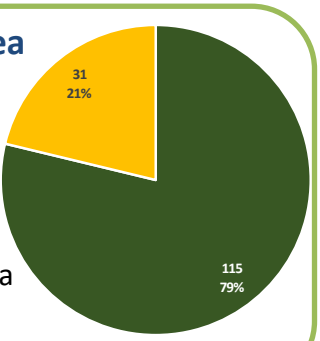
Breeds: Holsteins (15 Red + 129 Black) + 2 Brown Swiss + 14 Angeln Cattle

- 30 % replacement rate
- seasonal winter calving, start early January
- first calving : 33 months

Agricultural Area

146 ha AA

- 115 ha permanent grassland
- 31 ha silage maize



146 ha main forage area
100 % forage area

Workforces

- 2.3 labour units (Full Time Equivalent)
- 82dairy cows & 655 000 kg /FTE
- **Aims**: Seasonal calving allows to concentrate working processes. Save time based on healthy calves + grazing

Areas of interest

- High forage quality, high quality silages
- Grazing grass in young stages
- Healthy cows, animal welfare,
- High working efficiency
- exchange with other farmers

Main buildings and equipment

- Historical slowly grown in mainly depreciated barn
- new milking parlour + selection + waiting area for effective milking by 1 person
- Good infrastructure for grazing, constantly stocked aimed growing hight 6 cm
- Own forage wagon with front Mower allows additional green feeding

Production / Technical results

- 1 506 135 kg raw milk (97 % sold)
- 3.85 % fat & 3.4 % protein content
- Stocking rate: 1.6 LU / ha forage area
- 9 717 kg EC Milk /cow /year
- 10 315 kg Milk /ha forage area
- 220 gr. concentrates / kg milk
- Young fresh grass and at least 5 grass silage cuts as main protein source

Strengths

- Relaxed, level-headed person not easily disturbed
- Efficient son-father enterprise, well equipped with machines and well established grazing system

Weaknesses

- Too high first calving age
- Too high land prices

Opportunities

- Good climate + soils to grow enough forage
- Large enough forage area allows for reserves to cope with dry years
- High degree of independence contractor only for maize harvest

Threats

- Climate change in the long run, because of weather dependency of the grazing system
- Excessive bureaucracy

Farmer's strategy for a "resilient" system

A very efficient grazing system based on winterblock calving - pasture is constantly stocked and a maximum growth hight of 6 cm (= Kurzrasenweide) leads to very high concentrations of crude protein and net energy in the grazed grass.
Key to low feeding costs is high forage quality, based on own efficient forage wagon high flexibility to make good grass silage at the right time.
Silage maize is harvested leaving at least 50 stubble hight. This leads also with maize to extremly high forage quality, as a consequence 30% less concentrates are fed compared to meighbors.
Since many years the well established grazing system is the background for low production costs.

Aspirations / Needs for the future

Development goals: 10 500 kg milk per cow, 11 000 kg milk produced per ha pasture while at the same time reduce concentrate feeding to 180 gr concentrates per kg milk

Improvement project - objectives

- Increase efficiency 1 000 000 kg milk per FTE

ECONOMY & LABOUR

- Increase herd size to 200 and still can manage it with 2 FTE

RESSOURCE Efficiency

PROJECT

- Improve management and breeding with respect to longevity
- Try extend grazing area around farm with rented land
- Further improvement of cow comfort, happy cows are easy cows :)

ENVIRONMENT ANIMAL Wellbeing

Partners:

Kiel University
Christian-Albrechts-Universität zu Kiel

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Jan Danker

Brügge, Schleswig-Holstein

Pilot Farm description

Germany

Innovations

Socio-economic Resilience / Efficiency

Farming milestones

1980
Building new loose housing barn with 96 cubicles

2001 + 2004
Additional buildings for 180 + 80 cows

2018
24 spaces for calving and fresh milking cows

1996 + 1998
New milking barn with 2 x 14 side by side + selection

2011
New barn for 80 calves

2019
Renting the neighbour farm to house up to 220 heifers

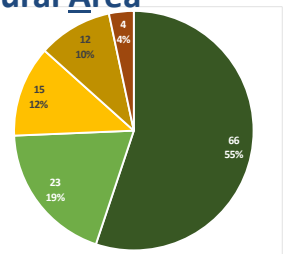
The herd

- 617 Livestock Units (LU)
- 450 dairy cows
  Breed: Holstein Frisian
  28 % – replacement rate
- 290 heifers
- Calving period : all year round calving
- Age at first calving : 24,4 months

Agricultural Area

275 ha AA

- 90 ha perm. grassland
- 2 ha set aside land
- 82 ha Silage maize
- 18 ha Oil seed rape
- 12 ha Winter wheat
- 48 ha Winter rye
- 19 ha winter barley
- 172 ha main forage area = 63 % of AA



Workforces

- 9 labour units (Full Time Equivalent)
- 50 dairy cows & 515 000 l /FTE
- **Aims** : Cost degression by size be efficient

Areas of interest

- Efficient management
- Rentability
- Healthy cows
- Comradely relationship with employees

Main buildings and equipments

- Efficient barn for 470 cows with good feed and slurry storage capacity
- Depreciated effective milking facilities
- Renting of the neighbor farm to raise the young stock there
- Photovoltaics (300 KW), heating of 5 houses based on wood chops (100 KW) from hedgerows supported by heat recovery from milk cooling approx. 10 KW

Production / Technical results

- 4.635 000 liters of milk produced (97 % sold)
- 3,95 % fat & 3,45 % protein content
- More than self sufficient with electricity
- Stocking rate: 3.59 LU / ha forage area; 2.24 LU / ha agricultural area
- 10.522 l of milk /cow /year & 26,947 l /ha forage area

Strengths

- Very good team, strong familiy
- All fields not too far from the farm good neighbours

Weaknesses

- Impatient
- High investments and relatively high interest burden

Opportunities

- Just the right size, no pressure to continue growing at any cost
- Good soils and good climatic conditions to grow forage

Threats

- Future agricultural politics
- Time consuming bureaucracy

Farmer's strategy for a "resilient" system

Beeing prepared with respects to financial risks,
Good, fair and stable long-term loans, good incurances to help covering risks.
Beeing prepared in case of unforseen things like accidents – have your testament in place :)
Very good structured working processes
Comradely relationship with employees, good living conditions in farm owned houses Flat hierarchy

Aspirations / Needs for the future

Reduce the workload
At one time replacing depreciated effective milking facilities by milking robots

Aims and planned projects for further improvement

- Reduce work load
- Improve digital cow management

ECONOMY & LABOUR

Digitalisation

PROJECT

- Growth only when there are good opportunities
- Field work, mainly done by contractors, only necessary basic machinery on the farm
- Milking robots when the time is right for this investment

RESSOURCE Efficiency

Partners

Kiel University
Christian-Albrechts-Universität zu Kiel

Bauern.SH
BAUERNVERBAND SCHLESWIG-HOLSTEIN E.V.

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Grünhof Jörg Riecken

Großbarkau, Schleswig-Holstein

Pilot Farm description

Germany

Innovations

Socio-economic Resilience / Animal welfare

Farming milestones

1966 Building a loose housing barn outside the village

1968 Start autumn block calving + rotational grazing

1998 Additional buildings for calves, dry cows + slurry storage

2011 Solar panels and heating with chopped wood

2019 Animal welfare barn + slurry storage

2022 3 Milking robots in combination with grazing (AB)

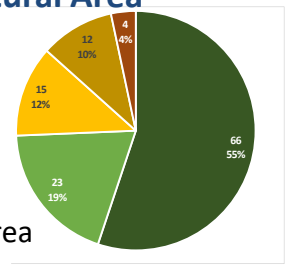
The herd

- 192 Livestock Units (LU)
- 140 dairy cows
  Breeds: Holstein Frisian
  31% – replacement rate
- 90 dairy heifers
- Calving period : autumn block calving
- Age at first calving : 29 months

Agricultural Area

130 ha AA

- 66 ha perm. grassland
- 23 ha temp. grassland
- 25 ha Silage maize
- 12 ha Winter cereals
- 4 ha set aside land
- 114 ha main fodder area
- 78 % forage area



Workforces

- 2.2 labour units (Full Time Equivalent)
- 63.6 dairy cows & 750 000 l /FTE
- **Aims** : Save time, be efficient, I am able to concentrate my work

Areas of interest

- Healthy cows, animal welfare
- Cost efficient feeding
- Exchange of experiences with other farmers, (EIP-Operational Groups, EDF)

Main buildings and equipments

- Animal welfare barn with 1.1 feeding places and cubicles per cow, cubicles with comfort mattresses and straw litter
- 3 Milking robots in combination with an AB-Grazing system
- Photovoltaics (35 KW), heating based on wood chops from hedgerows

Production / Technical results

- 1.650 000 liters of milk produced (97 % sold)
- 3,9 % fat & 3,3 % protein content
- Stocking rate: 1.78 LU / ha forage area
- 11,785 l of milk /cow /year & 14 474 l /ha forage area
- Veterinary costs: 0.75 /kg milk
- 240 gr. concentrates / kg milk

Strengths

- Block calving gives possibility to concentrate seasonal work and healthy calves
- Always prepared: able to act instead of reacting under press

Weaknesses

- Feeding strategy for dry cows.
- High investments and high loans have to be met by high productivity (pressing)

Opportunities

- Grazing area accecible from the farm
- Spreading financial risks by also investing outside agriculture

Threats

- Weather dependency (because of grazing)
- Very high land prices, both to buy or to rent

Farmer's strategy for a "resilient" system

Beeing prepared taking preventive measures: e.g. own emergency power supply, able to milk, cool and warm up in case of power failure. Regenerative energy (Photovoltaics and wood chips for heating) Own mechanisation, to be independend from contractors when needed. The very efficient grazing system is the centra point, it leads to low feeding costs and healthy cows. Compact block calving offers many opportunities to concentrate working processes but also enables for holydays with the family during summer

Aspirations / Needs for the future

Invest more outside the agricultural sector

Building an additional storage for 1000 tons of maize silage to build up reserves for draught as well as to have already ensiled maize for cows calving in mid of september cows.

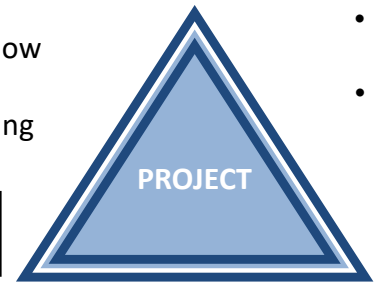
Aims and planned projects for further improvement

- Reduce work load

ECONOMY & LABOUR

- Buffer tank for milk to allow constant milking for the robots even under cleaning

RESSOURCE Efficiency



- Optimising of forage storage
- Enlargement of storage for solid manure
- An additional milking robot as back up
- Improve the cows roads with recycled artificial grass from urban football fields

ENVIRONMENT ANIMAL wellbeing

Partners

Kiel University
Christian-Albrechts-Universität zu Kiel

Agrarberatung-Mitte e.V.
Landwirtschaftliche Unternehmensberatung

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Hof Sophiental

Kirsten Wosnitza and
Gerd-Matthias Albertsen
Löwenstedt Northern Frisia

Germany

Innovations

Socio-economic Resilience / Animal welfare

Farming milestones

1997
Foundation of Civil law partnership with the previous owner

2004
Farm now owned by Kirsten and Gerd

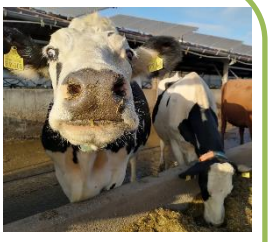
2009
Building of new barn with outside feeding trough and solar panels

2011
Building of Biogas plant together with 7 other farmers

2011
Intensification of grazing shift to autumn block calving with grazing

2022
Change from HF to crossbreeding

The herd

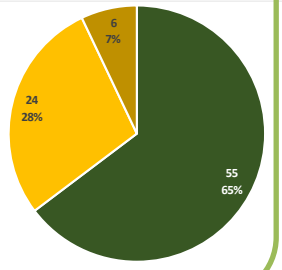


- 156 Livestock Units (LU)
- 120 dairy cows
  Breed: HF + crossbreeds
  23% – replacement rate
- 62 dairy heifers
- Calving period : autumn block calving
- Age at first calving : 27 months

Agricultural Area

85 ha AA

- 55 ha perm. grassland
- 24 ha Silage maize
- 6 ha Cereals grown for whole crop silage
- 85 ha main fodder area
- 100 % forage area



Workforces

- 1.7 labour units (Full Time Equivalent)
- 70.6 dairy cows & 713 000 l /FTE
- Harvest of grass and maize, as well as tillage + spraying is done by contractors

Areas of interest

- animal welfare, longevity
- Cost efficient feeding
- Biodiversity
- Networks (e.g. EIP), agricultural politics

Main buildings and equipment

- Animal welfare barn with outside trough feeding
- Grazing infrastructure
- Cooperative biogas plant (570 KW /12.5% shares owned), shares in a village owned Windpark, Photovoltaics: 88 KW

Production / Technical results

- 1 212 000 kg of milk produced (97 % sold)
- 4.1 % fat & 3.4 % protein content
- Stocking rate: 1.84 LU / ha forage area
- 10 100 kg of milk /cow /year & 14 260 kg /ha forage area
- Veterinary costs: 1.4 cent/kg milk
- 219 gr. concentrates / kg milk

Strengths

- High work efficiency with good work-life balance
- Longevity of cows, good animal welfare
- Good public acceptance
- Biodiversity on grassland
- Low carbon footprint of milk production

Weaknesses

- Coarse sandy soils with low water storage capacity
- farm too small for necessary machinery for regenerative farming
- Contractors not ready for regenerative farming

Opportunities

- Grazing area accecible from the farm
- good climatic conditions to grow forage
- Good advisory system and farming infrastructure (a choice of dairy- and feedstuff companies

Threats

- climate change because of weather dependency
- volatile milk prices
- public acceptance of dairy farming in general
- Underminig Green Deal decreases chances for sustainable farming
- Return of wolves

Farmer's strategy for a "resilient" system

A very efficient grazing system based on autumn block calving - pasture is constantly stocked and a maximum growth hight of 7 cm (= Kurzrasenweide) leads to very high concentrations of crude protein and net energy in the grazed grass.

The block calving leads to healthy calves and allows efficient feeding in the first half of the lactation period, as a consequence 30% less concentrates are fed compared to neighbors.

High animal welfare and a comparatively low carbon footprint of milk (PCF) production of 870gr. CO_2eq/kg ECM are reached (without PCF reduction caused by the renewable energy sources).

Grazing creates biodiversity (less cuts, cow dung as insect feed source) and increases CO_2-storage

Aspirations / Needs for the future

Intensive dialog between consumers/citizens, farmers and politics to create a system, which pays for public goods and gives sustainable dairy farming a future (market + CAP)

Establishing applied science, advice, school and on farm education for grassland and grazing systems

Aims and planned projects for further improvement

- Find a part time employee (for time off)
- Find a partner or contractor to transform crop production towards a regenerative system
- Breeding: reduce milk yield per cow and increase meat yield

ECONOMY & LABOUR

- Change to a more robust cow (Pro Cross), optimal yields over a long period instead of maximum yields in only a few lactations
- Improve the cows roads/grazing infrastructure of grazed pastures

PROJECT

RESSOURCE Efficiency

ENVIRONMENT ANIMAL wellbeing

Partners

Arbeitsgemeinschaft bäuerliche Landwirtschaft e.V.

Kiel University
Christian-Albrechts-Universität zu Kiel

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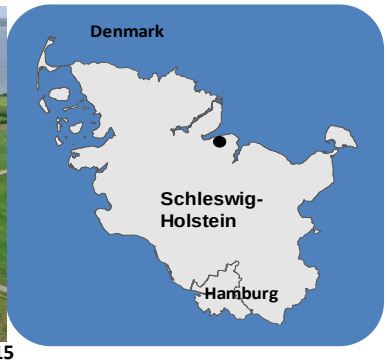
Lindhof (Kiel University)
Organic mixed farm at Noer in Schleswig-Holstein

Germany

Innovations

Socio-economic Resilience / Animal welfare



Farming milestones

1954 Dairy cows in loose housing barn

1970 Shift from dairy cows to beef production (400 animals). Silage Maize as main forage

1995 Conversion to organic farming, shift to suckler cows

2006 Start of outdoor piglet and pork production in a rented deep litter barn

2015 Building of animal welfare barn, purchase of 80 Jersey heifers

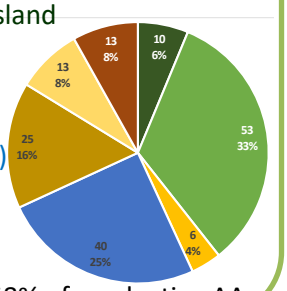
2016 Restart of milk production in a full grazing systemt

The herd

- 170 Livestock Units (LU)
- 111 dairy cows
  Breeds: 60% Jerseys + 10% Angeln+30%EBI-Crossbreeds
- replacement rate 16,5%
- Calving period: spring calving
- age at first calving : 23,5 months
- Average calving rank: 5 lactations
  Breeding aim: hornless, high fertility

160 ha Agricultural Area

- 10 ha perm. intesive grassland
- 53 ha temp. grass/clover
- 6 ha silage maize
- 40 ha wet biodiversity grassland (low input)
- 25 ha spring oats
- 13 ha winter wheat
- 13 ha Winter spelt
- 69 ha main forage area/58% of productive AA



Workforces

- 3 farm workers (Full Time Equivalent)
- 37 dairy cows & 750 000 l /FTE
  Lindhof is an experimental farm for organic farming owned by Kiel university
- Additional 3 FTE work with experiments

Areas of interest

- Organic farming, animal welfare
- Eco-efficiency
- Low-cost full grazing
- Beef production with crossbred excess heifers on nature conservation grassland

Main buildings and equipment

- Straw bedded loose housed animal welfare barn with outside feeding (2015)
- Depreciated straw bedded barn for young stock with outside area (1970)
- Flexible barn for seasonal produced calves and fattening pigs
- Good grazing infrastructure 110 hectares accessible
- Full range farm shop for marketing of meat (driven as separate company)

Production / Technical results

- 745 700 kg of jersey milk (= 870 000 kg ECM (94 % sold, rest needed for calf rearing)
- 5.2 % fat & 3.7 % protein content
- Stocking rate: 1.95 LU / ha productive forage area
- 7840 kg of EC-milk /cow /year & 12 608 kg /ha forage area
- 25 dairy/meat crossbred heifers for beef production produced on wet grassland
- 120 gr. concentrates / kg milk

Strengths

- Mixed farm, spreading financial risks and efficient nutrient management
- Cooperation with an organic all arable farm

Weaknesses

- Not able to grow size of agricultural area
- Specialisation to 100% dairy farm would make this mixed farm even more profitable

Opportunities

- Using organic waste potatoes and carrots from other farms as addtional feeding
- Spreading financial risks by diversi-fication

Threats

- Weather dependency (because of grazing)
- Very high land prices, both to buy or to rent

Farmer's strategy for a "resilient" system

Early converted to organic farming and built up large experience. Low cost full grazing system on grass clover, 85 % of milk is produced from forage (forage costs: 16 cent /kg ECM-Milk (organic). Long grazing season (March to end of october). 5 month full grazing (May to September). Undersown grass clover and cover crops are used as additional forage. Eco-efficient milk production. Carbon footprint: 630 gr. CO2eq/kg ECM. Grazing is carried out on drought tolerant multispecies grass/clover (chicory and plantain) Cooperation with an organic all arable farm swapping solid manure against grass clover, sharing combine and some machinery for tillage with a conventional all arable farm.

Aspirations / Needs for the future

Expand direct sale of meat, try to produce own cheese with help of a mobile cheese factory When possible, extend herd size

Aims and planned projects for further improvement

- Intensify coopera-tion with other farms also with respect to low input beef production
- Reduce feeding of concentrates even further

ECONOMY & LABOUR

RESSOURCE Efficiency

PROJECT

- Additional focus on breeding increase longevity and fertility
- Reduce calving period by 2 weeks (Mid January to mid April)
- Improve the cows roads and grazing infrastructure

ENVIRONMENT ANIMAL wellbeing

Partners:

Naturland Bioland

Wir fördern den ländlichen Raum EU.SH

eip-agri

C A U Kiel University Christian-Albrechts-Universität zu Kiel

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Michael Petersen,
Taarstedt, Region Angeln Schleswig-Holstein

Germany

Innovations

Socio-economic Resilience / Animal welfare

1993 Building new barn for 54 cows

2006 extension of cow barn to 86 cows

2010 building new barn for machinery and as fodder storage

2022 new silage storage facilities

2000 new barn for the calves

2009 new barn for heifers

2017 new animal welfare barn for dairy cows

Farming milestones

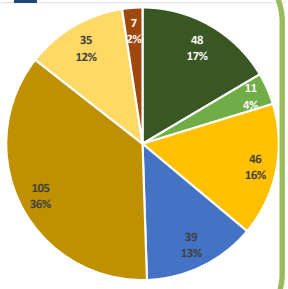
The herd

- 241 Livestock Units (LU)
- 164 dairy cows
  Breeds: Angeln cattle
  38% – replacement rate
- 99 dairy heifers
- Calving period : whole year
- Age at first calving : 26 months

Agricultural Area

291 ha AA

- 48 ha perm. grassland
- 11 ha temp. grassland
- 46 ha Silage maize
- 39 ha Oil seed rape
- 105 ha Winter cereals
- 7 ha Set aside land
- 35 ha Faba beans
- 105 ha main forage area = 36 % of AA



Workforces

- 4 labour units (Full Time Equivalent)
- 2 FTE for fieldworks
- 82 dairy cows & 826 838 kg /FTE
- **Aims** : Flexibility through mixed farming

Areas of interest

- Healthy cows, animal welfare,
- Breeding Angler cows: High milk yield with high ingredients
- Exchange of experiences with other farmers, (EIP-Operational Groups, RSH)

Main buildings and equipments

- Animal welfare barn, 1:1,1 feeding places and cubicles per cow, Cubicles with deep straw litter
- 3 Milking robots in combination with jogging pasture
- Photovoltaics (35 KW)

Production / Technical results

- 1 653 676 kg of milk produced (97 % sold)
- 4.5 % fat & 3.6 % protein content
- Stocking rate: 2.3 LU / ha forage area
- 10 879 l of milk /cow /year
- 25 021 kg Milk /ha forage area
- Veterinary costs: 0.84 /kg milk
- 280 gr. Concentrates / kg milk

Strengths

- High milk yields, with high concentration of milk solids
- New modern buildings
- Mixed farm to spread financial risks

Weaknesses

- High dependence on vulnerable markets
- High investments and high loans must be med by high productivity

Opportunities

- The large acerage can easy handle nutrient excess from milk production and be a base for growth of it
- Can be self sufficient also with concentrates

Threats

- Hard to find good employees
- Very high land prices, both to buy or to rent

Farmer's strategy for a "resilient" system

The focus of the business is the pursuit of efficient milk production. This, with targeted breeding goals, technologies (milk robots) and comfort, serves as a basis for a path to high productivity. This lays the foundations for healthy cows. This results in high milk production both per cow and per labour unit.
Mixed farming spreads financial risks, the additional arable land takes up excess nutrients.

Aspirations / Needs for the future

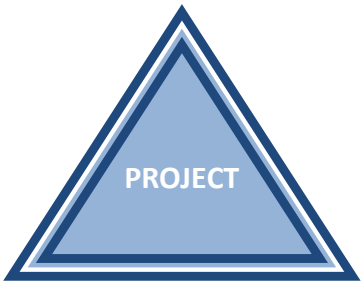
Invest more outside agriculture,
Building an additional storage for 1000 tons of grass silage.
Building a new barn to get more place for calves.

Improvement project - objectives

- Reduce work load

ECONOMY & LABOUR

- Optimization of forage storage
- new barn for heifers
- additional barn for calves
- Breeding goals for longevity
- Optimising slurry storage and applikation



RESSOURCE Efficiency

ENVIRONMENT ANIMAL Wellbeing

Partners:

Agrarberatung-Mitte e.V.
Landwirtschaftliche Unternehmensberatung

Wir fördern den ländlichen Raum
EU.SH

Kiel University
Christian-Albrechts-Universität zu Kiel

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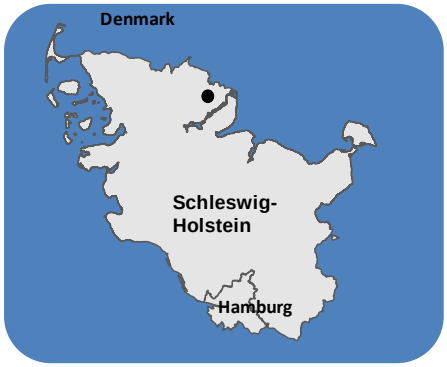
Nis and Dirk Petersen, Scheggerott, Region Angeln Schleswig-Holstein

Germany

Innovations

Socio-economic Resilience / Animal welfare



Farming milestones

1992 New cubicle barn for 70 dairy cows

2013 Building extention to house 160 dairy cows plus replacement

2015 Intensification of grazing shift to autumn block calving

2019 Strong focus on biodiversity and white clover + alfalfa

2021 First multispecies swards with plantain and chicory

2023 new milking parlour + selection + waiting area

The herd

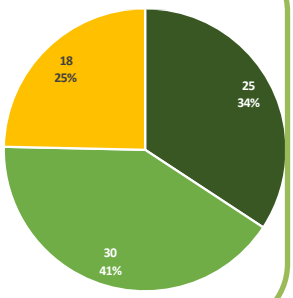
- 218 Livestock Units (LU)
- 164 dairy cows
  Breeds: Angeln cattle
  30 % – replacement rate
- 99 dairy heifers
- Calving period : whole year
- Age at first calving : 26 months

Agricultural Area

73 ha AA

- 25 ha perm. grassland
- 30 ha perm. grassland
- 18 ha Silage maize

73 ha main fodder area
100 % forage area



Workforces

- 2.0 labour units (Full Time Equivalent)
- 82 dairy cows & 715 600 kg /FTE
- **Aims**: Seasonal calving allows to concentrate working processes + healthy calvess and grazing, all saves time

Areas of interest

- Healthy cows, animal welfare,
- Breeding Angler cows a old local robust breed with high milk solids
- Exchange of experiences with other farmers in several networks

Main buildings and equipments

- Historical slowly grown and mainly depreciated barn for 160 cows
- new milking parlour + selection + waiting area for effective milking by 1 person
- Good infrastructure for grazing fast rotational grazing 7 paddocks at short grazing height of 7 cm

Production / Technical results

- 1 331 000 kg raw milk (= 1 430 000 kg ECM (94 % sold, rest needed for calf rearing))
- 4.57 % fat & 3.6 % protein content
- Stocking rate: 2.9 LU / ha forage area
- 8 729 kg EC Milk /cow /year
- 19 590 kg Milk /ha forage area
- Veterinary costs: 0.82 /kg milk
- 202 gr. Concentrates / kg milk

Strengths

- Efficient production at low costs, comparatively low input of concentrates and N-fertilizer
- High biodiversity

Weaknesses

- Quite high stocking rate
- High specialization on only milk and beef production

Opportunities

- Good climate + soils to grow forage and to replace mineral N-fertiliser by clovers also on our convential farm
- Higher price paid for milk from pasture

Threats

- Climate change because of weather dependency of the grazing system
- Very high land prices, both to buy or to rent

Farmer's strategy for a "resilient" system

A very efficient grazing system based on autumn block calving - pasture is constantly stocked and a maximum growth hight of 7 cm (= Kurzrasenweide) leads to very high concentrations of crude protein and net energy in the grazed grass. Alfalfa and white clover increase self suffiency with protein. Deepr rooting chicory, plantain and alfalfa stabilize forange yields in dry years.

The block calving leads to healthy calves and allows efficient feeding in the first half of the lactation period, as a consequence 30% less concentrates are fed compared to neighbors.

High animal welfare and a comparatively low carbon footprint of milk (PCF) production of 850gr. CO_2eq/kg ECM are reached.

Grazing creates biodiversity (less cuts, cow dung as insect feed source) and increases CO_2-storage

Aspirations / Needs for the future

Intensive dialog between consumers/citizens, farmers and politicians to increase attention to advantages of pasture based milk as eco efficient future way of milk production

Improvement project - objectives

- Reduce work load in the long run find a part time employee
- Furter increase of white clover content in grassland

ECONOMY & LABOUR

- Improve management and breeding with respect to longevity
- Try to extend agricultural area at reasonable prices
- Regenerative farming

PROJECT

RESSOURCE Efficiency

ENVIRONMENT ANIMAL Wellbeing

Partners:

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R4D DAIRY FARM NETWORK

Farm's presentations

SPAIN

Resilience for Dairy (R4D) has received funding from the European Union's Horizon 2020 research and innovation program under grant agreement No 101000770

Armoki Kop.
Pilot Farm description
Álava - 2021

Spain

Innovations

Socio-economic Resilience / Environment/ Technical Efficiency

Farming milestones

2020
Acquisition of the farm

2020 (1st semester)
Gaztenek incorporation

2020 (2nd semester)
New building project

2021
Start of construction of the building

2022 (1st semester)
First animal addition

2022 (2nd semester)
Total incorporation of animals

The herd

- 341 Livestock Units (LU)
- 184 dairy cows
  Breeds : Frisian (100%)
- 82 dairy heifers
- Calving period : all year round
- Age at first calving : 24 months

Agricultural Area

103 ha AA

- 36 ha perm. grassland
- 21 ha temp. grassland
- 46 ha Maize silage

Workforces

- 2 young and formed workers(Full Time Equivalent) and 2 experienced employees
- Aware of society and suburban issues
- **Aims:** save time and increase milk and forage production

Areas of interest

- Improve labour efficiency
- Improve milk production, saving time
- Reduce inorganic fertiliser
- Increase free time

Main buildings and equipments

- 210 cubicles with sand bed
- Heifer warm bedding shed
- Milking robots : 4
- 5000 m^3 Slurry pit
- Boxes for calves

Production / Technical results

- 2.080.070 liters of milk produced
- 3,75 % fat & 3,19 % protein content
- 13.036 l of milk /cow /year
- Concentrate: 5.000 kg/ cow

Strengths

- New Facilities to imrove animal health and milk production
- Trained and formatted farmers
- Modernized equipment

Weaknesses

- High investment
- Difficulties in replacing workers
- Not valued (as a sector)

Opportunities

- Ease of changing farm management
- Adaptability

Threats

- Large area under lease (tourist site →possible Lost)
- Low skilled labour force

Farmer's strategy for a "resilient" system

Use of forwarder wagon to reduce fuel use and improve quality of forage harvested.
5000 m3 pit to store slurry and use it on land, reducing the use of inorganic fertilizer.
One more milking robot (4 in total)

Aspirations / Needs for the future

Implementation of solar panels and the application of a solid-liquid separator, in order to reduce inputs and achieve a more sustainable management
Progress in improving fodder production

Improvement project - objectives

- Reduce work load

ECONOMY & LABOUR

- Keep a good global profitability for a knowledge transfer centre

- Reduce fossil fuels
- Save water consumption

RESSOURCE Efficiency

PROJECT

- Reduce inorganic fertiliser
- Improve forage self-sufficiency

ENVIRONMENT ANIMAL Wellbeing

Partners Lorra Koop.

Colaborators abere, Lursail

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Behi-Alde S.Coop.
Pilot Farm description
Álava - 2021

Spain

Innovations

Socio-economic Resilience / Environment/ Technical Efficiency

Farming milestones

1970 Setting up the cooperative (experiment)

1977 Participation in the first milk cooperative for milk collection

1986 Involvement in the creation of associations and Aberekin

1999 Constitution of the Cuma albina

2000 Milking parlour refurbishment

2017 Genotyping

2022 Rotational grazing (since founded)

The herd

- 1043 Livestock Units (LU)
- 550 dairy cows
  Breeds : Frisian (100%)
- 279 dairy heifers
- Calving period : all year round
- Age at first calving : 25 months

Agricultural Area

327 ha AA

- 78 ha perm. grassland
- 190 ha temp. grassland
- 59 ha Maize silage

Workforces

- 17 labour units (Full Time Equivalent)
- Good working conditions (free time)
- Large amount of AA
- Genotyping (A2A2)

Areas of interest

- Improve milk digestibility
- improve slurry decomposition
- Improve forage quality
- Increase free time

Main buildings and equipments

- 3 facilities for different production cows and heifers
- Boxes for calves
- 3 Milking parlours
- Cuma participation (machinery and raft)

Production / Technical results

- 5.648.900 liters of milk produced
- 3,99 % fat & 3,25 % protein content
- 10.740 l of milk /cow /year
- Concentrate: 4200 kg/cow

Strengths

- Distribution of AA for rotational grazing
- Trained and formatted farmers
- Generational replacement
- All cows genotyped

Weaknesses

- Outdated facilities
- Difficulties in making a renovation investment

Opportunities

- Possible A2A2 milk premium
- Better options for generational handover (work-sharing)

Threats

- Very high summer temperatures
- Low value of the product in marketing

Farmer's strategy for a "resilient" system

Genotyping of cows, selecting for the traits of interest.
Regenerative grazing
Use of bacteria for faster slurry decomposition
Participation in the Cuma: lung raft (improved waste management)

Aspirations / Needs for the future

Implementation of solar panels
Modernise the facilities
Investment in forage machinery

Improvement project - objectives

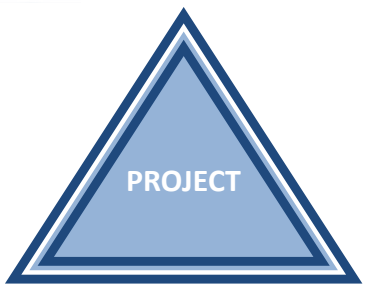
- Reduce work load
- Free time

ECONOMY & LABOUR

- Keep a good global profitability for a knowledge transfer centre

- Reduce fossil fuels
- Save water consumption

RESSOURCE Efficiency



- Biodiversity conservation and land improvement
- Improve forage self-sufficiency

ENVIRONMENT ANIMAL Wellbeing

Partners

Colaborators

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C.B. El Haya Matienzo
Pilot Farm description
Karrantza/Carranza Valley

Spain

Innovations

Socio-economic Resilience / Environment

Farming milestones

2000 Society set up

2005 Machinery renewal

2007-2008 Mats and rubber on the floor

2017 Fire in offices and milking parlor

2018 Restructuring

2020 Solar panels

The herd

- 347 Livestock Units (LU)
- 200 dairy Holstein cows
- 78 dairy heifers
- 69 calves
- Age at first calving: 24 months
- 20 % replacement
- A.I. sexed & genomic; no replacement b.b.

Agricultural Area

- 50 ha
- 50%-50% grass and ryegrass
- GUVAC cooperative → unifeed daily

Areas of interest

- Cooperativism between partners
- Animal & social welfare
- Milk quality

Workforce

- 5.45 a.m.-1 p.m. / 3 p.m.-8 p.m.
- 3 farmers partners
- 1 man full time labour
- 2 weekends off/month + 15 days/year

Main buildings and Equipment

- 2 main pavilions
- 180 sleeping mat
- Milking parlor of 12x12
- Slurry scrapers
- Offices
- 4 slurry pits
- Ventilators
- Humidifiers

"AA" quality milk production

- 2.300.000 L/year produced
- 4% butterfat and 3.4% protein
- 133 summatical cells
- 10 bacteria

Strengths

- Organization among partners
- New facilities

Weaknesses

- Lack of surface
- Current € situation
- Generational change in 10 years

Opportunities

- Slurry delivery service and biogas plant in the Valley:
- 1.5 €/m3

Threats

- Rough terrain for slurry
- Urban land pressure
- Minimize costs

Improvement project - objectives

ECONOMY & LABOUR

- Mantain work load
- Optimise dairy gross margin
- Keep a good global profitability for a knowledge transfer centre

- Save water and energy consumption

PROJECT

- Improve forage self-sufficiency

RESOURCE EFFICIENCY

ENVIRONMENT ANIMAL WELLBEING

Partners

Lorra Koop.

Colaborators

Lursail

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Sarobe Farm
Pilot Farm description
Karrantza/Carranza Valley

Spain

Innovations

Socio-economic Resilience / Environment

Farming milestones

2020 – Farm set up

2020 – 1st robot installation

2021 – 1 employee hired

2022 – Construction of outdoor warehouse

2022 – Expansion of indoor facilities

2022 – 2nd robot

The herd

- 120 Livestock Units (LU)
- 60 dairy Holstein cows
- 30 dairy heifers
- 30 calves → separated rebreeding center
- Age at first calving: 23 months
- No replacement → farm expansion
- 1st A.I. sexed; repeaters with Angus

Agricultural Area

- 11 ha
- Forecast → 25 ha
- 50%-50% corn and ryegrass (unifeed)

Areas of interest

- Sustainability
- Animal welfare
- Milk quality

Workforce

- Labour agreement → 8 h workday
- 2 farmers → fulltime
- 1 man full time labour
- 1 woman part time labour

Main buildings and Equipment

- 1 main pavilion
- 55+68 cubicles
- Sand beds
- 1 storeroom
- Slurry scrapers
- 2 robots (DeLaval)
- Offices
- 1 pit of 1 million L
- Ventilators
- Humidifiers

Production / Technical results

- 2.000 L/day produced
- 4% butterfat and 3.6% protein
- 14 kg (8 + 6 in robot) of concentrate/cow/day
- Total → 26 kg DM/cow/day
- Total feed cost → 8.7€/cow/day

Strengths

- Youthful strength
- Educational formation

Weaknesses

- Lack of surface
- Current situation
- COVID = start of activity

Opportunities

- Looking ahead
- More farms
- Young workers

Threats

- Lack of fodder
- Restrictive regulations
- Urban land pressure
- Minimize costs

Farmer's strategy for a "resilient" system

Making use of good quality grazed and conserved forage
Put into practice the knowledge gained in university studies

Aspirations / Needs for the future

Minimising costs and increasing efficiency
Optimise the amount of waste with the environment

Improvement project - objectives

ECONOMY & LABOUR

- Reduce work load
- Optimise dairy gross margin
- Keep a good global profitability for a knowledge transfer centre

RESOURCE EFFICIENCY

- Reduce concentrate for cow
- Save water and energy consumption

PROJECT

ENVIRONMENT ANIMAL WELLBEING

- Improve forage self-sufficiency

Partners Lorra Koop.

Colaborators Lursail

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Ugarte-Berri S.C.
Pilot Farm description
Gipuzkoa - 2021

Spain

Innovations

Socio-economic Resilience / Environment/ Technical Efficiency

Farming milestones

2018
creation of the civil company + incorporation of daughter and son

2019
Major investments (rotating room, self-propelled mixer)

2020
Modernisation of facilities + solid-liquid separator

2021
Use of the solid as a bed

2021
Census increase

2021
Recruitment of an employee

The herd

- 305 Livestock Units (LU)
- 160 dairy cows
  Breeds : Frisian (100%)
- 141 dairy heifers
- Calving period : all year round
- Age at first calving : 25 months

Agricultural Area

63 ha AA

- 51 ha perm. grassland
- 9 ha temp. grassland
- 96% forage area
- 100% grassland over forage area

Workforces

- 5 formed workers(Full Time Equivalent)
- Aware of society and suburban issues
- Generational replacement assured
- Modern buildings and equipment

Areas of interest

- Slurry: different types of management
- Be more energy self-sufficient
- Increase free time

Main buildings and equipments

- 140 cubicles with slurry solid extract
- Heifer pavilion
- Rotary milking parlour (24 places)
- Self-propelled mixer
- Solid-liquid separator + centrifuge
- Boxes for calves

Production / Technical results

- 1.780.412 liters of milk produced
- 3,62 % fat & 3,21 % protein content
- 10.856 l of milk /cow /year
- Concentrate: 4.254 kg/ cow

Strengths

- High investments to imrove animal health and milk production
- Trained and formatted farmers
- Modernized equipment

Weaknesses

- High dependence on forage
- Small surface area

Opportunities

- Improve milk quality
- Improve working conditions

Threats

- No capacity to extend the surface area
- Low milk price

Farmer's strategy for a "resilient" system

Use of the solid fraction as a bed.
Modernisation and investment in machinery to improve efficiency and reduce inputs
Continuous training of workers

Aspirations / Needs for the future

Implementation of solar panels to become more energy sustainable

Improvement project - objectives

- Reduce work load

ECONOMY & LABOUR

- Keep a good global profitability for a knowledge transfer centre

- Reduce fossil fuels
- Become more energy sustainable

RESSOURCE Efficiency

PROJECT

- Slurry solid fraction as a bed
- Energy autonomy

ENVIRONMENT ANIMAL Wellbeing

Partners Lorra Koop.

Colaborators abelur nekazaritza zerbitzuak, Lursail

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Zubeltzu Torre
Pilot Farm description
Itziar-Deba

Spain

Innovations

Socio-economic Resilience / Environment

Farming milestones

2002 Construction of cow barn

2008 Incorporation of daughter and agroturism opening

2016 Incorporation of son

2017 Purchase new barn for heifers

2018 Indoor facilities

2020 2 robots

The herd

- 180 Livestock Units (LU)
- 97 dairy Holstein cows
- 40 dairy heifers
- 43 calves
- Age at first calving: 23 months
- 23 % replacement

Agricultural Area

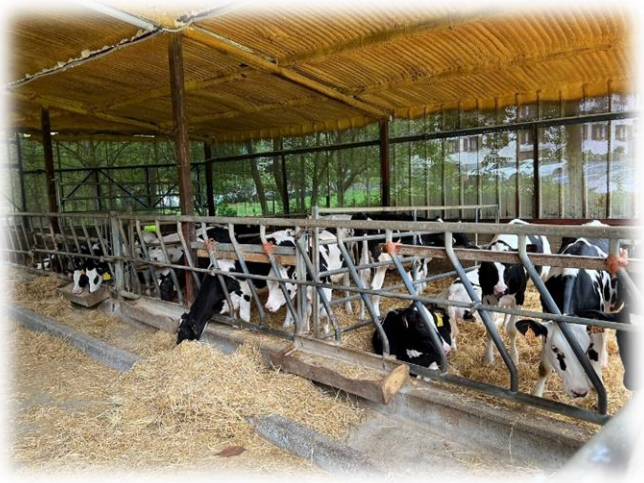
- 71 ha
- Permanent pasture → 61 ha
- Temporary pasture → 8 ha

Areas of interest

- Sustainability with innovation
- Animal welfare
- Agritourism → link rural-urban worlds

Workforce

- 3 farmers → fulltime
- Father, mother and son
- An agritourism manager
- Possible +1 worker in the future



Main buildings and Equipment

- 1 main pavilion
- 82 cubicles
- Sand beds
- Slurry scrapers
- Milking robots
- Cleaning robot
- Ventilators
- Cow-Welfare Cubicles

Production / Technical results

- 1.067.000 L/year
- 3,78% butterfat and 3.6% protein
- 5.621 kg concentrate/cow/year
- 5.980 kg DM/cow/year
- Grass production → 9.152 T DM/ha/year

Strengths

- Youthful strength of one worker
- Another rural business
- Good climate

Weaknesses

- Lack of surface
- Age of 2 parents: near retirement

Opportunities

- Promotion and approach by the rural hotel
- Possible 2 young workers in the future

Threats

- Lack of fodder sometimes
- Precipitation and filling of the slurry tank
- Minimize costs

Farmer's strategy for a "resilient" system

Make use of secondary activities (rural hotel) to reinforce the importance of the dairy sector
Put into practice the knowledge gained inherited from parents and computer facility (youth)

Aspirations / Needs for the future

Minimising costs and increasing efficiency
Adapting to the changing climate of the area

Improvement project - objectives

- Young workforce

ECONOMY & LABOUR

- Reduce concentrate for cow
- Save water and energy consumption

RESOURCE EFFICIENCY

PROJECT

- Resilience of animal welfare to climate and urban societal changes

ENVIRONMENT ANIMAL WELLBEING

Partners Lorra Koop.

Colaborators LURGINTZA Lursail

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Appreciation

Thank you to the partners, advisors, farm facilitator and farmers for making this project and its exchanges so rich and rewarding.

Let's make sure that we continue to share our knowledge so that European dairy farming becomes increasingly resilient!

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