


eip-agri
AGRICULTURE & INNOVATION

European Innovation Partnership for Agricultural Productivity and Sustainability

Survey of Austrian operational groups
as of March 2020

Translated from german by Mag. Mirjam Freund and Mag. Carola Parik

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EIP-AGRI in Austria

European innovation partnership for agricultural productivity and sustainability

Austria has taken over the role of a pioneer in the course of the implementation of the European Innovation Partnership for Productivity and Sustainability (EIP AGRI) in Europe. Four EIP AGRI calls for the submission of projects within the framework of the Rural Development Programme 2014-2020 have been implemented by the Federal Ministry of Agriculture, Regions and Tourism (Bundesministerium für Landwirtschaft, Regionen und Tourismus BMLRT) since 2015. In the meantime 30 operational groups in Austria have obtained information in order to implement innovative EIP-AGRI projects for agriculture.

For the implementation of EIP-AGRI projects it is of crucial importance to create synergies by means of the exchange between partners from various fields, sectors, initiatives, and projects. The focus of EIP AGRI is on the **cooperation between farmers and scientists**. By means of building, a bridge between practice and research problems from the agricultural and forestry environment shall be solved in an innovative way and implemented more speedily in the form of new products, services and technologies.

The following project descriptions were drafted by the respective project coordinators and reflect the current state of the projects as of March 2000.

If you have any questions please contact directly the project coordinators or the innovation broker Johanna Rohrhofer:

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1st Call

The project applications of the first EIP Agri call in Austria were submitted until the end of June 2015 under one of the following guiding themes:

- Animal Welfare / Animal Health / Animal Husbandry
- Biodiversity and Management
- Strategic farm and product development and current challenges in production
- Climate-relevant approaches to agriculture

Projects of the 1st Call

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2016-
2019
PROJECT
PERIOD



Innovative measures for corn rootworm control

Operational Group *Innobrotics*

ABSTRACT

The damage caused by the corn rootworm has reached worrying high levels in Austria. The pest has caused major damage on many arable farming and livestock farms by stock and stigma feeding. According to expert opinions, there is reason to fear a further spreading of the pest, which means a disastrous development for agricultural holdings. Moreover, the prohibition of neonicotinoids was imminent. Apart from problems in the field of crop cultivation, in particular livestock farms are facing special challenges. For this reason it was important to find innovative solutions as soon as possible in order to avoid major losses in value-added on domestic farms. The project “innobrotics” (“inno” stands for “innovation” and “brotics” originates from the generic name of the corn rootworm “Diabrotica”) considers itself therefore to be an initiative aiming at a solution of the problem of the corn rootworm in Austria. By means of close cooperation between research, consulting and agricultural practice new procedures in the field of pest control, as well as innovative approaches to solutions in the use of alternative pest control methods, arable crops and feedstuffs for conventional and organic farms shall be found and implemented. Moreover, socio-economic studies were also carried out on the farms.

STARTING POSITION

Since the first occurrence of the corn rootworm in Austria (2002) there has been - starting out from the Southern Federal Provinces (Styria, Burgenland, Carinthia) - an exponential propagation of the pest. However, the beetle did not only cause damage at the roots or on the corncob, but also by leaf feeding on various other crops. In particular in the field of vegetable growing partly merely the presence of the beetle was sufficient that deliveries were rejected by wholesale trade. The damage in the field of crop cultivation, however, was continued in the related sectors, with the livestock farming sector being most severely concerned. The experiences made at national and international levels were not sufficient until the beginning of the project in order to get the problem efficiently under control because there existed not enough know-how about effective corrective measures available. There were a number of approaches to solutions, which were, however, neither coordinated, or only insufficiently coordinated, nor implemented all over the country. Moreover, there existed not enough knowledge about the efficiency of combinations of measures and alternatives to chemical measures, which are compatible with organic farming.

TARGETS AND TARGET GROUPS

The main objective of the project was the preservation of the value-added by means of a high share of self-produced basic forage in the livestock farming industry as well as the best possible substitution of the main crop maize by alternative crops. The concrete goals of the project are defined as follow:

- ➔ Screening and testing of forage bases which are potential alternatives to maize as feedstuffs for cattle/pigs/poultry (conservation methods, digestibility, feeding performance etc.)
- ➔ Testing of forage alternatives in arable farming
- ➔ Research in to sustainably effective, ecologically compatible larvae and beetle control measures
- ➔ Identification of potential implementation barriers on the basis of socio-economic studies
- ➔ Targeted spreading of the results in the agricultural practice on conventional as well as organic farming

The main target groups of the project have always been arable and livestock farms as well as agricultural consultants.

KEY MEASURES

Essential steps of the project were:

1. Project management, monitoring and coordination during the whole programme period
2. Planning, implementing, evaluating and describing the results of the crop cultivation experiments
3. Planning, implementing, evaluating and describing the results of the experiments in the field of animal production comprising feeding experiments with cattle, pigs and poultry as well as forage conservation experiments
4. Socio-economic study on implementation barriers
5. Analysis of cooperative land-use systems
6. Targeted spreading of results by print and IT media, by lectures and by individual consultations for farms

RESULTS AND EFFECTS

The following results can already be presented: However, as far as the control of the corn rootworm is concerned there exists no cure-all, but the most efficient possibility of mitigating the pest is by means of applying a package of measures, consisting of early cultivation, control of the adult beetle and the larvae, as well as tailor-made crop rotation management. The effect of a potential variety resistance could not be examined due to the short duration of the project. Millet enables an extension of the supply with feedstuffs and thus a considerable reduction of the share of maize, which could be proved by means of numerous feeding experiments.

During the project period individual projects results on lectures could already be passed on to more than 1,200 practitioners per year. The contact between farmers and consultants is also sustainable, going beyond the end of the project. The total knowledge acquired in the course of the project will be integrated in the consultation in the years to come.

A brochure with the most important results and recommendations for agricultural practice has been worked out and is being spread via various channels (Homepage of the Chamber of Agriculture, Netzwerk Zukunftsraum Land, EIP-AGRI, Service Point, Consulting, etc.)

PROJECT MANAGEMENT

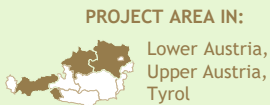
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- Institute for Sustainable Economic Development - University of Natural Resources and Life Sciences, Vienna
- Agricultural Research and Education Centre Raumberg-Gumpenstein
- Versuchsreferat Steiermark (experimental unit Styria)
- Chamber of Agriculture Burgenland

PARTNERS

- Chamber of Agriculture Carinthia



2016-
2020
PROJECT
PERIOD



Alternative wireworm control

Operational Group *Wireworm*

ABSTRACT

Wireworms, the larvae of click beetles, living in the soil, are causing in Austria, alone with potatoes, damage amounting to several million Euros per year. The control of wireworms constitutes a great challenge for the farms concerned. Thus, the insecticides licensed for conventional potato production are reaching presently their limits of effect in case of a high infestation pressure and also in organic potato growing effective control options are missing.

ARGE Drahtwurm (Wireworm), uniting relevant stakeholders from the fields of agriculture, research and environmental protection, was founded with the goal of developing and testing effective and practice-proof alternatives to chemical-synthetic plant protection products in wireworm control with potatoes. In order to reach the project goal, field studies were carried out in several production areas under common production conditions and in close cooperation with practitioners. The results reached are spread via seminars, information events, mailings especially to potato growing practitioners, and, moreover, via publications and conference contributions to further stakeholders in the field of agricultural production.

STARTING POSITION

Wireworms are larvae of click beetles living on the ground. They can cause enormous economic damage with potatoes and many other crops such as maize, carrots, onions or other cereals. In potatoes, wireworms are piercing into the tubers, are leaving typical insect holes, and are reducing in this way the share of marketable tubers. The harvest losses caused in this way make up in Austria on average 30,000 tonnes per year, with an economic damage amounting to several million Euros per year.

Wireworms constitute a major problem in conventional as well as in organic farming. So far, the control of this pest has been carried out primarily by means of the application of insecticides. Pesticides, which were frequently used against wireworms in former times, are not available any more. In the years 2006 to 2019 plant protection products against wireworms in potatoes were only available on the basis of emergency use authorisations limited in time. Plant protection products, which are presently authorised for conventional production, are soon reaching their limits of effect in case of high infestation pressure. As it is to be expected that wireworms will have a severe damaging effect also in future, which will probably even be aggravated by climate change, there is urgent need to work out alternative control measures.

TARGETS AND TARGET GROUPS

The main objective of the project was the development and testing of effective, practice-proof alternatives to the use of chemical-synthetic plant protection products in wireworm control with potatoes, which is necessary in order to reduce economically important damage caused by wireworms. In order to reach this goal works on the following thematic priorities have been developed:

- ➔ As a basic requirement for an effective control without insecticides investigations were made into the spreading, the temporal pattern of occurrence, and the spatial distribution of agriculturally important wireworm varieties.
- ➔ Basic knowledge on the virulence specific to the species of various strains of an insect-pathogenic fungus against varieties of wireworms existing in Austria, also influenced by environmental factors, were worked out.
- ➔ The efficiency of alternative, direct control measures against wireworms under practical conditions was assessed.

The target group of the project is Austrian potato growers.

KEY MEASURES

Essential steps of the project were:

1. Characterisation of the spreading of wireworm varieties, which exist in Austria and are agriculturally important
2. Description of the seasonal activity and the small-scale distribution of wireworms
3. Identification of the virulence of various insect-pathological fungi strains against wireworm species widespread in Austria.
4. Laboratory tests on the efficiency of an insect-pathogenic fungus inserted into the ground and its influence on the distribution of wireworms
5. Implementation, evaluation and interpretation of field trials on the examination of the efficiency of alternative methods of wireworm control
6. Direct communication of the results to farmers, consultants, and other stakeholders in the field of potato growing, within the framework of seminars and other events

RESULTS AND EFFECTS

Wireworm species have different spreading priorities (dry/hot, wet /cool) and show considerable activity fluctuations on arable areas in the course of a year. Laboratory tests with an insect-pathogenic fungus showed a virulence depending on the fungus strain and the wireworm species. In practical experiments the most promising option to reduce the damage caused by wireworms is a combination of fungus colonised barley grains and attraction by means of a mixture of attracting plants in the potato crop. For practical application a consistently high quality of fungi preparations must be ensured and there has to be a sufficient soil humidity. A long-term reduction of wireworm populations can be achieved by a combination of long-term measures: Crop rotation, humus development, targeted soil tillage, promotion of natural antagonists and the use of environmentally compatible means, such as insect-pathogenic fungi. For this purpose, the biology of the individual wireworm species must be examined even more extensively. Forecast models, which can be important bases for decisions for example for the right scheduling of targeted soil tillage measures, but also for other strategies aiming at the minimisation of damage caused by wireworms, will be of great significance in future.

PROJECT MANAGEMENT

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COOPERATION BETWEEN

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- Interest group potato growing
- Global 2000 Environmental Research Institute
- Austrian Agency for Health and Food Safety (AGES)
- Agroscope, research group ecology of harmful & beneficial organisms
- MELES Engineering Office for Biology
- University of Innsbruck, Institute of Ecology

PARTNERS

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- Karl Paul
- Paul Votzi
- Johannes Mayer
- Eduard Paminger
- Romed Giner
- Producer group Bauerneräpfel Verkaufs GmbH (Farmer potatoes' sales producer group)
- Interest group potato growing



2016-
2019
PROJECT
PERIOD



Further Development of Organic Winter Vegetables

Operational Group *Further Development of Organic Winter Vegetables*

ABSTRACT

In winter consumers must be prepared for a very limited range of types and varieties of regional vegetables. In order to be able to make available a diversified offer, not only classical storable vegetables, but also great quantities of fresh vegetables are produced in an energy-intensive way and transported over long distances. However, that it is also possible in a different way is demonstrated by the project of the Operational Group Further Development of Organic Winter Vegetables. Important insights gained from it are: Being able to harvest organic vegetables in winter means a great market opportunity for the farms. In the medium term, imported vegetables in winter could even be replaced in this way. Winter vegetables strengthen regional organic farming and bring about variety in the cuisine of conscious consumers. Numerous fresh vegetables are even more frost-resistant and winter-hardy than even experts would have considered possible before the beginning of the project. They can even be harvested in unheated polytunnels when it is storming and snowing outside. There is a wide range from salads, salad herbs, leafy vegetables, root vegetables to tuber vegetables.

STARTING POSITION

There existed a predecessor project to this project over a period of one year, which brought first insights on growing and cultivation. However, due to the short duration it was not possible to make reliable statements on the ideal crop rotation for the growing of winter vegetables. In order to establish this type of management also on the long term as an alternative to conventional production for several agricultural holdings, secured data on crop rotation were essential. Furthermore, it was obvious that the identification of the ideal times of growing requires a sharpening also with a view to the question when there is the highest demand for winter vegetables on the part of the consumers. The question should also focus on which types and varieties are also permanently marketable under the given conditions. Moreover, the question, whether the production of winter vegetables enables farms to use the respective growing areas also during the traditionally production-free time of the winter months, to achieve additional value-added, and to use the available working capacities in an optimal way, is decisive.

TARGETS AND TARGET GROUPS

The key objective was the comprehensive way of dealing with numerous questions concerning unheated growing of winter vegetables at scientific and practical levels:

- Identification of the ideal growing times of winter vegetable crops under various geographic and climatic conditions
- Identification of the ideal varieties /crops under various geographic and climatic conditions
- Development of suitable packaging solutions for winter vegetables
- Sensory description for winter vegetable crops
- Key work economics figures as a basis for economic efficiency
- Economic and ecological analysis of winter vegetable production as a basis for a long-term establishment

The target groups were agricultural vegetable growing enterprises which are open for new management methods and searching for new sources of income, as well as environmentally and health-conscious consumers, who want to enjoy in winter organic vegetables from unheated cultivation from the region.

KEY MEASURES

1. Planning, monitoring, and evaluation of growing experiments on farms and in experimental stations
2. Economic and ecological analysis: Calculation of the contribution margins for individual crops and crop rotations, calculation of the ecological footprint of winter vegetable crops
3. Labour-economic analysis with winter vegetable crops, the result is manuals for practitioners: Part 1: Foundations of labour economics in vegetable growing; part 2 Working methods with individual crops in the winter vegetables sectors
4. Sensor technology with winter vegetables. Establishment of means of communication for the description of winter vegetables: Sensory winter vegetables guide for consumers; sensory winter vegetable guide for farms, map for special winter salads and aroma wheel
5. Experiments on suitable packaging solutions for winter vegetables
6. Public relations and media work for various target groups: for example a workshop “Wintamine” to make restaurant proprietors familiar with winter vegetables; lectures and seminars for farmers; press talk on a winter vegetable farm; project conclusion “Winter vegetables - seizing new opportunities in a sustainable way” with more than 100 participants and many other things.

RESULTS AND EFFECTS

Winter vegetables are vegetables from outdoor or protected cultivation, which are freshly harvested in the time between November and March. What is very important in this respect: The crops are not heated. In ring trials with bunch carrots, bunching onions, lettuce and radishes, various varieties and growing times were tested under different climatic conditions. An important conclusion is that there is no “recipe” for winter potato growing, and that the growing times must be determined for every location individually. Winter vegetables bring about economic advantages for farms: Apart from more stable incomes, the expansion of the range of offers over the whole years serves as an instrument to promote customer loyalty. All participating farms continuously expanded the growing of winter vegetables in the course of the project, and have continued with it after the end of the project. For some of them it has become an important source of income. Most recently, there has also been demand for winter vegetables from unheated cultivation in Austria by the retail trade, which offers an exciting perspective for many vegetable growing enterprises.

PROJECT MANAGEMENT

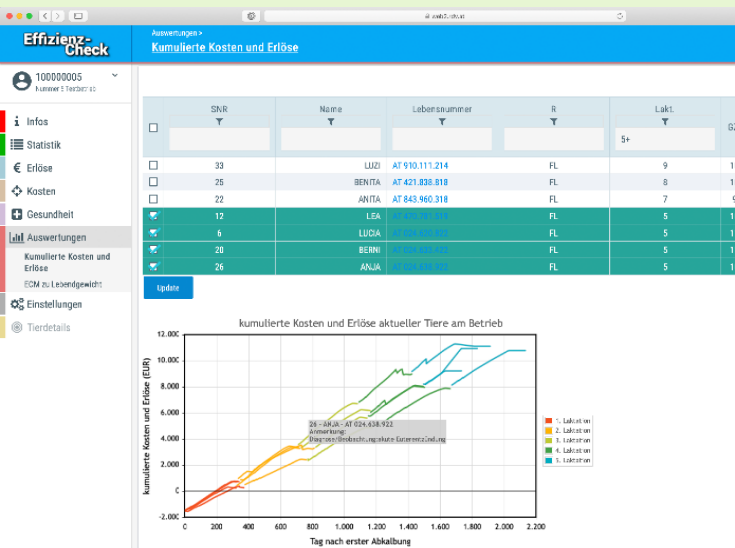
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COOPERATION BETWEEN

- 7 organic farms
- BIO AUSTRIA
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- Experimental Station for Special Crops Wies
- Horticultural school Langenlois
- Food Cluster Lower Austria

PARTNERS

- FiBL Vienna Research Institute for Organic Farming
- Eva Derndorfer, Vienna
- Renate Spraul, Germany
- Technologie & Innovation GmbH, OFI, Vienna




**ANIMAL
WELFARE AND
HEALTH**

**2016-
2019**
**PROJECT
PERIOD**

PROJECT AREA IN:
all over Austria


ONLINE
www.zar.at/Projekte/Effizienz-Check.html
www.zukunftsraumland.at/projekte/1484

Web application to optimise efficiency and animal health in dairy farming

Operational Group *Efficiency Check*

ABSTRACT

Within the framework of the EIP-AGRI project “Efficiency check” a modern and practice-proof web application has been developed to help dairy farmers to take targeted measures to improve the economic as well as the nutrient-related efficiency in milk production. By means of the visualisation of the interrelatedness of management measures, the conditions under which animals are kept, animal health and diseases as well as their economic effects, the awareness of farm managers for animal welfare and health shall be strengthened.

The WEB application “Efficiency Check” comprises three central tasks:

- 1. Comparison of the economic efficiency of all dairy cows on the farm taking into consideration the revenues from milk, meat and calves, as well as the costs for feeding, keeping, fertility, diseases and their consequences
- 2. Analysis of one’s own farm and comparison with other farms
- 3. Demonstration of potentials for the optimization of the farm, especially in the field of udder health and creation of new consulting opportunities by means of making available the WEB application also for veterinarians and consultants.

The Operational Group consisted of the Federation of Austrian Cattle Breeders (Zentrale Arbeitsgemeinschaft Österreichischer Rinderzüchter ZAR), the Chamber of Agriculture of the Federal Province of Upper Austria (Landwirtschaftskammer Oberösterreich LK OÖ), Animal Health Service Styria (Tiergesundheitsdienst Steiermark TGD Stmk), LKV Austria Gemeinnützige GmbH (LKV Austria), the ZuchtData EDV Dienstleistungen GmbH, agricultural holdings, veterinarians, as well as staff members of federal control associations.

STARTING POSITION

The Austrian farmers are facing every day the challenge to produce, within the framework of the complex interplay of nature, legal framework conditions, and the current market situation, high quality foodstuffs, to offer the animals on the farm a species-appropriate environment and to feed their families. Under these preconditions it is extremely important to know one’s strengths and weaknesses in order to be able to manage as efficiently as possible. In practice, a great number of data for farm management are available to farmers. However, they are not available in a collected form, but originate from various independent sources. However, presently there are hardly any opportunities for farmers to analyse with simple means the economic efficiency of individual animals or the efficiency of their farm compared to other farms. However, above all, there are hardly any possibilities to identify potentials of improvement on one’s own farm. Thus, there existed the urgent need of developing a web application by means of which the efficiency of a farm or of an individual animal could be more easily **hier fehlt was.....**

TARGETS AND TARGET GROUPS

The objective is to develop a modern and practical web application, which helps dairy farmers to take targeted measures to improve the economic and nutrient efficiency in milk production on farm and animal level. In the long run, the data collected also help to achieve improvements in the breeding of animals, making them healthier due to more sparing drug application, nutrient and production efficiency. Central goals were:

- ➔ Improvement of the economic efficiency of dairy production by means of the calculation of efficiency parameters, possibility of comparison with other farms and indication of potential optimisation measures
- ➔ Use of the collected data for the improvement of animal health and nutrient efficiency in breeding
- ➔ Reduction of the ammonium and greenhouse gas emissions by means of an increase in the efficiency in milk production
- ➔ Improvement of animal health and thus reduction of the use of medications
- ➔ Assistance of the farmers in the daily practice with herd management and in taking selection decisions

The main target groups of the web application are dairy farms and veterinaries, but also extension services and the teaching sector can draw benefit from the results.

KEY MEASURES

The focus of the project is on the participatory development of a requirement profile for a practice-proof web application, the programming and testing of the pilot application as well as the transfer of the web application into routine operation. The following concrete measures were taken:

1. Carrying out farm surveys and holding workshops with farmers
2. Preparation of a technical concept and of technical specifications for the web application
3. Conclusion and calculation of guide values under Austrian production conditions
4. Development of necessary calculation routines and practice-proof forms of presentation for comparisons of farms and individual animals
5. Testing of pilot farms and obtaining feedback
6. Transfer of the pilot application to routine operation for all dairy farms under performance control

RESULTS AND EFFECTS

Within the framework of the EIP project “Efficiency Check” one has succeeded in developing an appealing and intuitive web application for farmers, especially for the analysis of one’s own dairy cattle herd. However, the web application enables also the comparison with other farms and provides hints to optimisation potential on the farm.

Apart from the actual “final product” - the web application - valuable insights from and for practice were gained as well, and sound analyses of the relation between the conditions under which animals are kept, animal health, and performance potential of dairy cows in Austria were carried out.

With the collection and the linkage of existing and newly generated knowledge, a tool has been created in this way, which supports farmers in their daily work and enables, to the extent possible, without additional burden of recording, new insights about the farm. Moreover, a concept has been developed in order to be able to make available in future by means of the LCA method also detailed evaluations on the environmental impact of milk production.

Since the beginning of 2020, the web application “efficiency check” has been available to all dairy farms under performance control - which are presently more than 19,000 farms - free of charge on the RDV portal.

PROJECT MANAGEMENT

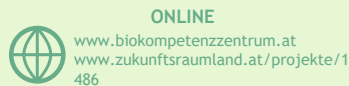
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COOPERATION BETWEEN

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- 2 practising veterinarians in OG
- Federation of Austrian Cattle Breeders (Zentrale Arbeitsgemeinschaft Österreichischer Rinderzüchter ZAR)
- Association Styrian Animal Health Service
- LKV Austria Gemeinnützige GmbH
- Chamber of Agriculture Upper Austria
- ZuchtData EDV-Dienstleistungen GmbH

PARTNERS

- University of Natural Resources and Life Sciences, Vienna
- LKV Lower Austria
- LfL Upper Austria
- LKV Styria



Sustainable grassland management by means of graduated grassland farming

Operational Group *Graduated Grassland Farming*

ABSTRACT

Quantitative and qualitative yields from grassland constitute the economic basis of a grassland farm. The precondition for it is a good crop formation, which can establish itself by means of adapted utilisation and fertilisation. The concept of graduated grassland farming according to Walter Dietl, where grassland areas within one holding are managed with different intensity, offers the opportunity to concentrate the fertilisation on yield-oriented areas and to develop and to maintain thus appropriate plant populations in the yield-oriented as well as in the more extensively managed areas. Within the framework of the EIP-AGRI project “Sustainable grassland management by means of graduated grassland farming” they have been working on the topic of graduated grassland farming in terms of its practical implementation on farms in Upper Austria in the course of the past few years. Thirteen participating grassland farms in Upper Austria, conventional as well as organic farms, applied this project in practice as model farms on their areas within the project period 2016-2018. The farms were supported by different institutions during the whole project period. The insights gained from the practical implementation could be used and processed as a basis for a guide on the implementation of the concept.

STARTING POSITION

In practical grassland farming there is often evidence for a trend towards increasing the frequency of the utilisation of grassland areas on the farm due to the climatic development. At the same time the areas are mostly managed in a very uniform way. This leads in practice frequently to an unbalanced relationship between utilisation and fertilisation of areas. A uniform management of all and/or of the major part of grassland areas of a farm related with a high cutting frequency can thus often lead to problems in the nutrient supply (fertilisation ceilings and/or not enough fertilisers). This challenge applies to conventional and organic farms likewise. By means of a differentiated management of one’s own grassland areas, a deprivation-oriented supply on all areas can be ensured.

TARGETS AND TARGET GROUPS

The project aimed at testing and establishing the implementation of graduated grassland farming on model farms. By means of the cooperation of the various project partners, the status quo on the farm was identified and the results were used as a basis for proposals for the conversions to graduated grassland farming. At the end of the project a consulting manual as a guide for the practical implementation of graduated grassland farming for extension services and for interested farms shall be developed.

- Individual implementation of graduated grassland farming at farm level
- Establishment of adapted crop populations
- Adapted fertilisation of extensive and intensive areas
- Preserving / increasing the biodiversity on farms

The target group were first and foremost farms in Austria.

KEY MEASURES

Important measures within the framework of the project were:

1. Analysis of the point of departure on the farms
2. Consultation and workshops with participating farms
3. Monitoring of the implementation of the concept at individual farm level
4. Preparation of a manual on the topic “Sustainable grassland management by means of graduated grassland farming” for farms.

RESULTS AND EFFECTS

By means of the implementation of the concept on graduated grassland farming stable and utilisation-adapted crop populations can be established and maintained enabling an up-to-date yield-oriented utilisation of grassland areas, without getting into conflict with restrictions on fertilisation. At the same time this form of grassland management has also a positive effect on climate protection, and the diversity of species on a farm can be promoted and/or increased in a sustainable way. In this way a win-win situation for the economic as well as for the ecological side of a farm can be developed and yield-oriented and more extensively managed meadows can exist permanently side-by-side.

In order to make the concept accessible to as many farmers as possible a manual for practice has been prepared. The manual on graduated grassland farming can be requested via the Biokompetenzzentrum Schlägl (biokompetenzzentrum@fibl.org) or downloaded directly via the online shop of the FiBL (www.shop.fibl.org) as a PDF document.

PROJECT MANAGEMENT

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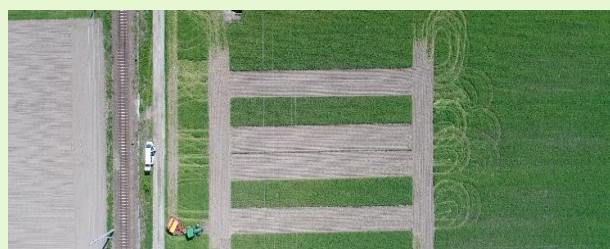
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COOPERATION BETWEEN

- Biokompetenzzentrum Schlägl
- Organic farms from Upper Austria

PARTNERS

- BirdLife Österreich
- Machinery Pool Upper Austria
- Chamber of Agriculture Upper Austria
- Agricultural Research and Education Centre HBLFA Raumberg-Gumpenstein




SOIL MANAGEMENT AND
EROSION PROTECTION

PROJECT AREA IN:
Lower Austria

2016-
2019
PROJECT
PERIOD

ONLINE
www.boku.ac.at/nas/ifoel/arbeitsgruppen/ag-bodenfruchtbarkeit-und-anbausysteme/projekte/biobo
www.zukunftsraumland.at/projekte/1487

Yield development and humus development via reduced soil tillage and organic fertilisation measures

Operational Group *BIOBO*

ABSTRACT

Der The soil serves as a source and sink for climate-effective substances and plant nutrients; this is why changes, in particular of the humus content, have an influence on the climate and on the yield developments and erosion. The project Operational Group BIOBO examined therefore innovative, reduced soil tillage procedures adapted to the farm in connection with sustainable and environmentally benign fertilisation measures (greening, organic manure) as strategy for yield increase and promotion of environmental benefits (humus increase, increase in the water storage capacity, increase in nutrient efficiency, avoidance of nutrient losses, diversity of species.) For this purpose, farm-specific practical and precision experiments were carried out on various organic farms as well as on the practical research station Rutzendorf (Lower Austria).

STARTING POSITION

The focus of organic arable farming is on the preservation and/or the development of a high soil fertility. The better soil fertility is developed on a site, the better are stress tolerance and the resilience vis-à-vis unfavourable weather conditions. A decisive measure for the promotion of soil fertility is, among other things, a gentle soil management, which goes also hand in hand with other advantages such as e.g. the optimisation of fertilisation, the reduction of erosion, and increased biodiversity. In order to make use of the advantages of a reduced, saving soil tillage in organic farming without losses in yield it had to be further developed and adapted to the respective soil and site conditions. New insights on reduced soil tillage shall be gained within the framework of the project of the Operational Group BIOBO by means of practical experiments, precision experiments, and intensive exchange of experience in the group. They serve as a basis of information for organic farmers with experience concerning reduced soil tillage and interest in a conversion of their soil tillage.

TARGETS AND TARGET GROUPS

The objective of the Operational Group BIOBO is to develop and assess approaches to solutions for the implementation of a reduced soil tillage in connection with green manuring measures and organic fertilisation. With the optimised growing systems contributions are made to erosion, climate and resource protection; soil quality and biodiversity are promoted, and the adaptive capacity of the systems with respect to climate change is improved. The objectives can be summarized as follows:

- ➔ Development and control of innovative, reduced, farm-specific soil tillage procedures as well as fertilisation measures (green manure and organic fertilisation) in order to increase yields and incomes while increasing the humus contents and soil fertility at the same time by means of on-farm and on-station experiments
- ➔ Further development and stabilisation of systems for soil loosening without reducing the advantages of reduced soil-tillage (on-farm)
- ➔ Identification of the most appropriate greening system for the site and for soil tillages (on-farm)
- ➔ Survey of sound scientific data and demonstration of the results of the experiments on the comparison of soil-tillage intensities and fertilisation systems within the framework of a long-term experiment (on-station)

The target group of the project is farms as well as consultants, which can be convinced of the functional and economic benefits of the innovative soil tillage procedures and fertilisation measures on the basis of the project results.

KEY MEASURES

Within the framework of the project on-farm experiments are carried out on several organic farms. The experimental question has been adapted to the respective farm and/or to the prevailing site and/or framework conditions. Moreover, experiments were also carried out on the practical research station Rutzendorf in Lower Austria, where the long-term effects of the conversion to organic farming have already been examined for more than ten years.

1. On-farm field trials on the effects of reduced soil tillage and organic (green) fertilisation on selected soil properties and yield development.
2. Survey of sound scientific data (humus, nutrient and yield development, soil-water balance) and demonstration of the results of the experiments on the comparison of soil-tillage intensities and organic fertilisation systems on a practical research station (on-station)

RESULTS AND EFFECTS

On-farm field trials: Advantages of innovative strategies partly visible for example a) very flat soil tillage with the modified skim plough as a gentle alternative to the grubber with the same result as regards soil properties and yield performance b) the direct seeding method has advantages regarding soil fertility and evaporation reduction and, due to the lower utilisation of machinery, it is economically efficient, however, it still needs further improvement in particular regarding the time of seeing and the seeding technology and c) the ridge till system from Turiel is an interesting soil tillage system for organic farming, however, there is still need for research, in particular as regards humus and nutrient dynamism, air and gas exchange and their effects on soil fertility and the yields of the crops.

Long-term experiment: Alfalfa crop rotation and organic fertilisation resulted in appropriate yields, humus production and stabilisation of the soil structure, reduced soil tillage: Tendency towards improved soil structure, rapid redistribution of humus and nutrients to the topmost soil layer.

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COOPERATION BETWEEN

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- Agricultural experimental station
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PARTNERS

- Chamber of Agriculture of Lower Austria
- wpa Beratende Ingenieure



**PLANT HEALTH AND
PROTECTION**

PROJECT AREA IN:



Lower Austria,
Styria,
Carinthia

**2016-
2018**

**PROJECT
PERIOD**



ONLINE
www.arge-ampfer.at
www.zukunftsraumland.at/projekte/1461

Organic dock control with beneficial organisms

Operational Group *Organic Dock Control*

ABSTRACT

In grassland areas dock control is very important as the weed leads to a deterioration of forage in terms of quantity and quality. Therefore, an innovative and sustainable methodology for organic dock control in grassland should be identified and tested. This new methodology should aim at weakening large sorrel plants with an established root system by means of the root-eating clearwing caterpillars to such an extent that they either die by themselves or are displaced by a highly competitive turf/sward. Within the framework of the project, important insights on the breeding of the clearwing and on the inoculation of sorrel plants with clearwing caterpillars could be gained. However, it became also obvious that for the operation of a stable mass breeding and the development of an efficient, practice-proof inoculation method, which is independent from the weather conditions, fundamental knowledge about the biology of these animals, is still missing. Only when this fundamental knowledge is available will it be possible to take up the work on the development and the implementation of the use of clearwings in practice again.

STARTING POSITION

Heavy infestation of grassland with dock reduces yields and therefore results in considerable economic loss for farmers. However, due to the high regeneration and reproduction capacity the control of dock poses a particularly sincere challenge to farmers. Existing means of combating (e.g. chemical control) can often be used to a limited extent only and in most cases also entail risks. Organic control through natural enemies is therefore an alternative.

TARGETS AND TARGET GROUPS

- ➔ Testing of an innovative method for organic dock control in terms of efficiency, practicability, and feasibility by means of a pilot project
- ➔ Knowledge within the Operational Group as well as between the Operational Group and interested farmers outside the Operational Group.
- ➔ The main target group is the Austrian grassland management sector.

KEY MEASURES

The Operational Group consists of practitioners, consultants, and researchers. They were supported by external partners (among others AGES, University of Vienna, Agricultural Research and Education Centre HBLFA Raumberg-Gumpenstein and the agricultural technical colleges Hohenlehen and Litzlhof. The implementation took place within the framework of the following sub-steps:

1. Collection of clearwing caterpillars from their natural environment as initial breeding population
2. Rearing and propagation of clearwing caterpillars
3. Application of the caterpillars that have been reared in first outdoor tests as well as
4. Analysis of the results gained from the testing of the method with a view to large-scale applicability of the method in grassland

RESULTS AND EFFECTS

1. On the basis of the experiences made and the project results, the Operational Group has come to the conclusion that the application of clearwings constitutes, at the present state of affairs, no efficient, practical option of clearwing control for Austrian grassland farming. According to literature, the best method of inoculating sorrel plants with the caterpillars of clearwings is the application by means of ice cream sticks applied in the project. However, under practical conditions this method has resulted only in a very weak infection quota.
2. The difficult task to bring the yellow-legged clearwing under artificial conditions to mating could be solved within the framework of this project.
3. Important insights into the development of mass breeding, e.g. on the recipe of a culture medium and on the conditions under which caterpillars should be kept could be worked out as a basis for further projects.
4. It has turned out that cool-wet weather conditions constitute for both varieties of clearwings (*Pyropteron chrysidiformis* - fiery and *P. triannuliforme* - yellow-legged clearwing) a great risk in the infestive stage. Moreover, the results indicate that the caterpillars of the clearwings can and must move a few centimetres deep into the soil in order to find an appropriate place to penetrate into the root. Both insights are of great importance for the development of a practical and efficient inoculation method.
5. In cooperation between the members of the Operational Group, the prototype of a capsule has been developed which is to enable an inoculation of sorrel plants with the eggs of clearwings, which is as independent from the weather and as practical as possible. This prototype can also serve as a basis for further projects on this topic.

The project year 2017 has shown very clearly that for the development and the implementation of an organic dock control by means of the clearwing fundamental insights on these animals will still have to be gained. These insights are necessary in order to be able to practice a stable mass breeding and to develop an efficient inoculation method, which is independent from the weather. The Operational Group has therefore come to the conclusion that the project should be terminated prematurely. First of all research work to gain basic knowledge has to be carried out. Only then, the work on the development and the implementation of the use of clearwings in practice can be started again. As soon as an efficient inoculation method, which is independent from the weather conditions, is available, the actual potential of dock control of the clearwing for Austrian grassland farming, thus the ability to reduce dock populations, can be tested in practical experiments.

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- Wieser Leopold - farmer
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- Bio Austria Lower Austria
- Bio Austria Carinthia
- Austrian Agency for Health and Food Safety (AGES)
- University of Vienna, Department of Botany and Biodiversity Research, Division of Tropical Ecology and Animal Biodiversity

PARTNERS

- Agricultural Technical College Hohenlehen
- Agricultural Technical College Litzlhof
- Agricultural Research and Education Centre Raumberg-Gumpenstein
- 2 agricultural holdings:

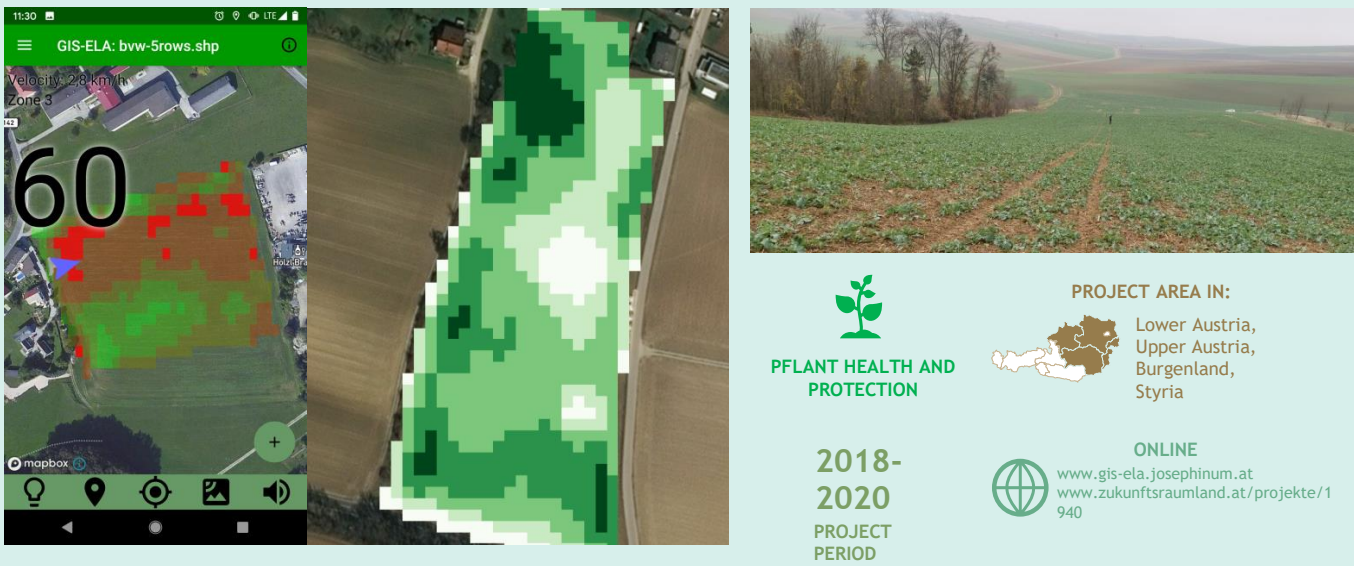
2nd Call

The projects of the 2nd EIP AGRI Call were submitted by the end of September 2016 under one of the following guiding themes

- Agriculture 4.0 - interlinking information /data with production-technical processes for the purpose of optimisation and/or efficiency increase - implementation of innovative procedures in practice
- Measures and technologies aiming at the reduction of emissions in agricultural practice
- Measures aiming at the increase of the welfare of farm animal
- Improving the risk management on farms
- Preservation and improvement of the genetic production basis of Austrian forests taking into consideration the aspects of the adaptation to climate change.

Projects of the 2nd Call

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Geographic Information Systems for Site-Specific Management Aimed at Increasing Efficiency and Greening in Austrian Agriculture (GIS-ELA)

Operational Group *GIS-ELA*

ABSTRACT

Whereas all over the world Precision Farming (PF), i.e. the data and GNSS/PS-supported precision agriculture is gaining increasingly in significance only 6 % of the farmers are making use of these technologies in Austria. Therefore, the economic and ecological potential of PF has remained, to a large extent, unexploited. Within the framework of the project, the Operational Group “GIS-ELA” the use of precision farming technologies for Austrian farm structures is evaluated and their spreading is supported. To this end, methods for the generation and use of yield potential and application maps in agricultural practice are being developed in close cooperation with pilot farms. The knowledge gained on site-specific management practices, including concrete tips for application, is documented in detail, and published as print and online version. After all knowledge transfer of to a larger number of farmers is to take place within the framework of various events.

STARTING POSITION

For the small-scaled Austrian agriculture there exist in practice several obstacles when using and spreading precision farming. Apart from the high acquisition costs for technical equipment it is often necessary to make use of services for the generation of application maps if the farms lack time and know how on information and communication technologies to do it by themselves. Furthermore, independent comparisons between the numerous procedures and products of technology and software providers on the market are missing. Moreover, the ecological effect achieved by Precision Farming is not appreciated according to the current subsidisation guidelines of the Austrian Agri-environmental Programme ÖPUL. Last but not least, there are frequently doubts regarding the benefit of PF systems. The project addresses this situation and wants to develop, taking into consideration the small-scaled and heterogeneous structure of agriculture in Austria, adapted methods for PF, and to make them available to the farmers. In this way, the awareness for the potential of economic and ecological opportunities shall be strengthened.

TARGETS AND TARGET GROUPS

The main target group is Austrian arable farmers. The applicability on grassland farms is taken into consideration as well. The objectives of the project are:

- The spreading and utilisation of yield potential and application maps in agricultural practice, with special consideration of farm structures, which are typical in Austria.
- Finally making available to the farmers free of charge the project results in the form of guides and multimedia manuals including free of charge software.
- Furthermore the results can be used for dissemination of knowledge about precision farming beyond the project period (for example for training events)

KEY MEASURES

Key project steps are:

1. Examination of the available GIS software for their suitability regarding the requirements for systems and imports of data from various sources,
2. Generation of yield potential and application maps by means of various methods with priority on the automation of the generation of maps and the simple easy operability,
3. Transfer of the maps on the working tools and development and/or testing of the use of the maps, and
4. Documentation, publication and spreading of project results and experiences.

RESULTS AND EFFECTS

Expected results of the Operational Group ARGE GIS-ELA are practice-proof instructions for the implementation of site-specific management methods for farm structures. On the long run, an increased use of PF technologies shall lead at the same time to the more efficient use of inputs (e.g. fertilisers, plant protection products, fuels) and to environmental relief.

PROJECT MANAGEMENT

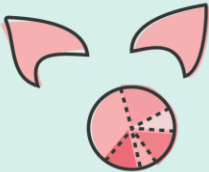
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COOPERATION BETWEEN

- 8 agricultural holdings:
- Chamber of Agriculture Lower Austria

PARTNERS

- Josephinum Research



GEMA

Nutzung von Gesundheitsdaten zur Verbesserung von Atemwegserkrankungen und Parasitenbefall bei Mastschweinen



2017-
2020
PROJECT
PERIOD



Utilisation of health data for the improvement of respiratory diseases and parasite infestation with fattening pigs

Operational Group *Healthy Fattening Pigs*

ABSTRACT

The health of the pigs is an important prerequisite for the economic success of pig fattening farms. However, there is no systematic evaluation and presentation of available health data (e.g. data from the carcass and meat examination SFU) for the use on farms available for the farmers. The project of the Operational Group Healthy Fattening Pigs aims thus at developing a health database for pig fattening farms, which will render it easier for farmers to identify risk factors and weak points with respect to health problems and to take respective improvement measures. In addition to that a diagnosis catalogue with pictures and explanations of diseases and what they mean for the animal as well as tools (online questionnaires, app) for the identification of potential weak points and risk factors at individual farm level has been developed.

STARTING POSITION

Pig fattening farmers receive only diagnoses on the health status of their own pigs in the course of the official ante- and post mortem inspection at the slaughterhouse (carcass and meat examination SFU data). In order to be able to use these data for the health management on the farm it has to be evaluated first whether the quality of the data is reliable for this purpose. Furthermore, the data will be processed more extensively in order to render an evaluation of various batches over a longer period possible. Moreover, a benchmarking with other farms shall be made available.

Thus, a comprehensive health database for pig fattening farms is developed with this project, which supports farmers in improving animal welfare and health on their farms.

TARGETS AND TARGET GROUPS

The objectives of the project are:

- Development of a health database by means of interlinkage of available health data as well as preparation of a diagnosis catalogue as a tool for the interpretation of health data.
- Development of tools in the form of a questionnaire for the fields of bio-safety, respiratory diseases and parasite infestation for the identification of risk factors and weak points of the farm with respect to health problems.
- Examination of the practicability and the effectiveness of the tools on the basis of farm visits.
- Development of a proposal for an alternative diagnosis scheme and/or listing of potential adaptations of the SFU (ante- and post mortem inspection data at the slaughterhouse) meta data catalogue together with the Vienna University of Veterinary Medicine, including the transmission of the proposal to the Federal Ministry of Social Affairs, Health, Care and Consumer Protection

The main target group of the project is agricultural holdings with fattening pigs.

KEY MEASURES

The Operational Group is composed of active farmers, a practising veterinarian, the Association of Austrian Pig Producers (Verband österreichischer Schweinebauern VÖS) the Animal Health Service of Upper Austria (Tiergesundheitsdienst Oberösterreich OÖ TGD), Association of Intensive Livestock Farmers Upper Austria (Verband landwirtschaftlicher Veredelungsproduzenten VLV). Farmers of the Operational Group will participate with their livestock in the development and testing of the health database as well as of the tools. Other cooperation partners are the University of Natural Resources and Life Sciences, Vienna (Universität für Bodenkultur, Wien BOKU) and the Vienna University of Veterinary Medicine (Veterinärmedizinische Universität Wien VETMed Uni Wien).

Important stages in the project are:

1. Development stage: Programming of an interface and the possibility to evaluate the SFU data; working out tools and a diagnosis catalogue
2. Implementation stage: Evaluating the status quo and the subsequent planning and implementation on 28 pig fattening farms further development of the tools and the health database
3. Evaluation stage: Evaluating and controlling the effectiveness of the tools; publication of the project results

RESULTS AND EFFECTS

The expected result is an improvement of animal health due to fewer respiratory diseases and parasite infestation in pig fattening farms. Measures in the field of animal health shall also contribute to the improvement of biosafety. In this way, the introduction and the spreading of pathogens on the farm can possibly be reduced, and a contribution to the reduction of the use of drugs can be made and the competitiveness of pig breeding can be improved as well. The tools (online) as well as the evaluation of the SFU data have already been completed. The catalogue of diagnosis as a tool for the interpretation of the health data has been completed as well and is available online. A proposal for an alternative diagnosis scheme for the SFU has been developed as well:

PROJECT MANAGEMENT

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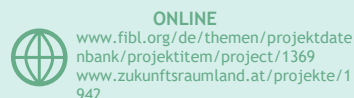
- 28 agricultural holdings:
- Chamber of Agriculture Lower Austria
- Association of Austrian Pig Producers (Verband Österreichischer Schweinebauern)
- Animal Health Service Upper Austria (Tiergesundheitsdienst Oberösterreich)
- Association of Intensive Livestock Farmers (Verband landwirtschaftlicher Veredelungsproduzenten)
- Veterinarian (Thomas Voglmayr)

PARTNERS

- University of Natural Resources and Life Sciences Vienna - Division of Livestock Sciences
- Vienna University of Veterinary Medicine - Unit of Veterinary Public Health and Epidemiology
- Vienna University of Veterinary Medicine - University Clinic for Swine



2017-
2020
PROJECT
PERIOD



Participation project and transfer of knowledge on extended suckling periods on organic pig farms

Operational Group *Extended Suckling Period*

ABSTRACT

In organic pig farming the weaning of the piglets from the sow takes as a rule place at the earliest after the minimum suckling period of 40 days required by law. At this time, however, the piglets are in a critical physiological stage. They are more prone to disease and frequently get the so-called post-weaning diarrhoea, which has to be treated with the use of antibiotics. The discomfort of the animals is also expressed in loss of performance, such as impaired growth, and is therefore economically relevant for farmers. The project “Extended Suckling Period” aims at demonstrating the positive effects and the practicality of an extension of the suckling period to at least 49 days and at making available guidance documents to organic farmers. The concept of an extended suckling period demonstrates an approach to a solution how the problems around the weaning of the piglets can be reduced and the welfare and the health of the piglets can be improved.

STARTING POSITION

There have already been scientific studies demonstrating that an extension of the suckling period has a positive effect on the health of the piglets. This is also demonstrated by a significant superiority of piglets, which were suckled over a longer period in terms of live weight development and treatment incidences.

However, there are several obstacles to actually implement it in agricultural practice. For farms with a fixed production rhythm the extended suckling period requires, due to the longer period of utilisation of the space, an individual adaptation at farm level. Moreover, a longer suckling period must not have a negative effect on the fertility of the sows. Last but not least, an economic assessment of the extended suckling period as supporting information for the farmers is missing. Within the framework of this project, the concept of an extended suckling period on fattening pig farms aiming at an improvement of the welfare and of the health of the animals and at a reduction of the farm risk due to the treatment of the animals has been implemented. The experiences made and the effects reached in this context have been published in various forms and support farmers in the course of the conversion to an extended suckling period.

TARGETS AND TARGET GROUPS

The objectives of the project were:

- Establishment of the concept of an extended suckling period as a reasonable option for organic pig farms and support of the farmers in the conversion process
- Improvement of the welfare and the health of the animals and reduction of the farm risk due to the treatment of the animals
- Evaluation of the economic effects in the course of the conversion to an extended suckling period
- Meeting the expectation of the consumers of healthy animals on organic farms with a low level of animal treatments

The main target group are organic pig farms with interests in a successful production of piglets. However, the results could also be interesting for conventional pig farmers, if, for the purpose of an improvement of the health of the piglets an extended suckling period is considered.

KEY MEASURES

Essential steps of the project were:

1. Farm visits and identification of the status quo
2. The preparation of farm folders on the implementation of an extended suckling period
3. The implementation of the extended suckling period on farms in practice and concurrent data collection
4. Regular meetings of the Operational Group and permanent exchange of experiences
5. Evaluation, interpretation and discussion of the results
6. Publication of articles, preparation of a brochure and a short video for interested farmers

RESULTS AND EFFECTS

The project supports the establishment of the extended suckling period in Austrian organic pig keeping. Regular meetings within the framework of the project promote the exchange among the participating farmers and members of the Operational Group and provide the opportunity to meet challenges jointly in a solution-oriented way. Insights around a successful piglet production are shared in the form of a brochure, participating farmers will report on their experiences in a short video.

Positive effects having an immediate effect on the welfare and on the health of the piglets have been observed. Due to the extended conversion period from their mother's milk to solid feed the piglets can already take solid feed very well at the time of weaning. This results in a strong live weight gain, in particular in the seventh and eighth week and thus in an increased vitality. "This advantage can still be seen in the fattening stable", says an enthusiastic farmer. Neither do the udders of the sows seem to be overused due to the extended suckling period, nor are the sows more sucked out than before. If attention is paid to a balanced feed ration and the feed is offered in sufficient quantities, they already gain in body weight even at that time (to be observed first and foremost in-group suckling). A rise in lactation heat as well as higher repeat breeding quotas could be excluded.

Healthy and efficient animals can only be achieved by means of a combination of various measures (optimisation of hygiene and management measures, feeding and the conditions under which animals are kept). Piglets, which are fit and vital during the suckling period, can also cope better with the (often stressful) weaning period, and this can work on every farm. A detailed look at the farm performance enabled a good comparability to other farms in the branch of industry and made options upwards and downwards visible. Many practical farms have made use of the positive experiences made with the extended suckler period and have practiced it also beyond the end of the project.

PROJECT MANAGEMENT

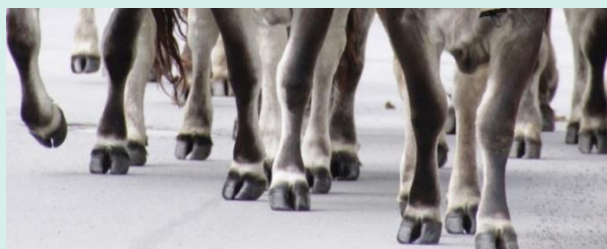
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COOPERATION BETWEEN

- 8 agricultural holdings
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- Rural Further Education Institute Lower Austria
- Organic Institute of the Research and Education Centre HBLFA Raumberg-Gumpenstein, external location Thalheim/Wels
- Division of Livestock Sciences, University of Natural Resources and Life Sciences (BOKU)
- Institute of Animal Welfare Science, Vienna University of Veterinary Medicine

PARTNERS

- Bio Austria



2017-
2021
PROJECT
PERIOD



Improvement of hoof health and animal welfare of dairy cows in Austria

Operational Group **KLAUEN-Q-WOHL**

ABSTRACT

Hoof and limb diseases with dairy cows are caused by deficiencies in the way the animals are kept, feeding and hygiene. They impair animal welfare and entail economic disadvantages for the farmers. The project “ARGE Klauen-Q-Wohl” aims at sensitising and motivating farmers and hoof trimmers for improvement measures in this field. An infrastructure for the standardised documentation and centralised electronic collection of hoof trimming and lameness data and other selected animal welfare parameters related to the individual animal in Austria is being developed. On the basis of these data conclusions concerning risk and influencing factors for the development of hoof diseases and lameness as well as for proposals for improvement measures are drawn. The results will be made available to the farmers for herd management and breeding, and support them in taking improvement measures adapted to the individual animals and to the farm.

STARTING POSITION

Hoof and limb diseases rank among the most frequent causes of losses of dairy cows. In the year 2016 they made up 8% of the cows lost in Austria. Moreover, it has been calculated that a lame cow costs up to 450 Euros per year and entails considerable financial losses for the farmer. Healthy hooves are thus not only important for animal welfare, but they are also of economic significance for the farm. However, presently there exists in Austria no systematic central recording and evaluation of lameness and hoof diseases, which includes also animal welfare parameters and takes thus account of the multifunctional causes of these diseases. This project aims at developing an Austria-wide infrastructure on the centralised standardised collection and evaluation of data on hoof health, lameness, and animal welfare.

TARGETS AND TARGET GROUPS

- ➔ Hoof trimmers, who are making a contribution to hoof health day by day, and who have, due to their training and experience the respective know-how concerning hoof-diseases, play a key role within the framework of this project. In the course of the project programmes are being developed aiming at motivating them to keeping electronic records and forwarding them to the cattle data network, at supporting them in this respect, and at making them available evaluations and analyses for the on-the-spot consulting on the supported farms.

- Farmers: Awareness raising and increase in knowledge in the fields of hoof health and animal welfare. Key figures and software tools are being developed which show them at the same time their strengths and their weak points in the fields of hoof health and animal welfare on their farms and possible solutions and the progress achieved after the measures have been taken. In order to improve the health of the cattle also at breeding level and thus sustainably /on the long run breeding values for hoof health are developed.
- Dairy cows: healthy footing, even higher welfare
- Consumers: healthy and high quality foodstuffs from dairy cows with a healthy footing and a high degree of animal welfare.

KEY MEASURES

All measures are designed and implemented in close cooperation of the members of the ARGE Klauen-Q-Wohl (farmers, hoof trimmers, provincial control associations all over Austria, Austrian Chamber of Agriculture, animal health services, experts in breeding and herd management, IT experts, Rinderzucht Austria, Vienna University of Natural Resources and Life Sciences, Vienna University of Veterinary Medicine.

1. Development of a programme on the promotion and encouragement of the electronic documentation of hoof trimming
2. Development of a data interface (International standard: ICAR Atlas)
3. Data validation, statistical evaluations and analyses (Development of key figures, ...)
4. Development of digital herd management - evaluations for farmers and development of a mobile app on the documentation of hoof trimming.
5. Comprehensive literature research and expert interviews on the weighting of risk factors.
6. Identification of animal welfare indicators and risk factors on five pilot enterprises and 20 test farms (Cooperation with the University of Natural Resources and Life Sciences, Vienna)
7. Elaboration of a technical concept on the digital recording of animal welfare indicators and risk factors
8. Evaluation of the surveys, reports to the test farms, development and test of the risk factor tool
9. Public relations tools, trainings and quality assurance

RESULTS AND EFFECTS

The most important result of this project is the improvement and/or the safeguarding of hoof health with dairy cows as an important contribution to the sustainable improvement of animal welfare in milk production. This is what sensitised consumers are increasingly demanding. For the farmers an increased level of welfare of dairy cows means less loss of performance, use of medicinal products and fewer failures and thus a higher productivity at her level. First results: The electronic infrastructure on the recording, transmission and storage of hoof diagnoses has been successfully developed. 43 hoof trimmers from all over Austria are already participating in the project. They document the hoof trimming for their farms electronically and can subsequently send the recorded hoof diagnoses to the cattle data network (Rinderdatenverbund RDV) via an interface, established by dsp agrosoft, to the programmes ANIMALoffice Klauenmanager and KLAUE. Also for the farmers who make the hoof trimming on their farm by themselves there has been the opportunity since May 2020 to document the hoof trimming in the app "klauenprofi", which has been developed within the framework of the project. Moreover, they have already digital access to the hoof diagnoses as well as to the evaluations based on them in the LKV herd manager or the RDV mobile App. These data constitute the basis for the long-term and sustainable improvement of hoof health in breeding.

PROJECT MANAGEMENT

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COOPERATION BETWEEN

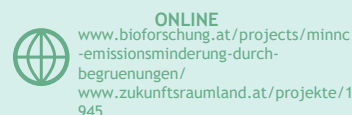
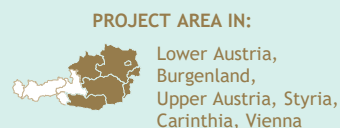
- Hoof trimmers from all over Austria
- Dairy farms (pilot farms)
- (Scientific staff members of the provincial control associations (Landeskontrollverbände LKV) from all over Austria
- Rinderzucht Austria (ZAR and breeding associations)
- Vienna University of Natural Resources and Life Sciences
- Vienna University of Veterinary Medicine
- ZuchtData EDV-Dienstleistungen GmbH

PARTNERS

- Federation of Austrian Cattle Breeders (Zentrale Arbeitsgemeinschaft österreichischer Rinderzüchter ZAR)
- Federation of Austrian Hoof Trimmers (Arbeitsgemeinschaft österreichischer Klauenpfleger AÖK)
- LKV Austria Gemeinnützige GmbH
- Performance Control Agency Vorarlberg (Leistungskontrollstelle Vorarlberg)
- Provincial Control Association Carinthia (LKV Kärnten)
- SEG Informationstechnik GmbH
- Animal Health Service Salzburg
- Austrian Chamber of Agriculture (Landwirtschaftskammer Österreich)



2017-
2020
PROJECT
PERIOD



Reduction of N and C emissions into the air and shift of N emissions into deeper layers of the soil by means of optimising the cultivation of greening in arable farming.

Operational Group *Greening*

ABSTRACT

Green areas reduce the shift of nitrogen into deeper layers of the soil as well as the gaseous N and C emissions and constitute an important measure for groundwater protection. In order to ensure that they fulfil this “catch-crop function” in an optimal way many different factors have to be taken into consideration, from the establishment of green areas to the nutrient release from dead green plants. The project of the Operational Group Greening aims at testing on the basis of practice-oriented trials measures aiming at the optimal management of greening and at evaluating their efficiency in terms of emission reduction. On the basis of the results a management concept for green areas is developed. This concept is published and, by means of events on the spot, on the experimental areas, directly communicated to the practitioners.

STARTING POSITION

In some bodies of groundwater, in particular in East Austria, the groundwater shows high nitrate pollution due to intensive farming. Thus, for example in the Marchfeld region, a continuously rising tendency has been observed; the medium nitrate content, amounting to 55mg/l NO₃ between 2011 and 2015, was considerably above the permissible threshold value. Greening is a tool of ground water protection, because the green plants take up in autumn the residual nitrate from the soil and fix it in the plant biomass, so that it is not washed out in deeper soil layers during wintertime. They constitute an important point within the framework of the Agri-environmental Programme ÖPUL, however, at the moment it is also possible to establish a type of greening, which has only little benefit as catch crops for nitrogen. Within the framework of this project measures aiming at the reduction of emissions, which are reasonable under the applicable conditions of the Austrian Agri-environmental Programme ÖPUL, are tested. In this context, it is examined under which conditions green plants fulfil their catch-crop function in an optimal way. The project aims at improving the problem awareness for emissions in agricultural practice.

TARGETS AND TARGET GROUPS

- ➔ Reduction of the shift of nitrogen emissions into deeper layers as well of gaseous nitrogen and carbon emissions.
- ➔ Optimisation of the management of greening and undersowing under the applicable conditions of the Austrian Agri-environmental Programme ÖPUL.
- ➔ Dissemination of the results by means of field days directly on the spot, preparation of a greening brochure and a greening compass, development of a greening network

The main target group of the projects is arable farmers.

KEY MEASURES

Key project steps are:

1. Implementation of six praxis-proof experiments annually on the arable areas of the participating farmers over a period of three years, oriented according to the most interesting greening question on the respective site. Examined were different greening mixtures, seed strengths, mechanisations, growing times, as well as management in winter.
2. Examination of the nitrate content in the soil, biomass and root behaviour of greening, analyses of nitrogen and carbon contents of aboveground and underground greening biomass as well as its degradability. Examination of soil cover and soil roughness as well as spectral analytic and anatomic root examinations.
3. Presentation of the current results at the “Days of the open Greening Workshop” every year on each of the practical experiments: What is special about the “Days of the open Greening Workshop is that the participants will learn at the seminar in the morning about the results of the analyses of the greening stocks which they will visit in the afternoon on the field. This enables the participants to understand the results in a unique way.
4. Publication and spreading of the results by means of a greening brochure, a greening compass, and recommendations for adapted greening mixtures, articles in magazines, development of a greening network, recommendations for ÖPUL (Austrian Agri-environmental Programme) measures.

RESULTS AND EFFECTS

Important factors for the efficiency of greening as catch crops for the reduction of nitrogen and carbon emissions have been identified and communicated within the framework of numerous field days and articles in agricultural journals on farming practice in a target group-oriented way.

- ➔ Duration of soil coverage: The longer a green cover can grow and remain on the field, the more biomass can it develop and the more protection against nitrate leaching and erosion will it bring. Soil cover by means of residues of a green cover reduces soil erosion during the period until the main crop covers the soil. Every day on which a field is greened counts.
- ➔ Species-rich greening mixtures have turned out to be effective because they contain moisture and wetness-loving species and the greening is therefore successful in dry as well as in wet years. Defrosting greening plantations should consist of at least five plant species from at least three plant families, greening and undersowing from at least three mixture partners.
- ➔ Adaptation: The greening mixture (with/without leguminous plants) should be selected depending on the planned subsequent crop and the residual nitrate content in the soil. In case of sufficient residual nitrate (measurement by means of a simple nitrate test), the growing of coarse leguminous plants is not worthwhile, because they are suppressed by the abundantly growing non-leguminous plants.
- ➔ Time of growing: on wetter and cooler sites the planting of greening plants should take place as soon as possible after the harvest in order to use the vegetation period. If the subsoil is dry, one should wait with the planting until the soil is sufficiently deep moistened, so that a rapid germination and root penetration is possible.
- ➔ In order to reduce soil erosion the seedbed should not be too finely prepared and the harvest residues should remain on the soil surface.
- ➔ Promoting root penetration! More roots means more protection against nitrate leaching. Mixtures with many different components are, due to their different root systems, more successful in keeping the nitrate rather in the upper soil layers. The root penetration in greater depth is of great importance, in particular for humus enrichment and improvement of the soils structure.
- ➔ The C/N ratio of different greening plants varies within a wide range (7:1 to 140:1). By means of the selection of an appropriate greening mixture taking into consideration the C/N ratio and the appropriate management the nutrient release can be optimally adapted to the demand of the subsequent crop and the nutrient losses can thus be reduced.

PROJECT MANAGEMENT

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COOPERATION BETWEEN

- 5 agricultural holdings:
- 1 agricultural service contracts
- 1 scientific institute
- Supported by numerous strategic partners, such as agricultural schools, agricultural extension services and NGOs, farmers, as well

PARTNERS

- Bio Forschung Austria
- Karl Strohmayer
- Franz Traudtner
- Johannes Doppelbauer
- Heinz Köstenbauer
- Harald Schelander
- Maschinenring Hollabrunn-Horn



2020-
2023
PROJECT
PERIOD



Clean air in animal production: Emission reduction and animal welfare in pig fattening

Operational Group SaLuT

ABSTRACT

Due to high emissions and associated conflicts with neighbours, Austria’s animal production sector is facing the challenge of implementing environmentally compatible husbandry systems that are in keeping with the principle of animal welfare. By means of emission measurements carried out in the first low-emission animal welfare stable for fattening pigs in Austria, the savings potentials of emissions and odour pollution are studied.

The results will demonstrate on the one hand opportunities for innovations and investments in animal production safeguarding the competitiveness of Austrian animal production enterprises in the EU. On the other hand, they invalidate the critical objections of neighbours so that official approval procedures for stable constructions will in future involve fewer conflicts.

STARTING POSITION

So far, many livestock farms, in particular those practising pig fattening, have produced high amounts of emissions. They account for a third of the total greenhouse gas emissions released by the agricultural sector and frequently lead to conflicts between livestock farms and residents in adjacent settlement areas. The considerable odour emissions are also the main cause of official approval procedures often lasting for years with ultimately negative assessments. Measures to reduce emissions are therefore urgently sought and also legally required.

This project deals with practical measures and technologies for the reduction of emissions and the improvement of animal welfare in the first low-emission animal welfare stable for fattening pigs in Austria, and provides scientifically sound statements on emission-saving potentials. The results on the low-emission animal welfare stable should contribute to ensuring self-sufficiency in the pig meat sector in Austria at a higher level from the point of view of environmental and climate compatibility.

TARGETS AND TARGET GROUPS

The project aims at a reduction of ammonium emissions having a greenhouse effect (NH₃) in livestock farming. The focus is on the development and on the testing of the first low-emission animal welfare stable for fattening pigs, which breaks technologically completely new ground in the fields of animal husbandry and emissions. The connection between emission reduction and optimisation of production is worked out by means of the use of the most state-of-the-art technologies and their evaluation in a team. Due to the emission reduction the odour pollution is reduced as well. At the same time this new type of stable means innovation in terms of animal welfare, animal protection, and animal husbandry in general.

The project sets the following three priorities:

Reduction of ammonium and dust emissions as well as of odour pollution in animal production and quantifiable statements on the emission reduction potentials.

- ➔ Reduction of existing and avoidance of future conflicts of interest with neighbours and animal welfare campaigners
- ➔ Ensuring on a medium- and long-term basis the self-sufficiency of Austria in terms of pork

The main target group of the project are austrian farmers of pig fattening farms.

KEY MEASURES

The focus of the project is on the scientific monitoring of planning, construction and operation of the first low-emission animal welfare stable for fattening pigs in Austria on the farm of the Neuhold family. For this new type of stable system there are so far no key figures on emission saving potentials available.

Key project steps are:

1. Current measurements in the new fattening stable of the Neuhold family in order to identify the emission savings potential when using state-of-the-art technologies
2. Active involvement of stakeholders, who have a critical view vis-à-vis conventional pig fattening in order to inform about this best-practice system
3. Activities of disseminate the results, for example information material, technical contributions for networks, journals and meetings, public relations work, excursions and farm visits:

RESULTS AND EFFECTS

Within the framework of the project scientifically sound statements on the emissions savings potentials of best practice examples in the field of pig fattening are worked out. Furthermore practice-proof possibilities of implementation of the NEC Directive are presented to stakeholders for example within the framework of a network event and the best practice measures are processed in the form of an information brochure, in order to raise awareness for low-emission animal welfare stables. Due to recommendations for respective promotion measures, the broad implementation of the technology shall be supported.

By means of an active involvement in the field of pig fattening the production systems developed are optimised and positioned as a gentle alternative. The involvement of stakeholders and pig fattening farms renders it possible to present the developed production systems as an approach to the solution of existing conflicts of interest and/or to the avoidance of future conflicts of interest with animal welfare campaigners and neighbours and to create investment incentives.

After all those innovations are demonstrated, which are necessary for the further existence of domestic small-scaled pig production and which create further incentives.

PROJECT MANAGEMENT

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COOPERATION BETWEEN

- Builder
- Pig fattening farm
- Stable technology provider
- Scientific monitoring

PARTNERS

- Agricultural Research and Education Centre Raumberg-Gumpenstein
- Jaga's Steirerei
- Lorber & Partner GmbH
- Schauer Agtronics

3rd Call

The project applications of the third EIP-AGRI call in Austria were filed until 10 August 2017 under one of the following guiding themes:

- Creation of new methods for resource-saving, emission-mitigating and efficient nutrient, plant protection and area management
- Tackling societal challenges in the context of agriculture
- Improving market opportunities along the agricultural value chain
- Strengthening the closed substance cycle economy
- Improving risk management in farms

Projects of the 3rd Call

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Agrarkultur Gutshof Heidensand	Page 42
Larval breeding	Page 44



2018-
2021
PROJECT
PERIOD



Preservation of the competitiveness of mountain farms by means of innovation and transfer of knowledge for efficient production, closed substance cycle economy and marketing

Operational Group *Reine Lungau*

ABSTRACT

With the acceptance of a narrow regional delimitation of the feed supply within the district of Tamsweg, the participating farms withdraw completely from the national feed market, which makes a re-orientation in resource and area management necessary. The starting point for adaptation is the assessment of all nutrient flows on the farm in order to make changes in fertilisation and use. For this purpose, the proven concept of graduated grassland farming is introduced and is now applied on all participating farms. Accompanying measures for the design of the plant communities and the integration of the locally important whinchat habitats are indispensable. To develop the idea of regionality, local feed supply has to be ensured. Under the climate conditions of the region cereal seed can only be propagated on site. However, this also concerns the seed mixtures for the re-seeding of grassland. These seeds can be obtained by on-site threshing. Farmers are assisted in their business activities by the FarmLife farm management tool and receive valuable information on changes in farm structures. In particular, the marketing of old cows under the “Reine Lungau Biosphärenrindfleisch” brand opens up new production and sales channels for the dairy cows, which are fed exclusively on regional feed.

STARTING POSITION

The changes in feed procurement have wide-ranging impacts on animal production, where they open a nutrient gap that has both a qualitative and a quantitative effect. Reduced feed quantities entail a reduction of livestock; this again reduces the amount of manure produced. Simultaneously nutrient density is declining and on many farms the share of staple feed accounts for as much as 95 % of the ration. Small-framed dairy cows with moderate performance can cope better with this situation than more intensive dairy breeds. The farms in the project must therefore as quickly as possible change their breeding stock and acquire suitable animals or develop some from their own herds.

TARGETS AND TARGET GROUPS

In the project of the Operational Group ARGE Reine Lungau farms, processors, research, school and advisors cooperate and enable the development of a modern management concept following the principle of “Get along with what you have”. The objectives of the project are:

- ➔ Need for change in the individual farms in respect of resource-saving, emission-reduction and efficient land management: Use of FarmLife for the assessment of the plot-related nutrient balances, individual farm management plan.
- ➔ Safeguarding the biodiversity of flora and fauna: Ensuring the supply with regional grassland seeds through on-site threshing, regional propagation of arable seeds based on the local competence of the Lungau seed cultivation association, establishment of biodiversity areas with late harvesting dates (after 20th June) to foster the habitats of whinchats. Documentation of the habitats and recording of the cutting dates with external evaluation.
- ➔ Promotion of suitable strains: Evaluation rounds for LKV reporting, selection of mothers and choice of bull fathers according to the total ecological breeding value.
- ➔ Boosting the marketing competence for beef: Product development in the beef sector (durable goods) and pilot for marketing.
- ➔ Ensuring social acceptance and price hedging: Overall assessment of the production network within the framework of environmental accounting, visualisation and communication paths to enterprises to be marketed and to consumers.

KEY MEASURES

1. Introduction of the successfully tested concept of graduated grassland farming
2. Increase the regional cereal cultivation for ruminant feed
3. Market exploration and prototypical introduction of the brand “Reine Lungau Biosphären Rindfleisch”
4. Measures to preserve biodiversity and species diversity, especially with regard to whinchat
5. Assistance of farmers by means of the farm management tool “FarmLife”

RESULTS AND EFFECTS

The farms participating in the project can enhance their competences beyond basic production in dairy farming and can thus safeguard the innovative method of production for the long term. With the success of the project the local professional representation of farms, the District Chamber of Agriculture of Tamsweg, supports the farming community in the region. Close networking between farms and the regional concept of tourism, in particular through close cooperation with the Lungau Biosphere Reserve, creates a valuable application for synergies in rural areas. Overall, the appreciation of the region will probably rise. This can also have an impact on the overall development of the region. An additional result path leads to the Agricultural Secondary School of Tamsweg. The Reine Lungau production process and the concept of eco-efficient agriculture are future training priorities in the region.

All agricultural findings gained from the production concept “Reine Lungau” as well as the comprehensive stakeholder process are recorded.

PROJECT MANAGEMENT

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COOPERATION BETWEEN

- 57 farms organised in the association “Reine Lungau”
- District Chamber of Agriculture Tamsweg
- Agricultural Secondary School Tamsweg
- UNESCO Biosphere Reserve Salzburger Lungau
- Nature conservation department of the Province of Salzburg
- BirdLife
- WWF Österreich
- Cattle breeders association/ Producer group / Salzburg

PARTNERS

- Salzburg Milch
- Agricultural Research and Education Centre Raumberg - Gumpenstein
- METRO Österreich



2018-
2021
PROJECT
PERIOD



Development of sustainable measures to combat spotted wing drosophila in the Austrian fruit-growing and viticultural sectors

Operational Group *KEFStrat*

ABSTRACT

Spotted wing drosophila is an invasive pest from Asia. The females of this fly species lay their eggs in ripening fruits and cause severe yield losses, mainly in berries, cherries, elderberry, and grapes. Existing control strategies cannot always prevent yield losses. Infestations often occur only just before the harvest. In order to exclude residues in the crop the application of insecticides is not, or only to a very limited extent, possible at this time. The few currently registered insecticidal measures are not always sufficiently effective against the fly and can harm other insect species.

The project of the OG *KEFStrat* therefore develops new approaches to combat this pest that are environmentally benign and gentle to beneficial insects and bees. In the laboratory, substances attracting the flies are identified. They are to be used in attract-and-kill processes where insecticides are applied only to part of the crop or to baits. Furthermore, sustainable measures to reduce oviposition and larval development are developed. The most effective strategies are tested in field trials. The results of the project form the basis for an effective, environmentally sound control strategy for agricultural practice.

STARTING POSITION

Spotted wing drosophila (SWD, *Drosophila suzukii*) belongs to the family of fruit flies. It was introduced from Asia and was first detected in Austria in 2011. Animals caught in traps demonstrate that meanwhile the species has spread all over the federal territory. In Austria, the species damages especially soft fruits, such as raspberries, blackberries or blueberries, sweet cherries and sour cherries, plums, elderberry and also grapes (in particular red varieties or those with flesh pink berries, e.g. the varieties Blauer Portugieser, Roter Veltliner, St. Laurent, Zweigelt, and Frühroter Veltliner). Depending on the region and the crop, the crop failure caused by spotted wing drosophila amounts to up to 80 %. The currently available concepts to combat spotted wing drosophila cannot always prevent crop failure. Frequently the infestation occurs only just before the harvest. In order to exclude residues in the crop the use of insecticides is not, or only to a very limited extent, possible at this time. The few presently permitted measures applying insecticides are not always sufficiently effective and can harm beneficial insects and, in the case of inappropriate application, even bees. The OG *KEFStrat* project therefore aims to develop strategies to reduce or prevent damage caused by spotted wing drosophila in the field or after harvest. The insights gained in the project will then be disseminated in the industry.

TARGETS AND TARGET GROUPS

Key objectives:

- Identification of substances which, under laboratory conditions, have an attractive effect on the flies and/or change their behaviour. These substances will subsequently be used to develop baits for this specific type of fly, which will then be applied in attract-and-kill procedures in the open air. In such procedures, the insecticide is applied to the bait only; the crop remains free of residues.
- Development and testing of repellents against oviposition and of sustainable strategies against the development of larvae in fruits. Development of the strategies and tests on laboratory efficacy and application of the most appropriate method in the open air.
- Development of measures to reduce damage in storage through pre-harvest measures or post-harvest treatment.
- Survey of fly development at different locations, in different fruit crops and grape varieties, to determine which crops are endangered under what conditions.
- Improvement of farm profitability through less severe crop failures and the dissemination of the method and communication about its application.

The target group of the OG KEFStrat project are agricultural enterprises presently affected by spotted wing drosophila. They come from the soft fruit, stone fruit and viticulture sectors.

KEY MEASURES

Key steps of the project are:

1. Development of and laboratory tests of attractants having an attracting effect on spotted wing drosophila in order to establish the most specific bait methods to combat this pest.
2. Laboratory tests to develop sustainable insecticides and repellents aimed at reducing or preventing oviposition of SWD and larval development.
3. Field trials with the developed baits, repellents and insecticides to test the effect of the measures in the open air
4. Collecting data on infestation in different crops at different sites and with different climate conditions to allow more precise predictions, and thus better recommendations.
5. Development of measures to reduce fruit damage in storage.
6. Dissemination of the measures by publication of the results in scientific journals and lectures, to the advisors of the chambers and associations, and in a workshop.

RESULTS AND EFFECTS

In the short term, the development of a control strategy for berries, cherries, elderberries and grapes, including measures not involving residues (wetting agents, particle films, etc.), can be expected. This strategy should be designed so that it can be put into practice rapidly. In the medium to long term, field results with the residue-free insecticides and repellents that proved most appropriate in the laboratory will be available and the development of baits for an effective attract-and-kill procedure will have been completed. Furthermore, recommendations for action and strategies for handling infested fruit (in particular raspberries, cherries) in storage are worked out. The methods developed and the know-how generated will be disseminated through journals and lectures and incorporated in the advisory activities of chambers and associations, and will cause sustainable change through direct integration into practice.

PROJECT MANAGEMENT

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eGen

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COOPERATION BETWEEN

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- Biohelp Biologischer Pflanzenschutz
- Chambers of Agriculture Burgenland, Lower Austria, Styria
- Austrian Wine-Growers' Association, Lower Austria
- Wine Growers' Association, Landesobstbauverband Niederösterreich
- Austrian Hail Insurance

PARTNERS

- Austrian Institute of Technology GmbH (AIT)
- Federal Education and Research Centre and Federal Office for Viticulture and Pomology Klosterneuburg
- Food cluster Lower Austria - ecoplus GmbH



SOIL MANAGEMENT
AND EROSION
CONTROL

PROJECT AREA IN:
 Lower Austria

2018-
2021
PROJECT
PERIOD

ONLINE
www.optero-kartoffel.at
www.zukunftsraumland.at/projekte/287

Optimisation of erosion control in potato-growing

Operational Group *OptEro*

ABSTRACT

In potato-growing, conventional management contributes more to soil erosion than the cultivation with other crops. In Austria, the Waldviertel and the Weinviertel regions are particularly affected. This does not only result in crop failures, but also reduces the water retention capacity. Progressing climate change will further exacerbate the problem. To improve the situation a new, erosion-preventive cultivation technique for potatoes, which can be applied under as many different conditions as possible and is therefore scalable, is developed in the OptEro project. For this purpose, field trials are performed in several variations and are evaluated. The focus is on feasibility, economic efficiency, and effectiveness. Subsequently, the results will be passed on through various channels and will be published in a manual in order to sensitise more farmers for the issue, to arouse their interest for erosion control, and to propagate the application of the measure.

STARTING POSITION

The growing of crops causes, among other things, soil erosion, which will further aggravate due to climate change and global warming. As a consequence, on the one hand, soil fertility will decrease and there will be a threat of crop failures. On the other hand, also the water storage capacity of the soil will decrease, which will have a negative impact in view of the water scarcity of the future. In Austria, especially soil erosion caused by potato cultivation is problematic. Potato cultivation is practised above all in the Weinviertel and Waldviertel regions and has already caused first negative consequences there, for example increased flooding. For other crops, alternative methods of cultivation exist already, but for potato-growing there is no satisfactory substitute so far. Innovative techniques are therefore required and the OptEro project aims to find them.

OBJECTIVES AND TARGET GROUPS

Key objectives:

- Raising the awareness of the issue of erosion control measures in potato-growing among farmers and the non-farming population
- Testing of different methods, such as mulch sowing, furrow greening, cultivation using transverse ridges and transverse furrowing
- Development of concrete, widely applicable instructions and recommendations for farmers, which are to be communicated widely
- Reduction of soil erosion in order to maintain the fertility and the water retention capacity of the soil

The main target groups of the project are farmers, who are to be motivated to apply the newly developed growing techniques, as well as the agricultural schools, which will spread the results. Furthermore, the broad non-farming population is to be sensitised for the consequences of soil erosion.

KEY MEASURES

The following key measures have been defined in the framework of the project:

1. Establishment of field trials in different, pre-defined variations at various farms and at an experimental station of Agro Innovation, in order to test potential measures and their effects.
2. Measurement of soil erosion using laser measurement technology and establishment of erosion measurement plots, including recording of precipitation quantity and intensity.
3. Determination of the economic factors like plant yield, machinery and personnel expenses.
4. Determination of the site-specific soil properties and of the change in properties relevant to erosion (ground roughness) resulting from the measures taken.
5. From the second project year onwards, demonstration projects on a larger area to test the practicability and to give farmers and the public a better understanding of the measures, for example by means of project boards.

RESULTS AND EFFECTS

As the trials are performed on different agricultural areas with different growing conditions, it will finally be possible to present diverse, particularly workable measures for farmers on events, on a website, at excursions and field meetings/field days. In addition to these presentations, the results will also be included in the advisory activities of the Chamber of Agriculture of Lower Austria. By focusing on practical suitability, interested farmers and technical colleges can make direct use of the results and thus can make an immediate and important contribution to soil protection.

Only with wide acceptance among farmers will it be possible to ensure large-scale implementation of the soil protection measures. The project will show its effects also for the long term and will ensure exchange of experiences and information flow via a homepage and regular meetings.

PROJECT MANAGEMENT

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- Günter Haslinger
- Thomas Helmreich
- Lorenz Mayr
- Günther Holzer
- AgroInnovation
- Chamber of Agriculture Lower Austria
- Verein Land schafft Wasser
- wpa Beratende Ingenieure GmbH

PARTNERS

- Institute for Land and Water Management Research
- Josephinum Research



2018-
2021
PROJECT
PERIOD



Development of labour market oriented integration projects in the agricultural employment sector

Operational Group Agrarkultur Gutshof Heidensand

ABSTRACT

The labour market is presently characterised by a lack of skilled workers on the one hand and an oversupply of low-qualified workers on the other. For the latter, finding work is often problematic, while on the other hand there are too few skilled agricultural workers on the labour market. The project of the OG Agrarkultur Gutshof Heidensand (Heidensand Estate) addresses precisely this problem and offers low-skilled workers further training programmes so that they can be integrated into regional food production. At the Heidensand Estate in Lustenau, which has about 23 hectares of arable land, a sustainable form of cooperation between agriculture and the social and education sectors is developed, implemented and tested. Socio-economic and viable structures are created which enable a meaningful and useful division of labour between the farm and people who are disadvantaged in the labour market. The participants in the integration programmes work in the fields of several sharecroppers of the estate and in the processing of raw materials. The aim is to integrate people into the primary labour market in the long term.

STARTING POSITION

According to the Austrian Institute of Economic Research (WIFO) the share of long-term unemployed in relation to the total number of unemployed is 34.9% Austria-wide (as of 2017, WIFO). The problem of long-term unemployment is that the physical and psychological condition of those concerned is getting worse and worse. Self-esteem declines, which makes it more difficult to gain a foothold on the labour market. By contrast, farmers in the Vorarlberg Rhine Valley often face seasonal labour shortages. According to Florian Vinzenz, Chamber of Agriculture of Vorarlberg, there is a seasonal need for 100 unskilled workers per season in Vorarlberg. The Ministry of Social Affairs provides for a quota of only 60 workers per season for Vorarlberg, which is exhausted every year. This does not cover the demand, however. Cooperation between farmers and social institutions could offset these peaks. The advantage for farmers is that these job assignments are also possible at short notice and that they do not need to provide accommodation and food, as is frequently the case for seasonal workers. The long-term unemployed get an opportunity to engage in meaningful work and to acquire new skills in the agricultural sector. The project also aims to create the preconditions required to employ the long-term unemployed irrespective of the season and continuously throughout the year.

Moreover, the degree of self-sufficiency for vegetables is comparatively low in Vorarlberg and presently amounts to about 7%. Due to topography and traditions, agriculture in Vorarlberg is dominated by dairy farming. For years the Chamber of Agriculture of Vorarlberg has tried to motivate more farmers to develop an additional area of business in the field of vegetable growing. However, due to the lack of experience in the sector and the higher demand for labour many are reluctant to take this step. The desired degree of self-sufficiency can be optimised and further extended through the experiences that can be gained, and reflected on, in the project of the OG Agrarkultur Gutshof Heidensand.

TARGETS AND TARGET GROUPS

Key objectives:

- Designing forms of cooperation between the agricultural and integration sectors
- Diversification of the agricultural sector by expanding the original range of offers
- Development of and reflection on appropriate methods, techniques and products for agricultural education and work projects
- Definition of suitable target groups for education and employment programmes including adequate occupation
- Development of suitable education and employment programmes and their medium- and long-term funding
- Profound examination of the relationship and the effects of work in nature on people
- Preparation of a guideline enabling other agricultural enterprises to learn from the model

KEY MEASURES

Key project steps:

The intensity of cooperation and the exchange of services are increased.

1. Care, learning and placement successes are analysed and improved.
2. Self-generated profit is determined and optimised.
3. Education and employment programmes are implemented and professionalised.
4. Guideline with key results is finalised and published.

RESULTS AND EFFECTS

Adequate structures and procedures of social farming are being developed and established for the long term at the Heidensand Estate. Evaluations of the interviews with project participants confirm the following first results:

- The work at the Heidensand Estate shows positive effects on the mental and physical health of long-term unemployed people.
- Simplified vegetable growing with a focus on herbs and berries appears to be appropriate in this case.
- Providing a daily structure with a meaningful activity is playing a central role for the effective social agriculture practised at the estate.
- In order to create diverse possibilities of use, to ensure visibility and earn adequate income, additional activities outside the estate, such as tending of the landscape or forest work are to be combined with activities on the farm.
- Networking and the exchange of ideas and experiences among OG participants must be considered essential parts of the project's success.
- A focus on public access, municipal cooperation by means of cultural events, pumpkin festivals or Christmas parties help inform the public about the topic, make the measures known, and eliminate social barriers.

PROJECT MANAGEMENT

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- Simon Vetter
- Lustenau market municipality
- Johannes Hämmerle
- Andreas Krammel

PARTNERS

- Bodensee Akademie
- Fachhochschule Vorarlberg
- Green Care Österreich
- Chamber of Agriculture Vorarlberg



PRODUCTS
AND
PROCESSES

PROJECT AREAS IN:



Upper Austria,
Styria, Vienna

2018 -
2021
PROJECT
PERIOD



ONLINE
www.global2000.at/insekten-als-futtermittel
www.zukunftsraumland.at/projekte/2289

Larval breeding for the production of feed for fish, poultry and pigs

Operational Group *Larval breeding*

ABSTRACT

The European import of protein feed is presently causing various problems: On the one hand, European livestock farming is highly dependent on the global market. On the other hand, imports of soy and fishmeal contribute to adverse ecological consequences such as greenhouse gases, loss of biodiversity in the countries of origin, and overfishing of the seas.

Targeted breeding of insect larvae has immense potential in this context and could help solve many problems in the future. As part of a resource-saving cycle, insect breeding could lead to increased domestic value creation and replace environmentally harmful sources of protein such as fishmeal.

The project is carried out by the Operational Group Larval breeding: With residual substances and by-products, larvae are bred and further processed to become protein feed. The feed resulting from this process is analysed and then tested in feeding trials. As this is one of the first projects of this kind in Europe, the results are to be disseminated to initiate a trend reversal.

STARTING POSITION

At present, primarily soy from South America and fishmeal are used for feeding in European livestock farming, which makes the market highly dependent on world market prices and their fluctuations. Imports also increase greenhouse gas emissions and result in a loss of biodiversity due to overfishing of the world's oceans and the use of rainforests for cultivation.

Breeding larvae for the purpose of processing them to protein feed directly in Austria can contribute to a solution of this problem. This has not yet become widespread in Europe, but it will gain in significance in the course of the next few years due to legislative amendments. In order to pre-empt global players at this point, and to ensure that at local level, and within the framework of a circular economy, larvae are bred for feeding in Austria, the approach of this project of the Operational Group Larval breeding is to develop an agriculturally relevant production of feed from larvae for conventional and organic aquacultures already now. In the future, insects are also to serve as a potential feed for poultry and pigs. At present, however, this is so far not permitted under European law.

TARGETS AND TARGET GROUPS

Key objectives are:

- Use of regional residues from Austrian agriculture or from the agricultural value chain
- Measurable contribution to the environmentally sustainable development of agriculture
- Suitability of the developed feed for fish and terrestrial monogastric animals
- Economic competitiveness of the final project (insect larvae as feed)
- Enhancing the knowledge about insect larvae as a protein source in the relevant target groups

The main target group are operators of aquacultures, such as trout or catfish breeders. In the long term, however, enterprises from the chicken and pig breeding sectors should benefit from the know-how gained as well. In addition, the acquired know-how will be spread in the scientific community and become accepted by the general population.

KEY MEASURES

Key measures are:

1. Evaluation of usable residual substances and by-products as feed in larval breeding, and further development of the production technology
2. Conservation of larvae and production of mixed feed taking into consideration the effects of processing on composition and usability
3. Feeding trials with larval protein with fish, chicken and pigs
4. Ecological and economic analysis of the feed based on larval protein
5. Spreading of the results among agricultural and scientific experts

RESULTS AND EFFECTS

The project is to contribute to the economic and environmental sustainability of livestock feeding and to a model fostering the regional circular economy. The level of knowledge is raised in scientific and agricultural target groups, and in the population at large, to achieve high acceptance and to enable scaling.

Results so far: The project identified regional and both environmentally and calorically expedient substrates for larval breeding. Most different mixtures have already been tested and evaluated. The low-energy conservation method of ensiling larvae is being tested and 90 percent of the analyses have already been completed. The trials for compound feed production were launched and have partly been completed. Feeding trials with chicken were already carried out and the final ones will start soon.

PROJECT MANAGEMENT

GLOBAL 2000 (environmental research institute)

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COOPERATION BETWEEN

- Bio Forschung Austria
- Federal Agency for Water Management
- Ecofly GmbH
- Research Centre Raumberg-Gumpenstein
- Foresters, agriculture
- GLOBAL 2000 Umweltforschungsinstitut
- GLOBAL 2000 Umweltschutzorganisation
- Teichwirtschaft Hartl
- University of Natural Resources and Life Sciences - Institute of Animal Nutrition, Livestock Products and Nutrition Physiology (TTE)

PARTNERS

- BIO AUSTRIA
- Zentrale Arbeitsgemeinschaft der Österreichischen Geflügelwirtschaft (Association of Austrian poultry farmers)

4th Call

The project applications of the fourth EIP-AGRI call in Austria were submitted until 10 August 2018 under one of the following guiding themes:

- Optimisation of farm processes and facilities to reduce greenhouse gas, air pollutants and other emissions in agriculture
- Development and testing of methods to increase the productivity of farms through more efficient material or energetic resource use in agriculture
- Development and testing of methods to adapt to climate change in agriculture
- Development and testing of methods promoting biodiversity in agriculture
- Development and testing of alternative products in primary agricultural production
- Development and testing of approaches to improve animal husbandry (in respect of methods of animal husbandry, animal welfare, animal health, breeding methods)
- Development and testing of methods fostering the circular economy - use of residual substances, by-products and waste from the agricultural value chain
- Development and testing of methods and approaches to stabilise agricultural income due to price fluctuations under the practical framework conditions in Austria

Projects of the 4th Call

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Garlic	Page 60
Tailored flower strips	Page 62
Mountain dairy cattle	Page 64
Income stabilisation	Page 66
Sugar beet farming	Page 68




PRODUCTS
AND
PROCESSES

PROJECT AREA IN:



Styria,
Lower Austria

2019-
2022
PROJECT
PERIOD



ONLINE

www.stmk.lko.at
www.zukunftsraumland.at/projekte/2429

Low-emission fertilization through nutrient recovery

Operational Group *Ammosafe*

ABSTRACT

The objective of the Ammosafe project is the technical recovery of ammonium nitrogen from liquid manure with a separation rate of over 90%. The aim is to considerably improve the nutrient efficiency of the products obtained and the associated reduction of emissions in the utilisation cycle of the farm manure. The approach of not removing the water, but the ammonium nitrogen by means of mobile installations for liquid manure treatment, is innovative and, according to first calculations, economically interesting. The Graz University of Technology already confirmed the feasibility of the technical procedure. The pilot system is provided by the company Röhren- und Pumpenwerk Bauer GmbH. A profitability analysis conducted by the Institute for Sustainable Economic Development of the Vienna University of Natural Resources and Life Sciences is to show whether and to which extent this innovative procedure pays off for farms. The ammonium nitrogen recovered in the form of ammonium sulphate should be usable specifically during the main vegetation period. On the other hand, the liquid manure, which has a low nutrient content after treatment, should be spreadable flexibly and with low impact on the groundwater until late in autumn (banned periods according to the Nitrate Action Programme Ordinance, NAPV). The expected reduction of nitrogen inputs into the groundwater is to be confirmed by appropriate field tests and monitoring of the leachate using suction systems. The suction systems have been in operation since autumn 2019 and are already continuously delivering results. In addition, the time-related material changes and the odour pollution of the treated liquid manure are measured and monitored by Raumberg-Gumpenstein Research and Development.

STARTING POSITION

Modern animal husbandry and changing framework conditions confront the agricultural sector with increasing challenges in the fields of manure logistics, nutrient efficiency, social acceptance as well as air, groundwater and soil protection. During the utilisation cycle of manure sometimes large quantities of nutrients can be lost through emissions to air and water. Therefore, for example in groundwater protection areas more stringent provisions on the ceilings for fertilisation and on the permitted periods of spreading the fertiliser apply already. In addition, solutions will have to be found to reduce ammonia emissions in accordance with future limit values. As it stands, the measures already taken and approved will not be sufficient to meet the requirements of the NEC Directive by 2030.

TARGETS AND TARGET GROUPS

The objective of the project is to find a technical solution for the concerns and challenges of livestock farms in manure logistics, meeting the requirements in groundwater protection, air pollution control, soil protection, and social compatibility. The concrete goals of the project are defined as follows:

- ➔ Provision of a feasible, cost-effective and mobile process for manure treatment
- ➔ Confirmation of the economic efficiency of the process
- ➔ Enabling the application of manure with flexible times, simultaneously preventing labour peaks
- ➔ Positive effect on the nitrate discharge to the groundwater after autumn and catch crop fertilisation compared to untreated liquid manure
- ➔ Enhancing the nutrient efficiency after use of the processed fertiliser variations compared to the fertilisation practised so far
- ➔ Reduction of odour pollution due to the treatment of liquid manure - lower emissions into the air

The target group of the project are livestock farmers who are searching for solutions in manure logistics and, in addition, want to implement options to improve nutrient efficiency on their farms.

KEY MEASURES

The essential steps of the project are:

1. Project management, monitoring and coordination throughout the project period
2. Planning, establishment and provision of a mobile pilot plant for liquid manure treatment by ammonia stripping
3. Collection of practically and scientifically proven results concerning the technical feasibility of the process
4. Implementation of a profitability analysis by the Institute for Sustainable Economic Development of the University of Natural Resources and Life Sciences (BOKU)
5. Supervision of the experimental plots and compilation of crop-cultivation data to determine nutrient efficiency
6. Conduct of a series of olfactory measurements to determine the level of odour pollution
7. Supervision of the suction system to determine nitrate shifting into the groundwater

RESULTS AND EFFECTS

In the long term, this project promotes the implementation of a new process technology in animal husbandry. If the technology proves to be economically interesting, it would create an opportunity for farmers to meet the challenges in the usage chain of manure adequately. It is expected that, in addition to an improvement of manure logistics (more flexible storage and spreading), also a significant increase in environmental compatibility will be achieved. This should also facilitate compliance with the normative specifications (NEC Directive, Nitrate Action Programme Ordinance and regional provisions on groundwater protection). Applicability is not to be limited to agriculture in Austria, which is small-structured in EU comparison, but should also exist in countries with high livestock populations, like Germany or the Netherlands. In addition, the reduction of odour emissions should also contribute to positively influencing the tensions between livestock farms and nearby residents as well as the social image of agriculture in general.

PROJECT MANAGEMENT

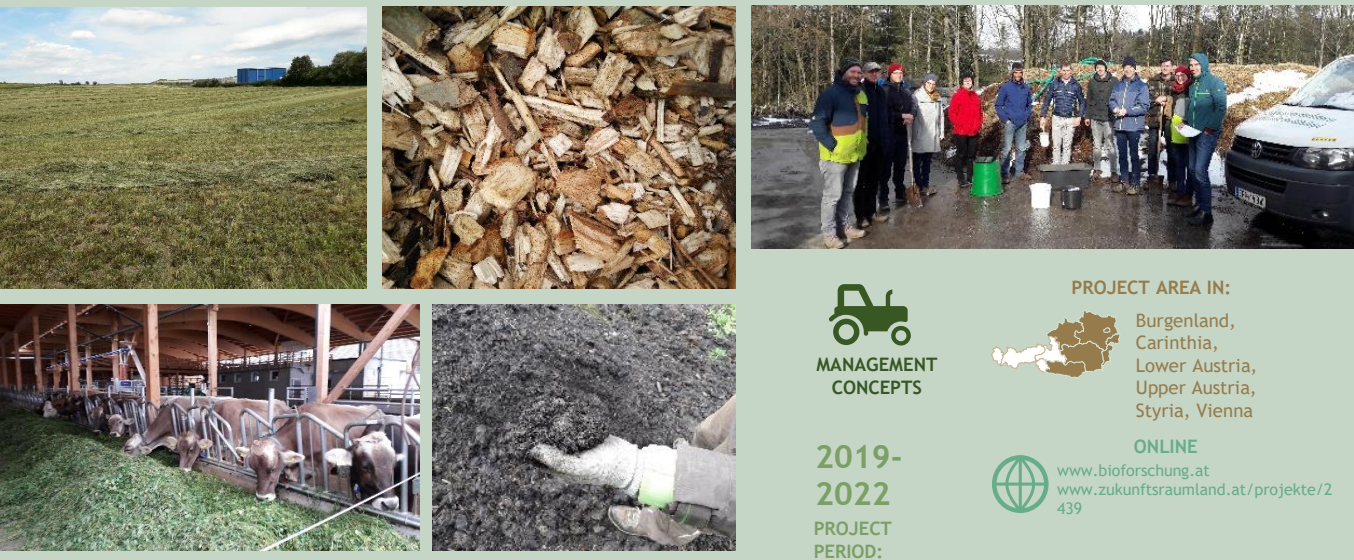
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COOPERATION BETWEEN

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 - Loibner Maria und Gottfried
 - Mascher Elfriede und Thomas
 - Scherz-Veit OG
- Röhren- und Pumpenwerk Bauer GmbH
- Institute of Chemical Engineering and Environmental Technology - Graz University of Technology
- Raumberg-Gumpenstein Research & Development
- Institute for Sustainable Economic Development - University of Natural Resources and Life Sciences (BOKU)
- Office of the Provincial Government of Styria, Department 15

PARTNERS

- Chamber of Agriculture Lower Austria



2019-
2022
PROJECT
PERIOD:



Closing cycles: Recovery by means of return, transfer or utilisation of organic by-products on the farm

Operational Group Cycles

ABSTRACT

As a result of the increasing specialisation of agricultural holdings in Austria, fewer and fewer farms have reasonably closed nutrient cycles. Many farmers want to change this but face problems, for example regarding the fairness of straw-manure cooperations or the use of unused alfalfa or grassland. However, composting or preserving unused residues, possibilities for using the biomass of nature conservation areas and the use of fermentation residues and alumina for nutrient and humus efficiency are challenging as well. The OG Cycles is therefore developing and testing practical measures that can close material cycles in farms and improve nutrient and humus efficiency through better use of agricultural residues. The measures developed are to be disseminated via agricultural secondary schools and advisory services.

STARTING POSITION

As a result of the increasing specialisation of agricultural holdings in Austria, fewer and fewer farms have reasonably closed nutrient cycles. Many farmers want to change this but face problems, for example regarding the fairness of straw-manure cooperations or the use of unused alfalfa or grassland. However, composting or preserving unused residues, possibilities for using the biomass of nature conservation areas and the use of fermentation residues and alumina for nutrient and humus efficiency are challenging as well. The OG Cycles is therefore developing and testing practical measures that can close material cycles in farms and improve nutrient and humus efficiency through better use of agricultural residues. The measures developed are to be disseminated via agricultural secondary schools and advisory services.

Pictures (©OG Cycles):
Top left: Luzerne donor field Robert Schneider;
Top centre: Wood chips compost Xaver Diermayr;
Right: OG Cycles on the methodologies day with Gerhard Weilhüpf;
Bottom left: Compost bedded picked barn of LFS Grottenhof;
Bottom centre: Compost with charcoal at Johannes Bergsmann's;
Icon: Picture Federal Provinces: Lencer;
(https://commons.wikimedia.org/wiki/File:Karte_%C3%96sterreich_Bundesl%C3%A4nder.svg) "Map Austrian Federal Provinces", Federal Provinces highlighted,
<https://creativecommons.org/licenses/by-sa/2.5/legalcode>

TARGETS AND TARGET GROUPS

The main objective of the Austria-wide project is to close material cycles in farms and to improve nutrient and humus efficiency. The focus is on the development and testing of practical measures with the following priorities:

- Straw-manure cooperations between farms, for example between arable farms and livestock farms
- Biomass transfer within a farm
- Composting of unused residual materials and subsequent use
- Innovative methods in the use of fermentation residues, digestates, alumina, and biomass of nature conservation areas

The target group of the project are agricultural holdings as well as agricultural advisors and students of the agricultural secondary schools, that is, the next generation of practising farmers.

KEY MEASURES

Key project steps are:

Documentation of different nutrient balances (for example in terms of quantity, nutrient and carbon content)

1. Data processing and evaluation of the field surveys and laboratory data
2. Calculation of nutrient balances and nutrient efficiency for the investigated measures to close cycles on farms
3. Implementation of tests to optimise the closed-loop system on the partner farms
4. Evaluation of the tests, interpretation and derivation of changes in the approach
5. Calculation of humus balances of the farms, or of the investigated measures, and comparison of the results of the laboratory analyses and the balancing with the figures researched from expert literature or with ballpark figures
6. Evaluation of the tested measures for the use of residual materials and for closing on-farm and regional cycles together with the partners
7. Development of balances, tests, catalogues of measures and decision trees that allow the results to be transferred to other farms
8. Preparation of a brochure on project results and measures

RESULTS AND EFFECTS

The project develops site-adapted measures to close the on-farm, farm-to-farm and regional nutrient and carbon cycles of agricultural holdings that contribute to improved nutrient utilization. Furthermore, concrete and realistic data on nutrient flows occurring in straw-manure cooperations are compiled. These data allow important insights for similar cooperations. The project will therefore ensure fair conditions for exchange in future cooperations and the prerequisites for optimising on-farm nutrient and carbon flows. The catalogues of measures and the decision trees to be developed will make it easier for other farms to implement these methods. In addition, the knowledge gained is disseminated by the agricultural secondary schools and new teaching materials on the topic can be developed. In the long term, this will make it easier for many farms to close cycles, save costs and maintain and increase natural soil fertility.

PROJECT MANAGEMENT

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COOPERATION BETWEEN

- 7 farms
- 3 agricultural advisors
- 2 scientific institutes
- 1 regional energy producer
- Supported by numerous strategic partners, such as agricultural secondary schools, agricultural advisory services and non-government organisations (NGOs), as well as other farmers and scientific institutes

PARTNERS

- Bio Forschung Austria
- Manuel Böhm
- Bio Ernte Steiermark
- Ressourcen Management Agentur (RMA)
- Biogas Produktions GmbH & Co. KG
- Robert Schneider
- Estate management Michael Piatti-Fünfkirchen
- Andreas Kögl
- Veronika Messenböck
- Xaver Diermayr
- Kräuter Bergsmann
- Josef Jugovits




SOIL MANAGEMENT
AND
EROSION CONTROL

2019-
2022
PROJECT
PERIOD

PROJECT AREA IN:
Upper Austria



ONLINE
www.biokompetenzzentrum.de
www.zukunftsraumland.at/projekte/2430



Erosion control and saving of resources in organic maize farming

Operational Group *Organic maize farming*

ABSTRACT

Currently agricultural enterprises are confronted with unacceptable soil losses - this concerns also holdings cultivating organic maize on sloping terrain. The development is particularly problematic as maize, due to yield losses in grassland areas caused by droughts and feeding damage by grubs, has been gaining in significance as an important forage alternative in the course of the past few years. The project aims at demonstrating how maize can be cultivated in a way reducing or protecting against erosion, and without the use of herbicides, in particular on sloping terrain. On trial plots, existing cultivation measures are to be tested and evaluated and new measures are to be developed. Improved cultivation measures can thus increase farm productivity and at the same time can protect the soil against erosion. In a cultivation guide, the findings from the project are prepared and comprehensibly presented for interested farm.

STARTING POSITION

Due to the extensive abandonment of livestock farming in Eastern Austria and the currently increasing specialisation of farms, only few farms still have a more or less closed farming cycle. As a result, most farms depend on external inputs. Due to the rising prices of these inputs the cost difference is increasing. Closed nutrient and carbon cycles could counteract this trend, but confront farms with new challenges. Problems arise for example in respect of the fairness of cooperation, the utilization of currently unexploited alfalfa - grassland growth, the conservation and utilisation of unused residual substances, the use of non-utilisable biomass of nature conservation areas for feeding, and the use of fermentation residues, digestates and alumina to maximise the effect of humus. Many farmers are keenly interested in these questions, but the relevance of closed-loop cycles is emphasised also in the UN Sustainability Goals (2016), the Circular Economy Package of the EU (2015) and the Austrian government programme (2017).

TARGETS AND TARGET GROUPS

The main objective of the project is to find alternative cultivation methods that are economically viable and that at the same time actively protect the soil against erosion and save resources. Other objectives include:

- Active erosion control and maintenance of soil fertility in organic maize farming
- Testing and further developing cultivation practices and cultivation measures that mitigate erosion (targeted tillage, undersowing, mulch sowing, maize cultivation in maslin).
- Pooling of the experiences of practitioners and scientists

The main target group are farmers who cultivate organic maize on sloping terrain. However, the results of the project are of relevance to all Austrian farmers cultivating maize.

KEY MEASURES

Essential measures in the project are:

Identification of the status quo on the participating farms, e.g. basic data on areas and crop rotation, and the use of machinery

1. Development of different test strips on the maize fields
2. Measuring of the soil erosion and monitoring of the test strips
3. Preparation of a cultivation guide for farms outside the Operational Group

RESULTS AND EFFECTS

In this project, the effects of erosion mitigation measures such as undersowing, mulch sowing, cultivation of maize in mixtures, different types of soil tillage etc. on soil and water management are evaluated.

Pioneer / Model farms that successfully cultivate organic maize in sloping terrain are to be established. The measures developed in the framework of the project will subsequently be disseminated by means of a cultivation guide on the implementation of successful organic maize cultivation for farm managers, in written form or in the form of a “new medium”. This optimal form of cultivation protects the soil against heavy rainfall and the associated erosion and in this way increases the added value of the farms while at the same time saving material soil resources.

PROJECT MANAGEMENT

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COOPERATION BETWEEN

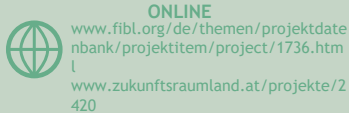
- Biokompetenzzentrum Schlägl
- 4 farms

PARTNERS

- Research Institute for Organic Farming (FiBL)
- ARGE KLIWA
- SoilSaveWeeding
- Bioschule Schlägl
- Boden.Wasser.Schutz.Beratung



2019-
2022
PROJECT
PERIOD



Knowledge transfer and implementation of agroforestry systems in Austria

Operational Group *Agroforst Österreich*

ABSTRACT

Progressive climate change in regions dominated by arable farming in Eastern Austria is prompting agricultural enterprises to test new cultivation systems, including agroforestry utilisation systems. These systems combine tree rows and traditional arable crops, with the trees being used to provide fruit or timber. If well implemented, agroforestry systems have positive economic and environmental effects, for example on yield, biodiversity, carbon sequestration, and the water regime. To date, these systems are rarely applied in Austria and there is neither a contact point for interested agricultural holdings nor a network for the exchange of information and experience between practice and science. The project will establish site- and farm-adapted agroforestry systems on six arable farms and will make insights from this pioneer work available to other farms and multipliers.

STARTING POSITION

Agricultural landscapes have been exposed to massive ecological changes in the course of climate change, e.g. to droughts, heavy rainfall, soil erosion, and yield losses. Farms find themselves increasingly forced to deal with modern growing systems that are adapted to the changed environmental conditions. Up-to-date and site-adapted agroforestry systems are an innovative approach to the challenges of future agriculture because they offer economic and ecological benefits for climate, soil, water balance, biodiversity, and diversification. In spite of these benefits, they are rarely implemented in Austria because, while scientific findings and implementation experience are available for other Member States of the European Union, there are neither information points nor a specific network where agricultural enterprises interested in agroforestry can obtain specific know-how in Austria. This deficit is even worse in view of the fact that the establishment of agroforestry systems is a type of management with a long-term perspective and thus must be well thought through. The project aims at closing this knowledge gap by implementing agroforestry systems on demonstration farms, establishing a national network of practitioners and scientists, and producing guidance documents.

TARGETS AND TARGET GROUPS

The objectives of the project are:

- Establishment of a network dealing with agroforestry
- Know-how transfer from Germany and Switzerland to Austria
- Identification of suitable agroforestry systems for different locations and business orientations in Eastern Austria
- Concrete planning and implementation of agroforestry systems
- Documentation of the steps of implementation
- Preparation of target-group-specific information material for farm managers and advisors
- Dissemination of the results of the project

The main target group are arable farms in Eastern Austria, but the project results are of relevance to all Austrian regions where arable farming is practised.

KEY MEASURES

Essential steps of the project are:

1. Implementation of agroforestry systems on six pioneer farms with the support of experienced consultants from Germany and Switzerland.
2. Accompanying investigations: Survey of the economic efficiency on at least 3 farms, modelling of the impact on climate, survey of the stock development, clarification of the legal situation as a basis for a discussion on future funding options.
3. Spreading of the results: Preparation of an information brochure for farm managers, consulting documents for representations of interest, recommendations for actions for the future of agroforestry in Austria, establishment of an agroforestry homepage, organisation of a meeting, contributions in national networks and at international events.

RESULTS AND EFFECTS

The agroforestry network created in this project is to make the idea of agroforestry known in Austria and to inform about the multifarious impacts on the environment and on climate change. Well-implemented agroforestry systems increase the CO₂ capture per area, contribute to erosion control, reduce nutrient leaching (for example of nitrate and phosphorus) in the soil and promote humus formation in the soil between trees. In addition, tree rows improve the water balance by offering shade and protection against evaporation. Last, but not least, agroforestry systems provide additional habitats for birds and insects and thereby increase biodiversity and the recreational value for humans.

In February 2020, the holdings obtained individual advice for the first time, so that the planting of the agroforestry areas can be planned and prepared for autumn 2020. Information and findings gathered in the implementation project are made available and practical implementation on the farms of the Operational Group is demonstrated.

PROJECT MANAGEMENT

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COOPERATION BETWEEN

- Research Institute for Organic Farming (FiBL)
- 4 farms in Lower Austria
- 2 farms in Upper Austria

PARTNERS

- Vienna University of Natural Resources and Life Sciences (Division of Organic Farming, and Institute of Viticulture and Pomology)
- Chamber of Agriculture Lower Austria
- Bio Austria
- Experimental unit of the Provincial Government of Styria




**SOIL MANAGEMENT
AND EROSION
CONTROL**

PROJECT AREA IN:
Lower Austria,
Upper Austria

**2019-
2022**
PROJECT
PERIOD:

 **ONLINE**
[www.zukunftsraumland.at/projekte/
2427](http://www.zukunftsraumland.at/projekte/2427)

Innovative erosion-reducing techniques of mechanical weed control after mulch sowing in row crops

Operational Group *SoilSaveWeeding*

ABSTRACT

Due to changed climate conditions, for example severe rainfall, more and more soils, in particular on sloping terrain, are endangered. Mulch sowing is an efficient strategy against soil erosion by water and wind and helps maintain soil fertility. So far, there have not yet been any reliably functioning procedures for implementing mechanical weed control in mulch seed stocks. Therefore, procedures and tools for mechanical weed control in connection with mulch seeding in row crops are tested in the course of the project. In addition, new camera systems are tested for their practicality. The results of the project are of relevance not only for organic farms, but to all farms that would like to practise herbicide-free arable farming in the future while at the same time protecting soils against erosion.

STARTING POSITION

Erosion by water and wind is the greatest threat to soil. Especially on intensively utilized agricultural areas the annual soil erosion can, in case of unfavourable management, reach considerable dimensions and thus endanger the fertility and the productive capacity of the soil in a lasting way. Especially in organic arable farming soil loss always means at the same time an economically relevant loss of soil nutrients, for example as not all mineral fertilizers are approved for organic farms. In addition, the demand for organic food has been increasing for some years, which is why the amount of organically farmed arable land is developing very dynamically.

Mechanical weed control constitutes a core factor of influence for successful cultivation in organic arable farming, but also conventional farms are increasingly interested in mechanical weed control as an alternative to herbicide application. For the combination of mulch sowing as erosion control and efficient mechanical weed control, there are no reliable methods yet that can cope with larger quantities of mulch.

TARGETS AND TARGET GROUPS

The primary objective of the project is to reduce the risk of soil erosion in row crops (for example grain maize, sunflower), in particular on sloping terrain, and thereby to maintain, or improve, the quality of the soil. In particular, the following goals are to be achieved:

- ➔ Development and testing of appropriate methods for mechanical weed control in mulch seed stocks
- ➔ Systematic optimisation of the process from cultivation, greening management, tillage, mulch and direct sowing to weed control, based on the premise of the maximum stay of mulch material on the soil surface
- ➔ Testing of new camera steering systems and checking whether new technical possibilities of improved row identification increase the force and reliable guidance of the hoeing implements.

Essential target groups are persons practising organic arable farming and herbicide-free conventional arable farming who want to prevent erosion (by water and wind) in row crops efficiently. Other target groups include agricultural advisors, teachers and other multipliers.

KEY MEASURES

Essential measures in the project are:

1. Establishment and supervision of strip trials with non-hardy and hardy greening stands in front of the target crop, maize, on pilot farms in Lower and Upper Austria
2. Testing of new methods for breaking up grassland, focusing on maintaining as much mulch material as possible on the soil surface compared to the methods so far applied on farms
3. Regular documentation of the soil's mulch cover after each stage of tillage during the vegetation period through the "Soil Cover App" developed by Josephinum Research
4. Development and testing of system-adapted weed control methods with the focus on the testing of newly developed hoeing techniques adapted to mulch sowing conditions
5. Assessment of the practicability of the tested soil tillage and weed control systems via the documentation of the weed development and the grain maize yields achieved in the individual variants
6. Dissemination of the project results via field visits with interested practitioners, seminars, brochures and reports as well as short films on the webpages of the project partners

RESULTS AND EFFECTS

The project aims to develop practicable, feasible strategies for mechanical weed control in mulch sowing. Existing and new equipment is assessed for its suitability and recommendations for farmers concerning the implementation of mechanical weed control in mulch sowing are developed. In this way, farms get an opportunity to reduce soil erosion in row crops, to increase soil fertility and, in the long term, to stabilise yields.

PROJECT MANAGEMENT

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COOPERATION BETWEEN

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- Chamber of Agriculture Lower Austria
- Bildungswerkstatt Mold
- Boden.Wasser.Schutz.Beratung-Oberösterreich

PARTNERS

- Higher Federal Education and Research Institute Francisco Josephinum
- Josephinum Research
- Federal Agency for Water Management, Institut für Kulturtechnik und Bodenwasserhaushalt Petzenkirchen



SOIL MANAGEMENT
AND EROSION
CONTROL

2019-
2022
PROJECT
PERIOD

PROJEKT AREA IN:
Lower Austria



ONLINE
[boku.ac.at/nas/ifoel/arbeitsgruppen/
ag-bodenfruchtbarkeit-und-
anbausysteme/kliwa](https://boku.ac.at/nas/ifoel/arbeitsgruppen/ag-bodenfruchtbarkeit-und-anbausysteme/kliwa)
[www.zukunftsraumland.at/projekte/2
436](https://www.zukunftsraumland.at/projekte/2436)

Climate-resilience through water-saving organic arable farming

Operational Group *Water-saving organic arable farming*

ABSTRACT

As an economic sector, agriculture is massively affected by climate change; its effects are already clearly noticeable today. In order to be able to ensure a sustainable, future-oriented agriculture, appropriate adaptation strategies are required. Ideally, these strategies should increase the water absorption and water storage capacities of soils, reduce the evaporation of water and protect the soil against extreme conditions. For this purpose, there are procedures already, which have to be further developed, systematically analysed and imparted to farms. In this project the focus is as much on on-farm and on-stage trials as it is on the transfer of knowledge and results to agricultural practice, so they can be applied area-wide on agricultural enterprises. Moreover, the project provides also insights into the effects on the individual farm in terms of business management and labour.

STARTING POSITION

The past few years have already brought about yield depressions in arable farming and crop production due to droughts and high temperatures. Climate scenarios indicate that a severe change in regional production conditions will take place in the course of the next decades. In dry regions and in the case of bad soil water storage conditions above all summer crops, such as summer cereals, maize, potatoes, and soy beans, will be increasingly affected by water shortage and drought damage. For this reason, sustainable climate adaptation strategies are required which ideally increase not only soil health but also the water storage capacities of the soil. Systematic scientific studies of appropriate strategies (e.g. direct seed and transferred mulch systems) are not yet sufficiently available, but show a promising potential. Therefore, further investigations and the targeted involvement of practitioners are required to develop practicable procedures that can be applied comprehensively.

TARGETS AND TARGET GROUPS

The project contributes to the development of strategies for the adaptation to climate change on (organic) farms. The main objective of the project is to develop and examine innovative strategies to increase the resilience against consequences of climate change in arable farming. Another important issue is that the knowledge gained from the project is used to develop viable strategies for farms and that these are not only communicated to participants in the project, but to other interested persons as well.

- ➔ Optimisation and further development of the direct sowing of maize and soy beans and of transfer mulch systems in maize and potato crops
- ➔ Insights into the effects of the systems (direct seed, transfer mulch) on the soil-water balance, the amount of weed, soil protection, the nutrient balance, and yield
- ➔ Comparison of the effects on the soil-water balance of short-term measures (transfer mulch and direct seed with mulch cover) and of long-term measures (formation of humus) in maize

The target group of the project includes farms and consultants that can, by means of the project results, be convinced of the functional and economic benefits of direct seed and the transfer mulch system.

KEY MEASURES

Key measures in the project are:

1. On-farm field trials on the influence of direct seed and transfer mulch systems on soil-water-balance, nutrient dynamics and yield development
2. Compiling of scientifically sound data (humus, nutrient and yield development, soil-water balance) and demonstration of the results of experiments to compare tillage intensities and organic fertilisation systems on a practice research station (on-station)

RESULTS AND EFFECTS

The project identifies various optimised and, above all, practicable climate change adaptation strategies and presents them comprehensibly: On the one hand, measures that can be carried out quickly and that have a direct effect, such as direct seed and transfer mulch systems. On the other hand, measures that have a long-term effect through continuous humus formation via organic fertilisation and reduced tillage.

Applied area-wide, these strategies contribute to the adaptation to climate change and to the easing of the water scarcity caused by climate change. In addition to results in arable farming and crop production, this project provides also insights into the effects on the individual farm in terms of business management and labour.

PROJECT MANAGEMENT

BIO AUSTRIA Lower Austria and Vienna

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- BVW GmbH
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PARTNERS

- Biorama
- Landtechnik Stöckel
- Landtechnik Hammerschmied



2019-
2022
PROJECT
PERIOD



Measures against soil-borne diseases in garlic growing in order to safeguard the cultivation in Austria

Operational Group *Garlic*

ABSTRACT

In recent years pathogenic fungi have, due to climate change, been able to establish themselves more strongly in Austrian soils and have caused considerable yield losses in the field, during the processing and storage of plant products. Garlic is particularly badly affected by this problem: Due to fungi infestation, the rapid development of regional garlic supply in recent years has seen a severe slowdown. Therefore, there are great challenges concerning the handling of fungal diseases in garlic: On the one hand, the precise identification of the pathogen is often difficult, on the other hand neither adequate preventive measures nor appropriate and authorised solutions (e.g. plant protection products) are available. The project aims at developing concrete methods for the identification as well as the prevention and control of fungal infections. In this way, yield losses are to be reduced and the high product quality of garlic from organic and integrated production is to be safeguarded.

STARTING POSITION

Various pathogenic fungi constitute a great challenge for the Austrian garlic production. In recent years, the problem has aggravated due to changing weather conditions. Fungi infections cause considerable yield losses in the course of all production steps (on the field, during processing as well as in storage). Especially hidden fungi infections, which do not cause visual damage before the garlic arrives at the storehouse or is in the process of trade, are problematic; therefore the farms are exposed to great pressure on the part of food retail trade, which demands a smoothly functioning supply of the markets. At present, the Austrian demand for garlic is covered mainly by imported goods, even though there is great demand for high-quality regional goods. Although the market share of Austrian garlic has multiplied by four to 25% in the course of the past ten years, this development has slowed down, in particular due to fungi infections. Presently there is mostly a lack of knowledge about dominant pathogens; moreover, unequivocal identification of pathogens based on the contents of garlic is problematic. Even if the pathogen is clearly identified, it is difficult to deal with the infection, as neither clear preventive measures nor solutions (e.g. spraying applications or dressing) with appropriate and authorised plant protection products (organic as well as chemical) are available.

TARGETS AND TARGET GROUPS

The main objective of the project is to develop easily manageable instructions to be able to identify fungal pathogens and to counter them effectively. This includes, in particular:

- Working out sound biological data for the diagnosis and assessment of soil-borne fungi (focusing on fusaria)
- Development of preventive strategies in line with Austrian climate conditions (with a focus on seedlings and contamination via soil)
- Checking and analysing all steps of production (including harvest, drying and storage) for sources of infection and factors that promote diseases at the individual farm

Important target groups include all current and future garlic farms. The knowledge gained is to be imparted to them as widely as possible.

KEY MEASURES

Essential steps of the project are:

1. Development of test systems for the examination of garlic and soil for colonialization by harmful fungi (in particular fusaria)
2. Application of these test systems for the examination of the fungi infestation of various garlic varieties and soil samples of various locations
3. Identification of potential causes, sources of infection and options of spreading in the whole production
4. Examination of the development of the disease in the field, including the identification of critical infection times
5. Examination of harvesting, drying and storage methods for their influence on the infection rate
6. Development of recommendations for action for farmers in order to prevent infestation
7. Dissemination of the results through suitable dissemination channels

RESULTS AND EFFECTS

The project focuses on the production of high-quality garlic from organic and integrated production under the changing climatic conditions. It develops methods and recommendations for action that can help improve the prevention of infections with pathogenic fungi in garlic growing. These methods are essential to ensure the high product quality of domestic garlic in all decisive points, in particular in planting material, cultivation on the field, harvest, drying and storage. This includes also strategies for the treatment of planting material or the establishment of individual plant material propagation. Later, the calculability of production and the level of quality will increase. This will make a significant contribution to improving the competitiveness of domestic garlic producers, adding value, and securing and expanding Austrian garlic production. Moreover, naturally healthy garlic of high quality is to be available for consumers.

PROJECT MANAGEMENT

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COOPERATION BETWEEN

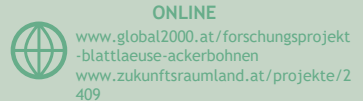
- 5 active farmers
- Niederösterreichischer Gemüsebauverband
- Association Bio Austria
- Chamber of Agriculture Lower Austria
- University of Natural Resources and Life Sciences Vienna (BOKU), Department of Crop Sciences

PARTNERS

- Austrian Agency for Health and Food Safety (AGES)
- Schreuder Bauke Kühltechnik



2019-
2022
PROJECT
PERIOD



Tailored flower strips and undersowing control aphids in leguminous plants

Operational Group *Tailored flower strips*

ABSTRACT

The Pea necrotic yellow dwarf virus (PNYDV), which is transmitted by aphids, causes dwarfism and harvesting loss in domestic legumes. However, as the application of organic and chemical plant protection products does not bring the desired results, more and more farms reduce their growing areas, which threatens their self-sufficiency in valuable protein suppliers. To counter this development, the flower strip project pursues a biodiversity-promoting approach and tries to make use of the ecosystem service of “natural pest control”. The focus is on the development of tailored flower mixtures and undersowing for the creation of attractive habitats for aphid antagonists. In this way, aphid outbreaks and the transference of PNYDV viruses are to be reduced in a natural way. The overriding aim here is practical suitability, i.e. the methodology must be economically viable and meet the technical requirements of the producers.

STARTING POSITION

Infection of leguminous plants with the Pea necrotic yellow dwarf virus (PNYDV), which is transferred by aphids, causes dwarfism, low pod set especially at an early stage, and may even lead to total loss. The control by organic plant protection products is reaching its limits and in conventional production the efficiency of chemical-synthetic products is decreasing due to increasing resistance. The increased cultivation risk often causes farms to reduce the growing areas for leguminous plants, which are, however, valuable components of crop rotation. Especially field bean improves, with its deep roots, the soil structure, enriches nitrogen and is also a valuable protein supplier with a relatively high yield potential. Although it has been scientifically proven that tailored flower strips and undersowing have positive effects on biodiversity and curb aphid outbreaks, there are still many reservations on the part of farmers and consultants, especially as regards economic efficiency. The project is therefore very practice-oriented and is run specifically for its agricultural benefit.

TARGETS AND TARGET GROUPS

Besides improving biodiversity, the main objective of the project is to demonstrate the potential added value of tailored flower strips and undersowing for the protection of Austria's field bean production. Other objectives are:

- Identification of an effective and economically acceptable composition of the flower strips/undersowing
- Reduction of the infestation with aphids / nanoviruses in crops
- Avoidance/Minimisation of insecticide spraying for aphid control
- Building know-how and increasing the acceptance of tailored flower strips among farmers

The target group of the project comprises farms as well as advisors that, by means of the project results, are to be convinced of the functional and economic benefits of flower strips and undersowing.

KEY MEASURES

Essential steps of the project are:

1. Development of tailored seed mixtures for flower strips and undersowing
2. Establishment and management of tailored flower strips/undersowing by the farmers
3. Scientific monitoring for the establishment and support of farmers with tailored flower strips / undersowing management as well as adaptation and tending of the tailored flower strips/undersowing by experts
4. Monitoring and rating activities, controls in the field of plant production
5. Dissemination of the project results in agricultural and specific expert groups

RESULTS AND EFFECTS

The project develops seed mixtures for tailored flower strips and undersowing which attract aphid antagonists in a targeted, timely way, so that the infestation of leguminous plants with aphids and nanoviruses is contained and insecticide spraying is reduced or no longer necessary. If the project is successful, farms will have a method to save pesticides and to achieve good legume harvests and economic profit. In addition, agrobiodiversity is improved. In the medium term, Austria's field bean production can thus be stabilised, or maybe even expanded.

PROJECT MANAGEMENT

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COOPERATION BETWEEN

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- Chamber of Agriculture Upper Austria
- Research Institute for Organic Farming (FiBL)
- GLOBAL 2000 Umweltforschungsinstitut


PARTNERS

- Raumberg-Gumpenstein Research & Development
- Austrian Agency for Health and Food Safety (AGES)
- Deutsche Saatveredelung AG (DSV)




**ANIMAL WELFARE
AND
HEALTH**

**2019-
2022**
PROJECT
PERIOD:

PROJECT AREA IN:
 Lower Austria,
Upper Austria, Styria,
Salzburg, Carinthia,
Tyrol, Vorarlberg

ONLINE
 www.zukunftsraumland.at/projekte/2428

Further development of husbandry systems for future-oriented dairy-farming in mountain areas

Operational Group *Mountain dairy cattle*

ABSTRACT

In the mountain areas of Austria’s western Provinces up to 80 % of the dairy farms practice a husbandry system which combines pasturage, free-range farming, and temporary tethering. Recently especially milk processing enterprises and the food trade are increasingly exerting pressure on these farms to convert to loose housing stables. For example, higher allowances for branded milk are only paid to loose housing stable holdings any more. However, stable reconstruction poses major financial, spatial and management challenges for small dairy farms in confined mountainous areas. The project aims at supporting these farms in two respects: On the one hand, innovative, already implemented solutions for stable reconstruction are well documented, processed, and made available as knowledge and experience. On the other hand, the project shows holdings where a reconstruction of the stable is not possible alternative strategies for farm development.

STARTING POSITION

About 70 % of the milk produced in Austria originates from small-scale dairy farms in mountain areas with an unfavourable starting position, such as a small number of cows, their location on a slope, or difficult climatic conditions. The vast majority of these farms practice a combined type of husbandry. Recently food retail chains, milk processing enterprises and animal welfare associations are increasingly exerting pressure on these holdings to convert to loose housing stables. For example deadlines are fixed for the conversion to a loose housing stable, or higher allowances for branded milk are only paid to loose housing stable holdings any more, and also in the case of a combined type of husbandry the daily time for exercise is prescribed from now on. These requirements threaten the existence of numerous mountain farms because, firstly, in narrow mountain areas it is not always possible to build a loose housing stable and, secondly, where enough space is available, there are no cheap, well-established standard solutions for mountain areas as there are for lowland areas, which means that stables have to be planned and built individually for the respective holding. The project aims at supporting the dairy farms concerned in a targeted way.

TARGETS AND TARGET GROUPS

The main objective of the project is to collect, evaluate and uniformly document innovative animal husbandry systems and business development strategies in mountain areas. Other objectives are:

- Consolidation of the experiences/knowledge from already implemented construction solutions from all regions concerned and from all project partners
- Evaluation of these construction measures in respect of animal welfare, emission risk and sustainability criteria
- Economic assessment of construction measures by working out current (re-) construction cost rates
- Survey and development of alternative farm development strategies

The main target group are all dairy farms concerned in the mountain areas, which will be provided with decision support based on the project results, as well as advisors who will receive comprehensive, data-based advisory tools.

KEY MEASURES

Essential steps of the project are:

1. Systematic recording of 30 already implemented construction solutions by means of recording methods and documentation templates worked out
2. Assessment of these construction solutions as regards their animal welfare and emission risk potential, their sustainability and their potential in terms of business economics
3. Monitoring and documentation of ten model farms in the course of the implementation of alternative types of business development
4. Preparation of a construction brochure and of a brochure on alternative types of business development
5. Creation of a homepage and of various materials for multipliers for the purpose of spreading the results

RESULTS AND EFFECTS

The project contributes to the security of dairy farms and the multi-functionality of mountain farming in Austria's grassland and mountain regions. It contributes to the modernisation of agriculture and to improved animal husbandry. Above all, however, the project is of great economic significance, as many farms are presently facing major challenges in terms of construction and business management and we have to protect their future.

PROJECT MANAGEMENT

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COOPERATION BETWEEN

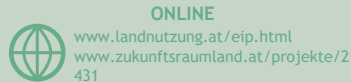
- 3 farms
- Austrian Chamber of Agriculture
- Chambers of Agriculture of the Provinces of Vorarlberg, Tyrol, Salz
- Bio Austria Bundesverband and Bio Austria Tyrol, Salzburg, Styria, Carinthia, Upper Austria, Lower Austria
- Austrian Council for Agricultural Engineering and Rural Developmen (Österreichisches Kuratorium für Landtechnik und Landentwicklung)
- Obersteirische Molkerei und Tirol Milch - Berglandmilch

PARTNERS

- Raumberg-Gumpenstein Research and Development
- Vienna University of Natural Resources and Life Sciences - Institute of Agricultural Engineering
- 40 pilot farms



2019-
2022
PROJECT
PERIOD:



Presentation and simulation of revenues and costs depending on changes in prices and quantities

Operational Group *Income stabilisation*

ABSTRACT

The incomes in the Austrian agricultural sector have been very volatile in the course of the past few years. Some types of farms are familiar with such situations, for others this is new and causes great insecurity. Uncertainty about the expected costs of inputs or operating resources and revenues from products sold contributes significantly to the income risk. In this project, free digital solutions are developed for Austrian farms to support them in their decision-making. Different information and data will be bundled and made available to farms in a comprehensible way. They obtain processed information, for example on forecasts from the agricultural sector, or on supply and demand for specific agricultural produce. In addition, derivations to individual farms will become possible. The focus is on improving the planning and management of farms.

STARTING POSITION

Farm managers are increasingly facing volatile market situations and thus are exposed to strong annual income fluctuations. Information on price, supply and demand developments as well as respective forecasts are difficult to access for the individual farm manager. There are no consolidated sources of information for farmers. Moreover, it is a challenge for many farms to transfer such items of information to their own economic situation. For these reasons, it is important to bundle the different sources of information and to transfer the effects of the developments to the individual farm.

TARGETS AND TARGET GROUPS

The overarching goal is to improve the competitiveness of all types of management of agricultural and forestry holdings in Austria. To this end, various digital information offers on current and projected economic developments in the agricultural sector are provided in a compact form. In this way, farmers can obtain information faster and easier, for example on the future development of demand on their sales markets or on current and anticipated price trends in products and inputs. This information is to provide farmers with an additional decision-making basis for farm management and is to help them better assess the impact of possible developments on their own farms. The following goals can be derived from this:

- ➔ Preparation and presentation of relevant data and information on the agricultural sector
- ➔ Darstellung der Angebots-, Nachfrage- und Preissituation und aktueller Prognosen zu ausgewählten Agrargütern
- ➔ Simulation of the quantitative impact of the projected changes in the prices of products and inputs on the individual farm
- ➔ Development of a digital solution that communicates the information collected, including the simulation, to farmers in a comprehensible, structured way

The target group comprises all full-time and part-time farmers of all types of management.

KEY MEASURES

Key steps in the project include:

1. Presentation of research results and forecasts
2. Presentation of the current supply, demand and price situations
3. Programming of a software for the simulation of quantitative effects at farm level

RESULTS AND EFFECTS

Information and data from different sources are to be made available to farmers. In the project, digital solutions are developed which provide farmers with understandable research results, information on the supply and price situation, forecasts on the agricultural sector and on selected agricultural goods and derive effects on farm level. The solutions developed are available to Austrian farmers free of charge. This easier access to information and data, including the derivations on farm level, helps farmers in decision-making for their farms; the uncertainty in volatile markets can be better assessed, and thus competitiveness can be maintained.

PROJECT MANAGEMENT

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COOPERATION BETWEEN

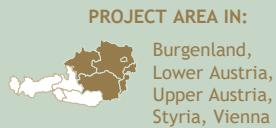
- Roland Weber (farmer)
- LK OÖ Dienstleistungs GmbH
- Austrian Institute of Economic Research (WIFO)
- Beiselen Service GmbH
- Chamber of Agriculture Upper Austria

PARTNERS

- Other farms
- Federal Institute of Agricultural Economics, Rural and Mountain Research
- LBG Österreich GmbH Wirtschaftsprüfung & Steuerberatung
- Austrian Chamber of Agriculture
- Chamber of Agriculture Lower Austria



2019-
2022
PROJECT
PERIOD



Aufbau Development of surveying and regulating measures on selected animal pests in sugar beet growing in Austria

Operational Group *Sugar beet growing*

ABSTRACT

The cultivation of sugar beet is an important sector of arable farming in Austria and a valuable element in many crop rotations. However, due to changed production conditions resulting from the increasingly limited possibilities in pest control, and increasing numbers of pests due to climate conditions, this valuable element of crop rotation is increasingly getting under pressure. The project aims at developing measures for integrated plant protection in sugar beet cultivation. On the one hand, a new warning service for beet pests is developed and, on the other hand, greening in front of sugar beet is optimised in a way that helps control pest populations and promote the attractiveness for pollinators. In this way, a concrete basis for decisions is developed, by means of which the risk of production loss can be mitigated and changed framework conditions can be handled in a better way. This contributes to safeguarding domestic sugar beet farming on a long-term basis and to make it fit for the future.

STARTING POSITION

The general conditions in Austrian sugar beet cultivation, an important arable crop of social, regional, and strategic interest, have considerably changed in recent years. On the one hand, changes in global supply and demand conditions increasingly entail price risks and changing production requirements bring about new challenges in cultivation. On the other hand, due to the changing climatic conditions pests to which little attention has been paid so far occur in greater numbers, for example beet weevil, hop flea beetle and, in particular, aphids. They pose great problems for farms. The knowledge about the pests relevant to farmers (such as population developments and spreading areas) is still fragmentary. Moreover, there are presently no warning activities on beet pests in Austria. Besides, pest control in sugar beet farming is difficult and getting more and more difficult due to the restrictions in the use of insecticides. One approach is the targeted selection of catch crops, which are often included in beet cultivation and have a great impact on insect populations (both pests and beneficials or pollinators). However, here too there is often a lack of the practical knowledge about optimal varieties, mixtures and cultivation that would be needed to minimise pest occurrence while at the same time providing optimal conditions to beneficials.

TARGETS AND TARGET GROUPS

The main objective of the project is, on the one hand, to process knowledge and information for farmers in a targeted way and, on the other hand, to develop management methods that minimise pest infestation in sugar beet. This includes, inter alia:

- Development of modules of the warning systems (www.warndienst.at) for selected beet pests (hop flea beetle, black bean aphid, green peach aphid)
- Studies on the virus infestation of aphids
- Standardised recording of the occurrence and development of the beet weevil and establishment of a monitoring and information system for beet farmers
- Optimisation of greening mixtures in beet crop rotations with a view to their impact on beet-specific pest populations

The project targets the entire Austrian beet sector, which presently comprises more than 6,000 farms.

KEY MEASURES

Essential steps of the project are:

1. Development of recording systems for flea beetle and aphid, data transmission and quality assurance systems and their integration in existing warning services
2. Examination of the effects of seed treatment on the damage potential of beet pests
3. Development of a recording system for the beet weevil and integration in existing warning systems
4. Examination of greening strategies with respect to their influence on pest populations and biodiversity

RESULTS AND EFFECTS

Due to high production costs, sugar beet cultivation has a high risk of lacking competitiveness. That is why highly efficient use of resources is essential in beet cultivation. Within the framework of this project, methods and recommendations for action are developed that enable Austrian beet farmers to effectively combat climate-related beet pests despite restrictions on the use of insecticides. These measures can make a decisive contribution to increasing efficiency in production and enhancing yield security by reducing planting and yield losses. The Austrian economy will benefit from this because jobs are secured by the maintenance of sugar beet production in Austria.

PROJECT MANAGEMENT

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COOPERATION BETWEEN

- 5 practising farmers
- Chamber of Agriculture Lower Austria
- Austrian Chamber of Agriculture
- Austrian Agency for Health and Food Safety (AGES)
- AGRANA Research and Innovation Center (ARIC)

PARTNERS

- Provincial Chambers of Agriculture
- Die Rübenbauern (growers' association)
- AGRANA Sales & Marketing (ASM)

EIP-AGRI projects can be clustered in different ways. Two clear classifications are presented below:

- 1) Classification according to the time of call
- 2) Classification according to the content focus

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Agroforst Österreich	Page 54



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