

# PRECISION FARMING POLICY & ECONOMIC REVIEW ANALYSIS

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D.T1.1.2 PRECISION FARMING POLICY  
ECONOMIC REVIEW ANALYSIS

Austria

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## Austria<sup>1</sup>

### 1. Role of PF industrial sector - Overview about industry/companies

In the following Table, there is a list and brief description of companies in Austria that produce, install or offer PAT services in their products.

There are no OEMs known in for steering systems in Lower Austria.

Lower Austria	
Company name	Description of the solution
Agri Farm Maschinenbau GmbH	They build conventional machines for tillage and soil cultivation
APV Technische Produkte GmbH	The company started with disc spreaders for grassland and seeding but continuously enlarged the product portfolio with rotary hoes, tine weeders for mechanical weed control, grassland harrows and grassland rollers, pneumatic seeders. The machines are partly equipped with ISOBUS technology.
Geoprospectors GmbH	Topsoil Mapper supports the farmer in optimising soil cultivation by measuring the heterogeneity of fields (soil type, water saturation, and compaction using electromagnetic induction). The products are sold via the CNHi distribution channel "agXtend"

<sup>1</sup> provided from: HBLFA Francisco Josephinum (FJ) - Researcher DI.Dr. *Jürgen Karner*, DI *Reinhard Streimelweger* LL.M. (WU), DI *Christian Rechberger* (2020) and Linz Center of Mechatronics - Researcher DI(FH), Dr. *Martin Scherhäufel*, et.al (2020).

Agrarcommander	provides digital tools for planning and record keeping in agriculture (FMIS).
Farmdok	provides digital tools for planning and record keeping in agriculture (FMIS).
Microtronics Engineering GmbH	stands for very high quality state-of-the-art products and services in the field of GSM-based M2M data transmission
Upper Austria	
Company name	Description of the solution
Steyr Traktoren	S-Tech System, provides high precision steering with an accuracy of up to 2,5 cm (RTK+).
agris	onboard electronics products, include automatic steering systems with a precision of 15 cm.
Pöttinger Landtechnik GmbH	agricultural technology company that includes grasland care, tillage, seeding equipment and digital farming technology (e.g. driving assistance and precision drill technology)
Einböck	includes machines for crop-care, tillage, grassland care and seeding & fertilizing
Regent	produces equipment for tilling such as ploughs, power harrows, seed drill gear and cultivators

WINTERSTEIGER	world's number one in field research equipment
Smartbow	developed a comprehensive system for dairy cow monitoring including Industry-leading rumination monitoring, unparalleled heat detection, truly real-time localization and Animal Pattern Recognition IntelLigence (APRIL)
Others in Austria	
Company name	Description of the solution
Audili	start-up company which develops a self-learning software which determines soil characteristics on a satellite basis and thus replaces complex soil analyses
Lindner	has been developing and producing tractors and transporters for the alpine and pasture farming industry, cultivated agriculture as well as for municipalities and cities throughout Europe.
Bauer GmbH	operates in three main product fields: Irrigation, Slurry Technology and Pipes & Fittings

## 2. Impact of PF - Status in the region

### 2.1. General

Only 6% of Austrian farmers used precision farming systems in 2016.<sup>2</sup>

According to the Transform survey in 2019, the results have shown for Austria and also for the other CE countries, that there is an importance on PF technologies and applications for farmers on their farm.

For Austria, 10% of farmers said they were not interested in precision farming (PF) at all. But the largest proportion, 42%, were those farmers who said they did not currently use precision farming technologies, but had plans to do so in the near future. 12% of respondents said in 2019, that they had recently started using precision farming applications on the farm. Furthermore, 12% said, they were beginners in PF but wanted to become professionals in the field of precision farming. 16% said they were advanced users of PF and 9% identified themselves as professional users since many years.

### 2.2. Lower Austria<sup>3</sup>

Lower Austria hosts PA companies, e.g. Geoprospectors, agXtend (as a sister company of CNHi), Farmdok, Microtronics.

In the trading business of agricultural products the RWA Raiffeisen Ware Austria AG is widely known. It is the wholesale company and service provider of the Lagerhaus cooperatives in Austria.

### 2.3. Upper Austria<sup>4</sup>

Upper Austria hosts top PA companies, e.g., Pöttinger, Steyr Traktoren and Wintersteiger.

Since 2015, Maschinenring (<https://www.maschinenring.at/>) provides a “Real Time Kinematic” (RTK)-Signal for exact driving. Four base stations allow for an area-wide use of this service in Upper Austria. In 2017, about 50 farmers used the MR signal.

Unfortunately, to the best of our knowledge, there do not exist any numbers about the coverage of the use of PA in Upper Austria.

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<sup>2</sup> KeyQUEST Landwirte Befragung Februar/März 2016, n=400 Ackerbauern in ganz Österreich:<https://www.keyquest.at/news/agrar-news/keyquestuntersuchungvonprecisionfarmingimackerbau/>, accessed 25.08.2020

<sup>3</sup> provided from: HBLFA Francisco Josephinum (FJ) - Researcher DI.Dr. *Jürgen Karner*, DI *Reinhard Streimelweger* LL.M. (WU), DI *Christian Rechberger* (2020)

<sup>4</sup> provided from: Linz Center of Mechatronics - Researcher DI(FH), Dr. *Martin Scherhäufel*, et.al (2020)

### 3. Support PF at Policy level in Austria

Several national and regional have been launched to support precision farming in Austria.

#### **Platform “Digitisation in Agriculture”**

To explore and seize new opportunities the platform “Digitisation in agriculture” of the Federal Ministry for Sustainability and Tourism was established in spring 2017. The platform aims to accompany the trend towards digital technologies in agriculture in the large number of areas concerned with an eye to the future. Short-, medium- and long-term measures are to be taken in a way that this trend can be followed and supported and that domestic agriculture which, in international comparison, is rather small-structured, can make good use of it and utilise it adequately. Specific fields of action have been identified and analysed in a report. They comprise legal framework conditions just as much as economic or environmental aspects and regional development. [<https://www.bmnt.gv.at/english/agriculture/Digitization/Digitisation-in-agriculture.html>; accessed 22.07.2019]

Nine areas of activity have been identified [BMNT: Bericht “Digitalisierung in der Landwirtschaft - Entwicklung, Herausforderungen und Nutzen der neuen Technologien für die Landwirtschaft”]:

- **Technology in arable farming:** The high rate of development offers a huge potential for an improved, precise and optimized production method. Digitalisation is a challenge for small-scaled Austrian farms. They often can't afford modern technology (ISOBUS, GNSS, section control, telematics, FMIS) for their own farm. The risk of highly rated transparency or the dependency on reliable technology are rated as risks from farmer's perspective.
- **Technology in livestock farming:** The number of semi- or fully-automatic working processes increases, especially in livestock farming. The systems are digitally controlled and acquire or handle external data. The collected data are used for herd management and for optimized feeding. It has to be mentioned that digitalization in livestock farming must not only be a tool for management control, but has to support animal welfare by the help of existing information.
- **Material management:** The information along the value chain shall be improved and standardized. One example is the structured digital data exchange for planning and controlling the processes in the Austrian forestry sector. Meanwhile, about 90 % of the Austrian round timber is managed with the standardized FHP file format to enable automatic cross-company data exchange.

- **Business administration and management:** The chance of small scaled farms is to take decisions on the basis of relevant data. Therefore the cost accounting has to be linked with farm-management systems. Farmers need the skills to acquire information out of data. An advantage of digitisation is the simplified proof of origin.
- **Ecology:** Digital information from soil and fields supports the decision making process in terms of arable farming (e.g. plant treatment, irrigation, demand-driven fertilization) to minimize environmental impacts (e.g. nitrate concentration in ground water, resistance formation among pathogens).
- **Legal framework:** The operation of drones in agriculture to acquire field information requires to fulfil several legal requirements. Uniform standards need to be developed. The permanent storage of data enables Big Data-analysis. From the legal point of view it is relevant that access to data without personal connection enables benchmarks in wide areas. The combination of various data can lead to new KPIs. But farmers might be supervised by third parties (e.g. service providers) when they collect data from the farmer´s fields. They could draw conclusions e.g. from the site-specific yield value.
- **Administration and agricultural statistics:** The ownership of data has to be clarified (open-data).
- **Regional development:** Austria is still lacking in technical and social infrastructure. The telecommunication systems need to be established and has to cover the agricultural territory.
- **Education and training, consulting:** The digital learning objectives have to be integrated in curricula of courses for future farmers. They learn about the utilization of Smart and Precision Farming. Several training opportunities are offered in Austria by the Francisco Josephinum, University of Applied Science Wiener Neustadt and the University of Natural Resources and Life Sciences.

### **House of digitalization**

The aim of the House of Digitalization is to increase understanding of the significance of digitalization for our (working) lives and our prosperity. It will provide a new creative space where projects can be initiated and implemented. The aim is to provide support for innovative firms, helping them get their ideas onto a commercially viable footing ([www.virtuelleshaus.at](http://www.virtuelleshaus.at)).

The targets are:

- Accelerated digital transformation for businesses in Lower Austria
- Easy access to research institutions for business enterprises
- Strengthening multi-disciplinary and international research
- Key and demonstration projects
- Raising awareness

- Transforming people's fears into interest through better understanding

The (virtual) House of Digitalization comprises several floor levels:

1. **digiPEDIA:** This floor is some kind of compendium for items, terms and definitions regarding digitization. This reference work explains abstract terms and definitions of digitization by means of concrete examples or projects.
2. **digiGALERIE:** Examples of digital innovation can be presented on this floor, as well as the corresponding companies.
3. **digiEVENTS:** This event calendar provides an up-to-date overview about digitization events in Lower Austria.
4. **digiSKILLS:** Companies and institutes can describe their skills, abilities, resources and references. If someone is seeking for a project-partner you can access this floor.
5. **digiFIT:** Search function for courses and training opportunities related to digitalization. Organizations that offer these types of opportunities are welcome to add them here.
6. **digiLAB:** New project ideas can be presented here - expecting to find an appropriate project partner.
7. **digiCROWD:** Service to support the development of new products, services and business models.
8. **digiINNOVATION:** Service to support the development of new products, services and business models - within a closed format.
9. **digiWALL:** Social media news related to the House of Digitalisation.
10. **digiREGIONAL:** Digitalization projects for rural areas, with a link to the "Digital Village 2030" discussion forum.

The online platform was launched new with new design on 15th of December 2020 under [www.virtuelleshaus.at](http://www.virtuelleshaus.at).

### **LK digital**

The Austrian Chamber of Agriculture supports the web-service "LK digital" ([www.lkdigital.at](http://www.lkdigital.at)). Established in 2017, it is operated by the LFI - Ländliches Fortbildungsinstitut Österreich, which is the continuing education institute. LK digital was set up as an education campaign to prepare information in the field of digitization in agriculture and to create awareness for new ways of crop and livestock production, marketing and management. It comprises a central hub for digitisation in agriculture. Interested persons can access relevant information, independent from time and place by the help of a knowledge platform. There you can find e.g. useful apps for agriculture and forestry, reports from research projects in digitization, monitoring of pest

infestation (European Corn Borer), use of satellite information based application maps, data networking with farm management information systems.

## 4. Subsidies schemes supporting PF in Austria

### 4.1. Free RTK signal for agriculture 2021

With the signature between the Federal Ministry of Agriculture, Regions and Tourism (BMLRT) and the Federal Office of Metrology and Surveying (BEV), the RTK (Real Time Kinematic) signal will be available free of charge to agriculture in Austria in 2021.

The free correction signal is available to farmers from 1.2.2021. (<https://www.bmlrt.gv.at/land/digitalisierung/RTK-Signal.html>, accessed 09.12.2020).

### 4.2. Lower Austria

From 1 to 30 October, agricultural and forestry holdings in Lower Austria could apply for funding for an RTK correction data service to improve the accuracy of satellite guidance systems. The use of an RTK correction data service is subject to a fee. With a flat-rate subsidy of 200 euro per farm for the year 2020, a further step is taken towards a broader application of this environmentally friendly and resource-saving technology. Lower Austrian contractors can also claim this subsidy. (Source: <https://noe.lko.at/schmuckenschlager-pernkopf-200-euro-pro-betrieb-f%C3%BCr-rtk-korrektursignal+2500+3262879>, accessed 10.12.2020)

For new acquisitions and retrofit solutions: steering systems and tyre pressure control systems there was a 20% investment subsidy available. For new purchases (only new purchases) of machinery pools: the proportion varies from one federal state to another. In Lower Austria, for example, for hoeing, seed and plant protection equipment, tractors and beet harvesters, 20% investment support was available (Source: Stefan Polly LK NÖ, <https://noe.lko.at/>, aus LE2020 Vorhabensart 4.1.1 Investment in agricultural production).

Around 800 farmers have invested in automatic steering systems since 2017. Since November 2019, the Lower Austrian Chamber of Agriculture has been supporting farmers with a new advisory product. As a service of the Chamber of Agriculture, the exact processing limits are determined with the farmer in nature with RTK accuracy, i.e. +/- 2 centimetres, using an RTK measuring stick. After the survey, the Chamber of Agriculture uses this data to create the lanes for the respective RTK steering system of the farmer. After import into the tractor terminal, the lanes can be used. (Source: Ing. Stefan Polly (2020), LK NÖ, <https://noe.lko.at/digitalisierungsoffensive-drohne-kuhbrille-lenksystem+2500+3021290>, accessed 10.12.2020)

### 4.3. Upper Austria

Support is granted to farmers and their farm (Source: <https://www.land-oberoesterreich.gv.at/15041.htm>).

The "investment support" of the province of Upper Austria refers to investments in agricultural production (project type 4.1.1), which are listed below:

1. investments in the area of livestock buildings, farm buildings, silo facilities, storage and adjustment rooms, functional rooms in the processing and direct marketing of Annex I products (primary agricultural products and products of the first stage of processing), including the technical equipment necessary for their function
2. manure collection plants with fixed cover as well as plants for the storage of solid farm manure and compost; manure lagoons are not eligible
3. indoor mechanisation: machinery and equipment as well as technical installations for indoor economy (see table below)
4. horticulture (vegetables, ornamental plants, tree nurseries, edible mushroom production): structural investments and technical facilities for production, storage and marketing; construction of foil tunnels (including field vegetable growing); irrigation and irrigation (including closed systems); investments for energy saving, heating improvement and conversion
5. fruit and wine growing (permanent crops): establishment of commercial fruit crops and hops and measures to protect fruit and wine crops
6. structural and technical facilities for irrigation and irrigation (individual companies)
7. individual purchase of self-propelled special machinery for mountain farmers up to a maximum of 50,000.00 euros net cost, individual and joint purchase of equipment for spreading liquid manure close to the ground, including liquid manure hoses (except for liquid manure drums), liquid manure separators, joint purchase of self-propelled harvesting machines for sugar beet (minimum limits for joint machines)
8. investments to improve the environmental impact (conversion of engines to vegetable oil up to a maximum of 7,000.00 euros per unit, retrofitting of tyre pressure control systems up to a maximum of 10,000.00 euros per unit, steering equipment for parallel driving systems up to a maximum of 25,000.00 euros per operation in the period covered by the aid)
9. biomass heating systems
10. structural and technical investments in alpine pasture management
11. construction and technical investments in the beekeeping sector

Used machines and equipment as well as used technical and constructional facilities are not eligible!

Interior Mechanization (e.g.)	
Projects	Note and examples
Milking technology	Parlour technology, milking robots, milk chamber equipment (cooling, washing system, etc.)
Feeding technology	Fodder mixing wagons, feeding robots, transponders incl. silo bags and Trevira silos, feed pusher (e.g. butler), calf drinker, feeding technology incl. grinding and mixing plant; no insulated malt mills or maize mills (Muser)
Many more...	Technical installations in processing and marketing, etc.

## 5. EIP-AGRI Projects in Austria

The Information are based and linked from the website, please see [https://ec.europa.eu/agriculture/research-innovation/projects\\_de](https://ec.europa.eu/agriculture/research-innovation/projects_de).

EIP AGRI operational groups in Austria

(Source: [https://ec.europa.eu/eip/agriculture/en/my-eip-agri/operational-groups/projects?title=&field\\_proj\\_geographical\\_area%5B%5D=87&search\\_api\\_views\\_fulltext=](https://ec.europa.eu/eip/agriculture/en/my-eip-agri/operational-groups/projects?title=&field_proj_geographical_area%5B%5D=87&search_api_views_fulltext=))

	Further Development of Organic Winter Vegetables - solution of concrete problems concerning the growing of winter vegetables
Geographical location	Austria
Keywords	Farming practice Plant production and horticulture Farming / forestry competitiveness and diversification
Starting - End date	2016 - 2019
Main funding source	Rural development 2014-2020 for Operational Groups (in the sense of Art 56 of Reg.1305/2013)
Description	Presently the most part of salads and herbs available in Austria in winter is imported, which causes, no matter whether they are organic-certified or conventional goods, high fossil energy consumption. By means of growing domestic organic winter vegetables the range of vegetable varieties and rarities offered can be extended in a resource-saving way. This constitutes for the participating farms - also due to the rising demand for such products on the part of the consumers - an interesting market niche. The value-added of the farm can be increased by means

	<p>of using the winter months, which are otherwise not used for production and the presently necessary imports can be substituted with domestic production. As there are numerous rarities among the varieties grown there is also the opportunity to re-establish these varieties and thus to revitalize "old knowledge" in the field of vegetable growing.</p> <p>The operational group consists of representatives from the fields of practice, consulting, and research. BIO AUSTRIA takes over the role of the lead partner. The operational group is supported by the food cluster Lower Austria (Lebensmittelcluster Niederösterreich) as external partner</p>
Contact person	<p>Christa Größ</p> <p>Auf der Gugl 3, 4021 Linz</p>

Title	Sustainable grassland management by means of graduated grassland farming ARGE Abgestufter Wiesenbau
Geographical location	Austria
Keywords	<p>Agricultural production system</p> <p>Biodiversity and nature management</p> <p>Biodiversity and nature management</p>
Starting - End date	2016 - 2018
Main funding source	Rural development 2014-2020 for Operational Groups (in the sense of Art 56 of Reg.1305/2013)
Description	<p>The planned project period is three years. In the first year model holdings shall be selected, the status quo on the model holdings identified, proposals on the implementation of graduated grassland farming shall be worked out, and the implementation of graduated grassland farming on model farms shall be started. In the second year the implementation of graduated grassland farming will be continued and in the third year there will be the evaluation of the implementation from various points of view as well as public relations measures.</p>
Contact person	<p>Andreas Kranzler</p> <p>Doblhoffgasse 7/10, 1010 Wien</p>

Title	Organic dock control - Development and implementation with fiery clearwing moths
Geographical location	Austria
Keywords	Farming practice Pest / disease control
Starting - End date	2016 - 2018
Main funding source	Rural development 2014-2020 for Operational Groups (in the sense of Art 56 of Reg.1305/2013)
Description	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 the problematic species (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.
Contact person	Patrick Hann Mörikestraße 20, 3100 St. Pölten

Title	Efficiency Check - Herd management tool to optimise efficiency and animal health on dairy farms
Geographical location	Austria
Keywords	benchmarking decision support system (DSS) dairy farming
Starting - End date	2016 - 2018
Main funding source	Rural development 2014-2020 for Operational Groups (in the sense of Art 56 of Reg.1305/2013)
Description	The milk price of the past few months shows once again how important it is for the efficient management of each individual farm to know its strengths and weaknesses. However, presently there are hardly any opportunities for farmers to have the

	<p>economic soundness and nutrient efficiency of dairy cows analysed for individual animals. Especially the use of data merged from different sources is often very difficult. Computer programmes which enable comparable evaluations are in most cases expensive and have to be installed locally. Moreover, in many cases all parameters need to be entered manually and the analysis of the data always covers but one component of the agricultural production. To enable significantly simpler and more efficient planning, for example of saving opportunities in dairy farms, the web application “Efficiency check” is developed.</p>
Contact person	<p>Franz Steininger Dresdner Straße 89/19, 1200 Wien</p>

Title	OG-BIOBO - Yield development and humus development via reduced soil tillage and organic fertilisation measures (green manuring and organic fertilisers)
Geographical location	Austria
Keywords	<p>Agricultural production system Farming practice Soil management / functionality</p>
Starting - End date	2016 - 2019
Main funding source	Rural development 2014-2020 for Operational Groups (in the sense of Art 56 of Reg.1305/2013)
Description	<p>The focus of organic arable farming is on the preservation and/or the development of high soil fertility. The better soil fertility is developed on a site, the better are stress tolerance and resilience vis-à-vis weather conditions. A decisive measure for the promotion of soil fertility is, among other things, a saving type of soil management, which goes also hand in hand with other advantages such as 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 has to be further developed and adapted to the respective soil and site conditions. New insights into reduced</p>

	soil tillage shall be gained within the framework of the project of OG-BIOBO by means of practical experiments, precision experiments and intensive exchange of experience in the group. They shall serve as a basis of information for organic farmers with experience concerning reduced soil tillage as well as for organic farmers interested in a conversion of their soil tillage.
Contact person	Gabriele Gollner Gregor-Mendel-Straße 33, 1180 Wien

Title	ARGE Drahtwurm Alternative methods of wireworm control in potatoes
Geographical location	Austria
Keywords	Pest / disease control Plant production and horticulture
Starting - End date	2016 - 2019
Main funding source	Rural development 2014-2020 for Operational Groups (in the sense of Art 56 of Reg.1305/2013)
Description	Potatoes injured by wireworm feeding are no longer suited as table potatoes; they cannot be sold as seed potatoes and their suitability for storage is strongly reduced. In the case of table potatoes the loss caused by wireworms in Austria amounts to 10% on average, which means that the farms concerned also suffer considerable financial loss. So far, above all chemical synthetic plant protection products have been used to combat wireworms. However, it is questionable whether it will be possible to use these, or similar, products in Austria in the future. As a consequence we need to find alternative means of control.
Contact person	Claudia Meixner Neustiftgasse 36, 1070 Wien

Title	ARGE Innobrotics - Solution of the corn rootworm problem in arable farming and livestock farming areas of Austria
Geographical location	Austria

Keywords	<p>Agricultural production system</p> <p>Plant production and horticulture</p> <p>Pest / disease control</p>
Starting - End date	2016 - 2018
Main funding source	Rural development 2014-2020 for Operational Groups (in the sense of Art 56 of Reg.1305/2013)
Description	<p>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. In 2014 the population reached - not least due to the prohibition of neonicotinoids as seed dressings - a new all-time high. However, the corn rootworm does not only cause damage at the roots or on the corncob of the maize crop, but also by leaf feeding on various vegetable crops. In particular in the field of vegetable growing partly merely the presence of the beetle is sufficient that deliveries are rejected by wholesale trade. The damage in the field of crop cultivation is, however, continued in the related sectors, with the livestock farming sector being most severely concerned. The experiences made at international level so far have not been sufficient in order to get the problem effectively under control. There are a number of approaches to solutions, which are, however, not or only insufficiently coordinated, and are not implemented all over the country either. There exists also not enough knowledge about the efficiency of combinations of measures and alternatives to chemical measures which are compatible with organic farming. It is planned that the experiments in the field of crop cultivation</p> <ul style="list-style-type: none"> <li>• demonstrate those methods of treatment and/or combinations of methods in the field of corn rootworm control, which are, from the economic as well as from the ecological point of view applicable to conventional as well as to organic farms.</li> <li>• present in combination with the experiments in animal production usable alternatives to the forage plant maize.</li> </ul>
Contact person	<p>Christian Werni</p> <p>Hamerlinggasse 3, 8010 Graz</p>

Title	Geographic Information Systems for Site-Specific Management Aimed at Increasing Efficiency and Greening in Austrian Agriculture
Geographical location	Austria
Keywords	Agricultural production system Farming practice Farming equipment and machinery Plant production and horticulture Fertilisation and nutrients management Soil management / functionality
Starting - End date	2018 - 2020
Main funding source	Rural development 2014-2020 for Operational Groups (in the sense of Art 56 of Reg.1305/2013)
Description	Essential steps of the project 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.
Contact person	Lukas Handl, Josephinum Research Rottenhauser Straße 1, 3250 Wieselburg, Austria

Title	ARGE Drahtwurm - Alternative methods of wireworm control in potatoes
Geographical location	Austria
Keywords	Plant production and horticulture Pest / disease control
Starting - End date	2016 - 2019
Main funding source	Rural development 2014-2020 for Operational Groups (in the

	sense of Art 56 of Reg.1305/2013)
Description	<p>Important steps of the project include</p> <ul style="list-style-type: none"> <li>• Field testing with alternative methods of wireworm control</li> <li>• Survey of the wireworms, of their composition (incl. species identification) and distribution on the trial plots</li> <li>• Virulence tests with <i>Metarhizium brunneum</i> strains and the wireworm species that are dominant on the trial plots</li> <li>• Direct communication of the results to farmers, extension workers and other stakeholders in the field of potato growing at seminars and field days</li> </ul>
Contact person	<p>Claudia Meixner</p> <p>Neustiftgasse 36, 1070 Wien</p>

Title	Clean air in animal production - Measures and technologies to reduce emissions as well as to increase animal welfare in pig fattening
Geographical location	Austria
Keywords	<p>Farming practice</p> <p>Farming equipment and machinery</p> <p>Animal husbandry and welfare</p> <p>Climate and climate change</p>
Starting - End date	2017 - 2020
Main funding source	Rural development 2014-2020 for Operational Groups (in the sense of Art 56 of Reg.1305/2013)
Description	The project SaLu_T - Clean air in animal production - is dealing with measures and technologies to reduce emissions in agricultural practice. For the first time scientific support has been provided to the construction and operation of a low-emission fattening pig house in Austria.
Contact person	<p>Monika Auer</p> <p>Hollandstraße 10/46, 1020 Vienna</p>

Title	Klauen-Q-Wohl: Development of an Austria-wide infrastructure on the centralised standardised collection and evaluation of data on hoof health, lamenes
Geographical location	Austria
Keywords	Farming practice Animal husbandry and welfare Pest / disease control
Starting - End date	2017 - 2020
Main funding source	Rural development 2014-2020 for Operational Groups (in the sense of Art 56 of Reg.1305/2013)
Description	Problems with hooves and limbs of dairy cows result from deficiencies in the environment in which they are kept, 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 animal welfare parameters in Austria is being developed. On the basis of these data conclusions concerning risk factors for the development of health problems are drawn.
Contact person	Christa Egger-Danner Dresdner Strasse 89/19, 1200 Vienna

Title	Working group extended suckling period
Geographical location	Austria
Keywords	Agricultural production system Animal husbandry and welfare Pest / disease control
Starting - End date	2017 - 2020
Main funding source	Rural development 2014-2020 for Operational Groups (in the sense of Art 56 of Reg.1305/2013)
Description	In organic pig farming the weaning of the piglets from the sow

	takes as a rule place after 40 to 42 days. 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 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. 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 of the piglets can be improved.
Contact person	Anja Eichinger, BSc Doblhoffgasse 7/10, 1100 Vienna

Title	Reduction of N and C emissions into the air and shift of N into deeper layers of the soil by means of optimising the cultivation of greening in arable
Geographical location	Austria
Keywords	Agricultural production system Farming practice Plant production and horticulture Fertilisation and nutrients management Soil management / functionality
Starting - End date	2017 - 2020
Main funding source	Rural development 2014-2020 for Operational Groups (in the sense of Art 56 of Reg.1305/2013)
Description	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 factors have to be taken into consideration, from the establishment of green areas to the nutrient release from dead green plants, which have partly not yet been examined. The project “MinNC” 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. The results will be prepared for agricultural practice.
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### EIP-AGRI Multi-actor projects

Projects with thematic relevance on Smart or Precision Farming and Digitisation: source: <https://ec.europa.eu/eip/agriculture/en/about/multi-actor-projects-scientists-and-farmers>

FERTINNOWA	Transfer of INNOvative techniques for sustainable WATER use in FERTigated crops: website - CORDIS (Thematic network - 01/2016-12/2018)
4D4F	Data Driven Dairy Decisions 4 Farmers: website - CORDIS (Thematic network- 03/2016-02/2019)
IPM Decisions	Stepping-up IPM decision support for crop protection: CORDIS (06/2019-05/2024)
DESIRA	Digitisation: Economic and Social Impacts in Rural Areas: CORDIS (06/2019-05/2023)
SMART-AKIS	European Agricultural Knowledge and Innovation Systems (AKIS) towards innovation-driven research in Smart Farming Technology: website - CORDIS (Thematic network - 03/2016-08/2018)
IoF2020	Internet of Food and Farm 2020: website - CORDIS (01/2017-12/2020)
SmartAgriHubs	Connecting the dots to unleash the innovation potential for digital transformation of the European agri-food sector: website - CORDIS (11/2018-10/2022)