

Call text – Agriculture and machinery 2021

The overall objective is to support the development of financially and environmentally sustainable agriculture. The focus areas include crop and livestock production, both conventional and organic. The foundation's specific priorities for autumn 2021 are described below. As a general rule, priority is given to projects expected to lead to perceptible developments of the agricultural sector. We see favorably that applicants contact us to discuss possibilities to use Lantmännen's feeds, seeds, experimental facilities and other resources in projects being planned. For example Lantmännen has extensive research activities in feed and plant breeding where various ideas can be studied cost efficiently with excellent data quality.

More information regarding measures to promote cooperation in sustainable crop production via research, innovation and practical cultivation measures can be found in the report Farming of the Future:

<https://www.lantmannen.com/farming-of-the-future/>



Sustainable intensification of Swedish crop production

We wish to develop resilient cultivation systems which can maintain high productivity under varying weather and climate conditions. A major aim is to increase production while minimizing pressure on ecosystems. Crop production dominated by fall seeding gives high productivity but also new weed and pesticide problems which we must learn to manage.

Some vital focus areas:

- Precision agriculture and digitalization, which have large possibilities to improve yield and quality as well as contributing to sustainability for all crops. The topic includes even data driven management support systems.
- The quantification of nitrogen losses from arable land in the form of nitrous oxide is necessary, accompanied with the development of strategies to minimize these losses.
- New and alternative uses for seeded grasslands providing a perennial break crop in grain dominated crop rotations and marketing of that forage which currently is extensively cultivated with low profitability.
- Development of biological products or other methods which can supplement or replace chemical products.
- New technologies with genetic markers, advanced image analysis and rapid evaluation methods for e.g. germination, health and purity.



Right quality of grains and other plant based commodities

A prerequisite for profitable production and processing of grains and other plant based commodities is that the quality specifications demanded are met. Different customers and different application areas impose different quality standards on these commodities.

Some vital focus areas:

- Cultivation with focus on right protein content and quality, starch content, falling number, and kernel size for feed and food. Malting barley with high vitality and minimal husk damage and oats with a pale color. Specific quality criterion exist even for specialty crops such as peas, lentils and beans.
- Knowledge regarding specific factors in grains and peas regarding improved yields and returns in animal feeds and in various industrial processes. One example is the gluten yield in wheat where grain lots with similar analytical values can have very different results in gluten yield and thereby the economy.



Right quality of grains and other plant based commodities (cont.)

- Minimum content of undesirable substances such as cadmium and mycotoxins, primarily Fusarium toxins and ergot.
- Knowledge in avoiding steps in grain processing that generate acrylamide and other toxic substances.
- Development of new, precise and cost-effective analytical techniques, both quantitative and qualitative, for grains and other vegetable crops.



Profitable and sustainable livestock production

Our objective is that Swedish livestock production and equestrian enterprises shall be able to grow and become more profitable. Currently we see a growing interest for Swedish animal products and an increase use of feed commodities with low climate impact. Sustainability is the governing concern in which productivity and animal welfare issues are important factors.

Some vital focus areas:

- Precision feeding and digitalization in which we see great potential to improve yield, quality and sustainability for all animal groups. The topic even includes data driven management support systems.
- Sustainable and climate-smart management and production systems. Interesting research areas are resource effective feeding and high productivity for all animal categories, life cycle analyses for different production strategies and also possibilities to reduce ammonia emissions in different production systems.
- General increase in competence in the feed evaluation, particularly for grains and grain byproducts. Focus is on nutritional parameters such as energy content, amino acid profile, and protein and fiber quality.
- Development of processing techniques for domestic alternative feed commodities and byproducts which can minimize the need for imports as wells as reduce the competition between feeds and foods.
- We wish to see practical feeding trials using pigs and poultry of modern breeding material with the aim of increasing the general competency within the area.
- New research initiatives within the area of roughage conservation with a focus on reduced storage losses and improved sustainability performance.