LANTMÄNNEN
RESEARCH FOUNDATION

Call text – Agriculture and machinery 2025

The overall goal of the Lantmännen Research Foundation is to support the development of profitable and sustainable crop cultivation and animal production. Ongoing climate change and a turbulent world situation emphasise the need for a well-functioning food production sector from field to fork. It also includes issues such as energy supply, digital infrastructure, climate adaptation as well as effective consulting services and other systems to transfer knowledge from research to practice.

Collaboration is a key factor in overcoming common challenges and is an effective way of achieving results quickly and cost effectively. We are therefore open to applicants contacting Lantmännen to discuss the possibilities of using Lantmännen's feeds, seeds and other inputs. There are also opportunities to run R&D projects in collaboration with Lantmännen's production facilities, research sites and farms of the future. Lantmännen has extensive research activities in feed and plant breeding as well as grain facilities specially-equipped with sensors for data collection and monitoring.

Sustainable intensification of crop production

The basis for successful crop production is generally high yields with a high minimum level. Robust cropping systems with effective inputs are required to manage climate change and the increasingly unpredictable weather conditions. This is not just about too much or too little water but also, for example, extreme heat peaks and an extension of the growing seasons. The latter increases the potential for higher yields but also poses new challenges with weeds and pests. Work on minimising the negative environmental impact of crop cultivation also has a high priority. Greater focus is required on developing methods to evaluate the effect of various measures.

Current research areas:

- Precision agriculture and digitalisation that increase profitability through higher yields and better quality in all crops. A particular priority is the optimisation of plant nutrition and plant protection with a focus on ease of use for consulting services and farmers.
- The carbon balance of arable land and nitrous oxide emissions with the focus on Nordic conditions as well as practical and economic possibilities.
- Robust crop rotation schemes and cultivation systems that can handle both surpluses and deficits of water, as well as milder winters in north Sweden with increased risk of damage due to ice cover. Knowledge of pre-crop values and the effect of catch and intercrops adapted to new weather conditions and production systems. Measurable measures that benefit biodiversity.
- New methods and products that can supplement or replace traditional plant protection products with increased focus on insects.
- Methods and strategies for managing new weed species and higher weed pressure, especially in seed and forage production.
- Plant breeding of the future, with the focus on new tools and methods for the management of characteristics, such as heat tolerance and tolerances to for example damage from ice cover.
- Fast and accurate farm-adapted analysis for, for example, vitality, germination soundness and purity in seed with a focus on winter cereal grain.
- Fertilisers and lime that are efficient, sustainable and preferably produced in circular systems.
- In-depth knowledge of the climate performance of different pasture ley mixtures and forage production systems.
- Forage crops for pasture and pasture ley for paddocks, with a focus on horses.

Profitable and sustainable intensification of Swedish livestock production

An expansive livestock production is important for a sustainable food supply. Knowledge about feed and the efficiency and function of feed and feed ingredients in different animal species is absolutely crucial. Detailed information on the animal's nutritional needs and on physiological processes in the body must go hand in hand with the genetic progress for production potential that occurs continuously. Digital, technical and biotechnological

development is also needed to find new solutions and approaches for a sustainable and circular livestock production.

Current research areas:

- Models for feeding recommendations that include both effective nutritional supply and climate efficiency for high-producing animals under Swedish conditions. Methane-reducing measures are a priority.
- The lifetime production of livestock with a focus on sustainability and climate performance with high standards of animal health. The subject includes fast high-performance production and recruitment animals and the causal relationships between nutrition, management and production losses.
- Feed evaluation for Swedish-grown crops, side streams from industrial processes and other raw materials that can be upcycled into food via livestock production. It concerns, for example, energy evaluation, fibre quality, protein quality, amino acid composition, mineral and trace element content.
- The animals' specific need for fat. This applies to fatty acid composition, fat quality, any impact on the end product and the development of feed fat that is produced from raw materials with a strong sustainability profile.
- Process technology for increased energy efficiency, both technical and physiological. Parameters such as milling structure and pellet quality are examples of important factors.

Right quality of grains and other plant-based commodities

A prerequisite for profitable production and processing of grains, legumes and other plant-based commodities is that the quality specifications demanded are met. The right quality is crucial for achieving a high yield in subsequent processing stages. Different customers and different application areas impose different quality standards on these commodities. Sustainable and resource-efficient grain management means ensuring the grain's quality without drying, cooling and cleaning more than is necessary. All unnecessary actions hit the finances hard. Climate change can entail greater weather variations, which creates the need for new knowledge and development of new standards for drying and storing. At the same time, the risk of attacks of various storage pests and problems with reduced storage stability increase.

Current research areas:

- The influence of cultivation activities on quality parameters required in different grain processing facilities e.g. protein content, amino acid composition, starch content, falling number and kernel size.
- The influence of grain properties on yield in animal feed and in industrial processes. An example is the gluten yield in wheat, where grain batches with similar analysis values can give very different results and profitability.
- Cultivation and handling methods that minimise the content of unwanted substances such as heavy metals and fungal toxins. Strong focus on substances where maximum limit values have been lowered or will be lowered.
- Energy-efficient drying and control of the drying process to reach the optimal target water content. Safe buffer storage before drying and efficient cooling.
- Monitoring systems to detect negative processes at grain storage that negatively affect various quality parameters, for example germination in malting barley.
- Methods for measuring quality parameters as early as possible in the grain handling management chain.
- Cost-effective and fast analytical methods, both qualitative and quantitative, for grains and other vegetable raw materials.
- Sorting and separation of different grain qualities for increased added value. Methods and algorithms for online sorting with desired grain qualities in focus.