Applied research and testing

The targeted use of scientific and research findings is an important factor for the economic success and social acceptance of agricultural businesses. That is the reason why the teaching and research farm exists as a multi-functional test facility for the State Office of Saxony for the Environment, Agriculture and Geology (LfULG). Around 40 different research projects, trials and demonstrations are currently being carried out at the training and research farm. Foremost among them are innovative, interconnected solutions for protecting natural resources and consumers. But numerous trials in the field of digitalisation are also a key focus of our work The results of the trials and projects are made public within the context of practical basic and further training and professional development as well as at specific events, in technical journals, online, and via the LfULG's publications.

Current focuses:

- New cultivation and tillage procedures – including procedures that are part of ecological farming methods – in the light of the specific effects of climate change
- The trialling of digitalisation solutions in agriculture
- Implementation of the National Action Plan for Plant Protection (NAP)
- Investigations into the rearing, feeding and preventive healthcare of cattle, pigs and sheep
- Forage conservation, and feeding and grazing management for dairy cattle
- An investigation into animal welfare criteria in the rearing of pigs and cattle
- Implementation of the "Betriebsplan Natur" (Nature Action Plan), including demonstrations of plant varieties and flower mixtures
- Renewable energy in agriculture (biogas, short rotation coppicing, woodchip heating plants, agrophotovoltaics)

Smart farming test and demonstration field

The teaching and research farm runs a test and demonstration field for smart farming technologies in cooperation with other agricultural businesses. At the teaching and research farm several interlinked digitalisation projects are incorporated into everyday farming processes. The focus is on the use of fertilisers and plant protection measures in arable farming, the use of digital technologies in animal husbandry, and the use of farm management information systems (FMIS).

A further aspect is the establishing of comprehensive internet coverage and state-of-the-art transmission technologies. The aim is to make the teaching and research farm a model farm where processes ranging from production and internal administration to documentation are structured in an interconnected way. The intention is to incorporate the resulting digitalisation expertise into practical agricultural operations.

Current focuses:

- Site-specific and economic fertiliser application using near-infrared spectroscopy (NIRS) sensors
- Site-specific herbicide application through offline and online processes
- Site-specific tillage through the use of a soil scanner
- Site-specific manuring through the use of hyperspectral remote sensing (drone/satellite)
- The use of digital biotechnological resources for insect biodiversity evaluations
- Telemetry – automated recording of data
- smart assistance systems for the rearing of calves
- Health checks and oestrus detection in cattle via a passive monitoring system
- Digital livestock protection

Publisher:
Sächsisches Landesamt für Umwelt,
Landwirtschaft und Geologie (LfULG)
Pillnitzer Platz 3, 01326 Dresden
Telephone: +49 351 2612-0
Fax: +49 351 2612-1099
Email: lfulg@smul.sachsen.de
www.lfulg.sachsen.de
The LfULG is a subordinate authority of the Saxon State Ministry of Energy, Climate Protection, Environment and Agriculture (SMEKUL). This publication is financed by taxes on the basis of the budget adopted by the members of the Saxon state parliament.
Editorial department:
Ondrej Kunze
Lehr- und Versuchsgut Köllitsch
Am Park 3, 04886 Köllitsch
Telephone: +49 34222 46-2601
Fax: +49 34222 46-2699
Email: ondrej.kunze@smul.sachsen.de
www.smul.sachsen.de/lvg
Photos:
LfULG: B. Puhlmann, B. Lehmann
Cover picture is by M. Bär
Layout and typesetting:
Sandstein Kommunikation GmbH
Serviceplan Solutions 1 GmbH & Co. KG
Print:
Harzdruckerei GmbH
Editorial deadline:
16.11.2020
Circulation size:
800 pieces
Paper:
Printed on 100% recycled paper
Supply:
This brochure is available free of charge from:
Zentraler Broschürenversand
der Sächsischen Staatsregierung
Hammerweg 30, 01127 Dresden
Telephone: + 49 351 2103-672
Fax: + 49 351 2103-681
Email: publikationen@sachsen.de
www.publikationen.sachsen.de

Täglich für ein gutes Leben.

www.lfulg.sachsen.de

LANDESAMT FÜR UMWELT, LANDWIRTSCHAFT UND GEOLOGIE

Freistaat SACHSEN

Practically relevant and professional

Köllitsch teaching and research farm




Köllitsch teaching and research farm

For decades now Köllitsch has been synonymous with education, demonstrations, trials and applied research in the agricultural sector. Due to its wealth of experience as a well-established educational establishment, Köllitsch was chosen in 1992 as the site for setting up a teaching and research farm in Saxony. Since then the former collective farm has been part of the Ministry of Agriculture in Saxony, and it has now been incorporated into the State Office of Saxony for the Environment, Agriculture and Geology (LfULG).

As a centre of expertise for agriculture within Saxony and beyond, we have the following tasks:

- Sector-wide training for farmers and livestock farmers in Saxony and southern Brandenburg
- The ongoing training and professional development of farmers, consultants, teachers, and students
- Applied research and testing as well as trials and specialist projects in the field of animal husbandry, crop production and nature conservation
- Demonstration of environmentally friendly and ecologically sound forms of agricultural management
- Exemplary implementation of good agricultural practices together with knowledge transfer
- Practical implementation of agricultural management and environmental management measures and of on-site power generation

We aim to provide specialist information and practical recommendations in relation to these wide subject areas. The close coordination of theoretical knowledge and practical farming means that the teaching and research farm facilitates the rapid transfer of research results into practice.
As well focusing on our core competencies, we are also a partner of the Arzberg local authority and of the rural community in the Ostelbien region to the east of the Elbe river.

Vocational education

Fully trained experts are the basis for competitive agriculture. The key task of the Köllitsch teaching and research farm is therefore to provide application-oriented, practical basic and further training and professional development. The teaching and research farm is the sector-wide training centre for Saxony and southern Brandenburg which provides training for farmers, livestock farmers, agricultural technicians, and agricultural workers. We teach professional skills and convey specialist knowledge in a practically relevant way

The sector-wide training that we provide includes:

- Basic and advanced cattle and pig rearing courses
- Agricultural engineering and crop production courses
- Courses on craft techniques and repairs
- Computer courses

We provide state-of-the-art training workshops and teaching units. A 5-hectare field trials area is provided for agricultural engineering courses, and there is also an indoor training area and a range of agricultural machinery and equipment. An experienced and fully qualified team of trainers ensures that knowledge is provided in a practically-oriented manner. The course participants are accommodated in the modern residential centre. There is an on-site canteen which provides meals for course participants and for guests.

Our training and professional development courses cover practical aspects of animal husbandry, plant cultivation and biogas production as well as environmental protection and nature conservation. They are specifically tailored to suit our target groups and are provided in the form of practician/user seminars, conferences, workshops and field days. We set out the latest results of our academic and research work through a mixture of face-to-face teaching and online training. Special emphasis is laid on legally required factual courses.

Agricultural operations

We test and demonstrate a modern, forward-looking form of agriculture which uses natural resources efficiently and in harmony with nature and the environment, and the wide variety of products that we produce is competitive within the agricultural marketplace. Since 2000 green agriculture farming practices have also been used on 58 hectares of arable land. About 240 hectares of grazing land are in wildlife reserves and are consequently subject to water and land conservation requirements. The soils of the Elbe valley wetlands are fertile but difficult to work. The low level of precipitation together with a marked summer drought are significant factors that limit yields.

Facts and figures:

- Soil type: alluvial loam with layers of sand in parts
- Soil quality index: arable land Ø 59 (50–80); grazing land Ø 44
- Annual precipitation: Ø 540 mm
- Annual temperature: Ø 9°C
- Cultivable area: 907 hectares, comprising 655 hectares of arable land and 252 hectares of grazing land
- Crop structure
  cereals 48 %, rape 12 %, maize 15 %, sugar beet 5 %,
  fodder crops 8 %, protein crops 4 %
  Renewable raw materials, landscape features and ecological focus areas
- Livestock
  200 dairy cows with progeny
  100 suckler cows – brindled, Angus and Limousin breeds – and
  120 partially mast-fed breeding sows
  200 ewes – merino mutton sheep & black faced mutton sheep breeds
  50 fallow deer
  5–6 bee colonies

Agricultural and environmental management

To ensure sustainability the Köllitsch teaching and research farm uses a farming system in which there is a healthy balance between the productivity of the land and the conservation and sustaining of natural resources. New research findings which go beyond the scope of good farming practice are demonstrated and are evaluated in accompanying studies. Various plans for ecologically sound and forward-looking farming are drawn up and they are implemented and updated on a rolling basis.

The starting point for this was the agroecological landscape plan of the mid-1990s as well as the plan for establishing an ecological system of agriculture. The teaching and research farm has had a Nature Action Plan since 2014. It sets out areas that need to be addressed in relation to species and biotope protection and in relation to the drawing up of a landscape strategy for a 10-15 year period. Based on quality objectives that are specified for the farm, specific measures are drawn up for conserving species and habitats as well as for incorporating educational and public relations activities.

The production sectors are coordinated with each other so that close-looped farming is possible. The implementation and further development of operational agricultural and environmental management is carried out on a target- and problem-oriented basis together with the specialist departments of the LfULG. This also involves implementing in-house arable and grazing land management strategies within the various protected areas bordering the Elbe river. The incorporation of the results into the basic and further training and professional development provides excellent conditions for the rapid transfer of knowledge into agricultural practice.