



FIELD STUDIES

Field residue and processing residue studies

Complete residue multi-site studies covered by the Good Laboratory Practice (GLP) quality system will be conducted. Field studies are performed in our own test sites in Germany, Spain, Poland and with their teams in Belgium, The Netherlands, Denmark, Czech Republic and Austria as well as with cooperation partners in the most important geographical and climatic zones of Europe. Processing studies following the field parts are carried out within the test facility's highly specialized pilot plants in Germany.

► Description of working areas

We conduct residue trials in open fields, under semi-field conditions and in the active greenhouse and also for all relevant crops, from apples to zucchini. Our special competence is reflected in the connection of these field studies with the subsequent food technological processing of the harvested crop products.

► Field studies

- Residue studies in all relevant field crops, vegetables and fruit
- Bee residue studies (honey)
- Dislodgeable foliar residue studies (DFR) and DT₅₀ studies
- Soil dissipation and accumulation studies
- Rotational crop studies
- Dust drift studies
- Stored goods studies
- Water monitoring studies

► Processing studies (abstract)

- Wheat: aspirated grain fraction, silage, bran, flour, germs, gluten, gluten feed, meal, middlings, shorts, starch, whole meal flour, whole grain bread
- Barley: brewing malt, malt sprouts, brewer's grain, brewer's yeast, beer, flour, bran, pearl barley
- Sugar beet: extracted pulp, raw juice, thin juice, thick juice, molasses, raw sugar, refined sugar, press liquor
- Oilseed rape: press cake, crude oil, solvent-extracted meal, extracted oil, refined oil

- Grapes: juice, young wine, white and red wine, raisins
- Other: alfalfa, apples, (soy) beans, cabbage, carrots, cauliflowers, cotton, cucumbers, hops, olives, onions, oranges, peaches, peas, potato, rice, spinach, strawberries, sunflower, tea, tomato

► Guidelines (selection)

- All relevant GLP guidelines and all relevant guidance and working documents related to field residue and processing studies
- OECD Guidelines for the Testing of Chemicals, Number 504 (2007): Residues in Rotational Crops (Limited Field Studies)
- OECD Guidelines for the Testing of Chemicals, Number 508 (2008): Magnitude of the Pesticide Residues in Processed Commodities
- OECD Guidelines for the Testing of Chemicals, Number 509 (2021): Crop Field Trial

► Team

Our experienced residue working groups are led by study directors with many years of experience in conducting of field residue and processing residue studies.

► Analytics

The analysis of the specimens generated in the field and processing studies can be carried out in-house under GLP conditions.



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FIELD STUDIES

Department of variety trials

The approval and marketing of a new variety is a multi-year process. This requires various performance and value tests in the field.

► Description of working areas

We offer our customers variety tests in many different crops and regions. Therefore, we built up a comprehensive network of testing stations in Germany and Poland. Our diverse and modern flexible technique park is useful for plot sowing, maintenance, plot harvesting and determination of quality parameters. This enables us to guarantee our customers timely and high-quality test results.

Additionally, the processing of harvested crop samples as well as the analysis of quality characteristics is possible in our laboratories. Our employees are trained and educated in the guidelines of the variety system and in using the software PIAF (planning, information and evaluation system for field trials). This enables us to participate in the complex approval process.

We carry out performance and value tests, EU variety trials and national variety trials. Depending on the growing area, demonstration and marketing studies are feasible too.

The variety field testing is possible in a wide range of crops, e.g. cereals, maize, oilseed rape, sunflower, sugar beet and Legumes.

All results in the final report are calculated and evaluated by using different statistical methods (mostly with the help of ARM-software) and can be documented by photographs.

► Guidelines (selection)

- Guidelines for conducting agricultural value tests and variety trials („Richtlinien für die Durchführung von landwirtschaftlichen Wertprüfungen und Sortenversuchen“)

► Team

The employees have many years of experience and they are constantly training in variety purposes.



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FIELD STUDIES

Registration trials under GEP

Specialist in studies for registration purposes in open field and under protected conditions, partly with the possibility for irrigation. Our own network of trial stations in Germany, Poland and Spain is covered by local GEP certificates, and in other European countries there are local cooperations with proven partners.

► Description of working areas

We setup trials in a wide range of crops, such as cereals, sugar beets, potatoes, maize, leguminous and oil crops, grassland, vine, hop, fruit and vegetable crops, diverse ornamental plants and non-cultivated land. Other specialties are trials with rotational/succeeding crops and pot studies.

Our service covers all indications, e.g., herbicide, insecticide, fungicide, growth regulator, biostimulants and biological products, additives and fertilizer. Application is possible as seed treatment, as incorporation during the sowing and normal spray application on plants or soil. In order to achieve better effects, it is possible (on request, if necessary) to set up infestation by spreading weeds or insects or inoculate with fungi.

During the season we detect the chlorophyll content or the NDVI (Normalized Difference Vegetation Index) with different devices. At harvest we offer determination of different quality parameters, some examples are thousand kernel weight, hectolitre weight, germination rate, ingredients (protein, starch etc.) and fodder analyses.

For use in taint test, we process harvested products, for example potatoes (cooked and fries), strawberries (fresh and marmalade), grapes (fresh and wine), apples (fresh and juice), barley or wheat (beer), rape and sunflower oil.

All results in the final report are calculated and evaluated by using different statistical methods (mostly with the help of ARM-software) and can be documented by photographs.

► Guidelines (selection)

- Weeds in maize, potato, cereals, hop and orchards: Eppo PP1/50, PP1/51, PP1/93 and PP1/90
- Diseases on sugar beet, fruit, cereals, grape vine and strawberries: Eppo PP1/01, PP1/05, PP1/96, PP1/26, PP1/04 and PP1/16
- Aphids and other pest insects on fruit, cereals, vegetable and ornamentals: Eppo PP1/70, PP1/07, PP1/08, PP1/192 and PP1/111
- Slugs in small plot cages Eppo PP1/289
- Potato desiccants and growth regulators in cereals and fruit: Eppo PP1/143, PP1/144 and PP1/208
- Taint tests Eppo PP1/242 and PP1/243
- Partly consideration of the French CEB guidelines

► Team

Our team consists of highly qualified employees. These have many years of experience from the crop protection industry, plant breeding, agriculture/agronomy and agricultural technology, digital phenotyping (including drone flights), biology, ecotoxicology, and much more. This ensures good expert advice and valid test results.



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FIELD STUDIES

Efficacy trials and selectivity trials under controlled conditions

Trials under controlled conditions in growth chambers and active greenhouse are necessary to verify the efficacy and selectivity of seed dressing or effects in inoculated soil.

► Description of working areas

Our climate chambers provide a variety of customizable conditions with temperatures from 5°C to 30°C, controlled humidity and adjustable day-night rhythms. LED lamps in all chambers ensure light supply to the plants with optimal light spectra. Our active greenhouse utilizes spray application of test products to perform in a spray chamber (Schachtner).

All common field crops, as well as more specialized requests, can be tested in our climate chambers and active greenhouse. Our specialty are trials with *Fusarium* sp., *Pythium* sp., *Rhizoctonia* sp. and *Phoma*.

Seed dressings are tested for efficacy and selectivity chambers and active greenhouse as well. We use sterile field soil with the possibility to combine additionally peat and quartz sand. There is a diverse range of inoculum to provide specific pathogens. Inoculum e.g. *Fusarium* sp. can be mixed with the substrate. Afterwards seeds are sown in the soil which is including the inoculum. An other opportunity is to apply the inoculum to the soil or seeds with a multipipette or as a spray suspension. This is usual e.g. for *Phoma*.

Biostimulant trials can be performed in our climate chambers and also in the active greenhouse. In addition to common assessments (phytotoxic symptoms, efficacy), we perform dry matter determinations and analysis of plant nutrients with ICP.

► EPP0 guidelines (selection)

- PP 1/181(5) Conduct and reporting of efficacy evaluation trials, including GEP
- PP 1/152(4) Design and Analysis of efficacy evaluation trials
- PP 1/135(4) Phytotoxicity assessment
- PP 1/125(4) seed treatment against seedling diseases (trials under controlled conditions)

► Team

Specialized team with longstanding expertise in the implementation of efficacy and selectivity studies under controlled conditions.



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FIELD STUDIES

Marketing trials and demonstration fields

Different kind of trials with more than 20 common agricultural crops are possible to setup at various locations in Germany and Poland. With regard to a sustainable and resource-saving management in recent years biostimulant products and respective trials are increasingly becoming the focus of investigations.

► Description of working areas

Marketing trials

Crop protection products must be able to effectively combat pests and pathogens without damaging the crops; accordingly, efficacy field trials of plant protection products have a high priority in the approval process. These trials are executed in a very early stage of product development. We examine the effectiveness and the phytotoxicity effects of agricultural products (insecticides, acaricides, herbicides, fungicides, dressed seeds, plant growth regulators and fertilizers). In addition to the typical locations in the field, we can also carry out experiments in the semi-open field - under tunnel - in Gerichshain.

Subsequently, harvest determination for all typically quality parameters of seeds is possible. We also undertake the monitoring of fungi, weeds and insects. The desired targets are collected and sent according to specifications.

Demonstration fields

Demonstration fields provide initial knowledge. The range of our work includes sowing, taking care of plants, preparing field exhibition days and harvest. We demonstrate several aspects and questions of agriculture in a small area and quite close to each other. This gives a direct insight into effectiveness at this location of different tillage systems, sowing rates, fertilizers, various plant protection products and at the current weather conditions.

► Regulation and standards

- Accordance with good professional practice
- Applications and assessments are based on the EPP0 guidelines

► Team

Our very experienced team is made up of committed farmers, biologists, horticultural engineers and gardeners. The field technicians are familiar with the local conditions with regard to the pests, the soil, the farmers and the weather conditions. A modern, technically versatile equipment park as well as Europe-wide test bases are the basis of our work.



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