



FIELD RESEARCH & DEVELOPMENT

MAKING THE DIFFERENCE

QUALITY & COMPLIANCE FROM DEVELOPMENT TO HARVEST

SGS

FROM SOURCE TO SUPPLY

Production agriculture is continually innovating to improve the management and sustainability of our natural resources. With growing demands for efficiency and increasing environmental concerns, expertise in research activities, product development, fertility management, as well as analytical techniques and farm management practices, are crucial for success.

To provide solutions for the highly specialized sector of production agriculture, SGS has developed a unique package of value-added services. Life science companies, plant breeders, seed producers, agrochemical companies, distributors, fertilizer suppliers and ultimately farmers benefit from our research services.

Our experienced staff conducts field and laboratory trials to support screening, development, and registration of agricultural chemicals, biopesticides, fertilizers, and new plant varieties and genetics.

SERVICES

The following lists our main service areas:

- Field studies
- Laboratory studies
- Seed services
- Sample processing
- Soil and water studies

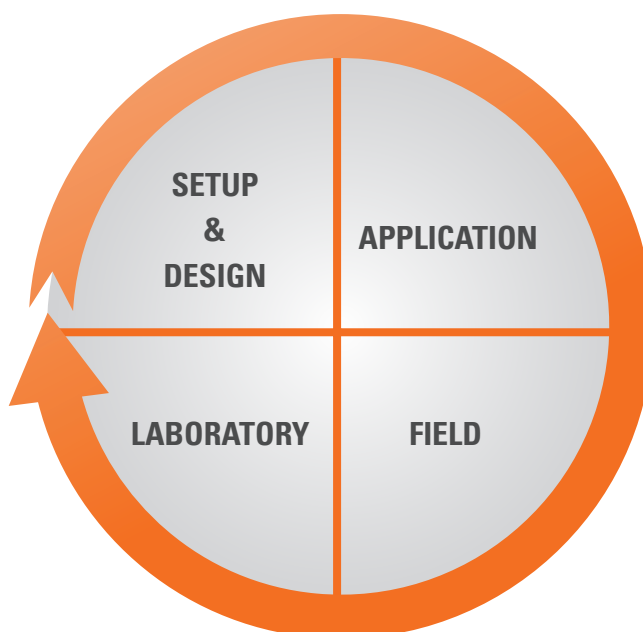


FROM DEVELOPMENT TO HARVEST

SUPPORT YOUR WORK FROM RESEARCH THROUGH PRODUCTION

- Seed amendments
- Field trial services
- Traditional seed services
- Analytical services
- Method development & validation

- Residue analysis
- GMO and trait testing
- Seed safety & storage studies
- Traditional seed testing
- Soil analysis & plant tissue testing



- Seed acquisition
- Seed testing
- Packaging & distribution
- Seed treatment application verification
- Dust off, plantability & flowability assessments

- GLP-GEP trials
- Regulatory trials
- Demonstration trials
- Operator exposure trials
- Efficacy trials

CONTRACT RESEARCH SERVICES

SGS field and laboratory staff are equipped to cover your field research and data collection needs. Our diligence to detail, training, and efficiency provide you with the quality results you rely on to make accurate business decisions.

BENEFITS

- Standardized GLP operating procedures
- Quality approach prevents bias in the studies performed
- State-of-the-art equipment
- Global network access offering a full international service
- Rigorous training with continuous improvement

SGS VALUES

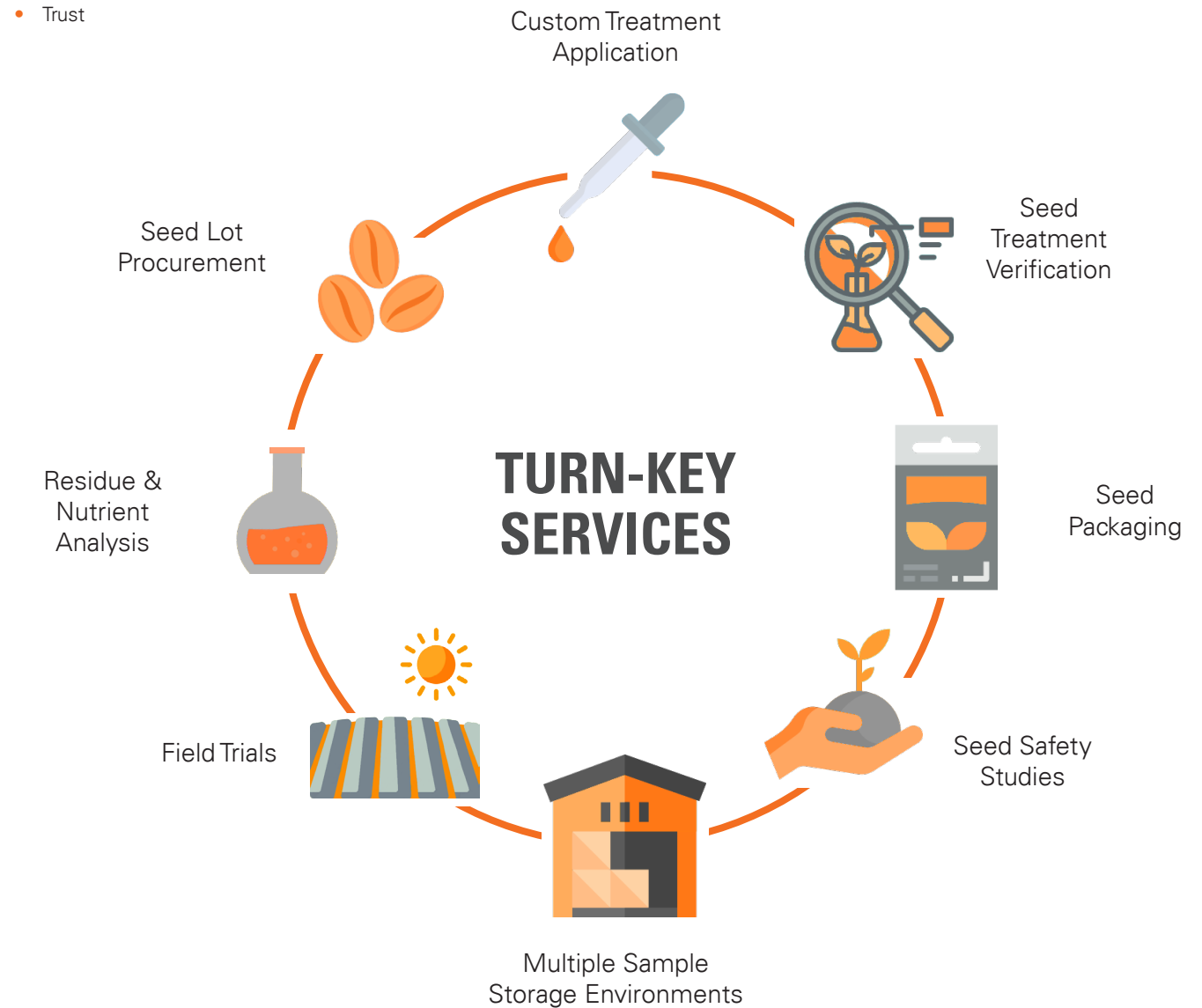
- Integrity - the cornerstone of our reputation
- Independence and neutrality
- Timeliness and accuracy
- Innovation and adaptation to change
- Trust

CROPS

- Corn/maize
- Soybean
- Cereals
- Canola
- Flax
- Cotton
- Potato
- Rice
- Rye
- Alfalfa
- Pulse crops
- Sorghum
- Sugar beets

- Vegetables
- Fruits
- Berries and small fruits
- Tree nuts
- Herbs and spices
- Oil seeds
- Sunflowers

SGS is the world's leading inspection, verification, testing and certification company and is recognized as the global benchmark for quality and integrity.



FIELD PRODUCT DEVELOPMENT SERVICES

By entrusting SGS with their trials, our clients benefit from standardized GLP (Good Laboratory Practices) operating procedures, field documentation systems, experienced staff, a quality approach and state-of-the-art equipment.

All SGS testing facilities comply with relevant, industry specific Quality Management Systems for conducting regulatory studies for local, international and global submissions.

OUR SERVICES

- Study project management
- GM testing
- Support registration of chemicals
- Crop residues
- Import tolerance studies
- Soil dissipation
- Crop rotation

- Environmental fate
- Field leaching
- Drip/drench irrigation studies
- Microbe and nutrient based studies
- Drought studies
- Efficacy
- Demonstration plots
- Crop sequencing
- Resistance analysis

Our network of experienced professionals and contractual partners conduct GLP trials in all geographical locations and climates.

OUR ADVANTAGES

- Field studies for local, international and global submissions
- Protocols drawn to client and industry guidelines
- Harmonized Standardized Operating Procedures (SOPs)
- Electronic Data Exchange in ARM or company provided software
- Full project reports
- Secure Internal Data Management System (intranet)
- Centralized quality assurance

EFFICACY FIELD TRIALS

SGS offers a flexible and impartial resource for your product development, supporting your needs throughout the research process.

Efficacy trials are vital in assisting companies to expand their knowledge of their product capabilities. SGS offers services for development and demonstration for product comparisons and assessing the capabilities of agrochemical or biological compounds.

We can also establish and manage demonstration centers. A choice of crops and varieties can be planted in conjunction with a range of spray programs, compounds and/or mixtures, providing diverse situations.

EQUIPMENT

At SGS, we have a wide range of specialized equipment that enables us to conduct all types of trials. We constantly review and renew our systems and tools to bring better technology systems to our locations.

RESEARCH ADVANTAGES

- Efficacy testing on any crop or uncropped situation
- Selectivity trials to determine product effects on crops
- Client-driven protocols



DISSIPATION & ACCUMULATION STUDIES

Dissipation in soil and water play an important role for the environmental behavior of substances such as crop protection agents and fertilizers. Substances that degrade slowly can accumulate with repeated application and can represent an increased danger for soil life and other environmental compartments such as ground water.

SGS has experience in the widespread use of crop protection agents and also in special application techniques (e.g. granular applications, seed treatment, drip application) and unusual sampling requirements (e.g. soil depths up to 2 m, application monitoring).

Degradation behavior and studies calculate the concentration in the soil to form an extended risk assessment within the

scope of a registration process.

OUR SERVICES

- Study planning and design
- Coordinating with authorities and growers
- Location and site selection
- Determining all relevant site parameters
- Equipping the location with measuring technology and marking out the field sections
- Selecting and deploying validated sampling technology
- Sample transport, storage, homogenization
- Residue measurements in soil, water, vegetation and air

SPECIALTY STUDIES

SGS provides a wide range of specialty services that can be customized to meet your project needs.

RESISTANCE ANALYSIS

- Testing against standard or requested products

FIELD SCREENS

- Small plot, unreplicated or replicated
- Herbicide and fungicide across various crop/variety types
- Rate and formulation comparisons

PRODUCT PROPERTIES

- Rainfastness (field and controlled environment)
- Pattern testing
- Nozzle effectiveness

DEMONSTRATION PLOTS

- Product evaluation under different treatments, rates and production methods

NEMATODE STUDIES

- Field crops
- Irrigated, spray, granule application

CROP SEQUENCING

- Single and multiple following crop effects

SPECIFIED USES

- Forage grasses
- Horticultural
- Ornamental

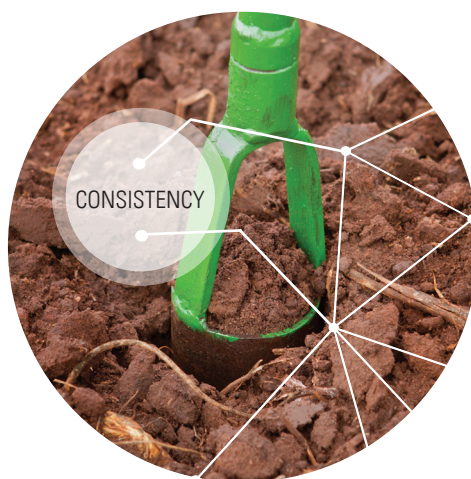
CONTROLLED STUDIES

- Inoculated studies
- Irrigated studies

BENEFICIAL/NON-TARGET STUDIES

NUTRIENT STUDIES

TILLAGE STUDIES



BIOLOGICAL & ANALYTICAL LABORATORY SERVICES

SGS agricultural laboratories have the experience and advanced analytical instrumentation necessary to service your complete GLP and contract laboratory research testing needs. Our laboratories provide GM and residue analysis, including method development and validation, seed application and verification, as well as studies directed by client protocol.

SGS EXPERIENCE

- Pesticides
- Biopesticides
- Seed treatments & amendments
- Biotech traits
- Method development including ILV

CUSTOMIZED GLP & ISO COMPLIANT SOLUTIONS

- Laboratory study directorship
- Gene expression by qPCR, RT-PCR
- Protein expression by immunoassay, ELISA
- Seed treatment application
- Chemical application verification
- Seed germination & vigor
- Gene transcription confirmation
- Customizable field research
- Compositional analysis
- Sample processing
- Chemical residue analysis
- Microwave digestion

STUDY TYPES

- Method development & validation
- Independent laboratory validation (ILV)
- Dislodgeable foliar residue (DFR)
- Crop/soil residue analysis (plants, processed products, soil, water, etc.)
- Seed treatment verification
- Trait related studies
- Food processing
- Physical & chemical composition
- Investigation of storage stability
- Product equivalence/compositional equivalence
- Analysis of minor constituents & contaminants

RESIDUE

- Pesticide residue
- Mycotoxins (aflatoxins, vomitoxin, fumonisins, etc.)
- Antibiotic residues
- Heavy metals
- Soil dissipation

CHEMICAL COMPOSITION

- Moisture, protein, crude fat, crude fiber, ash
- Macro and micronutrients (mineral elements)
- Amino acid profiles
- Fatty acid composition

PROTEIN & DNA SERVICES

- Gene transcription confirmation
- Protein expression analysis
- Matrices tested include seed, plant tissue and soil

ACCREDITATIONS

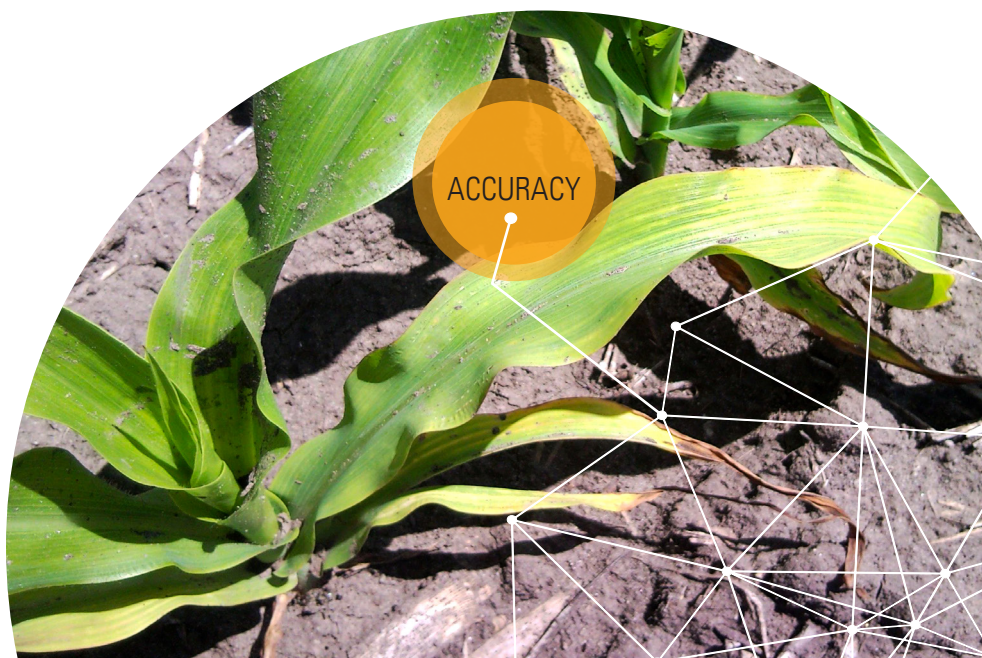
- ISO 9001 certified and ISO 17025 accredited
- GLP, EPA inspected in 2018
- National Seed Health Organization accredited
- International Seed Testing Association (ISTA) accredited

SAMPLE PROCESSING

Dedicated sample processing space and storage ensures no cross-contamination occurs for residue and GM studies.

PROCESSING MATRICES

- Soil cores
- RAC and processed products
- GM crops
- Freezer and ultra-low freezer capacity (-80C), set up to handle regulated, stewardship and non-regulated samples
- Best-in-class equipment and methods for sample processing



SEED STUDIES

In this highly specialized area of agriculture, there is no substitute for expertise. We employ professionals who are specialists in their field and have a deep understanding of our clients' needs.

Wide ranges of field crops are tested, such as wheat, barley, triticale, oats, rye, maize, oilseed rape, sunflower, soybean, flax, beans, peas, lawn seed, alfalfa, grass, field vegetables, flowers and much more.

We investigate chemical and biological seed amendments for safety and physical characteristics. We also provide sampling, laboratory testing and research to evaluate new seed products to ensure the quality of commercial seeds.

SEED SERVICES

- Crop sensitivity
- Seed treatment application
- Seed loading analysis
- Heubach dust analysis
- Seed safety
- Variety studies
- Varietal screening
- Trait evaluation

- Storage stability
- Mechanical and physiological seed analysis
- Evaluation of equivalence
- Germination and vigor assessments

SEED ANALYSIS

SGS Seed Services specializes in seed quality assessment. Our experience extends across various crops, including vegetable, flower and grain, as well as internal and external traits and quality characteristics.

ADVISORY SEED ANALYSIS

- Purity
- Other species content
- Germination
- Seed identification
- Moisture
- Thousand seed weight
- Screenings
- Rapid tetrazolium viability
- Vigor testing

TRANSGENIC ANALYSIS

- Protein determination
- DNA event specific testing
- Genetic purity

GRAIN QUALITY ANALYSIS

- Protein
- Admixture
- Moisture
- Oil content
- Nitrogen composition
- Mycotoxin analysis

METHODS



- ISTA
- AOSA
- Canadian

ACCREDITATIONS



- ISTA
- ISO 17025

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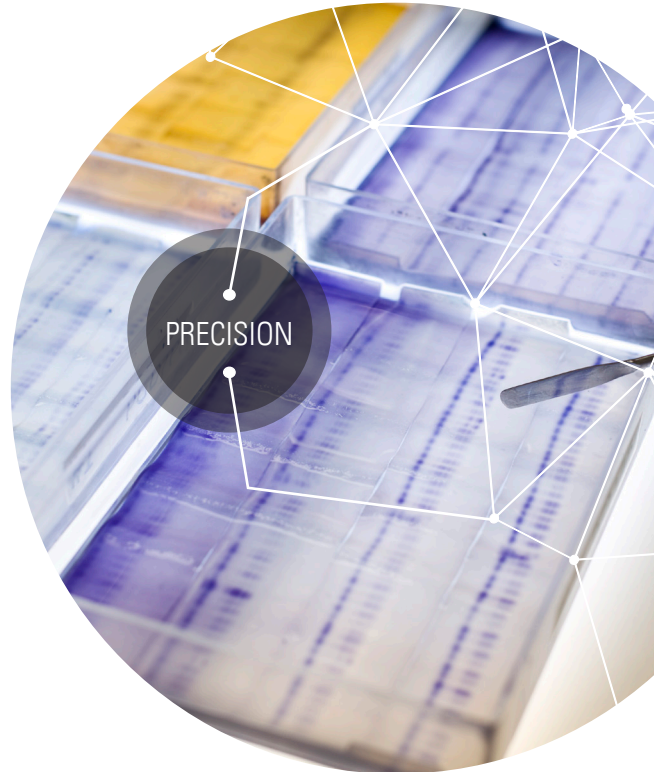
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WHEN YOU NEED TO BE SURE

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