



# **CONTRACT RESEARCH SERVICES**

**QUALITY & COMPLIANCE FROM DEVELOPMENT TO HARVEST**

# FROM SOURCE TO SUPPLY

Production agriculture needs continuous innovation 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 this highly specialized sector, SGS has developed a unique package of added value services. Life Science Companies, Plant Breeders, Seed Producers, Agro Chemical Companies, Distributors, Fertilizer Suppliers and ultimately Farmers benefit from our Field 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.

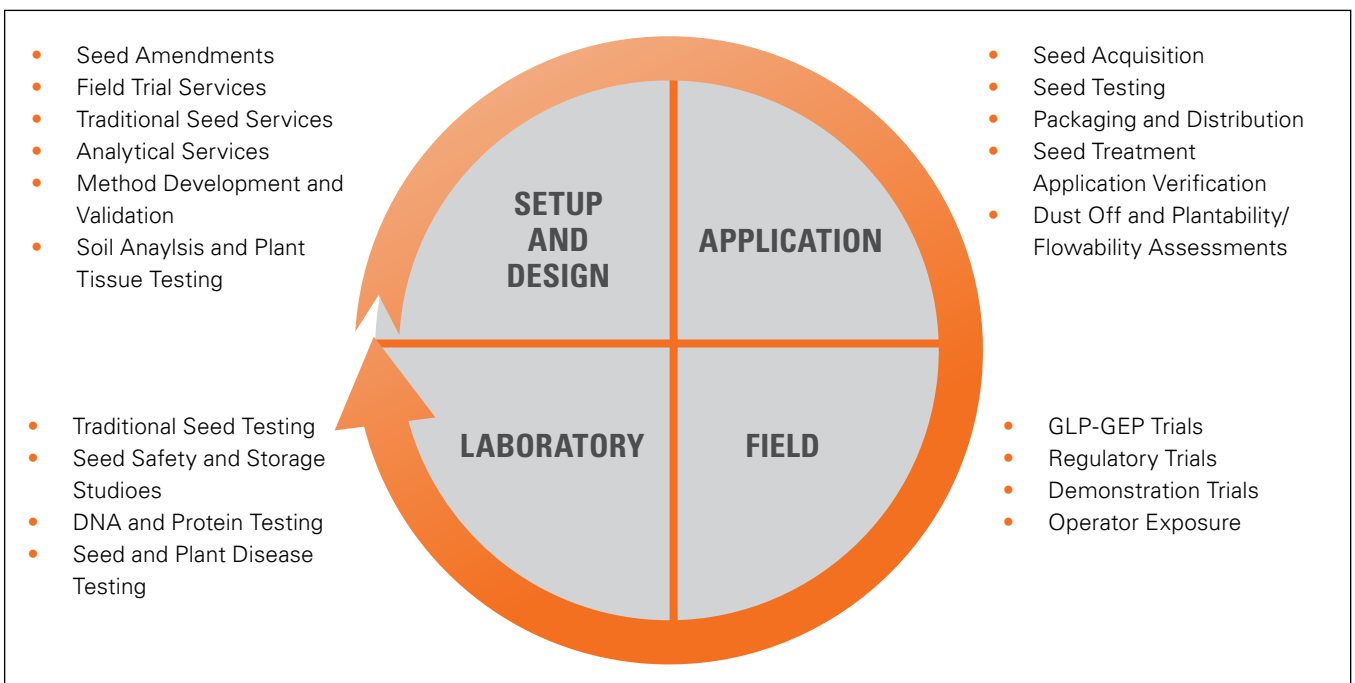
## SERVICES

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



# FIELD PRODUCT DEVELOPMENT SERVICES

By entrusting SGS with their trials, our clients benefit from standardized GLP (Good Laboratory Practices) operating procedures, field documentation system, 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

## STUDIES

- Efficacy
- Demonstration Plots
- Crop Sequencing
- Resistance Analysis

A 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
- Local Study Management
- Harmonized Standardized Operating Procedures (SOP's)



- 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 the 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 large scale 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 to enable 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 enrich with repeated application and can represent an increased danger for soil life and other environmental compartments such as ground water.



Degradation behavior and studies calculate the concentration in the soil to form an extended risk assessment within the scope of a registration process.

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 2m, application monitoring).

## OUR SERVICES

- Selecting and deploying validated sampling technology
- Sample transport, storage, homogenisation
- Residue measurements in soil, water, crops and air
- Study planning and design
- Coordination 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

# SPECIALITY STUDIES



SGS provides a wide range of speciality services.

## 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

- Glasshouse/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

- Pollination Studies

# BIOLOGICAL & ANALYTICAL LABORATORY SERVICES

SGS North America 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 as directed by client protocol.

## SGS EXPERIENCE:

- Pesticides
- Biopesticides
- Seed Treatments & Amendments
- Biotech Traits
- Method development including ILV

## CUSTOMIZED GLP & ISO COMPLIANT SOLUTIONS

- Gene expression by qPCR, RT-PCR
- Protein expression by Immunoassay, ELISA
- Seed treatment application
- Chemical application verification
- Seed germination & vigor
- Gene transcription confirmation Study Director & management
- Customizable field research
- Compositional Analysis
- Sample Processing
- Chemical residue analysis
- Microwave digestion

## STUDY TYPES

- Method development and validation
- Independent laboratory validation (ILV)

- Crop/Soil Residue Analysis (plants, processed products, soil, water, etc.)
- Seed loading verification
- Trait related studies
- Food processing
- Physical and Chemical Composition
- Investigation of storage stability
- Product equivalence/ Compositional equivalence
- Analysis of minor constituents and contaminants

## RESIDUE

- Pesticide Residue
- Mycotoxins (Aflatoxins, Vomitoxin, Fumonisin, etc)
- Antibiotic Residues
- Heavy Metals

## 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

- ISO9001 and ISO17025 Certified
- GLP, EPA inspection 2013
- National Seed Health Organization-Accredited
- ISTA-Accredited

# SAMPLE PROCESSING

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

## PROCESSING MATRICES

- Soil cores
- RAC and processed products
- GM crops
- Freezer and ultra-low freezer capacity (-80C)



# 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, durum wheat, barley, triticale, oats, rye, maize grain and fodder, oilseed rape, sunflower, soybean, flax,

beans, peas, lawn seed, alfalfa, grass, field vegetables, flowers and much more.

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

## SEED SERVICES

- Variety studies
- Varietal screening
- Density testing
- Germination and vigor
- Trait evaluation
- Crop Sensitivity

- Seed treatment application
- Physical and mechanical seed analysis
- Seed loading analysis
- Heubach dust analysis
- Storage stability
- Seed Treatment
- Seed Safety
- 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
- Screenings
- Seed identification
- Moisture
- Thousand seed weight
- Germination
- Rapid tetrazolium viability
- Vigor testing
- Stem nematode

## TRANSGENIC ANALYSIS

- Protein Determination
- DNA Event Specific Testing
- Genetic Purity

## GRAIN QUALITY ANALYSIS

- Protein
- Admixture
- Moisture
- Oil Content
- Nitrogen
- Mycotoxin Analysis

# CONTRACT RESEARCH SERVICES

SGS is able to support your research needs across the field and laboratory. SGS staff have high level technology and training to cover customers' needs in supporting field research and data.

## 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
- Speed and accuracy
- Innovation and adaptation to change
- Trust

## CROPS

- Corn/Maize
- Soybean
- Wheat
- Canola
- Flax
- Cotton
- Potato
- Rice
- Rye
- Alfalfa
- Pulse crops
- Sorghum
- Sugar beets
- Vegetables
- Fruits
- Berries and Small Fruits
- Tree Nuts
- Herbs and Spices
- Oilseeds



SGS is the world's leading inspection, verification, testing and certification company and is recognized as the global benchmark for quality and integrity. With more than 80,000 employees, SGS operates a network of over 1,650 offices and laboratories around the world.



## CONTACTS

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**WHEN YOU NEED TO BE SURE**

