



***Precision Testing S.R.L. deals with field testing, using machines and tools for precision agriculture.
This is the first step to support precision farming.***

Precision Testing S.R.L. innovative startup (DL n. 179/2012) has been founded in January 2019 as CRO for **field testing and agronomic research**. The founders' experience and the knowledge (in variety testing, crop protection and agro-environmental research) are the basis of their innovative services. In April 2019, Precision Testing got the **GEP accreditation** from the Italian Ministry of Agriculture as **test facility** to carry out **field trials**.

The **working group** is composed of **master graduates in agricultural sciences** (with different specializations), **agricultural experts and qualified technicians for organic productions**. Their technical-scientific background, linked to the passion for their work and the purpose of contributing to update the sector of field agronomic research, allow to provide **high-skilled services to the various players** in the supply chain: **industry** (seeds, agrochemicals, biostimulants, fertilizers), public and private **research centres** and **farms**.

The Company combines knowledges and technological innovations: to perform agronomic studies and field trials, it uses **tools and machinery of precision and digital agriculture**. Product applications are georeferenced, at fixed or variable rate, using **prescription maps** obtained after specific monitoring.

The **"PRECISION TESTING" process**, through **complex studies**, allows to test and to verify the performance of new products in specific agro-environments, which have been previously selected and studied. The outcome for the stakeholders is to receive a data pool and information on their products, **tested according to the precision farming purposes**.

Moreover, **Precision Testing's agronomists and specialists support farmers** for applying **precision agriculture techniques** and for the **integrated pest management**.

The experience gained in this sector allows the Company to **promote** events of **training and divulgation**.

ACTIVITIES

SERVICES FOR AGRONOMIC RESEARCH AND FIELD TESTING

Precision Testing designs and carries out field studies with a careful selection of the most suitable sites, according to the aim of the project. The activities are done in Northern Italy, both in selected farms and in its own testing farm.



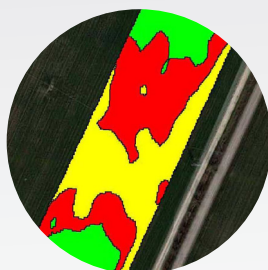
TEST FACILITY



TESTS ON ARABLES

SERVICES TO FARMERS

Precision Testing supports farmers in applying precision agriculture techniques and for the integrated pest management.



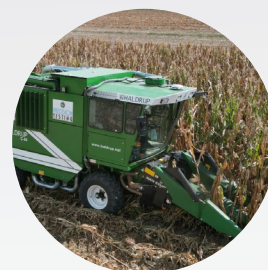
PRECISION AGRICULTURE



INTEGRATED PEST MANAGEMENT

SERVICES WITH OWN EQUIPMENT

Precision Testing can provide specialized services to seed companies, CRO, public and private research centres, in realizing field activities which require technical skills and technologically advanced machinery.



SERVICES TO RESEARCH CENTRES



SEED MULTIPLICATION

TEST FACILITY

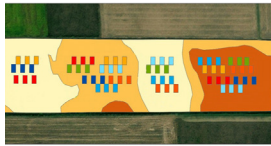
THE FEATURES OF THE TEST FACILITY



MONITORING (SOIL-CROP-PEST-YIELD) BY SENSORS ON TRACTORS, DRONES, PLOT COMBINES Before the study starts: to localize suitable areas/sites for carrying out the field trials; to evaluate the variability of soil and crop properties and to know the pest's pressure and its distribution. During the trial: to measure indicators of the crop's growth; to calibrate the agronomic operations; to identify the right time for products application. At the end of the study, on yield: to define the amount and the quality of the production.

USE OF OWN MODERN MACHINERY AND EQUIPMENT

All the key operations performed on the trials (monitoring, applications, harvest) are performed with modern machinery and equipment, designed for field research and all equipped with GPS. The calibration of all the equipment is the starting point to collect solid and reliable data.



USE OF EQUIPMENT FOR LOCAL APPLICATIONS AND THE "PRECISION TESTING" PROCEDURE

The "Precision Testing" procedure is based on a reasoned and careful distribution of the plots (small or large) in the field. This is the result of evaluations of preventive monitoring data and of the variability of some key indicators. Precision farming machinery and digital agriculture technologies allow to manage georeferenced and local applications, also at variable rate, based on prescription maps.

DISTINCTIVENESS OF THE TEST FACILITY



TRIALS OF PRECISION FARMING (WITH LOCAL APPLICATIONS) The skills of the specialists, to make specific prescription maps and to use equipment for precision agriculture, allow the application (by seeder, sprayer machine, drone) of the tested products (experimental or close to market) on georeferenced selected areas in open field.

TRIALS OF SEED CARE The trials are carried out in various agro-environments in Northern Italy (Piemonte, Lombardia, Veneto, Emilia-Romagna, Friuli-Venezia Giulia). For some pests (e.g. *Agrotis* spp.), every year the specialists identify the suitable infestations to carry out field trials. The work is divided in different steps: placing baits traps, soil sampling, pest identification, creation of georeferenced maps to study the pest's variability. For other species (e.g. *Diabrotica virgifera*, *Ostrinia nubilalis*, *Agrotis ipsilon*) monitoring of adults is conducted, also considering data of regional public research centres. Seed coating could be also carried out independently, by the liquid seed treater Hege-11.



TRIALS IN THE TESTING FARM Precision Testing manages an experimental farm of 6 hectares, where it is also placed a tunnel for protected crops. In this farm, applications of inoculums of pathogens to the soil, to the crop and the sowing of widespread annual broadleaf and grass weeds can be done.

TESTS ON ARABLES

Precision Testing plans and realizes:

- sowing of small/big plots at fixed or variable density on prescription maps,
- harvesting of small/big plots, measuring the yield and some qualitative indicators or the grain flows to create georeferenced yield maps.

All sowing and harvest data are georeferenced.



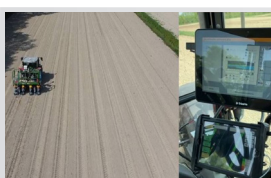
PRECISION PLANTING The precision planter HALDRUP SP-35, equipped with MONOSEM elements, allows the sowing of many species. The row-distance can be easily modified. It can sow both small and big plots at fixed or variable rates according to prescription maps.

SOWING IN ROWS The pneumatic seed drill, built on DAMAX frame, is used for cereals and other crops. It can sow both small and big plots, at fixed or variable rates, according to prescription maps.



HARVESTING OF SEED TRIALS Two plot combines (a HALDRUP C-85 and a FarmLiner 3370 modified by BAURAL) are equipped with modern and different plot weighing systems and systems to measure the grain flow to create georeferenced yield maps.

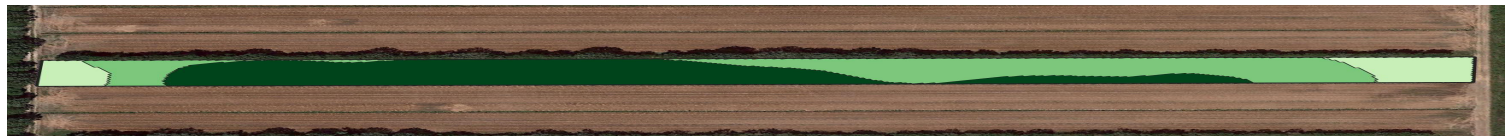
CHOPPING FOR SILAGE AND BIOMASS TRIALS The KE-125 row-independent forage harvester allow to chop crops sown at different densities and with different row-distance. The conveyor is connected to a weighing system based on load cells.



PROVIDING ROBUST DATA The working group is structured and organized:

- to guarantee the realization of perfect sowings,
- to properly calibrate all the machinery, the electronic and digital equipment, verifying their fully functioning and the validity of the collected data,
- to obtain clean and undamaged seeds at harvest, to avoid affecting the quality of the data.





ADVICE AND SUPPORT TO FARMERS

Precision Testing's agronomists and specialists support farmers in applying precision agriculture techniques and the integrated pest control.

The activity includes:

- the study of soil and crop variability, analyzing the data obtained from specific monitoring,
- the analysis of the risk factors of damage produced by soil pests or other pathogens,
- the creation of specific prescription maps, based on agronomic evaluations.

MONITORING AND DATA COLLECTION

The collection and the analysis of the data obtained from monitoring is the starting point to support the farmer in applying precision agriculture techniques for a sustainable use of the inputs.

SOIL MONITORING



- by measuring the apparent electrical conductivity
- by analyzing the physical-chemical properties (on samples)

CROP MONITORING



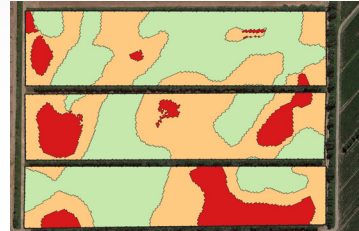
- by remote sensing
- by proximal sensors or cameras (on tractor or drone)

PEST MONITORING



- by placing pheromone traps for catching adults of wireworms
- by placing bait jars for catching larvae of wireworms

YIELD MONITORING



- by systems and digital tools for yield mapping, installed on plot combines or other harvesting machines

PRESCRIPTION MAPS AND PRECISION APPLICATIONS

The elaboration of the collected data from the monitoring and the analysis of the risk factors of damage drive the specialist to create specific prescription maps. This process can be managed:

- independently, by the Precision Testing's specialist,
- using the main digital tools on the market, chosen by the farm or the contractor.

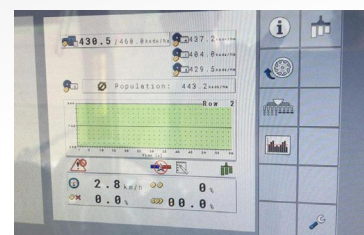
Once created, the prescription maps can be uploaded on the monitor of the operating machines, which are connected via ISOBUS with the agricultural equipment, otherwise uploaded on the drone's remote control.

LOCAL APPLICATION AT FIXED OR VARIABLE RATE OF



- fertilizers
- PPP, biostimulants and plant growth regulators
- herbicides

VARIABLE RATE SOWING



- precision seeding by varying the density of seeds

VARIETY MAINTENANCE AND SEED MULTIPLICATION



Precision Testing provides qualified support to seed companies in multiplication of soybean and winter cereals. The varieties in maintenance are reproduced in the experimental farm in Ronco all'Adige (VR) or in other suitable areas for the needs of the cultivated species.

The agronomic management (fertilization, irrigation) and the crop protection are carried out, directly or with the support of the farmers, in compliance with the protocols requested by the customer. The specialists manage the off-types removal and the relations with the ENSE's officers. The harvest is performed with perfectly clean plot combines and only when the seeds reach the right moisture. The machines, carefully calibrated, ensure the harvest of intact and clean seed. The bagging, handling and storage of the seeds are managed directly with own equipment.

THE PRECISION TESTING'S FARM



Precision Testing conducts GEP, DEMO, agronomic and varietal trials in Northern Italy, in the most suitable environments for the purposes of the study, in selected farms. The Company has also an irrigable farm of 6 hectares, located in the Verona plain, in a highly suited production area.

A tunnel of 400 m² is used to manage trials requiring protected conditions. The farm's land is reserved for trials with experimental products for which a daily management is required. The possibility to apply infestations with insects, mites, fungi and weeds (common in the Po valley) allows to increase the chances of success for the chemical trials, compared to the natural development of the pest populations, strongly linked to the seasonal climatic trend. This method allows the management of trials on a wide range of crops and targets, both in open field and in protected conditions. Part of the farm's land is used for seeds multiplication and varietal maintenance. The entire activity is managed independently, with owned machinery.



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Via del Commercio, 3 int. 5 - 37030 Colognola ai Colli (VERONA) - ITALY

Telephone: +39 045 7650292 - E-mail: info@precisiontesting.it - www.precisiontesting.it



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