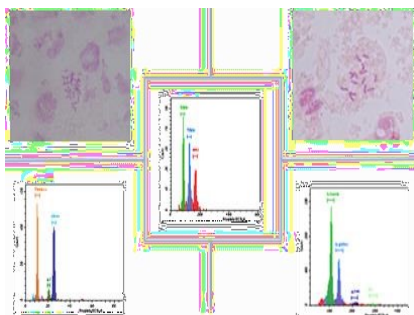
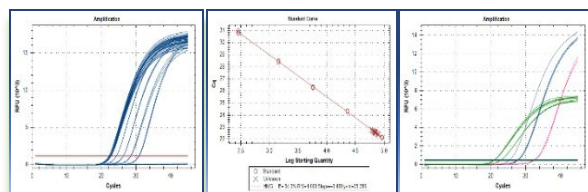


The varieties are also characterized at the cytological level to determine the degree of ploidy using microscopy and flow cytometry techniques.



GMO analysis

GMO testing is carried out to confirm the absence of GMOs in seed lots intended for farmers. The analysis includes the identification, detection, and quantification of possible contamination. The laboratory is a member of the European Network of GMO Laboratories (ENGL). It has been designated as a National Reference Laboratory by Commission Regulation (EC) No 120/2014. It is also a member of the Italian Network of GMO Laboratories "NILO".



Other tests

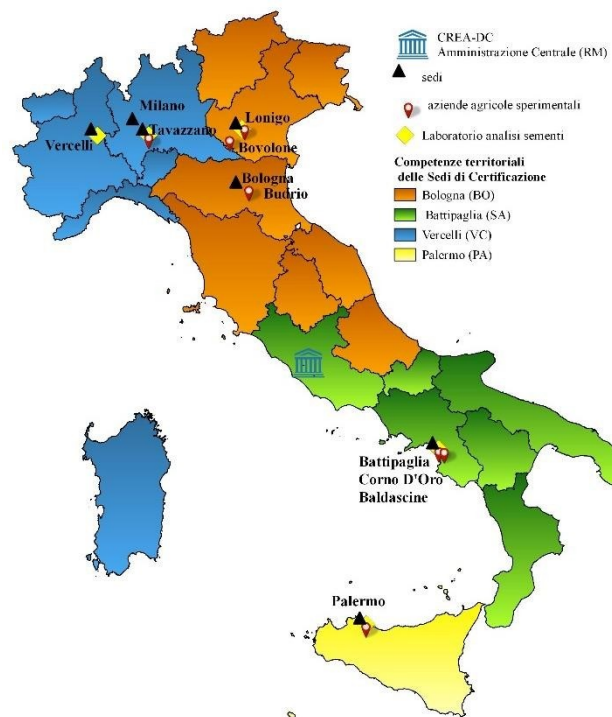
The laboratory performs the vigour and vitality tests, the moisture content test, and the determination of the thousand seeds' weight. The aim is to evaluate the different aspects of seed quality for the benefit of the entire seed sector.

Research and experimentation

The research activities are aimed at updating the seed quality assessment procedures. The researchers and technicians are involved in national and international projects on seed technologies.

To support institutional and research activities, the laboratory has both traditional equipment and high-tech equipment, such as a flow cytometer for cytological analysis, capillary electrophoresis sequencer, thermal cyclers, Real-time PCR, and Digital PCR for the molecular test.

CREA DC – Seed Certification Area



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CREA DC – Plant Protection and Certification Research Center

Seed Certification Area

TAVAZZANO OFFICE



CREA - Council for Research in Agriculture and Analysis of Agricultural Economics.

CREA is the main Italian public research institution under the supervision of the Ministry of Agriculture (MIPAAF) dedicated to agri-food supply chains with scientific expertise spanning the agricultural, livestock, fisheries, forestry, agro-industrial, nutritional, and socioeconomic sectors. The institute is currently made up of 12 research centres spread throughout Italy, with numerous locations, laboratories, experimental farms and more than 2,000 employees. Each centre is specialized in its own area of expertise; the Plant Protection and Certification Research Centre is the national reference for plant protection against harmful organisms and seed certification, including descriptive and agronomic tests for the registration of new varieties in the National Register.

CREA DC – Plant Protection and Certification Research Center Seed Certification Area

In addition to its plant protection role, CREA-Plant Protection and Certification Centre performs tasks arising from EU and national regulations governing seed production and marketing. A specific technical-administrative area dedicated to seeds, spread over 8 territorial offices (Milan, Tavazzano, Vercelli, Lonigo, Bologna, Roma, Battipaglia, Palermo) carries out official certification and inspections of seed products including technological, phytosanitary, and genetic analyses of seeds.

In addition, on behalf of the MIPAAF, it coordinates examination tests for **registration in the National Register of Plant Varieties** and for the recognition of protection titles for new varieties (Community Plant Variety Rights).



CREA DC, operating throughout the seed supply chain, ensures the quality and traceability of seeds through its inspection and certification activities. Checks are carried out directly in the field to ascertain the identity and level of varietal purity of seed crops; then, once the seeds have been processed and packaged at seed companies, samples are taken for laboratory analysis. According to the current legislation on seed marketing, seeds must be officially certified and belong to registered varieties in order to be marketed; only after the prescribed checks and verification of compliance with minimum quality standards such as varietal and physical purity, phytosanitary status, foreign seed content and germinability, an official label is issued and affixed to the seed packages, proving the certification and allowing seeds to be sold.

TAVAZZANO OFFICE (LO)

The Tavazzano office has been operating since October 1960, and it is a reference point for all those working in seed testing, both at nationally and internationally. The laboratory has been accredited by ISTA (International Seed Testing Association) since 2000 and promotes the use of standardized analytical methods. Moreover, the staff actively contributes to the development and validation of innovative protocols to meet the new needs of the seed sector (<https://www.seedtest.org/en/membership/creaconsiglio-per-la-ricerca-in.html>).

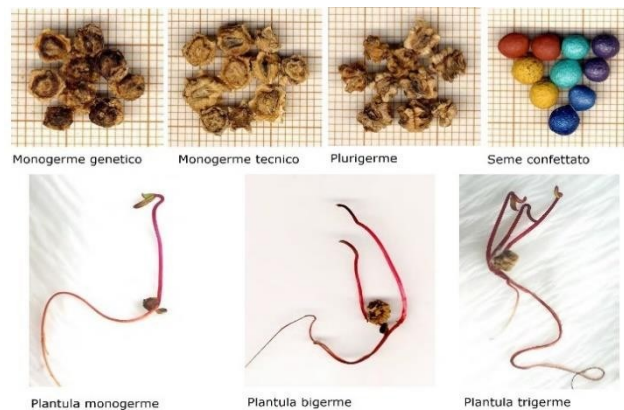
Within ISTA, the laboratory staff participates in the activities of various technical committees (Varieties Analysis, GMO Analysis, Tetrazole Assay, Proficiency Test, Flowers, and Humidity).

Seed certification

The laboratory uses a wide range of testing methods. Its expertise covers over 250 plant species (agricultural, vegetables, flowers, spices, aromatic plants, and medicinal). Germination analysis, physical purity, and other seed determination (RSE) are the main parameters evaluated in seed certification. The laboratory is authorized to issue official certificates for the marketing of seed lots and ISTA certificates required for international seed trade.

Germination test

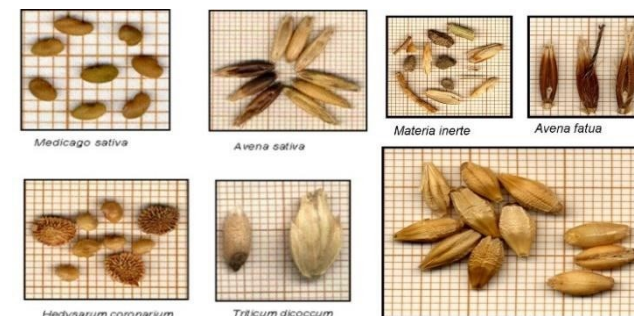
High-level germination seeds are the starting point for the plant's good development leading to successful cultivation.



Germination test *Beta vulgaris*

Purity test

The purity test aims to evaluate the presence of species other than that of pure seed and inert matter. The laboratory has an up-to-date reference collection of seeds of 130 different weed and crop species validated by ISTA. The seed collection is a useful tool for other seed determinations.



Examples of some analyzed species

Variety listing and traceability

Protocols based on biochemical and molecular markers are implemented for the description and characterization of new varieties (New variety Registration) and for the Protection of Breeders' Rights (PBR). In addition, varietal and specific traceability checks are carried out on raw materials for the agri-food chain.

