Disease resistance characteristic in DUS examination in Argentina

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Plant diseases in relation to the DUS test

- An example in Winter cereals
- An example in alfalfa (lucerne)
- An example in soybeans
- Molecular markers

- Rusts are one of the most important diseases in winter cereals.

- Three different pathogens: Stem rust; yellow and orange.

- To obtain a comparable result, the following steps must be followed:

  - Correctly classify the pathogen: genus, species, race.
  - Infect according to a reliable protocol.
  - Express the result in a comparable form.
  - Ensure that the samples are indubitable, so that they are not objected

To correctly classify the pathogen and perform the test or infection.

- The laboratory must be certified or be a national research institute.
- Follow the most reliable rules by ISTA, national research institutes or universities.
- Call a committee of experts in case of doubt.

An example in winter cereals.

- Two oat cultivars submitted by the same applicant four years apart.
- The first cultivar is declared resistant to a race of orange rust. Resistance is obtained from trial data and not from a laboratory test.
- The rust developed new strains and the cultivar appears susceptible to one of the new strains.
- The pathogen is identified in the laboratory.
- A protocol is established to determine susceptibility.
- The second cultivar is submitted, and it is determined in the laboratory that it is resistant to the same race.
- The samples were provided by the same applicant.
- It is considered that a clear difference has been obtained.

Selection of the Test guideline Alfalfa.

- The guideline is based on behavior against three diseases and three aphids and one nematode.
- The results are expressed in percentage.
- The test guideline include flower colour and dormancy.
- The NAAIC (*North American Alfalfa Improvement Conference*) protocol is followed.

Molecular markers

- Most winter cereal breeders have a molecular marker laboratory.

- The presence or absence of resistance genes is established in this way.

- The question is whether, once the information from molecular markers is obtained, if a laboratory test will also be needed.

Soybean diseases for which we have a protocol

- *Phytophthora sojae* (5 races: 1, 3, 4, 17 y 25)
- *Diaphorte phaseolorum var. meridionalis* (Stem canker)
- *Cercospora sojina* Hara (2 races: 11 y 12) (Frog eye leaf spot)

Differences

CLEAR differences between both varieties are considered when the behavior is SUSCEPTIBLE for one and RESISTANT for the other variety. INTERMEDIATE reactions are not considered clear differences.

Conclusions

-In Argentina, a clear difference between cultivars can be established using their behavior against pests (diseases).

-No decision has been made whether solely molecular declaration of the presence or absence of diseases resistance genes is sufficient to establish the difference between cultivars.

Thank you