

Fusarium Forum
ASSBT 2007 General Meeting
Salt Lake City, Utah
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Forum Moderator: **Linda Hanson**, Research Plant Pathologist, USDA-ARS, Fort Collins, CO.

Speakers included: **Steve Godby**, Research Agronomist, Western Sugar Cooperative, Scottsbluff, NE; **Tom Newcomb**, Manager – Agronomy, American Crystal Sugar Company, Hillsboro, ND; **Roy Martens**, Plant Breeder, Syngenta Seeds, Inc., Longmont, CO; **Bill Niehaus**, Official Trial Manager, American Crystal Sugar Company, Moorhead, MN; **Karen Klotz**, Research Molecular Biologist, USDA-ARS, Fargo, ND, **Barry Jacobsen**, Researcher, Montana State University, Bozeman, MT and **Carol Windels**, Professor, University of Minnesota, Crookston, MN.

Fusarium continues to be a problem in the Western United States, where it has been an intermittent problem for years. In many areas, the disease is reported with increasing frequency and may be increasing in severity in some areas. In much of this growing area, *Fusarium* is associated with stand loss. Screening for resistance in field nurseries is ongoing and some varieties show good responses in most areas where they have been tested. Screening nurseries have been set up at several different locations to provide information for different growing areas.

Fusarium wilt and *Fusarium* root rot are both continuing to be found in the Minnesota/North Dakota growing areas. These diseases have been found with increasing severity in some areas. Criteria have been established for abandoning fields due to these pathogens in some of the growing areas.

In addition to losses in the field, recent evidence shows that beets with *Fusarium* infections have a higher respiration rate and lose sugar faster during storage than healthy beets. Further research needs to be done in this area.

Sugar beet seed company breeders have been developing resistant sugar beet lines for several years. A number of lines with very good resistance are available. Some lines show very good resistance everywhere they have been grown, while other lines show a more variable response. Screening has traditionally been against *Fusarium oxysporum* and relatively little is known about the interaction with other species.

Potential interactions had been reported in the past between other pathogens or pests of sugar beet and *Fusarium*, but few controlled tests have been done. Recent tests with sugar beet cyst nematode indicate that there can be an interaction between nematodes and *Fusarium*, but the response may vary depending upon the *Fusarium* isolate and the sugar beet variety involved. In some interactions, an increase in disease severity was observed, while in others, no change in disease severity was detected. Because of this, it is important to determine whether cyst nematode is present in areas where sugar beets are being screened for disease response or in fields where *Fusarium* has been a problem.

In comparisons between different disease nursery screens in different growing areas, variability was found in how tests were done and at what age or ages plants were screened. In some cases, there was good correlation between results in different nurseries

or screening programs, while in other cases correlations were weak, or even negative. It was determined that the timing of ratings could make a difference in the response observed. In some tests, ratings taken early in the season did not correlate well with ratings taken later in the season in the same field. The location of the testing and other testing factors also could affect the rankings of different lines.

One important point to keep in mind is that *Fusarium* species can cause a number of different problems on sugar beet. It is imperative to know what type of disease and which *Fusarium* is involved to understand the situation. Fusarium root rot and Fusarium yellows are not the same disease, and likely are not caused by the same pathogens.

There is some good Fusarium yellows-resistant material available, including varieties that have shown good field resistance in multiple locations and to multiple *Fusarium* strains. This resistance continues to be the best management tool available for this disease.