Plant Pathology Seminar Series

"MANAGEMENT OF WHITE MOLD IN HYBRID SUNFLOWER SEED CROPS IN THE COLUMBIA BASIN OF CENTRAL WASHINGTON"

John Michael Weber

Hybrid sunflower seed production in the semi-arid Columbia Basin of central Washington increased from 20 ha in 2008 to >2,000 ha in 2014. White mold, caused by the soilborne fungus *Sclerotinia sclerotiorum*, is the main disease affecting sunflower seed crops in this region. Sclerotia, the survival structures of the fungus, are persistent in soil, and the fungus has a wide host range of >400 mostly dicotyledonous species, making *S. sclerotiorum* a difficult pathogen to manage. Sampling from Sclerotinia basal stalk rot foci in two sunflower seed crops in 2015 revealed genetically and genotypically diverse *S. sclerotiorum* isolates. The isolates were highly aggregated within foci, and the populations from each of the two fields were not differentiated genetically. White mold was observed in 92.5% of 40 sunflower seed crops surveyed in the Columbia Basin in 2016, but at a minimal incidence in most crops (average 3.8 ± 0.9% infected plants/field). In addition, very limited incidences of white mold in each of six grower-cooperator field trials completed in 2015 and 2016 precluded assessment of the efficacy of applications of Contans WG (*Coniothyrium minitans*, a mycoparasite of *S. sclerotiorum*) and vii foliar fungicide applications for in-season management of white mold. Spore trapping revealed ascospore release over approximately a 4-week period, from one week prior to flowering to about 10 days after flowering. This stage of sunflower growth is highly susceptible to ascospore infection, indicating that timely, preventative applications of fungicides with efficacy against *S. sclerotiorum* should protect sunflower heads against ascospore infections. Microplot trials near Ephrata, WA showed that drench applications of Contans WG at 0.56 or 4.48 kg/ha only reduced survival of sclerotia on the soil surface, not sclerotia buried 15 cm deep, and the applications were never as effective as burial at reducing duration of sclerotium survival. A large-scale, postharvest Contans WG trial confirmed that burial of infested sunflower crop residues reduced sclerotium survival more rapidly than leaving residues on the soil surface, and postharvest application of Contans WG did not reduce the duration of sclerotium survival in crop residues.

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MS Exit Seminar

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