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Integrated Management of Cercospora Leafspot with Resistant Varieties and Synthetic Chemical and Biologically-based Fungicides

Cercospora leafspot (CLS) has become more difficult to control due to the presence of "TPTH-tolerant" strains in MN and ND production areas. This coupled with the potential loss of triphenyltin hydroxide (TPTH) to EPA regulatory action suggests that alternative control strategies are needed. An experiment comparing three varieties with differing levels of a resistance to CLS with and without applications of the fungicides TPTH (Super-Tin); propiconazole (Tilt); a biologically-based fungicide, BAC J; a systemic resistance elicitor, CGA245704 (CGA), and combinations of BAC J, Tilt or CGA was executed in 9 different sites in MT, ND and MN. Where CLS developed to economic levels, disease severity was lowest on the variety ACH 309, intermediate on Monohikari and highest on VDH66140. All fungicide treatments reduced disease severity with TPTH giving the best control followed by Tilt-BAC J, Tilt, BAC J, CGA alone or in combination with BAC J or Tilt. In unsprayed plots, sugar yields did not differ significantly between varieties and all varieties had higher yields with fungicide treatments, although all increases were not significant. Sucrose yields where CGA was used were commonly lower due to lower ton/A, although not always significantly. At Sidney, MT, impurity indexes were higher for CGA treatments and lowest for TPTH, Tilt-BAC J and Tilt treatments. CLS can be economically managed without TPTH by combinations of resistant varieties, Tilt, BAC J or Tilt- BAC J, although TPTH treatments provided the best control.