



Extension FactSheet

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Maize Dwarf Mosaic Maize Chlorotic Dwarf Diseases of Corn

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The two most important viral diseases of corn in Ohio are maize dwarf mosaic (MDM) and maize chlorotic dwarf (MCD). Distribution of these diseases generally reflects the geographic distribution of their overwintering host, johnsongrass. In Ohio, MDM and MCD are serious threats to corn production in the southern half of the state. However, MDM has caused serious economic loss on late planted corn in northern Ohio, especially in the sweet corn growing region along Lake Erie.

Yield losses in fields where the disease is well established may be severe depending on the susceptibility of the corn hybrid being grown. In general, most loss occurs when the plants become infected at the “knee high” stage of development and is minimal on most hybrids if infection occurs after tasseling.

Diagnosis of virus infected plants is difficult based on field symptoms. Samples of plants should be tested in the laboratory to confirm the presence of the virus.

Symptoms

Maize dwarf mosaic

MDM symptoms vary with the corn hybrid and the stage of development of the plant at the time of infection. Early infection results in chlorotic spots or flecks that elongate in young leaves in the whorl. Flecks merge into chlorotic streaks along the leaves. These streaks form mosaic or mottled patterns and

may turn to a general yellowing as the growing season progresses. Later, plants may have blotches or streaks of red that generally appear after periods of cool (60°F) night temperatures. Infected plants are predisposed to root rot and may be barren.

Maize chlorotic dwarf

MCD symptoms include yellowing of youngest leaves in the whorl and a distinct fine yellow striping, or vein clearing of the smallest veins visible between the larger veins. This chlorotic vein clearing of secondary veins is diagnostic for MCD and may be more readily observed on the undersides of infected leaves. The striping may not be seen in later stages of development due to leaf reddening and general yellowing of the plant. Affected plants may also be stunted due to shortening of the upper internodes.



Corn virus symptom.

Disease Cycle

Maize dwarf mosaic virus (MDMV) exists in several strains, the most common being strain A, which infects and overwinters primarily on johnsongrass. Strain B does not infect johnsongrass. Besides corn and johnsongrass, the MDM virus may infect over 100 wild and cultivated grasses.

More than 20 species of aphids can transmit MDMV. An aphid can acquire the virus within a few minutes of feeding on an infected corn or johnsongrass plant. The aphid then flies or is carried by the wind to other corn plants and inoculates them with the virus. The aphid retains, and is generally able to transmit the virus for 15-30 minutes after acquiring it. The corn leaf aphid and the green peach aphid are common aphid vectors of MDMV in Ohio.

Maize chlorotic dwarf virus (MCDV) is primarily transmitted by the black-faced leafhopper. The leaf-

hopper must feed on an infected plant for several hours to acquire MCDV and then can transmit it for up to 48 hours. Johnsongrass is a known reservoir for MCDV, and its eradication is essential for control of maize chlorotic dwarf.

Control

Grow hybrids tolerant or resistant to maize dwarf mosaic. There is good tolerance and resistance to strain A, but only fair tolerance and no resistance to strain B in dent corn. There is no resistance to maize chlorotic dwarf virus and only fair tolerance.

Destroy johnsongrass and other grass hosts, including volunteer corn in areas where corn is to be planted. Best control occurs when all farmers in a community cooperate in eradicating johnsongrass.

Plant early, since early planted corn will escape damage because aphid populations do not build up until the plants are past the seedling stage.

Additional information can be obtained from your local Extension office or The Ohio State University web site Ohioline at: <http://ohioline.ag.ohio-state.edu>

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