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**110**

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## **FIELD SYMPTOM-RESPONSE OF SORGHUM HYBRIDS INFECTED BY MAIZE DWARF MOSAIC VIRUS**

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Sorghum (*Sorghum bicolor* (L.) Moench) that is infected by maize dwarf mosaic virus (MDMV) expresses different symptoms depending on plant genotype and temperature. Infection causes a yellow to dark green pattern (mosaic), and a necrotic reaction (red-leaf) develops on certain genotypes when the temperature drops below approximately 21 °C (69°F). Hybrids expressing the red-leaf symptom show a greater reduction in yield. Immunity to MDMV is not present in commercially available hybrid sorghums.

### **Procedures**

Studies were conducted at the Kansas State University Agricultural Research Center-Hays to determine symptom response of sorghum hybrids infected by MDMV under field conditions (2 years of testing). Sorghum seed was planted in 6.1 m rows. When at the two- to three-leaf stage, plants in half of each row were inoculated, and plants in the remaining half of the row served as healthy controls. Plants were inoculated with a Devilbiss EGA-502 spray gun attached to a 3.5 L (1 gal) inoculum reservoir. Compressor line pressure was maintained at 7.0 kg/cm<sup>2</sup> (100 lbs/h<sup>2</sup>). Symptom notes were recorded at biweekly intervals during the growing

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season beginning 2 weeks after inoculation. Planting was delayed until late June to assure cool temperatures for induction of red-leaf necrosis.

### **Results**

Field symptoms of hybrids are shown in Table 1. Symptoms of the sorghums to infection are given as M=mosaic reaction with no necrosis, NSp=necrotic spots (least severe RL reaction), NS=necrotic streaks often coalescing to form large irregularly shaped necrotic areas on the leaf, and RL=entire leaf necrotic (most severe necrotic reaction). Data so far indicate that sorghum hybrids having the M reaction suffer less yield loss than plants developing necrosis (RL types).

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Note: Trade names are used to identify products. No endorsement is intended, nor is any criticism implied of similar products not mentioned.

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**Table 1. Field Symptom-Response of Sorghum Hybrids to Infection by Maize Dwarf Mosaic Virus**

| Brand      | Hybrid   | Symptom Response |
|------------|----------|------------------|
| AgriGene   | AG2470W  | NS               |
| AgriGene   | AG2505   | M                |
| AgriGene   | AG2725   | M                |
| AgriPro    | AP 9250  | RS               |
| AgriPro    | AP 9830  | RS               |
| AgriPro    | AP 9850  | M                |
| AgriPro    | ST 686   | M                |
| AgriPro    | ST D701G | M                |
| Asgrow     | A504     | M                |
| Asgrow     | Madera   | M                |
| Asgrow     | Osage    | M                |
| Asgrow     | Seneca   | M                |
| Asgrow     | Topaz    | M                |
| Cargill    | 1099     | M                |
| Cargill    | 575      | NS               |
| Cargill    | 607E     | M                |
| Cargill    | 618Y     | M                |
| Cargill    | 630      | NS               |
| Cargill    | 837      | M                |
| Cargill    | 847      | M                |
| Casterline | SR 305   | M                |
| Casterline | SR 314EC | M                |
| Casterline | SR 315E  | M                |
| Casterline | SR 319E  | M                |
| Casterline | SR 324E  | M                |
| Dekalb     | DK-39Y   | M                |
| Dekalb     | DK-40Y   | M                |
| Dekalb     | DK-41Y   | M                |
| Dekalb     | DK-48    | M                |
| Dekalb     | DK-56    | M                |
| Dekalb     | DK-66    | M                |
| Dekalb     | M-572    | M                |
| Delange    | DSA 117  | M                |
| Delange    | DSA 121  | M                |
| Delange    | DSA 131  | M                |
| Delange    | DSA 141C | NS               |
| Delange    | DSA 922  | M                |
| Deltapine  | 1506     | M                |
| Deltapine  | G-1492   | M                |
| Deltapine  | G-1616   | NS               |
| Deltapine  | G-1655   | M                |
| Deltapine  | G-550E   | M                |
| DyNA       | DN 31    | M                |
| Fontanelle | 5550     | M                |
| Fontanelle | 5590     | M                |
| Fontanelle | W 5000   | NS               |
| Garrison   | SG-651   | M                |
| Garrison   | SG-821   | NS               |
| Garrison   | SG-942   | M                |
| Garst      | 5319     | M                |
| Garst      | 5392     | M                |
| Garst      | 5503     | M                |
| Garst      | 5511     | M                |

| Brand          | Hybrid       | Symptom Response |
|----------------|--------------|------------------|
| Garst          | 5522Y        | NS               |
| Garst          | 5681         | NS               |
| Golden Acres   | T-E 76       | M                |
| Golden Acres   | T-E 77-E     | M                |
| Golden Acres   | T-E Dinero   | M                |
| Golden Acres   | T-E Eden     | M                |
| Golden Acres   | T-E Rio      | M                |
| Golden Acres   | T-E Wahoo    | M                |
| Golden Acres   | T-E Y-60     | NS               |
| Golden Acres   | T-E Y-75     | M                |
| Golden Acres   | T-E Y-101G   | M                |
| Golden Harvest | H-388W       | NS               |
| Golden Harvest | H-444W       | M                |
| Golden Harvest | H-514B       | M                |
| Golden Harvest | H-515E       | M                |
| GRI            | 890111       | RL               |
| Groagri        | GSC 1214     | NS               |
| Groagri        | GSC 1313     | M                |
| Groagri        | GSC 3146     | M                |
| Groagri        | GSC 3148     | M                |
| Groagri        | GSC 3150     | M                |
| Groagri        | GSC 3159     | M                |
| Groagri        | GSC 3605     | M                |
| Hoegemeyer     | 6636         | M                |
| Hoegemeyer     | 671          | RL               |
| Hoegemeyer     | 6744         | RL               |
| Hoegemeyer     | 6878         | M                |
| Hoegemeyer     | 688          | M                |
| Horizon        | 200Y         | NS               |
| Horizon        | 213Y         | NS               |
| Horizon        | 216G         | M                |
| Horizon        | 76G          | M                |
| Hyperformer    | 1255 DR      | M                |
| Hyperformer    | Honcho       | M                |
| Hyperformer    | HSC 1289C    | M                |
| Hyperformer    | HSC Cherokee | M                |
| Jacques        | 211          | M                |
| Jacques        | 377-W        | NS               |
| Jacques        | 411          | M                |
| Jacques        | 606E         | M                |
| NC+            | 270          | M                |
| NC+            | 371          | NS               |
| NC+            | 472          | NS               |
| NC+            | 7B81         | NS               |
| NC+            | 7C49         | NS               |
| NC+            | Y363         | M                |
| Northrup-King  | 2656         | M                |
| Northrup-King  | KS-383Y      | M                |
| Northrup-King  | KS-555Y      | NS               |
| Northrup-King  | KS-710       | M                |
| Northrup-King  | KS-714Y      | NS               |
| Northrup-King  | KS-737       | M                |
| Northrup-King  | S-9740Y      | NS               |
| Northrup-King  | S 9750       | M                |
| Ohlde          | 120C         | NS               |
| Ohlde          | 134          | M                |

| Brand   | Hybrid   | Symptom Response |
|---------|----------|------------------|
| Ohlde   | 139A     | M                |
| Ohlde   | 140W     | NS               |
| Ohlde   | 246y     | M                |
| Oro     | Alpha    | M                |
| Oro     | Amigo    | M                |
| Oro     | Baron    | M                |
| Oro     | Edge     | M                |
| Oro     | G XTRA   | M                |
| Oro     | Hombre   | M                |
| Oro     | Ivory    | NS               |
| Oro     | Ultra    | M                |
| Pioneer | 8231Y    | M                |
| Pioneer | 8260     | NS               |
| Pioneer | 8358     | NSp              |
| Pioneer | 8379     | NS               |
| Pioneer | 8500     | M                |
| Pioneer | 8536Y    | M                |
| Pioneer | 8557Y    | M                |
| Pioneer | 8601     | M                |
| Pioneer | 8696Y    | M                |
| Pioneer | 8699     | RL               |
| Pioneer | 8771     | M                |
| SSI     | SBPO01   | M                |
| SSI     | SBPO05   | M                |
| SSI     | SBPO11   | M                |
| Stine   | SM 68 BR | M                |
| Stine   | SM 69    | M                |
| Stine   | SM 74    | M                |
| Stine   | SM 75R   | M                |
| Terra   | TR 4580  | M                |
| Terra   | TR 4620  | M                |
| Terra   | TR 4637Y | RL               |
| Triumph | TR 46    | M                |
| Triumph | TR 50yG  | M                |
| Triumph | TR 58Y   | M                |
| Triumph | TR 60-G  | M                |
| Triumph | TR 65-G+ | NSp              |
| Triumph | TR 74CR  | NS               |
| Triumph | TWO 64yG | M                |
| Triumph | TWO 80-D | M                |
| Warner  | W-624-Y  | M                |
| Warner  | W-625-Y  | M                |
| Warner  | W-902-W  | M                |
| Warner  | W-917-E  | M                |
| Wilson  | 515W     | NS               |
| Wilson  | 522W     | NS               |
| Wilson  | 535Y     | M                |
| Wilson  | 622E     | M                |

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