Disease Lesion Mimic Identified in Corn

- Caused by mutant genes found in the genetics of multiple corn products, Disease Lesion Mimic (DLM) lesions mimic symptoms of various diseases, but can not be controlled by fungicides.
- DLM spots, stripes, or lesions between corn leaf veins are showing up in fields across the Corn Belt.
- Lesions may appear as early as 3-4 weeks after planting or as late as flowering, and may spread over entire plants.
- DLM lesions may be more frequent in saturated fields and tend to be more uniform across fields than symptoms caused by corn pathogens.

DLM Identification

DLM lesions vary from tiny spots to lesions along the entire leaf. Lesions vary in color from chlorotic, to dark brown to translucent. Most lesions are on the leaves, but some Les/les mutants form lesions on the leaf sheath and stalk. Lesions may occur without causing damage to grain yield or quality. Others may spread rapidly and contribute to lodging or plant death.

Lesions that appear as tiny spots near the tip of the first corn leaf about 3-4 weeks after planting may enlarge in size and merge with new lesions down the leaf blade, covering the entire leaf in 4-5 days. Lesions may move from leaf to leaf, up the plant, until the entire plant is covered. Impact on yield potential has not yet been defined.

DLM Causes

Corn, and other plants, may contain genes that cause cells infected with certain pathogens to die. These hypersensitive responses deprive the pathogen of nourishment and inhibit spread of the disease. Occasionally, plants exhibit these symptoms without a pathogen being present. A cause of non-disease DLM lesions (dead cells) is genetic mutants (Les/les genes) that result in lesion development without the presence of disease. Les/les refers to recessive and dominant genetic mutants. Scientists have identified more than 50 lesion mimic (les) mutations in corn, and speculate that there may be many more. In addition to mimicking plant response to a pathogen, Les/les may also interfere with other cellular processes, resulting in cell death. These mutant genes have been identified across a wide variety of corn brands.

While scientists are searching for definitive causes of Les/les induced lesions, some contend that environmental stresses can be a trigger. DLM lesions seem to be more prevalent in saturated fields exposed to bright sunlight and high temperatures. Farmers have observed an increased level of lesion development in irrigated fields and in corn following corn.

DLM Management

Because DLM lesions look much like other disease symptoms, such as gray leaf spot, eye spot, or viruses, farmers should send samples of affected leaves to a plant pathology lab for accurate diagnosis of symptoms. Accurate identification could prevent unnecessary and ineffective fungicide applications.

Farmers who find suspected DLM lesions should also contact their seed suppliers and University Extension specialists. Continuing research will be necessary to more definitively identify causes and potential remedies for DLM.

Sources:

For additional agronomic information, please contact your local seed representative.