



# Corn Genetic Disorders that Resemble Foliar Diseases

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## INTRODUCTION

Genetic disorders of corn, often referred to as genetic flecking and lesion mimic, are non-infectious (abiotic) disorders that result in symptoms similar to many other foliar fungal or viral diseases of corn. This publication describes the symptoms associated with this type of disorder, causes, and how to differentiate it from foliar diseases.



## SYMPTOMS

Genetic disorders have a broad range of associated symptoms in corn. Symptoms may appear as:

- Small water-soaked circular lesions that turn yellow to brown in color (FIGURE 1).
- Long narrow lesions that are tan and dried in appearance.
- Lesions with a mosaic pattern and dark concentric rings, similar to symptoms of viral diseases (FIGURE 2).
- White or yellow streaks, which result when cells in affected plants produce less chlorophyll (FIGURE 3).

Symptoms often only appear on a single plant within a field, or only a few plants scattered throughout a field, almost always next to healthy neighboring plants (FIGURE 4).



**FIGURE 1.** CORN LEAF WITH SMALL YELLOW/TAN CIRCULAR LESIONS ON THE ENTIRE LEAF SURFACE, TYPICAL OF A GENETIC DISORDER. NOTE THE LEAF FROM A HEALTHY PLANT IN THE BACKGROUND.

**FIGURE 2.** GENETIC DISORDERS CAN RESULT IN DARK BROWN CONCENTRIC LESIONS ON LEAVES.



**FIGURE 3.** A SINGLE CORN PLANT IN A FIELD WITH LIMITED CHLOROPHYLL PRODUCTION DUE TO A GENETIC DISORDER. THE AFFECTED PLANT APPEARS YELLOW NEXT TO HEALTHY, GREEN PLANTS.



**FIGURE 4.** EVERY LEAF OF THIS CORN PLANT SHOWS SYMPTOMS OF A GENETIC DISORDER, WHILE THE PLANT NEXT TO IT IN THE SAME ROW APPEARS HEALTHY.

### CAUSE & DEVELOPMENT

Genetic disorders are caused by different genetic mutations that have a broad range of associated symptoms. The mutations cause cell death in the plant and result in patterns that appear similar to other foliar corn diseases. Symptom development is influenced by environmental and host factors, such as light, temperature, and genetic background. Genetic disorders typically appear 3 to 4 weeks post-emergence. A small number of genetic disorders display symptoms at tasseling. Genetic disorders are influenced by hybrid genetics but have been reported in hybrids from many seed companies.

### DISEASES WITH SIMILAR SYMPTOMS

The variability of lesions caused by genetic disorders can resemble other foliar diseases. For example, small tan or yellow circular lesions may resemble *Curvularia* leaf spot or *Physoderma* brown spot. Yellow striping and concentric lesions mimic symptoms associated with viral diseases. However, foliar diseases associated with pathogens will normally affect more than one plant within an area of the field or the entire field may be affected. If only one plant is affected in a large area, it may be caused by a genetic disorder. Observing the pattern of symptoms within the field is a good method to determine if the symptoms are due to genetic disorder, a biotic disease, or herbicide injury.

### MANAGEMENT

Genetic disorders occur at low frequencies in field corn production and will not affect overall yield. Proper identification of disorders caused by genetic mutations is important in order to rule out foliar diseases that they may resemble. Submitting plant samples to a county Extension office will aid in obtaining an accurate diagnosis.

Corn plants with lesions due to genetic mutations will not benefit from applications of pesticides.

### ADDITIONAL INFORMATION

- *Curvularia* leaf spot (PPFS-AG-C-09)  
<https://plantpathology.ca.uky.edu/files/ppfs-ag-c-09.pdf>
- *Holcus* leaf spot of corn (PPFS-AG-C-06)  
<https://plantpathology.ca.uky.edu/files/ppfs-ag-c-06.pdf>
- *Physoderma* brown spot of corn (PPFS-AG-C-07)  
<https://plantpathology.ca.uky.edu/files/ppfs-ag-c-07.pdf>

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