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Dicamba, stress, and distorted soybean leaves

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Dicamba, stress, and distorted soybean leaves

Abstract

A fairly common occurrence in late June and July is the appearance of distorted leaves on soybean plants. The most common cause of this response is exposure to a growth regulator herbicide (2,4-D; dicamba; etc.). Dicamba is the most commonly used growth regulator herbicide in Iowa crop production, and is present in numerous products (Banvel®, Clarity®, Marksman®, Distinct®, Status®, and many others). Soybeans may be exposed to dicamba in three ways: spray particle drift, vapor drift (volatilization), and sprayer contamination. Injury from spray drift or sprayer contamination usually is fairly straightforward in diagnosing, but questions often arise regarding volatilization.

Keywords

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Dicamba, stress, and distorted soybean leaves

by Bob Hartzler, Department of Agronomy



Distorted leaves on soybean are commonly caused by exposure to dicamba. (Bob Hartzler)

A fairly common occurrence in late June and July is the appearance of distorted leaves on soybean plants. The most common cause of this response is exposure to a growth regulator herbicide (2,4-D; dicamba; etc.). Dicamba is the most commonly used growth regulator herbicide in Iowa crop production, and is present in numerous products (Banvel®, Clarity®, Marksman®, Distinct®, Status®, and many others).

Soybeans may be exposed to dicamba in three ways: spray particle drift, vapor drift (volatilization), and sprayer contamination. Injury from spray drift or sprayer contamination usually is fairly straightforward in diagnosing, but questions often arise regarding volatilization.

Volatilization occurs when dicamba is sprayed, lands on the target site, but later evaporates and moves from the treated field. The potential for volatilization is affected by many factors. As temperatures exceed 85 °F, the threat of volatilization increases. Dicamba is more likely to evaporate off corn leaves than soil, so the risk increases with late applications of dicamba to

corn since more product will be intercepted by corn leaves. Risk of volatilization varies among dicamba formulations, with the dimethylamine salt (Banvel) greater than the diglycolamine salt (Clarity) or sodium salt (Distinct, Status). Studies have shown that the majority of volatilization occurs within 2-3 days of application.

Determining the potential for yield impact from growth regulator herbicides shortly after exposure is difficult, but if only two or three leaves show slight distortion, it is likely yields will not be affected. Studies found that if soybean height at the end of the season was not affected, then yields usually were not affected by dicamba exposure.

It generally is accepted that occasionally soybeans will develop symptoms similar to that of growth regulator herbicides in the absence of the herbicide. These symptoms typically occur during stress or periods of rapid fluctuating weather. Under these conditions, the symptoms typically appear uniformly across a field, rather than displaying a spray or drift pattern. With this type of response, the cupping is relatively minor and limited to one or two leaves.



*A spray plane applies pesticides to a corn field in north-central Iowa during early July.
(Marlin E. Rice)*

Bob Hartzler is a professor of agronomy with research and extension responsibilities in weed management.

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