SWEET CORN TOLERANCE TO LAUDIS AND IMPACT

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Callisto, Impact, and Laudis are all similar herbicides (HPPD-inhibiting herbicides [Group 27]) and all are labeled for use in sweet corn. Previously, sweet corn hybrids have had limited evaluation to determine tolerance to Impact and Laudis. In 2007, two multi-state field studies were conducted to evaluate hybrid tolerance to Impact and Laudis applied postemergence.

IMPACT TOLERANCE EVALUATION

The first study evaluated hybrid tolerance to several herbicides, including Impact, with a strip-plot arrangement and a single replication at sites in Oregon, Minnesota, Wisconsin, Illinois, New York, and Delaware, in 2007. Eighty-seven hybrids were planted in 20 ft long single-row plots and hybrid order was randomized among sites. Seed companies entered hybrids to be evaluated for each herbicide treatment. Impact was tested at twice the labeled rate to differentiate among tolerant and sensitive hybrids. The Impact treatment was:

> Impact at 1.5 fl oz/a + 1% v/v crop oil concentrate (COC) + 8.5 lbs ammonium sulfate (AMS) / 100 gal water.

Herbicides were applied at the V3 growth stage. Crop injury ratings were taken at 7 and 14 days after treatment (DAT). For all evaluations, a 0 to 100% scale was used to evaluate injury with 0% representing no injury and 100% representing total plant chlorosis.

LAUDIS TOLERANCE EVALUATION

This study was designed as a preliminary study to determine the potential need for future hybrid tolerance testing of Laudis. This 2007 study had a strip-plot arrangement with a single replication at sites in Minnesota, Wisconsin, New York, and Delaware. Twenty-eight hybrids (Table 1) were planted in 20 ft long single-row plots and hybrid order was randomized among sites. These hybrids were selected because they range in tolerance to Callisto. Laudis was applied at twice the labeled labeled rate to differentiate among tolerant and sensitive hybrids and was compared against a nontreated control. The Laudis treatment was:

> Laudis at 6 fl oz/a + 1% v/v COC + 8.5 lbs AMS / 100 gal water

Crop injury ratings were taken at 7 and 14 DAT. For all evaluations, a 0 to 100% scale was used to evaluate injury with 0% representing no injury and 100% representing total plant chlorosis. Green husk yields were taken at crop maturity.

RESULTS

Impact tolerance evaluation. In this study, 58 of the 87 Impact-treated hybrids had 1% or less chlorosis at 7 DAT (data not shown). No hybrid exceeded 5% chlorosis when treated with the twice labeled rate of Impact. Of the 42 hybrids, which were tested for tolerance to both Impact and Callisto in this same trial, 60% of the hybrids had intermediate, sensitive, or highly sensitive responses to Callisto whereas none of the hybrids responded to Impact (Figure 1).

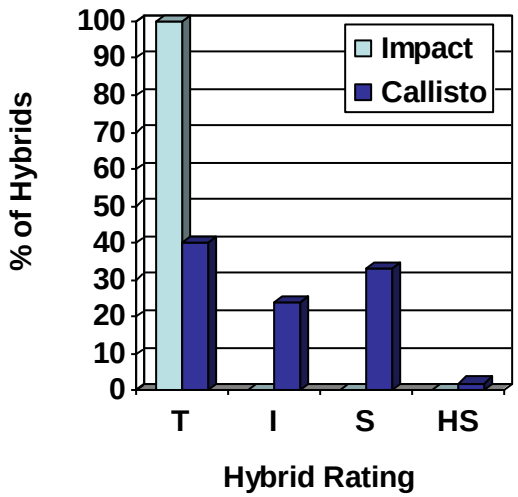

Figure 1. Classification of 42 sweet corn hybrids following treatment with a 2x rate of Impact or Callisto. Hybrid ratings are T = tolerant, I = intermediate, S = sensitive, and HS = highly sensitive.

Laudis tolerance evaluation. In this study, Merit was the only hybrid of the 28 hybrids that had significant injury from Laudis and was killed. Merit was the only hybrid to have a yield reduction compared to the nontreated control when treated with Laudis (data not shown). J. Pataky, University of Illinois also screened 249 hybrids for Laudis tolerance and found excellent tolerance except for 7 hybrids that were highly sensitive.

Table 1. Sweet corn hybrids used to evaluate crop response to 2x rate of Laudis.

Argent	Basin R	Cahill	Celestial
CSUWP1-7	Delectable	DMC 21-84	Dynamo
Early Gold	GH 2042	GH2547	GH4927
GH 9597	GSS 1477	GSS 2008	GSS 2914
Hollywood	How Sweet It Is	Legacy	Merit
Mystique	Overland	Passion	Rocker
SS Jubilee Plus	Suregold	Temptation	Trinity

CONCLUSIONS

Impact. Sweet corn hybrids exhibited excellent tolerance to Impact. Many sweet corn hybrids had greater tolerance to Impact than Callisto. Rotational intervals restrict planting soybean at the 0.75 fl oz/a rate and snap beans the year after applications of Impact, which may limit the use of Impact in some crop rotations.

Laudis. Sweet corn hybrid tolerance was excellent to a twice labeled rate for all hybrids tested except for the known highly sensitive hybrid Merit. A few highly sensitive hybrids (Merit, DM 20-38, HMX 6386 S, and Shogun) should not be treated with Laudis. Rotational restrictions on the Laudis label will allow peas, potatoes, and snap beans to be planted 10 months after application. This will allow greater rotational flexibility to major processing crops than Callisto or Impact.