

Crop Production

New weed threat confirmed

BY DON McCABE

THE list of herbicide-resistant weeds in Nebraska just got longer. University of Nebraska-Lincoln weed scientists this fall confirmed, in greenhouse studies, that a population of Palmer amaranth in Fillmore County is resistant to atrazine and HPPD-inhibiting herbicides. The latter chemistry includes Callisto, Laudis and Armezon/Impact herbicides.

This latest herbicide-resistance finding in Nebraska follows an earlier one in

Kansas of Palmer amaranth resistance to the same herbicides.

Amit Jhala, UNL weed scientist, says Palmer amaranth seed was taken from a seed corn production field near Shickley and grown in the greenhouse. "In 2014, we will conduct field experiments at the field site," he says.

"Palmer amaranth can be a significant concern in both corn and soybean fields in Nebraska because of its rapid growth, ability for prolific seed production and ability to evolve herbicide resistance,"

Jhala says.

One female plant can produce a million seeds or more, he explains, and pollen from male plants can spread easily by wind and reach female plants in neighboring fields.

The weed is a member of the pigweed family and is spreading from Southern states to a number of north-central U.S. states. In Nebraska, this difficult-to-control broadleaf weed is most prevalent in fields in south-central and southwestern areas, according to Jhala. "For now, it is not widespread across the state."

However, Jhala and UNL colleagues say that Palmer amaranth populations resistant to atrazine and HPPD inhibitors in south-central Nebraska are of particular concern due to their proximity to intense seed corn production. "Seed corn production relies heavily on postemergence atrazine and HPPD herbicides for weed control," he says.

The Fillmore County field had been in non-traited white corn seed production for at least five years and atrazine and HPPD inhibitors were applied through those years.

In the UNL greenhouse studies on 4- to 5-inch weeds, application rates of HPPD herbicides that resulted in 90% control of the population ranged from four to 23 times the recommended rates, depending on the HPPD herbicide used, according to Jhala. "This Palmer amaranth population also has at least a fourteenfold level



PROLIFIC SEED BEARER: This female Palmer amaranth plant carries at least a million seeds.



ANOTHER RESISTANCE PROBLEM: UNL greenhouse studies show Palmer amaranth brings a new weed control concern in Nebraska.

of resistance to postemergence atrazine," he adds.

Weed control in seed corn production will become more difficult with the evolution of atrazine and HPPD-resistant Palmer amaranth biotypes, Jhala says.

He recommends integrated weed control strategies that include crop rotation, tillage and a systems approach using residual herbicides followed by postemergence products with different modes of action for control in seed cornfields.

The 2014 field experiments will examine the effectiveness of tankmixing atrazine and an HPPD herbicide as well as other alternative herbicides for control of resistant Palmer amaranth in seed corn production, Jhala adds.