

Glyphosate-resistant tumbleweed found in Montana

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A researcher for the Montana Agricultural Experiment Station's Southern Agricultural Research Center in Huntley has identified glyphosate-resistant kochia populations in fields north of Gildford and Hingham in Montana.

Prashant Jha, associate professor and weed scientist at the research center, suspects the tumbleweed is also growing in Rudyard, Inverness, and Joplin.

"Kochia is the most troublesome weed in wheat-fallow [cropping systems](#) because it spreads so quickly and has developed a resistance to glyphosate - commonly known as Roundup," Jha said.

This is the first report of glyphosate-resistant kochia in Montana.

"It is critical information for farmers across the state to know we have confirmed this resistant strain of kochia," said Jha, who has been studying herbicide-[resistant weeds](#) at the center for several years. According to Jha, the weeds developed a resistance to the herbicide where farmers relied solely on glyphosate for [weed control](#) under wheat-fallow cropping systems.

Growers in Montana have expressed concern about controlling kochia in the past, but this year has been devastating with crop infestation rates as high as 70 percent in some fields north of Gilford and Hingham, Jha said.

In chem-fallow fields, some growers were spraying 24 to 32 ounces of Roundup alone with at least three applications and those fields had the most severe infestation. On the other hand, those growers using Roundup (24 to 28 oz/a) two to three times in combination (tank-mix) with 4 to 6 oz/a of Banvel and/or 10 to 12 oz/a of LV6 (2,4-D) had lower infestation levels, but the weed was still evident. It appears Roundup by itself even at the

high rates has no control over the kochia. The other combinations are taking the weed down but do not appear to be killing the weed completely.

The infested fields were within a 50-mile radius of Canada. Jha is advising growers that this problem will grow if not quickly managed. There are alternative herbicide programs that can control kochia, he said.

Jha and his research team will collect seed samples from grower this fall to confirm the level of resistance in kochia populations. Jha's research falls into three areas: screening for herbicide resistant weed biotypes, investigating mechanisms for resistance, and exploring alternative strategies for fighting the resistance. At the Huntley center, researchers are concerned many herbicides previously used in Montana are no longer effective. Previous research confirmed wild oats, Persian dandelion, and Russian thistle are herbicide resistant.

Jha also advised growers to avoid using Roundup in their burndown program. The use of high rates may aggravate the problem even more as plants develop higher levels of resistance. Rotating herbicides and using tank-mixes with multiple modes of action should manage the problem. Jha suggested growers immediately use alternative burndown herbicides like paraquat (Gramoxone) to clean up their chem-fallow fields before the kochia plants produce seeds this year.

"Managing the resistant seedbank is critical to managing this problem," Jha said.

Some growers not under the Conservation Stewardship program were also told to use shovel-plows to get rid of the resistant kochia prior to planting winter wheat.

MSU research and Extension personnel will work closely with agriculture and industry professionals to resolve this problem, Jha said.

"We will conduct grower meetings fall and winter across the state to educate growers on herbicide-resistant kochia management," he said.

Glyphosate-resistant Kochia is also a major concern in sugar beet fields, because more than 99 percent of the growers rely solely on glyphosate for weed control. Jha recommended an integrated weed management (IWM) program to prevent the spread of herbicide-resistant weeds.

Jha advises growers to apply herbicides at the rate suggested by the manufacturer and to use a tank mixture which includes multiple herbicide products. Jha's research involves evaluating new herbicide chemistries, optimizing herbicide tank-mixes, and studying application timing and rate in diversified crops grown in Montana.

Jha suggested using soil-applied residual herbicides at, or prior to, planting can potentially reduce weed bank recruitment and reduce weed interference, especially early in the season.

Diversifying crop rotations are also a critical component to IWM, and scientists at the SARC recommend rotating pulse crops such as peas and lentils - especially where growers have traditionally relied on wheat fallow rotations. Jha also advises high seeding rates for crops as a long-term [weed](#) management strategy.

Provided by Montana State University

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