

FALLOW WEED CONTROL WITH SAFLUFENACIL. Brian M. Jenks, Gary P. Willoughby, and Jordan L. Hoefing, Weed Scientist and Research Specialists, North Dakota State University, Minot, ND 58701.

Saflufenacil is a new broadleaf herbicide recently registered for use in multiple crops for preplant or preemergence burndown applications, pre-harvest desiccation in sunflower, and general weed control in fallow. Summer fallow hectares in North Dakota have decreased from 688,000 hectares in 1997 to about 292,000 in 2008. The decrease in fallow hectares can be attributed to growers switching to no-till farming and the positive economic and agronomic benefits of alternative crops such as canola, dry pea, lentil, chickpea, and sunflower. Though fallow hectares have decreased, there are still enough to warrant further research to develop more cost-effective weed control alternatives.

Saflufenacil controls emerged annual broadleaf weeds and provides some residual weed control depending on rate. Studies were conducted from 2006-2009 at Minot, ND to evaluate saflufenacil, tank mix partners, and adjuvants for weed control in summer fallow.

In 2007, treatments included saflufenacil (18 g/ha) alone; glyphosate (840 g) alone; saflufenacil (25, 38, and 50 g) tank mixed with glyphosate; and glyphosate (616 g) plus dicamba (154 g). These treatments were applied at 94 L/ha on June 5. Weeds consisted of kochia (2.5-20 cm, 0.5-2.3/m²), lambsquarters (2.5-15 cm, 0.1-0.5/m²), wild buckwheat (2.5-15 cm, 0.1-0.9/m²), and redroot pigweed (2.5 cm, 0.1-0.4/m²). All treatments provided $\geq 87\%$ control of all weeds 4 WAT except for glyphosate applied alone, which provided only 72% control of wild buckwheat.

In 2008, treatments included saflufenacil (18 g/ha) alone; glyphosate (840 g) alone; saflufenacil (18, 25 and 50 g) tank mixed with glyphosate or dicamba (140 g); 2,4-D (560 g) plus glyphosate; and carfentrazone (9 g) plus glyphosate. These treatments were applied at 94 L/ha on June 16. To evaluate spray volume, one additional treatment of saflufenacil (25 g) plus glyphosate was applied at 47 L/ha. Weeds consisted of kochia (2.5-23 cm, 0.5-4.6/m²), lambsquarters (2.5-18 cm, 0.2-1.4/m²), wild buckwheat (5-8 cm, 0.1-0.3/m²), and redroot pigweed (2.5 cm, 0-0.9/m²). At 4 WAT, all treatments provided good to excellent control of all weeds except for saflufenacil alone at 18 g/ha. Saflufenacil alone provided approximately 45% control of wild buckwheat, kochia, lambsquarters, and redroot pigweed at 4 WAT. Between 4 and 6 WAT, new flushes of kochia, lambsquarters, and pigweed emerged. Saflufenacil at 50 g/ha provided more residual benefit compared to other treatments with $\geq 85\%$ control of all weeds 6 WAT, while other treatments provided only 45-86% control of all weeds. Saflufenacil plus glyphosate at 47 L/ha generally provided 5-15% less weed control compared to 94 L/ha.

In 2009, treatments included saflufenacil (18 g/ha) alone; glyphosate (840 g) alone; saflufenacil (18 and 25 g) tank mixed with glyphosate or dicamba (140 g); 2,4-D (560 g) plus glyphosate; and carfentrazone (9 g) plus glyphosate. These treatments were applied at 94 L/ha on June 15. To evaluate spray volume, one additional treatment of saflufenacil (25 g) plus glyphosate was applied at 47 L/ha. Weeds consisted of kochia (5-30 cm, 0-0.9/m²), lambsquarters (13-23 cm, 0-0.2/m²), wild buckwheat (5-8 cm, 0.1-0.3/m²), Russian thistle (8-13 cm, 0-0.4/m²), and horseweed (13-18 cm, 0-0.2/m²). At 4 WAT, all treatments provided $\geq 89\%$ control of all weeds except for saflufenacil alone at 18 g/ha. Saflufenacil alone provided 50, 82, 86, 90, and 97% control of wild buckwheat, kochia, lambsquarters, Russian thistle, and horseweed, respectively. In contrast to 2008, saflufenacil plus glyphosate at 47 L/ha generally provided similar control to 94 L/ha.

In summary, saflufenacil at ≥ 25 g/ha alone or tank mixed with glyphosate provided acceptable weed control with some residual benefit at 50 g/ha. Saflufenacil alone at 18 g/ha did not provide consistent and acceptable weed control.