Technical Bulletin

TOUGH® 5EC Herbicide

A POST Weed Control Solution for Lentils

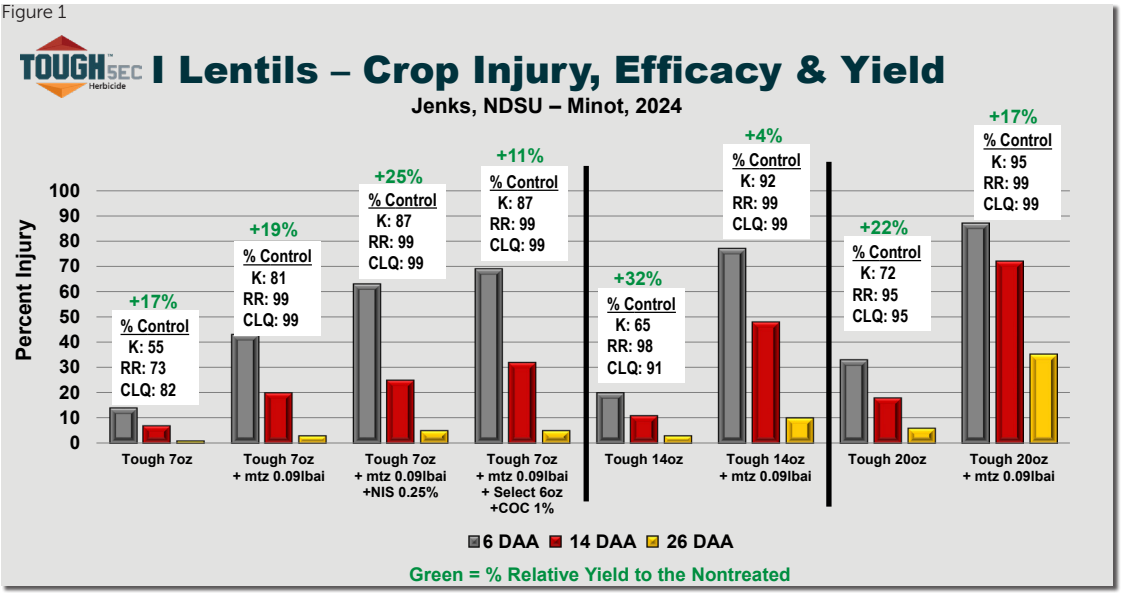
Implementing an effective integrated weed management program in lentils is crucial as this crop is typically vulnerable to weed impact on yields due to its slow establishment and limited vegetative growth. Lentil's poor competitive position intensifies when temperatures during the growing season are low or when moisture is insufficient.

Difficult to manage weeds such as Russian thistle, kochia, common lambsquarters, Redroot pigweed and Mayweed chamomile, are prevalent in regions where lentils are grown in Idaho, Washington, Montana and North Dakota. With minimal POST options labeled for control of weeds in lentils, Belchim USA added lentils to the TOUGH® 5EC herbicide (Pryidate) label.

Untreated (POST) Lentil field in the Palouse region of Washington state infested with Mayweed and Common Lambsquarters.

In 2024, Belchim USA set out to corroborate performance results seen in Canadian trials and in the field. As a result, research trials were conducted by Dr. Brian Jenks of North Dakota State University (Minot, ND) and Davis Diversified* (Amsterdam, MT). Weed control (kochia) and crop tolerance was the focus of Ed Davis' research, while weed control (kochia, Redroot pigweed and Common lambsquarters) crop tolerance and yield was evaluated by Dr. Jenks (see Figure 1). Both applied TOUGH 5EC (Group 6) alone, and in a tank mix with metribuzin (Group 5). While both herbicides are PSII Inhibitors, they bind to the D1 protein at different sites and cross-resistance between G5 & G6 is very rare. Putting the two together reduces a chance of selection for resistance.

Figure 1



Variety: Imvincible
Plant 05/15 & sprayed 06/14 to avg. 2.5 inch crop
Temps 0-7 days of spray: 79–54°F daily highs
Soil dry at application.
Rainfall: 0.2", 1.2", 0.9", 0.23"; 1, 3, 10 & 13DAA respectively
Kochia (K): 1.5" ($5ft^2$), Red Root Pigweed (RR): 1"($1ft^2$), Common Lambsquarters (CLQ): 0.5" ($1ft^2$)
(24-303)

* Edward S. Davis (MS), formerly Agricultural Specialist Cropland Weed Research at Montana State University

See Reverse

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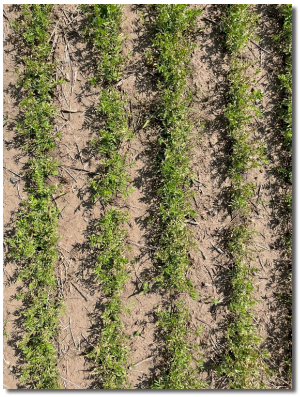
5 Days After Application

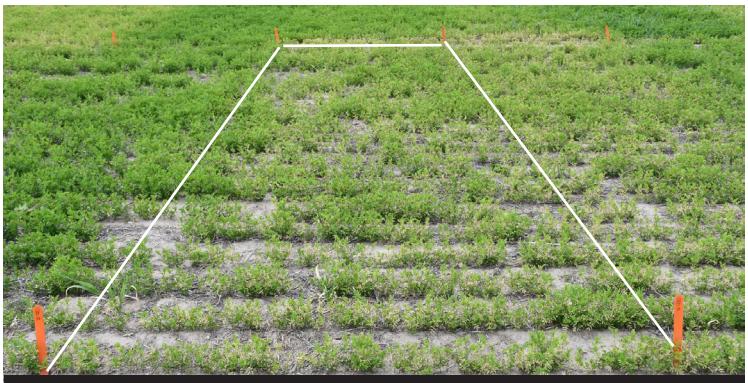


16 Days After Application

31 Days After Application

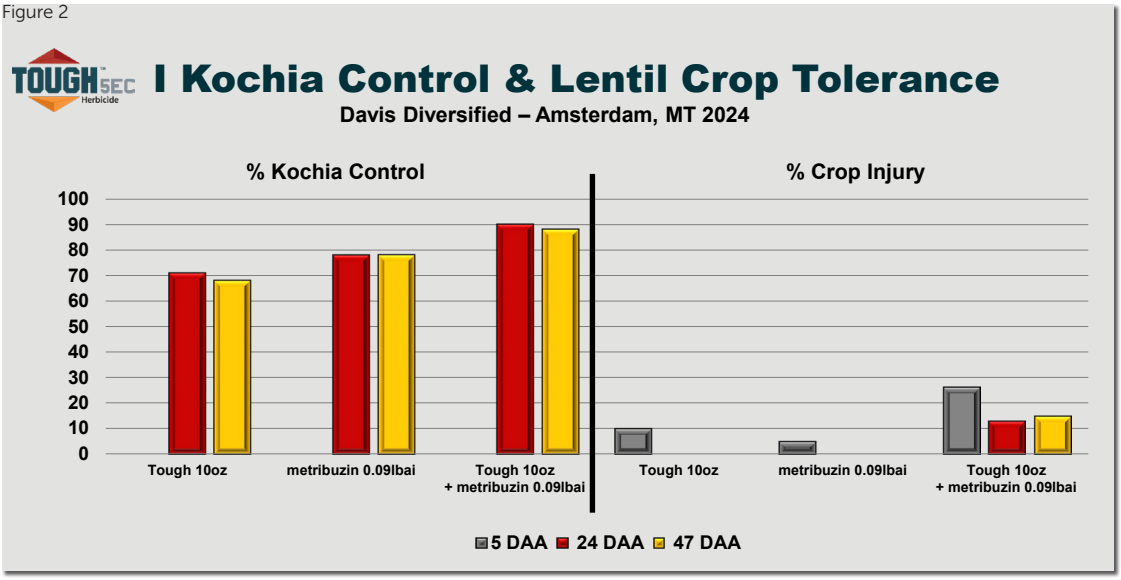
Photos show plots at North Dakota State University where TOUGH 5EC (7 oz/acre) + Metribuzin (0.09 lbai/acre) + NIS was applied. While lentils showed some injurous response, they recovered and weed control and yield showed a clear benefit of POST application.

Figure 2 shows the results of the trial conducted with Davis Diversified in Montana. The data clearly shows the combination of TOUGH 5EC and Metrubuzin resulted in increased control of kochia. While phytoxicity and a reduction in crop canopy occurred, lentils recovered and yield was not compromised.



Amsterdam, Montana
5 days after application of Tough 10oz + Metribuzin 0.09lbai

Figure 2



Variety: Richlea
Plant 05/17 & sprayed 06/21 to avg. 3" crop
Temp: 78°F
Soil good moisture at application. Silt: Sand 25%, Silt 55%, Clay 20%, OM 2.5%, pH 7.9
Rainfall: 0.015" & 0.30" 6 & 8DAA respectively.
Kochia: 0.25-3.0" (24-304)

The data from North Dakota and Montana clearly show the benefit of including TOUGH 5EC in the POST tankmix for increased control of difficult to control weeds in lentils. While lentils exhibited a phytoxic response, they recovered and overall yield was improved!

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