



A Great Tool for “Tough” to Control Weeds in Lentils

- A **SELECTIVE HERBICIDE** For Post-Emergence Control Or Suppression Of Annual Broadleaf Weeds
- **GROUP 6 – PROVEN AND EFFECTIVE** Mode of Action
- Contact herbicide -> **NO ROTATIONAL** Issues
- **PROPRIETARY** Active Ingredient: Pyridate
- Formulated as a 5 lb ai/gal **EMULSIFIED CONCENTRATE**
- **RAINFAST** Within 1 Hour
- **NO RESIDUAL** Restrictions

In response to the growing issue of weed management, Belchim Crop Protection USA brings TOUGH® 5EC to lentil growers in the United States. The active ingredient in TOUGH® 5EC is pyridate a Group 6 herbicide. Prior to EPA registration in the United States, Belchim Canada began trials with TOUGH 5EC, for post emergent broadleaf weed control. As lentils can show sensitivity to some herbicide applications (especially at higher rates) trials were conducted using lower rates of TOUGH 5EC in combination with lower rates of other herbicides labeled for broadleaf weed control in lentils.

THIS WINNING COMBINATION PROVIDES LENTIL GROWERS:

- *Multiple Modes Of Action To Increase Weed Control Over A Broader Spectrum Of Weeds*
- *A More Economical Way To Achieve Clean Fields*
- *Reduced Crop Response*

TOUGH® 5EC PHOTOSYNTHESIS II INHIBITOR

Pyridate works by blocking a weed’s photosystem II process, triggering the release of toxic forms of oxygen and causing rapid cell wall degradation.

- Pyridate is applied after emergence of the weed.
- Pyridate is quickly absorbed by the leaves (rain-fast within 60 minutes).
- Pyridate blocks photosystem II of the weed by irreversibly binding to the D1 protein and inhibiting the transport of electrons. High energy electrons then interact with oxygen, producing toxic forms of oxygen.
- The toxic forms of oxygen interact and degrade the cell’s membranes resulting in necrosis (browning) and ultimate death to the weed.

PROVEN PERFORMANCE

In addition to evaluating weed control in Belchim Canada trials, crop response (chlorosis) was also observed, and included in determining the recommended lentil application rates (see other side). The safest and most significant increase in weed control of several broadleaf weeds in lentils was shown when using a low rate of TOUGH 5EC (7 oz/acre) in combination with a low rate (0.12 lbs/acre) of Metribuzin 75 DF.

(See reverse)

WEEDS CONTROLLED



Common
Lambsquarters



Kochia



Pigweeds



Mayweed
chamomile



Black
Nightshade



Common
Waterhemp

In trials cited below, TOUGH 5EC was applied at 7 oz/ac and Metribuzin 75 DF was applied at 0.120 lb/ac formulated or 2 dry oz/ac. Note: Canadian application rates were converted to US rates within 4% of tested amounts. All weed control treatments were evaluated against an untreated control which had 0% efficacy.

Crop response (CR) was highest at both locations 15 days after application (DAA) in these trials (right).

CR Conventional Lentils (green bar) at 15 DAA:

Metribuzin = 1.5%

TOUGH 5EC 7 oz/a = 8.8 %

TOUGH 5EC 14 oz/a = 18.8 %

TOUGH 5EC 7 oz + Met 2 oz/a = 12.5 %

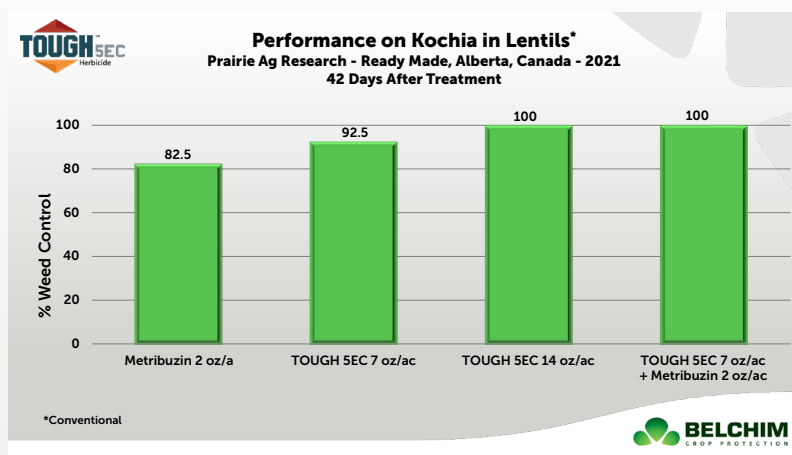
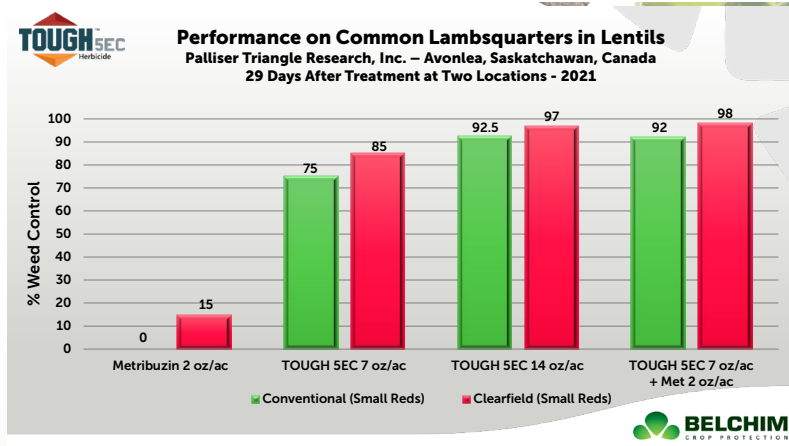
CR Clearfield Lentils (red bar) at 15 DAA:

Metribuzin = 0%

TOUGH 5EC 7 oz/a = 4.5 %

TOUGH 5EC 14 oz/a = 16.3 %

TOUGH 5EC 7 oz + Met 2 oz/a = 13.8 %



Crop response (chlorosis) 7 days after application (DAA):

Metribuzin = 5 %

TOUGH 5EC 7 oz/ac = 15 %

TOUGH 5EC 14 oz/ac = 27.5 %

TOUGH 5EC 7 oz + Met 2 oz/ac = 22.5 %

Results of these, and similar trial treatments, were used in determining the recommended rates below for the safest and most effective way to get TOUGH on weeds in lentil crops!

Optimal weed control is obtained when TOUGH 5EC is used in a weed control program following a broad spectrum preemergence herbicide. Recommendations below are based on observations and results of Canada's trials.

RECOMMENDED LENTIL APPLICATION

Apply TOUGH 5 EC at 7 oz/acre in conjunction with 0.12 lbs/acre of Metribuzin* 75 DF/WDG.

Note: If using a 4SC formulation this equates to 3 oz/acre. Apply in sufficient water (20 - 30 gal per acre recommended), at a pressure of 30 - 40 psi to ensure proper coverage. Thorough coverage of target weeds is required for optimum results. Adjuvants (nonionic surfactants, crop oil concentrate or liquid fertilizers) may be used with TOUGH 5EC.

RECOMMENDED TIMING

For best results, apply TOUGH 5EC when lentils are at the 3-5 node stage and to actively growing small

weeds (before the 4 leaf stage), 3-5 inches in size. Weeds which emerge after application will not be controlled by TOUGH 5EC. Delay application after rainfall, irrigation or cool cloudy weather. (See product labels for complete use instructions).

OTHER TANK MIX PARTNERS

TOUGH 5EC may be tank mixed with other registered herbicides** for control of additional broadleaf weeds and/or grasses. Refer to individual product labels for precautionary statements, restrictions, rates, approved uses and a list of weeds controlled. Always verify acceptable crop tolerance before wide-spread use of unproven tank mix combinations.

*Refer to specific Metribuzin DF or 4SC labels for precautionary statements, restrictions, rates, approved uses and a list of weeds controlled.

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Read entire product TOUGH® 5EC label and Supplemental Lentil label prior to use and to see complete list of weeds controlled.