

Technical Bulletin



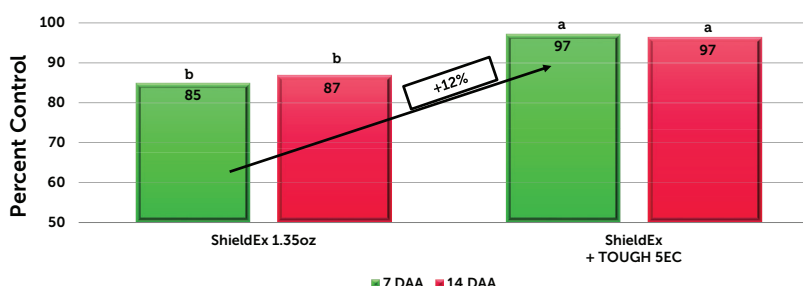
Synergizes HPPDs - Including Tolpyralate

OBJECTIVE

After observing the synergistic effect that TOUGH® 5EC had with mesotrione (Callisto) in 2018 and 2019 research trials, Belchim USA initiated trials with other HPPD chemistries in 2020. Tolpyralate (SHIELDEX®) was incorporated into several of these trials.

One trial was conducted at Purdue University, where Glyphosate Resistant Palmer Amaranth was treated with 1.35 oz of SHIELDEX on one plot and a second plot was treated with a combination of 8 oz of TOUGH 5EC and SHIELDEX.

Glyphosate Resistant Palmer Amaranth
Purdue University – 2020



Dual II Magnum PRE; Roundup PowerMax to all treatments
Bare ground trial with no corn planted
3-12" weed size, 3/ft²

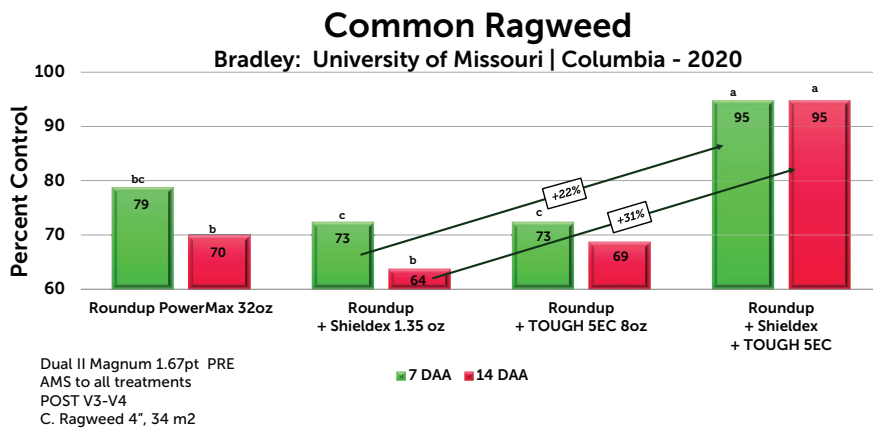
The chart above and the photos below confirm the combination of 8 ounces of TOUGH 5EC and 1.35 ounces of SHIELDEX, increased the speed of kill (from 85 to 97% 7DAA) and improved control (from 87 % to 97% 14 DAA) over Glyphosate Resistant Palmer Amaranth.



S-metolachlor PRE; Roundup PowerMAX® 32 oz to all treatments.
Bare ground trial with no corn planted. 3-12" weed size, 3/ft²

See Reverse

Fig 1



Additional trials were conducted on Common Ragweed at the University of Missouri (Fig 1), Palmer Amaranth and Pitted Morningglory (Fig 2 & 3) at the University of Tennessee.

In all trials, corn plots were treated with 1.35 oz of *SHIELDDEX* alone or a combination of 8 oz of TOUGH 5EC and *SHIELDDEX*. Results confirm the combination of 8 ounces of TOUGH 5EC and 1.35 ounces of *SHIELDDEX*, increased the speed of kill and improved control of a variety of weeds.

Fig 2

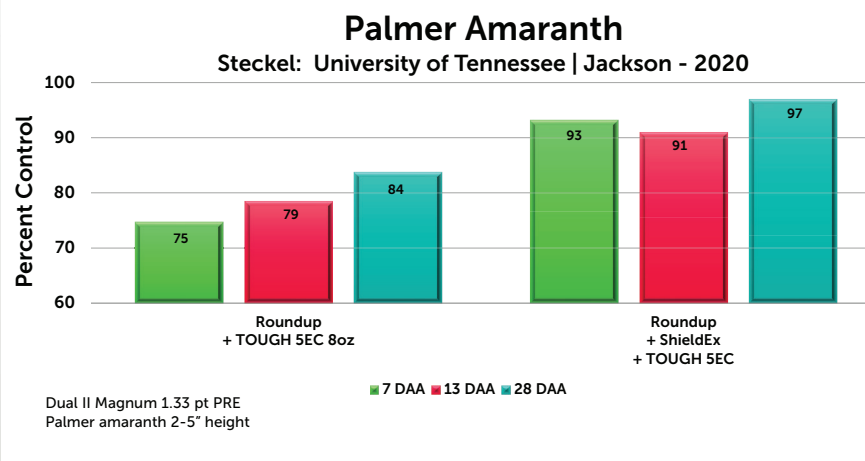
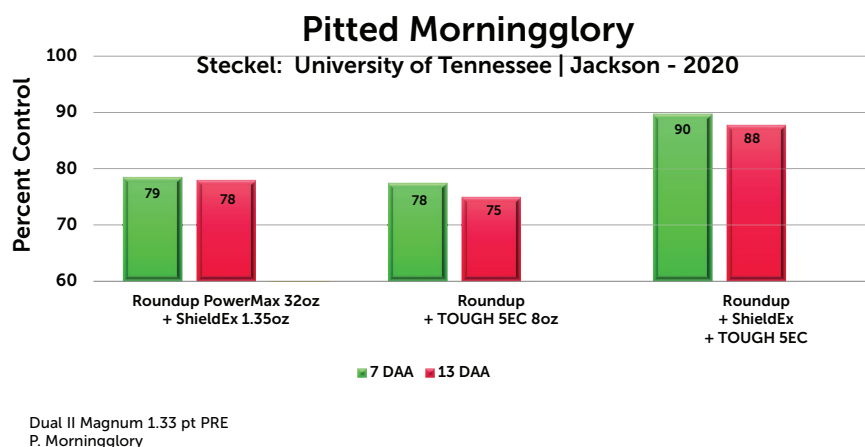


Fig 3



RESULT SUMMARY

Adding TOUGH® 5EC to the tank mix at the 8 ounce rate dramatically improved control of a variety of weeds at multiple locations when compared to *SHIELDDEX* used alone.

With improved control today, growers are reducing the amount of seeds "deposited" into the seed bank for the future!

For additional trial results, contact your local TOUGH 5EC retailer or Belchim representative.

Together, we can get TOUGH on Weeds!