

"We had been seeing 80% control at best, using alternate products, but incorporating TOUGH® 5EC brings that up to 95 - 100%. It's a truly valuable solution to a 'tough' problem."

Scott Setniker -
Setniker Farms,
Independence, OR

"You must have clean fields to maximize yield in mint – incorporating TOUGH® 5EC gets you as close as possible to 100% control when applied according to the label."

Randy Matthys -
Shady Lane Farms,
South Bend, IN

Problem weeds such as pigweed, and lambsquarters have been plaguing mint growers for years. These weeds can cause a multitude of problems in mint production, competing with mint for nutrients, water, and sunlight. Additionally, weed competition can reduce yield and impact value of the mint oil, and in even in extreme cases can cause the oil to be unmarketable.

Weeds such as pigweeds, contain compounds that can alter odor, color, and impact flavors of the mint. If not controlled these weeds get extracted along with the mint oil during the distillation process. As few as just three pigweed plants in ten square feet can impact the quality of the oil - deeming it unacceptable.

THE WEED SEEDBANK

These weeds (as well as others) can create additional problems due to the persistent seed bank and continual germination throughout the growing season. While it is essential to control the weeds of today, it is also extremely important to prevent weeds in the future.

Just one redroot pigweed can produce 100,000+ seeds, and these seeds can live for years in the soil. Say for example, a post emergence product provides 95% control; that would still allow 5% of plants to escape. Lets say just 50 plants per acre escape. Based on this scenario, the potential impact would be $50 \times 100,000 = 5$ million seeds per acre

Apply TOUGH 5EC to control weeds today, and prevent weeds of tomorrow!



***A Great Tool for
TOUGH to
Control Weeds***



INGREDIENTS:

Active Ingredient:

Pyridate: O-(6-chloro-3-phenyl-4-pyridazinyl)-

S-octyl-carbonothioate 55.8%

Other Ingredients: 44.2%

Total 100.0%

A Great Tool for "Tough" to Control Weeds

- **POST-EMERGENCE solution**
- **CONTACT herbicide**
- **FAST-ACTING (7-10 days)**
- **SAFE (will not cause injury to crops)**
- **NO Plant Back Restrictions**
- **EXCELLENT EFFICACY on difficult-to-control, actively growing broadleaf weeds**

Weeds Controlled



Kochia



Common Lambsquarters



Black Nightshade



Pigweeds



Palmer Amaranth

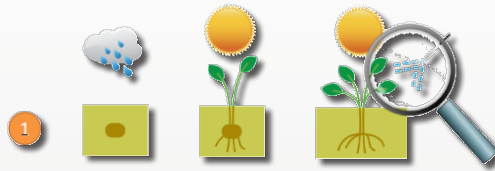


Common Waterhemp

Mechanism of Action

- Photosynthesis II Inhibitors
- Vary in binding site on the D1 protein in the chloroplast thylakoid membrane
- Group 5, 6 and 7 herbicides can be used in rotation and are not select for cross resistance
- Negative cross resistance is often observed between the groups

Mode of Action – Pyridate

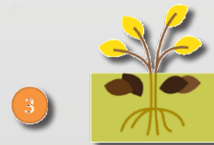


- Pyridate applied after emergence of the weed.
- The product is quickly absorbed by the leaves (rainfast within 60 minutes).



- 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



Frequently Asked Questions

What Rate of TOUGH® 5EC Should Be Used to Get the Best Weed Control?

Use the labeled 24 ounces per acre rate.

What Is the Best Time To Apply TOUGH® 5EC ?

For best results, apply to weeds when they small (< 4-leaf, < 3" height)

Should I Apply TOUGH® 5EC With An Adjuvant?

Yes, use a COC or MSO as surfactant 1% v/v

How Much Water Should I Use to Apply TOUGH® 5EC ?

Thorough coverage is most important, so use a minimum of 15 gallons/acre. However, 20 to 40 gallons is what is recommended on the label and is ideal for better results. Better coverage equals better performance!

Can I Mix TOUGH® 5EC With Another Herbicide?

We are aware of growers combination uses of products such as Basagran (or grass herbicides like Select) and TOUGH®5EC; some feel that there is additional benefit. To our knowledge, TOUGH®5EC does not antagonize the performance of grass herbicides.

What Is The Best Time of Day to Apply TOUGH® 5EC?

On extremely hot days it is better to spray in the morning. Some growers have sprayed on days that were near 100 degrees with little to no burn on the mint, and injured the pig weed quickly.

Can I Reduce the Rate of TOUGH® 5EC ?

No. We have seen optimal performance at the 24 ounce labeled rate, with 20-40 gallons of water, when weeds are small.

What is the rainfastness of TOUGH® 5EC?

Within 60 minutes

