

HatchTrakSM

2-20-17 Planning Effective Burndown Programs for 2017

Mild winter conditions favor materialized vegetation on fall burndown or tillage neglected areas. Even where fall burndown herbicide or tillage took place, warmer winter conditions may facilitate quicker herbicide degradation and perhaps unexpected weed escapes. Mild conditions promote shortened weed dormancy resulting in large weeds being present prior to spring treatment. Large winter annual weeds such as cressleaf groundsel often intercept herbicide patterns prior to reaching targeted driver weeds jeopardizing efficacy.

Dense spring weed populations provide attractive environments for migratory insects such as black cutworm moths to lay eggs. After larvae hatch soybean cutting or migration into corn is common. If dense weed populations are left alone until just prior to planting herbicide efficacy will be compromised. Additionally, late spring burndown herbicide treatments facilitate dense mattes of decaying weed vegetation creating cooler, moister soil environments conducive for diseases that damp off seedlings. Furthermore, adequate seedbeds facilitating optimal soil-to-seed contact can be diminished if planting occurs through dense vegetation. A weed-free seedbed is a critical component of establishing stress mitigation and yield trajectory for the season. Timely spring burndown treatments will be vital for optimizing weed management as well as promoting weed desiccation and soil drying / warm up prior to planting.

Challenges With Late -Spring Burndown Herbicide Treatments

Large marestail in late April of 2015. Plants should be <4" for consistent control with herbicide tank mixtures.



Cressleaf groundsel intercepting herbicide pattern and influencing efficacy on marestail.



Black cutworm larvae in soybean field with dense weed vegetation tilled just prior to planting.

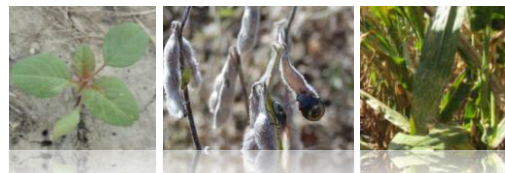


Poor soil-to-seed contact impeding emergence due to dense residue at planting



Key Points to Optimize Weed Management and Early-Season Yield Trajectory

1. Manage spring weeds early, as soon as field and environmental conditions are favorable.
2. Utilize effective burndown and residual treatments on driver weed species.
3. Only plant into a weed-free seedbed.
4. If possible, allow time between application and planting for vegetation to desiccate and soil to warm up.
5. If dense vegetation is still decaying just prior to planting utilize insecticide / fungicide seed or in-furrow treatment to mitigate insect and disease concerns.



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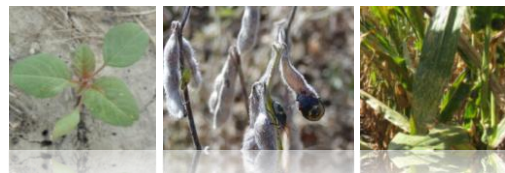
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Staying Ahead of Marestail

In most areas of the Midwest marestail exhibits two primary emergence periods. The first being late summer after seed drop and into the fall, and the second being spring emergence. Plants will stay in the rosette stage until stem elongation which typically occurs from mid April to early May depending upon how far south or north in IL/IN. Plants that emerged in the fall will bolt earlier than spring germinators. Applications occurring prior to or just after stem elongation will optimize herbicide efficacy. Marestail resistant to glyphosate, ALS-inhibitors and multiple resistance to both sites of action are becoming more frequent. Relying on glyphosate or combinations with FirstRate[®] herbicide or Classic[®] herbicide will likely not provide acceptable foliar activity in most field situations. Soil treatments of ALS-herbicides have been more efficacious on ALS-resistant marestail vs. foliar applications. However, diverse programs relying on additional sites of action in the soil including sulfentrazone - the active ingredient in Authority[®] brand herbicides - and metribuzin will be critical to manage glyphosate + ALS-resistant marestail. Other summer annuals such as waterhemp and Palmer amaranth have evolved resistance to multiple sites of action and in many cases are present when applying burndown herbicide treatments just prior to planting. Many burndown herbicide treatments rely on the PPO-inhibiting herbicide, saflufenacil (Sharpen[®] herbicide) for foliar activity on marestail. Often tank mixtures with glyphosate are employed. While this can be effective on marestail it will now be critical to scout fields to determine if glyphosate-resistant pigweed and foliar applications of PPO-inhibiting herbicides are present and adjust herbicide plans as necessary. Employing burndown plus residual treatments targeting marestail as early as possible will be critical to optimizing weed control and planting conditions.

Marestail Management Guidelines

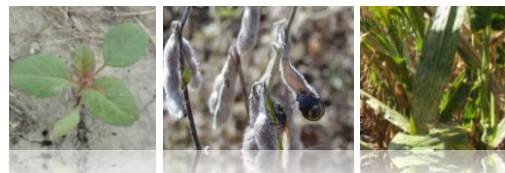
1. Use fall applications provide manageable weed heights / densities in the spring.
2. Early spring burndown (no fall application, extremely high marestail density, vertical tillage planned)
 - A. This should not substitute the at-plant burndown plus residual
 - ✓ Glyphosate 1 lb ae/a + 2,4-D 16 oz. OR dicamba 8 oz. + metribuzin 4-6 oz.
 - 2,4-D @ 16 oz. – 7 Day Plant Back, dicamba @ 8 oz. 14 days + 1" rainfall plant back.
 - B. At-Plant burndown + Residual
 - ✓ Paraquat 44-48 oz. OR Liberty 32-36 oz. + Authority[®] brand herbicides
 - Authority[®] MTZ DF herbicide 14-16 oz. (Refer to label for maximum metribuzin rate by soil parameters)
 - Authority[®] First DF herbicide 4-6 oz.
 - Authority[®] Maxx herbicide 5-6 oz.
 - Authority[®] XL herbicide 4-6 oz.
 - Anthem[®] herbicide 2.5-4 oz. + metribuzin 5 oz. (Refer to label for maximum metribuzin rate by soil parameters)
3. Preplant Application
 - A. 7-10 Days Prior to planting
 - ✓ Glyphosate 1 lb ae/a + 2,4-D 16 oz. + metribuzin 5-6 oz. + Authority brand herbicides
 - Authority MTZ DF herbicide 14-16 oz. (No additional metribuzin needed in burndown)
 - Authority First DF herbicide 4-6 oz.
 - Authority Maxx herbicide 5-6 oz.
 - Authority XL herbicide 4-6 oz.
 - Anthem herbicide 2.5-4 oz. + metribuzin 5-6 oz. (No additional metribuzin needed in burndown)
4. At Plant Application (Hopefully this only occurs if conditions prohibit bullet points 2 and 3)
 - A. Less than 7 days prior to planting – 3 days after planting
 - ✓ Liberty herbicide 32-36 oz. OR paraquat 48 oz. + metribuzin 6 oz. + Authority brand herbicides
 - Authority MTZ DF herbicide 14-16 oz. (no additional metribuzin needed in burndown)
 - Authority First DF herbicide 4-6 oz. (**Has been added to tank-mix approval list for Xtendimax[™] with Vapor Grip[™]**)
 - Authority Maxx herbicide 5-6 oz.
 - Authority XL herbicide 4-6 oz.
 - Anthem herbicide 2.5-4 oz. + metribuzin 5-6 oz. (no additional metribuzin needed in burndown)
5. Substitute tillage if weeds are too tall to manage with herbicides
6. Soybean Trait Systems
 - A. LibertyLink[®] or Roundup Ready 2Xtend[®] Soybean Varieties
 - ✓ Offer postemergence options with activity on marestail

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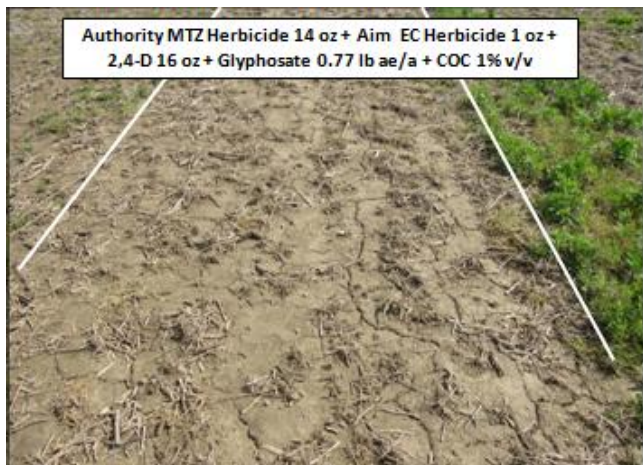
Marestail Competition

Treatment	Soybean Yields bu/a
Failed Burndown	51
Effective Burndown, No Residual	57+ 6 bu/A
Effective Burndown + Residual	65+ 14 bu/A

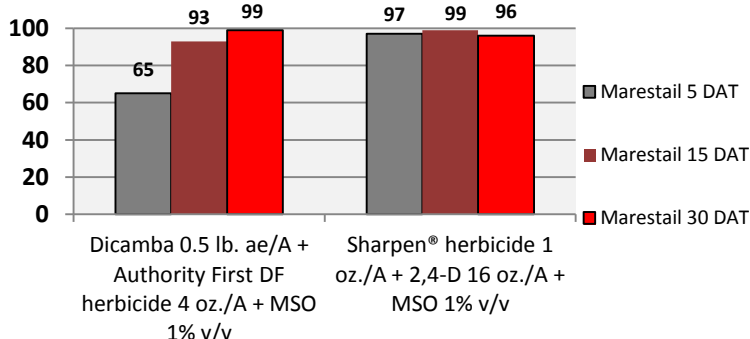
Data Courtesy of the Ohio State University



Treatment	2015 FMC Trial – Crawfordsville, IN Treatments applied to 4 - 8" Marestail	Marestail % Control 20 DAT
Authority [®] XL herbicide 4 oz. + Aim [®] EC herbicide 1 oz. + Gramoxone [®] herbicide 48 oz. + COC 1% v/v		88
Authority XL herbicide 4 oz. + Aim EC herbicide 1 oz. + Gramoxone herbicide 48 oz. + Metribuzin 4 oz. + COC 1% v/v		95
Authority [®] MTZ DF herbicide 14 oz. + Aim EC herbicide 1 oz. + Liberty [®] 280 herbicide 29 oz. + COC 1% v/v		97
Authority MTZ DF herbicide 14 oz. + Aim EC herbicide 1 oz. + 2,4-D 1 pt. + Roundup Weathermax [®] herbicide 22 oz. + COC 1% v/v		99



Tank-Mix Approval for Authority[®] First DF herbicide + Xtendimax[™] herbicide with Vapor Grip[™] Technology
Marestail Burndown Trial, SIU Desoto, IL - 2015



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Always read and follow label directions. NOTE REGARDING RESTRICTED USE PESTICIDES: Anthem ATZ herbicide; Athena insecticide, Brigade 2EC Insecticide/Miticide, Brigade WSB Insecticide/Miticide, Brigadier Insecticide Capture 3RIVE 3D insecticide, Capture LFR Insecticide, Declare insecticide, Hero Insecticide, Mustang Insecticide, Mustang Maxx Insecticide, Pounce 25WP Insecticide, Stallion Brand Insecticide, Temityr LFR Insecticide/Fungicide, Triple Crown Insecticide, Ethos XB Insecticide/Fungicide and Gladiator Insecticide/Miticide are **Restricted Use Pesticides**. NOTE FOR CALIFORNIA: Accurate Extra herbicide, Aim herbicide, Aim EC herbicide, Aim EW herbicide, Anthem herbicide, Anthem ATZ herbicide, Anthem Flex herbicide, Anthem MAXX herbicide, Authority Assist herbicide, Authority Elite herbicide, Authority First DF herbicide, Authority MAXX herbicide, Authority MTZ DF herbicide, Authority XL herbicide, Cadet herbicide, Chisum Herbicide, Command 3ME microencapsulated herbicide, Crusher Herbicide, Edition Broadspec herbicide, Edition Tankmix Herbicide, Marvel herbicide, Nimble Herbicide, Nuance Herbicide, Preemptor SC fungicide, Report Extra Herbicide, Solstice herbicide, Spartan 4F herbicide, Spartan Charge herbicide, Spartan Elite herbicide, Temityr LFR Insecticide/Fungicide, Topguard EQ fungicide, Zeus Prime XC herbicide, Zeus XC herbicide, Capture 3RIVE 3D insecticide, Ethos XB Insecticide/Fungicide, Hero Insecticide, Mustang Maxx Insecticide, Display cotton harvest aid, Zoro Miticide and VGR Soil Amendment **are not registered for sale or use in California**. VGR Soil Amendment is not a pesticide. Beleaf and Carbine are trademarks of Ishihara Sangyo Kaisha, Ltd. Cercobin is a trademark of Nippon Soda Co., LTD. Sovran is a registered trademark of BASF. FMC, 3RIVE 3D, Accurate, Aim, Anthem, Athena, Authority, Brigade, Brigadier, Cadet, Capture, Chisum, Command, Crusher, Declare, Display, Edition, Ethos, Preemptor, Fracture, Fyfanon, Gladiator, Hero, Koverall, LFR, Marvel, Mustang, Nimble, Obey, Pounce, Report, Rhyme, Rovral, Shark, Solida, Solstice, Spartan, Stallion, Temityr, Topguard, Topguard Terra, VGR and Zeus are trademarks and HatchTrak and Investing in farming's future are service marks of FMC Corporation or an affiliate. ©2016 FMC Corporation. All rights reserved. 11/16

Gramoxone and Paraquat and Restricted Use Pesticide.

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