

Chemical Fallow: Making the Most of A Dry Situation

Consider the earthworm: most growers appreciate its ability to aerate soils and prevent compaction. For farmers in the semi-arid Great Plains, however, it is also a welcome sign of soil moisture, which is as essential to earthworms as it is to high yielding crops. Great Plains growers use chemical fallow (eco-fallow) to conserve limited rainfall, and ensure both earthworms—and more importantly crop yields—remain abundant. It's a practice that more and more farmers are trying—and adopting.

The strategy of chemical fallow is simple: use little or no tillage and leave crop residue on the soil surface to trap moisture. The practice also involves letting the land lie fallow for six months to a year so moisture accumulates. The practice can backfire, however, if growing weeds steal the stored moisture meant for future crops.

Herbicide timing to control these weeds is important; so is using the right herbicide strategies—which may include a burndown with new Touchdown[®] CF herbicide. In other instances Gramoxone Max[™] herbicide, mixed with AAtrex[®] may be a better choice. Touchdown CF, a glyphosate herbicide formulated for chemical fallow, has been approved by the U.S. Environmental Protection Agency and will be submitted for state registration in states and regions within states where chemical fallow is practiced.

A Practice On The Rise

The need for chemical fallow is evident in regions from western Colorado to Hays, Kansas where the rainfall averages roughly from 8 to 22 inches. Farmers in western Nebraska and eastern Colorado also face low precipitation levels.

For growers in these areas, moisture is money. In fact, researchers with Colorado State University and the U.S. Department of Agriculture found that in Akron, Colorado

each additional inch of precipitation above the initial yield threshold will result in an extra 4.5 bushels of wheat per acre.

“We are definitely going to see an increase in chemical fallow practice, especially if the drought conditions we’ve been seeing continue,” says Phil Westra, weed scientist with Colorado State University. “In the future, I would not be surprised to see farm incentives in our region to promote moisture conservation.”

Westra added that for every pass of tillage, an inch of moisture is lost to growers in chemical fallow country.

“The practice is also low-impact farming at its best. Chemical fallow is good for soil and water conservation, plus it protects the land from wind and water erosion with crop residue,” says Bob Klein, a cropping systems specialist with the University of Nebraska West Central Research & Extension Center. “It traps the snow and increases the moisture infiltration rate in the soil.”

Klein, who includes a section on chemical fallow in his “Guide for Weed Management In Nebraska” adds that this conservation also makes for good weed control.

“The crop residue suppresses weed growth and weed populations.”

Matching Herbicides to Growing Conditions

A typical chemical fallow scenario might go like this: growers would harvest winter wheat, then, when weeds are evident, apply a glyphosate herbicide such as Touchdown CF in July, followed by a Gramoxone Max /Aatrex tankmix in September. They would then plant corn in late April or May. In drier areas, the field might stay fallow for one year before being planted to wheat again.

“Herbicides such as Gramoxone Max tend to work well on hot, dry days with lots of sunshine,” says Phil Stahlman, a weed scientist with Kansas State University. “You can spray these chemicals later than you would a glyphosate product, which won’t work if weeds have stopped growing or are drought-stressed.”

On the other hand, a glyphosate herbicide such as Touchdown CF (when state registered) may be a better choice in spring to mid-summer when warm, wet conditions contribute to active weeds growth in a fallow field,” Stahlman says.

“When it’s bright sunlight and very hot think paraquat, when it’s warm and moist think glyphosate,” he says.

Touchdown CF has been approved by the U. S. Environmental Protection Agency and will be submitted for state registration to allow use in: Colorado, Idaho, Montana, North Dakota, South Dakota, Utah, Wyoming and parts of Kansas, Nebraska, Nevada, Oklahoma, Oregon and Washington. However, it is not registered for use over the top of Roundup Ready® (RR™) crops.

Another Reason to Alternate Burndown Chemistries

Growers who want to seed winter wheat may be tempted to put down two glyphosate treatments because they fear a residual chemical such as AAtrex will damage their winter crop. However, giving a glyphosate herbicide, such as Touchdown CF, an autumn holiday helps prevent glyphosate-resistant weeds from surviving and producing glyphosate-resistant weed seed that will emerge in the following season. Long-term over-reliance on any herbicide can lead to resistant weeds. Taking steps to avoid weed resistance is also an investment in protecting land value. Switching chemistries can also help farmers prevent weed shifts.

“We have a situation in the Plains where it would not be uncommon to see three, maybe four, applications of glyphosate within a season,” says Stahlman. “That certainly could drive a change in weed populations over time.”

Stahlman and other researchers are already collecting data to see if weeds in the region could follow the patterns seen elsewhere. Common western weeds such as Kochia, Russian thistle, yellow foxtail and prairie cupgrass are all top candidates to develop resistance.

“Prairie cupgrass has natural tolerance to glyphosate, so you need a higher rate than normal to control it, plus you eliminate its natural competition when you eliminate the glyphosate-susceptible weeds, so naturally tolerant weeds can become more prevalent” says Stahlman. “It would not be too surprising if this kind of biotype developed outright resistance over time.”

“We will use Gramoxone Max in the fall to get control of late season grasses, such as prairie cupgrass, which is a tough one for us,” says Rod Craft, area fieldman of ADM Collingwood Grain in Kinsley, Kan. “It’s also important to use a different mode of action to clean up the fields, to help keep out glyphosate- resistant weeds.”

Craft, who provides weed control services to over 100 farmers in a four-county area, said that while the rainfall in his region averages about 20 inches, a number of his customers practice chemical fallow because they find their crops do better with the extra moisture.

Craft's choice is an example of using scientific knowledge to a grower's benefit, Stahlman said. Great Plains growers can continue to practice chemical fallow, and by also alternating chemistries they can conserve both moisture and glyphosate technology.

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SIDEBAR:

Dos And Don'ts for Chemical Fallow Success

Weed control for chemical fallow begins before the wheat harvest.

“A successful chemical fallow plan starts with good weed control in the wheat, so there aren't any broadleaf at wheat harvest,” says Bob Klein, a cropping systems specialist with the University of Nebraska West Central Research & Extension Center. “After harvest we treat to control the grassy weeds. We do that with a glyphosate product, such as Touchdown CF.”

In September, treat with Gramoxone Max tankmixed with Aatrex—an effective combination of fast burndown of weeds such as volunteer wheat with the backup of a residual herbicide. If no weeds are present at the September application time apply only Aatrex. Avoid, however, tilling after a wheat harvest and following with AAtrex alone, says Phil Stahlman, a weed scientist with Kansas State University.

“That is a good way to grow a crop of weeds,” he explains. “Tilling plants weed seeds, and AAtrex needs rain to be activated. If there is no rain, which is a predicable scenario in the Great Plains, the weeds will draw the existing moisture from the soil and the AAtrex will not control them.”

“In addition, growers will want to use different modes of action,” says Phil Westra, weed scientist with Colorado State University. “We have atrazine resistance in this region, particularly in kochia and pigweed. In that situation, a tankmix with a product such as Gramoxone Max would be more effective than AAtrex alone.”

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