

News Column

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Using cover crops for weed control: Consider all aspects

Kansas State University specialists provide tips.

Cover crops may be able to suppress weeds in some cases, but that's just one consideration producers should take into account when selecting cover crops for their farm fields, according to K-State Research & Extension agronomists DeAnn Presley, soil management and Anita Dille, weed scientist.

They provided guidelines to use when considering cover crops for your field, with weed management as a primary goal.

“To plan for the greatest weed management benefit with cover crops, you should start by knowing when your key weed species of concern germinate and emerge,” Dille said. “Your goal should be to establish the cover crop prior to that key point in the lifecycle of the weed for most impact.”

Weeds that emerge between September and November, or winter annuals, are marestail, mustard species, cheat, and downy brome. An early spring weed is kochia, which emerges in April. Common sunflower, giant ragweed, and common lambsquarters are mid-spring weeds that emerge in early May. Weeds that emerge between May and June, or summer annuals, are Palmer amaranth, waterhemp, velvetleaf, foxtails, large crabgrass, barnyardgrass, and shattercane, Dille said.

Cover crops provide weed management benefits in a number of ways, she said.

“Living cover crops or a layer of cover crop residues will reduce sunlight reaching the soil surface. This will serve to smother and out-compete weeds for light, water, and nutrients,” Dille said.

In addition, cover crops have the effect of altering the moisture and temperature environment in the soil surface layer during weed seed germination and emergence. Some cover crop species also release chemicals from roots or decaying residue, which can inhibit weed seed germination.

If weeds or volunteer wheat do get established in cover crops, however, they become difficult if not impossible to control as long as the cover crops are alive.

There are other factors to consider, including benefits and potential drawbacks, when deciding whether to plant cover crops, the specialists said.

Cover crops provide a range of possible benefits besides weed management, Presley said. They can often build soil organic matter which help reduce soil compaction and can prevent soil erosion. Plus, some cover crops can save fertilizer costs by scavenging nutrients or adding nitrogen to the soil through fixation.

They also conserve moisture by reducing evapotranspiration while using up excess moisture when soils are very wet, she said. Cover crops protect water quality by reducing phosphorus runoff and they add diversity to the soil biosphere, she added.

There can be drawbacks, however, starting with costs.

“There are costs involved in the seed and equipment use for planting cover crops,” Presley said. “Planting and terminating cover crops may require one or more additional passes through the field, and those costs have to be considered.”

Cover crops can lead to unwanted use of soil moisture when soils are dry, which can cause problems for the following cash crop.

When it comes to terminating the cover crop, the timing can be inconvenient and the ability to terminate can be a challenge in some cases.

It’s important to consider ahead of time how to terminate the cover crop along with how any weed species present will be controlled, the specialists said.

“A residual herbicide may need to be included with the burndown application in some cases when terminating the cover crop chemically,” Dille said.

The standard recommendation is to spray/terminate the cover crops at least two weeks before planting corn or soybean crops in eastern Kansas. Check with crop insurance providers, U.S. Department of Agriculture-Farm Service Agency, or Natural Resources Conservation Service offices for local rules on termination timing, particularly in the western half of Kansas, Presley added.

Some cover crops will die out naturally from freezing and not require active termination.

When deciding which cover crop to plant, Presley and Dille suggest certain resources:

- Midwest Cover Crops Councils’ [Cover Crop Decision Tool](http://www.mccc.msu.edu/selectorintro.html); (<http://www.mccc.msu.edu/selectorintro.html>) data available for Kansas
- [Managing Cover Crops Profitably](http://www.sare.org/Learning-Center/Books/Managing-Cover-Crops-Profitably-3rd-Edition), (<http://www.sare.org/Learning-Center/Books/Managing-Cover-Crops-Profitably-3rd-Edition>) 3rd Edition, SARE publication

- [Integrating Cover Crops in Soybean Rotations, Challenges and Recommendations for the North Central Region](http://mccc.msu.edu/documents/2015Integrating_CoverCrops_Soybeans.pdf) (http://mccc.msu.edu/documents/2015Integrating_CoverCrops_Soybeans.pdf) Published by Midwest Cover Crops Council.

Spring pea/oats cover crop reduced Palmer amaranth size in K-State trial

A cover crop trial in spring 2015 showed how effective a good stand of cover crops can be in reducing weed problems, said Anita Dille.

In the trial, the cover crop was a mixture of spring peas and oats.

At the time the cover crop mixture was terminated in mid-May, Dille said, it was evident that the Palmer amaranth, a problem weed in Kansas and other states, was much larger in the field without a cover crop than in the field with the cover crop mixture.

The Palmer amaranth present in both fields still needed to be controlled before soybeans were planted, but it was easier to control them in the cover crop field where the Palmer amaranth plants are smaller. Many of these Palmer amaranth were glyphosate-resistant, so some would have survived a glyphosate-only termination method in either field. There was a better chance of control with a glyphosate-plus-residual treatment.

Also, the cover crop residue remaining on the surface and the subsequent soybean crop that was no-till planted into that residue provided further weed suppression.

So, in the field with the cover crop, there were fewer Palmer amaranth plants and the plants were smaller, easier to control, and smothered by the cover crop after terminating.