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Dr. Don Tyler, University of Tennessee Soil Scientist recently gave a summary of cover cropping experience over the last 30 years. Photo by John LaRose, Jr.

Cotton Covers

Cover Crops In Cotton Provide A Rotation, Often Nitrogen Fixation

A summary of cover cropping experience over the last 30 years was the topic of a presentation by University of Tennessee Soil Scientist Dr. Don Tyler at the recent Cotton Focus meeting here.

"Cover crops are very advantageous in cotton in comparison to corn or to double crop soybeans with wheat. Corn and double cropped beans usually result in good soil cover. Cotton cropping systems usually leave much less cover on the soil, even in continuous no-till cotton," he said. "We also control the growth of cotton now with growth regulators resulting in even less cover. The only way to build soil cover up to the 30 percent residue cover is to either use a cover crop, in many cases, or to rotate crops."

Today there's a lot more crop rotation going on but this was not necessarily happening in continuous cotton 30 years ago. Many people were growing continuous cotton then.

"Because of that, we looked pretty carefully at cover crops like wheat or rye, and they worked quite well," Tyler continued. "We also did a lot of work with the nitrogen-fixing legume cover crops that make nitrogen out of the air. When crimson clover or hairy vetch grows through the fall, winter and spring, they make nitrogen in the material above ground. When they're either chemically killed in a no-till system or tilled under in a tilled system, that releases some of that fixed nitrogen back to the following crop. We've been trying to evaluate the amount of available fixed nitrogen for the following crop in order to reduce fertilizer nitrogen. That has become a more important issue with very high nitrogen prices."

Overall cover crops are more difficult to manage in cotton systems. Cotton harvest, in many cases, is later compared to corn harvest, so there is a more narrow window to plant a cover

crop after harvest. There's also a more narrow window for how long you can let it grow in the spring to get more soil cover, especially with the legumes.

"We have a lot of situations now, with some of the weed resistance problems, where we're having to go with very early herbicide applications," Tyler said. "Those may work with grass covers which make some of the growth in the fall and maybe a little more growth in the winter; but with legumes that make most of their growth during the spring, if early herbicide application is a necessary weed management option, then it's probably not a good idea to incorporate legumes, because you cannot let them grow long enough in the spring to get that maximum growth. April 20 is a reasonable cut-off date to grow legumes, and if they can't grow until then, you won't get a lot of growth in the spring."

Overall the data indicate the grass, wheat and rye covers have a lot of advantages. They supply organic matter, they supply additional soil cover, providing additional erosion control. The nitrogen-fixing legumes, if they work into a management system provide a really good option for supplying much of the nitrogen recommended for the cotton crop. That way a farmer can do away with all the nitrogen costs, but there's a trade off in seeding costs and management variables as well as potential extra burn-down of the cover crop in either situation.

"Overall, we're very positive about cover crops in cotton, if they can be managed effectively by the producer," Tyler said. "Key points would be, the grass cover crops work well if we have to have additional cover for erosion protection. They can get us above the 50 percent to 60 percent cover level. Legumes work well if you can manage them and they don't interfere with your other management programs. They can supply some and, in some cases, all the nitrogen a cotton crop needs if properly managed."

"We suspect that any of these systems where you grow something in the winter, in a continuous single summer crop system, that the winter cover crop can serve partially as a rotational crop," he added. "For people who are in continuous cotton system and are not rotating crops, anything they grow in between two cotton crops has some crop rotational benefit." Δ

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