Science Societies

Beating the ‘summer slump’: Interseeding warm-season forages boosts tall fescue yields

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University of Tennessee researchers found that interseeding warm-season forages—especially crabgrass—into tall fescue can help overcome the "summer slump" by maintaining forage production when cool-season grasses slow down. In a two-year study, mixed stands improved yield stability, suppressed weeds, and boosted forage quality, offering producers a practical, low-risk way to increase resilience and reduce input costs.

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The "summer slump" is a period mid-summer when production of cool-season forages like tall fescue slows down. It's been a challenge for farmers across the Southeast, who rely on fields of tall fescue for their hay making or grazing. However, researchers from the University of Tennessee have completed research that suggests a simple change—interseeding a warm-season forage—can improve yield during the slump, as well as provide other economical benefits.

In response to producer questions about summer slump for tall fescue, Renata Nave Oakes, Ph.D, a professor and researcher at the University of Tennessee's Department of Plant Sciences, dove into the science.

Oakes predominantly researches forage systems, including both hay and grazing systems, and has a special interest in creating more resilient and profitable management systems for farmers in Tennessee. When she heard a similar question raised at several producer events, she pulled her team together and posed this question to them: how will tall fescue respond when mixed with a warm-season forage?

In a two-year trial (2022–2023), researchers tested a control plot of tall fescue monoculture against tall fescue interseeded with crabgrass, tall fescue interseeded with buckhorn plantain (plantain), and a plot with all three forages: tall fescue, crabgrass, and plantain. Researchers recorded data for three main measurements: forage mass, botanical composition, and nutritive metrics—including crude protein and fiber digestibility.

All test plots were managed similarly to average hay fields for the region with inputs accessible to producers in the area. The plots were established with the Kentucky 31 cultivar of tall fescue in the fall of 2016. Researchers employed a randomized block design with four treatments and four replications, resulting in a total of 16 test plots.

In early May 2022, researchers interseeded crabgrass and plantain into an existing tall fescue sward using no-till seeding. The seeding rate for crabgrass was 6 lb/ac, and plantain was seeded at 5 lb/ac. In the test plots with all three forages, crabgrass and plantain were planted at a seeding rate of 3 lb/ac each.

Forage samples were collected four times each growing season: June, July, August, and September. The samples were randomly selected by clipping a 1 ft^2 area.

Collected samples were separated into favorable species (tall fescue, crabgrass, and plantain) and weeds to determine botanical composition. Each species was dried and weighed to determine its dry matter content and then re-combined to calculate the total forage mass for each plot.

Results of the research were published in the journal *Crop, Forage & Turfgrass Management*. Oakes says this is only preliminary research and more needs to be done in this field, but she believes this study provides valuable insights about interseeding warm-season forages into traditional cool-season tall fescue swards. Her main takeaways from the research, and where she feels farmers will find the most economical value from interseeding, are in weed suppression, sward resilience, and the potential for reduced expenses.

Competition is good for yield

Compared with its row-crop peers, grasses are great at snuffing out the competition. Tall fescue is no exception. In fact, during this research trial, researchers found it hard to establish plantain, a less aggressive forage, in the tall fescue plots.

In their report, researchers note that during the first and second harvests of Year 2, they harvested 208 and 64% more. “That’s a characteristic of grasses in general—they are more competitive than other species,” Oakes says.

Buckhorn plantain is a less aggressive forage than tall fescue, and the researchers found it difficult to establish it in the tall fescue plots. Photo courtesy of Alamy/Unpict.

Unlike plantain, crabgrass established well in the tall fescue plots. And during the summer-slump period, crabgrass outperformed tall fescue, becoming 50–60% of the forage mass. What's more, the plots that included crabgrass plantings showed less weed pressure throughout the growing season than those without.

“The more species you're incorporating,” says Oakes, “the more you're going to reduce the chances of having those undesirable weeds, especially toxic weeds. They are not going to have enough room to develop.”

Researchers were excited by the potential of crabgrass to establish well in tall fescue plots and suppress weed growth. However, beyond forage mass and composition, researchers also note another important aspect: Crabgrass contributes to better

nutritional value.

Diversifying for year-round production

In 2022, the plots where tall fescue was mixed with either plantain or crabgrass produced more forage mass than tall fescue alone or the trio of forages. However, in 2023, there were thinner margins in forage mass between all plots.

Crabgrass established well in the tall fescue plots. Photo courtesy of Alamy/NMUIM.

"I believe that if you have a very diverse field, you have a higher chance of increasing productivity as not all plants are going to behave the same," Oakes says. "So if you have several different species, cohabitating, you're going to have a better chance of having enough forage."

One example of this is seen in the tall fescue and crabgrass mixed plot. Harvest throughout Year 2 produced slightly (13%) less forage mass. However, when researchers examined the data on botanical composition, they found the desirable plants—tall fescue and crabgrass—increased while the undesirable plants—weeds—decreased. This led researchers to conclude that mixed forage systems are a valuable strategy to maintain the forage mass of desirable plants throughout the season.

There's little risk in trying to diversify forage fields, according to Oakes. Species variety will be there—in the form of weeds—whether you want it or not. Intentionally planting or managing for desirable species is what Oakes advocates. "I think it's the best of

both worlds," she says, "because you're going to be reducing your overall costs but increasing your forage and having fewer issues with noxious weeds."

Better nutrition, lower costs

In Oakes's opinion, the ideal forage system would be year-round grazing without the need to make or buy hay, fertilize, or apply other inputs. This research brings her closer to honing in on what that system could look like in reality.

"Having a mixture with cool-season and warm-season grasses, plus some different forage legumes, that gives you the best of all worlds," Oakes says. "You can have sufficient forage in the spring and fall with your cool-season forage, you have your warm-season forage taking that gap for the summer, and your forage legume improves the quality and reduces the need to fertilize."

Photo courtesy of Adobe Stock/jackienix.

In other research, she's evaluating how alfalfa mixed with tall fescue can boost forage productivity through the growing season and reduce the need for fertilizer. Her department is already researching forage mixes with white clover, cowpea and sun hemp. She's also looking at how winter annuals, like triticale, can complement summer forage production.

It's too soon to provide qualitative data from these trials, but she's optimistic there will be immense value for producers.

“Just having the [forage] mass data alone is not telling me the whole story. I don't know what the mass is actually made of,” Oakes says. She’s keen to expand this research to understand how diverse forage systems can produce higher yields, better nutrition, and valuable environmental outcomes for producers.

Dig deeper

Nassar, F. F., da Silva, R. C., Nave, R. L. G, & de Almeida, O. G. (2025). Agronomic responses of tall fescue interseeded with crabgrass and buckhorn plantain. *Crop, Forage & Turfgrass Management, 11*, e70053. https://doi.org/10.1002/cft2.70053

Self-Study CEU Quiz

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1. **What is the “summer slump” as described in the article?**
   a. A period when warm-season forages fail to establish.
   b. A decline in forage quality during winter.
   c. A time of increased weed pressure just before summer.
   d. A mid-summer slowdown in cool-season forage production.

2. **Interseeding warm-season forages into tall fescue helped maintain forage production during the summer slump while also suppressing weeds.**

   a. True.

   b. False.

3. **Which warm-season forage established most successfully in tall fescue plots?**

   a. Buckhorn plantain.

   b. Alfalfa.

   c. Crabgrass.

   d. White clover.

4. **What tall fescue cultivar was used to establish the test plots?**

   a. Kentucky 31.

   b. MaxQ.

   c. BarOptima.

   d. Jesup.

5. **During the summer slump, crabgrass made up approximately what percentage of the forage mass in mixed plots?**

   a. 10–20%.

   b. 25–35%.

   c. 40–45%.

   d. 50–60%.

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