

The Economics Of Legume Planting

FAYETTEVILLE, ARK.

When it comes to planting legumes for cattle forage, broadcasting is cheaper than drilling, but drilling provides the seedlings a better survival rate for these highly nutritious plants, said Dirk Philipp, assistant professor-forages, for the University of Arkansas System Division of Agriculture.

Legumes, such as the annual crimson clover, or perennial white clover, are an important part of a cattle operation.

"They provide early forage with high nutritive value," he said. "Legumes can also fix nitrogen from the atmosphere, which can benefit a producer two ways. One, it can be converted by the plants into protein for cattle, and two, it can potentially lower the cost of nitrogen fertilizers."

Still, there are some challenges with legumes. "They're site-specific and prefer a pH above 6," Philipp said. "It's also important to maintain adequate phosphorus and potassium levels in the soil."

Then, there's the expense.

"Some seed may be expensive, especially white clover, and in some cases seeds have to be inoculated," he said, adding that "Seedbed preparation and drilling are additional costs."

Researchers took a look at different modes of establishing both white and crimson clovers into Bermuda pastures to compare the costs of broadcasting the seed versus no-till drilling; seeding rates; whether the pasture was grazed before or after planting; and a combination of all the factors.

"Going in to this research, broadcasting seed followed by grazing, was considered the low-cost alternative to other methods," Philipp said.

In evaluating the methods, researchers recorded the number of seedlings per treatment, their winter survival and calculated the cost of establishing a stand of legumes.

Here's what the researchers found:

- Rate of seedling survival depended on species, seeding rate, and planting method, but grazing had no effect on seedling emergence.
- No-till drilling resulted in higher rates of survival than broadcasting.
- Average winter seedling survival was 21 percent for low seeding rates and 17 percent for standard seeding rates. However, standard seeding rates had essentially twice as many seedlings per unit area than at low seeding rates.
- Crimson clover was more expensive, about \$40 per acre, to establish than white clover, (\$30 per acre) on average.
- Reducing the seedling rate by half did not reduce the cost of establishment by the same factor. For example, no-till drill establishment of crimson clover at standard seeding rate was \$53 per acre, and \$34 per acre for a low seeding rate. And when compared to broadcasting crim-

son clover, the cost is \$45 at standard seeding rate, vs. \$27 for the low rate.

Philipp said that "given the number of seedlings that are about twice as high under no-till drilling than broadcasting, then this is a compelling case for using a no-till drill as this method will give not only the best results agronomically, but that also makes the most sense economically."

He added that the trend was also true for white clover: "here we had \$40 and \$29 for no-till drilling, and \$32 and \$21 for broadcasting."

When it comes to using the no-till drill, Philipp said the drills should be set with utmost care and the planting depths for clover seed shouldn't exceed one-quarter to one-half inch.

And as for grazing before or after, "although no grazing effects were observed, pasture canopies should always be kept short before planting, no matter what method is used," he said. "Canopies can kept short by mowing or grazing." △



Crimson blooms mark this annual clover, which can be a highly nutritious forage for cattle.

(U of Arkansas System Division of Agriculture photo courtesy Dirk Philipp)



No-till drilling of seed into a bermudagrass pasture.

(U of Arkansas System Division of Agriculture photo courtesy Dirk Philipp)



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