

## USING LEGUMES TO THE EXTENT POSSIBLE

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I am not one of those who believe that there ought to be clover on every square inch of your farm. But, I do recommend using legumes to the extent that you can. As nitrogen prices creep back up as oil prices start another upswing, it is important to figure out how legumes might fit. In this month's article, a few ways are presented that most of you can use legumes. Certainly, this is nowhere near a complete list of how legumes can fit in Georgia's cattle operations. However, some additional resources on the subject are listed.

The value of biological N fixation by forage legumes can be quite significant (Table 1). When the legumes represent over 30% of the available forage, this fixed N can provide enough N to meet the needs of the grasses that are growing with the legumes. Of course, the prerequisite for this is that the legumes are allowed to thrive.

**Table 1.** The value of N fixation from an acre of certain legume species at different prices for commercial N fertilizer.

Species	Annual N Fixation (lb of N/acre)	Cost of N Fertilizer (\$/lb of N)					
		\$0.50	\$0.60	\$0.70	\$0.80	\$0.90	\$1.00
		Annual Value of the Fixed N ----- (\$/acre) -----					
Alfalfa	100 - 300	\$50 - 150	\$60 - 180	\$70 - 210	\$80 - 240	\$90 - 270	\$100 - 300
Red clover	75 - 200	\$38 - 100	\$45 - 120	\$53 - 140	\$60 - 160	\$68 - 180	\$75 - 200
White clover	50 - 125	\$25 - 63	\$30 - 75	\$35 - 88	\$40 - 100	\$45 - 113	\$50 - 125
Annual clover	50 - 150	\$25 - 75	\$30 - 90	\$35 - 105	\$40 - 120	\$45 - 135	\$50 - 150

### **Management is Required**

Mixed stands of grasses and legumes generally require more management. This may include annual or (at least) periodic planting of legumes into the pasture, maintaining fertile soils, and maintaining a canopy height and density that allows the legumes to compete with the grass. It is this later aspect where grazing management is so important. Cattle tend to graze legumes before anything else. As a result, maintaining legumes in a continuously stocked pasture is high impossible. In contrast, maintaining legumes in rotationally stocked pastures can allow adequate recovery between grazings and allow them to better compete with the grass.

### **Using White Clover in Georgia Pastures**

Primarily, there are two methods where legumes fit best for most cattle producers in Georgia. The first of these recommended practices is the use of white clover as a companion to tall fescue and, in many cases, tightly grazed bermudagrass or bahiagrass. The variety selection process is critical. If the stand is likely to be closely grazed, then 'Durana' should be used. 'Durana' is a UGA variety that was bred to be exceptionally persistent in pastures that are typically grazed very short. If pastures are rotationally stocked and typically have more residual forage after grazing, then the variety 'Patriot' should be used. 'Patriot' is also a UGA-bred variety that was selected for persistence, but it grows more upright and maintains itself better in competition with taller growing pastures than does 'Durana' or other white clover varieties. Two other varieties that can be successfully used as a substitute for 'Patriot' in this case are 'Will' (Limestone Valley/Mountain and Piedmont regions) and 'Osceola' (Coastal Plain region). Though neither of these varieties will be as persistent as 'Patriot,' these varieties can work in instances where a short duration is acceptable because of expected renovation or when a need for herbicide use is anticipated within 1-2 years of planting.

### **Use Annual Legumes in Winter Annual Pastures**

The second of the most widely applicable ways of using legumes in Georgia is to plant winter annual legumes with winter annual grasses. Now, just because you plant clover with your grasses does not mean that you can or should neglect or reduce N fertilizer at planting and in the early winter months. It is critical to provide recommended levels of N fertilization to the grass during the establishment phase and in early winter months so that one can get a good stand and sufficient tillering. I had several calls this past winter from folks had neglected to put on N, thinking the clover would

provide all the N needed. (Trust me,... it was a train wreck.) Once the legume stand develops and contributes about 40% of the total available forage, N fertilization levels can begin to be reduced. Though the majority of the N-fixation potential will not be realized until later in the spring and summer, these annual legumes can contribute 50 – 150 lbs of N/acre. Furthermore, these species can contribute substantially to the forage production during the winter and early spring.

The two most commonly used winter annual legumes are crimson clover and arrowleaf clover. Crimson clover is an early maturing clover that matches well with pastures that are planted to rye or early maturing ryegrass varieties. Though older varieties like 'Dixie' and 'Tibbee' are fairly reliable, newer varieties such as 'AU Robin' and 'Flame' can produce forage earlier and will mature more quickly (i.e., are able to reseed sooner and do not interfere as much with the subsequent growth of bermudagrass or bahiagrass sods).

Arrowleaf clover also provides substantial forage, but it is a much later maturing species. Arrowleaf clover matches better with pastures where an emphasis is placed on late spring growth (i.e., with later maturing annual ryegrass varieties or oats). When planting arrowleaf clover, be sure to use the appropriate inoculant for it. Arrowleaf requires a Rhizobium species that is different from the inoculants typically used for other annual legume species. The 'Apache' variety is more resistant to the virus diseases that can sometimes build up in pastures where arrowleaf clover is commonly used.

### ***More Info on Legume Usage***

Other legume species can work well on most Georgia cattle farms, too. A detailed listing of the major forage legume species can be found in the Extension Bulletin entitled "Georgia Forages: Legume Species" (<http://pubs.caes.uga.edu/caespubs/pubcd/B1347/B1347.htm>). This nearly comprehensive listing of species, along with much more on how these species can be used, can be found on the Georgia Forages website ([www.georgiaforages.com](http://www.georgiaforages.com)). On this website, you can also watch a four-part video on how to select, manage, and use legumes for your farm operation (see: <http://www.caes.uga.edu/commodities/fieldcrops/forages/Lectures.html>). Of course, your local University of Georgia Cooperative Extension Agent can also provide you with additional information and advice on how to fit legumes into your forage program. If you have questions about using legumes in your operation, contact your local Extension office by dialing 1-800-ASK-UGA1.