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Tillage and Overseeding Pastures for Winter Forage Production in North Florida[1]

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Although Florida has a mild winter climate as compared to most of the U.S., perennial forages provide limited grazing during the late fall and winter months. As a result, from November until April, little forage is available for animal grazing except for planted cool season (winter) annual forages. Understanding how tillage systems and overseeding of a perennial pasture can influence the performance of winter annual forages is important to managing successful winter pastures.

In North Florida, the availability of winter forages ranges over a period of six months (Table 1). It is important to understand when these various winter forages are most productive in order to design a forage program that best fits the livestock enterprise. Blends of certain forages will allow for extended winter grazing and stability of a forage system, which is desirable until adequate summer forage is available.

Availability of winter forage depends on a number of environmental conditions, like rainfall and temperature. However, the method of planting (i.e., tillage method or overseeding of a perennial pasture) will also greatly influence when the forage will be able to be grazed and the amount available for grazing.

Winter Forage Production When Planted on a Prepared Seed Bed

If winter annual forages are planted on prepared seedbeds, they can be planted earlier. The small grains are desirable for early planting. Seeding rates for small grains and planting dates are shown in Table 2. The early planting on prepared seedbeds almost always ensures available forage and earlier grazing.

When deciding what varieties of the various winter forages to grow, carefully study variety trials from state tests. These tests show differences in the yields of these varieties. Early maturing varieties of wheat, oats, and rye produce more forage early in the season, when the forage needs are really critical. Oats offer an advantage because it may be planted earliest of all of the small grains. Rye has the best cold tolerance.

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Species of winter annual forages to plant depend on soil type and moisture holding capacity of the soil. Rye is best for the sandy soils. The other small grains will do well on heavier soils. Ryegrass and crimson clover grow best on moderately well-drained soils, but not on deep sands. If irrigation systems are available for watering, all small grains, clovers, and ryegrass will do well.

Late season winter forage production is also possible. Some forages, like ryegrass, will continue to grow into May and June. Red clover (cultivar Cherokee) will produce into July and August in North Florida, when moisture is not limited.

Overseeding Winter Forages on Bahiagrass or Bermudagrass Pastures

Bahiagrass is the predominant perennial grass in Florida pastures. Many bahiagrass pastures are overseeded with winter annual forages. Bahiagrass, however, is more competitive than bermudagrass. Results of a three-year study in Florida, comparing overseeding pastures, showed that wheat produced less forage yield when overseeded into bahiagrass than when overseeded into bermudagrass. Overseeding of wheat with a no-till drill into bahiagrass, compared with the bermudagrass, was also several weeks later in producing adequate forage for grazing.

In general, more tillage will have to be done to limit bahiagrass, and even bermudagrass competition, with the winter annual forage. Tillage does have certain disadvantages. Tillage may delay and reduce tonnage of bermudagrass and bahiagrass the next year, especially if ryegrass is not heavily utilized in May.

If bahiagrass or bermudagrass is to be overseeded successfully with winter annual forages, the following steps should be taken to ensure better success:

1. Overseed bahiagrass a few weeks later than for bermudagrass, probably sometime in November, (or at least after cool weather has slowed down the growth of bahiagrass). Be sure that there is adequate moisture for germination of the winter annual.
2. Make sure that bahiagrass or bermudagrass is grazed or cut close prior to planting winter annuals. If the field has to be planted early, use a growth regulation chemical, such as Gramoxone®, on bahiagrass in order to knock out top growth of the bahiagrass and reduce competition.
3. Provide more tillage on bahiagrass pastures (at least a heavy disking) than with bermudagrass. Make sure the no-till drill is cutting through the organic layer or surface root system of the bahiagrass and bermudagrass for good soil-seed contact. Bahiagrass should be tilled heavily enough so that it does not regrow immediately.
4. If planting on a clean-tilled seedbed following bahiagrass or bermudagrass, allow several weeks for plants to decay before planting, as the decaying process will tie up nitrogen that is needed for growth of the winter annual.
5. Use early maturing varieties of small grains to minimize the influence of the winter grazing on summer grass production.

Generally, small grains, clovers, and ryegrass planted in clean-tilled seedbeds will produce forage 2-3 weeks earlier than when planted into bermudagrass, and winter forage planted into bermudagrass will produce forage 1-3 weeks earlier than winter forage planted into bahiagrass. Total yield of winter forage is highest in the same order: clean-till > bermudagrass > bahiagrass.

Grazing is normally needed by December, and the only way to achieve this is to plant about 8 weeks earlier. An example of ideal timing would be to plant wheat, oats or rye on a prepared seedbed in October. Data shows that overseeded bermudagrass will produce as much total forage over the season as a prepared seedbed. However, it will not be ready to graze in most years until mid-January.

Overseeding Winter Legumes on Bahiagrass and Bermudagrass Pastures

Data in Table 3 show that overseeding legumes can contribute to the overall production of bahiagrass. Crimson or arrowleaf clover can contribute up to 200 lbs/A of N for the bahiagrass resulting in a value of nearly $50/A.

The clovers can provide grazing in March, April, and May, before bahiagrass starts its growth. However, it may cost as much as $30-40/A to establish clovers. New releases of red clover may provide longer season grazing than other legumes. The longer season clovers can also add extra N since most producers seldom apply more than 100 lbs/A of N to bahiagrass pastures. These clovers also add about 3 tons more dry matter to the total forage (bahiagrass-clover) produced during the year.

Dry fall seasons often discourage producers from overseeding pastures since stand failures do occur. Cold temperatures may delay the growth of the winter forages or cause some cold damage to the young, tender growth. Adequate rainfall is key to the success of any winter annual forage program.

Summary

Tillage and overseeding practices to consider for the most economic production of cool season forage annuals include:

1. Consider using open land or areas that have been cropped for early planting. Use deep tillage to break the compaction layer in the soil for better root penetration.

2. Select proper forage species for the time that grazing is needed.

3. Soil test and apply proper nutrients prior to maximum growth stage for optimizing production. If clovers are to be planted with small grains, check soil pH and apply lime several months ahead of planting, if needed.

4. Plant the crop in the early part of the seeding date range if planting on a clean-tilled seedbed; if overseeding bermudagrass, delay planting until the last one half of the seeding date range and when overseeding bahiagrass the planting date may need to be delayed even further.

5. Wait for proper moisture when overseeding into a sod. No-till drills need adequate moisture to be able to penetrate through the sod to insure good soil-seed contact.

6. Use proper inoculant if planting legumes.

7. Forage species mixture will result in a more evenly distributed forage production season, as compared to planting a single species.

8. Many producers use no-till drills with very good results on bahiagrass sod. No-till drills are sometimes available for rent through the local soil conservation district or seed/fertilizer dealer. Drills differ in the amount of tillage they do. Tye and Great Plains drills have straight cutting coulters in front for cutting through the sod. Hay Van and John Deere no-till drills have coulters which act more like off-set harrows and cut and remove more sod out of the seed furrow. All can do a very good job if the sod is cut or grazed short before planting and moisture is adequate.

9. Consult with your local Extension service for updates on best winter forage selection and best management practices.

10. Do not overgraze or graze the winter forage too early, as stand loss will result. Most small grains should not be grazed closer than 3 inches.

Table 1. Forage production periods for several cool-season forages recommended for North Florida.

Month of Year	Forage Types
December - January	Oats, rye, and wheat (small grains)
February - March	Small grains and crimson clover, ryegrass
March - April	Small grains, ryegrass, crimson clover, red arrowleaf clover, and white clover
April - May	Ryegrass, arrowleaf, white and red clover

Table 2. Seeding rates and dates for small grains and ryegrass for winter forage.

Seeding Date		Seeding Rate for Forage
Forage		**lbs/A**
Oats	September 15 - November 15	120
Rye	October 15 - November 15	120
Wheat	October 15 - November 15	120
Ryegrass	October 15 - November 15	25

Table 3. Total seasonal production of bahiagrass alone and with three overseeded legumes.

N Rate	No Clover	Arrowleaf Clover	Crimson Clover	Subterranean Clover
lbs/A	**lbs/A Dry Matter**			
0	1950	8620	7330	5340
50	3730	9410	8340	6640
100	4620	10530	10450	8030
200	8360	12480	13780	11380
400	12010	16320	16110	14420