



Tillage and Overseeding Pastures for Winter Forage Production in North Florida¹

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Although Florida has a mild winter climate compared to most of the United States, in Florida 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. However, successful tillage systems and overseeding of perennial pastures can improve performance of winter annual forages in winter pastures.

In North Florida availability of winter forages ranges from December until May (Table 1). Understanding when various winter forages are most productive is important to designing a forage program that best suits livestock and the crop 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, including rainfall and temperature. However, method of

planting (i.e., tillage method or overseeding of a perennial pasture) will also greatly influence when the forage will be suitable for grazing, as well as the amount of forage that will be available for grazing.

Winter Forage Production When Planted on a Prepared Seed Bed

If winter annual forages are planted on prepared seedbeds, the forages can be planted earlier than if overseeded into perennial grasses. The small grains are desirable for early planting. Seeding rates for small grains and planting dates are shown in Table 2. Early planting on prepared seedbeds almost always ensures available forage and earlier grazing.

When deciding what varieties of winter forages to grow, study variety trials from state tests. These tests demonstrate differences in yields and time of production of these varieties. Early maturing varieties of wheat, oats, and rye produce more forage early in the season, when livestock forage needs are critical. Oats offer an advantage because oats may be planted

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earliest of all of the small grains. Rye has the best cold tolerance.

The determination of which species of winter annual forages to plant will depend upon soil type, as well as the 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 is available, all small grains, clovers, and ryegrass will do well.

Production of late-season winter forage is also possible. Some forages, including ryegrass, will continue to grow into May and June. Red clover (cultivars include 'Southern Belle' and 'Cherokee') will produce into July and August in North Florida if 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 is more competitive than bermudagrass, and results of a three-year study in Florida comparing overseeding pastures showed that wheat produced less forage when overseeded into bahiagrass than when overseeded into bermudagrass. The study also showed that overseeding of wheat with a no-till drill into bahiagrass, compared with the same overseeding in bermudagrass, produced adequate forage for grazing several weeks later than when wheat was overseeded in bermudagrass.

In general, more tillage will be necessary to reduce competition from bahiagrass with the winter annual forage than when overseeding in bermudagrass. Keep in mind that tillage has certain disadvantages. Tillage may delay and reduce tonnage of bermudagrass and bahiagrass the next year, especially if ryegrass is not heavily utilized in May, when the perennial grasses begin to grow for the year.

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 in November or at least after cool weather has slowed down the growth of bahiagrass. Be sure that adequate moisture is available 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 paraquat, on bahiagrass to knock out top growth of the bahiagrass and reduce competition with the winter annual.
3. Provide more tillage on bahiagrass pastures or an aggressive no-till drill than when overseeding in bermudagrass. For bahiagrass and bermudagrass pastures, make sure the no-till drill is cutting through the organic layer or surface root system to allow for sufficient contact between the soil and the winter-annual seed. 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 production of summer grass.

Generally, small grains, winter legumes (such as clover), and ryegrass planted in clean-tilled seedbeds will produce forage two to three weeks earlier than when these forages are planted into bermudagrass. Winter forage planted into bermudagrass will produce forage one to three weeks earlier than when planted into bahiagrass. Total yield of winter forage is highest in the same order: clean-till > bermudagrass > bahiagrass.

Since grazing of winter forages is normally needed by December, plant these forages about eight 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, but in most years the forage produced in the way will not be ready to graze 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 in the range of 50-200 lbs/A of N for bahiagrass. Depending on the current cost of N, legumes may produce \$50-100 N/A.

Winter legumes can provide grazing in March, April, and May, before bahiagrass starts its growth. However, the cost of establishing legumes can be as much as \$30-40/A. 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 occur due to a lack of water. Additionally, 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 the following:

1. Use open land or areas that have been cropped for early planting and early grazing. Use deep tillage to break the compaction layer in the soil for better root penetration for the winter forage.
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 legumes 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 half of the seeding date range. When overseeding bahiagrass, delay the planting date another two to three weeks.
5. Wait for proper moisture when overseeding into a sod. No-till drills need adequate moisture 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, compared to planting a single species.
8. Many producers use no-till drills with 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 that act more like off-set harrows and cut and remove more sod out of the seed furrow. All these no-till drills can do a good job if moisture is adequate and the sod is cut or grazed short before planting.
9. Consult with your county 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.

Months	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.

Forage	Seeding Date	Seeding Rate for 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 lbs/A	No Clover	Arrowleaf Clover	Crimson Clover	Subterranean Clover
	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