Seeding and Reseeding of Cool-Season Forages in North Florida

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Introduction

Cool-season forages are seeded on temporary pastures or perennial summer grass sods during the fall in North Florida. Growing of cool-season legumes in temporary or sod pastures became a lost art during the period of low-priced nitrogen during the 50's,60's and early 70's. The purpose of this paper is to establish some of the fundamental rules for successful seeding and reseeding of small-seeded, cool-season grasses and legumes.

Seeding on Temporary Pastures

The earliest and most growth from a temporary cool-season pasture occurs when the crops are planted on a well-prepared seedbed. If the soil is turned and harrowed and good rainfall occurs it is possible to plant in early October in North Florida. The best mixtures are small grains, rye grass and one of the clovers either arrowleaf, crimson, sub, red or white. Steps for successful planting of cool-season temporary pastures are:

1. Do not plant until soil surface is moist and soil reservoir is filled with water. Seeding when soil is only wet to shallow depths can lead to disaster if drought follows seeding. If irrigation is available it is usually best to irrigate before seeding because this decreases the chance of damping off disease. Irrigation or rainfall prior to seeding also prevents the loss of legume inoculation, a problem when planting into hot, dry soil.

2. Lime and fertilize prior to seeding or band fertilizer at planting.

3. Seed should be planted at proper depth according to their size.

4. Firm soil around planted seeds. Good contact between soil and seed is essential to insure proper germination.

5. Check planting often for insect damage particularly from mole crickets and fall armyworm. It will be necessary to apply insecticides in some seasons.

6. Apply up to 60 pounds of N per acre to small grains-ryegrass-legume mixtures at seeding or when legume seedlings are out of the cotyledon

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stage. Apply no N to pure legume plantings. If growth of grasses falters in December, apply 300 pounds/acre of 15-0-15 fertilizer. The potash helps the legumes as well as the grasses.

7. Graze the new planting lightly if weeds or small grains are shading out clover and ryegrass. Do not let livestock stay on the new planting for more than a few hours at a time. Refrain from grazing as soon as the taller shading plants are eaten off.

8. Do not overgraze the cool-season pasture. This is probably the greatest fault in the management of cool-season pastures. Temperatures are cold, days are short, and light intensities are low during winter; so growth rates are low. Feed is scarce and the manager grazes his cool-season forage too closely, lowering the pasture productivity and often creating a longer forage deficit period than is necessary. Supplemental feed is necessary during the winter months to help prevent the need for overgrazing of cool season pastures.

Seeding of Legumes on Pasture Sod

When planting small-seeded legumes on pasture sod which has never been planted in legumes, it is desirable that all precautions are taken to insure a good stand of inoculated seedlings. The following steps are suggested:

1. Wait to plant until summer perennial grass is dormant frost or minimum temperatures of 50° F or lower can be expected on most days. This usually occurs about November 1 in North Florida. The summer grass top growth can also be killed by herbicides if earlier plantings are desired. Early plantings are preferable for successful forage production, but hazards are high for early planting in North Florida.

2. There should not be a large quantity of summer grass topgrowth available. This should be grazed or cut before seeding the winter crop. Burning this top growth before seeding is excellent if practiced.

3. Apply the needed dolomite lime several months prior to seeding legumes.

4. Fertilize with 300 to 500 pounds/acre of 0-10-20 (N-P_2O_5-K_2O) fertilizer just prior to seeding legume. Also apply sulfur and minor elements if needed.

5. Some scarification of soil surface is necessary when seeding legumes. In broadcast plantings this may be disc harrowing but the sod seeders which till soil, place seed and pack are desirable. Banding fertilizer and seed is excellent. Some damage to the summer grass is usually necessary in seeding operation but drastic damage should be avoided or recovery will be poor the following spring.

6. Seed should be inoculated with two or more times the amount of specific inoculant for the particular legume planted and a sticker-coating system is recommended. We have had excellent results with the PELINOC coating system. Inoculation is the most important planting step. All precautions to prevent death of the inoculant bacteria should be taken.

7, Plant the highest recommended seeding levels for each crop alone or in mixture. The legume should be seeded at least 60% of the pure stand seed recommendation when planted in a mixture with grasses). The small grain and/or ryegrass in legume mixtures should be planted at 50% or less of the pure stand planting rate.

8. Plant in moist soil following rainfall which saturates the soil over 6 inches deep. This promotes both rapid seed germination and protects the inoculant bacteria which often die in dry sand. Neither clover or ryegrass do well on droughty, excessively-drained sandy soils, unless irrigated.

9. Do not apply N to any grasses planted with legumes until a killing frost or until legume seedlings have passed the cotyledon stage. Do not apply N unless cool-season grasses are present.

10. Light grazing of the new plantings is helpful if warm season perennial grass is shading out legumes. Only allow livestock to graze new plantings a few hours each time. Do not let livestock stay on new planting continuously or they will pull up and trample too many young seedlings.

Reseeding Annual Forage Crops on Pastures

The most efficient method of seeding many cool-season, small seeded annual legumes is not to seed them but to let them reseed or volunteer. The annual legumes; arrowleaf, rose, crimson, subterranean, and Persian clovers, big-flowered vetch, and serradella; contain cultivars capable of reseeding. White and red clovers act as annuals in the south and many cultivars will reseed. 'Florida Reseeding' ryegrass also has the ability to volunteer if managed properly. Seeds of all the above crops have some protective mechanism which allows them to lie dormant during the summer months and germinate in the fall. By taking advantage of the seeds' ability to survive the summer, we could grow these valuable legumes on many millions of acres which now have no crops during the winter and spring.

There are three rules for successful reseeding of these cool-season crops.

1. The first rule is to make an excellent supply of seed every season, particularly the seeding season. It may take a seed crop of 200 pounds of seed to be the equivalent of 10 pounds of seed planted in the normal manner. Some seed will be eaten by various animals, or be

attacked by various micro-organisms, others will not germinate because of various dormancies, and some may be washed away by heavy rains. So only a low percentage of seed will survive and germinate.

2. The second rule is to graze, mow or otherwise maintain a short perennial warm-season grass sod during the fall months when seedlings are germinating. In many cases some scarification of soil surfaces such as light harrowing is helpful. Close grazing by livestock is the best way to maintain this short sod.

3. The third rule is to apply fertilizer and lime to provide maximum benefit to the cool-season crop. This often means all the fertilizer is applied in fall of year. No nitrogen is needed unless the cool-season crop contains a cool-season grass in addition to legumes. Nitrogenous fertilizer, up to 60 pounds/acre N, may be applied in fall to boost growth of grasses such as ryegrass.

Reseeding Ryegrass. Most cultivars of Italian ryegrass (Lolium multiflorum) reseed to some degree. The release of "Florida Reseeding" ryegrass in 1978 gives a ryegrass cultivar with a higher percentage of summer-dormant seed and better volunteering than other adapted cultivars. This greatly increases the potential of having both a volunteering annual grass and legume on perennial grass pasture sods. Grazing must be deferred on ryegrass during seeding if it is to make a satisfactory seed crop for successful reseeding. The reseeding ryegrass should be grown in mixture with a reseeding legume such as arrowleaf, crimson, subterranean, rose, white and red clover, vetches, and serradella. The deferred grazing often enhances the seed reproduction of the legume as well as the ryegrass.

The approximate time of flowering and periods when grazing should be deferred on Florida Reseeding ryegrass and a number of reseeding legumes is shown in Figure 1. By planting several legume-ryegrass mixtures in different pastures it is possible to maintain a high level of seed production and still have grazing at the same time. For example, crimson and sub clovers, and Florida Reseeding ryegrass will start seed production if grazing is deferred about April 10. Seed will be approaching maturity in these crops in early May. Arrowleaf, southern red and white clovers make excellent growth during month of April and many cultivars begin flowering profusely in early May. Florida Reseeding ryegrass will still reseed satisfactorily if grazing is deferred by the end of first week in May. If reseeding crimson and/or sub clovers-ryegrass mixtures are planted on about 1/2 of the pasture acreage and grazing deferred from about April 10 to May 7, this part of pasture should successfully reseed. The livestock can be heavily stocked on the arrowleaf and/or red and/or white clover-ryegrass mixtures during the April 10 to May 7 period when they are most productive. The livestock can be returned to crimson and/or sub clover-ryegrass pastures about May 7. The clover and ryegrass stubble and young growth of the perennial grass have produced a lot of forage during deferred grazing which can carry

the live·tock while the grazing is deferred on the arrowleaf, red, or white clover pastures. When the ryegrass seeds begin to shatter, then grazing can be resumed on these pastures also. In some seasons drought may tend to reduce forage supply and the deferred grazing scheme often becomes untenable. It may be necessary to scarifice the seed crop on part of the pasturage because all growth is needed for grazing. In this case, try to make a seed crop with the legume since the ryegrass seed is usually relatively cheap. If both legume and ryegrass seed crops are lost it may be necessary to replant. However, if the legumes have reseeded on the area for several prior years, scarification of the soil surface by harrowing or some other means will often bring enough seed to surface for a satisfactory volunteer crop. The scarification can take place at time of planting for the ryegrass which must be replanted if little or no seed is produced.

At Pine Acres Research Ranch near Citra, FL we have had 80 acres of rye-ryegrass-legume mixtures on Suwanee bermudagrass sod for several seasons. The rye and ryegrass are topseeded on short sod in October with a grain drill with small seed attachment following a disc harrow. A cultipacker follows the grain drill. Grazing is deferred a short time in April on sub clover and crimson clovers mixtures planted on one half the pasture acreage. The rye has already been grazed out. The ryegrass seed heads grow up during the short deferred grazing period (10 days to 2 weeks). When the cattle are returned they eat the ryegrass seed heads and leave most of the crimson clover seed heads which are relatively unpalatable. Sub clover can be grazed during seed production since seed production is not damaged by moderate grazing. Grazing continues on arrowleaf clover pastures in the other half of the acreage until late June. Because arrowleaf clover is the only winter plant still surviving in June, this clover is grazed so closely by cattle that seed production has usually not been as high as desired. When inadequate seed of a legume is produced in spring, we add some seed of that legume in the fall. By applying *60* pounds/acre of nitrogen fertilizer to the rye and ryegrass in fall and irrigating to insure early establishment in October we have been successful in having cool-season pastures from mid-December until mid-June.

SEEDING PERIOD

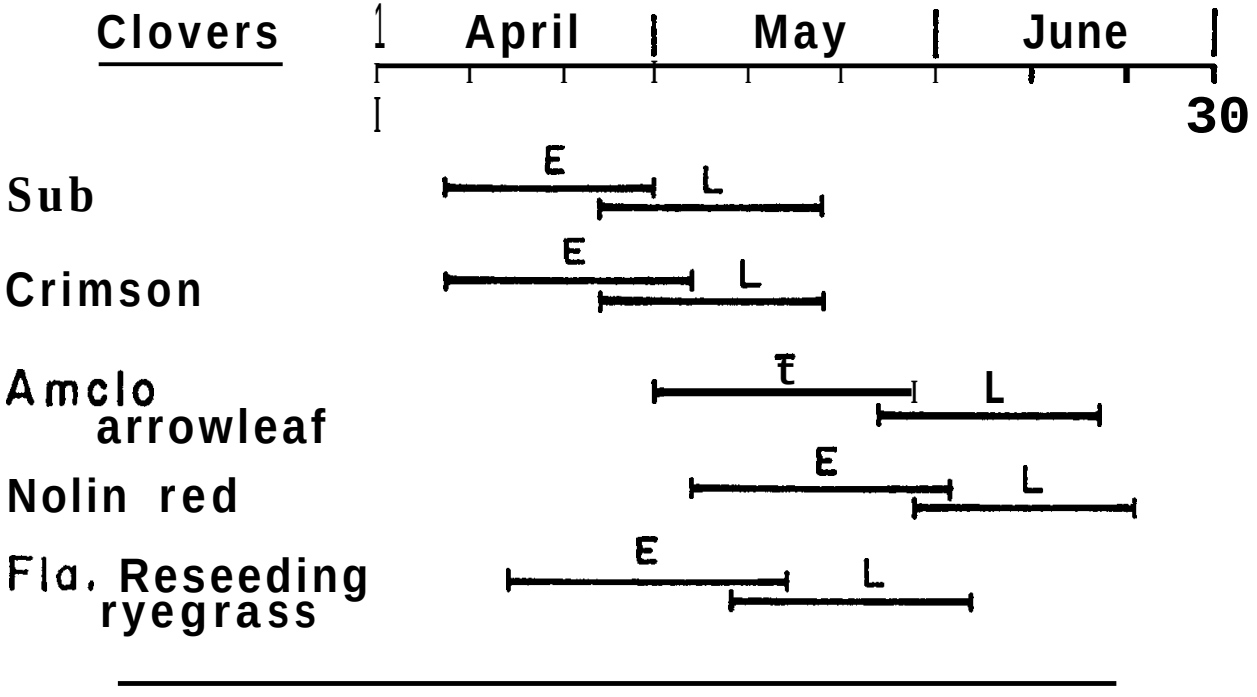

Fig. 1 Seed production periods of various cool-season forage crops. E marks the earliest period and L the latest period that grazing can be deferred on the crop and a good seed crop obtained.