

OVERSEEDING ANNUAL RYEGRASS on Warm Season Pastures



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A forage management option available to many livestock producers, especially in the South, is planting annual ryegrass, hereafter referred to in this publication simply as ryegrass, on the dormant pastures of warm-season forages, especially the perennial grasses bahiagrass and bermudagrass. However, other warm-season species including dallisgrass, crabgrass, broadleaf signalgrass and sericea lespedeza can also be overseeded. The dependability and value of overseeding has been thoroughly verified by university research, and thousands of livestock producers have benefitted from the practice.

BENEFITS OF OVERSEEDING

“Overseeding” is the term generally used to refer to broadcast-seeding winter annual forage crops on summer pastures, with or without disking or other tillage. “Sod-seeding” usually refers to planting annual crops *into* a pasture using a drill. Either or both of these operations may be used to establish winter annuals in warm-season pastures. For convenience, in this publication the term “overseeding” will be used to refer to both of these planting methods.

Overseeding extends the length of time during which a warm-season pasture can provide forage for grazing animals. Instead of six to eight months of forage production, overseeding can result in 8 to 10 months of productivity, thus helping reduce the need for expensive stored feed. In addition, pastures overseeded with winter annuals have less hoof damage by grazing animals compared to winter annuals planted on a prepared seedbed. This can be particularly important during prolonged wet periods or on soils that tend to stay wet during the cooler months of the year.

Winter annual forages can also improve animal nutrition. Ryegrass and other winter annuals produce high quality forage; much higher than produced by warm-season perennial grasses. The timing of this nutritional advantage is also important. Cows have their highest nutritional requirements from two months prior to calving until they are re-bred. In many areas, most cows calve in late winter or early spring and are bred again within three months after calving. The peak production of ryegrass forage is also in early- to mid-spring, which is the time it can greatly affect calf weight, calf health and conception rates of cows.

PLANNING FOR OVERSEEDING

Ryegrass is by far the most widely overseeded winter annual forage crop, but various other winter annuals are often planted with it. When ryegrass is the only species overseeded, in most areas it typically makes little growth until mid- to late winter, depending on geographical location. For this reason, small grain such as rye, wheat or oats, or sometimes a non-leguminous forb such as turnip, rape or forage radish are often planted with it for the purpose of obtaining earlier grazing. However, a drill or significant tillage is needed for small grain due to larger seed size and the need to cover the seed, ideally, with at least one inch of soil.

The added benefit of nitrogen fixation is obtained when legumes are planted with ryegrass. A good stand of a legume can fix 50 to 150 pounds or more of nitrogen per acre per year. Some of this legume-

supplied nitrogen will benefit ryegrass and any other plants growing with the legume, but the greatest nitrogen benefit typically goes to the warm season grass during late spring and summer. This primarily comes from urine and dung excreted by grazing animals that consumed legume forage and from decomposing legume growth. Where a good stand of overseeded legumes has been obtained, the first nitrogen application of the season to the summer grass can be omitted.

On non-irrigated sandy soils, crimson clover, arrowleaf clover and ball clover are often legumes of choice. Crimson clover makes the most early spring growth, followed by ball clover and then arrowleaf clover. On heavier soils or irrigated sites, white clover and red clover can make a significant amount of growth in mid- to late spring, and in the case of red clover, even into summer when adequate moisture is available. It is important to learn what soils and sites best suit various forage species before making species selection decisions.

Overseeded winter annuals can provide high quality pasture forage for numerous species and classes of grazing animals. Beef cow-calf operators should normally overseed no more than one-third to one-half of their summer pasture acreage unless any excess winter forage can be baled as hay or ensiled. Otherwise, it will be difficult to utilize the forage in the spring. The cost of overseeding winter annuals is usually only about half that of planting winter annuals on a prepared seedbed.

Many of the considerations important in planting winter annuals on prepared land also apply to overseeding. Although ryegrass is tolerant of soil moisture, fields selected for overseeding should not be excessively wet or subject to flooding. A soil test should be taken from each field, and any needed lime should be applied several months before overseeding. Most winter annuals, including ryegrass, are best suited to a soil pH of 6.0 to 6.5. Good quality seed of recommended varieties should be selected. Also, if legumes are planted, the seed should be inoculated with the appropriate species of *Rhizobium* bacteria. Most legume seed sold in the commercial seed trade is pre-inoculated, but if this is not the case, the seed should be inoculated by the producer immediately prior to planting.

VARIETIES AND SEED SELECTION

Many varieties of ryegrass are commercially available, and there are important differences among them. Some varieties have better season-long yields than others. The distribution of forage yield and the length of the growing season differ greatly as well. Some varieties are much



more winter hardy than others, which make them a better choice in more northern locations. Some varieties are susceptible to gray leaf spot, although many newer varieties have very good field resistance to this fungus. Crown rust may be a problem when ryegrass is planted near Coastal regions, so in these areas it is desirable to select rust resistant varieties. Many universities conduct ryegrass variety trials; therefore, it is prudent to review local trial data before making variety decisions. The vast majority of ryegrass seed is produced in Oregon, as this location typically provides an improvement in seed quality and higher seed yield compared to seed grown in other parts of the United States.

DATE OF PLANTING

The earliest date of planting ryegrass on pastures should usually be around six weeks later than the earliest date they can be planted on a prepared seedbed. This is typically around four weeks before the first killing frost. If winter annuals are overseeded too early, the summer grass may continue to grow and compete with the seedlings. Autumn weather, species of warm season grass and geographical location have an influence on the time summer grass will go dormant.

In the Deep South, most overseeding is done in October, November or early December (check local university recommendations). At this point night temperatures are usually in the lower 60's and daytime temperatures are around 80 degrees. Bermudagrass can usually be overseeded at an earlier date than dallisgrass or bahiagrass. Recommended planting dates in areas near the Gulf Coast are typically later than in areas farther north. As with most farming operations, rainfall is extremely important with regard to getting a good stand of overseeded winter annuals. Either natural rainfall or irrigation are essential for successful production of cool-season annual forages.

Another reason to not overseed too early is to avoid excessive heat and drought stress on the seedlings. However, planting as early as the situation will allow will result in forage available for grazing sooner than otherwise would be the case. This is particularly true if small grains are to be planted, because the primary advantage small grain offers is fall and winter production. Much of this advantage is lost with late plantings. That is why mixtures of small grain and ryegrass are often overseeded. The small grain provides more early growth, while most ryegrass growth occurs later. Planting too late is also undesirable, because with late plantings there is little time for seed germination and plant development, which may leave the young plants susceptible to winterkill.

PREPARATION FOR PLANTING

Failure to get the summer grass grazed down or mowed closely and removed is one of the most common reasons for overseeding failures. Auburn University tests showed that for small-seeded winter annual forage crops such as ryegrass and clovers, a stubble height of no more than one-inch is preferable. Large-seeded species such as vetch or small grain are more tolerant of taller plant residue.

Burning a field to remove surface residue is better than leaving a thick stubble in areas where small-seeded species are to be planted. However, it is often difficult to get a good burn over an entire field, and fire is a tool best left to professionals or those with adequate training and experience. Therefore, burning is generally less desirable than heavy grazing or close mowing.

Overseeding techniques vary greatly from producer to producer, and tillage varies from none to extensive. The need for tillage is

There is a good deal of confusion regarding the term "annual ryegrass." There are two types of annual ryegrass; Westerwold and Italian. Numerous varieties of each are commercially available. Westerwold ryegrass plants live less than one year. Italian ryegrass plants have the potential to live for more than one year in the northern USA if planted in spring. Most ryegrass overseeded on warm season pastures is of the Westerwold type.



Annual Ryegrass

Unfortunately, some people sometimes refer to annual ryegrass (*Lolium multiflorum*) as "rye." This is confusing because rye (*Secale cereale*) is a small grain that has a growth habit and seed size more like that of wheat or oats. Perennial ryegrass (*Lolium perenne*) has a similar appearance to annual ryegrass, but is only well suited to be grown for forage in cooler climates such as in the Upper Midwest, and does not perenniate in the southern region of the USA.



Cereal Rye

influenced by several factors, including amount of residue on the soil surface, soil type, date of planting and species to be planted.

Good stands of ryegrass or ryegrass and clover can sometimes be obtained by broadcasting seed over a dormant pasture without any cultivation, if this is done at the proper time and the stubble height is low. When seed is broadcast, it can be helpful to "tread-in" the seed by stocking the equivalent of 5 to 10 head or more of cattle per acre for a week or so. However, if conditions are not ideal, or if somewhat earlier planting is desired, use of a drag harrow may be beneficial. In some cases tillage may be quite beneficial. In most situations in which there is excessive plant residue and/or a thick sod, disking to a depth of 1 to 2 inches before broadcasting the seed will increase the chances of obtaining a stand. This light disking operation exposes some bare soil to ensure seed-soil contact and temporarily reduces competition from the warm-season perennial forage crop.

Light disking usually has no long term effect on a bahiagrass or bermudagrass stand, and on old stands it sometimes actually improves growth the following year. Tillage is often particularly helpful in facilitating stand establishment on bahiagrass because this species tends to form a thick, tight sod. With either broadcast seeding or drill planting, it is important that the seed come in contact with soil and not residue on the soil surface. If tillage is used, it is not necessary to penetrate the sod more than two to three inches. However, any tillage may encourage weed seed to germinate.

SEEDING RATES AND DEPTHS

Usual recommended seeding rates and depths for selected winter annual forages are presented in Table 1. Just about any combination of winter annuals may be used for overseeding, but in most cases ryegrass is a desirable component. Species selection should depend mainly on the amount of forage needed, the time when it will be needed and the relative costs of seed. Other points to consider are the benefit of

TABLE 1. USUAL SEEDING RATES AND DEPTHS FOR OVERSEEDING ANNUAL RYEGRASS ALONE OR WITH SELECTED WINTER ANNUAL FORAGE CROPS*

Forage Crop	Seeding Rate (lb/acre)		Seeding Depth (in.)
	Alone	In Mixtures	
Annual Ryegrass	20-30	15-20	0-1/2
Rye, Wheat or Oats		60-90	1-2
Arrowleaf Clover		5-8	0-1/2
Ball Clover		1-2	0-1/4
Crimson Clover		15-20	0-1/2

*These are usual seeding rates for drill plantings. The seeding rate for broadcast plantings should be increased by around 25%.

nitrogen fixation if legumes are included; the need for planting as early as possible in order to benefit from using small grain; and the need for a sod-seeder or no-till drill to plant small grain at the proper depth. Germination of ryegrass and small-seeded legumes normally occurs in about seven days, small grains slightly longer.

Placement of seed is as important when planting winter annuals on sod as it is when planting them on a prepared seedbed. Almost any winter annual forage crop can be overseeded on dormant summer pastures, but requirements for planting vary. Small grain should be covered with soil, therefore, it is best to use a drill planter. Ryegrass and clover seed can likewise be planted with a drill, but can also germinate on top of the ground if they are in firm contact with the soil and adequate moisture is present. Seed/soil contact is always important. Seed need to be in contact with soil and not surface residue. In areas where a significant amount of soil has been exposed by tillage, it is advisable to use a cultipacker or some sort of drag after broadcasting clover and/or ryegrass seed.

If seed are to be broadcast, thoroughly mixing seed with fertilizer is an option. However, the fertilizer/seed mixture should be spread within 6 to 8 hours of mixing. Otherwise reduced germination and seedling vigor may occur. Also, *Rhizobium* bacteria on legume seed may be adversely affected.

FERTILIZATION

Phosphorus and potassium should be applied at or near planting time according to soil test recommendations. In some areas, low phosphorus in particular will spell doom to establishment of winter annuals. Amount of nitrogen applied should depend on planting date, geographical location and the species being overseeded. When a small grain/ryegrass mixtures is overseeded, application of 30 to 60 pounds of nitrogen per acre should be applied at or near planting time (60 pounds for early plantings).

It is best to delay fall applications of nitrogen until after the seedlings have emerged. This allows making certain that a stand is present before applying the fertilizer, and also helps reduce the chance of stimulating summer grass growth.

When ryegrass alone is being overseeded there is usually enough nitrogen in the system to get the ryegrass through the winter. Application

of 50 to 60 pounds of nitrogen in late January or early February to ryegrass usually works well. Subsequently, one or two additional applications of 50 to 60 pounds per acre are typically made during the growing season.

For a legume-ryegrass mixture, 30 to 60 pounds of nitrogen per acre should normally be applied in late January or early February. If the legume comprises 25 to 30 percent or more of the ground cover in spring, no additional nitrogen is required.

GRAZING MANAGEMENT

As with winter annuals planted on a prepared seedbed, overseeded winter annuals should not be grazed until they are at least 6 to 8 inches high. However, if the weather after planting is such that the warm season pasture begins to grow enough to compete with the young seedlings, the area should be grazed down, perhaps even stocked heavily for a short period of time, to eliminate this problem.

The growing season of ryegrass and other winter annuals overlaps the growing season of warm season perennial grasses. It is critical to closely graze or cut hay during the spring transition period with the summer perennial grass pasture. Overseeding ryegrass usually has some negative effect on warm season grass production, but the benefits easily justify the practice. Failure to prevent extreme competition from a thick ryegrass stand can severely damage and even greatly thin the stand of summer grass. Overseeding no more than about one-third of the warm season pastures on a farm should allow the overseeded areas to be stocked heavily in spring to make use of the forage and to avoid undergrazing.

If it appears that it will be difficult to prevent undergrazing in spring, it will be highly desirable to harvest part of the overseeded area for baleage, haylage or hay, which can be of outstanding quality if it is not overly mature or damaged by rain. Once the ryegrass has stopped growing, an application of nitrogen, along with any other nutrients needed, can help the summer grass become productive.

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