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## CHAPTER 10

### Managing Ryegrass For White-tailed Deer

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#### Introduction

The white-tailed deer is the most popular big game species in Texas. Our large deer population has generated a tremendous sport-hunting demand which has developed into an estimated four billion dollar a year industry. This demand has created an increased interest in deer management by landowners and resulted in the need for more intensive deer management strategies. Expanded use of supplemental forages has occurred in response to increased economic and recreational value of the white-tailed deer and the general decrease in a suitable habitat base due to urban expansion highway and road construction, water development, cattle development strategies, even-aged timber management and clean farming methods.

#### Value of Supplemental Plantings

Supplemental forage plantings are becoming widely accepted throughout eastern Texas and much of the southern United States for white-tailed deer as well as wild turkeys. However, the primary purpose has been to increase harvest of deer and not to improve the nutritional plane available. Planting of supplemental forages is especially critical since much of the southeastern deer range (including East Texas) provides substandard nutrition for desirable deer production. In addition, food plots can be utilized to increase the nutritional plane of white-tails and inject critical minerals (particularly calcium and phosphorus) into the diet of a deer herd.

Well planned forage plantings can supplement native browse in meeting the deer's nutritional requirements, and at least partially compensate for decreases in suitable deer habitat. Furthermore, succession of vegetation occurs rapidly in East Texas and native plants can quickly grow beyond the reach of deer or decrease in quality to the point that the number of deer that the habitat can support (carrying capacity) is reduced.

The establishment of supplemental forages for wildlife historically has been accepted as a wildlife management tool. However, maximum benefits can only be obtained if forages utilized by deer are available when native vegetation is lacking or low in nutritional value. In East Texas, these

stress periods occur in late summer and late winter. Unfortunately, many well-meaning landowners and sportsmen waste thousands of dollars annually because of ill-fated attempts to establish forage food plots utilizing inappropriate species or varieties, inadequate sites, poor soil fertility, and/or poor planting techniques.

In East Texas, supplemental forages consisting of ryegrass and small grains (ie. oats) for white-tailed deer were initially established as a means to increase deer harvest. Since these plantings were designed to concentrate deer during the hunting season, cool-season legumes and grasses were the primary varieties utilized. More recently, use of warm-season legumes such as cowpea has increased as landowners and sportsmen attempt to provide deer herds with forage high in protein and minerals during the summer months when native vegetation quality is generally poor.

#### **East Texas Ryegrass Studies**

Ryegrass was evaluated from 1987-89 at four sites characterized as follows: Post Oak Savannah upland (POU), Post Oak Savannah bottomland (POB), Pineywoods upland (PWU) and Pineywoods bottomland (PWB). The Post Oak trials were located in Leon County on the Kelly-Meadows Ranch. The Pineywoods trials were located in Angelina County on the Eason Lake Hunting Club.

Production of "Gulf" ryegrass was lowest on the Post Oak Upland site (2,626 lb/ac). Production on the Post Oak bottomland site (5,376 lb/ac) and the Pineywoods bottomland site (6,155 lb/ac) were similar. The highest production occurred on the Pineywoods upland site (9,626 lb/ac). The Post Oak upland site was the most drought-prone of the 4 sites and lack of adequate rainfall following planting in the fall of 1988 severely limited production. Production in the Post Oak Bottomland site was not as adversely affected, presumably due to higher soil moisture conditions inherent in bottomland sites. However, severe flooding at the Pineywoods bottomland site in the spring of 1989 also limited production during that year.

Ryegrass utilization by white-tailed deer was highest from 60 to 120 days after planting, then steadily decreased (Table 1). Days 60-120 correspond with the cold weather of the January-February stress period that traditionally increase the white-tail's use of supplemental forages. The precipitous decline in ryegrass use after day 120 was caused by a diet shift from ryegrass to highly nutritious browse and forbs that became abundant at spring-greenup.

**Table 1. Mean utilization percentage of ryegrass by white-tailed deer over two growing seasons (1987-88 & 1988-89)**

Days Since Planting	SITE <sup>1</sup>			
	PWU	PWB	POU	POB
	% utilization			
30	47	46	99	84
60	91	87	91	91
90	100	100	100	99
120	100	100	98	85
150	58	58	65	56
180	18	19	35	15
210	3	5	0	0
240	0	0	0	0

<sup>1</sup>Sites: PWU=Pinewoods upland, PWB=Pinewoods bottomland, POU=Post oak upland and POB=Post oak bottomland.

The quality of ryegrass as measured by crude protein percentage was highest within 180 days of the planting dates (Table 2). Quality was also correlated to utilization. Ryegrass quality remained high during the time when utilization was high but began to decline as utilization declined and maturation progressed.

#### Site Selection, Size and Dimension

It is important to select planting sites that are not prone to flooding or standing in water due to heavy rains. Ryegrass does have more tolerance to wet soils than small grains or legumes and therefore should be considered for bottomland sites.

**Table 2. Mean crude protein content (%) of ryegrass established for white-tailed deer over two growing seasons (1987-88 & 1988-89)**

Days Since Planting	Site <sup>1</sup>			
	PWU	PWB	POU	POB
	crude protein %			
60	25.7	21.1	31.1	29.3
90	23.5	21.8	23.1	21.3
120	29.3	23.1	25.7	27.9
150	26.3	24.6	27.3	24.2
180	21.6	19.9	23.9	22.0
210	12.2	13.2	14.2	11.0
240	7.3	7.4	7.4	7.8

<sup>1</sup>Sites: PWU=Pinewoods upland, PWB=Pinewoods bottomland, POU=Post oak upland and POB=Post oak bottomland.

Whenever possible, existing openings should be utilized for food plot development to reduce costs. Examples include fallow fields, pipeline and transmission line rights-of-way, logging roads, firelanes and interior road rights-of-way. Areas adjacent to public roads/access are poor planting sites since they may encourage poaching.

The size and shape of supplemental food plots vary tremendously. However, numerous small plots are more effective at maximizing the edge available resulting in increased utilization by deer. Most plots are from 0.5 to 3.0 acres in size. Larger food plots can be established, especially if the shape is long and narrow instead of square. In addition, long narrow food plots maximize edge effect and serve to cut across an increased number of deer home ranges. However, plots must be wide enough to prevent excessive shading from nearby trees.

Properly established food plots are expensive and this may limit the acreage that can be established. Therefore, it is important to maximize productivity and carefully select planting sites. A good rule of thumb is to plant 1-3% of the habitat base present in both warm- and cool-season forages. For instance, 1-3 acres of food plots should be established for each 100 acres of habitat present. In addition, food plots should be distributed at the rate of at least one plot per 160 acres of habitat.

### **Site Preparation**

The area selected for planting supplemental forages depends on the plant species to be established and the goals of the landowner/deer manager. Cool-season species such as ryegrass are not as susceptible to drought or weed competition as warm-season varieties. One exception may be in September and October if rainfall is below normal.

Soil samples should be taken to determine lime and fertilizer requirements. Failure to properly amend the soil may result in drastically poor stands, unsatisfactory yields, or excessive weed competition. If soil testing is not possible, food plots should be limed every three years at the rate of two tons per acre. Ryegrass and ryegrass mixtures should be fertilized with 200 lbs. per acre of 6-24-24 following germination and top-dressed with 200 lbs. per acre of 34-0-0 fertilizer in mid-December. The site should be shredded and disked to prepare a clean seedbed. Agricultural limestone (if needed) should be applied prior to disking and worked into the soil. Planting sites should be selected to minimize shading from nearby trees. However, to maximize utilization, sites should be selected adjacent to adequate escape cover. Since cool-season plantings are often established in hunting areas, care should be given to establishing these plots near adequate escape cover, travel corridors and other habitat types frequented by deer.

### **Management Recommendations**

Unfortunately, there is no one forage species that can satisfy the nutritional requirements of the white-tailed deer throughout the year. As a result, cool-season forage combinations are recommended over establishment of ryegrass alone. Ryegrass is a valuable component of cool-season food plots for deer when combined with clovers or small grains.

Cool-season combinations provide forage during the hunting season as well as during the critical stress period in January and February prior to spring green-up. Furthermore, cool-season combinations can extend the season of forage availability into early summer, about the time warm-season plots reach a growth stage suitable for utilization by a deer population. Elbon rye is an excellent cereal grain to include in a cool-season forage combination because of its cold hardiness. Additional grains that can be utilized with ryegrass include oats and wheat. Clovers such as arrowleaf and crimson can also be mixed with ryegrass.

Whenever possible, livestock should be excluded from food plots established for white-tailed deer. Failure to exclude livestock may result in stand failure due to grazing before forages become established and result in limited forage availability for deer. Fence enclosures should have wire spacing that permit deer easy access to plots (i.e. bottom wire 18 inches above ground).

### **Conclusions**

Supplemental forage plots are not cure-alls for poor deer management practices. Without proper habitat management and population control, food plot establishment is a waste of time and money for the hunter, landowner and deer manager. However, food plots can be an important piece of the overall deer management puzzle in East Texas. Ryegrass planted in mixtures with small grains and/or clovers are an excellent source of forage, protein and minerals during January and February. This is a critical period to meet the nutritional requirements of white-tailed deer because the preferred food sources of browse and forbs may be limited in quality and/or quantity.