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SOILS

Control Thistles During Winter

by Jim Johnson / jpjohnson@noble.org

Most thistles go unnoticed until they bolt (put up a flowering stalk). When thistles bolt and begin to flower each spring, folks who want to control them call the Noble Foundation. By the time they call, however, it is usually too late in the season. Once thistles become reproductive, they are much harder to control and may have already produced viable seed.

Thistles can be easily controlled with herbicides when they are young and in the rosette, or low growing, vegetative stage. Plant identification can be a little more difficult when the weeds are immature, but there are many good resources available on the Internet. An excellent resource for Oklahoma is Oklahoma Cooperative Extension Service Fact Sheet PSS-2776. You can also use a search engine such as Google to find images of "musk thistle" or any other thistle.

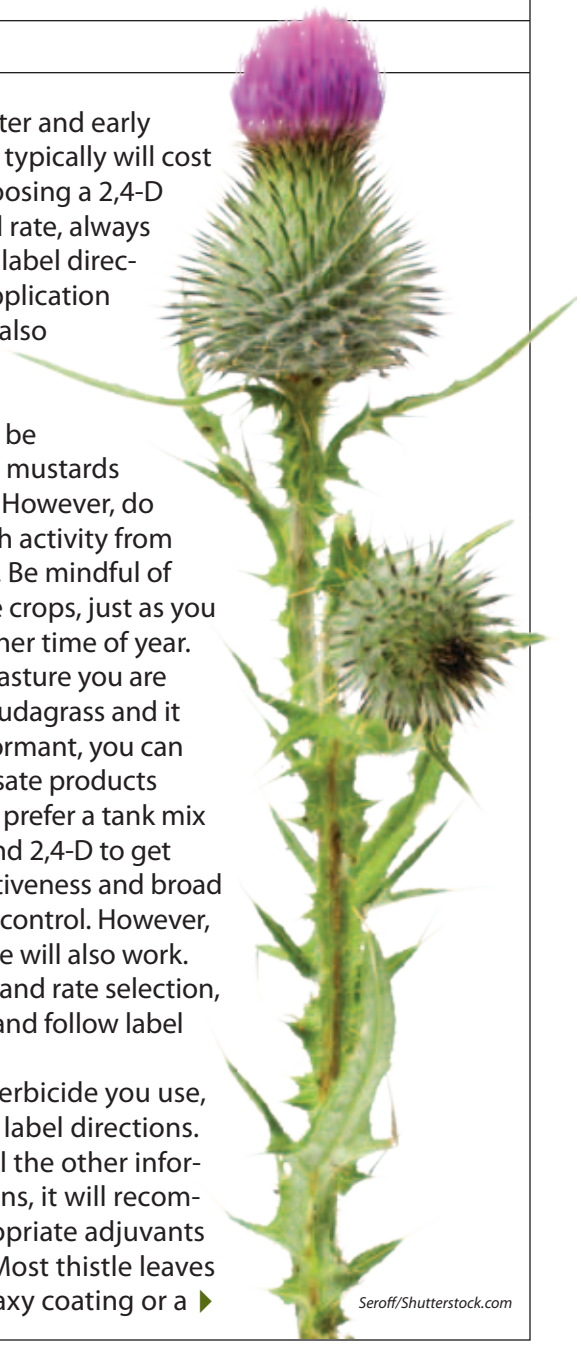
Once you determine if and what kind of thistles you have, consider how many and where they are in your fields or pastures. Are there so many that you want to treat them with herbicides or are there few enough that you can hoe them out by hand? Are they isolated so you can use a hand sprayer or so widespread that you will need a broadcast application? Are temperatures favorable enough that herbicides are an option?

If herbicide is the method chosen and the thistles are in grass pastures or crops, then there are many herbicide products to choose from. If thistles are in broadleaf crops or pastures, then herbicide options are more limited. For the sake of brevity in this article, we will focus on thistle control in grasses.

The most common, most available and least expensive herbicide for thistle control in grasses is 2,4-D applied in February. There are many other products that will also work in late winter and early spring, but they typically will cost more. When choosing a 2,4-D formulation and rate, always read and follow label directions. A 2,4-D application in February will also control many other broadleaf weeds that may be present, such as mustards and chickweed. However, do not expect much activity from 2,4-D on henbit. Be mindful of nearby sensitive crops, just as you would at any other time of year.

If the grass pasture you are treating is bermudagrass and it is completely dormant, you can also use glyphosate products like Roundup®. I prefer a tank mix of glyphosate and 2,4-D to get maximum effectiveness and broad spectrum weed control. However, glyphosate alone will also work. For formulation and rate selection, be sure to read and follow label directions.

Whichever herbicide you use, read and follow label directions. In addition to all the other information it contains, it will recommend the appropriate adjuvants or surfactants. Most thistle leaves have either a waxy coating or a ▸



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SOILS

covering of fine hairs. Both of these will inhibit the herbicide spray from reaching the leaf surface and being taken up by the plant. Surfactants reduce the surface tension of the spray solution and help it to spread over the leaf surface so that the chemical can be taken into the plant. Some herbicides already have the surfactant premixed into the product and no additional adjuvant is needed.

Thistles and most other weeds are most susceptible to control with herbicides when they are young and actively growing. If temperatures are cold enough that plants are not actively growing, then herbicide action will be limited. Try to plan your spraying when several days in a row are forecast to be above 60 degrees Fahrenheit. Under conditions of warm sunny days, cool-season weeds like thistles do have some active growth and should be acceptably controlled with herbicides. Read and follow label directions.

Once you are finished spraying, you will want to drain and re-winterize your sprayer, unless it is stored in a heated shop. Even though the weather may be nice on a particular day in February, late cold snaps in March can freeze the water in sprayer components and crack or rupture the plumbing. ■

WILDLIFE

Estimating Deer Weight From Field-dressed Weight

by Kenneth L. Gee / klgee@noble.org and Corey Moffet / camoffet@noble.org

Most deer hunters field dress their game prior to bringing it in from the field. This process usually involves removing the entrails, reproductive tract, heart, lungs, diaphragm and part of the esophagus. As a result, the only weight many hunters obtain for their deer is a field-dressed weight, leaving the whole weight of their quarry unknown.

Figures 1, 2 and 3 will help hunters estimate the whole weight of a deer based on its field-dressed weight. These graphs were developed using data collected at the Noble Foundation Wildlife Unit (NFWU) from 1982 to 2001 on over 200 deer harvested or collected during the months of October to January. The NFWU was located in south-central Oklahoma in Pontotoc, Hughes and Coal counties. We found slight differences in the predictive equations for fawns, yearlings and adults (≥ 2.5 years of age), but no difference for bucks and does within those age-classes. It is important to point out that differences may exist for deer in other parts of the country, but these equations should at least be applicable to deer in central and southeast Oklahoma and north-central Texas.

To obtain an estimate for a whole weight using the graph, simply locate the known field-dressed weight on the horizontal axis of the graph and draw a line straight up to where it intersects the predictive line for the appropriate age-class (solid black line). From that point, draw a horizontal line to the vertical axis. This line intersects the vertical axis at the estimated whole weight. For example, the estimated whole weight for a field-dressed deer weighing 105 pounds is 134 pounds (Figure 4). Based on our data, 95 percent of adult deer with 105-pound field-dressed weights would have whole weights between 126 and 141 pounds. An online calculator is available at www.noble.org/tools/deer-weight-converter that allows you to determine whole or field-dressed weight estimates for white-tailed deer using the corresponding available weight.

We strongly recommend that individuals interested in managing deer collect age and weight information for all harvested animals as part of the recordkeeping process. Average weights by sex and age-class are useful in evaluating the success of a management program. These regression equations or the online calculator will help managers evaluate deer weights on a common basis. ▸

Figure 1

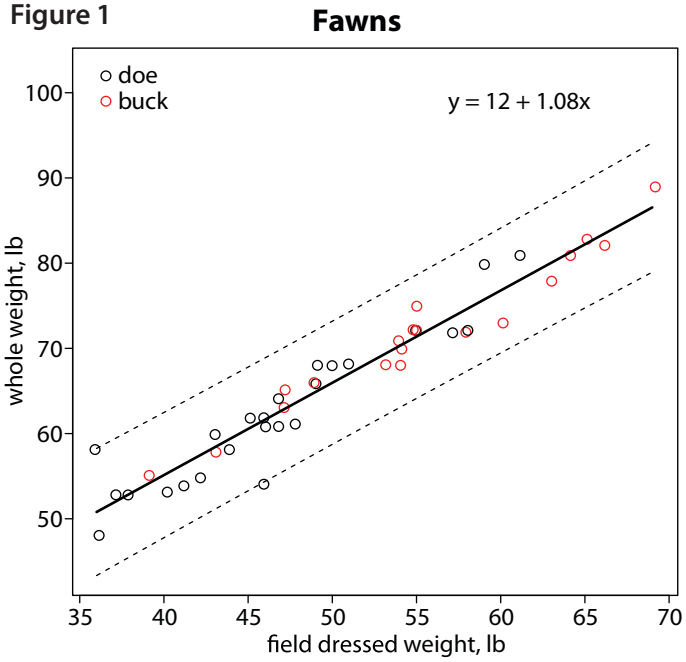


Figure 2

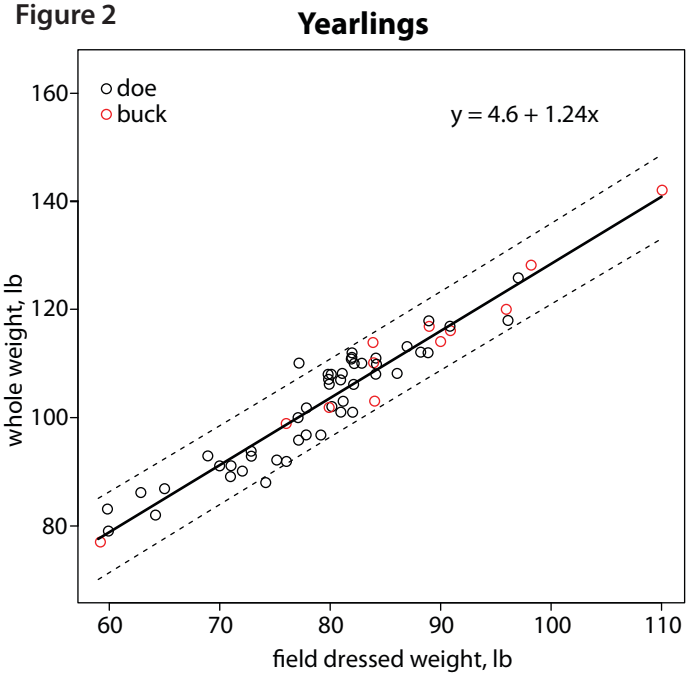


Figure 3

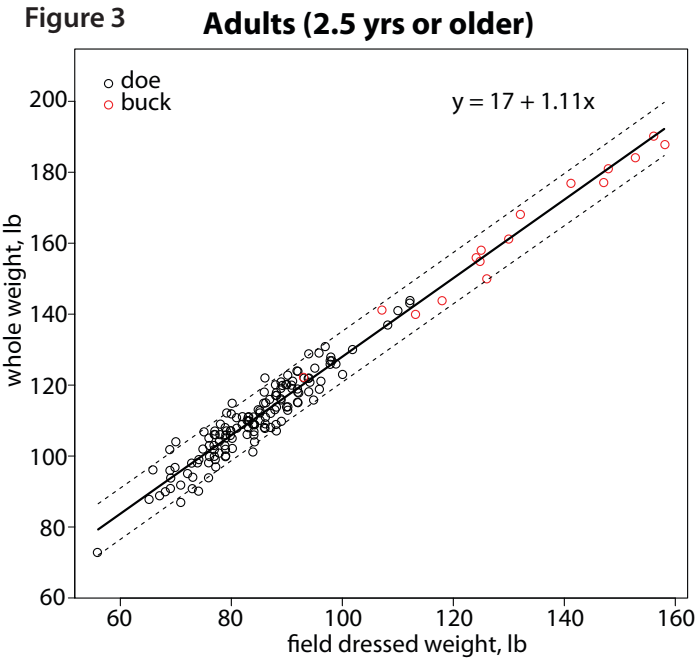
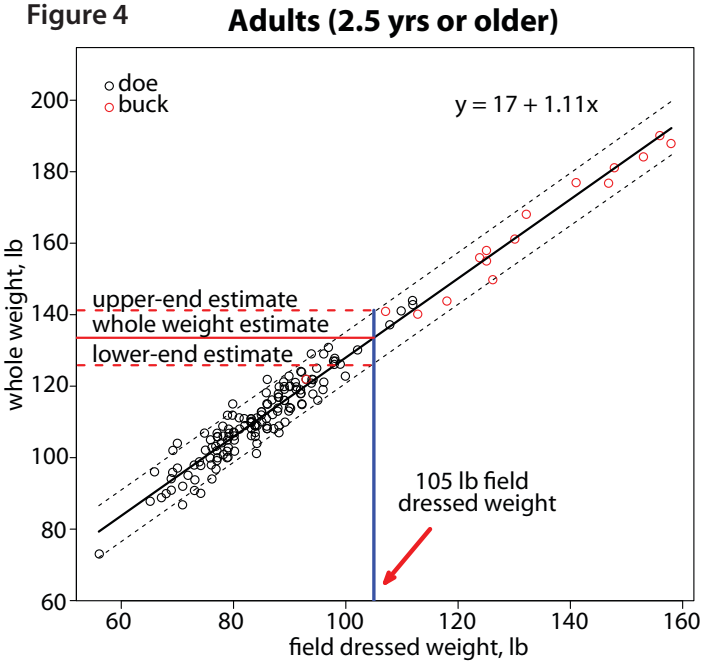


Figure 4



Figures 1, 2 and 3 allow estimation of a deer's full weight based on its field-dressed weight. Figure 4 demonstrates how to use the charts through an example of a 105-pound field-dressed adult deer. The charts were created using 19 years of data collected at the Noble Foundation Wildlife Unit in south-central Oklahoma.

Shaping Up Pecans With Irrigation

by Charles Rohla / ctrohla@noble.org

Installation of an irrigation system is one of the most important steps in establishing a new pecan orchard. Water is critical to produce healthy trees capable of optimal fruit production. This is especially important during dry seasons when trees can become significantly stressed without additional water.

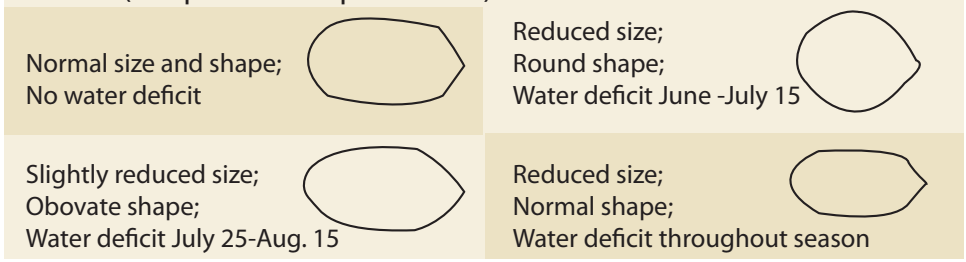
Research has shown that irrigation improves kernel percent, grade, fill percentage and nut specific gravity – all indicators of fruit quality.[1,2,3,4,5,6] Water availability also impacts tree size (trunk circumference and canopy) and overall fruit yield.[1,6] Madden (1969) found that irrigated trees averaged over 400 pounds of fruit per acre and had 17.8 fewer nuts per pound than non-irrigated trees. This increase in fruit quality is supported by other research that found that nut size increased with irrigation use, particularly during dry periods.[1, 4, 5, 7]

The timing of soil moisture can significantly influence the development of nuts as shown in the figure. Following are developmental periods where the availability of irrigation could ensure successful nut harvests:

Bud break: non-uniform bud break and weak, non-vigorous growth. Inadequate water after pollination causes misshaped (more rounded) nuts.

Nut sizing (June-August): excessive nut drop, small nuts or misshaped nuts (reduces basal diameter). Water stress during this period followed by a sudden influx of water can lead to water stage fruit split.

Figure 1. Effect of the timing of water deficit on nut shape and size (Adapted from Sparks 2006).



Nut filling (August-October): poorly filled nuts (poor nut quality), slightly reduced in size and obovate shape (teardrop shaped). Increase in shuck decline during heavy crops (shuck deteriorates and opens prematurely with poorly filled kernels).

Shuck split: delayed shuck split, increasing percentage of stick tights or pops (nuts with unopened shucks). Increased occurrence of vivipary (nut germinates and sprouts on the tree).

Water timing is critical for successful harvest, but how should the water be applied? How much is needed to ensure success? When watering pecan trees, not all roots have to be in the wetting zone. Water will be translocated from roots in moist areas to roots in dry areas[8]. This is the premise behind drip and micro irrigation. Most of the water taken up by pecan trees is in the upper 32 inches of the soil. Pecans are deep-rooted trees; however, when a tree has to pull water from deeper moisture reserves, it is for survival and not for fruit production. Therefore, irrigating should occur until the water reaches the bottom of the root zone (less than 32 inches). Watering beyond this is wasteful. When using drip and micro irrigation, approximately 40 percent of the soil surface should be wetted in order to provide adequate coverage. Use of soil moisture sensors is recommended to determine optimal irrigation levels.

The amount of water a pecan tree requires is debatable. In general, mature trees in the West have been reported to use 39 to 51 inches of water per season[9]. Thompson (1974) reported large trees in New Mexico used approximately 42 inches, while medium-sized trees in southwest Texas used around 27 inches of water per year. Madden (1969) estimated that pecans in the West required 50 inches of water. So there is considerable variation in water needs. My recommendation for Oklahoma and northern Texas is 30 to 50 inches per season or 1 to 2 inches per week from June through October.

In Oklahoma and northern Texas, irrigation is typically a supplement to rainfall. However, after a dry year like 2011, we see the importance of water and properly designed irrigation systems. When installing irrigation and especially when establishing a new orchard, I highly recommend use of an irrigation designer who has experience developing systems for pecan orchards. ■

[1]Alben, 1958; [2]Daniel and Heaton, 1984; [3]Heaton et al., 1982; [4]Stein et al., 1989; [5]Worley, 1982; [6]Romberg et al., 1958; [7]Madden, 1969; [8]Taylor and Fenn, 1985; and [9]Miyamato, 1983.

You Cannot Starve a Profit Into a Cow

by Robert Wells / rswells@noble.org

Most cattle producers in Oklahoma and Texas had a difficult 2011. The drought prevented an adequate amount of hay from being harvested or purchased for a reasonable price. Thus, most producers are trying to survive winter 2012 by stretching forage and feed resources. This can be accomplished with careful thought and consultation with a nutritionist to ensure that each cow's nutrient requirements are still being met for the stage of production it is in. If corners are cut to save money now, it can have long lasting repercussions.

The first consideration when pasture quality and quantity are low during winter is that a spring calving cow's requirements are increasing through late gestation and continue to increase after calving and early lactation. Table 1 demonstrates this trend and shows that a cow reaches its highest nutrient requirements two months after calving. This table also lists the quality of the total diet the cow must consume in order to meet her requirements, including maintenance and development of the fetus. If the cow is able to consume an ad libitum forage diet in the last month of pregnancy, she would need to eat hay or pasture that was at least 56.2 percent total digestible nutrients (or energy) and 8.8 percent crude protein.

Following drought, most ranchers do not have the luxury of enough pasture or hay to allow the cows to consume all that they want. This is when you should use the total pounds of each nutrient that the cow must have to meet her nutritional requirements. Many times, we can meet her nutrient requirements with more nutrient-dense feeds such as alfalfa hay and by-product feeds without meeting the cow's dry matter intake requirements. The cow may still be hungry because of lack of rumen fill, but she will not suffer from malnourishment.

The consequences of not meeting the cow's nutrient requirements prior to calving can have lasting effects on the cow and the ranching operation. A cow that is receiving inadequate nutrients and is losing weight will enter starvation mode, which may shut down the reproductive cycle. This can last well into spring after grasses have started to grow again because the cow must regain enough body condition to trigger the initiation of the reproductive cycle. This can lead to the cow being bred late in the season or not at all.

Table 2 demonstrates the importance of body condition on the rebreeding rate of mature cows. A cow in a body condition score of 4 or less has a dramatically reduced rebreeding rate. Additionally, a cow that is in poor body condition at calving has a higher chance of dystocia, or calving problems.

Feeding the cow herd during drought is a costly venture, but not feeding them will cost you more in the long run through stillborn calves and dead or open cows next year. You cannot starve profit into a cow. ■

Table 1. 1200-pound cow; 20 pounds/day milk during peak lactation

Months since calving	DMI, lbs	TDN, %	TDN, lbs	CP, %	CP, lbs
1	26.8	58.7	15.7	10.1	2.7
2	27.8	59.9	16.7	10.7	3.0
3	28.4	57.6	16.4	9.9	2.8
4	27.4	56.2	15.4	9.3	2.5
5	26.5	54.7	14.5	8.5	2.3
6	25.7	53.4	13.7	7.9	2.0
7	24.2	44.9	10.9	6.0	1.5
8	24.1	45.0	11.0	6.2	1.5
9	24.0	47.1	11.3	6.5	1.6
10	23.9	49.3	11.8	7.0	1.7
11	24.1	52.3	12.6	7.7	1.9
12	24.6	56.2	13.8	8.8	2.2

DMI=Dry Matter Intake TDN=Total Digestible Nutrients CP=Crude Protein
Adaptable from 1996 Nutrient Requirements of Beef Cattle.

Table 2.

		Body Condition Score at Calving		
		4 or less	5	6 or more
Trial 1	% in heat, 80 days after calving	62	88	98
Trial 2	% bred, 60 days	69	80	–
Trial 3	% bred, 60 days	24	60	87
Trial 4	% bred, 180 days	12	50	90
Trial 5	% bred, 60 days	70	90	92

Adapted from Whiteman, 1975, (Trial 1) and Sprott (Trials 2-5)

The Economic Potential of Grazing-tolerant Alfalfa

by Jon T. Biermacher, Sindy Interrante, Joe H. Bouton and Twain J. Butler

Alfalfa is a high quality, perennial legume forage that has potential to be a part of summer stocker grazing programs. However, most of the alfalfa that is produced is primarily harvested and marketed as high quality hay for dairy and equine enterprises. Generally, producers do not use alfalfa for grazing because of the short stand life that historically accompanies continuous grazing. More recently, though, new cultivars selected for grazing tolerance have been developed that show tremendous potential for high quality and persistence under continuous grazing. To date, there is limited information about the economic potential of the grazing-tolerant varieties. In response to this lack of information, we utilize animal performance data generated from a three-year (2002-2004) grazing trial conducted at the Noble Foundation to determine the economic potential of the grazing-tolerant cultivars.

In September 2001, strips of Alfagraze®, AmeriGraze 702® and Amerigraze 401+Z® cultivars were established using conventional clean till establishment techniques on six 2-acre paddocks. Two grazing management systems were randomly assigned to the six paddocks in a completely randomized designed approach. In the first system (Full Season), steers were allowed to continuously graze alfalfa pastures for the entire length of the grazing season. In the second system (August Termination), steers continuously grazed pastures until grazing was terminated the first of August, allowing the pastures to rest for the remainder of the growing season in an attempt to extend the life of the stand.

Table 1. Three-year Average Measures of Animal and Economic Performance for Grazing-tolerant Alfalfa Forage With and Without Pasture Rest

Animal/Economic Measures	Full Season	August Termination
Average Daily Gain (lbs/hd/day)	2.06	2.32
Steer Grazing Days	391.33	292.33
Total Gain (lbs/acre)	395.38	348.74
Total Alfalfa Establishment Costs ($/acre)	298.46	298.46
Establishment Costs – Prorated for Three Years at 7.5% APR ($/acre)	114.77	114.77
Total Costs Incurred Annually ($/acre)	128.48	119.22
Total Establishment Plus Annual Costs ($/acre)	243.25	233.99
Value of Gain ($/lb)	0.92	0.82
Gross Revenue ($/acre)	363.76	285.96
Net Return to Land, Management and Overhead ($/acre)	120.51	51.97

Average measures of animal performance and estimates of expected costs, revenue and net return to land; management; and overhead for the two management systems are reported in Table 1. We learned several things from this study:

- Steer performance (ADG) was similar for both systems.
- Steers in the Full Season system realized 34 percent more grazing days than steers in the August Termination system.
- Due to a longer grazing season, Full Season pastures realized 13 percent greater total gain relative to the August Termination pastures.
- Damage from cotton root rot limited pasture life to three years for both systems.
- Benefits from a greater value of gain and grazing days provided the Full Season system with a revenue advantage of $78 per acre over the August Termination system.
- The three-year average net return was positive for both systems; the Full Season system, however, was $69 per acre more profitable than the August Termination system.
- Average net returns for both systems are most sensitive to the life (years) of the alfalfa pastures. Extending the life of the pasture will reduce establishment costs, leading to substantial improvements in net return for both systems.

Producers should use the information reported in Table 1 to help them determine whether or not the Full Season system would be more profitable for their operation than their current production system. ■

Wanting More "Green" Early in Spring?

by Hugh Aljoe / hdaljoe@noble.org

This article has been adapted from one that ran in the Feb. 2009 Ag News and Views *newsletter. It has been updated with information relevant to 2012.*

It is February and many of us are anxiously waiting for spring, especially if we've been feeding hay. Most pastures have a straw-colored look about them. Green fields are short and not abundant enough. Although there was good rainfall in the fall of 2011 across most of southern Oklahoma and northern Texas, the winter pasture that was planned for last fall may not have developed to expectations or was not planted due to poor moisture conditions going into the fall. What can be planted now to bring about earlier spring pasture? Following are the two most common recommendations.

Recommendation 1

If you have cropland that does not currently have winter pasture on it, spring oats are a good alternative. Oats are probably the most palatable of cereal crops and grow rapidly once soil temperatures begin to warm. Oats will germinate with soil temperatures at 40 degrees or above. Soil temperature and moisture conditions will determine the rate of development in the spring.

The recommended planting date is between mid-February and mid-March. The recommended seeding rate is 2 to 3 bushels per acre (bushel weight for oats is 32 pounds) or 65 to 100 pounds per acre. If planted conventionally, the lower seeding rate would be acceptable, but use a higher rate for a "broadcast-disc" planting. For spring plantings, apply about 50 to 100 pounds per acre of actual nitrogen, and control weeds as needed. With good growing conditions, oats can produce 4,000 to 5,000 pounds per acre, although 2,000 to 3,000 pounds would be more typical. Oats can be grazed or hayed.

Dallas, Harrison and Horizon 314 varieties have performed well in fall-planted Noble Foundation tests at the Ardmore campus since 2000. In a spring-planted variety test the winter of 2001-2002 conducted by Dr. Brent Bean and Dr. Calvin Trostle of the Texas Cooperative Extension in the Texas Panhandle, Walken, Troy and Monida oat varieties were recommended for grazing and hay, with Charisma and Magnum oats also recommended for hay.

Recommendation 2

If you have some bermudagrass pasture that is grazed short at this time, broadcasting ryegrass is still the best option for early spring grazing. Broadcast 15 to 20 pounds of seed per acre by early March. Apply 50 to 100 pounds per acre of actual nitrogen when broadcasting seed. If the ryegrass is already present, either add seed at a reduced rate or only apply nitrogen. Production ranges from about 2,000 to 4,000 pounds for a spring planting, depending on the year.

Ryegrass varieties that have performed well in the Noble Foundation variety tests from 2006 through 2010 include Marshall, Passerel Plus, Jackson, TAMTBO and Big Boss, just to mention a few. General planting recommendations would be to plant no more than 1 acre of ryegrass per mature grazing cow. Ryegrass typically remains productive into early June and can retard spring growth of the bermudagrass. For that reason, it is not typically recommended to overseed ryegrass on your best bermudagrass pastures. If bermudagrass production is essential from an overseeded area, graze or hay off the ryegrass by early May.

One major benefit of planting ryegrass is its ability to reseed itself. With a good seed crop, little or no seeding will be necessary the following year, thus reducing establishment cost. Ryegrass will establish more rapidly on a clean field, but consideration should be given when planting on cropland. Because of its reseeding capability, ryegrass can become a difficult to control, grassy weed species if other cool-season grain crops are planted in future years.

Final notes

Whenever you are establishing a crop or pasture, attention needs to be given to pH, phosphorus, potassium and soil type. Sample soils and test them to determine nutrient levels so deficiencies can be identified prior to planting. If anything other than nitrogen is needed, it may not be cost- effective to establish an annual crop such as oats or ryegrass this spring. Also keep in mind that extremely sandy soils are generally not considered suitable for either oats or ryegrass, and neither crop will perform very well on soils prone to remaining saturated during the spring. However, ryegrass tolerates standing water better than oats. The ideal soils for both oats and ryegrass are loams and well drained clay soils. ■

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Spring Cattle Workshop
Date: Feb. 23, 2012
Location: Noble Foundation Pavilion
Time: 1 p.m.-5 p.m.
No Registration Fee

Fertilizing for Profit School
Date: Feb. 28, 2012
Location: Noble Foundation Kruse Auditorium
Time: 1 p.m.-4 p.m.
No Registration Fee

Junior Beef Spring Delivery
Date: March 5, 2012
Location: Noble Foundation Pasture Demonstration Farm
Time: 3 p.m.-7 p.m.
No Registration Fee

For more information or to register, please visit www.noble.org/AgEvents, or call Tracy Cumbie at 580.224.6292. Preregistration is requested.

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