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The picture above was taken in Henry County. From the road, the corn crop appeared to be in fair condition, but closer inspection revealed lack of ear development.

Dates of Interest:

- July 19 - TN Junior Holstein Show, MTSU
- July 20 - TN Holstein Show, MTSU
- August 1 - Deadline for all Regional and State Junior Dairy Shows entries
- August 9 - State 4-H Dairy Judging Contest, Franklin
- September 8 - Eastern Region Junior Dairy Show, TN Valley Fair, Knoxville
- September 11 - Western Region Junior Dairy Show, West TN State Fair, Jackson
- September 15-16 - Central Region Junior Dairy Show, TN State Fair, Nashville
- October 19-20 - State Junior Dairy Show, TN Dairy Expo, Murfreesboro

Tennessee Dairy News

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Is The Drought Stressing You Out?

- Kristy H. Campbell

The July 5, 2007 U.S. Drought Monitor for Tennessee shows that the majority of our state is suffering from a Severe to Extreme Drought. There is only one higher drought category – Exceptional Drought. Many parts of Alabama, and some areas in southern Middle Tennessee are unfortunately in this category. Depending on where in Tennessee you live and farm, and whom you ask, this is the worst drought in 10 years or 125 years. It is difficult to know when the drought-ending rains will come. In the meantime, you might enjoy brief showers that offer some relief, but it is vital that we do not simply wait on the moisture. As overwhelming as it is, now is the time to deal with the situation at hand and plan for the worst. There are steps you can take in the short term to ensure your cows and your farm survive this drought, with the prayer that next year will be better.

1 - Harvesting Drought-Stressed Corn Silage

- This year's crop of corn silage should be harvested at the same dry matter (DM) level as normal corn silage (32-35% DM). Dry matter content must be optimal for proper fermentation to occur. In drought-stressed corn, this may be before optimum stage of maturity. This year, it may be difficult to know when that is. The milk-line guideline may not be available due to lack of ear or kernels may not reflect total plant DM as normal. Moisture levels in whole plant may run higher than normal when grain development is lacking, and stunted plants with good ear development may have lower moisture than normal. To determine DM analysis on-farm, chop up several representative stalks and conduct a DM analysis with a Koster tester or microwave. Another option is to send a sample to a commercial lab. However, DM can change quickly, and field conditions may change significantly during the lag time from sampling to results.
- Corn is a nitrate accumulator, and drought-stressed corn may contain dangerous levels. Nitrate concentration tends to be highest in the lower portion of the stalk. To reduce nitrates in silage, raise the cutter bar to chop at 6-18 inches. This will significantly reduce DM yield, but keeps the lower portions of the stalk from contaminating the entire harvest. Ensiling does reduce nitrate levels, but only by 50% at most.
- Use research based, effective silage inoculants to jumpstart the fermentation process because 1) DM will be highly variable throughout the cornfield and 2) hot weather reduces normal bacteria found on the corn plant that starts the fermentation process.
- When faced with low ear production, realize the energy value of the silage will be reduced. Do not add dry corn to silage at ensiling, as it will reduce the moisture level causing fermentation problems. However, the silage will still have forage value.
- Do not add ammonia, urea or other nitrogen additives, as they will increase the pH and delay fermentation. Also, higher levels of nitrates may already be present.
- Adding wet brewers grains, liquid whey or wet by-products (> 70% moisture) can increase silage moisture and improve fermentation if done correctly. Adding water with a sprinkler will add some moisture, but not a significant amount.

Drought Stress, continued from page 1

(1 - Harvesting Drought-Stressed Corn Silage)

- Be aware of silo gases as higher than normal levels will be released from drought-stressed corn.
- Avoid feeding green chop this year! It could be very high in nitrates, and if it heats in the wagon or bunk, nitrates could be converted to nitrites, which are more toxic.

2 - Assess Forage Needs

Hay

- Most every dairy farm feeds hay. Hay may be fed to lactating cows year-round or only to grazers (heifers and dry cows) in winter. Determine how much hay you have on hand and how much you will need to make it to the next hay season.
- You can minimize loss of hay that you have on hand by storing it properly. Hay stored outside, on the ground and uncovered can lose 28-33% DM. If it is off the ground and covered, loss is reduced to less than 10% DM. If it is stored in a barn or shed, losses can be minimized to less than 8%. Also, you can minimize wastage of hay by animals by chopping it and including in a total mixed ration (TMR). If a TMR is not possible, use round bale rings rather than feeding on the ground.
- If you have Conservation Reserve Program (CRP) acres, FSA county committees in some areas of the state can consider hay harvesting and grazing of this land. Contact your local FSA office for details.
- If additional hay will be needed, investigate the potential for buying hay as soon as possible. Supplies are tight. The Southeast is devastated by drought, and areas in the Mid-West were hit hard by a late freeze and are now flooded out. Prices are climbing and will likely continue to rise as winter approaches. Recent alfalfa hay prices range from an extraordinary low of \$185/ton to an outrageous \$500/ton.

Corn Silage

- You can sample corn as it is being chopped and have it analyzed to provide a baseline of nutritional content. Ensiling does alter some nutritional values, but the early analysis will give you several weeks of additional time for making management decisions. If quality is very poor, the extra time can be used for exploring alternative feeding options. Have the silage analyzed again after ensiling to determine nutrient value prior to feeding.
- Determine how many tons of silage you harvest this year. Purchasing silage may not be an option, but you never know until you check. If you find some, get a nutrient analysis before purchasing and pay attention to DM levels when negotiating a price. Also, consider hauling costs, time and labor into total cost of silage on a per-ton basis before purchasing. Remember quality decreases rapidly with exposure to air and high temperatures.

3 - Feed Analysis is Crucial

- Having your feed routinely analyzed is always a good management practice, but it is absolutely crucial during a drought. Nothing is as it seems. You may be pleasantly surprised with the results or face tough decisions based on the results.
- Analyze all homegrown forages and feeds for nutrient content (as well as toxins). Purchased feed should be analyzed prior to purchasing or come with a guaranteed analysis (and it never hurts to double-check a guaranteed analysis).
- Work with a qualified nutritionist to develop a balanced, least cost ration that maximizes net returns or minimized costs. Remember, feeding for maximum production per cow is not the same as maximizing net returns. It may be more cost-effective to have a slight reduction in milk production than to purchase high quality feeds, provided animals do not suffer adverse health effects from a lower quality feed.

4 - Feeding Strategies During Drought

- Minimize waste! Store hay properly. Be vigilant on maintaining silage bunkers and covers, silage bags and hay wraps. Use a TMR to reduce hay waste. It will also allow you to incorporate lower quality or less palatable feeds to stretch the feed stores.

*Drought Stress, continued from page 2***(4 - Feeding Strategies During Drought)**

- Calibrate weighing devices to ensure accurate feed mixing.
- If silage will run short, start using silage extenders in the early part of the feeding season to avoid running out next spring. Soybean hulls, whole cottonseed, cottonseed hulls or a BIR (built-in-roughage) mix can help extend silage supplies.
- Group cows according to nutrient needs and feed accordingly. Keep entire production cycle in perspective.
- Feed fresh cows the higher quality ration. Every one-pound of peak milk lost equals a 200-250 pound loss over entire lactation.
- Do not overfeed groups.
- Do not underfeed lactating cows. This will result in mostly irreversible short-term and long-term economic losses in the form of low milk production and diminished reproductive performance.
- Do not shortchange dry cows or springing heifers. Their nutrient requirements are less than lactating cows, but underfeeding this group can lead to significant problems at and after calving as well as reduced performance in the following lactation.
- Young stock can support underfeeding for short periods and may recover with compensatory gain after normal feeding is restored.
- Maintain rumen health. Do not simply increase grain when forages are short. This can lead to starch overload, rumen acidosis, lameness, more displaced abomasums, chronic feed intake and production fluctuations, loss of body condition and decreased milk production.
- Use by-product feeds. Try to purchase a whole load to spread out transportation costs, and if necessary, split a load with a neighboring dairy. Use caution with by-products as many have maximum feeding rates and could have adverse effects on animals if exceeded. Also, pay close attention to mineral levels and adjust mineral mix formulation if necessary. Work closely with a nutritionist when using by-products.
- Decrease non-protein nitrogen sources in the ration when feeding high nitrate level forages or feeds.

5 - Management Strategies During Drought

- Get rid of unprofitable cows! Cows that haven't bred back, low producers, cows with high somatic cell counts, lame cows, cows with injuries or other health problems and older cows should be considered. It is hard to cull cows when milk prices are high, but these cows can deplete your forage supplies and lead to overall increased feed costs. Use cow records (DHI or other) and/or personal knowledge of cows to evaluate your herd. Be honest with yourself. A cow that had a record-breaking lactation last year but has been bred 15 times and not pregnant is costing money.
- Determine how many heifers you are going to need as replacements and sell the surplus. Heifer prices are still good, and this supplemental income will help.

Hay Resources**Tennessee Hay Directory**

It can be viewed on the TN Farm Bureau website (<http://www.tnfarmbureau.org>) or (<http://www.picktnproducts.org/farm/hay.html>)

If you have hay to sale, it can be listed by county Farm Bureau offices or by calling the Tennessee Department of Agriculture.

Note: If moving hay from regulated imported fire ant areas to non-regulated areas, you must obtain a permit from TDA. A list of inspectors and quarantined counties can be found on TDA's website (<http://state.tn.us/agriculture/regulate/plants/pcsect.html>)

Hay Net

This is an internet-based hay ad service maintained by FSA. It allows farmers and ranchers to share 'Need Hay' ads and 'Have Hay' ads online. It can be viewed on the FSA website (<http://www.fsa.usda.gov>)

Out-of-state Listings

For a listing of hay availability from other states, compiled by the TN Farm Bureau, visit their website (<http://www.tnfarmbureau.org>) or the Animal Science Department website (<http://animalscience.ag.utk.edu>)

If you do not have internet access, your local county Extension, Farm Bureau or FSA offices will be glad to assist you with accessing these resources.

Drought Stress, continued from page 3

(5 - Management Strategies During Drought)

- Switch to artificial insemination and save the cost of feeding a bull.
- Reduce somatic cell counts by culling high SCC cows and developing a mastitis control plan. Cows with lower SCCs produce more milk. Also, many processors and cooperatives offer premiums for higher quality milk.
- Feed ionophores to improve feed efficiency.
- Use an effective cooling plan to reduce effects of heat stress.
- Consider planting winter annuals in pastures as well as for harvest to increase forage supply.
- Options in futures contracts traded on the Chicago Board of Trade and New York Exchange may offer you opportunities to lock in feed prices for feed needed in three, six or nine months. If you are interested in this strategy, seek advice from someone familiar with the futures market.
- Control other expenses on the farm as much as possible.
- Be flexible and willing to make tough decisions when necessary.

6 - Drought Stressed Feed Likely Harbors Toxins

Nitrates

All plants contain some nitrate. Nitrate is the principle precursor to plant protein. Normally, it moves up from the soil into the plant and is converted into plant protein. Under normal nitrate plant levels, rumen microbes convert nitrate to ammonia, which is used to make amino acids and protein (just like non-protein nitrogen). During times of drought, nitrate can accumulate 1) in the soil and rapidly enter the plant when moisture is available and plant growth resumes, causing high plant nitrate levels 3-7 days after rainfall or 2) in the plant because conversion of nitrate to protein is slowed or stopped. When nitrate intake levels are high, the ammonia-converting microbes are overwhelmed and nitrate accumulates in the rumen. Nitrates are absorbed into the bloodstream where they substitute for oxygen in the blood. Toxicity will vary depending on condition of the cows, previous exposure to high nitrate levels and energy level of the diet (energy is needed to convert nitrate to ammonia). Symptoms will vary from diarrhea to muscular weakness to abortion to respiratory distress to sudden death.

All plants can accumulate nitrate, but some plants do so more than others and are considered nitrate accumulators. Common forages such as corn, oat hay, barley, wheat, rape, kale, turnip and sweet clover accumulate nitrates. In a drought, when nothing else will grow, it seems that weeds flourish, and some weeds pose a significant danger in pastures, hay and silage. Common weeds that are problems: pig weed, brome grass, lamb's quarter, jimson weed, nightshade, johnson grass, dock and thistle. Typically cattle will avoid these plants, but curiosity or hunger will lead animals in pastures or lots to consume weeds. Corn and hay fields may also have significant weed contamination.

Ensiling can reduce nitrate levels by 15-50%, but it will not totally eliminate nitrate. Silage should be screened immediately upon opening silo and before any silage is fed to animals. All suspect forages should be screened with a diphenyl amine kit (available in many county Extension offices and from some large animal veterinarians). This test will only indicate the presence of nitrate and does not provide any indication of nitrate level. If the test is positive, you should follow up with a quantitative analysis from a forage testing lab or the College of Veterinary Medicine's Toxicology Lab. This analysis will help you decide whether the amount of nitrate in the forage is large enough to cause problems.

Interpreting lab results can be difficult. Results may be reported as nitrate (NO_3), nitrate-nitrogen ($\text{NO}_3\text{-N}$), potassium nitrate (KNO_3) or sodium nitrate (NaNO_3). To make feeding decision, be sure conversions are made into appropriate form of nitrate.

To convert to Nitrate-Nitrogen (NO₃-N)

Nitrate (NO₃) × 0.23 =

Potassium Nitrate (KNO₃) × 0.14 =

Sodium Nitrate (NaNO₃) × 0.16 =

To convert to Nitrate (NO₃)

Nitrate-Nitrogen (NO₃-N) × 4.4 =

Potassium Nitrate (KNO₃) × 0.61 =

Sodium Nitrate (NaNO₃) × 0.73 =

As an example, assume the laboratory reports a value of 0.17% nitrate-nitrogen (NO₃-N). Convert to nitrate (NO₃) as follows: 0.17 × 4.4 = 0.75% nitrate (NO₃)

Source: M.L. Eastridge and W.P. Weiss, The Ohio State University

Guidelines for using feeds with known nitrate level.

% Nitrate-Nitrogen	ppm (NO ₃ -N)	% Nitrate (NO ₃)	Comment
<0.1	<1000	<0.44	Safe to feed.
0.1-0.2	1000-2000	0.44-0.88	Generally safe for non-pregnant animals. Limit to 50% of dietary dry matter for pregnant animals. Animals may go off feed, experience a slow drop in milk production or abort in some cases. At upper levels, some death may occur.
0.2-0.34	2000-3400	0.88-1.5	Limit to 35-40% of dietary dry matter for non-pregnant animals. Do not feed to pregnant animals (<25% only if absolutely necessary). Be sure water is low in nitrate and ration is well fortified with energy, minerals and vitamin A.
0.34-0.4	3400-4000	1.5-1.8	Limit to 25% of dietary dry matter for non-pregnant animals. Do not feed to pregnant animals. Be sure water is low in nitrate and ration is well fortified with energy, minerals and vita-
>0.4	>4000	>1.8	TOXIC. Do Not Feed.

Source: M.L. Eastridge and W.P. Weiss, The Ohio State University and Dairy One Forage Testing Laboratory

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(6 - Drought Stressed Feed Likely Harbors Toxins)

Dealing With High Nitrate Levels:

- Check nitrate level in water. This amount should be added to amount in feed to calculate total nitrate intake. Water can contain enough nitrates to cause problems on it's own or in conjunction with high nitrate feeds.
- Don't feed or harvest drought stricken forages (corn, hay or pastures) for 3-7 days after a recovery rain.
- Cut suspect forage at higher than usual heights to avoid high nitrate containing portions of the stalk and stem.
- Ensiling will reduce nitrate levels. However, hay is different than silage in that nitrate in cured hay is stable and very little leaches out.
- Analyze forages and other feed ingredients before feeding and retest periodically.
- Feed a balanced ration. Do not limit energy, as it is needed to convert nitrate to ammonia in the rumen.
- Dilute high-nitrate feeds with feeds that have tested low for nitrate. Feed a TMR to prevent variations in nitrate intake throughout the day.
- Introduce questionable feeds over a period of 2-3 weeks so that microbes can adapt to higher nitrate levels.
- Don't allow hungry animals free access to suspect forages (or weeds).
- Identify nitrate-accumulating weeds in pastures or lots and remove. Your County Extension Agent is an excellent resource to help you identify weeds.
- Observe animals closely, especially those consuming high forage diets (heifers and dry cows). If you suspect a problem, contact your veterinarian immediately. If a cow is found dead, have a post-mortem inspection conducted as soon as possible to identify the cause.

Prussic Acid

Most everyone is aware of prussic acid (cyanide) poisoning from frost damaged plants. However, drought conditions can also lead to prussic acid accumulation in certain plants. Cattle consuming plants containing large amounts of cyanide will show signs quickly because it blocks the transfer of oxygen to the tissues. Death can occur within a few minutes.

Poisoning is more likely to occur with forage sorghums or sudangrass. Test forages to determine prussic acid levels. Levels less than 500 ppm of CN as HCN on a dry matter basis are considered safe. When prussic acid levels are greater than 1000 ppm, the forage is considered hazardous. Consider ensiling or haying the forage as the ensiling and curing process reduces prussic acid concentrations. Be mindful of weeds that can cause prussic acid poisoning: johnson grass, arrow grass, wild black cherry, chokecherry and pin cherry.

Molds and Aflatoxins

Typically, we think of mold issues during wet years. However, drought conditions and high air temperature can also be perfect conditions for mold growth and mycotoxins. The presence of mold does not always mean mycotoxins have been produced, but it is a good warning sign. Also, mycotoxins can be produced without mold being visible.

Aflatoxin is one of the most potent mycotoxins, and the FDA regulates levels that can be fed to livestock as higher levels may result in contamination of meat, milk or eggs. Regulations indicate grain intended for dairy cattle may not contain more than 20 ppb aflatoxin. Corn silage can be a source of aflatoxins because the ensiling process does not destroy the toxins already present in silage.

High levels of aflatoxins can affect animal health. Symptoms can range from feed refusal to decreased milk production to diarrhea to abortions to anemia. Diagnosis in milking cows is readily evident from milk samples.

Drought Stress, continued from page 6

(6 - Drought Stressed Feed Likely Harbors Toxins)

However, it is more difficult with other classes of animals, and typically by the time aflatoxicosis is diagnosed, prognosis is poor.

Prevention of aflatoxins is key. Consider testing corn, corn by-products and corn silage for aflatoxins this year. Samples should be collected in a paper bag, kept cool and delivered to the lab within 24 hours. Do not feed ingredients contaminated with aflatoxins if at all possible. If you must feed contaminated ingredients, consider diluting with uncontaminated feed, feeding clay binders and increasing energy, protein and antioxidants in the diet. However, you must realize that none of these strategies guarantee that aflatoxins will not be present in milk.

Other Toxins

- Dicumerol may be produced by moldy sweetclover hay. It can induce abortions and bleeding. Often CRP land contains sweetclover.
- There are many other toxic weeds in Tennessee's forage environment. Your County Extension Agent is an excellent resource to help you identify weeds and those associated with toxicities.

7 - Water Conservation

Well water is often used to water cows, clean up parlors and cool cows. The amount of water that a dairy uses on a daily basis can be staggering. With water tables shrinking, you need to start conserving water – especially if you are dependent on a well. There is nothing more frustrating or potentially devastating than running out of water. A few producers have already lost their primary water source. Follow these tips to reduce water wastage and in preparation for wells going dry:

- Fix all water leaks. Water running out of leaking pipes or water tanks serves no purpose.
- Cooling cows is essential, but it should be done properly. Cooling system sprinklers (and fans) should be sized correctly and operating properly. You may be tempted to reduce water flow and/or reduce droplet size – this is a mistake! Creating a mist or a fog in a system not designed as such will actually trap heat around the cows exacerbating heat stress. It would be better to turn the sprinklers off than to reduce droplet size.
- Have a backup water source ready. If you don't already have a tap on a municipal water line, now would be the time to have it installed, if there is a line nearby. You may not need to use it, but it is better to have it ready than to wake up one morning to realize your well is dry, and you only have a short time to find an alternative water source. If installing water lines, be sure that they are sized correctly for the amount of water you use.

8 - Records, Records, Records!

It is always a good practice to keep accurate records, but it is extremely important during a drought. Federal aid may come in various forms, and good management and financial records will be a necessity. Also, make contact with your financial advisors or tax preparers now to see if there are any additional records or forms you should complete.

I don't know how long this drought will last, a few more weeks or months. In many parts of Tennessee, the damage already incurred will affect you for the next year. Your first cutting of hay was reduced. Your second cutting many not come. Your corn may be stunted and twisted or six foot tall with little or no ear. Your forages or feeds may contain toxins. Your options for purchasing feed at a reasonable price may be dwindling. Your wells may be drying up. It can be a pretty grim outlook. However, if you haven't already started planning ahead – start now. You can survive this drought if you are mindful of potential problems, flexible enough to make difficult decisions and keep the long-term picture in mind. It will rain again, but don't wait for the rain. Take action now.

Winter Annual Forage Crops

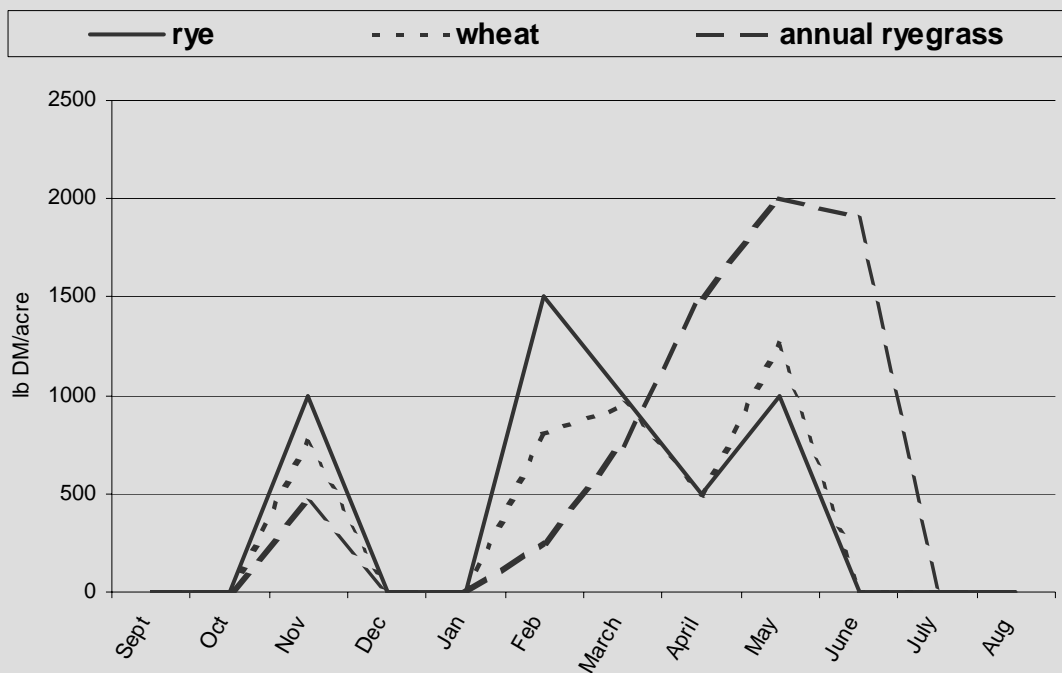
- Dr. Gary Bates, Professor, Plant Sciences

Most producers across the state have had a serious struggle with poor pasture and hay production this year. The hard freeze that occurred in April, followed by the severe drought this summer, have left pastures in extremely poor shape, and stored forage supplies dangerously low. One of the best options to provide quantities of high quality forage for the winter and spring is through the use of winter annual pastures. Wheat, rye, and annual ryegrass can provide the extra forage needed to get many producers through the year.

For the earliest fall grazing, rye is generally the best choice. It generally produces the most fall and early winter grazing of the winter annual grasses (Figure 1). In contrast, annual ryegrass usually produces forage later into the spring than the other winter annual grasses. To get the maximum amount of forage produced, a mixture of rye and annual ryegrass can provide early forage from the rye, and then late forage from the annual ryegrass. This works well if it is used for pasture. If this mixture is used for hay, the rye usually shades out the ryegrass, and late spring forage production is limited. Winter grazing keeps the rye from being too competitive with the annual ryegrass.

If a single species is desired, wheat is usually the best choice. It gives the best combination of winter and spring forage production. It can be used for either grazing, hay or haylage. If harvested correctly, it can provide an extremely high quality diet for livestock.

Figure 1. Dry matter yield of winter annuals.



Source: Day & co-workers. 1983. NC State Univ. Crop Research Report No. 91

*Winter Annuals, continued from page 8***Steps for using winter annual grasses.**

1 - Planting method. Both conventional and no-till methods of planting can be used. Both methods depend on the reduction of competition from existing vegetation. For successful no-till planting, this vegetation must be killed chemically with a herbicide. Seeds should be placed between 1/4 and 1/2 inch deep in the soil. No-till plantings have shown less winterkill and a more firm base for winter grazing than conventional planting.

2 - Planting dates. For fall grazing, seedings should be made early. Rye, which will produce the earliest fall grazing, should be planted August 15 to October 15. Wheat should be planted September 1 to October 15. Adequate moisture is essential for stand establishment. Including ryegrass in the mixture will produce grazing later into the spring. Small grain plantings made after October 1 usually produce little fall grazing.

3 - Seeding rates. If fall grazing is expected from wheat or rye, 2 bushels per acre should be used with 10 pounds of crimson clover. If no fall grazing is expected, then seeding rates can be dropped back to 1.5 bushels per acre. 15 pounds per acre of ryegrass can be added in place of 1/2 bushel of the small grain to provide grazing later into the spring. Check with your local Extension office for recommended varieties.

4 - Fertilization. A soil test should be taken to determine if there is a need for lime, potash or phosphate. Information from a soil test will provide assurance that the establishment and production of the pasture will not be limited by low nutrient levels, or that money is not wasted by excessive application of fertilizer. Small grain pastures are highly responsive to nitrogen fertilizer. Apply 30-45 pounds of nitrogen per acre at planting, and then 30-45 pounds nitrogen per acre on March 1. If ryegrass is included in the mixture, add another 30 pounds of nitrogen per acre on May 1.

5 - Grazing management. Harvesting the forage by grazing generally results in a large amount of waste, due to trampling and rejection of forage around manure piles. The amount of waste can be decreased if animals are confined to small areas of the pasture, called a paddock, and then rotated to another area when all of the forage in the first paddock has been consumed. Grazing should begin when the forage is approximately 8-10 inches tall. The animals should be removed when plants are grazed down to about 3 inches. Electric fencing can be used to divide a large pasture into several paddocks, with paddock size adjusted so that 3-7 days is required to graze it down. After the animals are rotated, the paddock should be clipped to remove any rejected areas that have become mature.

6 - Harvest for hay or haylage. Winter annual grasses can produce a high quality hay or haylage crop if they are harvested correctly. Because of their high moisture content, and the difficulty in getting weather conditions for hay making during spring, it is easier to make haylage than hay from these crops. For good haylage, the crop should be harvested at the late boot stage, then baled and wrapped when the moisture content is approximately 50 percent. If the crop is to be ensiled in a trench silo, moisture content should be higher, at approximately 60 percent. If these crops are to be dried for hay, moisture content needs to be below 20 percent. It may be a good idea to check moisture content before baling, to make sure the bales do not go through too much of a heat, which can reduce forage quality.

Small grain and ryegrass pastures provides high quality grazing during the fall, winter and spring to heifers and cows. No matter if planting 100 acres or 5 acres, the high nutrient content of these forages can provide excellent performance from any group of livestock.

We're on the web!
<http://animalscience.ag.utk.edu/>

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Special Drought Edition

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