

# Alabama Beef Systems Management

HANDBOOK



# Introduction

► **Beef Systems Management is a comprehensive guide for Alabama cattle farmers to learn more about sustainable land, animal, and economic practices. Materials and concepts presented are a collaboration of Animal Science and Forage specialists and regional agents of the Alabama Cooperative Extension System. Additional information on these topics is available through your county Extension office.**

The best use of this handbook is as a training manual that is part of a curriculum used by the Alabama Extension Animal Science and Forage Team during educational programming.

The authors acknowledge the contributions of many scientists, educators, and farmers in Alabama for the research, extension, and feedback needed to develop and provide systems-level management recommendations to stakeholders.

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# Systems Defined



**Alabama Beef Systems Management Handbook**

# Systems Approach to Beef Production

## Developing a Basic Management Plan

► Learn the basic strategies for developing a beef cattle operation management plan.



A systems approach to beef cattle production involves many working parts that influence the overall goal of the operation. Although you may think about repairing these parts one piece at a time, you must recognize that, in reality, they work together to drive the total production system. This publication addresses basic strategies for developing a beef cattle operation management plan.

### What is the goal and long-term vision?

The quotation “Begin with the end in mind” has widespread application for a beef cattle operation. In order to determine what management decisions need to be made, it is important first to determine the goals of the operation. Remember, you have to know where you want to go before you can decide how to get there.



Collecting soil samples

### What resources are needed to achieve these goals? Can you feasibly attain them?

Evaluate your current farm resources and what improvements may need to be made to attain your production goals. Reflect on your goals and determine if it is economically feasible to move forward. Develop a time line for achieving these outcomes, and invest the effort in steps required to achieve them.

### When developing a management plan, consider the following systems foundations and decision points.

**Soils.** A soil analysis provides valuable management information needed for every beef producer. Routinely soil testing pastures and hayfields will provide an estimate of available nutrients in the soil and fertility recommendations. A soil analysis service is available through the Soil, Forage, and Water Testing Laboratory at Auburn University.

**Forages and Nutrition.** Forages are the foundation for nutrition in the beef cattle herd. Forages are classified as a grass or legume, an annual or a perennial, or a warm-season or cool-season plant. Climatic conditions in Alabama allow us to grow forages for the majority of the year and economically meet the nutrient requirements of our herds. Select forages that are well adapted to the soil and environmental conditions in your



Cow-calf pairs grazing annual ryegrass and crimson clover

area. Understanding forage adaptation, the level of management required, and if these species will meet the nutritional needs of your livestock are important factors when making a beef cattle management plan.

Appropriately selecting and managing forages for a given environment ensures that you will have more grazing days per year. Extending the grazing season is important when setting goals for a beef cattle operation because this represents the most economical source of nutrition for livestock. If excess forage is harvested and stored as hay, a forage analysis is needed to determine overall feed value and whether it will meet the nutritional needs of the herd. Consider supplemental feeding only if forage quality is low.

**Herd Health.** Establishing a local veterinarian-patient relationship is crucial in determining the correct health program for the herd. Depending on the class of animals in the operation (cow-calf, stockers, etc.), the types of vaccination and management programs may vary widely.

**Record Keeping.** Collecting, using, and maintaining good records are key components of any beef cattle management system. The level of record keeping practiced on the farm can help define the level of success achieved in the operation. Without adequate records, it will be difficult for you to determine if your goals can be achieved efficiently and productively.

Producers should tailor their record keeping systems to meet the specific needs of their operations. If you are not currently collecting records, start with basic information to quantify production efficiency and inventory numbers. Basic cattle production records should include animal identification information and cow and calf performance data.

Conduct an annual inventory of the number of cows, calves, bulls, and replacement heifers in the herd. Estimate cow age, and record the number of cows that wean a live calf. Minimum calf data includes ear tag number, date of birth, sex, color, birth weight, and weaning weight. From this information, you can calculate pregnancy rate, calving rate, and weaning rate in the herd.

**Facilities Management.** Well-designed working facilities enhance the flow of processing cattle in the operation. Evaluate the current infrastructure on the farm, and determine where improvements are needed. Understand that working facilities do not have to be elaborate, but they should be practical and safe for the animals and handlers.

Choice of fencing is also important in forage-based beef production systems. The cost and type of materials for fencing is often a site- and producer-specific decision. A storage shed or barn for equipment and hay may also be a worthwhile investment. A building protects expensive investments and increases years of usefulness in the operation. Incorporate this information into the annual systems plan where feasible. Some investments may take years to achieve, and their need should be evaluated annually.

**General Production Practices.** All cattle producers should incorporate into a systems management plan two basic herd management strategies—a defined calving season and castration. A controlled calving season optimizes the herd nutrition and health program, breeding season, time, and labor. Calving within a 60- to 90-day window is desirable for enhancing efficiency. Castrating calves at a young age (usually around the time newborn calves are tagged) is a desirable management practice. Steer calves are usually preferred over bull calves when sold at livestock markets, and they almost always bring a higher price.

Another general management practice to consider is implanting calves to improve the rate of gain and feed efficiency. Implanting is a low-cost practice that complements other management goals. Implants are small pellets that contain a slow-release growth stimulant that can be inserted with a specialized implant gun into the ear of growing calves. Steers and cull heifers, or animals that will be sold, finished, and processed for consumer markets, may be candidates for implanting. Implanting works best with animals with good genetic potential and a proper nutrition program that effectively promotes weight gain.

### Choosing Cattle for Your Environment.

The most important decision related to breed selection is choosing a cattle breed that is adapted to your production environment and management system. Traits related to growth, reproduction, maternal ability, and end product are all important for commercial cow-calf operations. Understand desirable traits of a given breed type, and compare these to your overall production goals. Based on this information, develop a planned crossbreeding program to help meet these needs. A plan helps a producer determine the steps and time line needed to combine the strengths of several breeds into a cross.

**Putting It All Together.** There are many management considerations in a beef cattle operation. Being profitable in the cattle business requires a production plan and the desire to maximize the return on your investment of time and resources. Most important is to develop a list of realistic goals, items needed to achieve them, time frame, key personnel, and resources.



Figure 1. Systems management keys

### Additional Resources

Contact your county Extension office with questions related to beef cattle management in Alabama. Use the following online resources for more information.

Alabama Cooperative Extension System  
[www.aces.edu](http://www.aces.edu)

Alabama Beef Systems Extension Program  
[www.alabamabeefsystems.com](http://www.alabamabeefsystems.com)

Alabama Forage Focus Extension Program  
[www.alabamaforages.com](http://www.alabamaforages.com)

USDA Natural Resources Conservation Service  
[www.nrcs.usda.gov](http://www.nrcs.usda.gov)

USDA Farm Service Agency  
[www.fsa.usda.gov](http://www.fsa.usda.gov)

USDA Weekly Livestock Market Report  
<http://www.ams.usda.gov/market-news/feeder-and-replacement-cattle-auctions#Alabama>



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# Forages



**Alabama Beef Systems Management Handbook**



# Forage Systems for Cow-Calf Operations in North Alabama

► Make the right forage choices for your cow-calf operation with the help of the diagrams provided.

A sound grazing program includes combinations of adapted forage crops which will provide good grazing over the longest possible period of time. Many forage crops are adapted to Alabama conditions. Because each crop has its own distinctive pattern of forage growth, choosing the right combination of crops for a given situation isn't always easy.

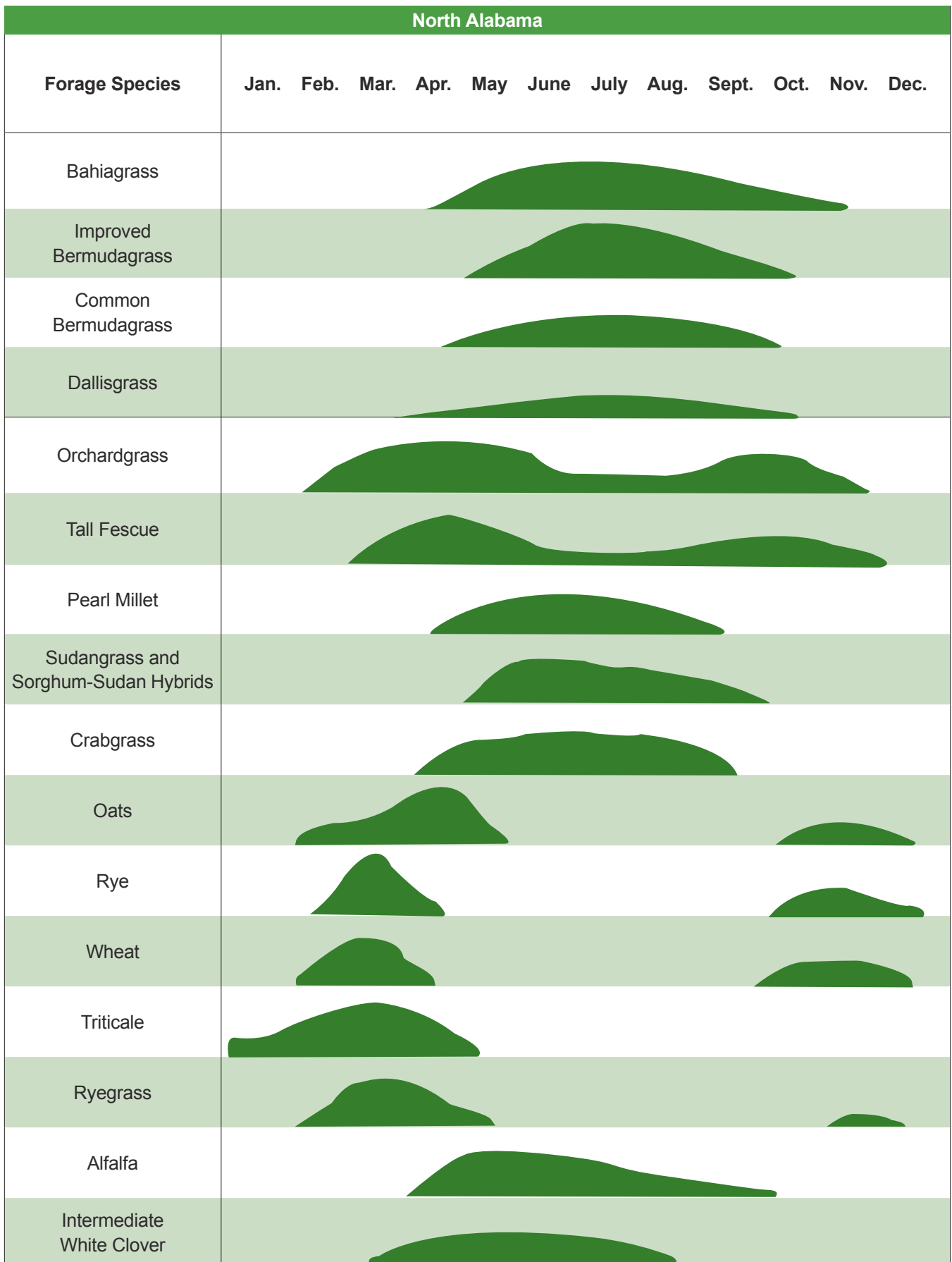
The diagrams for various crops are grouped into northern, central, and southern regions of Alabama, and also grouped as either perennials or annuals and grass or legume crops. Each diagram shows when a particular crop normally makes growth available for grazing. By looking up and down the page, you can see at a glance which crops make the best early, middle, or late season growth, and you can pick out the ones which would best complement each other in your forage program.

The height of the growth symbols is not to exact scale, but will give you an idea of the relative amounts of forage produced by the different crops. Several of the crops listed grow well in combination. Often, growing mixtures of forage crops is the best and most economical way to meet the nutritive requirements of cattle for the maximum length of time.

The diagrams give only the normal or average situation. In a given year, actual forage availability will depend on moisture availability, planting time, grazing pressure, and other factors. In some cases, accumulated forage can be grazed during times when temperature or other factors slow down plant growth.

Each crop listed is adapted to be grown within the area specified, but a crop may be adapted only under certain conditions or on certain soils. Matching a forage species to the conditions to which it is adapted is important.









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# Forage Systems for Cow-Calf Operations in Central Alabama

► Make the right forage choices for your cow-calf operation with the help of the diagrams provided.

A sound grazing program includes combinations of adapted forage crops which will provide good grazing over the longest possible period of time. Many forage crops are adapted to Alabama conditions. Because each crop has its own distinctive pattern of forage growth, choosing the right combination of crops for a given situation isn't always easy.

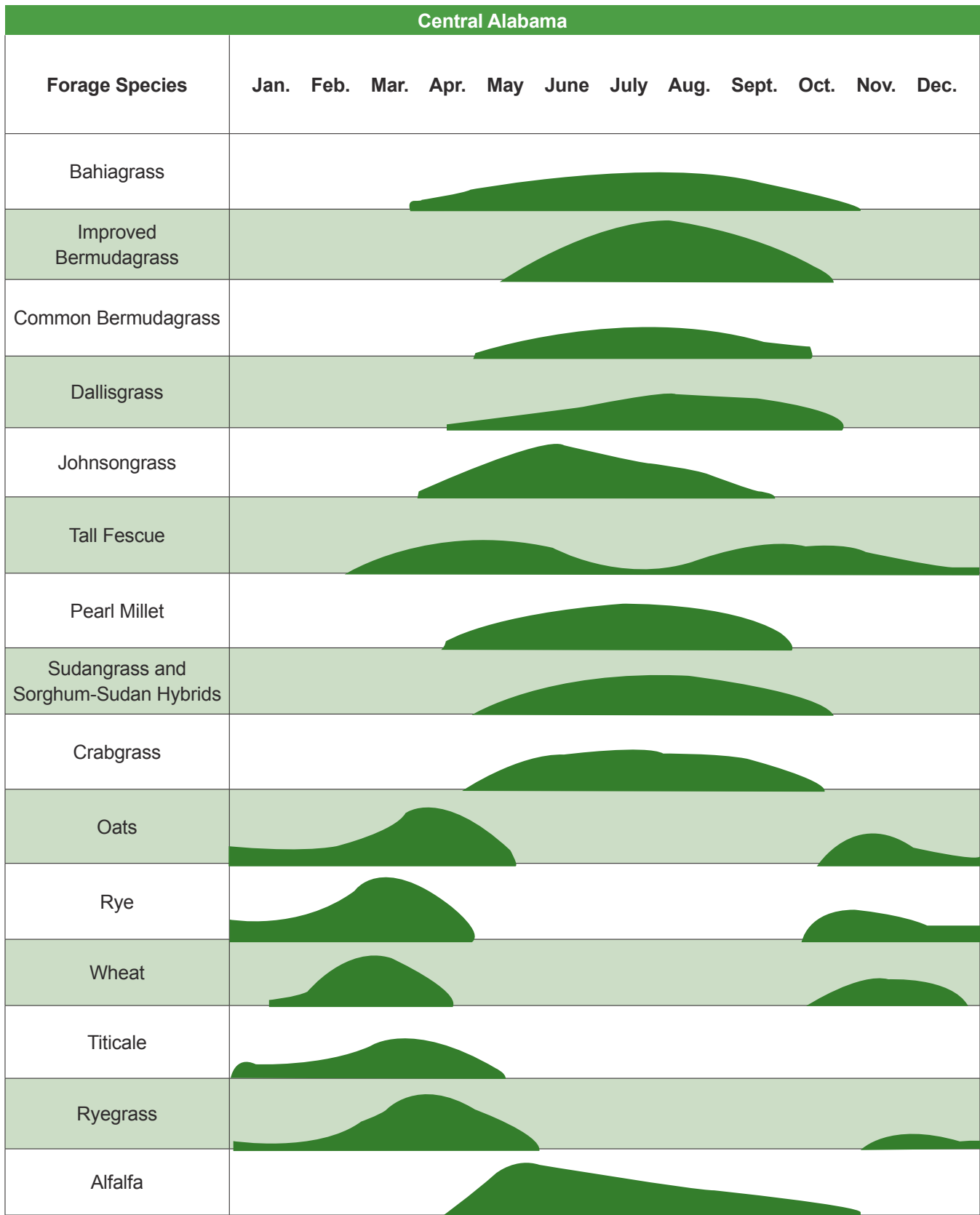
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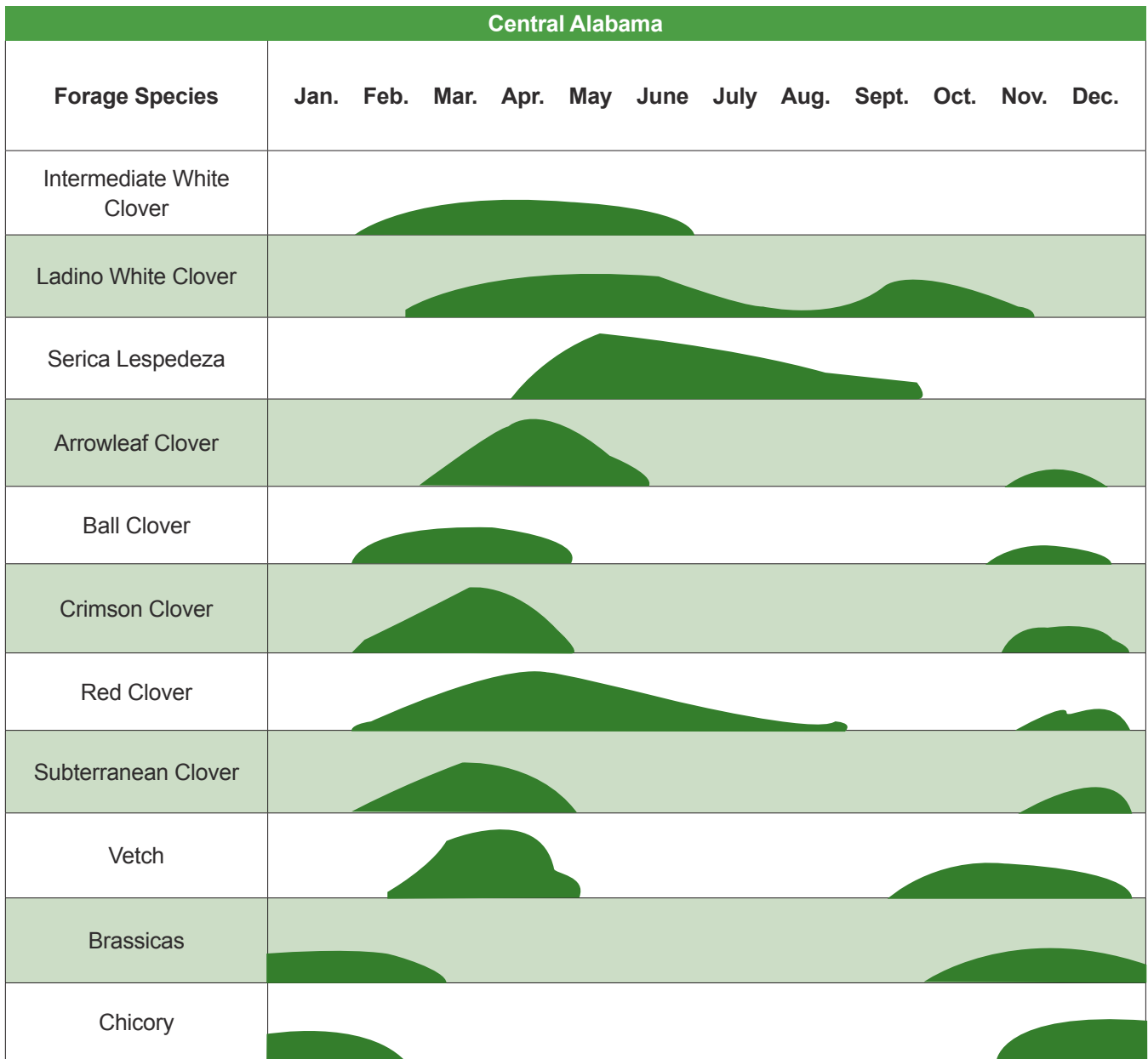
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The diagrams give only the normal or average situation. In a given year, actual forage availability will depend on moisture availability, planting time, grazing pressure, and other factors. In some cases, accumulated forage can be grazed during times when temperature or other factors slow down plant growth.

Each crop listed is adapted to be grown within the area specified, but a crop may be adapted only under certain conditions or on certain soils. Matching a forage species to the conditions to which it is adapted is important.









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# Forage Systems for Cow-Calf Operations in South Alabama

► Make the right forage choices for your cow-calf operation with the help of the diagrams provided.

A sound grazing program includes combinations of adapted forage crops which will provide good grazing over the longest possible period of time. Many forage crops are adapted to Alabama conditions. Because each crop has its own distinctive pattern of forage growth, choosing the right combination of crops for a given situation isn't always easy.

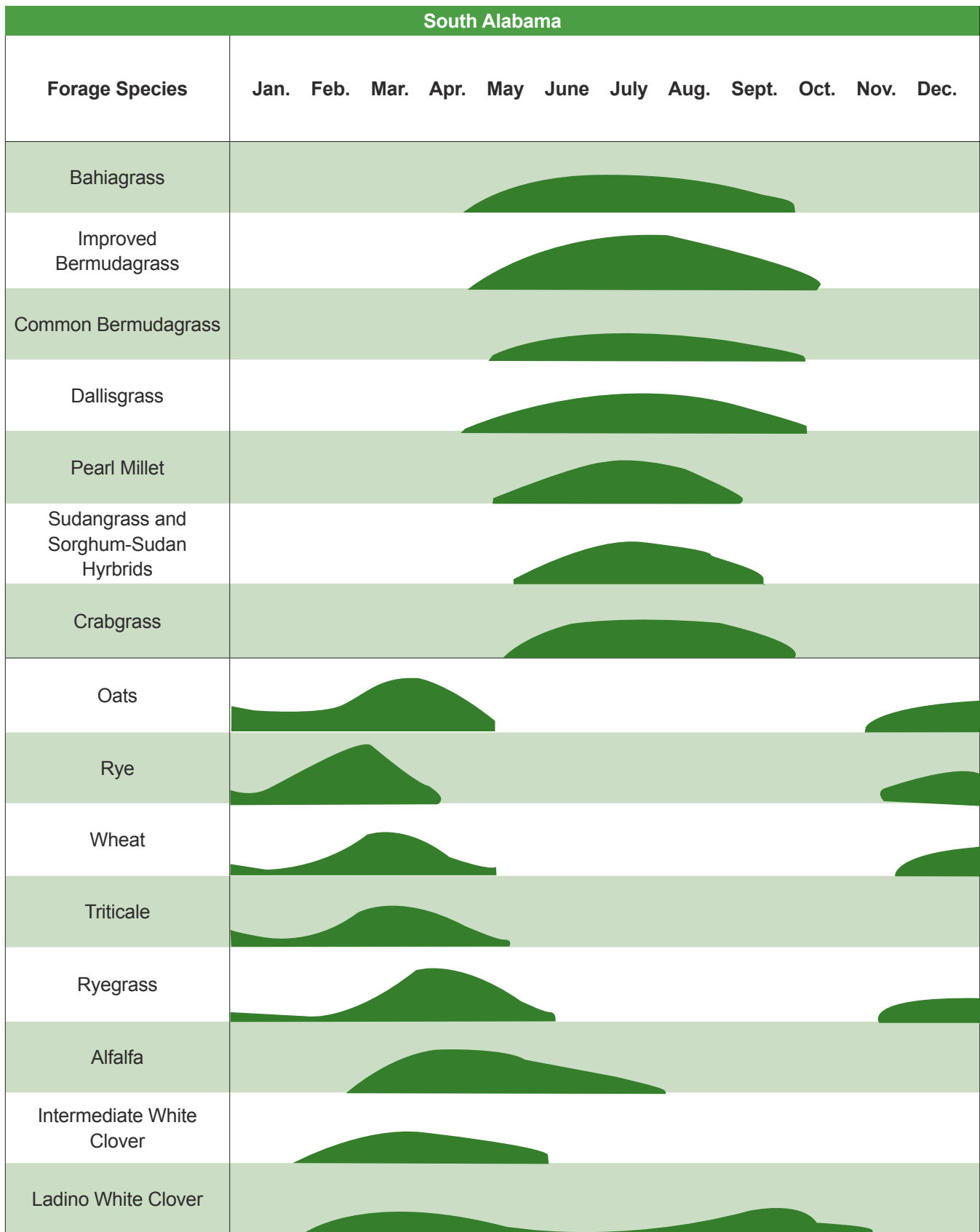
The diagrams for various crops are grouped into northern, central, and southern regions of Alabama, and also grouped as either perennials or annuals and grass or legume crops. Each diagram shows when a particular crop normally makes growth available for grazing. By looking up and down the page, you can see at a glance which crops make the best early, middle, or late season growth, and you can pick out the ones which would best complement each other in your forage program.

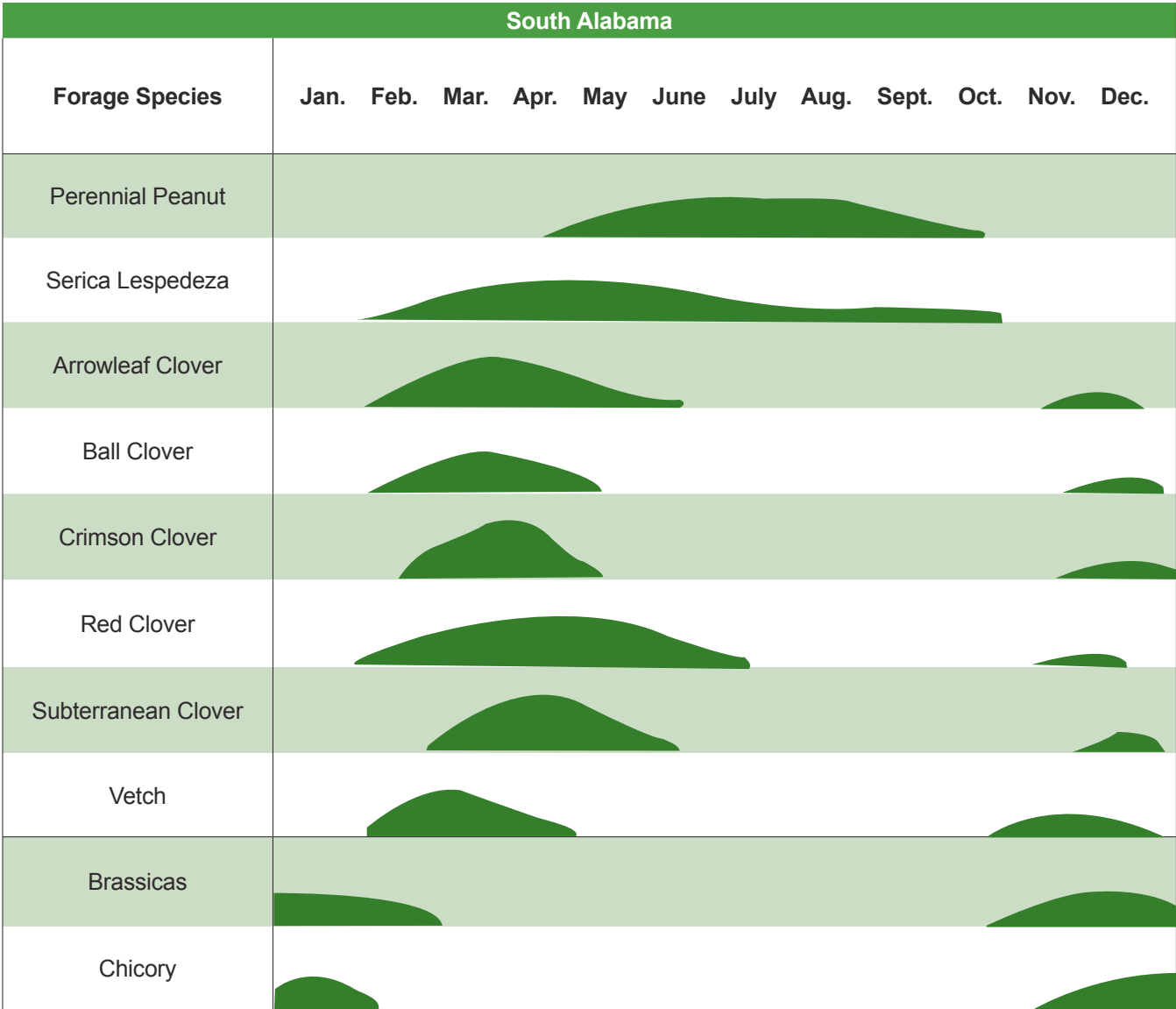
The height of the growth symbols is not to exact scale, but will give you an idea of the relative amounts of forage produced by the different crops. Several of the crops listed grow well in combination. Often, growing mixtures of forage crops is the best and most economical way to meet the nutritive requirements of cattle for the maximum length of time.

The diagrams give only the normal or average situation. In a given year, actual forage availability will depend on moisture availability, planting time, grazing pressure, and other factors. In some cases, accumulated forage can be grazed during times when temperature or other factors slow down plant growth.

Each crop listed is adapted to be grown within the area specified, but a crop may be adapted only under certain conditions or on certain soils. Matching a forage species to the conditions to which it is adapted is important.









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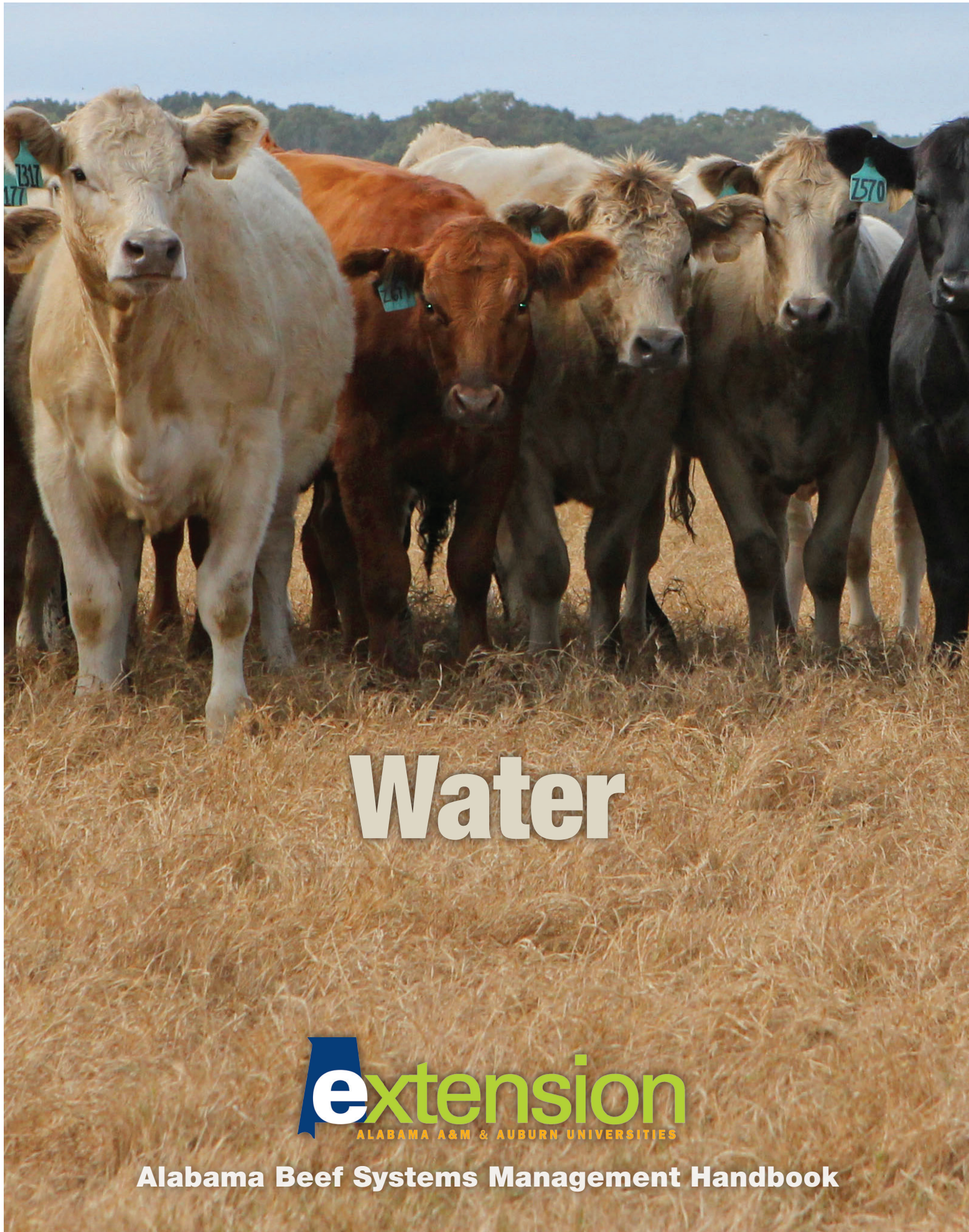
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# Water



**Alabama Beef Systems Management Handbook**

# Drinking Water for Livestock

► Overall maintenance of herd health and productivity depend on the quantity and quality of water required by livestock. Learn how much water is typically required, acceptable ranges of water quality, and ways to protect water quality for livestock.

The quantity and quality of water required by livestock are important considerations for the overall maintenance of herd health and productivity.

- Amount of water required depends on several factors.
- Quality of water may influence consumption and health of livestock.
- Protecting and maintaining water supply are critical.

If water is suspected of causing a health problem, seek veterinary assistance to determine a diagnosis.

## How much water do livestock typically require?

How much water cattle need each day may range from 7 to 20 gallons and depends on several factors:

**Forage dry matter.** Green forage is higher in moisture than dry forage. Cattle have increased water consumption when consuming hay compared to fresh forage.

**Season.** Higher temperatures increase water consumption. High humidity reduces daily consumption.

**Physiological state.** Water consumption increases with age, weight, pregnancy, and lactation.

A general rule of thumb is livestock need 2 gallons of water per 100 pounds of body weight each day.



Figure 1. Test livestock drinking water annually to avoid problems that could result in health issues.

## What are the acceptable ranges of water quality for cattle?

Surface waters are a source of drinking water for many livestock in Alabama. Waterborne contaminants may be naturally occurring (salinity, iron) or introduced and thus exceed natural levels (nitrates, pathogens). There are acceptable levels of contaminants in livestock drinking water that, when exceeded, may result in reduced water intake or health concerns. Research has shown that improving water quality and palatability results in increased water consumption, feed consumption, and weight gain. If the drinking water has high levels of contaminants, livestock will drink less of it.



**Temperature.** Cattle prefer water between 40 and 65 degrees F. They will reduce consumption of water warmer than 80 degrees F.

**Salinity/total dissolved solids (TDS).** Salinity includes sodium chloride (common salt), magnesium (Epsom salt), calcium, and sulfate. Levels of salinity less than 1,000 mg/L are considered safe to drink. Above this level, livestock may limit water intake and experience adverse health effects such as diarrhea. Drinking water with salinity greater than 7,000 mg/L should be avoided if possible. Water consumption increases when cattle are fed supplements that contain salt.

**Nitrate.** Safe nitrate levels for livestock drinking water are below 100 mg/L. As levels increase, ensuring a balanced diet with low-nitrate feeds is important. Nitrate levels above 300 mg/L may result in severe health problems and death. Nitrate is reduced to nitrite in the rumen. Nitrite limits the amount of oxygen that can be carried in the blood, which is of special concern during drought when certain forages may accumulate high concentrations of nitrate (i.e., summer annual grasses, bermudagrass, and Johnsongrass under conditions of high nitrogen fertilization).

**Pathogens.** Pathogens are disease-causing organisms that may be introduced by untreated animal waste. Consuming untreated waste can lead to health concerns.

**Cyanobacteria (blue-green algae).** Excess nutrients and stagnant water can stimulate harmful algae growth, such as cyanobacteria or blue-green algae. Cattle can become sick from toxins (microcystins) released by blue-green algae.

## Protecting Water Quality for Livestock

Test the drinking water source annually. The Auburn University Soil and Water Test Lab can screen water samples for 16 parameters of interest including nitrates, pH, and total dissolved solids. If water is suspected of causing a health problem, veterinary assistance should be sought to determine the actual health problem.

Don't let livestock loaf in ponds or wet soils. Infections from soilborne bacterium, such as fusobacterium or foot rot, may be transmitted with increased exposure to stagnant water and wet soils.

Fence or limit livestock access to ponds or other surface waters (streams). Keep a healthy streamside forest to protect streams and rivers.

Protect the watershed of your pond or water source by maintaining plants and limiting chemicals and manure transport into the water.

Pipe water to a quality water trough or other waterer. Freeze-proof troughs, such as floating ball top waterers, work well in cold weather and keep water cool in the summer. They also keep water relatively clean and free of algae.



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# Water Requirements of Beef Cattle

► Water is considered the most critical nutrient in beef cattle diets. Cattle diets are balanced for energy, protein, vitamins, and minerals based on the desired level of animal performance. Animal performance can be affected by water intake—a key factor often overlooked.

Water is needed by cattle daily to support maintenance (digestion and excretion), growth, and lactation. A significant amount of water can be lost through excretion in the form of urine, feces, or sweat. Cattle do not adapt well to water restrictions. Restricting water consumption can lead to a decrease in feed intake and poor animal performance. Understanding the daily requirements and influences on water needs can help producers plan for reliable sources and supply of drinking water for cattle.

Cattle fulfill their water needs from three main sources: drinking water, water in forage and feed, and metabolic water produced from digestion or other metabolic activities.

## Factors Influencing Water Requirements and Needs

### Age and Stage of Production

In general, as cattle grow and mature, their daily water requirements increase. Growing steers and heifers require less water per head daily than mature cows. Mature cows have differing water requirements based on their stage of production. A dry, pregnant cow in early- to mid-pregnancy has a lower water need per day than one within 60 days of calving. As cows reach the last trimester of pregnancy, water requirements begin to increase in order to have the capacity for milk production. Water requirements are their highest for cows in the first 60 days after calving, which is the peak lactation period. Mature bulls require similar amounts of water to a lactating cow. Table 1 illustrates water requirements of cattle in different stages of production.

### Diet

Grazing cattle consume water in fresh forage, which contributes to daily water needs. Lush, vegetative forage may contain up to 80 percent water; whereas, harvested forages such as hay may contain 10 to 15 percent moisture. Cattle consuming hay and supplemental feeds may require more daily water than those on pasture.



Self-limiting supplemental feeds containing salt (i.e., a “hot mix”) may increase the water requirements of cattle. Salt is rapidly absorbed into the bloodstream and excreted by the kidneys through urine. To eliminate excess salt, adequate clean water sources must be available.

### Heat Stress and Environment

Water can be lost through evaporation from the skin or respiration from the lungs in beef cattle. As temperatures increase, water lost through this process may exceed that from excretion. Increased physical activity from handling cattle during hot, humid weather conditions can amplify water losses. Because water consumption increases during the summer months (June through September), it is especially important to monitor water sources to ensure an adequate supply for cattle during this time of the year. Table 1 illustrates water requirements for beef cattle in various stages of growth and production and how needs change with increasing air temperature.

Heat stress and water losses in cattle can be minimized by providing ample shade for grazing livestock. Handling cattle in the morning or evening when temperatures are at their lowest or decreasing can reduce stress to livestock during the summer in Alabama.



## Water Quality

Water intake is influenced by water quality. Producers should adopt management strategies that do not negatively influence water quality. Access to clean, cool water can have a positive influence on animal performance in the herd. More information on water quality needs for livestock can be found in ANR-2381, “Drinking Water for Livestock.”

**Table 1. Water Quantity Needs of Beef Cattle as Influenced by Air Temperature, Animal Class, and Body Weight**

	50°F	70°F	90°F
	----- gallons per day -----		
<b>Growing Steers/Heifers</b>			
400 lb.	4	6	10
600 lb.	6	8	13
800 lb.	8	11	17
<b>Dry, Pregnant Cows</b>			
1100 lb.	7	10	17
1300 lb.	9	12	19
<b>Lactating Cows</b>			
1100 lb.	13	18	20
1300 lb.	15	20	22
<b>Mature Bulls</b>			
1600 + lb.	10	13	22

Source: NRC (2016). Adapted from NRC Nutrient Requirements of Beef Cattle, 8th revised edition; Winchester and Morris (1956).



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# Climate



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# Climate Effects on Forage and Beef Production

► Beef cattle production potential is influenced in part by environmental conditions. Cattle producers should be aware of management risks and mitigation strategies to improve production potential in the Southeast. Following is an overview of seasonal weather conditions, impacts, and strategies for management in beef-forage systems.

## Key Climate Impacts and Management Strategies

Impact	Strategy	Resources
<b>Condition: Drier, Warmer Summer</b>		
With sparse rainfall, minimal forage production may be supported. Lack of forage production in extreme drought situations.	Review animal stocking rate (number of animals per acre); decrease stocking rate to reduce grazing pressure on perennial pastures.	<a href="http://www.aces.edu/go/780">Understanding Stocking Rates in Grazing Systems</a> http://www.aces.edu/go/780
Heat stress may be observed in animals.	Provide ample shade and access to clean, cool water to support animal production goals.  Follow suggestions for trailer stocking density from NCBA to reduce heat stress during transport.	<a href="http://www.aces.edu/go/781">Drinking Water for Livestock</a> http://www.aces.edu/go/781
Increased forage pest and disease pressure.	Scout for pests beginning in early summer.	<a href="http://www.aces.edu/go/779">Insect and Weed Control Recommendations for 2017: Pastures and Forage Crops</a> http://www.aces.edu/go/779 <a href="http://www.aces.edu/go/16">Management of Fall Armyworm in Pastures and Hayfields</a> http://www.aces.edu/go/16 <a href="http://www.aces.edu/go/782">Biology and Management of Bermudagrass Stem Maggot</a> http://www.aces.edu/go/782
Nitrate accumulation in heavily fertilized warm-season grasses experiencing drought stress.	Have stored forages tested for nitrate levels. Develop a supplementation and use strategy as needed.	<a href="http://www.aces.edu/go/783">Nitrate Poisoning of Cattle in Alabama</a> http://www.aces.edu/go/783



## Key Climate Impacts and Management Strategies (cont.)

Impact	Strategy	Resources
<b>Condition: Wetter, Warmer Summer</b>		
Frequent rainfall may prevent timely harvest of hay, decreasing quality of stored forages used in the winter months.	Conduct a forage analysis to determine amount of nutrients in stored forages at time of feeding.	<a href="http://www.aces.edu/go/523">Collecting Forage Samples for Laboratory Analysis</a> http://www.aces.edu/go/523
Increased forage pest and disease pressure.	Scout for pests beginning in early summer. Conduct soil tests and apply nutrients according to recommendations.	<a href="http://www.aces.edu/go/779">Insect and Weed Control Recommendations for 2017: Pastures and Forage Crops</a> http://www.aces.edu/go/779 <a href="http://www.aces.edu/go/16">Management of Fall Armyworm in Pastures and Hayfields</a> http://www.aces.edu/go/16 <a href="http://www.aces.edu/go/782">Biology and Management of Bermudagrass Stem Maggot</a> http://www.aces.edu/go/782
Weed competition more prevalent in pastures.	Conduct pasture evaluations throughout the summer. Identify weeds and develop a comprehensive management strategy.	
Increased forage yield potential.	Use managed grazing and increase stocking rate to improve forage utilization. Explore long-term hay storage options to save surplus forage.	
Heat stress may be observed in animals.	Provide ample shade and access to clean, cool water to support animal production goals. Follow suggestions for trailer stocking density from NCBA to reduce heat stress during transport.	<a href="http://www.aces.edu/go/781">Drinking Water for Livestock</a> http://www.aces.edu/go/781
<b>Condition: Drier, Warmer Fall</b>		
Decreased potential for stockpiling perennial grasses and planting cool-season annual forages.	Have seed and equipment ready to plant and fertilize as needed when timely rainfall occurs.	<a href="http://www.aces.edu/go/784">Alabama Planting Guide for Forage Grasses</a> http://www.aces.edu/go/784 <a href="http://www.aces.edu/go/789">Alabama Planting Guide for Forage Legumes</a> http://www.aces.edu/go/789
Heat stress may be observed in animals.	Provide ample shade and access to clean, cool water to support animal production goals. Follow suggestions for trailer stocking density from NCBA to reduce heat stress during transport.	<a href="http://www.aces.edu/go/781">Drinking Water for Livestock</a> http://www.aces.edu/go/781
Reduced forage availability for winter.	Begin making decisions about purchased feedstuffs. Develop a culling strategy for use as needed. Identify potential sacrifice pasture for feeding during winter months.	
<b>Condition: Wetter, Cooler Fall</b>		
Stocker calves unable to adjust to changing wet/cool conditions.	Monitor calf health, provide complete feed ration and free-choice access to adequate quality forage to help cattle acclimate to new environment.	
Fall-calving cows in muddy areas.	Provide clean, easily accessible pasture for cows calving in the fall to prevent the opportunity for spread of disease.	
Conditions favorable for stockpiling perennial grasses and planting cool-season annual forages.	Have seed and equipment ready to plant and fertilize as needed when timely rainfall occurs.	<a href="http://www.aces.edu/go/784">Alabama Planting Guide for Forage Grasses</a> http://www.aces.edu/go/784 <a href="http://www.aces.edu/go/789">Alabama Planting Guide for Forage Legumes</a> http://www.aces.edu/go/789
Frost on warm-season grasses such as Johnsongrass and warm-season annuals.	Increased potential for prussic acid accumulation.	

## Key Climate Impacts and Management Strategies (cont.)

Impact	Strategy	Resources
<b>Condition: Wetter, Warmer Fall</b>		
Warm-season perennial grasses take longer to go dormant.	Use grazing management/increase stocking rate to improve forage utilization.	
Moisture conditions favorable for planting cool-season annuals in a prepared seedbed.	Follow planting recommendations in ANR-0149, Alabama Planting Guide for Forage Grasses, for your region of the state.	<a href="http://www.aces.edu/go/784">Alabama Planting Guide for Forage Grasses</a> http://www.aces.edu/go/784
<b>Condition: Cooler, Drier Winter</b>		
Energy requirements of cows increases by 1 percent for every degree that the wind chill is below 32 degrees F.	Provide extra hay to cattle during this time. Mid- to high-quality hay will help maintain consistent consumption during the cooler weather.	<a href="http://www.aces.edu/go/520">Calculating the Energy Requirements of Brood Cows in Cold Weather</a> http://www.aces.edu/go/520
Changing cow nutrient requirements and decreasing body condition in fall-calving cows.	Separate the cow herd into nutritional management groups and monitor body condition; begin supplementation based on forage analysis conducted earlier in the season.	<a href="http://www.aces.edu/go/788">Beef Cow Herd Planning Calendar</a> http://www.aces.edu/go/788
<b>Condition: Cooler, Wetter Winter</b>		
Energy requirements of cows increases by 2 percent or every degree that the wind chill is below 59 degrees F.	Provide extra hay for cattle; supplement with a fiber-based energy source for 3 to 5 days after the cold weather to help overcome energy losses.	<a href="http://www.aces.edu/go/520">Calculating the Energy Requirements of Brood Cows in Cold Weather</a> http://www.aces.edu/go/520
Changing cow nutrient requirements and decreasing body condition in fall-calving cows.	Separate the cow herd into nutritional management groups and monitor body condition; begin supplementation based on forage analysis conducted earlier in the season.	
Cows/calves in muddy areas.	Provide clean, easily accessible pastures for cows and calves to prevent the opportunity for spread of disease. Consider putting in heavy-use area (hay feeding pads, etc.).	<a href="http://www.aces.edu/go/785">USDA NRCS Conservation Practice Standard–Heavy Use Area Protection</a> http://www.aces.edu/go/785
<b>Condition: Warmer, Wetter Winter</b>		
Favorable growing conditions for cool-season forages.	Use managed grazing to improve forage utilization. Increased forage availability may decrease supplementation needs depending on region.	
Changing cow nutrient requirements and decreasing body condition in fall-calving cows.	Separate the cow herd into nutritional management groups and monitor body condition. Begin supplementation based on forage analysis conducted earlier in the season.	
<b>Condition: Warmer, Wetter Spring</b>		
Favorable growing conditions for cool-season forages.	Use managed grazing to improve forage utilization, especially in late spring. Increased forage availability may decrease supplementation needs depending on region.	
Cool-season forages experience earlier growth.	Conduct soil tests and apply nutrients before anticipated flush of spring growth.	<a href="http://www.aces.edu/go/790">Soil Testing Information Sheet</a> http://www.aces.edu/go/790
Potential for animal health conditions such as grass tetany to occur.	Provide free-choice high magnesium mineral (10 to 15 percent Mg) during spring. Monitor intake to ensure that cattle are consuming at the recommended rate per day.	<a href="http://www.aces.edu/go/786">Management Practices to Reduce Grass Tetany</a> http://www.aces.edu/go/786

## Key Climate Impacts and Management Strategies (cont.)

Impact	Strategy	Resources
<b>Condition: Cooler, Wetter Spring</b>		
Cool-season forages experience delayed growth.	Conduct soil tests and apply nutrients before anticipated flush of spring growth. Use managed grazing to improve forage utilization and remove excess forage in late spring/early summer as warm-season perennials break dormancy.	<a href="http://www.aces.edu/go/790">Soil Testing Information Sheet</a> <a href="http://www.aces.edu/go/790">http://www.aces.edu/go/790</a>
Potential for animal health conditions such as grass tetany to occur.	Provide free-choice high magnesium mineral (10 to 15 percent Mg) during spring. Monitor intake to ensure that cattle are consuming at the recommended rate per day.	<a href="http://www.aces.edu/go/786">Management Practices to Reduce Grass Tetany</a> <a href="http://www.aces.edu/go/786">http://www.aces.edu/go/786</a>



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# Management



**Alabama Beef Systems Management Handbook**

# Beef Herd Management Strategies

► Learn key management practices to improve sustainability in small herd operations.

Cow-calf operation sustainability involves the efficient use of resources on-farm to improve herd profitability and farm productivity now and for future generations. For operations with less than fifty head of cattle, it is especially important to focus on herd processes that improve time and resource management. The following are key management practices you can implement to improve herd sustainability.

## Keep Cattle Healthy

A good herd health program is essential to any farm management operation. Many producers think about vaccinations, deworming, or other treatment strategies when developing a plan. Yet practices that decrease handling and environmental stresses on the herd can influence health, as well. You need a veterinarian who can work closely with you to best meet the requirements of the herd.

## Maintain Accurate Records

Animal identification is especially important for evaluating herd inventory, maintaining biosecurity, and tracking performance of animals in the herd. Individual identification records should include a calf's place of origin, date of birth, and health care records indicating vaccinations and other treatments given.

Numerous record-keeping resources are available. Among these are the National Cattlemen's Beef Association Integrated Resource Management Redbook, online software, and mobile applications. Many resources include features that allow users to add photos and detailed information regarding the herd for quick reference. These tools help producers to keep track of pregnancy data, calving data, dam information such as calving interval and calf weaning weight, sire information, and pasture usage.

## Define a Calving Season

A controlled calving season can save time, labor, and resources for a small cattle producer (table 1). Managing

the cow herd to calve in 90 days or less can help with the following:

- Forages. Calving can be timed to occur during peak forage availability and nutritive value.
- Nutrition. A more targeted feeding program can be established, since animals are in the same stage of production (pregnant, lactating, etc.).
- Record keeping. Cow records can be used more efficiently to select replacement heifers and to cull cows.
- Health maintenance. Cattle require less handling for vaccinations and other health-related activities.
- Marketing. The calf crop is more uniform at the time of marketing because calves are closer in age and stage of growth.

## Implement Crossbreeding

Crossbreeding can improve production efficiency by increasing hybrid vigor (heterosis). Hybrid vigor is the increase in production traits, such as growth, fertility, and longevity, that occurs from breeding genetically different animals of separate breeds. Crossbreeding allows a cattle producer to blend complementary strengths and superior traits, including carcass characteristics, growth rates, and reproductive performance, to produce calves that can perform at a higher level than the parental breeds.

## Consider Growth-Promoting Implants

Implants can complement other good management practices such as crossbreeding, adequate nutrition, castration, and vaccinations to improve gains in growing beef calves. Implants are small pellets containing slow-release hormones that increase muscle growth over time. They are inserted into the ear of a calf. Steer calves and heifers to be sold to the feedlot should be implanted; replacement heifers should not receive growth-promoting implants.



**Table 1. Year-round Herd Management Timeline for Winter-, Spring-, and Fall-Calving Beef Herds.**

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<b>Winter Calving Season Planning Timeline</b>			Breeding Heifers Early March & Cows Late March			Remove Bulls by Mid June		Pregnancy Check Mid Aug	Wean & Weigh Calves for Adjusted Weaning Weights by Mid Aug			Bred Heifers Calving Mid Dec
<b>Spring Calving Season Planning Timeline</b>		Bred Heifers Calving Mid Feb	Calving Season March-May		Breeding Heifers Early May & Cows Late May			Remove Bulls by Mid Aug	Pregnancy Check Mid Oct	Wean & Weigh Calves for Adjusted Weaning Weights by Mid Oct		
<b>Fall Calving Season Planning Timeline</b>			Remove Bulls by Mid March		Pregnancy Check Mid May	Wean & Weigh Calves for Adjusted Weaning Weights by Mid May			Bred Heifers Calving Mid Sep			Breeding Heifers Early Dec & Cows Late Dec

## Castrate Bull Calves

Buyers of feeder cattle prefer castrated steers over intact bull calves. Bull calves that are not intended for breeding purposes should be castrated before the age of 3 months or at the first available handling opportunity beyond this age. Calves castrated at a younger age recover more quickly, and the procedure is easier to perform. Cattle buyers often prefer calves that have been surgically castrated. Alternatively, calves can be castrated using an elastrator.

## Dehorn Calves

Dehorning is a cost-effective practice that can add value to feeder cattle and reduce risk of injury to those handling cattle. Calves should be dehorned at the earliest age that is practical. Young calves tend to recover more quickly and have fewer complications than those dehorned at an older age. It is important to properly restrain calves before dehorning.

## Additional Resources

Alabama Beef Cattle Improvement Association: [www.albcia.com/](http://www.albcia.com/)

Alabama Beef Systems Extension Program: [www.aces.edu/beefsystems](http://www.aces.edu/beefsystems)

Alabama Cattlemen's Association: [www.bamabeef.org](http://www.bamabeef.org)

Alabama Farmers Federation: [www.alfafarmers.org](http://www.alfafarmers.org)

Beef Quality Assurance Program: [www.bqa.org](http://www.bqa.org)



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# Economics



**Alabama Beef Systems Management Handbook**

# Planning to Make a Cow-Calf Profit

► **Most cattle businesses in Alabama are cow-calf operations. The profitability of these operations is largely a function of the ability to produce and market high-quality feeder calves at a reasonable cost of production.**

The profitable cow-calf operation is more than just getting the highest price or being the lowest cost producer. The profitable operation weighs the comparative costs and returns of each input and management practice. Following are input and ranch management practices that influence the profitability of a cow-calf operation.

## Decrease Total Production Costs

- Implement a sound fertilizer and lime program to achieve an economical quality and quantity of forage production. Use legumes to provide nitrogen and store P & K in the ground during profitable years.
- Shop around for fertilizer bargains (price by element used, broiler litter, bio-solids, etc.).
- Increase the number of grazing days (limit, mob, strip, rotational, etc.)
- Evaluate the decision to produce or purchase hay from an economic perspective. Capital costs and depreciation make it difficult for small cattle producers to justify fixed costs associated with hay making.
- Reduce supplemental feed costs (days fed, cost of supplement, supplement waste, supplement fed, and/or number of animals fed).
- Reduce labor expenditures. Partner with your neighbors.
- Reduce fuel costs—quantity used and price paid.

## Increase Cull Animal Revenue

- Identify preferred market windows to market cull animals (winter and spring).
- Add value to cull animals—quality grade, weight gain, breed them, dehorn, etc.
- Cull all open cows, cows with consistently low body condition, poor production, and poor feet, leg, and udder structure, teeth, and eyes, etc.
- Sell animals with breeding value that doesn't fit your production program at their greatest potential market value.



## Increase Pounds of Calf Production (Weaning Percent and Weaning Weight)

- Implement a breeding season to increase the average calf age and weight at weaning.
- If needed, shorten your breeding season—365 days is not a breeding season. Shorter breeding seasons usually result in increased pounds of calf production and lower cost of production.
- Select cow and bull genetics to increase calf muscle and/or frame scores to achieve medium-large frame feeder calves with #1 and #2 muscle scores.
- Evaluate the decision to purchase or develop replacement heifers based on farm resources, goals, and expertise.



- Determine pregnancy, calving, and weaning rates; correct any problems.
- Make sure nutritional requirements are being met.
- Implement a sound herd health program that adequately addresses health issues and, when possible, lowers costs.
- Wean feeder calves between 6 and 9 months of age to increase sale weights.
- Perform calf management practices (implant, deworm, fly control, etc.) to increase sale weights.

## Consider Marketing Strategies

- Know the unit cost of production (UCOP) of your operation, which can be used to subtract from the appropriate feeder calf market price to determine if a profit is achieved. (Estimated UCOP = [Total production costs—cull animal revenue]/total pounds of calf production = \$/lb.)
- Select breeding stock that enhances production levels and quality, lowers UCOP, attains higher market prices, and improves profitability.
- Determine which cattle market outlets that attain higher cattle revenues for various classes of cattle— auction barns, private treaty, graded and pooled sales, tele-auctions, video auctions.
- Evaluate the best time of year to market calves based on your calving season and the 10-year seasonal price trends.
- Be informed about past and future cattle price cycles and sensitive market factors that affect cattle prices and understand risk management tools.

## Additional Resources

- [Alabama Extension Farm and Agribusiness Management](http://www.aces.edu/go/791) at <http://www.aces.edu/go/791>
- [Profit Profiles](http://www.aces.edu/go/792) at <http://www.aces.edu/go/792>
- [Alabama Livestock Market News](https://www.ams.usda.gov/mnreports/lswalabama.pdf) at <https://www.ams.usda.gov/mnreports/lswalabama.pdf>
- “[Planning to Make a Cow-Calf Profit \(2015 Projection\)](http://www.aces.edu/go/775),” Timely Information by W. Prevatt and C. Prevatt. <http://www.aces.edu/go/775>
- “[So You’re in the Cattle Business](http://www.aces.edu/go/774)” YouTube video <http://www.aces.edu/go/774>
- “[Economics: Top Ways to Improve Profitability in Beef Systems – A Three Part Series](http://www.aces.edu/go/776)” YouTube videos:
  - Part 1 <http://www.aces.edu/go/776>
  - Part 2 <http://www.aces.edu/go/777>
  - Part 3 <http://www.aces.edu/go/778>



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