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Raising Calves for Slaughter

Shane Gadberry
Associate Professor

Brian See
Marion County Extension
Agent - Agriculture

John Jennings
Professor

Paul Beck
Professor

Jason Apple
Professor

Rural landowners are often interested in raising livestock to slaughter for either personal consumption or local marketing. Advantages to raising your own beef include having control over calf quality and choice of how the calf is finished out. Calves can be grown-out on grass only, grass plus grain or mostly grain. There are disadvantages to consider when fattening your own beef, including the need to purchase a calf, extra labor for feeding, sufficient land set aside for forage-finishing, purchasing expensive feedstuffs for grain-finishing or purchasing freezers to store the beef after slaughter. Calves can also get sick and may require veterinary attention. Also, keep in mind that if you are the sentimental type or if you have children who may become attached to the calf, you may have unpleasant feelings when it comes time to have the calf processed. This fact sheet covers facility, calf selection, feeding options, health and slaughter considerations when raising calves for butchering.

General Facility Considerations

Shade and windbreaks. Finishing (forage- or grain-finishing) and marketing goals (personal use or sale) will determine the land and facilities needed. Whether finishing calves on pasture or in a dry lot, calves will be more comfortable if they have access to shade during summer and a windbreak during winter. Even though calves grow adequately without shade or a winter windbreak, the necessity for access to shade and a windbreak is a personal preference depending on the level of animal comfort desired and marketing. If the goal is to market beef locally, buyers may be interested in farm tours to see where the beef was produced. Buyers of locally grown beef are in part making their buying decision based on their perception of how calves should be reared. If calves don't have access to summer shade or winter shelter, someone will eventually make it a point to ask.

Water. One farm-raised beef marketer noted that questions about water source and cleanliness were the most common questions received on their farm tour with clients. Earthen ponds are a good source of water for pasture-finished beef, but buyers may not like the idea of calves idling in ponds. Creating limited-access watering points can restrict calves from standing idle in ponds and also protect pond banks from eroding. If watering calves from small troughs, it is important to keep the troughs clean of manure, algae and foreign materials to sustain good water intake. Monitor tanks regularly to avoid winter freezing (add a heater if needed) and running dry during the heat of summer.

Handling facilities. Cattle handling facilities, at a minimum, should include a catch pen with a lane and headgate to be able to vaccinate, treat illness, castrate and dehorn. Working facilities that are poorly designed and maintained can be a source of injury to both person and animal, and bruising may cause product loss. Walk through working facilities looking for possible points of injury, such as protruding bars, bolts or nails.

Feed storage and handling. Wasted feed due to poor storage and handling techniques increases the cost of producing beef. Feeds should be stored in a dry location to reduce the chances of mold growth. Feed storage

facilities need to be kept clean to keep pests (rodents and insects) at a minimum. Hay used in forage-finished beef programs should be high in quality. Storing hay under UV-protected tarps or in barns can help reduce storage waste. Feeding round bales in protected rings that either keep the bale centered or have a metal sheet around the bottom can help minimize feeding waste. Feed troughs should also be kept clean to minimize leftover feed spoilage and to prevent mixing of fresh feed with any uneaten, spoiled feed.

Finishing Options

Forage- Vesus Grain-Finishing. The objective here isn't to start a grass- or grain-finished debate; there is room for both in a local farm-raised beef market. It is important to understand common characteristics of forage- versus grain-finished beef when deciding which option is best for beef produced on-farm for personal use or market based. In general, the typical beef consumer in the U.S. enjoys the beefy flavor of grain-fed beef. By comparison, ground beef from cattle finished on forage has been characterized as having a "grassy" flavor. Grass-fed ground beef can also have a cooking odor that differs from grain-fed beef. The visual appearance of the fat of grass-fed beef can be more yellow in color, due to carotenoids, in comparison to grain-fed beef fat that appears white. Forage-finished cattle are usually finished at a lighter weight (approximately 1,000 pounds) than grain-finished cattle (approximately 1,250 to 1,450 pounds) and, as a result, are often leaner when delivered for slaughter compared to grain-finished cattle. Leaner beef is generally scored by taste panelists as being less tender and less juicy compared to fatter beef. So, the health-conscious consumer seeking forage-raised beef is usually willing to accept trade-offs of flavor, tenderness and juiciness for a leaner beef that may contain a greater proportion of heart-healthy fats. Whereas, other consumers may continue to seek the grain-finished beef characteristics but want to support local sources of grain-fed beef.

Forage-Finishing. Forage-finishing capitalizes on the beef animal's ability to convert forage cellulose into mammalian protein through the aid of microbial breakdown of forages in the rumen. Since cattle are naturally grazing animals, some producers and consumers prefer beef from cattle reared in their "natural environment." The first challenge to forage-finishing is having a sufficient area of grazable land. Forage dry matter intake is thought to be maximized when forage allowance is kept above 1,000 pounds per acre. Forage-based systems may require 0.5 to 1.5 acres per calf, depending on fertilization, weed control, seasonal forage productivity and forage species management. Even with good forage management, hay is often needed for two to four months during winter. To sustain good calf growth rates and reduce the number of days required to finish calves on a forage-based system, high-quality hay should be offered when pasture grasses are limited. Supplementation with concentrate feeds, such as soybean hulls, may be needed to boost gains and allow for fat deposition when hay or pasture is moderate to low quality. Soybean hulls are recognized by the American Association of Feed Control Officials as a roughage source and are approved for grass-fed beef claims by the USDA for meat marketed as grass-fed beef. The second limitation to forage-finishing is calf growth response. As forage quality, forage quantity and environmental temperatures fluctuate throughout the year, average daily gain may range from seasonal highs of greater than 2.0 pounds per day to seasonal lows of 0.5 pound per day. As a result, calves grown in forage-finishing systems are often slaughtered before they reach the same degree of fatness of grain-finished cattle. Forage-finished calves will often be slaughtered near 1,000 pounds live weight. It will take over a year (367 days) to grow a 500-pound calf to 1,000 pounds if its average daily weight gain is 1.5 pounds per day. Some extensive forage-finishing systems may require a longer duration for calves to reach slaughter weight if forage quality and quantity restrict growth to no more than 1 pound per day.

Intensive spring and summer forage-finishing systems can be accomplished with legumes, perennial grasses, annual grasses and brassicas. Research at Clemson University compared forage species for finishing calves on pasture during late spring and summer months. Calves used in the study were grown the previous winter on rye or ryegrass and fescue. Finishing forages studied included alfalfa, bermudagrass, chicory, cowpea or pearl millet. Pastures in this study were stocked at three calves per 5 acres, with the exception of pearl millet which was stocked at three calves per 2.5 acres. The amount of pasture forage maintained during the study ranged from 1,300 to 2,500 pounds per acre. Table 1 is a summary of the study results.

Steers grazing bermudagrass pastures gained right at 1.7 pounds per day, while steers grazing alfalfa (2.8 pounds per day), chicory (2.5 pounds per day) and cowpea (1.9 pounds per day) gained more rapidly and had greater backfat thickness at slaughter. Steers grazing pearl millet only gained 1.2 pounds per day and had the least backfat at slaughter. Among the finishing systems, fatty acid composition tended to be similar and the ratio of the polyunsaturated fats to saturated fats was similar.

Research in Georgia (Table 2) compared forage-finishing on toxic fescue and nontoxic, endophyte-infected fescue for a 176-day grazing period (starting in the fall and ending in the spring). The stocking rate of the toxic fescue was three steers per 2 acres, and the stocking rate of the nontoxic fescue was two steers per 2 acres. When fescue became limited during winter months (January and February), calves were grouped into a single pasture and were fed bermudagrass hay. In general, toxic fescue reduced growth rate, which resulted in lighter carcass weights, but tenderness and consumer panel attributes were not enhanced by nontoxic fescue.

A study at the University of Missouri examined the effect of adding either red clover or alfalfa to a fescue-based, forage-finishing system for a three-month finishing period from late-March through July.

The amount of legume in these systems was 38 percent in the alfalfa system and 16 percent in the red clover system. Final weight of calves did not differ between the fescue and combined legume response and averaged 1,035 pounds. Calves in the alfalfa system were 50 pounds heavier at the end of the study compared to the red clover system, which could had been influenced by difference in legume forage availability. The fatty acid composition of fat taken from the loin muscle did not differ among forage types.

Another study at Clemson University (Table 3) compared a legume system to a grass system with or without supplemental corn fed at 0.75 percent of body weight. The legume system utilized alfalfa and soybeans, while the grass system utilized nontoxic fescue and sorghum-sudangrass. While corn supplementation provided some beneficial responses, these responses were independent of the forage system. The differences in forage systems are summarized in Table 3. Forage type had little influence on fatty acid composition; however, greater fat soluble

Table 1. Growth and carcass attributes of calves finished on different forages during late spring and summer (adapted from Schmidt et al., 2013)

Growth and Carcass Attributes	Finishing System				
	Alfalfa	Bermudagrass	Chicory	Cowpea	Pearl millet
Grazing days per acre	168	219	135	115	277
Start weight, pounds	893	1,047	931	1,058	1,052
End weight, pounds	1,184	1,274	1,137	1,221	1,155
Average daily gain, pounds per day	2.8	1.7	2.5	1.9	1.2
Carcass weight, pounds	711	719	675	752	664
Backfat thickness, inches	0.30	0.22	0.30	0.27	0.18
Quality grade	Low Select	Low Select	Low Select	High Select	Low Select
Warner-Bratzler shear force, kilograms[1]	4.0	4.8	4.5	4.0	4.5
Consumer preference, percentage	40%	5%	10%	20%	25%

[1]Warner-Bratzler shear force (lower is associated with greater tenderness).

Table 2. Growth and carcass attributes of calves finished on toxic and nontoxic, endophyte-infected fescue from autumn through spring (adapted from Realini et al., 2005)

Growth and Carcass Attributes	Finishing System	
	Toxic Fescue	Nontoxic Fescue
End weight, pounds	906	992
Carcass weight, pounds	491	541
Backfat thickness, inches	0.17	0.21
Quality grade	Low Select	High Standard
Warner-Bratzler shear force, kilograms	6.0	7.0
Consumer panel – chewiness score[1]	2.8	3.7
Consumer panel – juiciness score[2]	2.7	2.4

[1]Chewiness score: 1 to 5 scale with 1 being most desirable and 5 being least desirable.
[2]Juiciness score: 1 to 5 scale with 1 being least desirable and 5 being most desirable.

Table 3. Growth and carcass attributes of calves finished for 98 to 105 days in a grass system or a legume system (adapted from Wright et al., 2015)

Growth and Carcass Attributes	Grass System	Legume System
End weight, pounds	1,142	1,166
Carcass weight, pounds	669	697
Backfat thickness, inches	0.33	0.37
Quality grade	High Select	High Select
Consumer panel[1] – tenderness score	8.5	8.4
Consumer panel – juiciness score	6.0	5.9

[1]Consumer panel scores based on a 15-point scale with 0 = none and 15 = extreme.

vitamin content was detected in the loin muscle of grass-finished beef in this study.

As a general summary, the forage system chosen will first be dictated by the forage species already present. Replacing forages with alternative species or interseeding with complementary forages will be dictated by soil type, topography and soil fertility. Calves can be forage-finished on grasses, legumes or a combination thereof. Current research results do not suggest that any single system is ideal, based on carcass quality and consumer sensory comparisons.

Grain-Finishing. While ruminants have the distinct ability to convert cellulose into mammalian protein, there remains a history of fattening cattle on feedstuffs other than forage long before the establishment of the modern confinement feedlot industry. Early fattening in America included root crops, "Indian corn," tree fruits and brewing and distillery mash. Confinement feeding in early America was also a mechanism to concentrate manure for fertilizer. Unlike forage-finishing, grain-finishing requires less land. Depending on soil type and topography, as little as 150 square feet per calf of pen space with a feed and water trough is sufficient. Producers of locally grown beef may sometimes allow a much larger area to keep grass cover in the lot instead of allowing the pen to become a dirt lot. This system is essentially a grain-finishing system on pasture. An example of such a system is described later.

When finishing calves in groups, 22 to 26 inches of linear trough space per calf is needed when all calves will be eating at once on the same side of the trough. Grain diets are much drier than pasture diets, and when calves are fed in confinement, they are usually watered from a trough. As discussed earlier, keeping the water trough clean is extremely important. A depression in water intake can cause a reduction in feed intake and slow growth rate. During hot weather, a calf near finishing weighing 1,000 pounds or more can consume in excess of 20 gallons per day.

Many associate grain-fed beef with corn-fed beef. From 2005 through 2011, corn use for ethanol grew to the point that the total use for ethanol reached that of feed and residual use. During this time, researchers examined the effect of increased use of corn distillers grains replacing dry-rolled, high-moisture and steam-flaked corn in feedlot diets. A feedlot finishing diet today may contain 6 to 12 percent roughage, up to 50 percent byproduct feeds (such as distillers grains and corn gluten feed), and cereal grains (mostly corn) representing 50 percent or more of the finishing diet.

Mimicking feedlot diets may not be practical when finishing calves on-farm for personal use or for local market; however, similar steps used in the commercial feeding industry should be adopted including:

- Calves should be transitioned from a roughage diet to the final high concentrate diet over a three-week period. This is called a step-up program.
- Feed calves at least twice per day when the final diet does not contain built-in roughage or is not formulated to be self-fed or self-limiting.
- Include 10 to 15 percent roughage in the final diet for increased rumen health and reduced acidosis.
- Feed calves a balanced diet (protein, minerals, mineral ratios and vitamins).
- Adjust feed amount as calves grow.

Consult with a nutritionist to develop a ration based on locally available ingredients or use a commercial finishing ration. Some feed mills offer "bull rations" that can also be used as a decent finishing ration. The "bull rations" sometimes include enough cottonseed hulls and byproduct feeds that additional roughage is not needed. Diets formulated for farm finishing can also be based on limit feeding the concentrate portion in the trough while allowing calves to have free choice access to pasture or hay for roughage.

In addition to distillers grains and corn gluten feed, other byproducts such as soybean hulls may be used in finishing diets. Soybean hulls have an estimated feed value of 74 to 80 percent of corn; whereas, dried distillers grains have demonstrated a 124 percent feed value of corn.

As an alternative to a high-starch (corn) ration fed twice daily, self-fed supplements on pasture can be another approach to finishing cattle. Research at Iowa State University (Table 4) examined self-fed dried distillers grains with solubles mixed 1:1 with either soybean hulls or ground corn. In addition,

Table 4. Growth and carcass attributes of calves finished on self-fed concentrates (adapted from D. D. Kiesling, 2013)

Growth and Carcass Attributes	Finishing System	
	Distillers grains plus solubles:corn [50:50]	Distillers grains plus solubles:soybean hulls [50:50]
Average daily gain, pounds	3.4	3.3
End weight, pounds	1,302	1,291
Carcass weight, pounds	816	807
Backfat thickness, inches	0.53	0.55
Quality grade	Low Choice	Low Choice

Estimated concentrate intake was 80% and pasture intake 20%.

a mineral that helped balance the calcium-to-phosphorus ratio and contained Rumensin to improve rate of gain was added at 4 percent of the mix. The calves were stocked at approximately 2.25 calves per acre of predominately tall fescue pasture. Estimated contributions of self-fed concentrate and pasture to the total dry matter feed intake in this study was 80 and 20 percent, respectively. The study did not report any issues with digestive upset with self-feeding.

Selection

Calves selected for farm-raised beef vary in type. Budget, niches and end product goals will determine the type of calf that works best. Small-framed dairy calves like Jersey can have exceptional meat quality; however, percent retail product and size of cuts, like ribeye steaks, will be fairly small. A large-framed, heavy-muscled beef breed will have very good cutability (high percentage retail product), but calves of this type can take longer to reach maturity, will likely be slaughtered prematurely and freezer space may be inadequate to store all the cuts. Calves of beef breeds that are moderate-framed and early maturing with good muscling are ideal for most farm-raised beef programs. Producers who desire greater lean may desire calves of traditional Continental breeds like Charolais and Limousin; whereas, producers who desire the flavor and juiciness of steaks with more marbling (intramuscular fat that determines USDA Quality Grade) may prefer calves that are of predominantly of English breeds, such as Hereford, Red Angus, Black Angus or Shorthorn. Others prefer the novelty of certain breeds like miniature Herefords or Belted Galloways. Wagyu (which means Japanese cattle) is a breed type that has exceptional marbling.

Try to avoid finishing calves with more than 25 percent Brahman influence due to reduced cutability and tenderness. A nine-year summary of the Arkansas Steer Feedout program indicated calves that fit carcass targets for size, Quality Grade and Yield Grade had greater breed influence from English breed types and less breed influence from Continental breed types and Brahman breed influence.

Bulls should be castrated early in life, preferably at birth or by three months of age. Steaks from bulls can be leaner and tougher than steaks from steers. Aggressive activity of group-fed bulls can become a handling issue as well as increase chances for animal injury and bruising. Heifers make good farm-raised beef candidates. Heifers are often kept for breeding, and at the end of the breeding season, any heifer that did not become pregnant can be grown-out for slaughter. Heifers generally fatten quicker and have a slightly poorer feed conversion ratio than males.

Calf Health Management

A health program should include prevention of disease through vaccination and controlling internal and external parasites. **Vaccinating and treating with antibiotics is not the same thing.** Vaccinate calves to protect them against clostridial and perfringes diseases and viruses that are part of the respiratory disease complex (IBR, BVD, BRSV and PI3). Vaccine efficacy reaches its full potential when booster shots are given, so give booster shots when the vaccine label indicates a booster shot is needed.

Preventing disease is important, especially when trying to be a source of beef produced from calves that were raised without antibiotics. When calves do become sick, it is important to utilize antibiotics to restore health. Antibiotics are a component of good animal husbandry, and calves that are treated with antibiotics can be marketed as farm-raised without the antibiotic-free claim. Tissue damage from respiratory disease and parasitism can rob calves of growth potential, lower feed conversion and increase the cost of growing calves for beef. Visit with your local large animal veterinarian or county Extension agent about product options and effectiveness for a complete calf health management program.

Cattle producers need to adhere to Beef Quality Assurance guidelines, and producers looking to market farm-raised beef should acquire national or state Beef Quality Assurance training and certification. As a producer of beef, administer shots subcutaneously instead of intramuscularly when the drug label permits subcutaneous administration. Always give shots in the neck region. Discard expired products, and **always follow the label instructions on slaughter withdrawal time**.

Foot rot is a problem that can develop in both pasture and confinement finishing systems. Calves finished on pasture may be exposed to toxic weeds and pastures with a high percentage of legumes, which can result in bloat. To avoid pasture-associated problems, never introduce hungry calves into a new pasture. Calves finished in confinement can experience grain bloat and acidosis if fed a high percentage corn ration with inadequate amounts of roughage in their diet. Calves that will be finished on a high percentage grain diet should be transitioned from their forage diet to the high percentage grain diet over at least a three-week period.

Live Weight to Retail Cuts

The final amount of retail cuts produced from a live calf will be affected by frame, muscle, bone, fat cover and gut capacity or fill. The first measure of yield is dressing percentage, which is the percentage of carcass weight relative to live weight. Dressing percentage can range from 58 to 66 percent. A 1,300-pound steer that yields a carcass weighing 806 pounds would have a 62 percent dressing percentage. A second measure of yield is retail product. The USDA Yield Grade is a numerical score that is indicative of retail product. A calculated Yield Grade is determined from hot carcass weight, fat thickness at the 12th rib, ribeye area and the combined percentage of kidney, pelvic and heart fat. Percentage of retail products can be calculated from these same measurements. Percent retail product may range from 45 to 55 percent. A 1,300-pound steer

that is Yield Grade 3 would have a retail product percentage of 50 percent, which would yield about 650 pounds of retail product. If two individuals purchase a side of beef each, they each can expect 325 pounds of retail product. The yield of retail product will consist of approximately 62 percent roasts and steaks and 38 percent ground beef and stew meats. So, a single side of beef that yields 325 pounds of retail product would also yield approximately 201 pounds of roasts and steaks and 124 pounds of ground beef and stew meat.

A useful tool for estimating product yield from a carcass is the Beef Cutout Calculator (http://beefcutoutcalculator.agsci.colostate.edu/). User inputs include cattle type (beef or Holstein), anticipated or known Quality Grade (Choice or Select), Yield Grade options (calculated or selected from a range of Yield Grades) and weight (live or hot carcass weight). Table 5 contains an example projected yield of wholesale cuts using the Beef Cutout Calculator (prices excluded).

Slaughter Considerations

A plan for slaughter should be developed before a farm-raised beef program is initiated, especially if the intent is to market beef instead of growing out a single calf for personal consumption. In a 2001 survey of grass-finished beef producers, 40 percent utilized state inspection, 57 percent utilized federal inspection and 30 percent sold live animals for slaughter. Custom slaughter facilities are common in states such as Arkansas. However, beef packaged in many custom slaughter facilities cannot be retailed, and packaging must be labeled "not for sale." Producers can opt to market finished live calves to buyers who are then responsible for coordinating custom calf slaughter. When the intent is to market packaged beef, processing must be done under federal inspection for interstate commerce. States offering state inspection have provisions for intrastate commerce. In Arkansas, for example, there are limited facilities that offer USDA slaughter inspection, and the state does not have a state inspection program. Whereas, Missouri is an example state with state meat inspection. The USDA Food Safety and Inspection Service (FSIS) maintains a list on their website of USDA-inspected facilities. Additional considerations for slaughter include:

- How many calves can the facility process (cooler space)?
- How many packages can be stored on-farm before market and delivery or use (personal freezer space)?
- How long will the facility chill carcasses before fabrication (aging)?
- Will the facility provide carcass details (backfat thickness, carcass weight, quality grade, yield grade) that can be useful for future calf selection and feeding management?
- What kind of packaging is available (butcher paper, vacuum packaging)?
- What specialty options are desired (jerky, sausage)?
- What processing costs are involved (slaughter fee, processing fee, specialty packaging such as jerky fees)?
- Labeling of products for resale under federal inspection.

Table 5. Beef Cutout Calculator Projected Cuts for a 1,300-Pound Live Weight, Choice, USDA Yield Grade 3.00 to 3.25 Range.

Cut	NAMP/IMPS*	Weight (pounds)	Cut	NAMP/IMPS*	Weight (pounds)
Chuck Roll	116A	47.09	Round, Sirloin Tip (Knuckle), Peeled	167A	21.63
Chuck Tender	116B	7.16	Round, Outside Round (Flat)	171B	30.28
Top Blade Steak/Flat Iron	114D	3.83	Loin, Tenderloin, Full	189	12.15
Shoulder (Clod)	114	37.27	Loin, Strip Loin, Boneless	180	23.80
Shoulder Tender (Petite Tender)	114F	1.66	Loin, Top Sirloin Butt, Boneless	184	25.79
Pectoral Meat	115D	5.32	Short Ribs	123	11.15
Boneless Chuck SR	130A	3.66	Flank Steak	193	4.16
Ribeye Roll, Lip-on	112A	29.62	Inside Skirt	121D	3.99
Blade Meat	109B	6.49	Outside Skirt	121C	3.33
Back Ribs	124	8.49	Bottom Sirloin Butt, Flap, Boneless	185A	7.16
Short Plate	121	27.79	Tri-Tip	185C	6.32
Brisket, Deckle-Off, Boneless	120	23.30	Ball-Tip	185B	5.16
Round, Top (Inside)	169	47.26	80/20 Mixture		69.89
Eye of Round	171C	11.81	Bone		127.12
			Fat/Tissue/Skin		144.76
				All Cuts Total	**757.44**
Hot Carcass Weight = 832			Live Weight = 1300		

*NAMP/IMPS – National Association of Meat Purveyors/Institutional Meat Purchasers Specifications official number

CONTACT INFORMATION
Date:_ _
Name: _
Address:
Phone Number: _

CUTTING INSTRUCTIONS
Dressed Weight:
Roasts: Per Package Weight (lbs): [standard is 3 lbs]
Steaks: Per Steak Thickness (inches): _ [standard is 3/4]
Per Package Steaks (#): __ [minimum 2]
Round Steaks Tenderized: Yes☐ No☐
Hamburger: Per Package Weight: 1 lb☐ 1.5lb☐ 2lb☐

Estimated Quantity* per ½ beef	CUT SELECTION	✓ or lbs	
12	T-bone Steak		
8	Sirloin Steak		
12	Ribeye Steak		
8	Round Steak		
4	Arm Roast		
4	Chuck Roast		
1 to 2	Rump Roast		
1	Sirloin Tip Roast		
6	Stew Meat		
60+ lbs	Hamburger		
3 1.5 lb packages	Short Ribs		
3 1.5 lb packages	Soup Bone		
1	Brisket		
	Prime Rib**		
	PROCESSING FEES		
	Jerky ($/lb)	Lbs	
	Snack Sticks ($/lb)	Lbs	
	Summer Sausage ($/lb)	Lbs	
	Kill fee ($)	¼ ☐ ½☐ 1☐	
	Processing ($/lb)	Lbs	
		TOTAL $	

Any cuts not wanted will be boned out into hamburger.
*Cuts not packages unless stated otherwise.
**Will reduce the number of rib steaks

Figure 1. Example beef processing order form.

A component of custom slaughter is determining the type and size of cuts desired. One of the greatest challenges to selecting cuts and marketing farm-raised beef is with the end meats (steaks and roasts from the shoulder and round). Middle meat (loin steaks like the ribeye) and ground beef demand is usually greater. Figure 1 is an example meat cuts form. For slaughter, customers can often specify steak thickness and package quantities, hamburger packaging weight, choice of steaks and(or) roasts or hamburger from the shoulder and round cuts. Some facilities may offer options such as jerky and summer sausage. Sometimes two or more buyers will go together to purchase a calf and evenly split the beef packages to accommodate freezer space and the amount of beef they consume.

Postmortem Aging Effects on Beef Tenderness

Figure 2 illustrates the beneficial effects of aging on tenderness as measured in a laboratory as Warner-Bratzler shear force. This naturally tenderizing process ceases once meat is frozen. When possible, postmortem aging should be at least 7 to 15 days. Aging beyond this timeframe is often restricted due to the processor's cooler space.

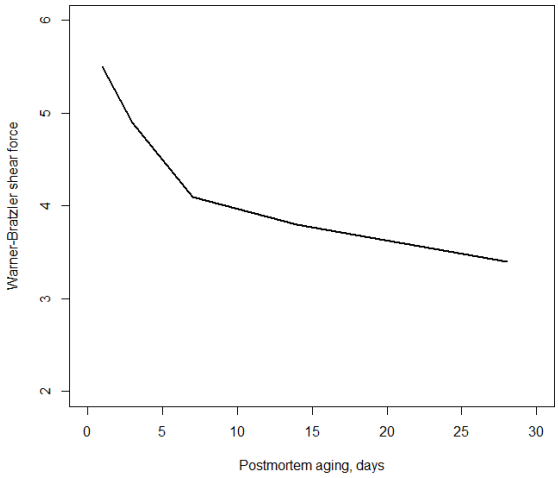

Figure 2. Effect of aging on forage-finished beef tenderness as determined by Warner-Bratzler shear force (adapted from Schmidt et al., 2013).

Marketing Considerations

Producers intending to sell beef that was processed under state or federal inspection must first become promoters of product, not just producers of product. The majority of producers (95 percent) surveyed that market forage-finished beef sell to

local individuals while 28 and 16 percent sell to independent stores and restaurants, respectively. Most advertisement of forage-finished beef has been by word-of-mouth (99 percent); however, website (43 percent), direct mail (34 percent) and newspaper or magazine ads (25 percent) are also used for marketing. Contact local restaurants that emphasize locally produced menu items. Utilize social media tools, and create a farm website to promote your product and tell your story. Investigate shipping options. Most cities have farmers' markets, but meat marketing will likely have a stronger customer base in urban areas. An important aspect of planning is to make sure product supply is not greater than product demand. An interstate program, MarketMaker (https://foodmarketmaker.com/), is a web-based resource to connect sellers and buyers of food products.

Economics and Budgeting

The concepts and details associated with economics and farm enterprise budgeting can easily be separated into a separate fact sheet. The purpose here is to present budget items to consider that would be associated with a farm-raised beef enterprise. The economics of farm-raised beef is often less important for the individual who is growing out a calf born on the farm to slaughter for family use. Individuals who intend to market beef should construct a finishing beef budget to evaluate the costs and returns to this farm enterprise. The contribution of the farm-raised beef enterprise to other farm enterprises will affect how certain fixed costs, such as equipment or facilities, are charged to the farm-raised beef program. A spreadsheet budget for finishing systems is available through Virginia Cooperative Extension (https://pubs.ext.vt.edu/446/446-048/446-048.html, accessed July 29, 2016). Basic components of the finished beef enterprise budget should include:

- **Income**
  - Finished calf sales or meat sales
- **Expenses**
  - Initial calf purchase cost or cost to produce a weaned calf if growing calves raised on the farm
  - Pasture fertilizer, seed and herbicide
  - Land charge
  - Purchased feed, hay and mineral
  - Veterinary care and cost of medicine
  - Depreciation on facilities and equipment specific to the farm-raised beef enterprise or prorated for enterprise use of the total
  - Hauling
  - Meat storage, marketing and distribution
  - Hired labor
  - Facility and equipment repairs and maintenance
  - Fuel and lubrication
  - Supplies and miscellaneous expenses
  - Operating interest
  - Slaughter expenses
- **Return**
  - Return to management and family labor

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DR. SHANE GADBERRY is an associate professor and **DR. JOHN JENNINGS** is a professor in the Department of Animal Science in Little Rock. **BRIAN SEE** is Marion County Extension agent - agriculture in Yellville. **DR. PAUL BECK** is a professor in the Department of Animal Science at the Southwest Research and Extension Center in Hope. **DR. JASON APPLE** is a professor in the Department of Animal Science at Fayetteville. They are faculty of the University of Arkansas System Division of Agriculture.

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