



MSU Agriculture Innovation Day

Focus on Forages and the Future



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and Natural Resources
MICHIGAN STATE UNIVERSITY

Take Home Messages: Grass-fed Beef – Research and Experience

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1. **Grass Fed Beef does work in Michigan**
 - a. Since the first calves hit the pastures in 2011, the MSU Lake City Research Center has finished out over 70 head of steers annually, making the total number of steers finished on an all forage diet well over 440 head.
 - b. 17 cooperator farms in a USDA NCR SARE Grant has also produced more than 500-600 head of grass finished beef
 - c. These farms together with MSU have produced \approx 1000 head of grass finished beef, with the majority of that beef processed and consumed in Michigan.
 - d. The average carcass grade of the cattle has been USDA High Select and the average carcass yield at 18-20 months of age has been 53 -54%.

2. **It takes the right kind of cattle to have a high degree of consistency in finishing**
 - a. Smaller framed ~ 4 - 5.2
 - b. Deep bodied (top to bottom), thick made (side to side), and easy fleshing
 - c. Must have exceptional structural soundness
 - d. Highly adapted to your region - must be easy fleshing on your forages!
 - e. When you put pressure on fertility = Carcass Quality follows
 - f. Must be able to consume high amounts of fiber

3. **Provide a high-quality forage to animals being finished**
 - a. Neutral Detergent Fiber (NDF) range \approx 40-50%. Intake should be around 1.25% of BW. As NDF increases, intake decreases
 - b. RFV of somewhere around 150 or higher, for 2 pounds of gain or more.
 - c. Figure on providing each animal with 3.0% DM on a daily basis.
 - i. For a 1000 lb. steer that is 30 lbs. DM per day.
 - d. It takes \approx 5400 - 6000 pounds of high quality forage DM to get a steer from \approx 800 lbs. to 1200 lbs.
 - e. Pastures need to have a high % of legume/high energy forages
 - f. Do not require finishing cattle to take more than 30-40% of available forage DM. If they have to take too many bites of the same plant, then gains will decline.
 - g. Animals *cannot slow down* their ADG, try to stay above 2 lbs./day in winter.
 - h. Summer gains should be 2.25-2.5 lbs./day on pasture



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- i. year around averages will range from 1.5 - 3.75 lbs. Day depending on feed quality and management (year-round)
- j. On an average, figure one pound of gain per 13-14 pounds of forage
- k. High quality hay is made available at all times to the finishing animals. To finish the steers in the 18-20-month window, there is no room for mistakes. If you size a paddock incorrectly and run the finishers out of feed, they will fall below the targeted ADG, and that is not good!

4. Use management intensive grazing on your farm

- a. Healthy soils hold more water; more water = more forage
- b. Pasturing results in ½ the cost as feeding stored forage
- c. Grazing stimulate microbial activity in the soil, helping to capture water and sequester carbon which improves soil health
- d. Summer and Winter Annuals can extend the grazing season, provide a great energy source during poor perennial pasture growth.

5. Typical Production Calendar at MSU Lake City AgBioResearch Center

- a. Calves are Born starting April 1
- b. Weaned October 1
- c. That winter, they are fed a ration of High Quality hay.
 - i. 40-50% NDF and 150 Relative Feed Value (RFV)
- d. Put on Grass or Alfalfa pasture in the spring (early May)
 - i. If they are grazing alfalfa, Lake City utilizes about 70% of the available forage
 - ii. If they are grazing grass, they only harvest 15-20% of the available forage
 - iii. High Quality dry hay is available at all times. Most of the time they do not eat much.
- e. Cattle are usually finished (0.3 inch of back fat) by November. They are harvested November - December, depending upon the research project and slaughterhouse availability (deer season).
- f. Cattle are usually off pastures and on harvested feed by November 1.



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Take home messages from real world producer transitioning from cash crop to grazing birth to finish grass-fed beef

Jon Nelson JNelson Farms

1. **Cattle Type - Red and Black Angus**
 - a. smaller frame
 - b. calm disposition
 - c. easy calving
 - d. gain well on forage - Finish in less than 2 years

2. **Quality Forage is a must!**
 - a. graze as long as possible - most cost effective, seasonal, least capital and time resource
 - b. make baleage - longer harvest season than dry, minimal nutrient loss, shorter harvest window than dry
 - c. need dry bales too - easiest storage, most dry matter per unit storage, easy to handle
 - d. Utilize Perennials as much as possible
 - i. pastures and multiyear hay ground - red clover, alfalfa, timothy, orchard grass, etc.
 - e. Plant Annuals to help deal with seasonal decreases in perennial pastures
 - i. cover crop after cash crop - late season harvest (grazing or baling), nutrient scavenging, moisture retention, tillage

3. **Must have good pasture management skills - JNelson farms results from using Management Intensive Grazing**
 - a. 25% increase in organic content in 3 years of grazing - 1% organic matter = 27,000 gallons/acre water absorption capacity
 - b. 12% increase in Nitrogen release capacity in 3 years
 - c. Reduced/eliminated topsoil erosion
 - d. increased worms and other soil biology
 - e. reduced soil temperature in the summer with vegetative cover
 - f. Utilize MSUE and NRCS!



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4. Develop a good marketing plan

- a. Value proposition
 - i. Locally produced - welcome to visit the farm
 - ii. GMOs and growth stimulant free
 - iii. year-round grazing
 - iv. grain free
 - v. health benefits of grassfed
- b. Customers
 - i. Health food distributors
 - ii. Consumers - individual cuts, bundles
 - iii. Restaurants - cuts, burger
- c. production system - grazing and water - maximize grazing versus feeding stored feed
- d. who will purchase what you produce

5. Startup tips

- a. work closely with academia - learn from their experiments
- b. plan your production system before building it - fence and water
- c. annual plan for feed source
- d. cheaper to move cattle to feed than feed to cattle
- e. minimize transportation costs
- f. Fence
 - i. High Tensile Steel - \$.50/ft DIY
 - ii. wood corner posts
 - iii. plastic line posts
 - iv. 3 - 5 wires perimeter
 - v. 1 wire internal division
 - vi. 3:1 O'Brien reel, poly wire for temporary
- g. water
 - i. summer water - above ground piping, float valve on heavy duty tank - I use 1100-gallon horizontal steel tanks cut in half
 - ii. tank needs to be large enough so that cattle won't empty it and then push it around and break the water line
 - iii. winter water - frost free
 1. Cobett with underground line running to it.
 - iv. only haul water temporarily; piping with float valve for permanent installation.



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- h. Cattle
 - i. a few good cows are better than many bad cows - \$1500 - \$2500 each
 - ii. yearling stockers raised according to your end market protocol
 - iii. a bull with right genetics - most important
 - 1. small frame - 4-5
 - 2. minimal ground clearance
 - 3. wide deep bodied
 - 4. calm disposition
- i. Grazing - figure out what works for you
 - i. Cow/calf pair - at least 2 acres per pair
 - ii. 800 lb stocker - 1 acre per animal
 - iii. Rotationally graze paddocks
 - 1. move frequently - complete grazing, extended rest for regrowth
 - 2. move to new paddock in 6 days or less
 - iv. always have access to water and mineral
- j. network with other producers
- k. Get started!
 - i. Put in corner posts - 1 pound mine with a rented pounder - 5' in the ground
 - ii. Wraparound insulators on corners
 - iii. Run HTS wire between corners - ratchet tightener in the center
 - iv. use L shaped fence to have a lane at one end of the paddocks
 - v. bore water line underground from source to frost free water

 - vi. Above ground water lines and tanks for paddocks
 - vii. Use a powerful fencer - electric, solar, battery
 - viii. 2 and 4 wires of 5 hot
 - ix. poly wire on reels for further division