

Economics of Grass-fed Beef Production

Allen Williams
Rod Ofte
Pasture Project

Economics of Grass-fed Beef

■ Getting Started in Grass-fed Beef

- Genetics
- Managed Grazing: Rotation = \$
- Fencing / Watering Solutions
- Winter Forage Options

■ Financials

- Cow/Calf vs Finishing
- Direct Marketing Scenario
- 5 Year Cash Flow

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Economics of Grass-fed Beef

■ Economic Benefits of Holistic Management

- Improve Soil Health
- Reduce Erosion, Improve Water Retention
- Improve Water Quality

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Today's Bad Idea



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What About The Grass-fed Sector?

- Mintel Red Meat Report – 2012
- In major US metro areas – Grass fed beef accounted for between **3% and 6%** of all beef sales.



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Grass-fed Sector

■ Mintel Red Meat Report – 2012

- Importance On Scale of 1-10:
- Grass Fed – 7.2
- Impact on environment – 7.5
- Hormone/Antibiotic Free – 7.9
- Taste – 8.7

■ **43%** had purchased “**Grass Fed**” or “**Locally Raised**” beef in 2012.

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Value of Grass Fed Beef Market

■ 1998

- 100+ serious grass fed beef producers
- \$4-\$5 million retail value – Domestic
- Industry in infancy
- Thought of as “fad”
- Little attention paid by larger programs and packers, or even producers

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Value of Grass Fed Market

■ 2013:

- More than **\$2 billion** sold in U.S.
 - \$450 million domestic
 - \$1.5 billion+ imported
- More than **3000** producers involved.
- Growing @ **25-30%** rate annually.
- Has penetrated all major market sectors.
- Major branded program and packer interest.

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Economic Data

■ University Studies and Farm/Ranch Case Study data show:

- Takes average of **0.8 – 1.2 acres** per head to finish steers.
- More than enough available acres to finish **30 million+** head annually in U.S.
- Skilled grass finishers net **\$300 - \$500+** per acre.
- **Build soil** rather than deplete.
 - Value of SOM is **\$750/ac per 1.0%**.

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Selecting Genetics for Forage Based Production



Cow Herd Attributes

- Must have great **longevity**
- High **fertility**.
- **Sound** feet & legs, eyes, udder & teats, teeth.
- **Low to moderate milk**
- **Highly adapted to their environment**
- **Moderate frame (BIF Frame Score 3.0-5.0)**
 - Bulls = 52 – 56 inches
 - Cows = 48 – 52 inches
- **Adequate depth, thickness, and gut capacity.**

Bull Selection – What Are We Looking For?



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Cow Selection



“The animal that is really functionally efficient has small, sleek and very shiny teats.”

J.C.B.



“The body of the highly fertile cow is in beautiful proportion; she looks feminine or broody. *Seen from behind, the largest diameter of the body is the mid-rib region. She has a tremendous stomach capacity...*”

J.C.B.

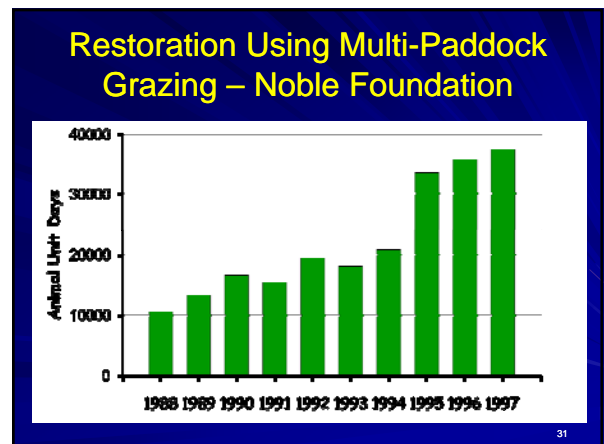
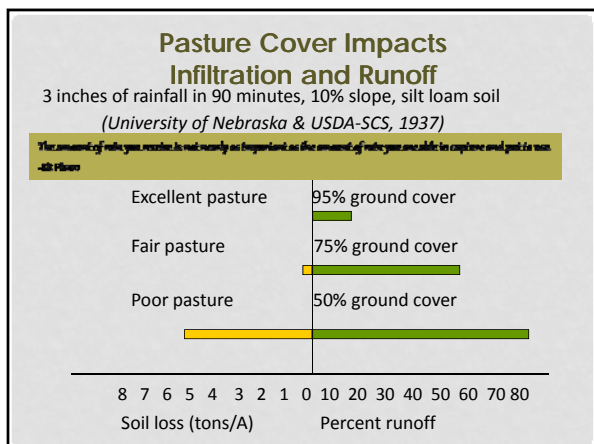




Rotational Grazing 101

Pasture recovery is Critical!

Planned Multi-Paddock Grazing



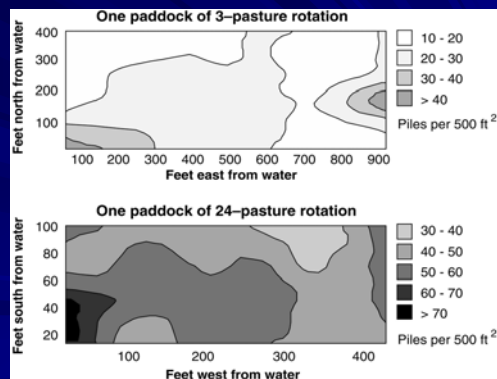
Decrease drought impacts

% Leaf Volume Removed	% Root Growth Stoppage
10%	0%
20%	0%
30%	0%
40%	0%
50%	2-4%
60%	50%
70%	78%
80%	100%
90%	100%



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Manure Distribution

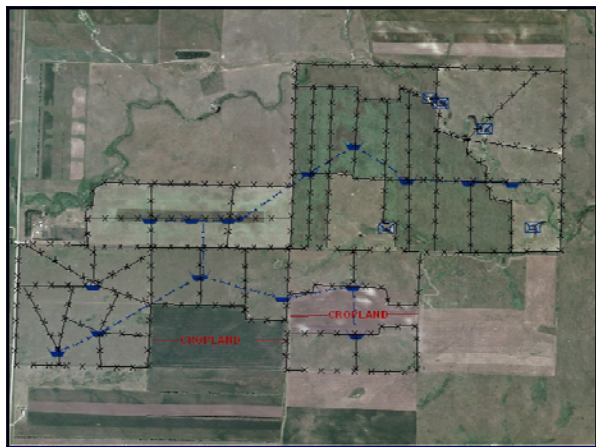


Manure Distribution

Rotation Frequency	Years to Get 1 Pile/sq. yard
Continuous	27
14 day	8
4 day	4 – 5
2 day	2
1 time a day	??

Fencing 101

- Invest in good fencing solutions
- Cost Share Programs : EQIP
- Build to suit your needs with the future in mind



What kind of fence is best ?

- Key Considerations:
 - Budget and phase if needed
 - Terrain (hills, woods, streams)
 - Cattle Type
 - Internal vs perimeter
 - Feed Availability

Fencing, Fencing, Fencing..



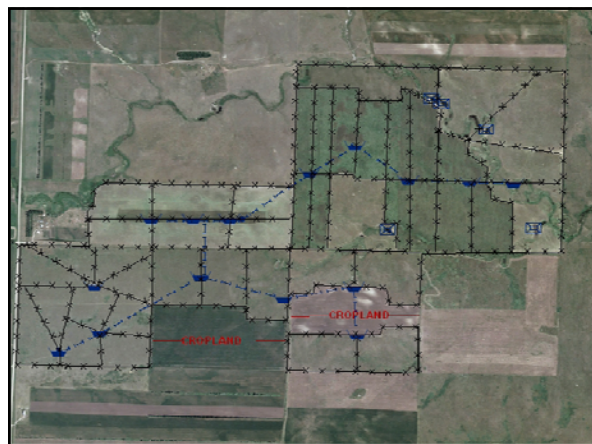
Water Management



Water Management

- Don't let water be limiting factor in finishing.
- Gains will be limited if cattle have to walk too far to water or if water source is poor.
- For optimum finishing – water available in each paddock.
- Different for cows.

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Quick Couplers.



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Winter Forage Management



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Winter Forage Management

- Upper Midwest "Grazing" programs require managing harvested forage.
- Think through your goals and resources to complete a winter forage plan.
- Winter gains and health maintenance are critical for a successful beef program.
- A variety of feeding systems can be built to suit your needs and budget.

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Winter Forage Management



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Winter Forage Management



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Winter Forage Management



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Winter Forage Management



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Winter Forage Management



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Winter Stockpile Grazing



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Millet: 9% CP 50% TDN
Sorghum/Sudan: 12% CP 72% TDN



Hairy Vetch: 18% CP 70% TDN

Pasture Improvement

- What can be done to speed up pace of improvement?
 - Stocking Density
 - Frost Seeding
 - Rotation – Rest
 - Clipping “Yes” or “No”? “Maybe”?
 - Mow for Hay
 - Seeding/Pasture Renovation Options??
 - No Till seeding
 - Warm vs Cool?
 - Complexity/Diversity – No monocultures

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BRIX

- Higher Brix – Result of improving SOM and soil microbial populations.

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What is Brix?

- Dissolved plant solids include **sugars** (such a sucrose and fructans), **minerals**, **amino acids**, **proteins**, **lipids** and **pectins**.
- About **50-80%** of the Brix measurement represents plant sugars, with the remaining portion representing the other plant solids.

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What is a Refractometer?

- A simple optical instrument that measures that amount of light refracted in a liquid.
- Standard piece of equipment for many agronomists and commonly used in the fruit and vegetable industries.



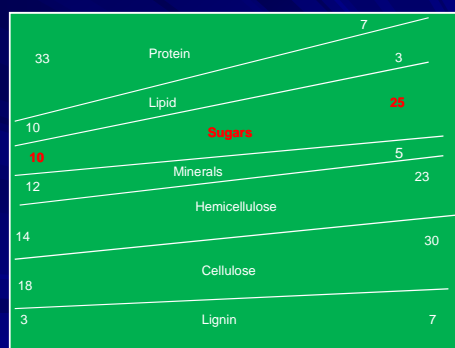
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Brix Index of Common Forages

Forage	Poor	Avg	Good	Excellent
Alfalfa	4	8	16	22
Ryegrass	6	10	14	18
Sorghum	6	10	22	30
Fescue	2	4	7	12
Bermuda	2	4	6	8

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Effects of Stage of Maturity on Pasture Composition



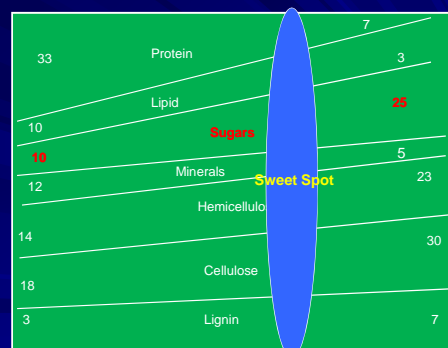
Early Maturity

Mid Maturity

Late Maturity

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Effects of Stage of Maturity on Pasture Composition



Early Maturity

Mid Maturity

Late Maturity

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Why High Brix in Forages?

- Research shows that High Brix forages increase animal gains and milk production.
- High Brix Forages also are more drought resistant, freeze tolerant, and more resistant to plant disease and pests
 - (Moorby, 2001).
 - (Moller, 1996).
 - (Downing & Gamroth, 2007; Miller, et al, 1999).
 - (Allison, 2007).
 - (McKenzie, 2007).



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Benefits of High Brix

- More **Sugars, minerals, and proteins** – Less water
- Forages and crops will taste **"sweeter"** and be more nutrient dense
- Enhanced **aroma**
- Indication of **nutrient uptake**
- Helps plants **resist disease and insect infestation**
- Stored Forages & Crops – **Longer "shelf" life**, better nutritional values, better flavor characteristics



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Brix Advantage

- Brix 5.0% or less = ADG in low 1's.
- Brix 8-12% = ADG in low to mid-2's.
- Brix 12 – 15% = ADG in mid-high 2's.
- Brix > 15% = ADG in high 2's to 3's.
- **Every 1.0% increase in Brix adds 0.1 to 0.3 ADG.**

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Important Grazing Tips

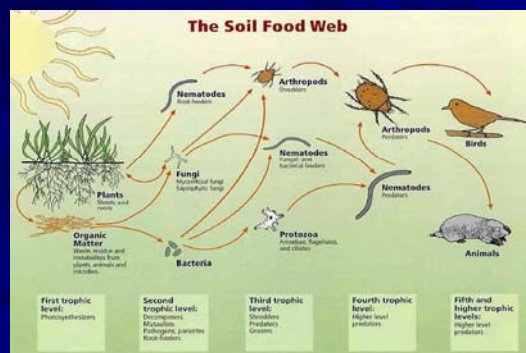
- Know DM availability and allow 3.0% - 3.5% daily.
- Take no more than 30% available DM.
- Move forward rapidly to not allow too many bites of the same plant.
- Know the brix content.
- Turn into new paddocks in early to mid-afternoon (peak brix or plant sugars).
- Stage of forage maturity critical – Mid-stage to slightly beyond...

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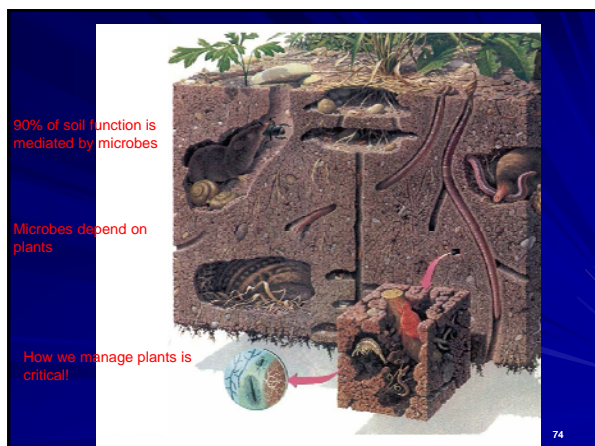
Environmental benefits of Holistic Management

It All Starts With The Soil!!

The Soil is Alive!!



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■ Plant growth & health highly correlated with how much life & what kind of life is in the soil!

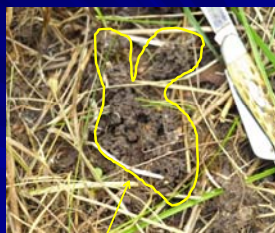
- **Microbes Matter!!!**
- **Microbial community structure crucial.**
- **Highly Important**
 - **Fungi to Bacteria ratio**
 - **Predator to Prey ratio**

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Building Topsoil



Soil Insects



Earthworm Castings

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The Value of Soil Organic Matter

Value of Soil Organic Matter (1.0% SOM Nutrients/Acre)

Nutrients	Nutrient (Lbs)	Unit Value/lb	Value/Acre
Nitrogen	1000	\$0.56	\$560
Phosphorus	100	\$0.67	\$67
Potassium	100	\$0.54	\$54
Sulfur	100	\$0.50	\$50
Carbon	10000	\$0.037	\$20
Value of 1.0% SOM in Nutrients/Acre			\$751

Source: J. Soil and Water Conserv. B. Hudson, 49 (2) 189-194

5.0% SOM = \$3755

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Can we control runoff with OM?

- **2% OM** will hold 32,000 gallons of water or **21%** of a 10 year storm(5.5 inches)
- **5% OM** will hold 80,000 gallons of water or **53%** of a 10 year storm(5.5 inches)
- **8% OM** will hold 128,000 gallons of water or **85%** of a 10 year storm(5.5 inches)



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Strategies for Land Improvement

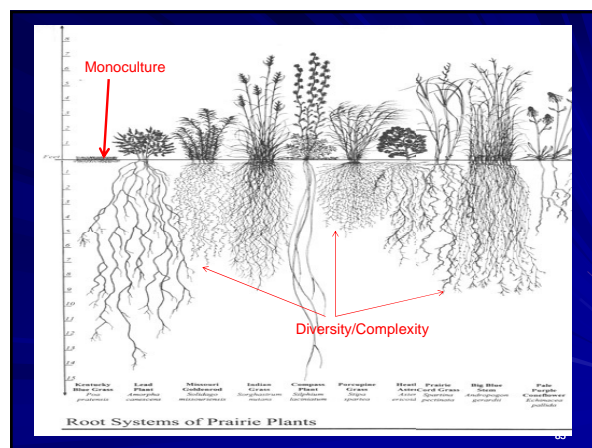
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- Building SOM and Soil Microbial Populations Through:
- Plant Species Diversity
- Livestock Impact

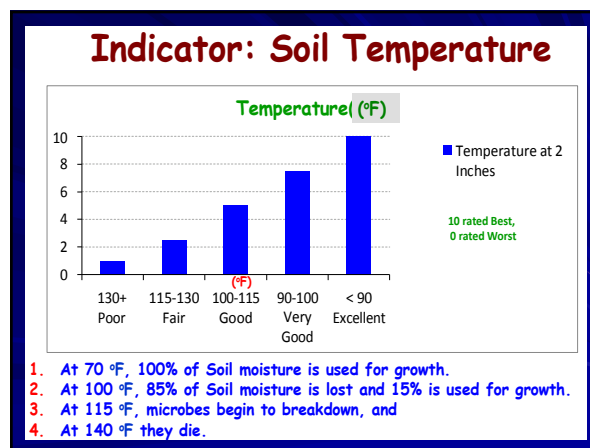
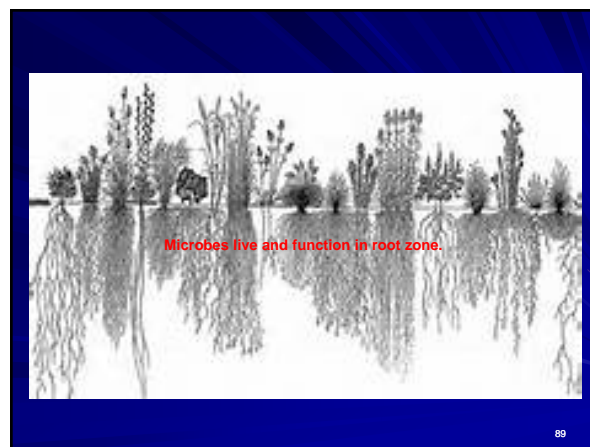
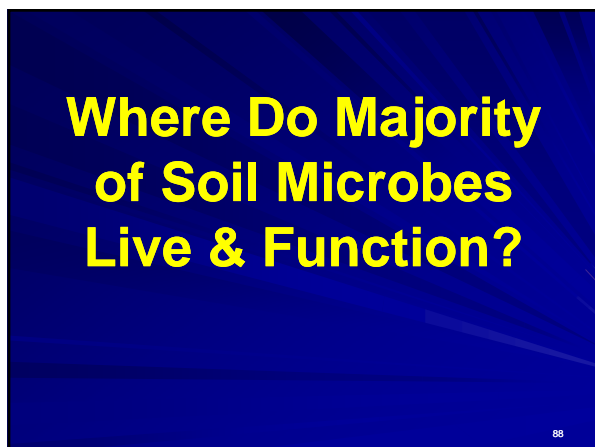
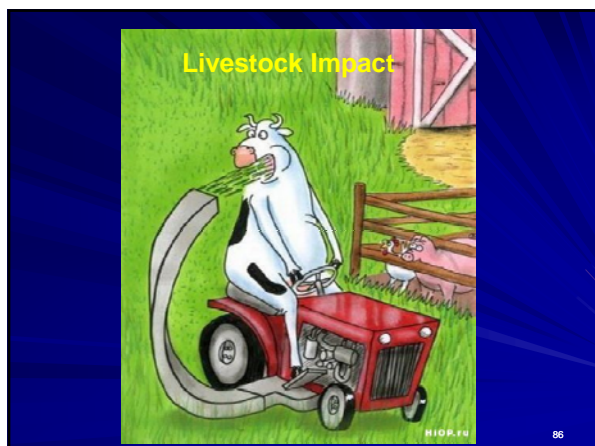
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Diversity



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Adaptive High Stock Density Grazing



Moving the "Mob"



Building Soil OM

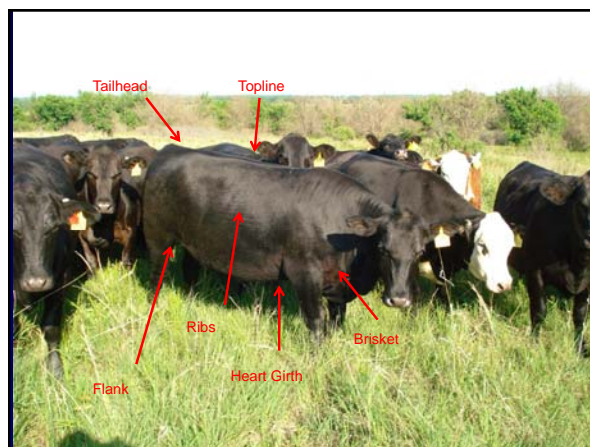
- Mississippi – 1.0% - 4.2% (4 years)
- New York – 1.5% - 4.1% (5 years)
- Kansas – 1.6% - 3.9% (5 years)
- Nebraska – 2.1% - 5.5% (6 years)
- Michigan – 2.2% - 6.1% (6 years)
- Wisconsin – 2.3% - 5.0% (4 years)

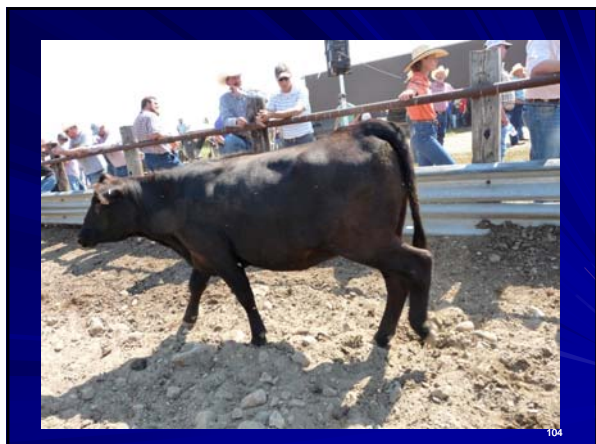
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Degree of Finish

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What is a “Finished” Animal?





High Quality Eating Experience



Economic Analysis Spreadsheet

- <http://www.wallacecenter.org/resourcelibrary/-grassfed-beef-financial-calculators>
- www.wallacecenter.org/pastureproject
- www.farmbiztrainer.com

Grass-fed Beef Marketing Options

- Direct Marketing
- Thousand Hills
- Grass-Run Farms
- Wisconsin Grass-fed Beef Cooperative
- US Wellness Meats
- Honored Prairie

Building for Future Generations



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Thank You!!!



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