

# Grass-Fed Beef

## Finishing time and weights of grass-fed beef animals

A Farmer-Rancher Grant Project supported by North  
Central Region Sustainable Agriculture Research and  
Education (NCR-SARE)

Willow Sedge Farm

Jane Grimsbo Jewett, [jane@janefarm.com](mailto:jane@janefarm.com)



# Acknowledgements:

Edgar Brown, Willow River, MN

Jake and Lindsay Grass, Pine City, MN

Bill McMillin, Plainview, MN

Troy Salzer, Carlton County Extension

Wayne Martin, University of MN Extension

The Jewett and Grimsbo Families

Kate Clancy, Senior Fellow, Minnesota Institute for  
Sustainable Agriculture (MISA)

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Kris Johnson, MISA Board of Directors

Kate Seager, Minnesota SARE Co-Coordinator

Betsy Wieland, Minnesota SARE Co-Coordinator

Midwest Perennial Forage Working Group

Rich Pirog, C.S. Mott Group for Sustainable Food  
Systems, Michigan State University

# What is Grass-Fed Beef?

**Grass(Forage) Fed: Grass and forage shall be the feed source consumed by the animal for its lifetime, with the exception of its pre-weaning diet. The diet shall contain forage consisting of grass, forbs, browse, or cereal grains in their pre-grain state. Hay, haylage, baleage, silage, crop residue without grain, and other roughage sources are allowed as is vitamin and mineral supplementation. No grain or grain byproducts are allowed. Animals must have access to pasture during the growing season. Adverse environmental or physical conditions permit supplementation with full documentation of amounts, frequency, and supplements provided.**

Federal Register Notice. Vol. 72, No. 199 “U.S. Standard for Livestock and Meat Marketing Claim, Grass (Forage) Fed Claim for Ruminant Livestock and the Meat Products Derived from Such Livestock” October 16, 2007.  
<http://edocket.access.gpo.gov/2007/pdf/E7-20328.pdf>

# Why Grass-Fed Beef?

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Human  
Health

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Human  
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Animal  
Health

# Why Grass-Fed Beef?

Human  
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Animal  
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Environmental  
Benefits



# Why Grass-Fed Beef?



- Documentation of higher CLA: Conjugated Linoleic Acid
- Improved Omega-3/Omega 6 fatty acid ratios
- **No proof that these fatty acid differences mean anything in terms of public health**
- Beef is not considered a significant source of Omega-3

# Why Grass-Fed Beef?

- Less use of antibiotics
- Animals eating the diet for which they evolved



Animal  
Health

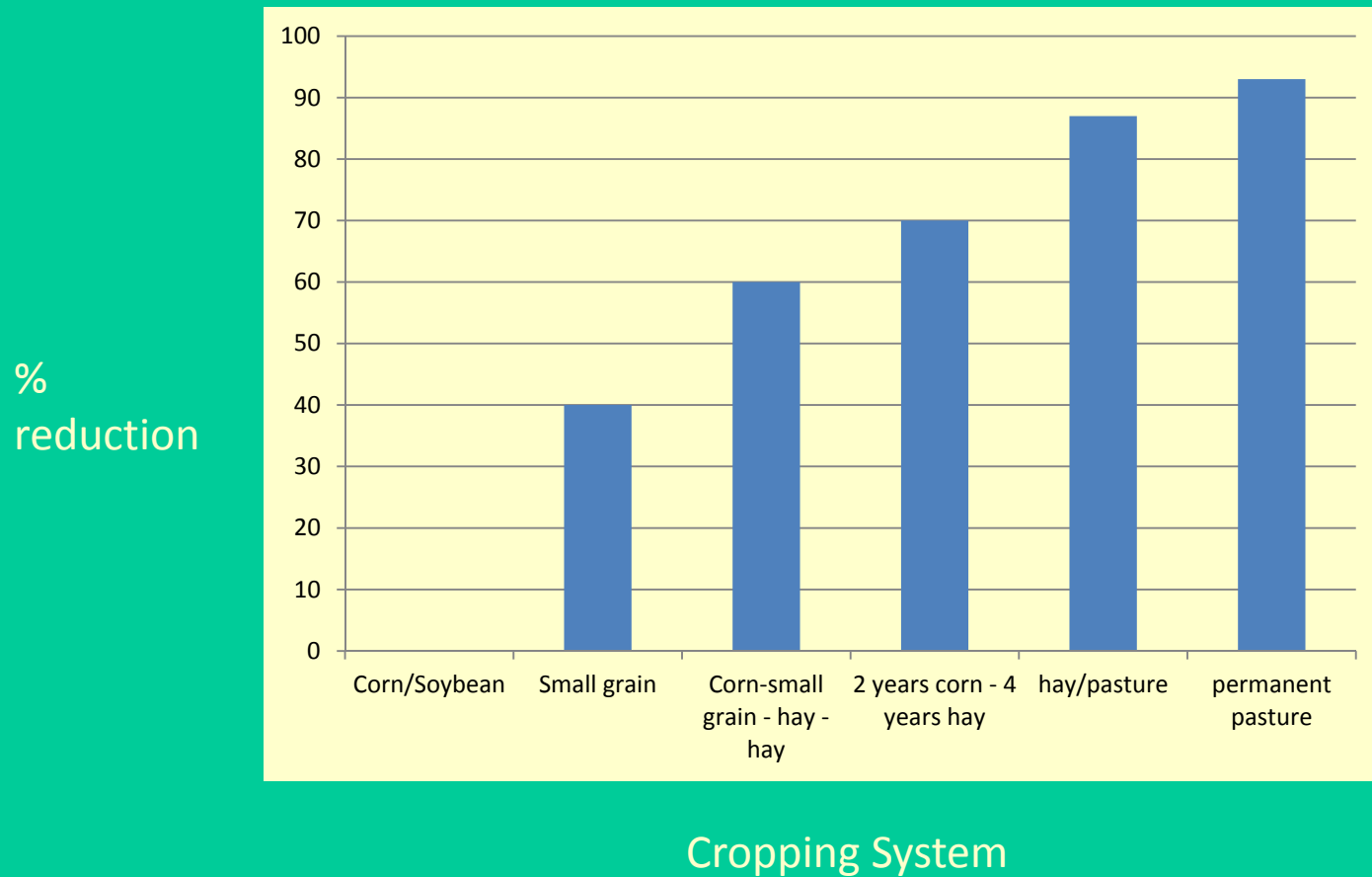
# Why Grass-Fed Beef?

- Perennial forage crops = less soil erosion than corn & soybean
- Perennial forage crops = less fossil fuel use than corn & soybean
- Legume crops (alfalfa, clovers) fix atmospheric nitrogen into soil



Environmental  
Benefits

## Reduction in soil loss % due to cropping system

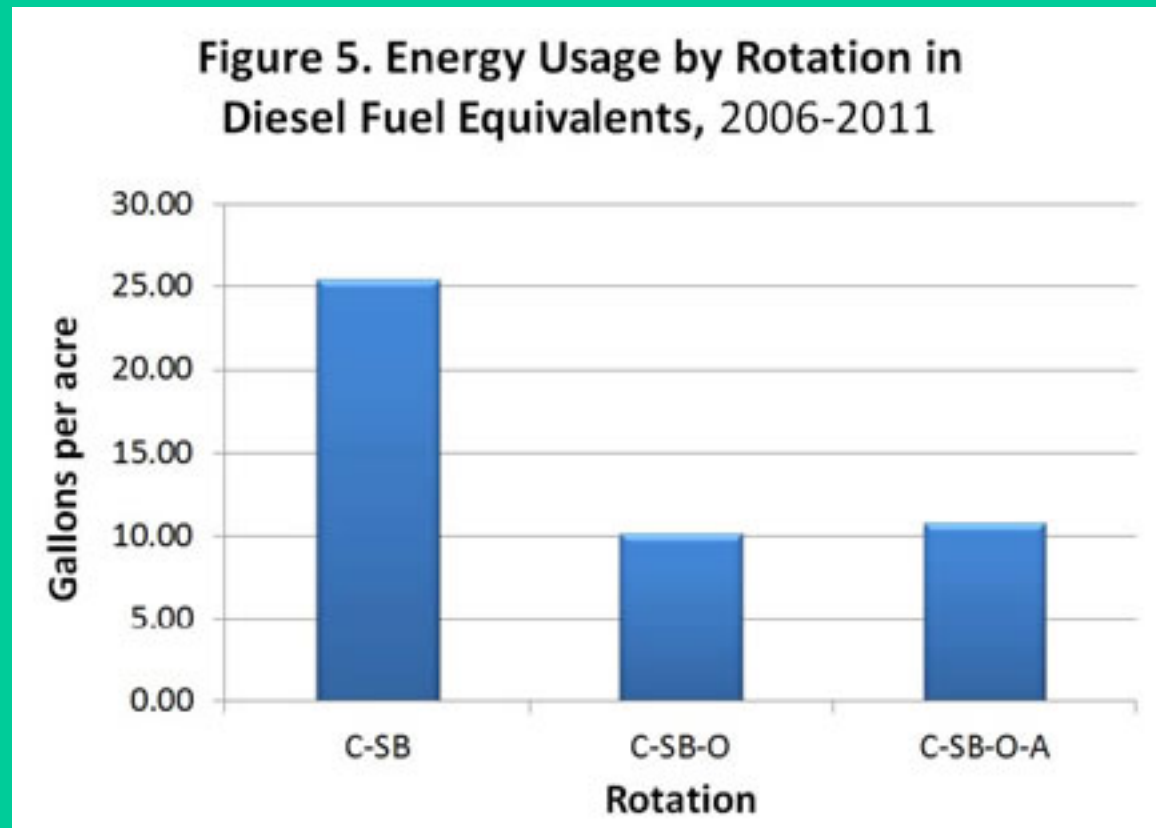


Control of Soil Erosion Fact Sheet. Robert P. Stone and Neil Moore. Ontario Ministry of Agriculture and Food. <http://www.omafra.gov.on.ca/english/engineer/facts/95-089.htm>



## **Perennial Grasses have a phenomenal root system!!**

Jerry Glover and Wes Jackson  
The Land Institute  
Salina, KS



**Energy and Economic Returns by Crop Rotation.** September 2012. Ann M. Johanns, Craig Chase, and Matt Liebmann. Iowa State University Extension.

[www.extension.iastate.edu/agdm/crops/html/a1-90.html](http://www.extension.iastate.edu/agdm/crops/html/a1-90.html)

## Alfalfa Nitrogen Credit

A fair stand of alfalfa on medium-textured soil can provide **160 lbs./acre** of nitrogen to the corn crop that comes after it (1).

Using a 2012 nitrogen price of \$0.60 per lb. (2):

160 lbs. nitrogen/acre x \$0.60/lb = **\$96/acre**  
nitrogen credit from the alfalfa crop

## References:

**(1) Using Legumes as a Nitrogen Source.** June 1997.

L.G. Bundy, K.A. Kelling and L. Ward Good.

University of Wisconsin Extension, publication  
#A3517.

<http://ipcm.wisc.edu/download/pubsNM/Usinglegumes.pdf>

**(2) Fertilizer Use and Price.** Reports from the Economic  
Research Service, USDA.

<http://www.ers.usda.gov/data-products/fertilizer-use-and-price.aspx#26727>



# **Comparative life cycle environmental impacts of three beef production strategies in the Upper Midwestern United States**

**Nathan Pelletier, Rich Pirog, Rebecca Rasmussen**  
July 2010. *Agricultural Systems* 103(6):380-389.

“Impacts per live-weight kg of beef produced were highest for pasture-finished beef for all impact categories and lowest for feedlot-finished beef”

Materials & Methods:  
“Calves weaned to  
pasture in lowa finish at  
505 kg in 450 days  
on a ration of forage and  
hay.”

## Typical beef steer life:

- Born in March or April
- Weaned in November at 7 mos.
- “Backgrounded” or sent directly to feedlot
- Slaughtered at 17-18 mos.

Grass-fed beef finish time:

505 kg = 1,111 lbs.

450 days = 1 year + 3 mo.

Compare to:

Feedlot beef

637 kg = 1,400 lbs.

303 days = 10 mos.

Grass-fed: Total of 22 months  
to get a 1,100-lb. animal

Feedlot beef: Total of 17  
months to get a 1,400-lb.  
animal

“Calves weaned to  
pasture in Iowa finish at  
505 kg in 450 days  
on a ration of forage and  
hay.”

*Where did these figures come from?*

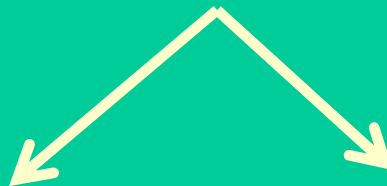
*Where did these figures come from?*

*Rich Pirog: Iowa State U. Extension beef expert's estimate, personal communication to authors*

**Grass-fed Beef Production Method**



**CONFOUNDED**



**Heritage Beef  
Breeds**

**Poor Pasture  
Quality/  
Management**



**What if the Life Cycle  
Analysis used input  
numbers obtained  
through use of modern  
beef genetics and good  
pasture with good  
management?**

What if the Life Cycle Analysis used input numbers obtained through use of modern beef genetics and good pasture with good management?



**That question is where this project starts.**

# Collaborators:

Edgar Brown

Jake & Lindsay Grass

Jane Jewett

Bill McMillin

All using managed rotational grazing on improved pastures.

# Livestock Breeds:

Edgar Brown - Shorthorn

Jake & Lindsay Grass – Black Angus,  
British White, Ayrshire

Jane Jewett – Black Angus

Bill McMillin – Black Angus, British White

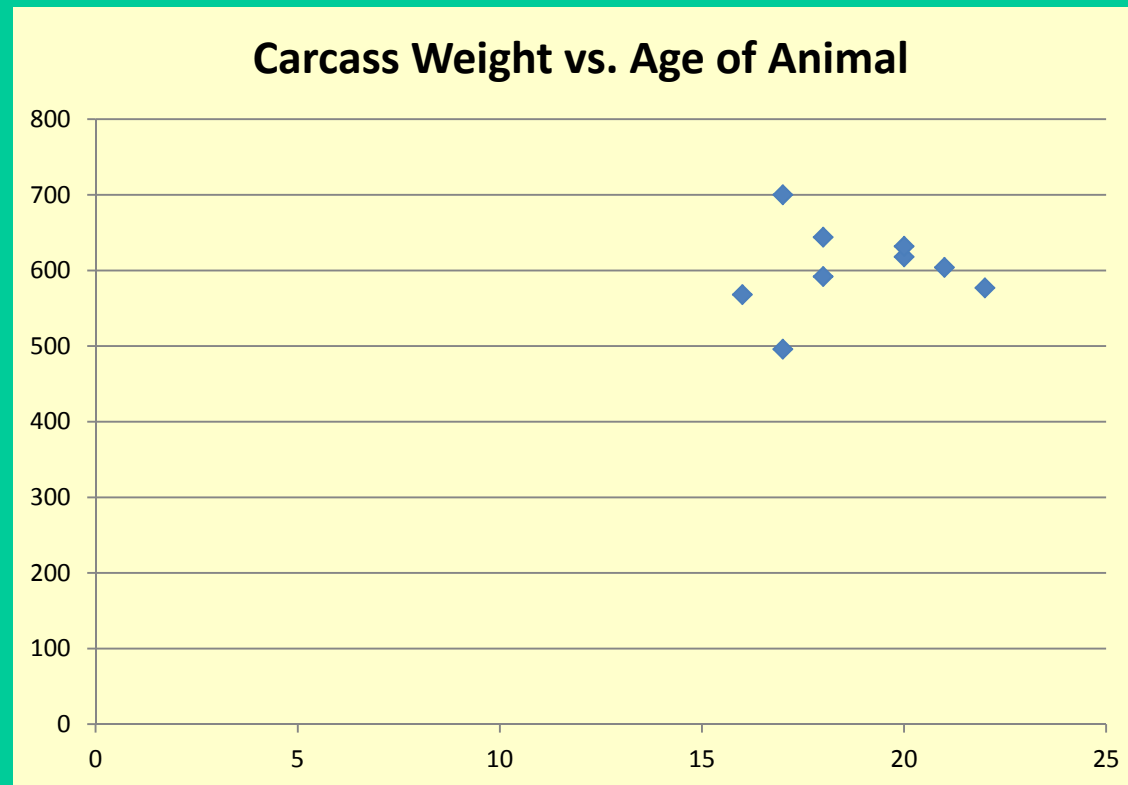
# Carcass wts., 2010-2013:

Compare to Life Cycle Analysis estimate: 577-lb. carcass wt. at 22 mos.:

	<b>Brown</b>	<b>Grass</b>	<b>Jewett</b>	<b>McMillin</b>
2010	-	-	644 lbs./18 mo.	632 lbs.
2011	-	-	592 lbs./18 mo.	665 lbs.
2012	618 lbs./20 mo.	604 lbs./21 mo.	496 lbs./17 mo.	700 lbs./17 mo.
2013	-	632 lbs./20 mo.	568 lbs./16 mo.	-

# Carcass wts., 2010-2013:

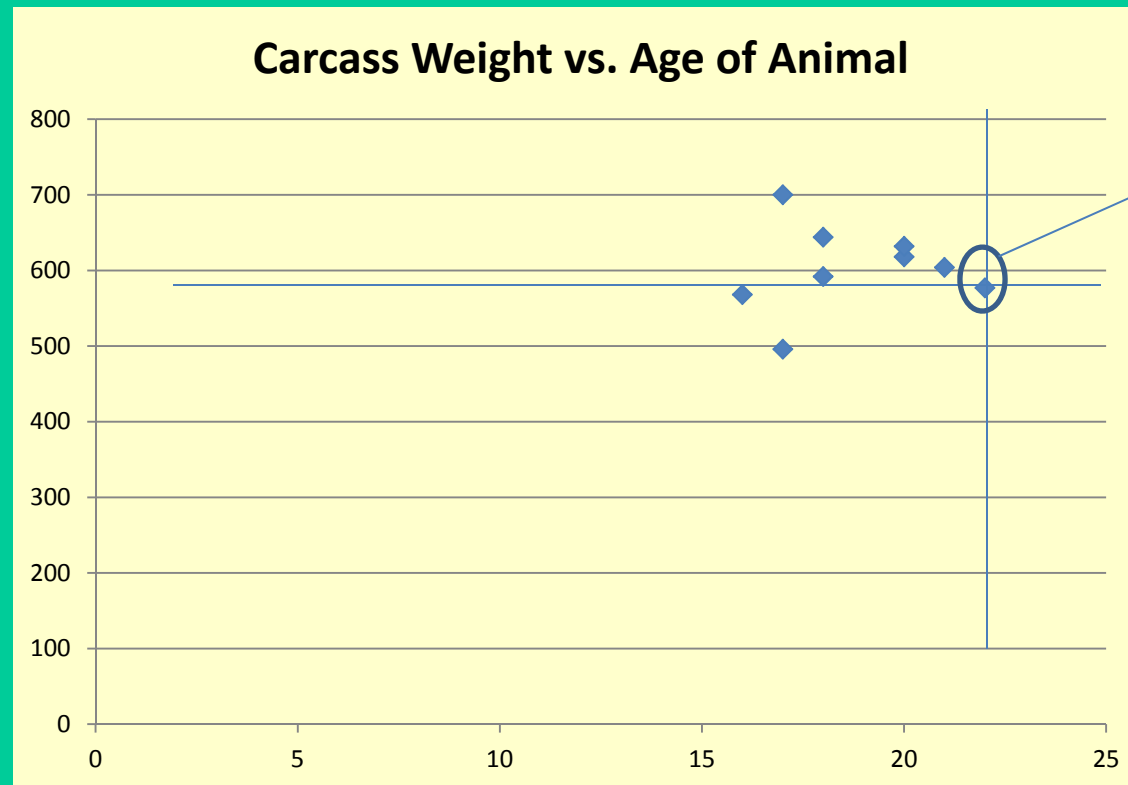
Lbs. of  
carcass  
Wt.



Age of animal in months at slaughter

# Carcass wts., 2010-2013:

Lbs. of carcass Wt.

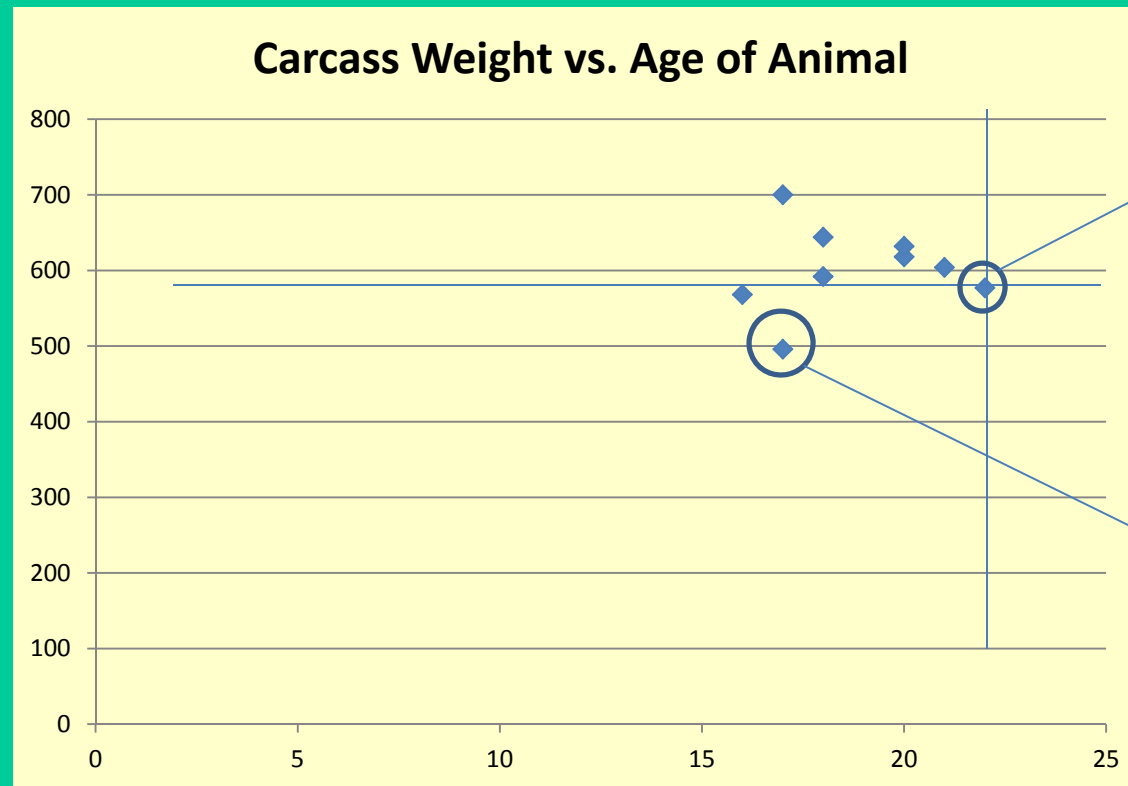


Life Cycle Analysis:  
577 lbs. at  
22 months

Age of animal in months at slaughter

# Carcass wts., 2010-2013:

Lbs. of carcass Wt.



Life Cycle Analysis

Jane's flood trainwreck

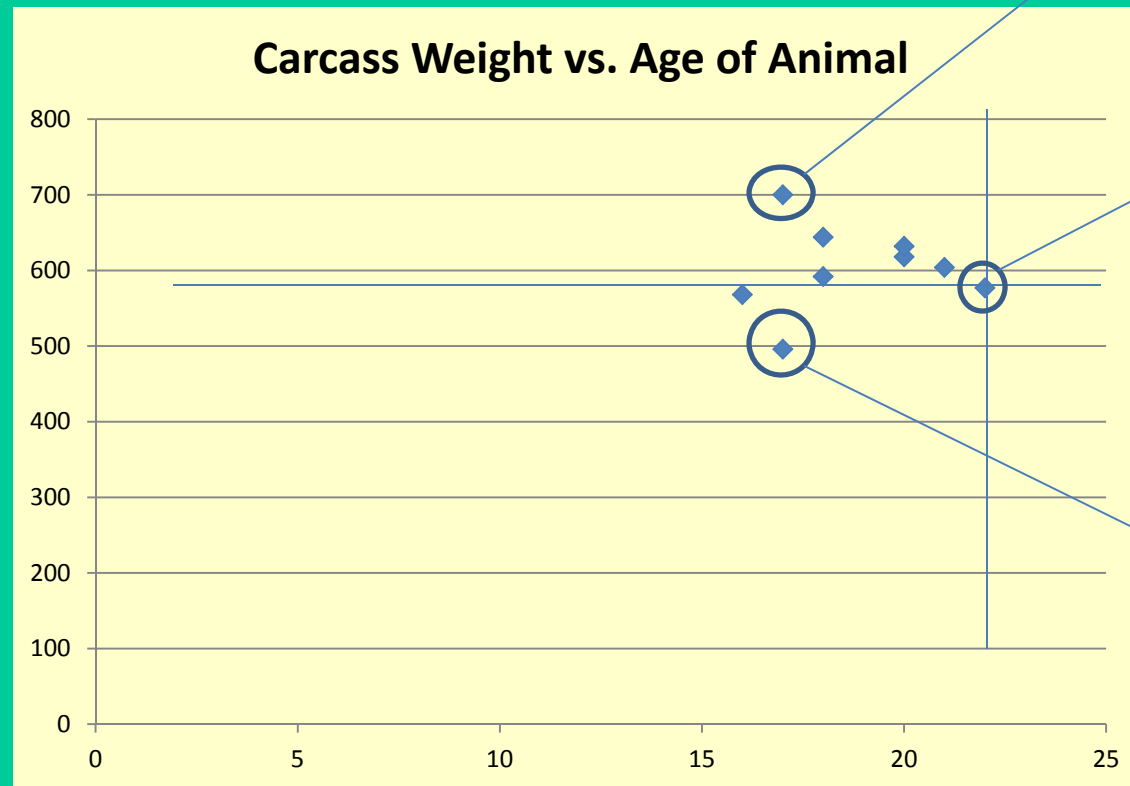
Age of animal in months at slaughter



# Carcass wts., 2010-2013:

Bill's high-cost system

Lbs. of carcass Wt.



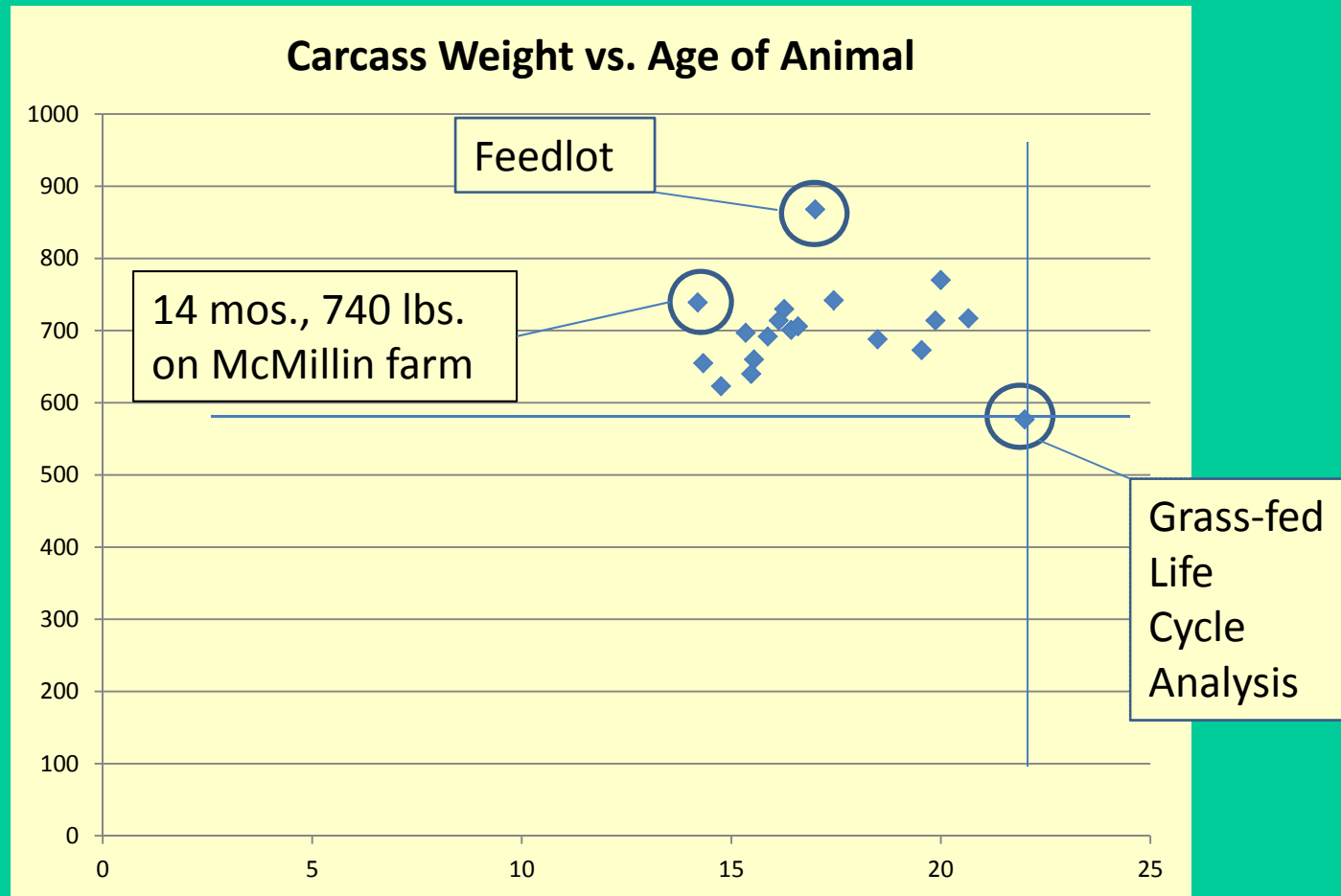
Life Cycle Analysis

Jane's flood trainwreck

Age of animal in months at slaughter

# Bill McMillin's carcass wts., 2012

Lbs. of carcass Wt.



Age of animal in months at slaughter

**Grass-fed beef production  
can produce a  
740-lb. carcass  
at < 14.5 months  
of animal age**

# Thank You!

## Finishing time and weights of grass-fed beef animals

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Willow Sedge Farm

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