What’s special about feeding Jersey heifers?

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Down Home Heifer Solutions
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• Established in 2016 – focus on dairy calf and heifer consulting US and globally.
• Retired from Virginia Tech Dairy Science Dept. after career of 35+ years in Teaching, Research and Extension.
• Down Home Nutrition - ~ 10 dairies ~ 15 years consulting
• Down Home Jerseys – Raised elite pedigreed Jersey heifers
What’s special about feeding Jersey heifers?

• What do we know is different in feeding Jerseys compared to other breeds?
• What do we know that isn’t different?
• What do we know that needs more research?
Begin with basic scientific principles – applies to all breeds!

Heifers and calves have nutrient requirements for maintenance and growth.

(Requirements for repro are relatively minor for heifers!)
Historical preconceived ideas about Jersey calves and heifers!

• Jersey calves and heifers are smaller; therefore, they need to eat less!
• If we feed them too much, they will get diarrhea as calves.
• In mixed breed herds, house Holsteins and Jerseys of similar body size together.
Growth charts – benchmarking for progress?

Holstein Heifer Weight Chart

Why? They are for Holsteins!
Not a lot of research conducted on Jersey calves and heifers! Mostly on calves.
Virginia Tech research – (Bascom et al)

• Maintenance requirement of Jersey calves is higher / unit of body weight.
• They lose body heat more quickly due to greater body surface area!
• It’s why Jersey milk has more protein and fat!
• Research led to development of Cow’s Match – Jersey Blend.
Texas Tech Research

• Nutrient digestibility and N retention of Jersey calves fed:
  • .9 lb. of solids/day of 20:20 milk replacer
  or
  • 1.3 lb. of solids/day of 28:20 milk replacer
• No difference in diarrhea
• Same energy efficiency
• More milk = more gain and more N retention!
Focus for today from weaning to calving
A science based approach

• NRC = National Research Council
  • Establishes nutrient requirements for dairy cattle
  • Establish growth and maintenance requirements with feeding trials
    • Weigh nutrients consumed, nutrients excreted
    • Measure body composition of growth – protein, fat and ash.
    • Not much on dairy so we use some beef data.
    • New NRC will have some dairy data!
Targeted Growth System used by NRC

• Calculate **nutrient requirements** based at various body weights based upon:
  • Weight of mature cattle – breed, genetics for stature.....
  • Current age and body weight of animal
  • Target post calving body weight at first calving
  • Predicted chemical composition of weight gain.
  • What nutrients are required at that age to reach growth goals at 1\textsuperscript{st} calving, 2\textsuperscript{nd} calving????
Key message

• All mammals
  • As they mature the accumulate protein and fat.
  • % protein in gain (lean tissue) decreases with age.
  • % fat in gain increases with age.
Protein Composition from Birth to Maturity

% Protein in gain vs. Shrunken Body Weight, kg

Body Protein vs. Empty Body Protein, kg

M. E. Van Amburgh
Fat Composition from Birth to Maturity

% Fat in gain

Body Fat (kg)

Shrunk Body Weight, kg

Fat in gain, %

Empty Body Fat, kg
Key components of system.

- Heifers should achieve target % of mature body weight at milestones in life:
  - Puberty - 45%
  - Breeding weight at 3\textsuperscript{rd} estrus – 55%
  - Calving at desired age (~22 months) – 85% (post calving weight)

We can scale the nutrient requirements for the breed, genetics within breed and the desired calving age!
Key message for Jerseys!

• Composition of gain (lean vs. fat) will differ at *same body weight* for heifers of larger mature size (Holsteins) than those of smaller mature size (Jerseys!)

• Jerseys mature at earlier age and lower mature size.

• Jerseys will fatten more if fed and housed with Holsteins at *same body weight*!
Effect of Mature Body Weight on Nutrient Requirements for Growth

- 1,650 lb mature weight
- 1,100 lb mature weight

- Similar composition at similar % of mature size
- Same weight – different % of mature size

Mixed breed herds???????
What about height?

- Potential height determined by genetics!
- Meet nutrient requirements to enable them to reach genetic potential for height!
- I can make a heifer with genes for tall stature short by not feeding enough protein.
- I cannot make a heifer tall that has genes for short stature by feeding more protein.
- Overfeeding protein is expensive, nutritionally expensive and bad for the environment.
Implementing targeted growth

• What are your genetics for mature size?
  • Jersey sires for stature?
  • Mixed breed herd?
  • Crossbreeds?

• Establish goals for growth based upon mature size!
  • Double birth weight by 56 days – 1.1 lb. of gain. Some herds triple birth weight???
  • Tailor you goals to the genetic potential for growth!
Target weights and required gains for Jersey calves and heifers with expected mature weight of 1000 lb.

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<th>Start Weight</th>
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<td>56 days</td>
<td>Double birth weight</td>
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<tr>
<td>First Breeding</td>
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<td>After first calving</td>
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Implementing targeted growth

• In mixed breed or cross breeds moving towards all Jersey genetics!
• More challenging.
• Grouping
  • By breed?
  • Scaling by reproductive management
    • Jerseys breeding would be 2 – 4 months ahead of larger breed.
    • House younger smaller Jerseys with larger, older “Holsteins”.
Implementing successful management of Jersey heifers.

• Applies to all breeds

• Challenging areas for heifer management
  • Weaned calves – diet and social transition – one at a time!!
    • Diet – calf starter / some forage
    • Group feeding
    • Group feeding systems for preweaned calves!!
    • Don’t try to economize by shifting to “cheaper” feeds to quickly.
• Provide plenty of bunk space.
• Limit feed heifers??? Challenging if bunk space is limited. Encourage the Jersey tongue rolling.
Implementing successful management of Jersey heifers

• Monitor body condition and adjust diets based upon body condition!
• Routinely weigh heifers when handled – , moving to new group, vaccination, breeding, calving and calculate daily gains.
• Compare to standards.
• Develop means to monitor heifer growth and health that are practical and labor efficient.
## Calf Barn Mortality

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| Total    | 100 | 990   | 39.9    | 95.3    | 71      | 210     | 1.5     |
• Train employees on differences in handling Jersey heifers – Stockmanship
Summary

• What do we know that is different with Jerseys?
  • They mature sooner than Holsteins.
  • They should be fed and bred to calve at an earlier age than Holsteins! Capture this genetic advantage!
• Mixed breed herds
  • Group by breed or house Jerseys with older, larger Holsteins to reach breeding age – weight at desired age.
What’s not different?

• Calves and heifers have nutrient requirements for growth and maintenance which govern how they should be fed.
What requires additional research?

• Need better estimates of nutrient requirements for maintenance and growth!
  • Slaughter studies to measure true growth and not just “fill”.
  • What is impact of environment – temperature, humidity, activity on maintenance requirements? Cold weather Hot weather!!!!!

• What is most “economical” age and body weight of first calving for Jerseys?
THANK YOU!