



Minnesota Dairy Days

Educating the dairy industry on today's and tomorrow's dairy technologies.

CALF AND HEIFER RESEARCH

“DEVELOPING TOMORROW’S DAIRY COW”

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And

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- Partnership and objectives
- Facilities overview
- Calf sources - contracting
- Research studies
- What we have learned and implications for you

Calf and Heifer Research and Extension Facility

A University of Minnesota and Ridley Inc. partnership focused on applied nutrition and management research for replacement heifers, from birth to 6 months of age.

“Developing tomorrow’s dairy cow”



UNIVERSITY OF MINNESOTA



University of Minnesota and Ridley Dairy Youngstock Partner Research and Extension Team

University of Minnesota

Hugh Chester-Jones and Jim Linn - coordinators

David Ziegler (SROC),

Dennis Johnson (WCROC, Morris),

Sandra Godden (CVM), Marcia Endres (DairyExtension)

Jim Salfer, Chuck Schwartau, Neil Broadwater - REE

Ridley Inc – Hubbard and Feed Rite

Chuck Soderholm, Rich Larson, Bruce Ziegler, David Overend,

Ken Swanson, Kelly Cruise, Peter Villi

Milk Products

Steve Hayes and Dave Kuehnel



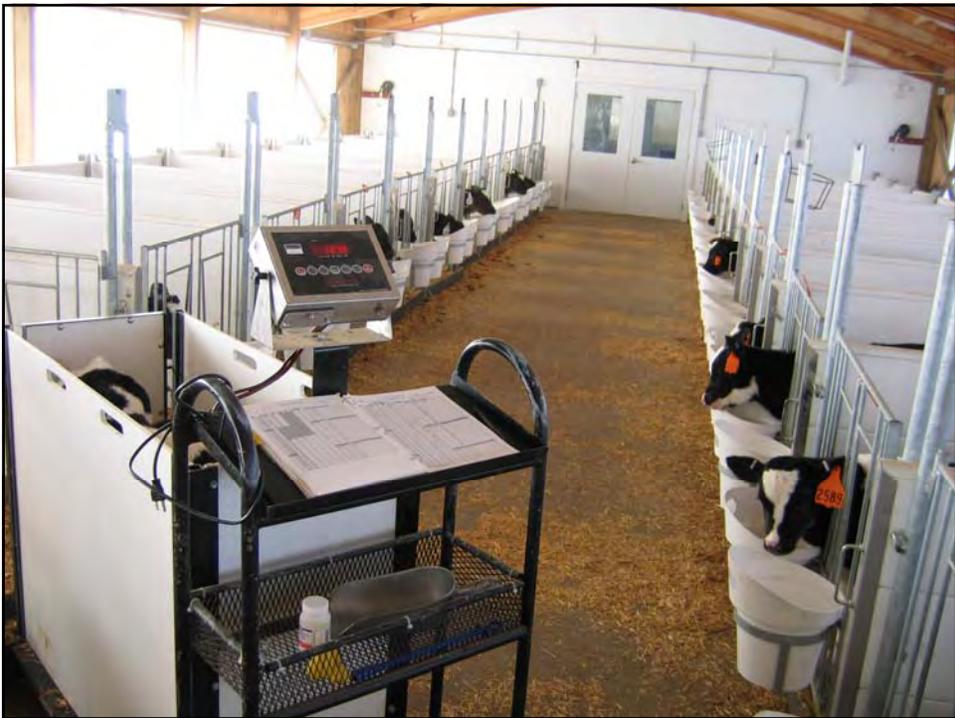
Nursery Phase

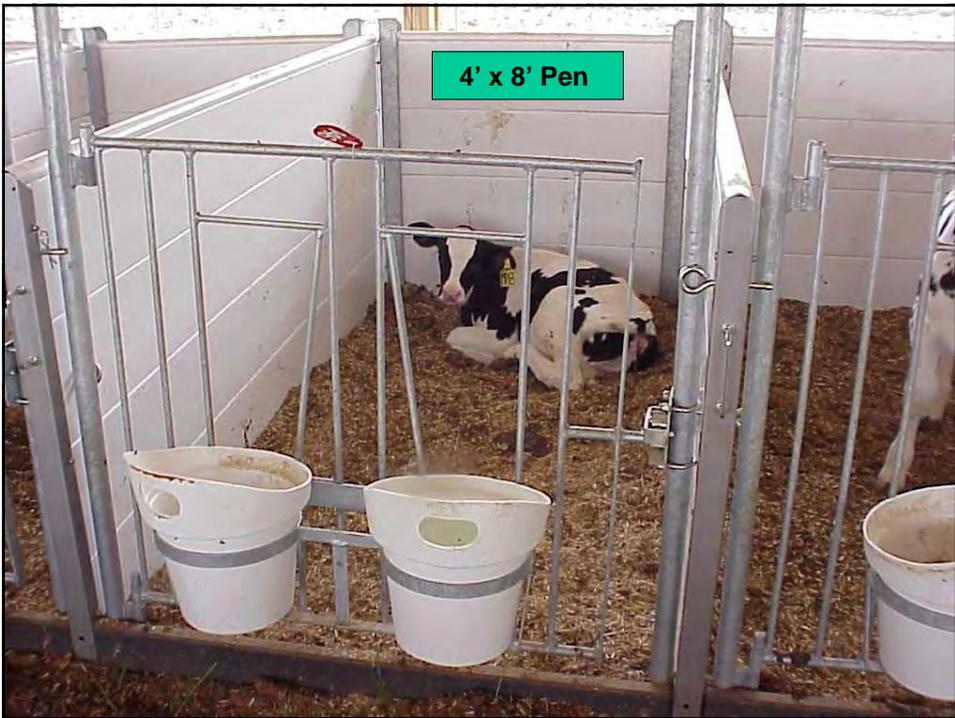
⇒ **Calves from 1 to 70 days of age**

⇒ **Two 30' x 200' barns, two rooms per barn**

- **6' curtain side walls**
- **Central mixing area**
- **40 calves per room**
- **Individual pens, each 28 sq. ft.**
- **All-in, all-out by room**
- **Removable panels for post-weaning grouping**









Stalls taken down for cleaning





Grower Phase

⇒ Calves from 70-200 days of age

⇒ 2 barns

⇒ New 65' x 150' grower barn

- Curtain sided
- Center feed alley
- 20 pens
- 6 to 8 calves per pen
- Animal handling area

⇒ Existing 80' x 160' pole barn

- 20 pens
- 6 to 8 calves per pen
- Animal handling area







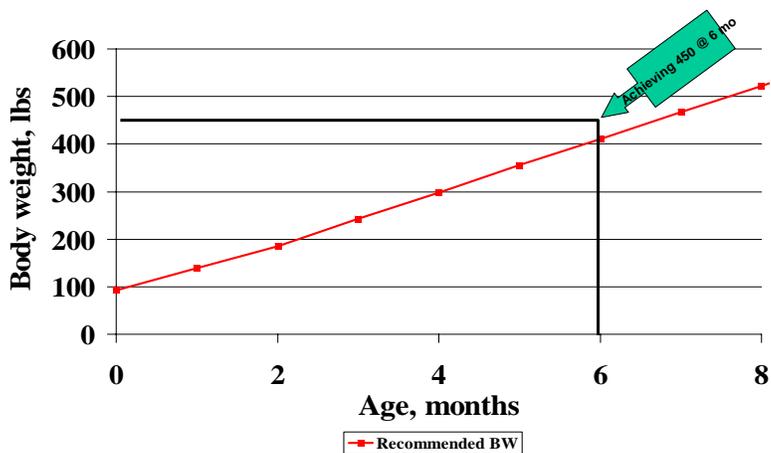
CALF SOURCES

- Bombay dairy 700 cows
- Wolf creek dairy 400 cows
- Clay View dairy 600 cows

CONTRACT WITH EACH DAIRY

- Specifies responsibilities for dairy and SROC
- Outlines growth and health expectations
- Competitive daily rates from 2 days to 6 months

AVERAGE WEIGHT OF HEIFERS AT 6 MONTHS 1ST YEAR OF OPERATION



RESEARCH OBJECTIVES and STUDIES



Trial Design Options

⇒ Nursery Phase

- 20 to 25 calves per treatment
- Individual feeding and performance records
- 4 treatments per trial
- 100 calves per trial
- Randomized by weight and source

⇒ Grower Phase

- 6 to 8 calves per pen
- 4 to 5 pens per treatment
- 3 to 4 treatments per trial
- Randomized by weight and farm source

Research Objectives and Needs

Systems approach to nutrition/management of calves: 2 days to 6 months:

- **Evaluate use of supplements/additives that enhance antibacterial competition in the GI tract against pathogens.**
- **Refine vitamin and mineral requirements under intensive vs conventional feeding.**
- **Social adaptation transition - best management practices.**
- **Manage calf variance within a group more effectively.**

Research Objectives and Needs

Investigate nutrient management of heifers to:

- Improve nutrient utilization.
- Evaluate changes in manure nutrient composition.
- Contribute to value-added processing of manure at SROC.
- Monitor ammonia losses from bedding packs.

Economics of feeding/management programs.

Partner Collaborative Research

- In 2004, initial projects established barn management and data collection procedures;
- 1st project completed in July - effect of physical form, consistency, and molasses level on calf growth and health;
- 2nd project started in July – evaluation of milk replacer feeding programs (traditional to accelerated) and effect on post weaning calf performance;
- Concurrent grower project initiated in June evaluating physical form of grower diets from 3 to 6 months of-age.

Calf and Heifer Research and Extension Facility

Applying Research
to
Benefit the Dairy Industry

“Developing tomorrow’s dairy cow”



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PROTOCOL EXAMPLE Pickup and Arrival at SROC Calf and Heifer Facility

Pickup Check: (calves 2 – 4 days old)

1. Make sure calf has a minimum of 3 colostrum feedings
2. Take only healthy heifer calves that walk
3. Observe owners calf/maturity area for cleanliness



Arrival Procedures and Checks

1. Check for infected navel cords
 - A. If swollen – NuFlor or Pennicillin
 - B. If wet, dip navel with iodine
2. Blood sample – serum protein and BVD carrier
3. Vaccinate (oral) TSV2
4. Record (document) any abnormalities/health problems
5. Bottle feed calf – first feeding
6. Weigh calf, hip height measurement

Measuring the success of Colostrum Management

REFRACTOMETER

Blood sample on arrival

Blood coagulates –
serum drawn off

Serum protein measured



Measuring the success of Colostrum Management

REFRACTOMETER

Serum Protein Guide to Passive Immunity

Profile of 214 calves upon arrival

Failure	< 5 g/dl (100 ml)	3%	< 4 g/dl
Acceptable	5-5.5 g/dl	21%	4-4.5 g/dl
Goal	> 5.5 g/dl	40%	4.5-5.0 g/dl
		36%	> 5 g/dl

PROTOCOL EXAMPLE
Daily Monitoring of Calves for Disease

Check each calf at each feeding for:
Abnormal appearance (dull, depressed, weak or unwilling to stand, ears or head down, sunken eyes)
Decreased appetite (unwilling to drink or drinks less than normal, weak suckle or drinking effort)
Abnormal feces (scours)

Scours – Scoring 1 (normal) to 4 (watery)

Scours – score of 3 or 4

1. Don't treat on first sign of 3 unless refuse to drink milk
2. Treatment
 Penicillin if calf runs temp
 3 days with trimeth sulfa bolus standard
3. Lactobacillus or Probiotics in severe scours prolonged
4. Electrolytes if dehydrated
5. Don't force feed milk until after 2 full feedings refused
6. **Observe calf closely, record and alert others to problem(s)**

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