

FROM MATERNITY TO MATURITY

THE CRITICAL PATHWAY TO TODAY'S HIGH VALUE HEIFER



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VITA PLUS CORPORATION



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ABOUT US



My team: Dairy specialists with feed, nutrition, and management expertise



My role: Science and management-focused calf and heifer technical specialist

Learn more and
download slides at:



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WHY HEIFERS?

-  High value: \$800 calf → \$4,000 springer
-  Generate quality replacement herd
-  More tools in the toolbox



Expansion, genetics, finding marginal milk...
all start with the high value heifer



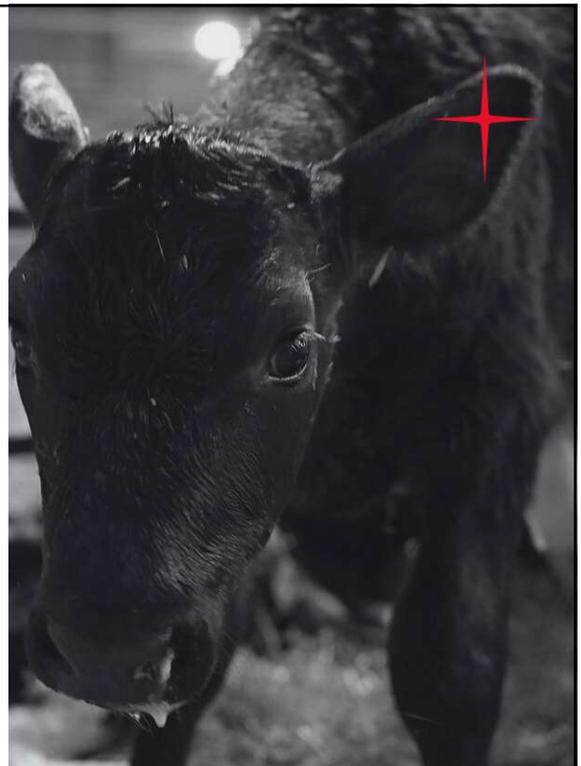
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WHY NOT BEEF X DAIRY?

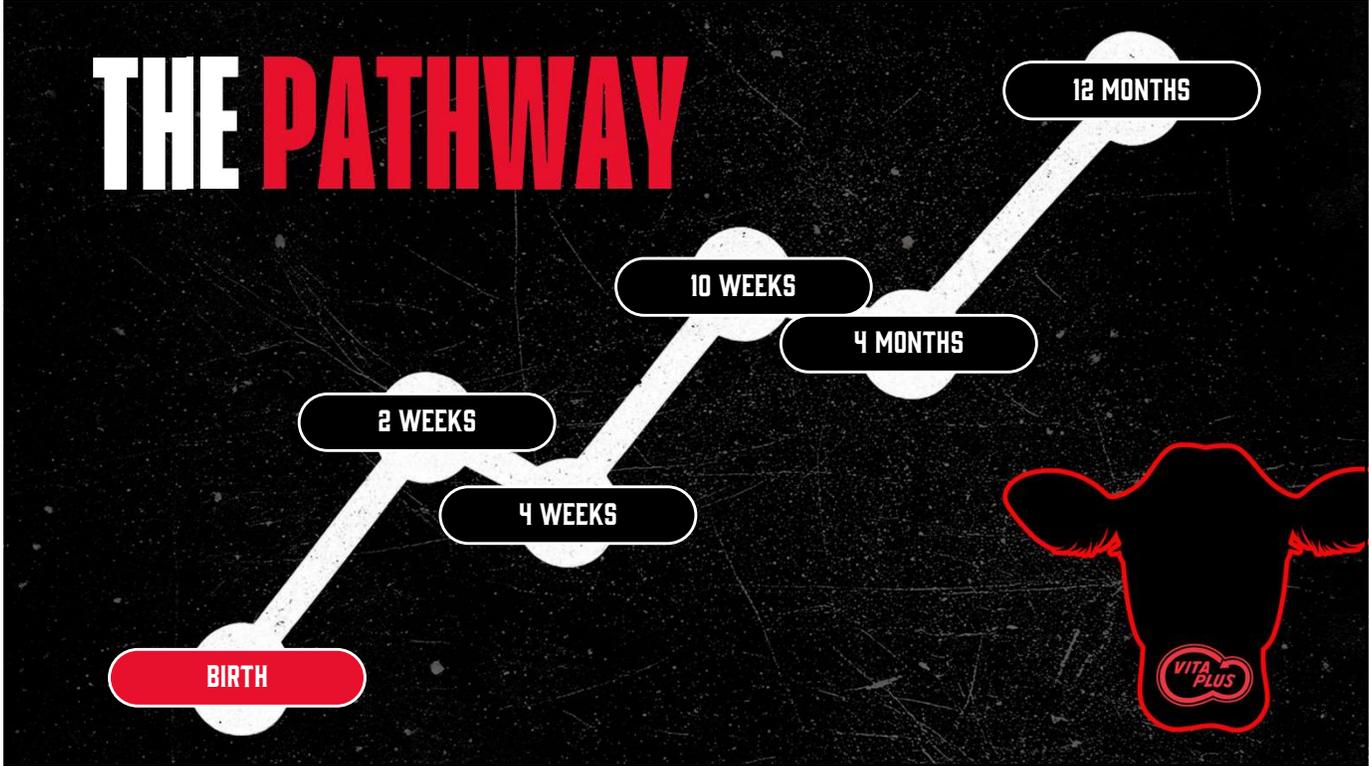
-  High value: \$1,500-\$2,000 calf
-  Finite management responsibility



BENCHMARK: BLACK
 JOIN VITA PLUS AT CENTRAL PLAINS
 DAIRY EXPO | MARCH 17-19, 2026
 BOOTH #C107



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COLOSTRUM

1st feeding benchmarks:

- Quantity: 3 to 4 quarts
- Quality: 24% Brix
- Quickness: 0 to 2 hours
- Cleanliness: <50,000 cfu/mL
- *Tube or bottle feed*

2nd feeding benchmarks:

- Quantity: 2 quarts
- Quality: 21% Brix
- Quickness: 12 hours
- Cleanliness: <50,000 cfu/mL
- *Bottle feed*

BIRTH

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1. Crannell and Abuelo 2023, 2. Renaud and Steele 2025

COLOSTRUM

Test calf serum total proteins at 2 to 4 days of age

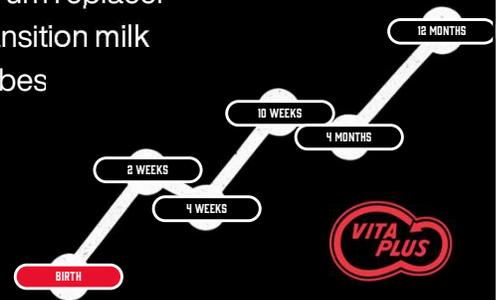
- “Poor” calves: **1.5x** more likely to get sick, **4x** more likely to die¹

Continue to feed **transition milk** for 3 to 14 days²

- **Why?**
 - Gut pathogen surveillance
 - GIT development
 - Short-term growth and health
- **Method:**
 - 10 g IgG/day
 - Dosed colostrum replacer
 - Harvested transition milk
 - Colostrum cubes



BIRTH



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3. Lauber et al. 2023, 4. Meyer and Redifer 2024

BIRTH



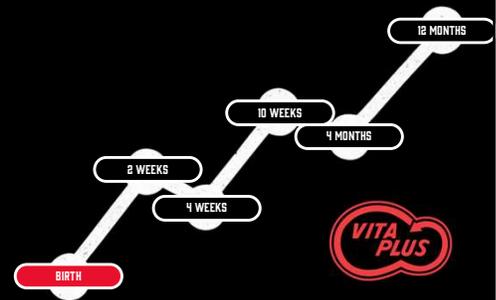
DO WE MANAGE HEIFERS BORN FROM HEIFERS DIFFERENTLY? [?]



- Up to 70% of nulliparous heifers bred to sexed semen³
- The ruminant “curse of the firstborn.”⁴

WHY AREN'T WE MORE WORRIED ABOUT STILLBORN RATES?

- Pre-weaning mortality = 1%, stillborn rate = 6%
- Uncontrollable vs. controllable factors



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2 WEEKS

5. Overton, personal communication

CLEANLINESS

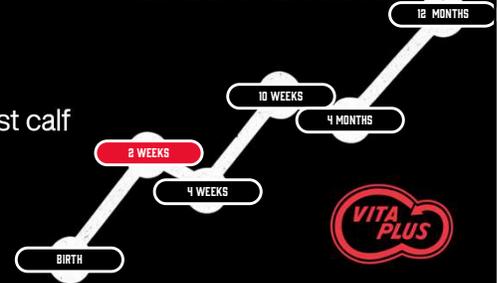
Scours rate: <15%⁵

Protocols:

- All-in, all-out housing
- Pens cleaned in-between → ClO₂, remove to pressure wash

Benchmarks:

- Test equipment via ATP meter quarterly
 - Feeding: < 50 RLU
- Test milk samples monthly
 - Pre-pasteurized, pasteurized, first & last calf
 - Bacteria: <20,000 cfu/mL
 - Coliforms: <10 cfu/mL



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2 WEEKS

6. Wilms, Smart Calf Rearing Conference 2025

CALORIES

Milk composition

- What's the composition of whole milk on a % protein and % fat basis?
- Consider increasing fat % in milk replacer⁶
 - Energy for stress
 - Limited impacts on starter intakes
 - Fatty acid profiles matter

Milk volume

- 6 qts (min) to 12 qts (max) per day
 - Powder: 1.5 to 3 lbs/d → 2 to 3 bags/calf
- The higher the volume, the longer the weaning
- More milk = better mammary development



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2 WEEKS

CONSISTENCY

Mixing:

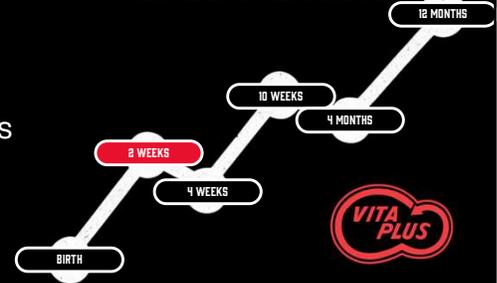
- Target 12-15% solids with 0.5 to 1.0% variation
- Mix/warm to 110-115 F to feed at 100-105 F
- Tools: scale, metered hose, mixing vats

Feeding:

- Space out feeding as evenly as possible
- Feed youngest to oldest

Stress:

- Avoid stacking stressors
- Winter warmth: deep bedding and jackets
- Summer cool: shade and ventilation



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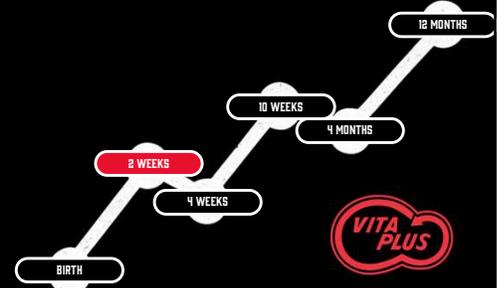
2 WEEKS

WHERE DOES HEALTH TECHNOLOGY FIT?



COULD TWO-WEEK PERFORMANCE PREDICT PRE-WEANING ADG?

Category	Wean Weight, lb		Wean ADG, lb/d		% Calves	Age	B Wt, lb
	Mean	SD	Mean	SD			
- ADG	213.63	28.40	1.67	0.31	17%	11	93.67
0 ADG	215.41	34.96	1.74	0.30	4%	10	89.68
+ ADG	226.49	33.55	1.84	0.29	84%	14	88.44



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5. Overton, personal communication, 7. Dairyland Initiative

AIR QUALITY

BRD rate: <20%⁵

Ventilation⁷

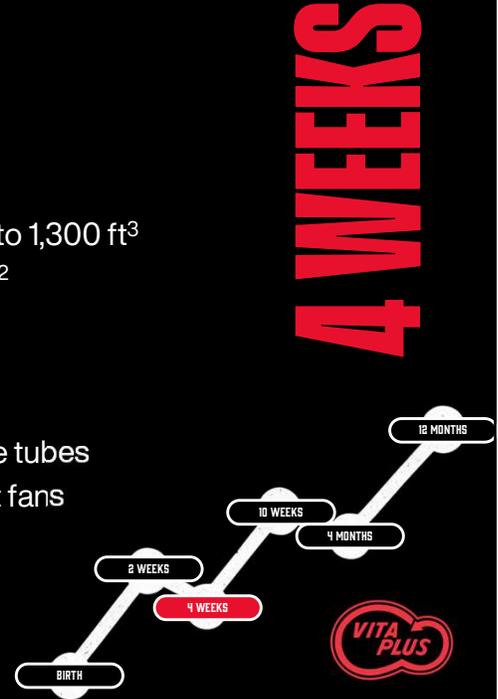
- Air changes:
 - Winter: 4 to 8 ACH
- Air speed:
 - Winter: <0.5 mph
 - Summer: 2.5 mph
- Ammonia
 - <10 ppm

Stocking density

- Air volume: 600 to 1,300 ft³
- Sq footage: 32 ft²
- < 18 calves/pen

Maintain

- Curtains
- Positive pressure tubes
- Inlet and exhaust fans



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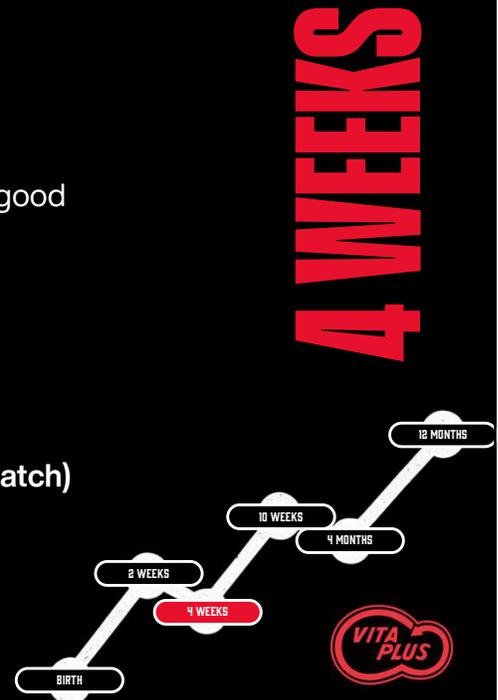
8. Quigley, Calf Notes 1997.

STARTER GRAIN

Kickstart rumen development

- “Early and aggressive intake of calf starter is the key to good ruminal development.”⁸
- Offer starter early: free choice but age-based
- Encourage **intake**
 - Quality: dry, clean, changed out 1-2x/week
 - Offer fresh, warm water

Prefer **texturized** form over pelleted or mash (rumen scratch)



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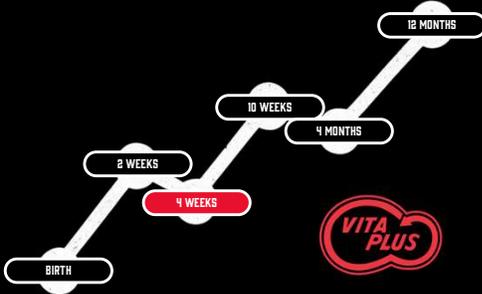
4 WEEKS



WHAT ROLE DOES HUMIDITY PLAY?_

WHAT'S THE CONNECTION BETWEEN SCOURS AND PNEUMONIA?





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10 WEEKS

9. Quigley et al. 2019, 10. DCHA Gold Standards

WEANING

Protocols:

- Trends for later and longer weaning
- 2-week step-down, 1.5 to 2 weeks weaned

Benchmarks:

- When to **start**?
 - 2 lb (~1 scoop) for 3 consecutive days
 - 33 lb non-fiber carbohydrate (NFC) intake⁹
 - 5 lbs/d for 7 d (8 to 9 weeks)
- Continue monitoring starter intake
 - 4 lbs during weaning
 - 6 to 10 lbs by the end of weaning
- **Growth:** 1.8 to 2.0 lb/d¹⁰





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10 WEEKS

HOUSING

Older calf + more water = more **moisture + ammonia**

Housing considerations:

- Space
 - Use larger hutch footprints
 - Lower group housing stocking density
- Bedding
 - Top off bedding daily
 - Replace group pen bedding more often
 - Replace hutch bedding 1x/cycle



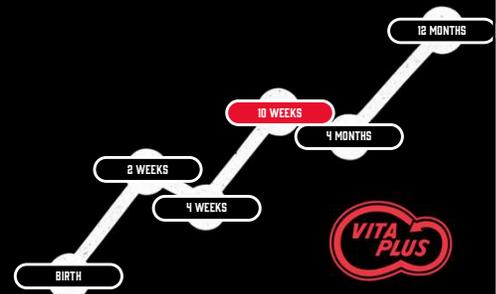
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10 WEEKS

IS AN INTERMEDIATE GROUPING FEASIBLE?

HOW MUCH DOES AGE AT WEANING WEIGHT INFLUENCE ADG?

	Age, d		ADG, lb/d		Cost/lb gain, \$/lb/d	
	Avg	SD	Avg	SD	Avg	SD
Older group	78.1	4.5	1.91	0.09	\$2.30	\$0.13
Younger group	69.3	3.1	1.73	0.12	\$2.71	\$0.17



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11. Marcondes, Smart Calf Rearing Conference

POST-WEANING SLUMP

Large slump from 150 to 250 days of age.¹¹ **Why?**

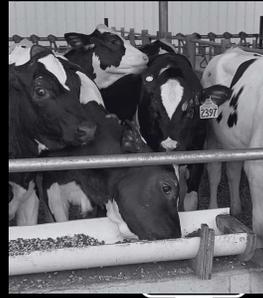
Nutrition

- Diet changes → transition to TMR
- Options:
 - Ad lib grain and hay: fast growth
 - Limit grain, ad lib hay
 - Heifer TMR: slower growth, better NDF profile

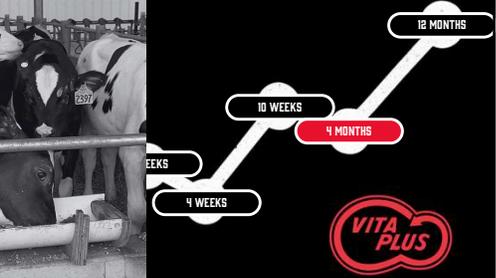


Change/stress

- Grouping, housing style, pen move
- Stacked stressors
- Feed and water accessibility



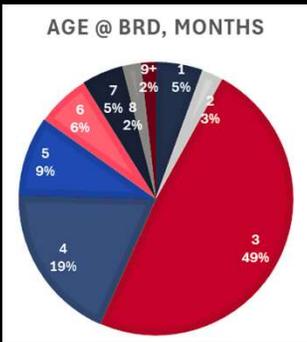
4 MONTHS



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5. Overton, personal communication, 10. DCHA Gold Standards

PNEUMONIA... AGAIN



Why?

- Post-weaning slump, air quality

Gameplan:

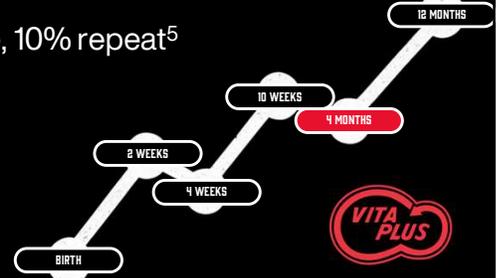
- Limit slump, stocking density (35 ft²)
- Decision-tree for chronic “lungers”

Benchmarks:

- ADG: 2.0 to 2.4 lb/d¹⁰
- BRD: 15% incidence, 10% repeat⁵



4 MONTHS



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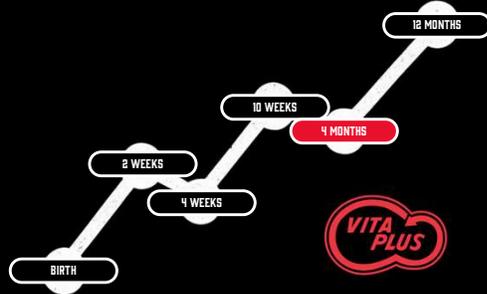
4 MONTHS

WHEN DOES A CUSTOM GROWER MAKE SENSE?




WE LOVE ADG. BUT WHAT ABOUT POST-WEANING GROWTH?

- Difficult to monitor → 3D imaging?



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12 MONTHS

BREEDING AGE HEIFERS

10. DCHA Gold Standards, 7. Dairyland Initiative

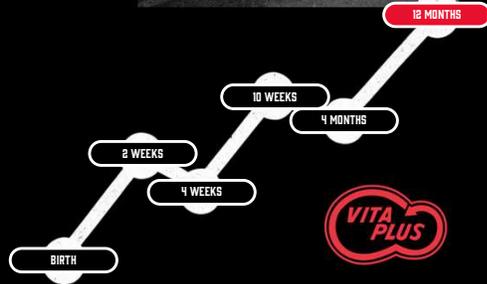
Size:

- Target 55% mature body weight¹⁰
 - ADG: 2.0 to 2.3 lb/d (*back-calculate*)
 - Trailer vs. individual weights
- Over- or under-conditioned impacts milk yield

Housing

- **Pen style and dimensions⁷**
 - Bedpacks: to 400 lbs or breeding age
 - Freestalls: 400 to 1,200 lbs
- Limit under-recognized **lameness**





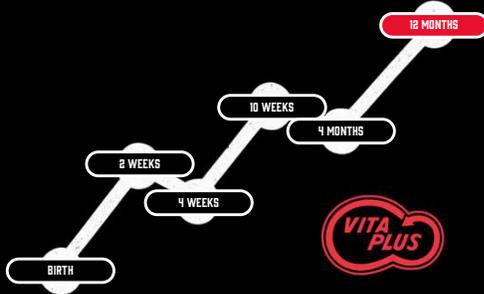
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12 MONTHS

WHAT'S THE SKINNY ON HIP HEIGHTS?



WHAT ARE WE DOING TO COOL OLDER, PASTEURED HEIFERS?

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QUESTIONS?



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