

Transition Calves

Goals: Minimize Stressors & Maintain Health



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5 Keys to a Successful Transition Program

- Adequate calf age, size, and starter intake (rumen development) coming into the transition group.
- Maintain starter intake (same grain) and water intake (warm water is preferred).
- Transition calves onto a diet with some forage (grass hay), transitioning calves to a TMR at 3 + months of age.
- Modest sized groups (4 to 6 calves/group is best).
- Adequate bedding and ventilation.



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What do we know

- **Transition calves will get sick**
 - Minimize mortality, morbidity
- **Consult your veterinarian**
- **Use proper medications**
- **Route of administration**
- **Duration of medications**



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Transition Calf Protocol

- **Have a written protocol**
 - Example
 4. Feed grain to small hutches
 5. Feed grain to Super Hutches – 5 black buckets in the morning
 - a. Feed TMR – 1 white bucket to Super Hutches when the calves are eating all 5 grain buckets 3 days in a row
 - b. When they eat all of 1 white bucket, feed 2 buckets of TMR
 - c. Make sure all old TMR is cleaned out before grain is fed



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Stress Free calves are happy calves

- **Factors to consider:**

- Animal handling
- Bedding
- Ventilation
- Water
- Feed
- Grouping



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Bedding options

- **Straw**
- **Sawdust**
- **Soybean stubble**
- **Bedding solids**
- **Corn Stalks**



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Ventilation

- **Natural**
 - Open front with curtains on back walls
 - Split curtain preferred
 - Natural plus tubes/curtains
 - Open to the south



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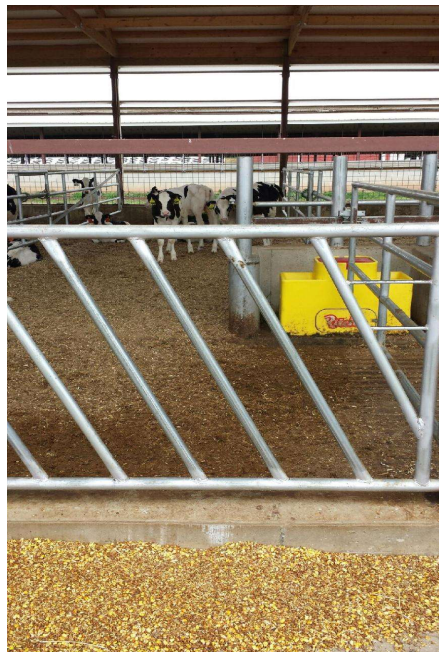


Water

- Height
- Easy access
- Easy to clean



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Feed


- **Same feed as weaning**
- **How much and how long**
 - Depends on consumption in nursery pens
- **Feed bunk designs**
 - Raised bunks
 - Floor feeding
 - Tubs
 - Troughs
 - etc.




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Mix: HALLS 18% CALF STARTER-R45			Code: HA41516CS18R			
Feeding Rate (lb/hd/d): 5.50						
Code	Ingredient	lb AF	Nutrient	Unit	As Fed	Dry Matter
900927	CORN STEAM FLAKED, THICK	4,144.97	DM	%	87.06	87.06
900115B	CORN WHOLE SHELL	4,130.00	NEm	Mcal/lb	0.81	0.93
834361B	CORNETTE 38% DAIRY PELLET	3,750.00	NEg	Mcal/lb	0.54	0.62
900288B	OATS WHOLE	3,000.00	NEI	Mcal/lb	0.75	0.86
900560B	VITA-SOY	2,300.00	TDN	%	71.47	82.10
901238	MOLASSES, LIQUID (E-Z GLO 5-68 PLUS)	1,350.00	CP	%	18.10	20.79
809055B	CORNETTE CALF FORTIFIER-NON MED	1,000.00	Lysine	%	0.98	1.13
808709	VIP RUM 2/CLAR PELLET	225.00	Methionine	%	0.28	0.32
001086	OSO-SWEET 10	100.03	Fat (EE)	%	5.25	6.03
Grand Total		20,000.00	CF	%	4.19	4.81
			ADF	%	5.47	6.28
			aNDFom	%	11.71	13.45
			Starch	%	31.84	36.57



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Feeding Strategy (Starter and grower)

Stage	Recommended Feeding Strategy	Timing
Weaning	Ramping up starter and water intake	1 week
Weaned	Achieving 5 + lb. of starter grain intake	1 week
Grouping	Calf starter (Cocci control) offer hay on the side	1 to 2 weeks
Step 1	Switch to grower grain top dressed onto hay	1 month
Step 2	Dry TMR/65% grain	1 month
Step 3	Dry TMR/55% grain	1 month



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Transitioning from high protein starters

- **Best to feed some of the same feed as nursery pens**
- **Top-dress 3-4 lbs. of starter on TMR**
- **Use lower protein hay**
 - Grass/alfalfa=soft
- **Monitor intakes**



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TMR vs. Grain / Hay Diet

- **Prevents selective eating**
- **Must be uniformly mixed**
 - Particle size important
- **Better control of intakes**
- **More uniform calves**
- **Competition non-factor**



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Transition feeds

- **When to start feeding forages**
- **Blend over works well**
- **50% starter 50% 1st stage TMR**



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1st Stage TMR

- **Components**

- Dry hay
 - Types-alfalfa, grass or mixed
 - Pre-processed
- Haylage
- Corn silage
 - Particle size
- Corn
 - Types of processing
- Protein-coarse
- Other-liquid molasses



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Shifting Heifers to a TMR

- **Age at first introduction to TMR**

- A minimum of 275 to 350 pounds
- Need to have a well developed rumen with enough capacity to process feed and meet nutrient requirements.



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Star



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1st Stage Heifer TMR (200 lb.) 2.10 lb./d ADG

Nutrient	Analysis, DM Basis
Wet feed intake, lb	12.3
Ration DM, %	61.0
DMI, lb	7.5
Crude Protein	17.0
NEg, Mcal/lb	0.53
Fat, %	3.3
NDF, %	21.8
Starch, %	36.0
Forage, %	32.2
Concentrate, %	67.8

← 6.1% of BW

← 3.8% of BW



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200 lb. TMR

Ration: 200 LB. HEIFER 6-8-16

Feed Stuff Analysis	DM	NEI	CP	ADF	aNDFom	Starch	Ca	P	K	Sugar	Fat (EE)
Feedstuff	%	Mcal/lb	%	%	%	%	%	%	%	%	%
HMSC 27% 6-7-16	73.00	0.91	6.50	3.00	8.82	72.50	0.02	0.28	0.42	3.17	4.30
Corn Silage 15' 5-26-16	40.00	0.74	8.00	22.30	35.00	36.00	0.23	0.26	1.18	3.50	3.30
HAYLAGE 6-7-16	70.00	0.64	21.98	37.40	52.90	1.50	0.92	0.31	1.64	4.35	2.78
Alf. Hay	87.00	0.61	20.00	33.00	43.00	1.75	1.20	0.26	2.60	3.80	2.60

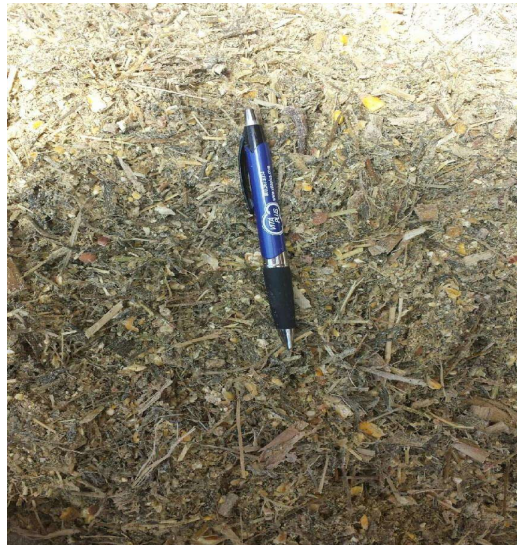
Ration Composition			Suggested Ration	
Ing DM%	Code	Ingredient	lb AF	lb DM
73.00	980209	HMSC 27% 6-7-16	4.42	3.23
40.00	980306	Corn Silage 15' 5-26-16	2.20	0.88
90.50	HA30116GR	Grower Mix	2.00	1.81
70.00	980464	HAYLAGE 6-7-16	1.29	0.90
66.00	900255	MOLASSES,LIQUID	0.50	0.33
87.00	980420	Alf. Hay	0.40	0.35
Total Amount Fed (lb)			10.81	7.50



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TMR



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2nd Stage Heifer TMR (275lb.) 2.25 lb./d ADG

Nutrient	Analysis, DM Basis	
Wet feed intake, lb	17.3	← 6.0% of BW
Ration DM, %	56.8	
DMI, lb	9.8	← 3.5% of BW
Crude Protein	16.5	
NEg, Mcal/lb	0.54	
Fat, %	3.3	
NDF, %	25.7	
Starch, %	31.4	
Forage, %	42.1	
Concentrate, %	57.9	



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275 lb. TMR

Ration: 275 LB. HEIFER RATION 6-8-16

Feedstuff Analysis	DM	NEI	CP	ADF	aNDFom	Starch	Ca	P	K	Sugar	Fat (EE)
	%	Mcal/lb	%	%	%	%	%	%	%	%	%
HMSC 27% 6-7-16	73.00	0.91	6.50	3.00	8.82	72.50	0.02	0.28	0.42	3.17	4.30
Corn Silage 15' 5-26-16	40.00	0.74	8.00	22.30	35.00	36.00	0.23	0.26	1.18	3.50	3.30
HAYLAGE 6-7-16	70.00	0.64	21.98	37.40	52.90	1.50	0.92	0.31	1.64	4.35	2.78
Alf. Hay	87.00	0.61	20.00	33.00	43.00	1.75	1.20	0.26	2.60	3.80	2.60

Ration Composition

Ing DM%	Code	Ingredient	lb AF	lb DM
73.00	980209	HMSC 27% 6-7-16	4.90	3.58
40.00	980306	Corn Silage 15' 5-26-16	4.50	1.80
70.00	980464	HAYLAGE 6-7-16	2.33	1.63
90.86	HA53116A	HEIFER SUPP. MIX	2.23	2.03
66.00	900255	MOLASSES, LIQUID	0.50	0.33
87.00	980420	Alf. Hay	0.50	0.44
Total Amount Fed (lb)			14.96	9.80



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Vitamins & Trace minerals

- **NRC plus**
- **Feed the immune system?**
- **Vitamin A & E**
- **Chelated trace minerals**
- **Selenium**
- **Zinc & Iodine**



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Feed Management

- **Continue feeding starter grain (with cocci. control) at 3 to 4% of body weight.**
- **Keep feed fresh by feeding grain twice daily.**
- **Transition calves onto forage by gradually introducing a small amount of high quality palatable grass hay with grain top-dressed on top of hay.**





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Feed Management

- **At 3 months of age start feeding heifer TMR with 3 to 4 pounds of starter grain top-dressed.**
 - Target > 65% DM
 - Concentrate = 65% DM
 - Forage= 35% DM



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Feed management

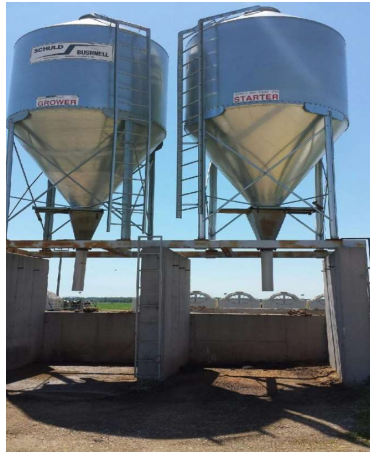
- **Storage structures**
- **Elevated bins**
 - Minimize fines
- **Fermented feeds**
 - Bags
 - Silo's
 - Bunkers



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fill with a gator or skid loader



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Feeding-the mechanics

- **Mixer size**
 - Right size for the job
 - Horizontal mixer seems to work best
 - Pre-processed hay
 - Ingredient sequence
 - Pre-blended haylage



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Feed Bio-security



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Respiratory Disease and Weaning

- **Stress - suppresses innate immune response**
 - Weaning (Hubert et al., 2011)
 - Dehorning (Ballou et al., 2011)
 - Transportation (Hubert et al., 2011)
- **Insufficient starter intake at weaning:**
 - Increased stress/Increased cortisol
 - Decreased energy balance



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Background Calves Before Moving

- **What age, d (Target 56 to 63 days of age) are calves moving into the transition pen?**
- **Are you weighing calves, and if so, what is the weight (Target > 170 pounds) of calves moving into the transition pen?**
- **Health: no eye or nose discharge, alert ears, and normal fecal.**



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Background Calves Before Moving

- **Intake: Weaned off of milk for at least one week and eating > 5 lb/d of starter grain.**
- **Coccidia control strategy in place.**
 - Rum vs. Bov
 - Crumbles (future of crumbles)
- **Adequate body condition score.**
- **Fly control strategy in place.**
 - Feed through
 - Pour-on
 - Bait
 - Etc.



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Know when to graduate

- **Hutch calves - 8 weeks of age and > 170 pounds. Keep calves <160 pounds in hutches.**
 - Eating a minimum of 5.0 lb/d
 - Normal manure and respiration
- **Super Hutch Calves - 12 weeks of age and >215 pounds.**
 - Eating a minimum of 6.5 to 9.0 lb/day
 - Normal manure and respiration



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Transition Pen Resources:

- **4 to 6 calves per pen for the first month.**
- **28 sq. foot resting space.**
- **>600 cubic foot air space.**
- **Air quality: 4 air exchanges/hour, air speed at 60 ft./min at 4 ft. above floor, air ammonia < 5 ppm.**
- **Feed bunk space: 8 inches/calf.**
- **Maximum throat height: 200 lb. calf = 10 inches; 300 lb. calf = 12 inches.**



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Transition Pen Resources (Cont.)

- **Maximum reach (inside of curb to furthest feed): 10 to 12 in.**
- **Drinking water space: 4 in /calf.**
- **Deep bedded straw at the beginning and refreshed twice weekly or as needed.**
- **Dehorned and vaccinated at least two weeks prior to moving.**



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Calf Housing - Space Requirements

Vita Plus Corporation • July 2007

Replacement Heifer Resting Area Space Requirements Per Animal

Age (months)	Weight (lb per hd)	Self-Cleaning Resting Area (sq ft per hd)	Minimum Bedded Resting Area (sq ft per hd)	Slotted Floor (sq ft per hd)	Paved Outside Lot (sq ft per hd)
0 – 2 ^a	90 – 170	Do not use	32 (4 x 8 ft hutch with 4 x 6 ft outdoor run) 28 (4 x 7 ft pen in barn)	Do not use	Do not use
3 – 5 ^{c,d}	170 – 330	Do not use	28 ^b	Do not use	Do not use
6 – 8	330 – 500	10	25 ^b	12	35
9 – 12	500 – 710	12	28 ^b	13	40
13 – 15	710 – 860	15	32 ^b	17	45
16 – 23	860 – 1,240	18 ^e	40 ^b	25	50
Springing Heifer	1,270	Do not use	50 ^b	Do not use	50

Source: MWPS-7 Dairy Free-Stall Housing and Equipment

Resting space does not include walk alleys for animal movement to and from feeding areas. Group pens for calves are usually fully bedded to provide as much dry resting space as possible.

^a 8% slope (1in per ft)
^b Assumes access to 10 ft wide scraped feed alley or paved outside lot
^c House separately from older animals
^d Groups up to six head in pens or super calf hutch
^e Provide proper treatment for concentrated runoff

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Transition Heifer Facility Design



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Take Home Messages

- **Nutrition**
 - Feed to meet program goals
 - Measure performance and evaluate variation
- **Management**
 - Optimize the environment to meet program goals
 - Potential return on heifer investment is increasing.
 - Use of technology coupled with records helps us better predict heifer performance.



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One size does not fit all



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Bulk feeds



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Dry feed storage



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Bedding tools



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Questions?



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