

Management and Feeding of Holstein Steers

**Dan Schaefer
Professor and Chair
Animal Sciences Department
University of Wisconsin - Madison**

Birth to 350 lbs

Calf Health Management

- **Purchase healthy, strong calves**
 - Colostrum
 - Agile
 - Dry navel cord
- **Transport calf in draft-free, clean vehicle**

Housing should be dry and draft-free

- **Confinement facilities**
 - 7-10 cu ft/min/calf in winter
 - 60 cu ft/min/calf in summer
 - low humidity and ammonia
 - 55-65 F initially
- **Hutches**
 - adv: portability, exposure to sun, calf separation
 - disadv: freezing of liquids, higher fat milk replacer

Sanitation

- All-in-all-out for calves in facility, espec when co-mingling occurs
- Pen/crate floor and pail areas are sources of contamination
- Wash with disinfectant and dry
- Repeat washing and drying
- Idling of facility can break sequential contamination

Disease Prevention and Treatment

- Develop a program (see page 9) with a veterinarian who has calf-raising experience
- Prepare for sick calves; it will happen
- Identify calves and observe carefully
- Take temperatures; treat promptly and sustain treatment
- Pneumonia and scours are common causes of calf death

Milk Replacer Feeding

- **Milk replacer - milk protein sources preferred**
- **Fat - 10-22%**
- **Antibiotic and coccidiostat**
- **Feed consistent amounts at regular intervals**
- **Offer clean water, after milk replacer**

Calf Starter

- **Corn, oats, soybeans and molasses**
- **Offer good quality hay in limited amounts**
- **Diet should contain 20-15% crude protein**

Weaning

- **Wean after starter intake is 1.5 lbs/hd daily for previous four days**
- **Decrease milk replacer powder gradually over 4-5 days while offering same volume of liquid**
- **Weaning at 5-6 weeks of age is typical**

Castration and Dehorning

- **Use a heated dehorning device**
- **Knife castration is preferred**
- **Cryptorchids become stags**
- **Implant for accelerated growth, if you are selling a “commodity” animal**

Group Housing

- **Holsteins have thin hides so more shelter is needed**
- **Allow calves to choose location which is dry and draft-free**
- **Vented roof ridges for escape of humidity**
- **Treat for removal of internal and external parasites**

Feeding the Weaned Calf

- **Objective: Sell calf at 350 lbs**
 - Maximize growth rate
 - Minimize ownership time and interest expense
 - High-energy, 15% CP with high rumen escape value
- **Objective: Feed calf to slaughter wt.**
 - Allows for use of higher forage diet
 - Early, slow growth can be compensated by later, faster growth

350 lbs to Finish

Health Management

- **With purchased calves, vaccinate promptly against IBR, PI3, BVD and BRSV, which cause shipping fever**
- **Vaccinate against clostridial diseases**
- **Palpate scrotums, castrate stags**
- **Dehorn, if not yet dehorned**
- **Consider use of a long-acting implant**

Feeding Programs

- Two-stage program: moderate forage or pasture for middle weights, followed by low forage-high corn for heavy weights
- Single-stage program: low forage-high corn from 350 lbs to slaughter
- Design a feeding program that fits your labor, land, facility and equipment resources

Why Feed a High-Energy Diet?

- Holsteins and other high-milk breeds have higher energy requirements for maintenance than low-milk breeds
- Growth rate is determined by amount of energy consumed in excess of maintenance requirement
- High-energy diets maximize growth rate, and minimize the number of days to reach the desired slaughter weight

Energy Concentrations

<u>Feed</u>	<u>NEg (Mcal/cwt DM)</u>	<u>Ratio to Corn</u>
Corn, dry	68.2	100
Corn, hi-moist.	73.6	108
Ear corn, grnd	61.4	90
Barley	63.6	93
Oats	50.4	74
Corn silage	52.7	77
Alf., mid-blm	30.9	45

Cost per Unit of Net Energy for Gain

<u>Feed</u>	<u>unit</u>	<u>DM, %</u>	<u>\$/unit</u>	<u>\$/Mcal NEg</u>
Corn, dry	bu	85	2.00	0.062
Corn, HM	bu		2.00	0.057
Corn silage	ton	35	20.00	0.054
Alf., mid blm	ton	88	50.00	0.092

- Corn is a less expensive energy source than hay.
- Although the costs of corn silage and corn energy are similar, the moisture content of corn silage limits the amount of DM, and therefore energy, that steers consume.

Corn Silage in Holstein Steer Diets (430 - 1100 lbs)

<u>Corn: Corn silage</u>	<u>60:40</u>	<u>75:25</u>	<u>90:10</u>
Days on feed	229	202	194
DM intake, lb/d	16.2	16.5	16.6
Daily gain, lb/d	2.95 ^a	3.25 ^b	3.5 ^c
DM feed/gain	5.9 ^a	5.4 ^{a,b}	5.2 ^b

^{a,b,c} P<0.05

Alfalfa haylage fed from 430-500 lbs;
corn silage fed from 500-1100 lbs

Forage

- When 0-2 lbs of long hay is fed, cattle will crave fenceposts and boards
- Small amounts of long forage are able to stimulate cud-chewing, which is good
- Fresh bedding, like straw, will be consumed as a forage source; fresh bedding can decrease grain consumption

Feeding Methods

- **TMR and fenceline bunk**
 - adv: more feedstuff choices, more feed blend choices, observation of feed intake and health
- **Self-feeder (steer stuffer)**
 - adv: low labor, low equipment cost

Avoiding Acidosis

- **21-28 day adaptation to high-corn diet**
- **Consistent daily intake of high-corn diet**
- **Fine feed particles increase risk of acidosis**
- **Include an ionophore in diet**
- **Minimum of 5% plant matter in diet, more is safer**

**Whole Corn Plus Pellet (WCP) Diet Fed with
or without Access to Long Hay for 259 d**

	<u>WCP</u>	<u>WCPLH</u>	<u>WCPFC</u>
Initial wt, lb	343	343	344
Final wt, lb	1150	1124	1128
Daily gain, lb/d	3.12	3.02	3.03
DM, lb/d			
Wh. corn	13.35	13.30	13.75
Pellet	2.65	2.65	2.70
Long hay	0	0.7	1.00
Total	16.00	16.65	17.45
DM/gain	5.15	5.53	5.78

Chester-Jones et al., 1993

Chester-Jones et al., 1993

- Dietary regimen did not affect ($P>0.05$) daily gain, feed intake or feed conversion efficiency
- Maximum intake of hay available free choice was 2 lbs/steer daily
- Authors stated that free choice hay improved consistency of feed intake

Components of Finishing Diet

- Energy source(s)
- Forage source(s)
- Protein source(s)
- Calcium, potassium, trace-mineral salt
- Vitamins A,D and E
- Rumensin/Tylan or Bovatec/OTC
- Aureomycin (CTC) or Terramycin (OTC) for coughing

Supplemental Protein Sources

<u>Source</u>	<u>CP%</u>	<u>Unit</u>	<u>\$/Unit</u>	<u>\$/%CP</u>
38% Pellet	42	Cwt	13.00	0.31
44% SBM	49	Ton	170.00	0.17
Urea	288	Ton	400.00	0.07
Soybeans	40	Bu	4.20	0.18
Corn gluten	22	Ton	90.00	0.20

CP Sources in Dry, Whole Corn Diets

		<u>Urea</u>	<u>Raw</u>	<u>Roasted</u>
Period 1	End wt, lbs	497	480	514
	Gain, lbs/d	2.45	2.29	2.58
Period 2	End wt, lbs	829	791	821
	Gain, lbs/d	3.38	3.17	3.14
Period 3	End wt, lbs	1189	1222	1258
	Gain, lbs/d	2.25	2.61	2.65
Overall	Gain, lbs/d	2.62	2.66	2.76
	DM/gain	6.17	6.11	6.07

Initial wt = 222 lbs

Fox and Ketchen, 1991

Proposed Diet Ingredients

- Long hay, 2 lbs/day
- Corn, whole or cracked
- Soybeans, whole or cracked
- Balancer pellet
 - Ca, K, vitamins, ionophore, antibiotic

Summary

- Dry, draft-free housing conditions
- TMR with bunk offers more choices
- Consider using home-raised soybeans or purchased by-products as supplemental protein sources
- Feeds must remain uniformly mixed