**HOW TO MANAGE AUTOMATIC CALF FEEDERS SUCCESSFULLY**

**5 C’s for successful calf management**
- Colostrum
- Calories
- Cleanliness
- Comfort
- Consistency

**Colostrum Feeding**
- 3-4 liters (1 Gallon) (10% of BW) within 2 hours of birth if possible
- Won’t drink it? Tube it!
- Feed 2-3 liters again in 8-12 hours
- Colostrum will not make up for poor sanitation
- Too much heat will damage the proteins

**Environment**
- Housing Well Ventilated but Free From Drafts
  - 100 cfm hot weather – 15 cfm cold weather
- Bedding is Clean and Dry
  - Knee test
  - Plenty of it and changed often
- Pens cleaned between calves
- Enough space per calf
  - 30-35 sqft - more is better

**Best Management Practices**
- Clean clothes and boots
- Work youngest to oldest
- Work healthy to sick
- Sanitize feeding articles like you do your milking system
- Vaccination protocols for cows and calves

**Importance of Water**
Water is the biggest nutrient in the diet of the calf (test water every 6 months)
Each unit of dry matter requires 4 units of water for digestion
Each unit of protein requires 3 units of water for tissue building
Think of newborn calves as infants!

It changes your perspective on what you really need to do for these little critters.

HOW DO THE AUTOMATIC CALF FEEDERS WORK?

- Feeds calves individually
- You can feed vitamins or medicine to individual calves or group (liquid and powder)
- Up to 4 nipples per feeder
- Easy weaning
- Full control over calves performance
- Consumption, drinking speed, visits, and more info available with one click
- Software program available
- Priority control
- I Q heating for correct feeding temperature
- Automatic calibration

Calves are fed individually

- Always Fresh portions
- Mixes only 250 ml to 500 ml per portion
- Option to clean mixing jar and hoses between calves
- Calves drink small portions 4-6 times daily
- Calves drink between 1.5 and 3.0 liters per visit
- 10-14 day weaning period
- Automatic registration
- Fully Automatic cleaning up to 4 times a day

Only small portions

- Electrodes guarantee:
  - Fresh prepared feed
  - No leftovers, that have to be thrown away
  - Always an empty mixer!
  - Uninterrupted feed preparation
  - Simultaneous feed preparation and feeding

Variable portion size

- Portion preparation between 0.25 and 0.5 l
- 2 sensors in mixing jar for more accurate bookings Sample: 1.7 l = (1 x 0.35 l)+(2 x 0.5l)+(1x 0.35l)
- High intensive mixer only needs 4-5 seconds to mix the MP

What age should calves go on the automatic feeders?

1 - 7 days after birth
- Move calves after colostrum period
- Bottle feed until good sucking reflex
- Use calf feeder to prepare milk for calves in single pens
- Train calves early on teat
- Do not help too often
Priority

- Set priority for calves up to 7 - 10 days

How it works:
- If a calf with priority enters the feeding station, the machine immediately switches feed over to this calf.

Automatic calibration

- Intensive mixer is connected to load cell.
- The automatic calibration checks the dosing quantities several times per day during the preparation of the portion.
- Automatically rectifies the calibration value, if necessary.
- Fully Automatic calibration of milk, milk Powder and water

Automatic calibration

- Intensive mixer is connected to load cell.
- Up to 4 times a day, normally 1 time a day is enough.
- Automatically rectifies the calibration value.
- Fully Automatic Calibration of milk powder, milk and water.
- Warning appears if difference is too high (do not ignore the warnings!)

Manual training pump

To easily train the calves, push button, transfers milk to the teat.

Temperature settings

- Water flow sensor for accurate water dispensing

- Operation of automatic feeder almost irrespective of water pressure.
- Only basic calibration of water necessary.
- Water solenoid valve more simple, and faster and more accurate diagnosis in case of water deficiency.
Checking suction hose and teat

It is imperative to regularly check the suction hoses and teats.
- If after cleaning deposits are still visible in the suction hoses or teat, you should manually clean them or replace them.

The suction hoses can also be cleaned continuously with automatic cleaning.
Check the teat daily and turn quarter turn.

Mixer Jar, Heat Exchanger and Suction Hose Cleaning

- Mixer and heat exchanger are automatically cleaned up to 4 times a day (possible to clean thru nipple).
- Set detergent according to the tag on the detergent. (Higher temperature cleaning of feeders is now available 135-140°F or 58°C).
- We recommend to do a circuit cleaning every day this will clean all valves and hoses.
- When circuit cleaning is running check nipples and clean, also turn nipple quarter turn this way the nipple will last longer.

Cleaning automatically

- Check detergent
  - Empty?
  - Is detergent Pump working?
  - Set detergent level correct to much or too little it will not clean correctly
  - Set cleaning temperature up to 58°C (137°F).

Recommended feeder installation

- Mount teat 10 to 15 cm higher than mixer outlet.
- Height of teat around 50 to 80 cm above calves platform.
- Keep hoses as short as possible.
- Possibility to drain feed remains at station.

Up to 4 nipples per feeder

- Priority control with 2 nipples
  - 50 calves
- IFS add to existing feeders
  - 2
- IFS added to Priority feeder
  - could feed up to 60 calves
- Quattro can feed 100

Additive Dispenser

Animal-specific addition of powder and/or liquid additives

- Dosage in grams per
  - Kilogram body weight
  - Liters of feed
  - Animal and day
- Distribution over the day
  - Once
  - Twice
  - Evenly
When Feeding Whole Milk

- Use Pasteurizer
- Try to use milk from same cows
- Do not use milk from treated cows
- Check the DM regularly
- Add milk powder to whole milk?
- Clean tanks and hoses daily
- Check bacteria levels (tanks, hoses)

Whole milk feeding

Feed room with Whole milk tank and return milk line

Whole milk feeding

- One of the biggest advantages from Automatic feeders
- Last 2 weeks weaning about 0.5 liters less every day (automatically done with feed curve)
- Normally calves are weaned after 8 weeks on a machine

9.3 kg more gain in machine versus individual fed calves

(All calves fed 6 liters at 150gr/liter)

9.3 kg more gain in machine versus individual fed calves

USE OF HANDHELD IS EASY AND FAST

Mobile Hand terminal
- big display
- Animal list
- alphanumeric keyboard
- additional hot keys
- SD card slot for software updates and backups
Calf Management on handheld and/or PC

- Check Alarm calves
- Check Consumption
- Check Drinking speed
- Check Visits with and without milk
- Check Entitled calves
- Check all calves in pens

Animal control

- Animal control, using the control key
  - Check for entitled animals
  - Drinking speed
  - Number of visits
- Check for alarm animals
- Check for expired animals

Management - Animal list

```
1/12 cons: dr:sp
  9 aA1 27 89 ✓+ 80
  5 aA2 70 ✓ 49 52
 11 aA3 ✓ 63
  3 aA1 84 ✓ ✓ ✓
 12 aA1 69 ✓ ✓ 95
  4 aA2 ✓ ✓ ✓
  2 aA1 ✓ ✓ ✓
```

Calf Manager management software

- "Navigator" = main menu + toolbar + menu bar + calf feeder + sort and filter tool
- History of one animal

KalbManagerWIN

- Features:
  - Sorting and filter function
  - Animal history
  - Tables and graphs
  - Print function
  - Data export, import and backup
  - Networking of several automatic feeders
  - Updates and service via internet
- Benefits:
  - Ease of work for animal control
  - Also with number of animals
  - Effective management

Graphic view to show drinking parameters of one calf
Goal of a Calf Raising Program

- Healthy calves
- Low mortality
- Maximize growth potential
- Reduce time to first conception
- Maximize production in 1st lactation

Example Feeding Schedule for Automatic calf feeders (Restricted)

<table>
<thead>
<tr>
<th>Quantities</th>
<th>Days</th>
<th>Calories (Liters)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>8.0 to 9.0 liters</td>
</tr>
<tr>
<td></td>
<td>10</td>
<td>9.0 to 10.0 liters</td>
</tr>
<tr>
<td></td>
<td>14</td>
<td>10.0 to 2.0 liters</td>
</tr>
<tr>
<td></td>
<td>27</td>
<td>10.0 to 10.0 liters</td>
</tr>
</tbody>
</table>

Calves will be weaned at 56 Days

Feeding limits:
- 5 Days 1.0L Min 2.0L Max
- 10 Days 1.5L Min 2.5L Max
- 41 Days 1.5L Min 3.0L Max

Results show increase in body weight by 10.8 kg or 23.8 lbs (9L vs. 6L)

The importance of intensified calf feeding

Many impressive new studies show that intensive rearing in the first few weeks of life produces calves that are more energetic, are more fertile, are healthier.

Higher earnings from milk yield exceed by far the added costs of calf raising:

“The first 40 days in life are essential to exploit the full genetic potential.”

40FIT Feeding plan – controlled ad lib

- Each drinking visit is computer controlled via RFID, also in the ad-lib phase of the 40FIT plan
- Limits only per visit to prevent over-drinking
- Works for winter and summer conditions
- Intake compared against reference, e.g., older calf needs to drink more liters, otherwise alarm
- Documented in Calf feeder & PC
- Always freshly prepared, sweet, no “depot” of old milk
- With exact drinking temperature
- Easy weaning afterwards
Conducted 2012 at Agrargenossenschaft Memmendorf e.G., Saxony, Germany
Approx. 1,000 milking cows
5 automatic feeders
6 concentrate feeders
Trial: 54 Holstein-Frisian calves
- 24 - restricted fed calves
- 30 - 40FIT calves

Feed consumption

More milk – more gain

2 years after – increased milk yield

Development of concentrate consumption

Example Feeding Schedule for Automatic calf feeders Controlled Ad-lib (40FIT)

- 26 Days  8.0 to 8.0 Liters F
- 4 Days  12.0 to 9.0 Liters R
- 10 Days  9.0 to 9.0 Liters R
- 14 Days  9.0 to 2.0 Liters R (Weaned at 56 days)
- Feeding Limits
- 7 days  1.0 liters Min 2.0 liters Max
- 21 days  1.5 liters Min 2.5 liters Max
- 42 days  1.5 liters Min 3.0 liters MAX

F is 40 fit (40 fit setup for every 02:00h) (P1 8.0-8.0 liters is used only to alarm animals the calves will be fed controlled adlib for 28 days max 2.0-2.5L every 2 hours R is restricted)
Summary of 40Fit trial

- Natural behaviour
  - Average milk intake per day per calf of 11 liter during 40FIT
- Higher daily gain during 40FIT - Period
  - Higher weights at the end of the trial
- Less visits of 40FIT calves during intensive feeding
  - More rest time - less stress
- Concentrate intake of both groups almost equal
  - Feed conversion of 40FIT calves up to 9% better.

Accelerated Feeding

Increased immunity with Higher plane of nutrition

Feces remain softer longer on Accelerated feeding programs – incidence of scours, however, is not increased.

More milk more money

- Intensified rearing of 2.2lb (998g.Tag) daily gain has a positive impact on milk production to 3rd Lactation.

<table>
<thead>
<tr>
<th>Lactation</th>
<th># of animals</th>
<th>Predicted difference in milk yield per 2.2 lbs of ADG (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st</td>
<td>1244</td>
<td>+1.871</td>
</tr>
<tr>
<td>2nd</td>
<td>826</td>
<td>+1.957</td>
</tr>
<tr>
<td>3rd</td>
<td>450</td>
<td>+1.06</td>
</tr>
<tr>
<td>1st to 3rd</td>
<td>450</td>
<td>+5.023</td>
</tr>
</tbody>
</table>

(Bar et al., 2010)

The importance of intensified calf feeding

Effect of increased feed intensity on first lactation cow performance

<table>
<thead>
<tr>
<th>Study</th>
<th>Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Denmark (Foldager and Knobs, 1994)</td>
<td>+1,402 kg</td>
</tr>
<tr>
<td>Denmark (Foldager et al., 1997)</td>
<td>+519 kg</td>
</tr>
<tr>
<td>Israel (Bar-Pokot et al., 1998)</td>
<td>+454 kg</td>
</tr>
<tr>
<td>USA, NY (Ballard et al., 2005)</td>
<td>+700 kg</td>
</tr>
<tr>
<td>USA, IL (Drackley et al., 2007)</td>
<td>+835 kg</td>
</tr>
<tr>
<td>USA, MN (Chester-Jones et al., 2009)</td>
<td>+998 kg</td>
</tr>
<tr>
<td>Average</td>
<td>+772 kg</td>
</tr>
</tbody>
</table>

Saving potential

Example: Dairy farm with 100 dairy cows and automatic feeder

<table>
<thead>
<tr>
<th>Description</th>
<th>Saving Notes</th>
<th>Total Revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Labour saving</td>
<td>250 h</td>
<td>$2500.00</td>
</tr>
<tr>
<td>Reduction of first calving age</td>
<td>2 months</td>
<td>$2000.00</td>
</tr>
<tr>
<td>Higher milk yield during the first lactation</td>
<td>500 kg</td>
<td>$2500.00</td>
</tr>
<tr>
<td>Average</td>
<td></td>
<td>$9500.00</td>
</tr>
</tbody>
</table>

When milking 100 cows it corresponds to more than 250 hours a year in saving on average depending on labor source
- Better Time management
- You not calf feeder but calf manager
- Healthier calves (Medication savings)
- Bigger calves
- Better weaned calves
- Still need to manage Calves
THE TWO LEGGED PROBLEM

Problems may occur when……
- Wrong barn setup
- Problems with ventilation
- Wrong feed schedules
- Not Managing calf feeder
- Not managing calves

Take Home Message
- COLOSTRUM First hour (10% of body weight 4 liters)
- Provide adequate housing
- Ensure appropriate ration management
- Good weaning schedule
- Use priority control
- Use Auto Calibration
- Do not ignore warnings on feeder
- Ensure good hygiene
- Manage Automatic feeder
- Check calves not just Automatic feeder

NEW STUFF COMING FROM FOERSTER TECHNIK

- Higher cleaning temperatures (already available version 8.08 and up (8.10 Latest version)
- New antennas (are here)
- Apps for calf feeders
- www.calf-cloud.com
- Calf Rail

Identification and training at the same time!
- Identification of all common transmitters
- Variable position in the feed station
- Training button with LED for easy entitlement control

www.calf-cloud.com

- Each Förster-Technik Calf feeder comes with LAN Ethernet-Interface
- Data is sent to www.calf-cloud.com
- Data-back-up, remote update, remote service
- Data-interface to other services
- Huge database of each animal
  - Milk consumption, drinking speed, visits, breaks, duration etc.
  - Weight, concentrate consumption, water intake via peripherals
  ➔ Internet-of-calves
CalfRail

- Automated feeding for individually penned calves.
  - Up to 8 times a day
  - Feed always fresh
  - Always right portions
  - Individually
  - Controlled
  - Exact Temperature
  - Full CIP cleaning
  - Nipple sanitized

CFR100 – Feeding for individually penned calves

CalfRail Same calf feeder used for Groups

CFR100 – Heating

- Heating of CFR100
  - External Element to keep line at right temperature
  - Pumps warm water through separate hoses next to suction hose with the milk
  - Water is circulated back to boiler and kept warm
  - Heating included in Calf Rail purchase

Application area: Used for Calf Rail only

Teat cleaning:

- Optional
  - After each calf the teat is cleaned with disinfectant, spread over the teat via a jet
Light indication for drinking at station

First Install in North America
Ontario (2014)

Layout 2 Calf Rail Barn in Ontario

100 cow facility in Ontario 1% dead loss gains between 900 and 1000gr/day

1000griday

CFR100 – Saskatoon Canada

Example USA, CY Heifer Farm

Individual boxes Approx. 48 calves/barn

Group housing with 100 calves/barn
CY-Farms, Batavia, NY, USA

Calf ranch for 300 calves on milk
6 calf feeders with 4 teats each
Only milk powder

Results
- Weight gain increased from 110 kg to 125 kg in first 12 weeks
- 50% labour savings compared to hutches/crates
- Less stress during weaning

Farm in , NY, USA

- Calf raising installation for 400 calves
- 6 calf feeders
- Pasteurisation whole milk and MP
- „Labour savings are amazing”
- 3% dead loss and 900-1000gr ADG

Thank You Very Much

Jan Ziemerink
jan.ziemerink@foerster-technik.com
Cell 519-239-9756