Calf to Beef Farm Walk
Ben Sweeney, Enfield, Co. Meath
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Food Harvest 2020 outlines a target of increasing the value of beef output by 20%. The expansion of the national dairy herd in the coming years following the abolition of milk quotas in 2015 and the application of sexed semen technology on a proportion of dairy farms will drive an increase in production of dairy bred calves. The result is an increasing supply of dairy bred calves that will be finished as beef. Significant component research information has been generated on dairy beef finishing at Teagasc Grange and Johnstown Castle. However, there is limited data on whole farm dairy calf to beef systems, demonstrating best practice at farm level. This programme will demonstrate profitable dairy calf to beef systems on a whole farm basis through a network of ten demonstration farms. The primary aim of this project is to demonstrate that, where a high level of technical efficiency is achieved on beef farms, it is possible to attain a net margin per hectare (excluding premia) in excess of €500 per hectare.

Gordon Peppard, the dedicated programme adviser is delivering the new Teagasc Green Acres Calf to Beef Programme supported by Drummonds Ltd., Liffey Mills, Volac Ireland, Grassland Agro and MSD Animal Health on a full time basis for three years.

The Objectives of the Programme are:

- To advise and demonstrate best practice at farm level on the rearing, growing and finishing of purchased dairy bred calves through to beef (steers/heifers/bulls) on a whole farm basis on 10 demonstration farms and to demonstrate the associated economic benefits.

- To provide technical support and targeted training to the technical staff of the contributing stakeholders to the programme.

- To disseminate physical and financial progress / results from the programme through a wide range of communication strategies including monthly coverage in the Farming Independent, farm walks and other channels of communication.
Ben Sweeney

Ben, originally from Galway moved to Enfield in the 1980’s and set up farming there. Today he and his son Joseph farm over 260 acres of owned land with a further 80 acres rented. There are 25 suckler cows and followers on the farm at present and up to 200 calves are reared each year. These calves are primarily Friesian bull calves that are intended for slaughter at 18 to 20 months. It is critically important that anyone intending to produce bulls at this age would talk to their factory agent in order to ensure that you have an outlet for this type of animal.

Ben also has some tillage on the farm, with triticale grown in 2015 which is currently being used as whole crop silage. Previously Ben grew maize but this practise has ceased since joining the programme.

The calves are reared using different methods. Around 120 calves are reared on a Volac automatic feeder with the remainder on teat feeders and this year Ben had 50 calves reared on contract off farm. These will be returned to the farm after they are weaned.

In order to make maximum use of the automatic feeder, a number of batches are reared throughout the year, with one batch reared before Christmas and generally two batches reared in the spring.

The plan going forward for Ben is to tighten up his many finishing systems. Friesian bull calves bought in the autumn and the early born spring calves will be left run as bulls for finishing at 18 months or earlier. The later spring born Friesian bulls will be castrated and finished as bullocks at 26 to 30 months off of grass. Some rented ground maybe dropped which will increase stocking rate and also improve grassland management on the overall farm. There is a grassland plan in place and Ben intends to make better use of grazed grass through the introduction of a paddock system and also reseeding some old pastures.

Ben generally buys Angus and Hereford heifers, but this year this system will be seriously analysed to see if he will proceed with it in the future.

All aspects of calf rearing will be discussed here on the farm today primarily focusing on the areas of calf nutrition, calf health and calf housing and there should be something new to be learnt in relation to calf rearing for all in attendance.
Feeding Calf Milk Replacer

Calves require energy and protein to support and maintain their normal body functions; maintenance, growth and immune function.

Bought In Calves – Isolate & Give Electrolytes in the First Feed
- Management and care of bought in calves is critical.
- Allow calves 2-3 hours rest before feeding a good rehydration electrolyte as a first feed.
- Electrolytes are formulated to promote absorption of specific nutrients from the intestines whilst replacing water and minerals lost during times of stress, scouring etc.

Pre – Weaning Nutrition
- The level of nutrition a calf receives in the pre-weaning stage has a huge impact later in life. It affects growth rates, health and the ability to cope with cold stress.
- Young animals have the ability to convert feed into growth most efficiently during the first two months of life.

- In order to gain 0.7kg/day you must feed 750g-900g milk solids/day in 2-3 feeds, supplemented with good quality concentrates.
- Protein levels in a quality CMR should be 23-26% and consist predominantly of milk proteins.

Concentration of Milk Powder
- Feed 6 litres of good quality milk replacer at 12.5% - 15% solids; be consistent do not vary concentration levels.
- WEIGH milk powder using an accurate weigh scales; feeding the calves too much or too little is a waste of money.
- For a concentration of 12.5% solids use 125g of milk powder and 875ml of water to make 1 Litre of mixed milk.
Feeding Calf Milk Replacer

Temperature of Milk Powder
- Mix milk powder using water below 40°C – boiling water damages the milk proteins.
- Feed milk at body temperature between 37°C-39°C degrees – stimulates strong oesophageal groove reflex preventing milk from entering the rumen.

Feeding Systems
- Whatever the system cleanliness and consistency are critical.
- Bucket/Teat feeding; twice, three times/day, computerised feeders, ad lib feeders can all be successful provided it is done consistently, cleanly and with good attention to detail.
- Avoid once a day feeding until calf is at least 3-4 weeks of age.

Five ‘Must Haves’ when Purchasing a Milk Replacer
- Minimum of 20% protein declared
- Maximum of 9% ash declared
- Minimum 0.8% calcium
- A trusted supplier
- Previous calf performance and calf health give the best guarantee for the milk replacer’s quality

Be consistent when feeding baby calves – feeding times, temperature of milk fed, concentration and volume fed.
Cleanliness and hygiene are critical.
**Pneumonia**

Pneumonia is the most common cause of death in cattle of all ages over one month old. The word pneumonia basically means inflammation of the lungs. It is a complicated, multifactorial disease which means many things can impact on its onset and course.

**How will you recognise it?**

The cattle will likely be off their feed, empty looking and off form. There may be panting, coughing and/or have a watery or mucus discharge from the nose. Often they may have an elevated temperature (>39.5°C).

**What can you do to treat pneumonia?**

Most cases of pneumonia can get worse very quickly so the best course of action is to talk to your vet who will advise you on the best treatment. Some new antibiotics reach a very high level in lung tissue and can last for a prolonged period of time so as to reduce the chances of relapses.

**How can you prevent pneumonia?**

To prevent pneumonia you need to minimise infectious pressure and maximise the animal’s immunity. This basically means decreasing the amount of infection the animals are exposed to and increasing their immunity to the bugs that cause pneumonia.

**How can you minimise infectious pressure?**

- Try to avoid exposing calves to stressful conditions. Be mindful of any abrupt changes as animals tend to find these stressful i.e. weaning, transport or suddenly change of diet.
- Ensure sheds are well designed and ventilated. Avoid overstocking or mixing stock of different age groups.
- When purchasing animals try to isolate them for a few weeks.
- If you notice an animal panting or off-form try to remove it from the pen as it will act as a source of infection for other animals.

**Maximise the animal’s immunity**

- Ensure the calf receives enough colostrum
- Vaccination

Vaccinating calves before they get pneumonia can be a very effective way of controlling disease. The vaccine stimulates the animal’s immune system to produce antibodies. These antibodies help the animal to fight infection when they encounter it. Vaccines can help you prevent pneumonia on your farm. It is important to protect against both viral and bacterial pneumonia. Calves can be vaccinated from two weeks of age. The vaccination program is two shots four weeks apart. A booster dose should be given before the next period of risk. It is also possible to vaccinate against IBR at the same time i.e. both vaccines can be administered together.

**Calf Diarrhoea and Scour**

Calf diarrhoea is the most common cause of death in calves. It accounts for nearly 30% of deaths in calves less than 1 month old.

**How can I reduce calf scour?**

- **Colostrum** – Increase the resistance of the calf to infection by feeding 3 litres of colostrum as soon as possible after birth (ideally within 2 hours)
- **Clean calving pens**
- **Clean dry calf pens, you should be able to kneel in calf pens without getting knees wet**
- **Handle calves youngest – oldest**
- **Clean feeding equipment**
- **Disinfect pens between batches of calves**
When I have an outbreak of calf scour what can I do?

1. **Isolate sick calf** (remove from group pen)
2. **Rehydration** is the most important treatment - you must replace lost fluids. Ensure calf is warm (put under lamp if chilled)
3. Take a **sample to find out what’s causing the calf scour** so you can treat as appropriate.

In Ireland, **cryptosporidium** and **rotavirus** are the two most common causes of calf scour. It’s very important to focus on hygiene and making sure the calf gets enough colostrum. You can increase the quality of the colostrum by vaccinating the cows with a scour vaccine before calving. This ensures that the cow produces more antibodies to rotavirus, coronavirus, and ecoli. The vaccinated cow will store these antibodies in her colostrum. Feeding the calf enough colostrum will enhance the protection of the calf against these bugs. It is advantageous for farmers operating dairy calf to beef enterprises to purchase calves from herds vaccinating cows with a scour vaccine and that have good colostrum management.

### Parasites

#### Roundworms
Present on the pasture for most of the season. Predictable in presence of calves. Immunity can be generated relatively quickly.

#### Lungworms
Present on pasture but very unpredictable. Need as many opportunities for immunity to develop as possible.

### Fluke
- Liver Fluke
- Rumen Fluke

Challenge can vary from year to year. Important to monitor – check fluke forecast produced by DAFF.

### Clostridial Disease
Clostridial bacteria cause blackleg, black disease, tetanus, bacterial redwater, malignant oedema, and enterotoxaemia among others. Each year clostridial diseases are a significant cause of mortality in Irish cattle. The disease rate is usually between 5 and 10% of animals sent for post mortem examination but is higher in cattle between 3 and 12 months of age.

- The most common presenting sign of these diseases is sudden death
- A post mortem examination should be carried out to reveal the specific clostridial bacteria responsible so that an appropriate vaccination programme can be instigated.

### It is best practice to faecal sample animals to test for endoparasites on your farm

Treatment of cattle for internal parasites can be delivered by three basic dosage methods:

- Orally e.g. bolus or drench
- Injection
- Pour-on

### The most important thing to remember about any dose is to give it at the recommended dose rate for the weight of the animal

When developing a parasite control plan:

- Always consult with your prescribing vet
- Know your production system e.g. days to slaughter, days at pasture
- Know the parasites you are trying to control
- Know what actives / products were used previously to help avoid resistance
- Maintain good handling facilities – Poor handling facilities on fragmented farms can cause slippage in the protocol of 3, 8 & 13 weeks.
Cryptosporidia in Calves

A recent report from the veterinary service of DAFM and DARD has revealed that up to 40% of calf deaths in the first six weeks is scour related.

At farm level Cryptosporidium parvum is becoming more prevalent and apart from the obvious lack of thrive and potential for high mortality rates it is both expensive and time consuming to control an outbreak. It can also infect humans generally through Cryptosporidium contaminated water supplies.

Clinical Signs

Calves from 5 -35 days are susceptible but it generally occurs in the 2nd week of life. Characteristically calves will get a persistent diarrhoea that is extremely difficult to cure. The infection will cause severe damage to the lining of the gut wall and destroy the ability of the animal to absorb nutrients.

Calves will become lethargic, stop drinking and can become dehydrated quickly.

Once infected, calves will after 4 days begin to shed vast quantities of oocysts in their scour. This leaves the environment heavily contaminated for other calves who then become infected.

Treatment

Because of the damage to the gut lining it is important that calves are kept on milk and electrolyte therapy so that they are kept nourished and do not become dehydrated.

The only licenced product that can be used therapeutically or as a preventative is Halocur. Where there is a problem calves should be given Halocur in the first 24 hours after birth and it must be continued daily for a further 7 days. Once one calf is treated in the herd all subsequent new born calves should be treated for the remainder of that calving season. Your typical 45-50kg calf will need 10ml/day for 8 days. Treating of calves with Halocur will interrupt the life cycle of the Cryptosporidium reducing the challenge to the calf and the number of oocysts shed.

Once Cryptosporidia gets into a herd it can be difficulty to remove and so many herds will just routinely treat all calves after they are born.

Prevention

- Isolate scouring calves immediately from the group. They are a huge source of infection.
- Adequate colostrum will safeguard calves against secondary infections such as Rotavirus, Coronavirus.
- Cleanliness is critical. Calving boxes, feeding buckets, boots, stomach tubes need to be properly cleaned.
- You should use a proper disinfectant effective against the oocysts from this protozoan parasite when cleaning out sheds and pens.
- Remember antibiotics are ineffective and you cannot vaccinate against Cryptosporidia.

Typical cost of Halocur is €100/480mls or €160/980mls.
As with cryptosporidia, coccidiosis is caused by protozoa. Cattle will develop an immunity to the condition over time but young calves with an underdeveloped immune system placed in a dirty environment can succumb to the disease. A dirty environment leaves calves more likely to ingest high numbers of the immature protozoa. Coccidiosis tends to be seen in calves from about 3 weeks old up to about 6 months. Infected calves pass out large numbers of oocytes which can contaminate the environment for other calves. The oocytes are resistant and can survive for long periods in the environment (sheds etc).

Clinical Signs

The coccidia can cause a watery scour because they damage the mucosa of the intestine. Damage to the intestine reduces the calves ability to absorb fluids and nutrients and so calves that are infected can become dehydrated, may start to pass blood, shed part of the intestine lining and can become weak and uncoordinated.

Calves that have the condition can often be seen straining. Probably the biggest economic loss is the poor thrive in animals that are affected.

In many herds there may be sub clinical infection where animals show very little symptoms and will recover with time but thrive will be affected.

Treatment

If a herd has had trouble with coccidia in the past then they need to be vigilant because it can easily re occur particularly where hygiene is poor.

In this case herds will often dose calves with Vecoxan (diclurazil) or Baycox (toltrazuril) as a prophylactic. Typically calves will be given an oral dose of between 20-30ml depending on the weight of the calf.

Calves that are scouring become dehydrated should receive normal electrolyte therapy and be removed from the group.

Prevention

- Increase the amount of bedding used in the calve areas.
- Try and prevent the build up of faecal contamination around feed and water troughs.
- Avoid mixing of different ages of calves as younger calves will be more susceptible.
- If you have had a problem make sure sheds are cleaned and disinfected between batches of calves. Disinfectant choice that kills oocytes is critical.
- Animals can be given licenced medication as already mentioned to prevent the disease. In some areas medicated licks containing coccidistats are used under prescription.
- Please note that there is no vaccine available against coccidia.
Soil Fertility –
The Foundation for High Output

Good Soil Fertility is critical

- Only 10% of fields being tested have results showing optimum soil fertility. That means 90% of fields are missing something!

- Soil management is a key factor that will determine the farm’s potential to grow grass.

- Weather is critical, and there will be good years and bad years when grass production on all farms will vary upwards or downwards.

- Soil management is a key factor that will determine the farm’s potential to grow grass.

- However, what will be consistent year on year is that well managed fields with fertile soils will perform best.

- You are at the mercy of the weather, but you do have control over the management and fertility of your soils.

- It is essential that soil is fertilised and managed so that it is in the right condition to give the grass whatever it needs whenever the weather comes for good growth.
Soil Fertility –
5 Soil Fertility Targets

- Soil sample results for the whole farm
- Soil pH > 6.0 in every field
- Soil P and K levels in Index 3 in every field
- Apply slurry to maximise its fertiliser value
- Use the right fertilisers to balance the overall nutrient supply. Major nutrients (N, P & K) need to be balanced with all the essential nutrients, including Sulphur (S), Magnesium (Mg), Calcium (Ca) and trace elements where required.
Information Boards

**Finishing Systems**

- Weight gain achieved from grass more profitable
- Steer and heifer system less risk
- Early maturing steers (21mth and 26mth)
- Sensitive to calf price, meal price, bonuses paid and beef price
- Management of animals from birth is key

**Feed for Growth**

- Food for maintenance, growth and immune system
- Target live weight gain of 0.7 -0.8 kg/day
- Young animals convert feed into growth most efficiently in the first 2 months
- Feed for GROWTH not Maintenance
- Weight gain depends on quality and quantity of feed consumed per day
Milk Replacer

- Feed enough milk replacer to support growth rates during the pre-weaning period.
- To gain 0.7kg/day, feed 750g + MR/day, supplemented with good quality concentrates
- 6L of good quality MR 20-23% protein, 18-20% fat
- Use a MR made from predominately milk proteins not veg/plant. Whey Protein Concentrate or Skim

Feeding Tips

Cleanliness & Hygiene
- Wash and disinfect all milk feeding equipment
- Dirty buckets, troughs, utensils, hoard bacteria

Consistency is essential for the young calf
- Calves should be fed proper amounts of milk replacer at the; Same concentration @ Same time @ Same Temperature everyday.
- Changes in the routine can stress calves
- Stressed calves more likely to get sick
- Any changes make it Gradual
Water – The Forgotten Nutrient

- Milk is a feed not a drink
- Water is required in the rumen; milk by-passes the rumen
- Ad-lib clean water from day 3 is essential for rumen development

**A calf needs 4-5 litres of water for each 1kg dry feed**

Concentrates & Roughage

- Invest in a good quality palatable calf starter
- Ideally 12MJ energy, 18-20% crude protein
- Replace with fresh concentrates daily
- Essential for early rumen development
- From 2-3 weeks old intakes will gradually increase
- By 6-8 weeks calves should be eating 0.7-1kg/day

Roughage

- Provide good quality, clean, dust free straw in racks
- Do not feed hay
**Information Boards**

**Weaning**
- Aim to double calf birth weight by 8 weeks
- 40/45kgs to 80/90kgs+
- Ensure calves are eating at least 1.5kg – 2kg concentrates/day
- Gradual/Step wean calves over a number of days
- Minimise stress & change around weaning – dehorning, social group etc.

**What to look for when selecting a Calf**

**Head**
- Clear eyes & Nose
- Alert Ears
- Easy Breathing

**Appearance**
- Bright, Curious, Playful
- Not Dehydrated
- Good Coat
- Dry Clean Naval
- Keen to Eat and Drink

**Rear**
- Clean, Dry, No Scour
- Not too Thin
- Normal Temperature 38/39 Degrees C

**Legs**
- Sound on All Four
- No Stiffness
- No Swollen Joints
- Relaxed Posture
Information Boards

**Causes of Mortality in Calves***
- Gastro enteric infections
- Systemic infections
- Bovine Respiratory Disease
- Hereditary
- Nutritional/Metabolic

**Causes of Scour in Young Calves***
- Cryptosporidium spp
- Rotavirus
- Coccidiosis (*Eimeria spp*)
- Coronavirus
- Salmonella
- E-coli K99

*All-island animal disease surveillance report 2013*

**Treating a Scouring Calf**
- **Remove**
  Prevents spread of infection
- **Rehydrate**
  Replace lost salts and fluids, need 4 litres extra
  Give good quality electrolyte
- **Feed Milk**
  Helps heal intestine
  Do not stomach tube
### Vaccination protocol

**Pneumonia**
- Different programmes
- To cover RSV, PI3 & Pasteurella**
- 2 shot program, 4 weeks apart
- From 2 weeks of age
- Booster at next stress period

**IBR**
- 1 shot live vaccine
- Can be given with some pneumonia vaccines

**Clostridial**
- Essential to vaccinate twice
- 4–6 weeks apart
- From 2 weeks of age
- Don’t administer on same day as the pneumonia vaccine
- Annual booster
- Use multivalent vaccine to deliver broader range of cover

**Mannheimia haemolytica**

### Calf Housing

- Optimum conditions
- Max. performance
- Min. disease
- Calf 80% time lying
- Dry bed - Knee test
- Warm - Nestle score
- Draught free

**Good ventilation**
- Fresh air
- Prevents disease build up
- Removes moisture
- Removes dust/gases/smells
- Inlet
- Outlet
**Information Boards**

**Calf House Design**

- The min. pen floor area per calf is \(1.5m^2\) for calves <150kg (\(1.7m^2\) is recommended)
- \(1.7m^2\) for calves 150kg to 220kg
- \(1.8m^2\) for calves ≥220kg.
- Sloped concrete floor
- Roof pitch minimum 22 degrees
- Height difference of 1.5/2.5m between inlet/outlet

- Light
- Ventilation
- Air Space
- No draughts
- Good drainage
- Easy to clean
- Floor slope 1:20
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