



PERFORMANCE PRO-BIOTICS
DIRECT-FED MICROBIALS

EARLY FRESH COW MANAGEMENT

www.performanceprobiotics.com

Last Updated **August 2011**

Managing fresh cows is a real balance between keeping them metabolically healthy while trying to promote rapid increases in milk production towards peak. Their metabolic system is stretched, the immune system compromised, appetite is low and there are often extreme dietary changes. The best management of these fresh cows must start early and change as she proceeds through early lactation.

There are many risks to the cow at this time, including Milk Fever, Retained Afterbirth, Mastitis, Metritis, Ketosis, Acidosis and Displaced Abomasum. To fully understand how nutritional management can help with these areas, it is worth briefly discussing each issue. We can then develop management tools to combat such problems.

Milk fever is caused by low blood calcium, and its high occurrence is no surprise given that the requirement for calcium at the onset of colostrum and milk production exceeds blood levels by nine or ten fold.

Retained afterbirth, or retained foetal membranes, is now commonly recognised as being due to a suppression of the immune system. The placenta is very close in composition to the cow and when the immune system is compromised, the cow's system does not recognise it as being a foreign body and instead holds onto it.

Mastitis is eight times more likely to occur in a cow that has had milk fever. Again the immune system plays a crucial role, and calcium plays a second part because of its action on smooth muscle strength. The timely closure of teat ends is dependent on this smooth muscle activity.

Metritis is highly related to immune function, and its prevention is of utmost importance in recovery of the uterus and ensuring that cows have the best chance of getting back in calf.

Ketosis is caused when the liver breaks down high levels of fat. This may be due to insufficient delivery of energy (glycogen) to the liver or it may be due to fat or high production cows quickly mobilising weight. In many cases it is both factors. When the liver breaks down fat it releases compounds called 'ketone bodies' into the blood stream, which can be toxic and cause metabolic stress.

Acidosis results from an accumulation of acid (primarily the volatile fatty acid lactate) within the rumen. It is much more common in those cows who have previously been affected. Acidosis leads to a cascade of problems including laminitis, liver abscess and death. It also results in the keratinisation of the rumen wall, and a subsequent decrease in the absorption and removal of volatile fatty acids and further decreases the pH of the rumen.

Displaced abomasums can occur in two ways; Left (LDA) and Right (RDA). Normally the abomasum sits in the right hand side of the abdominal cavity. After calving and when the rumen is not full, the abomasum is able to move around the abdomen more freely simply because of the extra space. In the case of LDAs, the abomasum slips under the rumen and is trapped on the left hand side when the rumen fills or when the cow stands. RDAs are caused when the abomasum twists on itself, still remaining to the right. Muscle function plays a key role in keeping abdominal organs in their proper place, so calcium again plays a part. Dietary considerations to maximise rumen fill are also important, and ideal forage to concentrate ratios have long been accepted as important management tools in the prevention of displaced abomasum.

While it may seem that there are many things that can go wrong, management can make all the difference. We can effectively break the management of these problems into three crucial areas: (i) calcium balance, (ii) immune system, (iii) rumen and liver health.



PERFORMANCE PRO-BIOTICS
DIRECT-FED MICROBIALS

EARLY FRESH COW MANAGEMENT

www.performanceprobiotics.com

CALCIUM BALANCE

Lead feeding with anionic salts is proven to optimise calcium balance at calving. Not only does it virtually eliminate milk fever, it plays a key role in the other calcium-related physiological processes. One such process is smooth muscle strength and contraction, including the uterus (timely uterine involution), teat ends (rapid closure after milking) and abdominal muscles (keeping the abomasum and other organs in place, as well as controlling rumen contractions).

The other area where calcium plays a large part is in cell mediated immunity, the importance of the immune system being inarguable and dealt with below.

There is plenty of literature about lead feeding so we do not need to go into too much detail here. It is worth noting that appropriate lead feeding includes anionic salts, at a strength that is sufficient to alter the metabolism of the cow (shown through changes in urine pH). You can then be certain that calcium levels are optimal and metabolic disease in fresh cows can be minimised. If you would like more information on lead feeding and the product 'Fire Up', please contact Performance Probiotics.

THE IMMUNE SYSTEM

The nutritional stimulation of the immune system is most commonly attributed to trace minerals and vitamins, especially zinc, selenium, vitamin E and copper. The inclusion of trace minerals and vitamins is therefore strongly recommended throughout the transition period, both before and after calving.

We need also remember the role that calcium plays, through cell mediated immunity. This is the part of the immune system that relies on 'T cells', which are white blood cell lymphocytes. They are essential for a variety of actions within optimal immune function.

There is also strong evidence that the inclusion of Direct Fed Microbials can positively influence the immune system. Certain bovine specific bacteria directly stimulate the immune system. Additionally, some of the bacteria included in Direct Fed Microbials operate through 'competitive exclusion', whereby beneficial bacteria attach to the gut wall taking the place of where pathogenic bacteria were going to attach. Finally, the by-products of beneficial bacterial fermentation can actively work against pathogens.

RUMEN AND LIVER HEALTH

These two organs are possibly the most important when it comes to a smooth transition from dry cow to high production fresh cow. Looking after both the rumen and the liver will prevent many of the disorders mentioned earlier. This is also an area we can easily manipulate through sound nutrition.

Lead feeding enables farmers to prepare the rumen environment for the diet post calving, which is often vastly different from those diets offered to dry cows. The inclusion of grain at half the rate milkers receive is an effective tool in minimising acidosis cases. High levels of fibre help keep the rumen full (less chance of the abomasum moving around) and keep the rumen contracting nicely. Protein supplementation helps stimulate appetite and the onset of milk production. Simply, the lead feeding of cows prior to calving helps in many ways other than the prevention of milk fever, and these follow through to higher milk production at peak.

Post calving, there is obviously a significant increase in the requirements for energy and protein to meet milk production requirements. Best practice is to consider the requirements for the first two weeks of lactation separately from the requirements for peak production.



PERFORMANCE PRO-BIOTICS
DIRECT-FED MICROBIALS

EARLY FRESH COW MANAGEMENT

www.performanceprobiotics.com

Before dismissing this idea, because of the practicalities, consider the stress under which these animals are placed. The rumen and the liver are at the centre of this management practice.

The following table are levels of some nutrients as suggested by US dairy nutritionist, Dr. Bob Patton:

	0 – 14 days	14 days through peak
NDF %	35 %	30 %
Sugars	3.5 %	3.5 %
Starch	18 – 19 %	22 % +
CP %	19 – 22 %	16 – 18 %

As you can see in the table, NDF (Neutral Detergent Fibre) levels of the diet should be higher for the very fresh cows. Additional fibre helps keep the rumen full and contracting, and helps in the prevention of acidosis. Sugar levels can remain the same (and are often slightly higher than this in Australia) but starch levels should be lower in the first two weeks of lactation. Again this helps look after rumen health and prevent ruminal acidosis.

Crude protein levels need to be higher for those very fresh cows. This is mainly due to a process called 'gluconeogenesis', whereby cows synthesise glucose in the liver from amino acids (the building blocks of protein). Rumen Undegradable Protein (UDP or 'bypass' protein) is extremely effective at delivering protein 'intact' to the cow and her liver. The synthesis of glucose in this manner can be effective in reducing cases of ketosis.

Managing a fresh cow herd as well as the rest of the herd can be tricky, but the benefits are enormous. These cows are likely to produce higher yields of milk, suffer fewer metabolic diseases and have better conception rates. At the very minimum, consider running a 'colostrum' herd while fresh cows are still on the bucket. This herd should be offered less grain in the dairy (although at a higher protein percentage if the feed system allows). They should have access to pasture as high as the quality offered to the rest of the milkers, and also have access to high quality roughage (lucerne hay in a hay rack works beautifully). The closer to two weeks they can spend in this herd the better.

Additives are particularly important in looking after both the rumen and the liver. Speak with your advisor or nutritionist to ensure that buffers are included at appropriate rates. This may include traditional buffers such as sodium bicarbonate, or may include yeast (Direct Fed Microbial). Additives should also include the full spectrum of macro minerals, trace minerals and vitamins.

Another practice I highly recommend is giving all cows a shot of vitamin B12 at calving. This helps with glucose metabolism at the site of the liver, which we have discussed as being highly important.

It is impossible to give set rations for optimal fresh cow management, obviously because of the variation from farm to farm in infrastructure, climate, expectations etc. However there are some important management tools listed here that will make the road smoother for those fresh cows. For help in implementing some of the strategies discussed, speak to your advisor or contact Performance Probiotics.