



ORGANIC BEEF PRODUCTION WITH FEEDTEK

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The use of ionophores and other antimicrobial growth promoters (or so called AGP's) in livestock production were banned more than 20 years ago throughout Europe. This forced the agricultural sector in Europe to undertake huge amounts of research throughout the past 20 years on natural replacements for these banned substances. In South Africa we are in the privileged position of not only having access to this research without spending the money, but also to pick the products that have scientifically proven to be viable replacers of these substances. During the past 10 – 15 years many of the alternative products were compared to AGP's under South African conditions, resulting in several products that were identified as producing similar responses in performance. Feedtek has been adding these products to our range of concentrates for many years, gaining excellent experience in how to apply these products locally, both in conjunction with or as total replacement of AGP's.

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In this article the term “Organic Beef” production refers to medicament/AGP free beef production without the exclusion of urea in the feed. Due to the re-cycling of urea in the normal metabolic processes of ruminants, the inclusion of urea or NPN sources in organic beef production are justified.

What do we want these products to do?

The main aim of any feed additive is to enable the animal to produce more marketable product (meat, milk, wool) with less feed in a shorter space of time. This is achieved through two main co-dependable and interlinked routes namely:

1. Increased dry matter (DM) intake
2. Improved microbial digestion and utilization of consumed nutrients

DM intake is improved by

1. Improving palatability of feed (hiding unpalatable tastes or smells)
2. Improving digestibility of fibre rich ingredients, thereby decreasing rumen fill and creating more space within the rumen

Products that have proven very successful in achieving this is palatants, flavourants, sweeteners, specific essential oils and slow release buffers.

Improved microbial digestion and utilization of nutrients is achieved by:

1. Creating the optimal environment in the rumen for the bacterial strains that digest fibrous rich ingredients, resulting in the production of the most efficient sources of nutrients for the host animal (for example propionic acid is a more efficient energy source for ruminants than acetic acid). This is done by:
 - a. Regulating rumen pH and therefore preventing sharp fluctuations in rumen pH
 - b. Improving rumen wall health
 - c. Competitive exclusion of less efficient bacterial strains
2. Improving gut wall health in the lower digestive tract, which improves uptake of nutrients by the host animal.

Products that have proven very successful in achieving this is organic minerals, specific essential oils, slow release buffers and nutrients stimulating growth of rumen fungi.

Feedtek has developed a concentrate for farmers who specifically want to grow out and fatten beef cattle organically. The product is called Beef Gainer 110 (Organic) and it contains several of the above mentioned additives including:

1. Molasweet - a molasses flavoured palatant/sweetener
2. XTract 7065 – a combination of essential oils including
 - a. Eugenol – an essential oil promoting microbial production of propionic acid and decreasing methane production
 - b. Cinnamaldehyde – an essential oil improving microbial protein synthesis
 - c. Capsicum – an essential oil improving energy metabolism, regulating feed intake patterns, improving saliva production and blood flow to the organs
3. Acid Buf – a slow release buffer derived from natural calcified seaweed

A large research trial was conducted at a commercial feedlot in South Africa, comparing the performance of beef feedlot animals on Monensin (the most common AGP used in feedlot diets) with Acid Buf and XTract 7065. A total of 390 beef cattle in 3 replicates of 130 animals each, were allocated to each treatment. The results are shown in the tabel below.

Parameters	Monensin	XTract 7065	Acid Buf
Start weight (kg)	225.6	225.4	222.7
End weight (kg)	417.5	429.3	425.3
Days on feed	113.1	115.0	116.6
Dry matter intake (kg/d)	8.96	10.05	9.09
Average daily gain (kg/d)	1.70	1.77	1.74
Feed conversion rate (kg dry feed/kg growth)	5.26	5.67	5.22
Cold carcass mass (kg)	242.7	247.3	245.9
Dressing percentage	58.13	57.61	57.82



The performance of cattle on both XTract 7065 as well as Acid Buf were statistically similar to or better than Monensin, with Monensin not outperforming the natural additives in any parameter. This trial clearly shows that these natural additives can hold their own against the world's leading AGP in the fattening of beef animals. Beef Gainer 110 (Organic) is suitable to mix both veld grower- an finisher meals as well as feedlot finisher feeds. See table below for examples of balanced meals.

INGREDIENT	VELD GROWER MEAL	VELD FINISHER MEAL	FEEDLOT FINISHER MEAL
Maize meal / Hominy chop	750	800	900
Cotton Oil cake meal	50	50	50
Salt	100	50	
Beef Gainer 110 (Organic)	72	72	54
Total (kg)	972	972	1004
Composition (%)			
Protein	15,90	16,28	14,54
Protein from NPN (% of total)	51,29	50,08	40,71
Calcium	1,00	1,00	0,74
Phosphate	0,42	0,43	0,41
TDN (Energy)	67,08	71,30	77,19
Recommended Intake (kg/day)	1,0 – 2,0	2,0 – 4,0	Ad lib

FEEDING RECOMMENDATIONS

- Up to 80 kg of maize meal / hominy chop may be replaced by molasses meal / syrup if preferred
- Cotton oil cake meal may be replaced with any other oil cake meal if preferred
- Animals should be adapted gradually onto these finisher meals. On veld this may be done by doubling up the inclusion level of salt for the first 7 – 14 days to prevent gluttonous eating
- Once animals are adapted, the veld meals should be fed unrestricted (ad lib). Should actual intakes vary markedly from recommended intakes after 14 days on the concentrate (see bottom of tabel above), a Feedtek nutritionist will gladly adapt the formulation
- Grazing and/or additional roughage should be available freely at all times together with the veld meals
- In the feedlot animals are adapted by providing the meal at 0.5% of live weight on day one and increasing this daily by an additional 0.5% of body weight until meal remains in the trough for 3 consecutive days. Thereafter the troughs should be kept full at all times
- Good quality roughage should be available unrestricted (ad lib) at all times together with the feedlot finisher meal
- These feeds contain urea and other NPN sources and should not be fed to horses.

RECOMMENDED FEEDING REGIME

Backgrounding and frame development on dry / green veld	Veld Grower Meal
Finishing on dry / green veld (free range beef)	Veld Finisher Meal
Feedlot finishing	Feedlot Finisher Meal



WHAT PERFORMANCE CAN BE EXPECTED?

It is important to realise that animal performance will be influenced by a wide variety of factors including:

- Quality of pasture
- Availability of pasture
- Genetic growth potential of the animal
- Internal- and external parasite status of the animal
- Frame size
- Quality of the supplement
 - o Quality of energy and protein
 - o The balance between all nutrients
 - o Levels of all minerals, trace minerals and vitamins
- Water – quantity and quality
- Environmental factors
 - o Heat / cold
 - o Rain and mud
 - o Wind
 - o Daily distances covered (horizontal / vertical)

As a “rule of thumb” healthy beef cattle (medium to large frame) on good quality green pasture should have a feed conversion (kg supplement per kg growth) of around 1.5: 1 to 2.5: 1, while this figure will be around 3: 1 to 5:1 on good quality dry veld. In the feedlot the feed conversion will vary between 4.5:1 to 7:1 (kg concentrate per kg growth). Due to all the factors influencing these figures, it is very important that the producer uses conservative figures when potential profitability is determined to prevent him feeding at a loss. It is also strongly recommended that the producer get expert advice from a professional animal scientist before making any large financial decisions. Please go to www.feedtek.co.za for a list of Feedtek animal nutritionists who are qualified to provide this service or contact Feedtek at 086 111 5362.

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