



PROFITABLE FEEDLOT

with adequate mineral nutrition

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The current economic climate marked by high input costs necessitates the feedlot producer to critically evaluate all expenditures impacting profitability. Mineral supplementation contributes a small but integral part of the ration. When deciding to include an additive in a ration it is advised to consider the five R's: **R**esponse, **R**eturn on investment, **R**esearch, **R**epeatability and **R**eassurance.

Receiving period

During the receiving period feedlot calves are subjected to stress due to being transported over long distances causing dehydration in addition to stress associated with weaning and the new environment where competition and a change in hierarchy plays a role. Stress affects the calf's response to vaccinations, mineral retention, morbidity and growth. Stressed calves take longer to start eating and are more prone to infectious

diseases due to their compromised immune status. It is during this receiving or starter phase where adequate mineral supplementation can ameliorate the effect of stress on long-term performance in the feedlot.

In a study at the University of Arkansas, 288 steers received iso-levels of **zinc, manganese, copper** and **cobalt** from either Availa-4® or zinc sulphate, copper sulphate, manganese sulphate and cobalt carbonate. Calves fed the organic source of minerals (Availa-4®) had a 0,11 kg improvement in ADG ($P = 0,04$). Morbidity improved and second treatments tended to be less for calves on the organic mineral treatment ($P = 0,09$). Availa-4® is recommended for the first 21 to 28 days of the feeding period at 7 g per head per day.

Importance of chromium in stressed calves

Researchers have identified

chromium as a critical mineral during the receiving period to alleviate the effects of stress in calves. When calves are stressed, cortisol levels rise, causing a reduction in blood clearance of glucose and uptake in peripheral tissue as it is spared for tissues of higher demand (fight or flight response) and thus an energy shortage arises. Cortisol is also immune suppressive and reduces protein synthesis and hence growth. It is thus highly recommended that calves receive 3 mg of chromium/head per day (**MiCroplex Cr-L-Methionine®**) during the receiving/starter period in addition to the Availa-4®. The focus in this period is therefore on negating the effect of stress and boosting the immune function. This is done by supplementing organic zinc, manganese, copper and cobalt (via Availa-4®) and supplemental chromium (MiCroplex Cr-L-Methionine®) to improve the energy status of the calf.



Zinc is King during finishing

During the grower/finisher feeding phase the focus is on growth performance and return on investment. It is recommended that zinc is supplemented during the entire growth period at 360 mg per head per day (3,6 g Availa-Zn® per head per day). In a meta-analysis of 22 feedlot studies during which zinc was supplemented an improvement of 3,26 % in ADG and 4,05 % in FCR was reported. Both the improvements in ADG and FCR are attributed to the source and not the level of the zinc.

The success of a feeding programme supplementing Availa-4® during the starter period at 7g/h/d and Availa-Zn® during the finishing phase at 360 mg Zn/h/d as opposed to a control group receiving iso-levels of minerals from inorganic sources only, was proven in a study

at a large commercial feed yard in the US where more than 1200 steers were finished in 154 days. An improvement in ADG was reported ($P < 0,05$), mortalities decreased ($P < 0,10$) and DMI increased ($P < 0,05$). In studies by Chirase et al., 1994 and Chirase & Greene, 2001 calves subjected to IBRV infections recuperated quicker and had higher feed intakes when receiving organic minerals as opposed to calves only supplemented with inorganic sources.

Enhanced performance when supplementing Zinc with beta-agonist

Most feedlot producers use beta-agonists in the last phase of finishing, enhancing lean meat production and maximising on kilogram meat produced per animal.

In a trial performed at the well-known Cactus Feed yard in Texas supplementation of Availa-Zn® in addition to a

Beta-agonist (Ractopamine Hydrochloride, Optaflex®, Elanco, Greenfield, Ind) was evaluated. Animals that received RAC and Availa-Zn® had a 1,5% improvement in ADG, 4 to 4,5 kg higher slaughter weight ($P < 0,1$) and 3,18 kg higher carcass weight compared to animals receiving only RAC.

Supplementation of organic minerals via Availa-4® in the starter ration together with MiCroplex Cr® and Availa-Zn® during the grower/finisher and final finisher rations has been proven to improve growth, immune response and thus profitability for the feedlot producer.

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