

PRELIMINARY PROPOSAL FOR WATER USAGE ON NYAMA YETHU FARMS IN THE PRIESKA REGION-USING WATER GRANTED FOR ABSTRACTION FROM THE GOVERNMENT ORANGE RIVER WATER SCHEME

This is a proposal for Nyama Yethu to use the water abstracted from the Orange River Water Scheme to enable a successful feed and pasture production system for a cattle and lamb farming operation to take place. Currently the farm has a small-scale Free Range Cattle and Lamb farming operation and the additional water will allow for the expansion of this operation. The main driver for the sustainability of NY hinges on the irrigation of maize, triticum feed cultivars and lucerne for the backgrounding (grazing on planted feed pastures) and additional feeding of the animals on the veld specifically during drought conditions. South African supply of free range animals for the local and international market has run into a shortage. Our national regular supply from various regions became under pressure due to the severe drought conditions in our supply regions including Namaqualand, Northern Cape, Central, Southern and Little Karoo as well as Eastern Cape Midlands. The availability of adequate water for irrigation from the Orange River Water Scheme is all-important for our financial survival and to produce sufficient numbers of animals for the market within the strict requirements of retail free range farming protocol. An intensive analysis of various production systems and consumer behaviour research has indicated that the best form of cattle and lamb operation should be intensive-extensive farming. This system suits with the dryer South African conditions with additional feed and pasture production as and when needed. The system further provide a higher profitability based on Free Range supply to a fast growing and environmental aware and concerned consumer market. This market is prepared to pay a premium for products originating from sustainable farming practices and environmentally friendly systems. The following criteria were assessed:

1. Animal Welfare;
2. Environmental Impact and Health Benefits of the Meat Produced ;
3. Investment;
4. Markets for Free Range Meat and Customer Awareness About Food;

It should be noted that the above criteria are often interlinked and should not be viewed in isolation.

ANIMAL WELFARE

Whatever livestock farming system is used, animal welfare plays a very important part in the successful management of the operation. If the livestock is not kept in a healthy condition throughout their lives, the end product, in terms of both quality and value, is greatly reduced. It would be true to say that a well-managed feedlot could be better in terms of welfare than a poorly managed free range operation. However, a well-managed free range operation will always provide a higher welfare environment for animals than a well-managed feedlot. This is because a feedlot could never achieve the same levels of meeting the 'FIVE FREEDOMS' as a free range operation could.

The Five Freedoms are:

1. Freedom from Hunger and Thirst.
2. Freedom from Discomfort.
3. Freedom from Pain, Injury or Disease.
4. Freedom to express Normal Behaviour.
5. Freedom from Fear and Distress.

A well-managed feedlot will be able to ensure compliance with the 1st freedom as it is very easy to manage and control the food and water supply to the cattle at all times. This is because they are in small enclosed pens with food available 24 hours a day. It can be argued that a feedlot can manage four of the five freedoms, but it would be unable to comply fully with the 4th freedom - the ability of the animals to express their normal behaviour.

Cattle and sheep are ruminants that graze on grasses and other available vegetation on a constant basis during the day. To do this they require a range of available grazing land to allow them to move from area to area as they graze back the grasses. If they are unable to have this natural behaviour, that in itself will cause the cattle/lamb to suffer discomfort

(the 2nd Freedom) such as when they are confined to a landless, grassless feedlot system.

In a feedlot the animals are kept in confined areas without any grass under foot, and the pens often become very muddy in wet weather and exceptionally dusty in dry weather. This causes both feet and respiratory problems, which must be actively managed with the routine use of strong drugs such as antibiotics, antihistamines and other drugs. Without this drug use the animals will undoubtedly suffer from Pain, Injury and Disease, (3rd Freedom). In a feedlot system the high stocking density means that medication must be given in a prophylactic manner to prevent diseases occurring in the first place. A feedlot cannot take the risk of illness as this would spread rapidly to the entire farm. To achieve the same level of health and vitality does not require this intensive use of medication in a free range system.

The 5 Freedoms are not automatically guaranteed in a free range system and still require careful monitoring and management. Water rights will enable our operation to grow sufficient natural feed and fodder for an increased number of cattle and lamb. This will enable our livestock to feed directly on the natural grazing land or for fodder to be transported to the different fields where the herds are. Water supply will allow different feed crops to be grown seasonally and the nutritional requirements of the livestock to be met, (1st Freedom). The eventual intended feed crops will be a mixture of Maize and Lucerne. However, with the allocation of water, Nyama Yethu will establish grazing pastures that will work suitably and sustainable for winter-time and summer-time feeding for our livestock. These pastures as well as rotational crop production of Triticum Cultivars (barley and oats) and Maize (150ha) as well as Lucern (150ha) are central to long-term sustainable feeding for the livestock, but can only realistically be grown when there is a larger allocation of water (300ha) to Nyama Yethu.

The management of the 3rd Freedom will always be necessary, however in a free range system the prophylactic use of medication is not required. The animals only need to be treated when they start to show signs of injury or disease. Furthermore, it will also only

be a particular family group, in a particular field or camp, that must be treated. This is unlike in a feedlot where all animals must be treated even if only one animal is showing signs of disease.

Animal welfare is a key value for Nyama Yethu and is what we stand for. We believe it sets us apart from the rest of the market. The diverse cultural and experiential backgrounds of our shareholders contribute significantly to the richness of our company values and our ability to differentiate ourselves from other players in the market.

ENVIRONMENTAL IMPACT AND HEALTH BENEFITS OF THE MEAT PRODUCED

There have been many studies carried out on the impact of different beef farming systems on the environment and, even though many of these are passed off as being Life Cycle Analysis, none have included all aspects of the operation that could either positively or negatively affect our environment. Currently, a notable environmental focus is the carbon footprint of beef / lamb (and dairy) production. This is because cattle and sheep produce large quantities of methane gas (CH₄) which is known to be a more potent greenhouse gas than carbon dioxide (CO₂).

Some studies show that feedlot animals produce less methane gas than free-range ones per kilogram (kg) of meat produced. However, these have been shown to have excluded the carbon footprint of critical aspects of the entire chain such as medication use, production and transport, removal of manure from site, protection of the water table and water sources on or near the farm's production and the use of fertilizers. It is clear what benefits a free range system has over a feedlot on the environment, as detailed below.

As stated earlier, all cattle and sheep produce methane during the conversion of feed in their rumen to energy. However, in a free-range system, some of this carbon, in the form of methane, is sequestered into the pastures upon which the animals are grazing. The water and air quality on the farm remains high because free-range farming is less

intensive. There is production of animal waste (urine and faecal matter or cow dung) which causes no problems. In fact, the land benefits from the cattle and sheep being present and walking / turning over the dung into the soil, which acts as fertilizer and returns nutrients back into the soil (carbon cycle).

Feedlot farming produces larger quantities of manure than can be absorbed by the feedlot's soil. This animal waste must be taken to a licensed composting facility, and such transportation can contribute to air pollution.

Such a facility in itself requires a very specific set of management skills and knowledge so that it does not compromise the environment in the locality.

Free range grazing, on the other hand, helps to stabilize soils and to control undesirable weeds and invasive plants as the movement of cattle over the land, whilst grazing, helps to stimulate the growth of the grass ahead of bush encroachment. This also helps with the reduction of wildfires.

INVESTMENT

The investment required to run a successful feedlot is considerably more than that of a free range farm. The current farm in **Prieska** has the infrastructure for free range beef and lamb farming. The only restriction on the number of animals is based on the availability of grazing land. Water rights will allow the operation to grow additional grazing space and provide water to cover the targeted number of livestock. These numbers will be finalised once the figures of allowable water is available.

Pre-construction, a feedlot requires a full site-plan and layout to be drawn up as well as ground surveys, soil samples, drainage channels, etc. This will then need to go through a full Environmental Impact Assessment. Concrete pens will need to be built in a specialized design in order to prevent injury to the cattle, ensure ease of movement, ease of treating sick and injured animals, while providing feed for 24 hours a day. Also required

are weighing stations, feed mills and mixing equipment, secure medicine, feed additive storage (Zilpaterol, the main growth promoter used in a feedlot costs as much as R40,000 per kg), shade for the cattle, and casualty pens. Such a feedlot system and additional expenses can be estimated to cost double the nominal value for the same number of cattle as we plan to keep on our free-range farm. In comparison, the investment required for the free-range farm to get the field irrigation ready is estimated at half the price and will also cover additional feed storage and transportation which may be required. Complex feed mixing equipment will not be required as the farm will not be needing to mix growth stimulants such as Zilpaterol into every batch of feed.

MARKETS FOR FREE RANGE MEAT AND CUSTOMER AWARENESS ABOUT FOOD

The feedlot industry is a highly competitive market which is dominated by approximately 5 major feedlots holding over 100 000 to 150 000 cattle, along with about 20 to 30 smaller feedlots which hold 5 000 to 50 000. In order to compete in this market, a feedlot must be able to provide a product that is different from the other role players. This can only be achieved on price. An A2 animal from one feedlot eats more or less the same quantity as an A2 animal from another feedlot. It also trades for the same price in the market. It would not be possible to compete on price with feedlots, which have efficient and mature systems designed to maximize the return per kg of beef or lamb produced per kg of feed intake. It is essentially a economies of scale based model where input/head and output/head determines yield and eventually profit.

There will always be a demand for feedlot beef, but any new feedlot operator would be trying to get their product into an already mature and stable market, with no or little ability of product differentiation. This is similar to launching a new fizzy drink to compete with Coca Cola and hoping to beat them at their own game that they have perfected with end-to-end efficiencies over the years! Your chances of becoming a dominant player against them in a free market are very limited.

Entering the industry can only be done by differentiating one from the feedlot industry. The feedlot industry's strength, which comes from size and economies of scale, is also

its main weakness. Size makes them slow to change and to keep up with the end-consumers' ever changing requirements of how they want their meat. Customer preferences have been changing over the decades. Today's customer attitudes are very different from 10 years ago. The South African consumer has been spoilt by the cheap average price of beef which comes from the feedlot industry, however they have also become more aware of other aspects of food and farming. This is due to more information becoming available through the internet and many food television programmes which expose people to global practices, the impact of antibiotics on health e.g. allergies, nutritional effects of meat, and the impact that farming has on the environment, along with the welfare of farm animals.

Consumer research shows that most regular meat eaters are unaware what a feedlot looks like, or how the cattle are farmed. However, when they become aware of how animals are kept and treated and what they are fed prior to slaughtering they become exceptionally concerned. A major study carried out by a large South African retailer shows that what customers are becoming more concerned about when choosing their food are issues of animal welfare, routine antibiotic use in animals, growth promoters & hormones and the environment in general. All of these concerns are part and practices of the feedlot industry.

Because of this, there is an ever increasing demand for free range beef and lamb, but the farming industry is not set up to respond to this demand as yet. The feedlot industry cannot adjust to these market demands quickly enough, and therefore is leaving room for the likes of Nyama Yethu to enter the market with limited competition. In addition to the above, several studies have shown that grass fed, free-range beef and lamb has a healthier nutritional profile than intensive grain-fed animals in the feedlot. The fatty acid profile of free range animals contains more of the desirable fatty acids and less of the undesirable ones, with the reverse being true of feedlot animals. Nyama Yethu will finish its livestock in the field without any interference with the animal's normal feeding patterns in order to ensure that it supplies fully free range grown animals, as opposed to the feedlot system that uses grain for finishing.

Moreover, Nyama Yethu has already secured the services of a partner abattoir that has capacity for an additional 400 free-range cattle and 2500 lamb per week at this time. Nyama Yethu has been assured of a secure market for all additional free range beef and lamb and sustainable further growth based on availability of feed and pasture . However, when taking into account available capacity in all the approved abattoirs for free range beef and lamb, Nyama Yethu will be spoiled for choice in this under-supplied market of free range meat which is growing in leaps and bounds annually. Nyama Yethu will also access export markets right away, as its partner abattoir already possesses the Department of Agriculture, Forestry and Fisheries (DAFF) certification for sourcing from free range farms that do not use growth promoters / hormones or routinely use antibiotics. This is attractive for supplying to strict overseas customers that require traceability of free range meat to the source farm in order to ensure quality. (farm to fork traceability)

Currently, livestock is running at a shortage in SA due to ongoing droughts and demographic population growth. Consumers are further more prepared than ever to pay more for the right environmentally friendly product. Nyama Yethu seeks to become a dominant player in this market with the ability to sustainably supply free range beef and lamb and contribute significantly to South Africa's food security solution for healthy protein supply. Nyama Yethu will have a well-established market for its free-range beef and lamb as soon as it starts operating. Currently no supplier can guarantee sustainable free range cattle and lamb production, therefore with guaranteed water availability for feed pasturing production for livestock, Nyama Yethu will be in a position to guarantee the continuous supply of A grade, AB grade and B grade free range beef and lamb to its local and export markets.