KHSA
Knowledge Hub for Organic Agriculture and Agroecology in Southern Africa

Namibian Organic Association

ORGANIC LIVESTOCK FACTSHEET SERIES

KCOA
Knowledge Centre for Organic Agriculture and Agroecology in Africa

german cooperation
DEUTSCHE ZUSAMMENARBEIT

Implemented by:
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About the Namibian Organic Association (NOA)
NOA is a membership-based association established in 2009 by a group of dynamic farmers and consumers with the common interest of developing the organic sector in Namibia.

About the Knowledge Hub for Organic Agriculture in Southern Africa (KHSA)
KHSA is part of the project Knowledge Centre for Organic Agriculture in Africa (KCOA), a collaborative country-led partnership funded by the German Federal Ministry of Economic Cooperation and Development (BMZ) and implemented by the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) and non-governmental organisations. The project aims to scale up adoption of organic farming practices through five knowledge hubs in Africa. In the Southern African Knowledge Hub (KHSA), project activities are focused in Zambia, in Namibia (led by the Namibia Nature Foundation and NOA), and in South Africa and Malawi.
For more information contact the KHSA Project Manager for Namibia: **noa@nnf.org.na.**

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ORGANIC LIVESTOCK FACTSHEET SERIES

Livestock farming in Namibia comprises approximately two thirds of the country's total agricultural production, and so is an important part of the country's economy. Namibian livestockhas a reputation for exceptional quality on international markets, especially because of the prohibition of growth hormones, strictly regulated use of antibiotics and mostly free-range production in the country.

Given that Namibia's livestock production is already aligned to organic standards, there is significant opportunity for farmers to convert to full organic meat production to realise the potential of both local and international organic markets. Furthermore, livestock farmers have the potential to positively impact the state of the country's rangelands by converting to more ecologically sound management practices.

The conversion to organic production involves adhering to specific organic standards along the entire value chain, from production to slaughtering and processing, and to accessing the market.

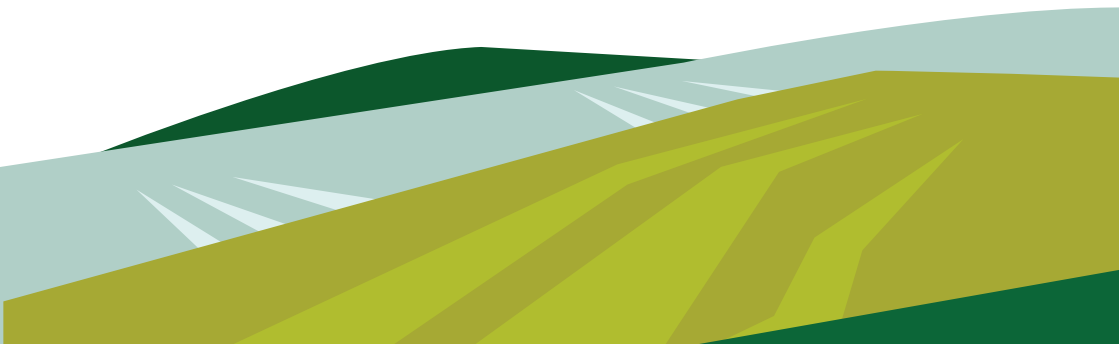
Organic agriculture is a production system that 'sustains the health of soils, ecosystems and people'. It uses ecological processes and environmentally friendly practices and products to benefit the 'shared environment'. (IFOAM)

This series of factsheets serves to inform interested farmers, consumers and other stakeholders on the various aspects of organic livestock production with a focus on the following topics:

1. Organic Livestock Production
2. Benefits of Organic (Grass-Fed) Livestock
3. Organic Slaughter and Processing
4. Market Opportunities for Organic Meat
5. Alternative Feed & Supplements for Organic Livestock
6. Organic Crop Production for Animal Feed

Marketing of organic agricultural products in Namibia adheres to the standards defined by the International Federation of Organic Agriculture Movements (IFOAM). For export (e.g. to the European Union or United States), certification by an accredited third-party certifier is required. Producers need to comply with the respective organic standards, which are part of official legislation. Both livestock and rangelands must be certified.

For more information on organic livestock production and certification, please contact the Namibian Organic Association (NOA): info@noa.org.na or noa@nnf.org.na.



FACTSHEET NO 1:

ORGANIC MEAT PRODUCTION IN NAMIBIA

The Namibian advantage

Namibian beef has an excellent reputation in international markets with export status. Compared to major beef suppliers, for example Argentina or Brazil, Namibia's beef industry needs to exploit niche markets such as organic. Namibian grass-fed livestock production already complies with organic standards in many aspects; often just minor changes are needed to align existing production with organic principles and standards.

Organic livestock production

Organic agriculture is a production system that "sustains the health of soils, ecosystems and people". It uses ecological processes and environmentally friendly practices and products to benefit the "shared environment". Organic livestock production is based on the principles of respect for the physical and behavioural needs of animals, the provision of superior quality and organically grown feed, and the desire for a harmonious relationships between land, plants and livestock.

- **Animal welfare:** Organic livestock production upholds the 'five freedoms' of animal welfare: freedom from hunger and thirst; freedom from discomfort; freedom from pain, injury or disease; freedom to express normal behaviour; and freedom from fear and distress. Organic management aims to sustainably produce high-quality animal products and meat. Organic animals are born to organically managed mothers. Predator conflict requires a targeted approach and prohibits the use of poison.

- **Sustainable grazing practices:** Rotational grazing practices build vigorous quantities of veld of high nutritious quality, preventing soil erosion. Should natural grazing be encroached by bush or weeds, these cannot be eliminated by using chemicals.

- **Focus on the principles of health and care:** Animals are allowed to live out their natural instincts according to species' specific needs. The humane treatment of livestock does not allow painful mutilations. Animals must be provided with a natural organic diet, except in extreme circumstances where an exception can be granted.
  - Licks and Feeds: Licks may not contain Urea (NPN). Phosphate licks have to comply with the standards. Some commercially available phosphate licks in Namibia may be used in organic production.[1] Organic feeds may never contain genetically modified organisms (GMOs). Details for allowed substances can be found in the respective standards' annexes.
  - Castration and dehorning: The Namibian standards allow for castration and dehorning without anaesthetics until six weeks of age, but the European Union standard does not allow for such mutilations unless an exception is granted by the certifier. This must then be performed with anaesthesia and/or analgesia where appropriate.

- **Prevention rather than cure.** Livestock must be robust and adapted to thrive in their environment, without preventative veterinary interventions. Parasites are prevented by breaking their lifecycles. Treatment of a sick animal is required to prevent suffering, but the withdrawal period before use of animal products is doubled. Vaccines are allowed according to national legislation. Repeated use of antibiotics makes an affected animal lose organic status.

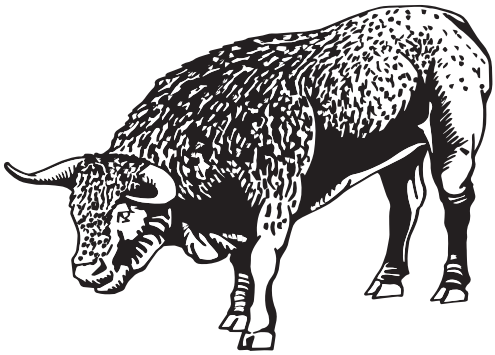
Certification of organic production

There are two primary approaches to certification. Export, for example to the Europe Union (EU) or the United States (US), requires certification by an accredited third-party certifier. Producers need to comply with the respective organic standards, which are part of official legislation.

The Namibian Organic Association (NOA) provides detailed guidelines and standards for certification of organic livestock production, which is split between land/crop (veld) and livestock production.

To market domestically, the NOA uses a Participatory Guarantee System (PGS) approach according to the International Federation of Organic Agriculture Movements (IFOAM) – Organics International guidelines. This community-based assurance mechanism is a locally focused quality assurance system built on a foundation of trust, social networks and knowledge exchange.

[1] Please contact NOA for an updated list of products available info@noa.org.na or 0816633224



Successful verification allows the use of the "Namibian Organic" mark, which gives credibility to the organic claim on the domestic market and enables access to the organic retail market in Namibia. The abattoir and/or processors must also have certification to market meat and animal products as organic.

Steps to organic certification

The first step is for the producer to identify the country or region market for the product and contact the relevant certifier-entity. The differences between the Namibian verification and certification for export to the European Union or United States are outlined in the following table:

	Namibian Standard	EU/US Standards
1	Producer becomes a NOA member (fee: 350 N$/year)	Producer fills in an application form
2	Producer can participate in PGS assessments of other producers to get an idea of the process. This is not a requirement	Producer receives an offer for the certification process according to complexity/size of operation
3	Producer completes PGS-application with required information on the operation and pays the assessment fee (contact NOA for the current fee structure)	Producer accepts offer, signs a contract with the certifier and receives a questionnaire to fill in with information on the organic operation
4	NOA conducts pre-assessment internally and possibly reverts with questions to better prepare for on-site assessment	Inspector conducts pre-evaluation of questionnaire and possibly reverts with clarifying questions
5	On-site assessment is scheduled and NOA members are invited	On-site inspection is scheduled (usually just one inspector)
6	All participants at the on-site assessment contribute ideas, experiences, questions, concerns, etc. It is a learning experience for all, including the producer	On-site inspection takes place. Inspector is not allowed to give advice; therefore, technical questions cannot be discussed
7	Follow up on outstanding issues	Follow up on outstanding issues
8	Certification decision is issued	Certification decision is issued
9	Conversion period to full organic is no less than 2 years (retrospective recognition can be granted)	Conversion period to full organic is no less than 3 years for land and 2 years (EU) or 3 years (NOP) for animals (retrospective recognition can be granted)

FACTSHEET NO 2:

BENEFITS OF ORGANIC (GRASS-FED) LIVESTOCK

Background

Today people have higher life expectancies than in previous centuries. Leading causes of death have shifted from infectious diseases to non-communicable diseases such as vascular failings (heart attacks, strokes), cancers and diabetes. While not always fatal, these diseases are far more common now and are often linked to diet and nutrition.1 The failings of our food system – which delivers calories but not necessarily nutrition – can be largely attributed to the industrial farming model. Mechanical and chemical interventions in this model drive soil degradation resulting in reduced nutrient density in the food we eat.[2] In the industrial model, animals are kept in confined spaces to reduce movement and are fed high-calorie rations to speed up weight gain. These feedlot and battery-style animal husbandry systems increase the risk of fast-spreading diseases. While these can be countered by antibiotics, this measure also poses a risk to human health.

Multi-faceted benefits of organic production

Organic agriculture contrasts to conventional farming systems by avoiding monocultures and by nurturing the soil as the basis of health for plants and animals and small stock that are raised under organic principles in the Namibian context are in most cases exclusively grass-fed. Also in more intense contexts, all organically raised livestock have access to grazing while grain feeding is restricted. The production of organic grass-fed beef for human consumption carries significant benefits for humans, animals and the environment. This meat is higher in Omega-3 fatty acids and is less likely contaminated with chemicals, such as antibiotics and growth hormones. It is therefore healthier to eat. The animal itself benefits as organic agriculture places an emphasis on animal welfare. Animals farmed using organic or regenerative practices also produce less greenhouse gases than those farmed conventionally thus contributing less to climate change. And they feed on readily available resources, reducing the cost of animal feed. Recent research has shown that regenerative farming practices may play an important role in combatting climate change by restoring ecosystem functions.[3]

Benefits to the consumer

Organic meat production offers several health benefits for the consumer, in that they enjoy:

- **Chemical/pesticide-free meat.** Under organic principles, animals are not allowed to be fed grass/supplements/grains that have been sprayed with chemicals (pesticides, herbicides). These chemicals have been proven to cause cancer and ill health in humans[4] and chemical residues have been found in meat from animals that have been exposed to these chemicals through their feed.[5]

- **Higher nutritional value.** Organic agriculture systems enhance natural processes to a point where organic foods have higher nutrient values and provide powerful cancer-fighting organic compounds such as antioxidants and vitamins. The meat from organic grass-fed livestock generally has a higher content of various A, B and E vitamins, as well as other antioxidants. Another powerful compound found in elevated levels in grass-fed beef is conjugated linoleic acid, a compound that has been proven to help prevent obesity, diabetes and breast cancer.[6] The fat on grass-fed beef, which are typically much leaner than feedlot beef, contains elevated levels of Omega-3 fatty acids, which keep our cardiovascular systems healthy and improves brain-function.

- **Antibiotic-free meat.** Antibiotics are not allowed to be used preventatively in organic animals, as is typically done in feedlot systems. The overuse of antibiotics has been linked to widespread resistance to antibiotics, which has been identified as one of the greatest threats to global human health by the World Health Organization.

If livestock feed on their natural diet of grass, the benefits of their meat to the consumer is significantly more than that from feedlot animals fed predominantly with grain. Namibia already has world-class regulations in place to address the concerns of first-world export markets by prohibiting the use of growth hormones and preventative use of antibiotics.

Benefits in terms of animal health and welfare

Organic animals are allowed to express their natural behaviour. Namibian farming occurs under extensive conditions, breeding occurs naturally, and animals are able to exhibit natural social

behaviour such as herd instinct. Organic standards address animal welfare concerns during management interventions such as mutilations (castration, de-horning), as well as in transport and slaughtering. Any stressful periods need to be minimised and properly handled to reduce the risk of unnecessary stress and pain.

Benefits to the environment

The climatic changes that we are experiencing now can be linked to higher concentrations of greenhouse gasses (such as carbon dioxide and methane) in the Earth's atmosphere than during pre-industrial times. Large-scale industrial agriculture has been blamed for its role in increasing emissions of carbon dioxide, methane and ammonia in large quantities. Organic agriculture and other regenerative farming practices, if applied correctly, play a powerful role in mitigating climate change. As the saying goes: It's not the Cow, it's the How. Farming organically managed livestock can tackle the carbon emissions dilemma because it:

- **Reduces greenhouse gas emissions**
  Organic grass-fed cattle emit less methane, a powerful greenhouse gas, than grain-fed cattle in feedlots. In addition, organic production focuses on local production and marketing, which minimises the carbon emissions typically generated in extensive distribution and marketing systems. Livestock fed exclusively on grassland/natural pastures also do not require feed to be brought in through carbon-heavy transport systems.

- **Generates a positive carbon balance**
  Regeneratively managed soils are proven to sequester more carbon than they lose into the atmosphere. They do this by binding carbon into organic compounds such as glomalin and humus, which are highly stable substances that provide valuable services when rain falls by improving infiltration and retaining water for longer periods than in soils that are low in organic matter. Carefully managed livestock can increase carbon sequestration significantly compared to land left without livestock impact. Many scientists therefore now actually see livestock as tools to mitigate climate change and not as a primary driver.[7]

- **Is chemical-free farming**
  Chemical interventions on these grasslands have negative effects on the various trophic levels. As an example, the use of Ivermectin against internal parasites is fatal to dung beetles. Dung beetles provide a critical service to the ecosystem by taking nutritious organic matter underground and thus improving soil life and carbon sequestration long-term.

- **Manages grazing to control bush encroachment**
  Large parts of Namibia's rangelands suffer from bush encroachment. Improper grazing management and disturbed ecological cycles caused by predator eradication and prevention of veld-fires are contributing factors to this economic challenge. The use of arboricides to combat bush encroachment is not allowed in organic production. Long-term effects of this on ecosystems as well as human health are poorly studied but have already shown to be detrimental in many contexts. Bush can be reduced using mechanical means and livestock, when proper grazing rotations are used, play a key role in keeping grasslands open and healthy, with increased species composition and higher biomass per hectare. Carbon stored in healthy grasslands is generally significantly higher than that in areas encroached by bush.

Livestock raised naturally on organic grassland provide a superior, nutrient dense and healthy food through their meat. It is a win-win situation for the animal, farmer and the planet.

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FACTSHEET NO 3:

ORGANIC SLAUGHTER AND PROCESSING

Slaughtering and processing of organic beef carcasses

The slaughter and processing of organic animals is an essential step to supplying consumers with nutritious organic meat of the highest quality, while ensuring the integrity of the entire organic value chain. In order for the meat of an organic animal to be sold on the market under the 'organic' label, each step of the process (on farm production, slaughter and processing), needs to be certified by a third-party assessor.

Requirements for organic slaughter and processing

There are certain requirements regarding slaughtering and processing of organic meat to maintain its organic status. These are the below points.

- **Certification of slaughter and processing facilities**
  Meat products can only be labelled 'organic' if the slaughter and processing facility has undergone organic certification by an accredited third-party certifying body to assure compliance with all applicable regulations and organic standards. The label must list the responsible entity that processed the organic product as well as the certifying entity.

- **Separation/segregation of carcasses and meat products**
  The slaughtering facility must ensure that organic animals, the resulting carcasses and organic products are clearly separated from non-organic products. Products must be identified as organic throughout all processing stages to ensure that co-mingling or substitution with non-organic products is prevented. Slaughtering of organic livestock carcasses should be done on specific days and at specified times before which all slaughtering equipment is cleaned to ensure no contamination/mixing occurs with non-organic products and carcasses.

- **Traceability**
  The slaughter facility must establish and maintain a traceability system for all manufacturing steps. Traceability must be possible in both directions of the value chain, from farm to the consumer and backwards from the retail package to the original organic animal.

- **Recordkeeping**
  Records/documentation must also be kept on the cleaning of equipment prior to the slaughter and processing of organic carcasses.

- **Allowed substances/additives during processing of organic meat**
  In a broad sense organic processing is defined as changing a raw product by biological, physical or mechanical means. If the raw product is changed through a chemical reaction, only additives and processing aids that are listed in the annex of the relevant set of standards may be used for products labelled 'organic'. If meat is processed into value-added products, all ingredients and raw products must be organic. Any additives and processing aids used during the processing of meat must be listed in the annex of the respective organic standards for allowed substances. At no time may organic products use genetically engineered or nanomaterials. For organic certification of any processed products, the processor must share the used recipes and quantities of ingredients with the certifying entity. In principle, salt (sodium chloride) and water do not count as non-organic ingredients. Irradiation is not permitted for an ingredient or a final product. Isolated ingredients such as vitamins, trace elements and minerals, or others, are not allowed, unless required by law or to prevent a nutritional deficiency. In such cases it is best to inform the certifying entity to get the required clearance. Some processing may require the use of enzymes or micro-organisms. Such cultures must comply with organic standards and may not involve genetic engineering during any stage of multiplication or preparation.

- **Packaging and storage of organic meat products**
  The handler and processor aim to maintain a high nutrient value through proper packaging and storage. For that purpose, processing may use permitted measures to regulate humidity, control temperature and atmosphere. Organic products may not be packaged in genetically engineered or nanomaterials.

[1]United States National Organic Program: eCFR (electronic Code of Federal Regulations) §205.600 to §205.607; European Union Organic Regulations: Regulation (EU) 2018/848 of 30 May 2018 and pending changes dated 1 Jan 2022. Annex – Ares (2021) 2131426.

- **Prevention of contamination by prohibited substances**
  During processing, handlers and processors prevent contamination by harmful chemicals, such as pollutants and prohibited cleaning chemicals. Only allowable substances as listed in the respective organic standard annexes[1] may be used. Proper sanitation measures must be in place, without the use of prohibited substances, to ensure that organic products are free from pests, diseases and pathogens.

Animal welfare considerations

Generally, animals should be subjected to the least amount of stress during transport to and while in a holding pen at the slaughter facility. The slaughter facility carries a responsibility for animal welfare from the time animals are offloaded until they are slaughtered. Preventing stress and pain to the animal will result in meat of superior quality with improved shelf-life and it will address the ethical concerns of consumers. Namibia adheres to the standards set in this regard by the International Federation of Organic Agricultural Movements (IFOAM)-Organics International, which includes that:

- Animals are to be handled gently and calmly during transport and slaughter.
- They must be kept separate from non-organic/ conventional animals during transport, offloading and in the holding pen at the slaughter facility.
- Animals should be given water and feed during transport depending on weather and other conditions.
- Journeys to a slaughterhouse may not exceed eight hours.
- Injurious devices such as electric prods, tranquilizers and stimulants are prohibited.

NamLits – Traceability in the Namibian context

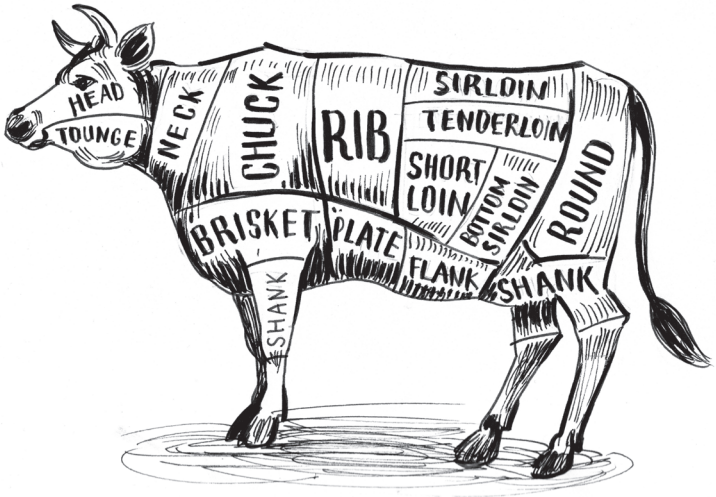
Namibia has a well-established traceability system for all livestock suitable for export under FanMeat regulations, the NamLits system. This system is suited to trace organic meat from farm to fork (producer to end-consumer) as organic cuts in retail packaging can be traced back to the producer provided the processors and logistics providers maintain traceability throughout the product's journey.

Organic certification

The term 'organic' carries an inherent claim to value and quality. Hence, certification is a critical mechanism to ensure that the integrity of an organic product is protected and never compromised. Organic produce in Europe and the United States must be certified by an accredited third-party entity before they may be sold with an organic claim on a label. This certification is required for every step of the value chain. Organic allowable inputs, the organic producer, processor and the logistic handlers must comply with the regulations for the respective markets. This procedure applies also to Namibia.

STEPS TO CERTIFICATION OF A SLAUGHTERING AND/OR PROCESSING FACILITY IN NAMIBIA

1. Become a member of NOA
2. Get familiar with Namibian organic certification procedures
3. Submit an application form to NOA
4. Assessment and inspection by NOA as the certifying body
5. Annual assessments undertaken to ensure ongoing certification



FACTSHEET NO 4:

MARKET OPPORTUNITIES FOR ORGANIC BEEF

Organic agriculture addresses both health and ethical concerns. Key consumer drivers for purchasing organic produce and meat are its known health benefits and growing ecological consciousness.[1] Producers are benefitting from the growing demand for organically produced food.

Market dynamics for organic producers

Conventional agriculture products are traded as commodities as they are produced and handled at scale, with limited traceability from farm to fork. Consumers mostly have no relation to the farms where their food was grown or raised. For producers, conventional commodities are subject to volatile market mechanisms that are beyond the control of farmers. Organic produce is traded within a different dynamic. Consumer expectations inform production and trading relations, which in turn are built on integrity and clear traceability.

While conventional commodities are subject to volatile market mechanisms beyond farmer control, organic value chains and associated prices tend to be more stable,[2] a direct benefit of healthy relations of all links in this chain. From the onset of recognised organic production, organic farmers have taken greater control over marketing their products and thus accessing a larger part of the value chain. Organic produce also tends to enjoy price premiums in retail markets, as well as preferential placement.

Internationally and increasingly locally traded organic products are certified to protect both consumers and farmers against false claims. Organic certification by an independent and accredited entity is now a critical part of the organic value chain to provide quality assurance, although this can be an expensive process.

International markets for organic beef

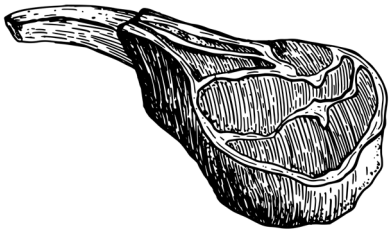
The global organic meat market is expected to grow with a compound annual growth rate of 7% of the next three to five years,[3] mostly in the United States and European Union. Organic beef receives a 15-20% price premium depending on the cut in Europe as legislation for industrial feedlots becomes stricter and in the United States, the premium ranges from 40% to more than 80%.[4]

Namibia has long-standing export markets for its free-range beef to Europe, particularly Norway. Less than 2% of retail food sales in Norway are organic compared to the German average of close to 6%.[5]

Potential export market growth

There is a growing demand for organic Namibian meat from urban consumers in neighbouring South Africa, which, while a net beef exporter, has a bad market reputation due to the embracing of genetically modified organisms and extensive feed-lot practices. This is currently a limited market though due to limited purchasing power of the majority of the population.

On international markets, Namibian beef – while a s mall player – has a good reputation as a superior niche product. The value chain to international markets is mature and established.



[1]Burrows, D. (June 9, 2022). How organic food can navigate the cost-of-living crisis. https://www.just-food.com/features/how-organic-food-can-navigate-the-cost-of-living-crisis/#:~:text=Price%2Dwise%2C%20organic%20prices%20have,and%20organic%20is%20therefore%20shrinking.
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The local market for organic meat

Namibian consumers have few options to purchase organic meat as very few farmers have gone through the compulsory conversion period and had their production certified as organic. There is, however, a market for organic produce, particularly in the larger metropolitans. The price premium in Namibia ranges from 5% to 20% for certified organic beef, depending on the cut.

Potential local market growth

Meat is considered a staple in the country, with considerable potential growth for the organic livestock sector as consumer ecological consciousness and their understanding of the health benefits of organic produce grows.

Namibian livestock production is to a large extent already 'natural', but many farmers are hesitant about waiving bagged feed and urea during the dry season. Farmers that have done so report slightly lower average daily weight gain for their cattle, but are able to main critical performance indicators of good fertility and production per hectare. This is under conditions of good grazing management practices and farming with adapted breeds.

Retail markets for organic meat include the Windhoek Green Market, the Organic Box (online store), FarmGanic in Swakopmund and SuperSpar (countrywide).

There is thus room to grow the local market and benefit from exports of organic meat to international markets.

FACTSHEET NO 5:

ALTERNATIVE FEED & SUPPLEMENTS FOR ORGANIC LIVESTOCK

Background

Namibian livestock production on open veld is already aligned to organic principles and standards in many aspects. There is significant opportunity for farmers to convert to full organic livestock production to realise the potential of both local and international organic markets. Livestock fed exclusively on natural pastures have an advantage because they do not require feed that is potentially contaminated by harmful synthetic chemicals (such as pesticides) or contains genetically modified organisms (GMOs) and has been imported through fossil-fuel-heavy transport systems. Implementing sound rangeland management strategies is therefore the foundation for successful organic livestock production. Livestock must be robust and adapted to thrive in their environment, needing little inputs. However, during the dry season, the biggest challenge to the sector is the sustained availability of affordable good quality local animal fodder, even more so during a drought. Animal fodder ranked as the eighth largest import good in Namibia, with imports valuing close to N$ 4 billion.[1]

Alternative sources of feed

Bushfeed

Bush-based animal feed is a solution for many farmers to overcome drought periods. As large parts of Namibia's rangelands suffer from bush encroachment, bush feed is a viable option to keep grasslands open and healthy, with improved species composition and higher biomass production per hectare. Exceptional growth rates of up to 7 kilograms (kgs) a week in cattle and 1.5kg a week in sheep were obtained by farmers who fed animals with bush-based rations.[2] Bush feed as an alternative source of feed is suitable for application throughout the year, even during years with good rainfall. Farmers planning bush feed production should consider factors such as abundance of desirable bush species, ease of handling (thorns), palatability of the bush material, availability of equipment and considerable logistics to harvest, process and store bush feed.[3] Ruminants generally do not browse on bushes (with the exception of goats and some indigenous breeds), except during the early growing season. Farmers using bush feed consequently enrich processed bush: molasses is the most used supplement,[4] followed by lucerne, maize, Vachellia erioloba (camelthorn) and Prosopis pods, bran, brewers spent, cotton seed and other types of oil cake, as well as dried and milled prickly pear cladodes.

To comply with organic rules, none of these supplements may be contaminated by or contain GMOs (the majority of maize, cotton and soya from South Africa is GMO). Animals are not allowed to be fed supplements that were sprayed with chemicals (pesticides, herbicides). Bush feed additives must come from certified organic sources to maintain full organic status. The use of tannin-binding agents (such as poly-ethylene glycols) does not comply with organic standards. Tannin poisoning from bushfeed can be detrimental to animal health, so some farmers make use of biochar (see section below) or aloe to counter the negative effects of tannins on the animal's digestive tract. With minor changes to current bush feed production systems, it is possible to meet the requirements for full organic status.

Forage legumes

Namibian rangelands provide for all the ruminant nutrition requirements throughout the rainy season but the protein content of grass declines in the dry season. The Namibian Comprehensive Conservation Agriculture Programme promotes dryland grain production with the rotation of leguminous crops. Forage legumes like cowpeas, groundnuts and lablab, and crop residues from grains like maize, mahangu and sorghum become available. They can be critical supplements in the dry season to ensure animal productivity. Research results, documented in the Namibian Rangeland Management Policy,[5] have shown that the average daily weight gain of cattle fed on rations based on lablab, cowpea, mucuna and groundnut stover were significantly higher than that of commercially-fed or grass-fed cattle. If certified organic, these bought-in supplements can make up a substantial part of the ration.

Additional forage plants

Licks may not contain Urea (Non Protein Nitrogen [NPN]) or other chemically altered substances in organic livestock production. Namibian certified organic livestock farmers have successfully used seed pods of various trees, such as camelthorn (Acacia/Vachellia erioloba), Prosopis species and

Ana Boom (Acacia/Faidherbia albida), to increase protein content of licks. Prickly pear (Opuntia ficus-indica) is another valuable source of forage, cultivated widely in Namibia, containing carbohydrates, vitamin A, calcium and other nutrients. Lastly, saltbush (Atriplex nummularia) has been widely used as a good source of protein, salt and minerals by livestock producers. These forage plants, used as alternative sources of feed, can greatly enhance farmers' efforts to meet organic standard requirements, if grown organically on certified land.

Biochar offered as a free-choice supplement

Biochar has the potential to play a complementary role in combination with bush-based animal fodder. It can adsorb tannins in the digestive tract and thus help the animals to digest the feed more effectively. Adsorption, as opposed to absorption, means that toxins, such as tannins, attach to the surface of the biochar and are thereby not available for uptake or absorption by the animal's digestive tract. While tannins have some beneficial properties, an oversupply of tannins negatively impacts the animals' ability to digest feed efficiently. According to the Bush Control and Bush Utilisation report, the benefits of adding biochar to the animal's diet have positive effects on toxin adsorption, digestion, blood values, feed efficiency, meat quality, and reduction in greenhouse gas emissions.[6] Ideally, biochar is offered as a free-choice supplement, leaving it up to the animals to decide when and how much to consume. Feed biochar from Namibian encroacher bush should only be produced from natural, untreated trunk wood. For certified organic operations biochar must be produced or bought from certified organic sources.

Organic production standards in Namibia and internationally

In Namibia, organic production and processing for the local market adheres to the standards of the International Federation of Organic Agriculture Movements (IFOAM) – Organics International, an internationally recognised organisation that represents organic farmers, consumers and stakeholders across the world. The Namibian Organic Association (NOA) uses IFOAM's Participatory Guarantee System (PGS) to give consumers credibility to the organic claim on the domestic market.[7] Namibia also has long-standing export markets for its free-range beef to Europe, particularly Norway, with potential and interest of buyers for certified organic beef. For the export market, organic production and processing must be certified by a third-party certification body (e.g., EcoCert, CERES) that adheres to the organic standards for the target market (e.g., the National Organic Program (NOP) in United States or European Union regulations).

Organic animals must receive their nutritional needs from organic forage and feed of good quality. At least 50% of feed must come from the farm on which livestock are being produced, or from another certified farm in the region (IFOAM Norms 5.5.3). The United States' NOP states that the producer of an organic livestock operation must provide livestock with a total feed ration composed of agricultural products, including pasture and forage, that are organically produced and handled by operations that are certified.[8] Under Namibian organic requirements, farmers may feed a limited percentage of non-organic, non-GMO feed under specific conditions (10% dry matter for ruminants and 15% for non-ruminants (IFOAM Norms 5.5.1).

Organic feeds may not contain synthetic urea (NPN) or GMOs in any form. Livestock may not be fed animal by-products such as meat and bone meal or any excrements such as chicken manure, which is also prohibited under the Namibian Livestock Identification and Traceability System[9]. Veterinary products such as antibiotics, growth regulators and heat synchronisation hormones may not be given to animals through their feed. Some commercially available phosphate licks in Namibia may be used in organic production such as de-fluorinated rock phosphate. It must not have undergone chemical treatment to make it more soluble. Animals may be fed vitamins, trace elements and supplements from natural sources. Non-organic feed materials of plant or animal origin may be used if they are produced or prepared without chemical solvents. Since there may be factors beyond a producer's control like veld fires or drought, exceptions from the set standards can be granted (e.g., feeding non-certified feed to organically certified cattle in quantities above the limits set by the standards for a certain period) to ensure animal welfare. Certified livestock farmers should always communicate with their certifier if they are unable to source certified organic feed and wish to use non-organic feed.

[1] Bush Control and Biomass Utilisation (BCBU), 2020. Biochar from Namibian Encroacher Bush. Practical Guidelines for Producers. Ministry of Environment, Forestry and Tourism (MEFT)/GIZ.
[2] De-bushing Advisory Services, 2017. Factsheet: Bush-based Animal Feed Survey Findings.
[3] Bush Control and Biomass Utilisation (BCBU), Policy Brief March, 2021. Namibia's economic opportunities: Biomass value addition - charcoal, animal feed and other uses. Ministry of Environment, Forestry and Tourism (MEFT)/GIZ.
[4] Ministry of Agriculture, Water and Forestry/GIZ, 2017. Animal Feed from Namibian Encroacher Bush. MAWF/GIZ Support to De-Bushing Project.
[5] National Rangeland Management Policy (NRMP), 2019. Reviving Namibia's Livestock Industry. Regenerative Livestock Production. Trend, Key Profit Drivers, Case Studies and Recommendations. NRMP Best Practice Strategy Document (Revised edition from 2012 NRMPS).
[6] Schmidt. H.P. et al. 2018. The use of biochar in animal feeding. PeerJ 7(15).
[7] Namibian Organic Association, 2012. Namibian Organic Production Manual for Livestock, Horticulture and Crops.
[8] National Organic Program (NOP), 2023. Organic Production and Handling Requirements. Livestock feed. 7 CFR Part 205 Subpart C (up to date as of 3/13/2023)
[9] Namibian Livestock Identification and Traceability System (NamLits)is a largely automated online platform to ensure livestock producers in the commercial farming area of Namibia (south of the veterinary cordon fence) comply with all regulations pertaining to livestock farming, with a particular emphasis on compliance to export regulations. Namlits is operated by the Meat Board of Namibia and managed by the Department of Veterinary Services.

FACTSHEET NO 6:

ORGANIC CROP PRODUCTION FOR ANIMAL FEED

Introduction

Certification of organic products requires the entire value-chain in which they are produced to be assessed and certified. For a product to be sold under a certified organic label, both the producer and processor need to ensure that production complies with organic standards, and that there is no risk of contamination through harmful chemicals or genetically modified organisms (GMOs). Organic agriculture practices and standards are based on and guided by the four principles of organic agriculture: Health, Ecology, Fairness and Care.

Why organic feed for organic animals?

For organically managed livestock to be certified, a farmer must show that animals were only fed certified organic feed, be it grass or supplementary feeding, and not anything from conventional sources (e.g., derived from GMOs or grown using chemical fertilisers and pesticides). Ideally, organically managed animals are fed using feed grown on the farm, but certified feed from other sources can be bought in. As the Namibian organic sector is still in a development stage, standards allow for up to 10% of dry matter for ruminants and 15% of dry matter for non-ruminants to be derived from conventional, non-GMO sources on an annual basis. Certifiers can grant a larger percentage in individual cases of emergency or natural disasters. Fodder and feed must be adapted to the dietary needs of the species with ruminants being fed mainly on roughage (including natural grass).

Organic crop production for animal feed

If animals cannot be sustained by the natural environment on the farm, additional feed and fodder is ideally produced on-site to avoid direct and environmental costs of bringing in animal fodder from other parts of the country or region. Sowing pastures may supplement natural veld and improve animal nutrition. These pastures are managed using organic principles. Arable crops that can be grown include maize, sorghum, millet, lucerne, cowpeas, oats, sunflowers, sunhemp, mucuna/velvet beans, lab lab and pigeon peas. Crop production for animal fodder is done under organic plant production principles (see 'NOA Guide Organic crop production' for further guidance on standards and 'Organic Meat Factsheet #5' on alternative feed sources for non-crop feed for livestock).

Soil fertility management

Organic farming returns microbial, plant or animal material to the soil to increase its fertility and biological activity. Soil health and quality are the basis of soil management practices and are critical for successful pest, disease and weed management. Organic growing systems are soil based, care for the soil and surrounding ecosystems provide support for a diversity of species, are based on nutrient recycling recycling, and mitigate soil and nutrient losses.

Intercropping

Monocultures are more prone to pests and diseases as these are more able to take hold in a system where the same crop is grown year-on-year. Polycultures or intercropping are therefore encouraged in organic crop production systems as well as the incorporation of pest-repellent plants among or on the outside of the main crop. Intercropping with nitrogen-fixing legumes also enhances soil fertility.

Crop rotations

A crop rotation system is an important part of pest/disease and soil fertility management in organic agriculture. Crop rotation and intercropping practices can be used either in combination with each other or on their own, so long as a particular field is not only cultivated with a single crop year-on-year.

Cover crops & green manure

Cover crops should be grown on the main crop field during the non-growing season to ensure that the ground is covered. Cover crops can be used as animal fodder or as green manure incorporated into the soil of the field prior to cultivating the main crop in the new season. Farmers often use a mix of grains (e.g., rye), radish and a legume (e.g., clover) as cover crops because these complement each other well in terms of nutrients. Other suitable cover crops are velvet/mucuna beans (high biomass production with little water requirements) and cowpeas (specially a creeper variety).

Mulching

Mulching is a key practice in organic agriculture as it protects the soil from unnecessary water loss and extreme temperature fluctuations. Soil microorganisms are extremely

sensitive to extreme day/nighttime temperature fluctuations, which are especially common in a country like Namibia. With mulch acting as a protective cover, there is a lower rate of evaporation/water loss from the soil – this means less water usage, which is very important in a dry country such as Namibia. Mulching also protects the soil surface from wind and water erosion (during for example heavy downpours). Mulch material can be collected from in and around the farm, especially leaves and dry grass. Mulching with dry materials also helps manage termites as they prefer dry materials over fresh plant material and will not attack living plants if they have dry material available.

Organic fertilisers

The use of organic fertilisers, ideally made on the farm with materials from the farm, is encouraged. The use of synthetic fertilisers is not allowed under organic standards. Natural minerals may be added to balance soil nutrients. Organic fertilisers that can be made/grown on the farm include compost, compost and plant tea, manure, green manures.

Integration of livestock into crop production

The integration of livestock into crop production systems is encouraged and can be implemented by allowing livestock into crop fields post-harvesting where they are able to feed on crop residues as well as leaving their manure on the field which in turn improves soil fertility. Poultry or pigs can be integrated into crop and vegetable production systems post-harvesting as weed and nutrient management. So-called chicken/pig tractors can be used to confine these to the respective area.

Organic pest & disease management

Pest and disease management in organic agriculture focuses on building and maintaining soil fertility. Healthy soils allow plants to thrive, and they are less likely to be attacked by pest and disease. Healthy plants have a high sugar content (as measured by the Brix value), which insects are not able to digest. Organic crop production systems promote biodiversity through intercropping, companion planting, hedges and buffer zones that offer habitats for beneficial insects that serve as natural pest control. An integrated pest management system is implemented through prevention, regular monitoring for pests and disease ('scouting') and, as a last resort, control measures in the following order: mechanical, biological, chemical (using remedies allowed under organic standards). Ecological approaches are promoted, such as the push-pull system for maize crop to manage striga weed, fall armyworm and stemborer attacks. Weeds are controlled manually and through cover cropping. Over time, organic crop production systems typically see a reduction in weeds.

Seeds & crop varieties

Non-GMO seeds are used for growing crops. Crop varieties should be selected based on their suitability for the local environment – hence, local varieties are usually best suited. Ideally, seeds should not be treated. Since non-treated seeds are not available in retail shops, organic standards under Namibia organic regulations do allow the use of treated seeds.

Preservation/storage of animal feed and fodder

Harvested feed and fodder can be stored by drying (making hay), fermenting (without chemical additives) or milling for better digestion. An alternative is to store seeds post-harvesting and sprout these prior to feeding to increase nutrient content. Sprouting seeds for animal feed is typically barley, oat and wheat, but can be done with any seed. These sprouts are high in nutrient content and can be made within a water-efficient system year-round that has no need for synthetic fertilisers or pesticides. Harvested feed and fodder cannot be stored with toxic substances that could contaminate it and it cannot be treated with chemicals to control pests.

Delivery of feed

During on-farm delivery, feed and fodder may not be contaminated with any chemicals on trailers or vehicles. This is also applicable for any feed and fodder brought in from outside sources.