

Organic livestock production and marketing

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Role of livestock in organic farming systems

In organic farming, livestock play an important part in the farming system. This Primefact details the steps necessary to market livestock produce as 'organic'.

Nutrient cycling

Nitrogen fixed by legumes and other nutrients consumed by livestock during grazing are returned to soil via manure and urine. Managed carefully, livestock and manure can play an important role in nutrient cycling on the organic farm.

In feedlots, it is necessary to store and dispose of manure and urine in an environmentally acceptable manner.

Weed control

Livestock are used extensively for weed control on organic farms. For example, they can graze down weeds either before sowing a crop or after crop establishment for weed control and to enhance tillering. Crops can be selected for their palatability. Livestock selectively graze out weeds and avoid the less palatable crop.

Pasture and crop establishment

Livestock can assist in preparing ground for planting. For example, they can assist with stubble management by grazing and trampling stubble.

Insect and disease control

The pasture phase in a mixed cropping system builds a critical fertility and structure building phase into rotations and interrupts the potential for the build-up of insects and disease.

Livestock nutrition

Organic farming aims to provide a diet which livestock is most adapted to consume. Organic husbandry does not aim to maximise weight gain at the expense of animal health and happiness. While good nutrition aims to achieve adequate yields, it has an enormous effect on animal health and is therefore very important in disease prevention.

Diet diversity is the key factor in balancing nutrition. A balanced diet helps to meet the physiological needs of livestock. Lampkin (1990) points out that cows with a high production level due to emphasis on concentrates in their diet have a shorter productive life. In organic systems, crop rotation and a variety of plant species in the pasture help to achieve diet diversity. A mixture of deep-rooted and shallow-rooted species increases the greater potential for making nutrients available and avoids nutrient deficiencies.

For example, in organic pastures, herbs such as chicory, plantain, yarrow and caraway are often added. Deep-rooted native species can recycle and make available nutrients that otherwise may be unavailable deep in the soil profile. Legumes such as lucerne can supply organic nitrogen to the grass component of pastures and help to recycle deep nutrients.

Nutrient imbalances are less likely to occur in organically raised livestock where plant nutrients are provided by the balancing of soil fertility and the soil's biological activity rather than water-soluble nutrients.

The long-term aim of organic systems is to correct soil deficiencies. Under the organic standards, mineral supplements used to correct deficiencies should be from natural sources. For example, certain additives such as urea and synthetic amino acids are not allowed but seaweed and seaweed extracts, containing a range of minerals are permitted.

Nutrients can also be fed in mineral licks, fodder mixes or by drench gun. Exceptions are made for potassium based fertilisers.



According to the National Standard, 100% of food for organic livestock must be produced organically (either as purchased input or preferably, produced on the farm). With regard to feeding supplements and rations the National Standard (Ed. 3.3, July 2007) states:

In order to satisfy their nutritional requirements, livestock can be given free access to mineral supplements (e.g. mineral licks, shell-grit and trace elements from mineral origin).

Feed supplements of agricultural origin must be of certified 'organic' or 'biodynamic' origin where the operator can prove that the required products are not available¹.

An exception is made for agricultural supplements of 'non-organic' origin² provided that:

- they constitute no more 5% of the animals feed ration;
- they are not processed with products which do not meet the requirements of this Standard;
- they do not contain materials of GMO origin.

Supplements of non-agricultural origin may only include:

- minerals, trace elements, vitamins or provitamins if of natural origin;
- binders, anti-caking agents, emulsifiers, stabilisers, thickeners, surfactants, coagulants if from natural sources;
- acids if of natural origin;
- marine products if of plant origin.

Where feed rations are prepared, the agricultural origin component must consist of *organic* or *organic in conversion* products and be labelled accordingly.

Prohibited feed products include, but are not limited to:

- antibiotics, coccidiostats, medicinal substances, growth promoters or any other substance intended to stimulate growth or production;
- non-protein nitrogen compounds (e.g. urea);
- amino acid isolates;
- products and by-products (excluding milk and milk products fed to ruminants) fed to the same species;
- GMO products or their derivatives.

In cases of extreme climatic or other extenuating circumstances (such as fires), exemption for feed inputs may be granted, whereby inputs from other

sources may be used. The National Standard states that:

The use of such feed should be sourced from, in the first instance, *organic in-conversion* produce; untreated conventionally produced feed may be used only after it has been demonstrated that *organic in-conversion* produce is unavailable.

Only in circumstances described above, where *organic in-conversion* feed is sourced, the *organic* or *biodynamic* status of the livestock is unaffected.

Livestock fed from conventional produce must, however, be fed on organic inputs for a consecutive six-month period before regaining organic or biodynamic status. Residue testing of certified livestock by-products may be required before any organic or biodynamic status is regained.

Soil management for nutritious pastures

Slow, organic remediation of soils through improved biological activity provides balanced plant nutrition and growth and hence improved nutrition for livestock. Organic soil management aims to build soil fertility through management. This includes rotation of crops, incorporation of organic matter (e.g. green manures) and cultivation practices which enhance the aeration of soil. Aerator ploughs (for example, Agroplow[®] or Yoeman's[®]) and deep ripping are used to open up the soil profile, and a deep-rooting species such as lucerne or chicory is sown to keep the soil open.

The organic farmer's goal is to improve biological activity to build up a store of humus so that nutrients are available to the plant through soil via micro-biological activity. The activities of fungi, bacteria and other soil microbes are not well understood, but what is known is that these species play a critical role in pasture nutrient balance.

For example, in Davidson and Davidson (1992):

A small shift in soil acidity can depress the activity of soil micro-organisms which break down soil detritus and mineralise the nitrogen and phosphorous to forms that plants can absorb.

Conventional management of pastures often involves a sledgehammer approach to correcting deficiencies. The use of synthetic fertilisers has resulted in problems of soil acidity and declining soil structure. Organic management, on the other hand, provides long-term improvement in soil and crop health, but requires careful long-term planning to ensure that crop and livestock needs are met.

Encouraging predators to manage pasture pests

Synthetic pesticides cannot be used to produce organic fodder or pasture for stock. Rather, cultural practices which encourage healthy plant growth and other management practices which encourage predators of pests are used. Davidson and Davidson

¹ Sunset clause until 31 December 2003

² Livestock feed produced before the inspection should be replaced during the *in conversion* period.

(1992) give the example of 1,000 ibis consuming nearly 250,000 pests during a day.

Providing shelter, breeding grounds and year round food sources for predators encourages their presence. Nectar-producing species incorporated into pastures and windbreaks attract parasitic wasps which parasitise scarab species in pastures. On-farm wetlands encourage predatory waders and, correctly located and designed, provide a filter for nutrients in drainage before it exits the farm.

Shelter

The benefits of shade and shelter for livestock have been well documented. Organic animal husbandry requires that sufficient protection be provided against excessive sunlight, temperature, wind, rain and other harsh climatic conditions. This can be achieved through the provision of windbreaks and/or housing for livestock.

Breeding

In conventional livestock systems, genetic emphasis is on high production. The organic farmer selects livestock for a wider range of qualities. These include: pest (parasite) and disease tolerance or resistance (e.g. Brahman tick tolerance) and mothering ability. Breeding for *lifetime yield* is more commonly the practice in organic farming. While the aim of conventional livestock production is for high, early productivity (early maturity), the aim with organic livestock is to increase their productive life and this is often associated with resistance to disease (Boehncke, 1990).

Developing longevity within the herd has a number of advantages.

- Long growth period means long youth, and a long immature stage has been shown to be a precondition for a longer life.
- The farmer has the opportunity to get to know their herds, which makes handling easier and provides thorough knowledge of the herd's disease history.
- The herd establishes a stable social order and stable health state.
- Stress factors become adapted to the conditions over a longer period.
- The quality and quantity of colostrum in older cows is greater.

Breeding should be within the genetic capacity of the species concerned. For example, breeding for high feed conversion can lead to arthritis, while large hindquarters can lead to birthing difficulties.

During conversion to organic production, livestock purchased externally must be organic or, if conventional, placed in a quarantine area for three

weeks. Once the farm is fully organic, external purchases are confined to breeding stock only – all other livestock should be bred on the property. Replacement breeders may be introduced at an annual rate of 10%–20% (depending on the certification organisation) of existing breeding stock. A limited provision does exist within the Standards however, for taking on agisted stock.

Livestock produced by artificial insemination are allowed by most certification organisations when natural behaviour is not practical or if new genetic material is required. Embryo transplant is not permitted since this technique usually requires hormone injection to synchronise breeding cycles and tends to breed away from diversity within the herd. Livestock produced using genetic modification techniques (genetic engineering) are not permitted under the organic standards.

Livestock welfare

Organic farmers aim to minimise physical or psychological stress in livestock in order to promote well-being and reduce the incidence of disease. Non-stressed livestock also has implications for reducing veterinary bills and maintaining meat tenderness.

The National Standards (OIECC, 2007) require that:

maintenance of livestock must be guided by an attitude of care, responsibility and respect for living creatures ... Living conditions must consider the natural needs of the animal for free movement, food, water shelter and shade. Consideration must be given to their specific natural behaviour patterns.

In respect to specific stress:

pain inflicted by treatments such as castrating, marking and mulesing must be kept to a minimum.

For example, NASAA prohibits certain common practices such as de-tailing of cows. Dehorning and castration are allowed when carried out in as humane a fashion as possible and with specific age limits.

Management aims to minimise stress during potentially stressful periods. For example, after shearing, stress can be reduced by providing good pasture with low or no parasitic infection. Reducing noise and not rushing stock through gateways can also help to minimise stress during handling.

Animals experience further stress during transport to market and during slaughter. The standards aim to minimise stress during this period. For example, NASAA standards state:

slaughter will be carried out quickly and without undue stress, and ... animals may not be held or herded in an area where the killing of other livestock is visible.

Livestock such as geese should be protected from predators such as foxes and dogs.

Livestock health

Prevention of disease through diet, shelter, breeding and husbandry practices, rather than treatment is the organic approach to animal health care. While it is not possible to extinguish all animal disease, when disease does occur, a healthy animal is in a better position to cope with it.

Many organic farmers regard good observation as an important part of disease management. The keeping of daily or frequent records assists the producer in assessing possible origins of the disease or injury.

While organic standards state that the adoption of good management practices is the preferred method of maintaining livestock health in an organic system, they also recognise that sometimes this alone is insufficient to guard against diseases and illness.

The routine use of any veterinary drugs such as antibiotics and some vaccinations is not permitted by organic standards. Organic farmers rely on treatments such as herbs, vitamins and minerals, homoeopathy, acupuncture and dietary additives such as probiotics. However, there is not always a satisfactory 'organic treatment' to health problems which may occur and when an organic treatment is not effective, there is no doubt that conventional treatment has to be used since *the welfare of the animal is the primary objective*.

Organic standards outline specific requirements for the use of vaccines and other allopathic livestock treatments. The standards classify the use of vaccines as 'restricted'. This means that their routine use is discouraged and is only permitted when it can be demonstrated by the organic operator that a specific disease is endemic in the region or on the organic farm, or where their use is required by law, or in proven cases, where such a disease cannot be effectively controlled by other management practices. Organic certifiers require written verification from a veterinarian to confirm the presence or threat of disease infection prior to approving the application of the treatment. In addition, the vaccines must not contain genetically modified ingredients or by-products. The use of vaccines under these circumstances will not prejudice certification and does not require quarantine procedures. Full records of treatments must be kept.

Use of non-permitted veterinary treatments

Other conditions apply to the use of veterinary treatments (such as drugs and antibiotics) or other treatments not listed or not permitted for use under organic standards. Prohibited treatment use is only acceptable in cases of emergency; however, organic standards stress that such treatments (including medicines) should not be withheld where animal welfare concerns exist.

If parasiticides and/or antibiotics are required, organic standards specify a number of management

conditions which must be applied to treated livestock. Treated stock must be excluded for a period of time from certified organic land and separated from non-treated organic stock. This means containing those livestock to be treated in a defined quarantine area during and following treatment for a defined period. Following this quarantine period, treated stock are permitted to mingle with organic (non-treated) stock and range on certified organic land provided they are clearly identifiable from the organic stock as well as traceable through farm records. However, unless otherwise stated, their products may not be sold as organic.

The use of anaesthetics does not result in the loss of certification status, but does require the treated livestock to be withheld from sale or killing for a period three times the legal withholding period of the substance in question or a minimum of 48 hours, whichever is longer.

For more information on use of vaccines and other veterinary treatments in organic farming see Primefact 760 [Use of vaccinations and other veterinary treatments in organic livestock farming](#).

Internal parasites

Organic farmers are not permitted to use anthelmintics for the control of internal parasites. Drenching is carried out on a needs basis only, as routine use is not permitted and could lead to the development of resistance. However, if permitted substances or practices do not satisfactorily treat an animal, their welfare is the first priority over organic status.

Organic treatments include drenches made from natural products such as garlic, molasses, vegetable oil and cider vinegar. Copper sulfate (CuSO_4) in minute doses is also favoured for use by some organic farmers. Others have used aloe vera, clay products, diatomaceous earth, other vegetable and tree products, and Nutrimol[®]. Homoeopathic remedies are widely used worldwide with mixed results. These and other substances listed as permissible are not registered as veterinary treatments.

OIECC³ has been asked to explore the legality of using these unregistered substances.

Alternative management practices aim to disrupt the life cycle of the parasite. Temperature and moisture favour the development of internal parasites, so, after rainfall or irrigation, livestock are moved to a clean pasture, or pastures can be harrowed following grazing to expose the eggs and larvae to

³ Organic Industry Export Consultative Committee. OIECC are responsible for approving changes to the National Standard for Organic & Biodynamic Produce.

sunlight and heat. New Zealand's Agroecology Program (1991) found certain pastures (such as chicory and lucerne) to be least conducive to parasite larvae intake.

Resistance to internal parasites increases with age because immunity develops through previous exposure. Sheep reach a higher level of resistance to internal parasites around 9 months whereas cattle reach this stage around 18 months. Late pregnancy, lambing and weaning are critical periods of infection as resistance drops with increased stress and as feed intake increases, so it is critical to provide clean pastures at these times. Good nutrition and grazing rotations assists in developing and maintaining resistance.

Grazing management is very important in managing parasites. Spelling can control worm populations, as can alternate grazing. This system can have older, less susceptible stock grazing wormier pastures before young stock, or it can have a higher number of less susceptible stock together with young stock. Another form of alternate grazing is to graze alternately with different species (e.g. cattle before sheep as cross-infection does not occur to any great extent) or to graze species together. This also has benefits as different grazing habits do not allow domination of any one weed species. Strip grazing involves back-fencing stock to match larvae development so that stock do not contaminate their pastures. Most organic farmers prefer low stocking rates and relatively intensive rotations.

Cultivation and intermediate cropping provide a break in the build-up of insects, parasites or disease and therefore a clean pasture. Sowing mustard and ploughing it in as a green manure has been shown to clean a pasture (Belstead and Belstead, 1992).

In summary, maintaining good health and reducing the risk of parasites involves:

- maintaining a high plane of nutrition and minimum stress.
- grazing management which reduces exposure to parasites.
- eliminating herd drenching and only drenching individual stock when infection is sighted.

Close observation is a crucial factor.

After the system is established, cull animals that show signs of heavy infestations.

External parasites

External parasites are managed through a range of practices. These include:

- observation of livestock
- selection of resistant or tolerant stock (genetic selection and culling of susceptible stock)

- monitoring the presence and trapping of pests e.g. traps
- cleanliness, e.g. in yards, burn crutchings
- biological controls, e.g. use of dung beetles to remove faeces and hence the eggs of buffalo fly (*Siphona exigua*).
- organic treatments – derris and rotenone for lice, lime sulfur (itch mite), zinc sulfate (lumpy wool) and neem and eucalyptus (*E. globulus*) oil for fly strike, monocalcium fluorosilicate (Flockmaster®) for lice.

Double fencing, particularly adjoining conventional neighbouring livestock, can help to prevent spread of lice from infested to clean livestock.

Marketing

Food safety scares, such as bovine spongiform encephalopathy (BSE), commonly known as mad-cow disease (MCD), have increased the interest in organic meat products.

Hassall and Associates (1995) made the following comments regarding markets for organic and bio-dynamic livestock products:

For dairy products, opportunities include whole milk, butter, yoghurt and cheese from cows and sheep/goat dairy products.

Overseas interest in Australian organic wool is high and enquires have been made from both Japan and Western Europe. If this interest can be converted into sales the potential for organic wool as a product has potential. The main limitation appears to be the availability of an organic scouring facility.

Domestically, organic meat products are becoming increasingly popular amongst affluent and health conscious consumers.

Meat opportunities include certified lamb and beef. The potential for pork and poultry products may be limited by the availability of certified feed grains.

A number of factors impact on the marketing of meat and meat products. One significant factor is the requirement for certified slaughtering and processing facilities. Continuity of supply is an issue with most producers. This has led to producers pooling resources; however this in turn creates difficulties with providing consistent quality and grade.

Some producers are successfully marketing their own products. For example, the Riverina Organic Farmers Organisation cooperatively markets livestock products.

Some of the potential marketing problems include those of quality consistency (due to food, genetics and/or farm practices), and continuity of supply and packaging (retaining integrity of product). Some suppliers have improved product consistency by

designating a number of finishing-off properties located near processors and by developing a common genetic base. Continuity of supply can be overcome to a large extent by the diverse geographic distribution of producers. Integrity would be retained (and substitution minimised) by pre-packing (vacuum packed and branded) all the cuts for retail or food service applications.

A number of end markets for the product have been identified. These include export, direct delivery, food service industry (sweet cuts), wholesalers (to target independent retailers) and retailers (limited). A price premium is generally available for the product in the market place.

NSW based organic meat wholesalers, Cleavers Meats and organic smallgoods manufacturer ICO, both tell the same story: 'we have the demand, but have difficulty sourcing a year round supply of quality product'.

Drought conditions are adding to supply problems.

Organic producers requiring supplementary feed for livestock must source organically grown feed if they wish to retain the organic status of the livestock. The additional cost of purchasing-in organic feed or the lack of suitable feed altogether, is forcing many producers to either sell stock or feed stock non-organic feed, thus losing the stock's organic status.

Meat products from livestock fed on non-organic feed may never be sold as organic. They may, however, still be used as breeders and, provided their progeny are raised organically (from conception to point of sale), the meat products from these offspring may then be marketed as organic.

In drought conditions many organic farmers may need to de-stock. The loss of core breeding stock can be particularly devastating for an organic farmer. Breeding for resistance to internal and external parasites is an important management tool for organic farmers who are not permitted to use synthetic pesticides to control pests. Many years of careful selection and breeding for lifetime resistance to pests and diseases go into an organic livestock management program.

Interruptions to market supply, whether it is due to seasonal livestock growth patterns or due to a one in one hundred year drought, may result in processors sourcing meat elsewhere and a producer losing their markets. In a worst case scenario, substitution may occur in the market place – non-organic meat is sold as organic, or cuts are incorrectly labelled.

The key to improving the consistency of supply and the quality of the product is the establishment of marketing alliances and the development of market specifications and pathways. Production alliances allow purchasers of organic products access to a range of products through one avenue and the potential for a year round supply.

Defining production and supply pathways

Producers considering selling any product first need to define who? (is the consumer), what? (product will you sell), where? (are consumers located) and how? (the product will be transported/processed etc.). Key considerations include:

Focus pathways. Consumers are the focus of production pathways. Consumer protection is paramount so pathways need to be defined; this includes on-farm practices. The direction of pathways needs to be determined and guidelines and specifications need to be developed to meet consumer requirements.

Communications. Various communications and documentations must be developed to facilitate the marketing process. The origin of the product needs to be verifiable, so a system of full-traceability is essential. Organic producers need to be able to prove the organic history of the product in order for consumers to have confidence in the organic product. Organic certification will achieve this. Marketing and promotion of the product should be undertaken by the producer and supplier. A professional marketing consultant can help you to plan a strategy. Use personalised logos on labelling, and 'tell your story'.

Substitution. Substitution is occurring in the market place – non-organic meat is being sold as organic, cuts are mis-labelled, etc. Producers need to have confidence that they can prove their accreditation and the authenticity of their product. Truth in labelling and the correct naming of the product are essential.

Develop processing specifications. Processing specifications for your product involve establishing guidelines at key points in the production pathway. These include the farm, transport, slaughter, boning room, any further processing, packaging, distribution, treatment by the retailer/purchaser, and the display of your product. Maintaining an awareness of how your product is performing at all key points is essential. Feedback sheets provide an opportunity to gauge consumer response to your product, but can also be included at other key points in the pathway.

Further processing (value adding). As a producer you need to determine if you will produce traditional market cuts or (perhaps in addition), you will value-add to product cuts. Value-added products include prepared meals, heat and serve cuts, pan ready cuts, oven prepared and gourmet products (e.g. pate). If the product contains other ingredients, for example herbs, and is being marketed as organic, then proof of their organic certification is also required.

Identify your consumer. Consumers must be willing to pay for your organic product. This will tend to limit markets to health conscious, middle and upper

class consumers. You need to identify where the greatest demand is (for example, affluent city suburbs) and what type of product will be in demand (sausages or sirloins). Currently there are a limited variety of organic meat products in the market place. Your product needs to have purchasing appeal (presentation etc.) and you need to instil confidence in your product to purchasers. Information such as cooking methods can accompany your product. A consumer that is happy with your product will come back for more.

Supply chain management – the key to successful marketing

The key to successful marketing, whether as an individual or as a group, is effective supply chain management. The group must be active and maintain communications and interest in the whole marketing process. Successful producer alliances follow their product throughout the marketing pathway to track its performance – all the way to the consumer, – and are prepared to diversify.

Key issues for organic producer alliances to address before selling organic meat are:

- organic credibility
- year-round supply
- election of a processor sympathetic to their aims
- selection of appropriate trading partners.

Organic credibility. Producers must understand and implement an organic certification scheme that meets their requirements as well as that of their customers. Ideally, one common certifier should certify each property in the producer alliance. It is important to select a certifier whose standards are recognised by the country or customer where your product is to be sold, as not all importing countries or customers recognise the standards of each Australian organic certification organisation.

Clear and precise documentation will assist with the marketing of the product, and the group will be

able to demonstrate full traceability of the organic product to potential customers. Specific standards may need to be developed for the transportation and handling of livestock and these are then endorsed by the organic certifier. It is advisable to conduct trial runs of product to expose any potential problems that could breach its organic status. Full documentation will also be required that clearly alerts stock handlers to the organic status of the system.

Year round supply. Cooperation between members in a producer alliance is the key to obtaining a year-

round supply of quality product. Finishing of livestock should be scheduled within the capacity of each individual property – individuals will manage their operations to grow and finish within the capability of their resource base. This may vary from season to season and locality to locality.

In order to meet a year round supply, year round production data on each individual property will need to be thoroughly assessed and all options will need to be investigated. Agreement on other group members' organic properties may be required if feed is low or unavailable. Other members may have the capacity to produce organic feed to supply others in the group.

Selecting a processor. A single processor needs to be selected who understands the requirements of the group and the product. They need to be innovative and accept that the producers wish to be involved throughout the entire supply chain.

The processor will need to agree to be certified to process the organic product, and also have the required clearances for the markets the group is targeting. If not already certified to process organic products, the processor will need to establish procedures and standards that ensure the segregation of the organic product throughout the processing plant, including packaging and storage for shipment. Full traceability to each farm, and even to each paddock, will need to be demonstrated.

The key points when contemplating marketing your organic livestock products are:

- Pathways between the producer and consumer need to be defined and developed.
- Market specifications, codes of practice and quality assurance need to be developed.
- You need to gain credibility for your product in the marketplace.

Marketing alliances allow you to supply year round, but these will only work if you work together to develop the market pathway, become involved and be aware of the program. Communication is essential throughout all of the supply chain.

Conclusion

Emphasis of organic animal husbandry is on the management of the livestock within the whole system of farming. The animal has roles within the farming system. The system, in turn, through aspects such as pasture/fodder production, shelter availability and style of management influences the livestock, its health, longevity and consequently productivity.

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