



## Transition to Organic Farming - Chris Alenson Jun '15

### Introduction to Organic Farming

Organic agriculture has both a philosophical and practical base. Care and enhancement of environmental resources are high on the management agenda. Farmers avoid the direct and/or routine use of readily soluble chemicals and all synthetic pesticides that might be toxic to man or the environment.

The goal of increasing soil fertility is pursued with a desire to produce healthy uncontaminated food. Practices adopted to build this fertility include composting, the use of rotations, utilisation of green manure and cover crops, legume based leys and the use of mineral based fertilisers.

Far from being a step backwards organic farmers utilise some of the latest technologies that science has to offer. Prescription mix fertilisers, new seed varieties, microbial inoculants, innovative equipment, biological pest control and integrated pest and weed management strategies.

Those supporting and advocating organic agriculture would argue that its dynamic and flexible management systems may well be capable of addressing many of the problems that the conventional agriculture system is faced with today and would provide a sustainable agricultural system.

### Managing the organic system

The principles of organic farming based on the management of the farm as a living organism and the interactions of that farm with the environment.

Successful organic farmers are those that understand these principles and can apply them to their own particular farming situation.

Organic farming is heavily based on the principles underlying nature's agriculture where mixed farming is the rule; plants are generally found with animals. Monocultures do not exist in these systems. What dies in this world is recycled to provide fertility and life to other food webs.

Organic farming in trying to mimic these systems attempts at every opportunity to preserve and improve soil fertility by recycling wastes for conversion into humus, by raising mixed crops and animals and by utilising management techniques that look to maximise moisture retention in the soil.

The aim in organic farming is therefore to prevent pest and disease occurrences by building a strong resilient farming system that can cope with the occasional problem that may arise.

When or if it arises the approach is to:

- try to understand why it may have developed
- seek to solve the problem without impacting on the farm or environment

Management techniques utilised include:

- balanced rotations
- judicious use of cultivation and soil aeration
- green manuring, waste and stubble retention
- composting
- use of mineral fertilisers where there is a demonstrable need



## Introduction to conversion

Conversion relates to the process of changing from a more conventionally managed agricultural system to one managed according to organic methods. Instead of relying on outside inputs as a source of fertility, optimisation of the farms own inherent soil base is the objective of all management strategies only applying acceptable inputs where a need can be demonstrated. The process of conversion to organic agriculture is very much an acquirement of knowledge.

The challenge in converting to organic agriculture is to apply the information and the necessary technical management to ensure that the farm is run economically and maintains a sustainable resource base.

There are many factors to be considered and integrated into the conversion process.

## Successful Conversion Depends On

### 1. Suitability of the farm for conversion

Mixed farms with a diverse range of crops, trees and livestock will be easier to convert than a monocultural system where pest, disease control and nutrient cycling would be very difficult to manage. It would also be very difficult for intensively housed animal enterprises such as poultry, pigs or cattle to comply with organic guidelines.

Climate and geographic location, contamination from previous land use or even distance from suitable markets may preclude a farm from being suitable for organic farming.

### 2. Motivation, commitment of the farmer and his/her family

A farmer undertaking the conversion process may find themselves with little technical help to work through the many areas that need addressing. There is a lot of learning to be done and perhaps mistakes to be made. Commitment to pursue the organic objectives must be strong. Despite the increase in organic markets and the hectares being farmed there are still many that consider organic farming a non-scientific pursuit that decreases soil fertility due to the prohibition on the use of synthetic fertilisers.

### 3. An understanding of how optimum soil fertility can be achieved

Understanding the interaction of physical, biological and chemical attributes of a soil is essential. The conventional fertiliser paradigm sometimes ignores the biological system that regulates and drives the basis of soil fertility. It is impossible to arrive at a truly fertile soil without understanding these vital soil components, their weaknesses and how to they integrate with each other. For example soil compaction supplies an inhospitable environment for aerobic soil organisms affecting nutrient cycling and the supply of essential plant nutrients.

## The Conversion Plan

The conversion plan involves two key stages:

### 1. Farm assessment

This will involve an audit of the farm detailing, paddocks size, layout, irrigation, soil fertility including nutrient status (including fertilisers used), soil structure, pest and weed management (including chemicals used), stock and crop health, rainfall, length of growing season, equipment, etc. **Know where you are in relation to where you are going.**

Once a farm assessment is complete the development of an action plan is the next stage in the conversion process.

### 2. Development of an action plan

The plan for cropping enterprises will be based around establishing an effective rotation. It is important when conversion is initiated that a suitable field, no larger than a grower can afford to risk, is trialled.



The following elements will generally have to be considered as part of the conversion process for both annual cropping and perennial based operations:

**(i) Information gathering**

Information is a very necessary part of successful conversion. This may include organic production standards, requirements for certification, the agency to obtain certification from, markets, fertility management, allowable inputs and simply what organic agriculture is all about.

**(ii) Soil Fertility Improvement & Nutrient Supply**

The development of a sustainable system will depend very much on how soil fertility enhancement is pursued. Both the supply of nutrients and the soils own structural development are equally as important.

Organic systems are generally low input systems. How do I supply the fertility? Soil assessment should be undertaken. This will include soil nutrient status (soil analysis), biological and physical characteristics. The farmer should be able to carry out much of this on-farm assessment

**(iii) Rotation Design**

It is essential to understand the role that rotations play in underpinning the fertility building cycle so important in achieving a sustainable system of agriculture. A balanced rotation will address economic crop production, soil nutrient status, organic matter and nitrogen supply, insect and weed suppression and minimisation of soil borne pathogens. The rotation should have a balance between fertility building crops (eg. grass/clover pasture) which provide good quantities of root bio-mass for earthworms and micro-organisms and exploitive crops (eg. cereals, canola), and utilise crops that have natural weed germination inhibitors (like rye and sorghum).

A diversity of crops can assist in increasing stability and minimising risk

**(iv) Weed, Pest and Disease Control**

It is often the case that a dependence on agricultural chemicals has caused an increase in particular pest problems which has been exacerbated by the destruction of possible beneficial predator insect populations.

In conventional agriculture pests, disease and weed intrusions are usually managed through direct intervention, i.e. the use of pesticides and herbicides, whereas in organic systems the basic principle is manage infestations through overall farm management. This may include:

- rotation of crops
- sound hygiene
- foster, greater plant biodiversity via practices such as intercropping
- increasing soil fertility to build strong plants
- using disease resistant cultivars
- encouragement of natural biological control
- the use of carefully selected naturally occurring plant and mineral extracts that minimise impact on beneficial insects
- monitoring threshold levels

Crop rotation is important for insect control and the use of natural predators should be encouraged through the planting of herbaceous vegetation.

Weeds management should now be exercised primarily through the development of the rotation, planting density, grazing of stock, mechanical and perhaps thermal weed control. Equipment needs for both weed and insect control should be addressed at the planning stage of the conversion.



**(v) Farm infrastructure (fences, water, sheds, machinery)**

Conversion to organic agriculture may require different equipment and infrastructure to be in place to support the particular enterprise.

**(vi) Consideration of livestock and stocking rates**

On a mixed farm there should be a balance between livestock and crops. Under organic management stock numbers may need to be reduced to ensure that stock are fed from on-farm produced foodstuffs. Mixed livestock may assist in parasite control and pasture management and recycling of nutrients.

Organic animal husbandry is about caring and feeding livestock according to the principles and standards of organic agriculture. In an organic system this may involve:

- raising livestock on land which has not had synthetic fertilisers or pesticides applied to it.
- stocking rates and rotations appropriate for the area and feed available
- providing a diet grown according to organic growing methods
- ensuring that housing and environmental conditions meet the physiological and psychological needs of the animals.

Raising animals under the above conditions provides them with the minimum of stress and optimum health and therefore they have more chance of developing strong immunity against pests and disease. The need for routine veterinary treatment should as a result be reduced or eliminated.

**(vii) Cultivation and tillage requirements**

Depending on the enterprise equipment needs may differ from conventional agriculture. Chisel ploughs and soil aerators are often used for opening up the soil while weeding requirements may require a completely different set of equipment.

**(viii) Marketing requirements**

It is essential that preliminary market research is carried out to see what opportunities exist to supply the given produce. Is the product in demand, what are the packaging and market supply requirements? How will it be transported?

The marketing of organic produce firstly assumes that certification of the production unit or processing unit has taken place to ensure consumers are guaranteed the 'organicness' of the product. The link therefore between certification and the marketing of product is inseparable.

The growth in both the domestic and export market offers opportunities for both producers and processors. Good investigation and research is required by the producer to maximise opportunities.

**(ix) Labour requirements**

Given that organic agriculture is often more labour intensive due to its non-reliance on agricultural chemicals for pest and weed control, is there sufficient labour for the enterprises being considered and is seasonal labour available when required?

**(x) Financial implications**

Have all financial considerations been investigated, plant, machinery and labour. Is their adequate buffer for the earlier years when income may be reduced? During the conversion process a decrease in production may be expected in the order of 10-15% due to the changing nature of nutrient supply to the crop from a chemical based system to one of optimising soil based fertility.

**(xi) Risk assessment and cost**

A thorough risk assessment for the intended enterprise should be performed by a competent authority or farm consultant taking into consideration all aspects of the conversion, particularly the initial three year conversion period with the likely decrease in income, the cost of any new capital equipment and infrastructural changes necessary to ensure the success of the operation.



### **(xii) Inputs**

Although organic agriculture is generally a low input system, operations do utilise compost and mineral fertilisers. The use of these mediums, and biological preparations such as seaweed sprays and fish emulsions, will aid crop nutrition and health.

It is important in the transition planning to anticipate what inputs are required and how they will be provided.

### **Don't Move Too Quickly**

A change to an organic system requires both a philosophical change in the farmer as well as the adoption of many new management techniques. It is therefore important not to move too fast.

Remember that organic/sustainable farming is not about substituting one allowed input for a prohibited input, but putting into place a management regime that works towards a regenerative system.

Try out the management techniques on a small area first where mistakes made are unlikely to be too costly. A big mistake on a small acreage may not be too costly, a small mistake on a large acreage may turn out to be very costly.

### **Summary points in the conversion process**

- Is there a commitment to organic farming?
- Seek information and explore all options, standards, certification, conversion information, markets, et
- Farm assessment of current enterprise and what needs to change to convert to organics
- Soil fertility restoration, including rotations and nutrient planning
- Proceed slowly (progressive conversion) while adapting to a change in management

### **Information and Assistance**

Don't be afraid to seek advice on this adventure. There are many organic organisations, extension personnel in Departments of Agriculture, advisory services, and growers themselves who will be only too pleased to offer advice and encouragement.

You are not alone in seeking a more environmental approach to agricultural production. It is a challenge that is being taken up by more and more farmers around Australia.

### **Further Reading**

1. Organic Standards and Certification in Australia  
[http://www.dpi.nsw.gov.au/\\_data/assets/pdf\\_file/0011/353297/Organic-Standards-and-certification-in-Australia.pdf](http://www.dpi.nsw.gov.au/_data/assets/pdf_file/0011/353297/Organic-Standards-and-certification-in-Australia.pdf)
2. Blake, F. 1987 The Handbook of Organic Husbandry, The Crowood Press.
3. Newton, P, Hollier, C. & Jones, J, 1996, Crop & pasture Rotations for Sustainable Organic Production, Proc. Nat. Symposium Organic Agric., June 30<sup>th</sup>-July 3<sup>rd</sup>
4. Wynen, E. 1999a Conversion to Organic Agriculture in Australia; problems and possibilities in the cereal livestock industry; NASAA

An excellent American publication which can be viewed on the Internet is:

1. Peet, Mary.M. Dr. 1997 Sustainable Practices Vegetable Production in the South, North Carolina State University.  
<https://attra.ncat.org/attra-pub/download.php?id=19>

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