



ORGANIC TRUST CLG

An Introduction to Organic Horticulture



Organic horticultural production in Ireland takes place on holdings varying from intensive market gardening enterprises, with production of high value crops, e.g. tunnel production, to field scale operations with a high level of mechanisation. Field scale production is limited to areas of good arable soils with a suitable climate, with most production occurring in the

midlands or south east. Intensive production, particularly tunnel production, is possible in a wider range of areas.

Horticultural production, when compared to most agricultural enterprises, can give very high returns per acre. Horticultural production usually requires good soil, climate, skilled management, labour, specialised equipment & machinery accompanied by good marketing. For the organic horticultural producer the need for skilled management and organisation are probably even greater than that required for conventional horticultural production. The potential rewards obtainable from organic horticultural production are therefore good but the potential risks are also high.

The general requirements for successful horticultural production are essentially similar for the conventional or organic producer; however organic production requires a different, and possibly more organised, approach to soil fertility and pest, disease and weed management. An organic grower is also much more restricted in the types of seeds and seed compost which can be used.

Organic Soil Fertility Management

A fertile soil has:-

1. Appropriate levels of soil nutrients
2. High levels of biological activity
3. Good structure

An organic grower needs to manage all three aspects of fertility whereas the conventional grower concentrates largely on maintaining levels of soil nutrients. In a well managed organic soil, nutrients are supplied largely from the biological breakdown of soil organic matter. A good level of biological activity is maintained in the soil by the addition of large quantities of organic matter, either as additions of compost & farmyard manure or through the growing of green manure crops. The maintenance of good soil structure is achieved by careful and well planned soil cultivations. A good soil structure is vital both for good root growth and for the activity of soil organisms that break down the soil organic matter. Levels of soil nutrients are maintained in organic growing by the addition of organic matter such as farmyard manure or by the addition of less soluble forms of soil nutrients such as rock phosphate or rock potash. The organic grower tries to “feed the soil not the plant”. An organic grower treats the soil as an ecosystem not an inert growing medium.

Management of the soil involves the following:-

- Encouraging soil life by adding organic matter such as F.Y.M.
- Use of green manures – non-leguminous green manures with a deep root system to supply organic matter and leguminous green manures to fix atmospheric nitrogen
- Use of vegetable legumes such as peas and beans in the rotation
- Avoiding ploughing/digging in autumn to prevent leaching and run-off of nutrients – ploughing is best done in late winter/early spring
- Use of legumes for nitrogen fixation
- Recycling all plant and animal waste
- Not selling off nutrients cheaply i.e. hay, silage, & straw should not leave the unit
- Managing soil to prevent nutrient loss
- Avoiding bare soil if possible
- When cultivating the soil the idea of “deep loosening but shallow turning” is worth remembering
- Applying P & K in less soluble forms
- Applying lime if soil is acidic

Organic Pest and Disease Control

Pest and disease control on an organic horticultural holding relies on the management of pest and diseases rather than their total eradication. This involves working with natural cycles as much as possible and only using the limited range of permitted products as a last resort. As an organic grower does not have access to the large array of chemicals and sprays available to their conventional counterparts to combat pest and diseases, the emphasis should be placed on preventing potential problems. Every organic grower knows that a healthy soil will produce healthy crops which hopefully results in healthy human beings. A wide variety of techniques are available to the organic grower to manage pests and diseases on the holding:

- Crop Rotation
- Correct levels of fertility – to ensure healthy growth but not excessive levels
- Barrier Methods, e.g. fleece or bionet on carrots for root fly
- Timing of sowing - sow to avoid pests - e.g. June sowing of carrots should miss the 1st generation of carrot fly
- Appropriate variety- e.g. in potato production using blight resistant varieties
- Plant spacing- sow at the best spacing for growth & to allow air circulation to control leaf fungi
- Confuse pests – e.g. have under-storey of growth beneath brassicas to discourage the laying of caterpillar eggs
- Propagation Hygiene – keep tunnel propagation areas clean
- General Hygiene - compost or turn-in crop waste
- Alter the scent of a crop- e.g. use garlic spray
- Companion Planting
- Encourage natural predators- natural vegetation around fields encourage beetles around brassicas with plastic covers
- Cultivation- e.g. rotavating in dry weather can kill slugs
- Use of livestock- e.g. poultry (particularly ducks) can be effective slug clearers
- Introduction of predators- e.g. release of nematodes to kill slugs



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And finally if all else fails.....

- Use products permitted under the organic standards- e.g. Pyrethrum extract on aphids

Organic Weed Control

Weed control on an organic horticultural holding obviously cannot rely on herbicides. Control of annual weeds involves the management of the weed seed bank in the soil through techniques such as stale/false seed beds and ensuring that weeds are not left to seed on the holding. Other techniques such as precision hoeing and carefully timed pre-emergence thermal control can be used on the growing crop; alternating weed susceptible crops such as onions with weed suppressive crops such as potatoes; growing under natural or plastic mulches; making and using a good compost which will heat up and burn weed seeds and roots; use of transplants which are a step ahead of the weeds and as stated earlier use of stale seed beds which allow weeds to germinate (they are then hoed/harrowed or flame weeded - can be repeated several times).

The control of perennial weeds largely relies on cultivations or manual control. Ideally holdings entering organic conversion should not have a large number of perennial weeds. It should be noted that there is now a vast range of weed control equipment available for all sizes of holdings which range from oscillating hoes to wheel-hoes and tractor-mounted brush-weeders. The timing of cultivation is essential – if you hoe on dry days, the weeds can be left to decompose on the ground and thus release their nutrients to the growing crop.

Crop Rotations

All good growers use crop rotation as a means of controlling soil borne pests and diseases such as club root of brassicas and eelworms in potatoes; for an organic grower however rotations are also important for other reasons.

Different crops need different levels of the various plant nutrients and extract them from different depths of soil. So for the organic grower a suitable sequence of crops can maximize the efficiency of soil nutrient use. Most legume crops are a special case here as, due to the fixation of atmospheric nitrogen, they often don't require any soil nitrogen and may even leave some in the soil for a subsequent crop.

Some crops such as potatoes and brassicas allow easy weed control and have dense canopies which shade out the soil. These can be considered cleaning crops which allow for the germination and eradication of weeds from the soil's seed bank creating cleaner conditions for a subsequent weed-susceptible crop such as onions. The state of the soil after the cultivation of certain crops leaves the soil in a suitable condition for establishment of a subsequent crop.

For effective control of soil borne pests & diseases a minimum break of four years (ideally longer) is required before replanting the same crop. An example of a basic four year rotation could be:

Potatoes → Brassicas → Salads → Carrots

In this rotation fertility would be supplied in the form of compost or FYM at appropriate points in the rotation, i.e. before the high nutrient demanding crops such as potatoes.

Longer term rotations generally include one or more years under clover based green manures. The nitrogen input from the clover would be supplemented with FYM or compost two or three years after the incorporation of the green manure.

Buying Inputs

An organic grower needs to put much more effort into buying inputs than a conventional grower. This is partly due to the organic standards which require growers to buy organic seeds wherever possible (i.e. in the first instance organically certified seeds must be sourced) and certified seed compost. If certified seeds are unavailable or if the particular variety required is unavailable, a derogation can be sought from the Organic Trust for use of non-organic untreated seed (N.B. treated or 'dressed' seeds are strictly prohibited). Similarly with propagation compost, only products

approved by an organic certification body may be used – caution must be exercised in this area as many garden centres and other suppliers sell 'organic' composts which are not organically certified. As a commercial organic grower you must ensure that the compost you use is fully approved prior to use – phone the Organic Trust for assistance if you are unsure of the suitability of any specific product. An organic grower, therefore, needs to be much more organised with their ordering than a conventional grower and must plan in advance.

Marketing Produce

Market opportunities for organic growers are varied; the small intensive grower can produce for local farmers markets, restaurants or gate sales, while the larger grower may sell to supermarkets, wholesalers or processors. Any market outlet does require a grower to produce the right quality & quantity of produce at the right time; horticultural production does therefore require a grower to be disciplined and market led. In general the demand for organic produce is increasing, however, a large part of the demand for organic produce is met by imported produce. Opportunities exist for Irish growers to replace some of this imported produce if they can match the quality and consistency of the imported fruit and vegetables. In general production of staples such as potatoes, turnips, salad crops, carrots and so forth has the potential to find successful end markets provided the organic grower carefully researches these before setting out. Organic horticultural production does offer the opportunity for substantial income per acre of land, though this comes with the need for excellent management, skilled labour and good marketing skills. On a note of caution, as with all growing, there are potential risks, including possibilities for crop losses due to Ireland's uncertain climate.

Getting started

The development of an organic horticultural enterprise requires thorough planning and an appraisal of all the resources available to the grower – for example:

- Have you got the knowledge and skills necessary?
- Is your land suitable - soil fertility needs to be assessed?
- Is there a potential market for your produce?
- What machinery and equipment do you need?
- Do you have enough labour (either your own or employees) to cope with the peaks of labour demand?
- Do you have access to the capital required to get set up?

If you can answer the above questions then the next stage is developing a plan, both an organic conversion plan, which will describe how the holding will be developed into a sustainable organic holding, and a business plan.

The organic conversion plan will be presented to the Organic Trust as part of your application for registration as a holding in conversion to organic status. The conversion plan and holding will be reviewed at the initial organic inspection of your holding. You will be informed of any changes required to your plan; then hopefully you have a plan which will enable you to develop a viable and sustainable organic horticultural unit.

To proceed to the next step!

If having read this article you wish to commence conversion to organic horticultural production, simply telephone the Organic Trust (01 8530271) and ask for an application pack. This contains all the application and standards documentation that you will need. In addition, if there have been no inputs which are prohibited in the organic standards (i.e. essentially no chemical inputs to the land area to enter conversion for the full 36 month period prior to registration of the land into conversion) and if no livestock are to be maintained on the unit, you may qualify for a reduced conversion period – the usual conversion period (before you can sell any produce as 'organic') is usually two years but this can be reduced to twelve months subject to certain conditions – these conditions are outlined in the application pack mentioned above.



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