A case study of conversion to organic field vegetable production
Huntapac Produce - Lancashire

Project funded by DEFRA

Conversion to organic field vegetable production Defra OF 0191

Project aims

- To monitor agronomic and economic performance during conversion at ten commercial farms, representing contrasting scenarios of organic vegetable production (this farm has been monitored for 6 years).
- To interpret and evaluate data and to produce appropriate information to aid farmers who are undergoing, or who are considering, conversion to organic systems, and to aid future policy making on related farming issues

Farm details

Location: Tarleton, nr Preston
Farm size: 1215 ha (3002 ac)
Area converted: 49 ha (120 ac)
Farm type: Intensive vegetable farm converting to intensive vegetable production
Business : Limited company. Separate company formed for organic business
Altitude: 0-5 m (0-15')
Rainfall: 1083 mm (42")
Soil type: Deep fen peat soils with earthy topsoil/
fine loamy over clayey soils with slowly permeable subsoils .

Prior land use: Brassicas and salads – more recently set-aside
Conversion: Phased conversion over 5 years. Additional 10 ha prime silt land put into conversion in 2000. Also growing on rented land

Farm description

Huntapac Produce is a family-owned business established in 1942 as a grower and packer to the fresh produce industry, supplying vegetables to the local wholesale markets. As the company developed, its operations expanded throughout the UK and Europe, forming transport and packing subsidiaries. The primary business of the company is supplying conventional vegetables into the supermarkets. While originally they were growing on their own land local to the farm buildings, as they grew they expanded onto rented land and now grow 1000 ha of conventional field crops (carrots, cauliflower, calabrese, cabbage and lettuce) in more than 10 counties and also on land in Europe to ensure continuity. This scaling up of operations meant that the small size of the fields on the home farm became increasingly difficult to use and much of the growing moved away from their West Lancashire base. It was this land close to the pack-house that they decided to convert first.

Reasons and suitability for conversion

Conversion to organics at Huntapac was very much driven by the market. In 1996 the supermarkets were asking conventional growers if they could grow organically as demand for organic produce was clearly out-stripping supply. Huntapac Produce were approached and the supermarkets felt that "as we were good conventional growers we should be good organic growers." The aim of the farm is "to produce high quality organic vegetables with complete integrity for our supermarket customers."

The small fields are not situated in one neat block and are in many cases surrounded by conventional fields, not farmed by the company. The farmable area, once 10m margins of fields have been left as buffer zones to conventional farming, becomes quite small. The soils are capable of producing a wide range of high value horticultural crops, but are high in annual weeds. The company is equipped to pre-pack, chill and cold-store produce and marketing is by the parent company and should complement existing conventional production.

Farming system

- Stockless system relying on grass/clover leys, brought-in farmyard manure and natural fertility of land.
- A four year rotation was proposed, including a one year grass/clover ley. The three years of cropping are lettuce, double-cropped, or followed by leeks, carrots and brassicas, but not necessarily following that order.
- The fertility building strategy at Huntapac evolved over time and they admit that they did not pay sufficient attention to it at the start of conversion. The first fields that entered into conversion received as little as 7 months fertility-building and in the second phase of conversion fertility was sold off the leys as silage (part of an arrangement with a local organic farmer).
- The variability of the land has also lead to problems with the rotation, with celery being grown on less than ideal land and carrots on black soil with very high weed burdens
- There has been limited use of over-winter green manure or cover crops. The emphasis has been on harvesting crops in the ground and once that has been achieved it has left little time or been too late in the season to sow crops such as grazing rye or winter vetch. When vetch has been sown it has not performed well.

Soils and soil fertility

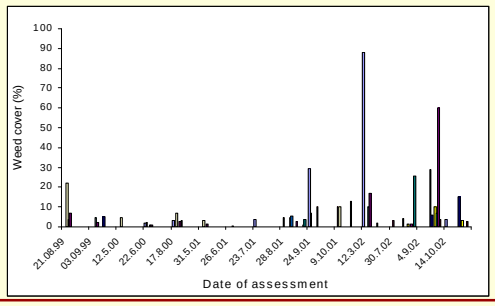
- Very high organic matter levels (more than 50% in some fields)
- No obvious changes (declines or increases) in P or K
- Nutrient stress (N) for brassicas in particular at the end of the rotation, after a short (only 4 months) fertility building in one field,following carrots and double cropped lettuce. Cultivation during the wet spring also contributed to problems of nutrient availability in this field due to compaction. Derogation received to apply pelletted organic fertiliser
- Other soil problems related to low pH in a couple of fields with very peaty soils and also fields that lie wet due to the high water table
- Problems of compaction and poor soil structure affected some crops, particularly celery and brassicas.
- Problems of Manganese availability - brassica plants showing signs of deficiency though high levels in soil.

Crop performance

- In 1999 good yields were achieved on relatively small areas. Carrots, cabbages and iceberg lettuce were grown and yields at or above organic standard yields were recorded. Quality was good, sales were good and marketable yields respectable.
- In 2000/01 they grew calabrese, cauliflower, brussels sprouts, celery, lettuce, courgettes and sweet corn on the home farm. The sweet corn had to be ploughed in as it bolted in a very cold June and though the brussels grew well they had disease problems which affected marketability. The cabbage, cauliflower, celery, lettuce and courgettes performed well.
- In 2001 they grew cabbage, calabrese, cauliflower, celery, lettuce and leeks. It was a bad year for pests and diseases with losses from leatherjackets on celery and lettuce after a two year fertility building grass/clover ley, cabbage root fly damage to the brassicas and septoria leaf spot on celery in the autumn. Weed control was difficult in the spring with wet weather and insufficient staff but was more effective in the drier conditions of summer.They grew 4 ha of organic carrots on rented land in Cheshire, in 2001. They also entered into an agreement with a local organic dairy farm to grow vegetables on 17 ha of their land and grew cauliflower, carrots, potatoes and parsnips. This arrangement was not without problems, however, as the land had a far larger weed pressure than they expected and the crops became smothered with charlock (*Sinapis arvensis*) and 8 ha had to be ploughed in.
- In 2002 they grew cabbage, calabrese, cauliflower, celery, lettuce, carrots and leeks. Big yield losses in brassicas due to cabbage root fly and club root. Lettuce grew well but didn't sell partly due to the cool Spring and Summer. Leeks grew well and weeds were controlled well but they did not reach specification due to length of white shank being too short.

Weed management

- Weed pressure on the farm could be considered medium but there is, however, considerable variation between fields and the weed pressure is higher on the fields with higher peat content.
- Weed control strategies generally a combination of inter-row hoe and hand hoeing within the rows.
- With small areas of cropping in 1999 & 2000, weeds managed effectively with attention to detail.
- The large expansion of cropping area in 2001 put the farming system under pressure at key times of year (June in particular). Missed weeding windows caused high weed levels in crops, **as management and labour time was focused on planting.**



- Results were higher labour costs for hand weeding and where not weeded, additions to the weed seedbank and loss of yield through competition.
- In general weeds within the crop row have been managed well, but pressure of time has meant that, in some crops, the weeds within the crop row have not been removed.
- Generally later planted crops were managed well for weed control as there were easier conditions for mechanical weed control, faster establishment of crops, less weed pressure and more time for weed strikes prior to planting.
- Flame-weeding tried with limited success - had to stop on peaty land as peat starting to burn. Poor kill of annual meadow grass on another occasion.
- In 2002 establishment problems due to cabbage root fly allowed some weed competition.
- High level of diversity of weed species - up to 16 species per field recorded. Chickweed (*Stellaria media*), mayweed (*Matricaria spp*) and annual meadow grass (*Poa spp*.) were the most common. Sporadic occurrence of, but no real problems with perennial weeds.

Project funded by DEFRA

Pests and diseases

- Past history of brassicas cropping on the land and the background population levels of major brassica pests have posed particular challenges for this farm.
- Cabbage root fly (*Delia brassicae*) has been the most persistent problem. There have been six crops where considerable economic damage has been incurred. Garlic granules used but not been effective.
- Aphid have not been a huge problem with no significant infestations. Potassium soap sprays were used in the 2000 season but not thereafter due to concern of the possible effect on predator levels.
- In 2000 Brussels sprouts suffered severe ring spot (*Mycosphaeralla brassicicola*) and were not grown in subsequent years.
- Severe club root (*Plasmodiophora brassicae*) attack led to the abandonment of one field of cauliflower and calabrese.
- Both lettuce and celery suffered from leatherjacket (*Tipula spp*) damage after the grass/clover fertility-building, with up to 30% losses in celery
- There was a significant problem with leaf spot (*Septoria apiicola*) in celery in 2001, exacerbated by slow sales.
- Downy mildew has been a problem in later plantings of lettuce (double-cropped).
- Carrots have been sown late (avoiding carrot fly) and not had any pest or disease problems.

Management and labour issues

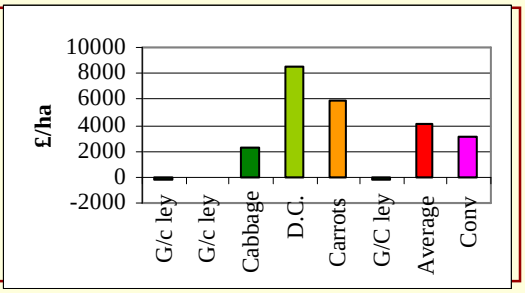
- Expansion of the organic cropping area caused problems as no corresponding increase in management staff - stretched resources. Casual labour was available and sourced locally
- Managing production on rented land was problematic, logistically . Not able to give it the attention needed, for example to get weeding timings right.
- Loss of key management person in 2001

Marketing

- Their own packing enterprise and good links with supermarkets has provided the market outlet for their organic produce.
- Good demand in 1999 and 2000, but 2001 and 2002 more difficult.

Rotational gross margin during and following conversion

- Grass clover leys during in-conversion led to no income generated from the land in this period.
- Average gross margin from the first rotation is above that for conventional horticultural cropping in the region.



Economics

- The farm was well set up with vegetable production and harvesting equipment, therefore only needed to spend £10,000 on weeding equipment.
- High income and gross margins were obtained from organic vegetable production.
- Casual labour accounted for 53% of variable costs.

Conversion to organic field vegetable production Defra OF 0191

HDRA the organic organisation

General conclusions

- HDRA have monitored 4 years of vegetable growing on this farm.
- Conversion was very much motivated by the market (supermarkets).
- The company is largely a vegetable growing and packing enterprise, not really a farm.
- Lack of attention to fertility building led to the fertility problems in some areas.
- Harvesting of crops in wet conditions with large equipment led to soil structure problems.
- Initial success driven by good vegetable growing skills, good access to the market and natural fertility of the soil.
- Problems were caused by the rapid expansion of vegetable growing area in 2001 and the lack of additional resources devoted to the enterprise.
- Fertile soils led to weed problems and yield reductions. Weeds dealt with by topping where got out of hand but some weed seed returns.
- Pest and disease pressure high in the region/area especially for brassicas and also related to intensity of past cropping.
- There have been problems meeting high supermarket specifications and lack of alternative outlets.
- Pressure from market to increase brassicas grown is placing demands on the rotation.
- The inability to claim set aside during in-conversion led to no income during in-conversion period.
- High financial returns and gross margins were obtained from organic vegetable production, which were above those from conventional production in the region.
- The practice of growing on other organic farms (in Cheshire, and a local dairy farm) was less successful. This was partly due to distance but also not knowing the fields, their weed burdens etc.
- Organic vegetable requires 50% more management time than conventional.
- This farm converted the land that was no longer suitable for conventional production first and better land later.

Lessons

- Don't under estimate the time organic vegetable growing will take and the resources required.

Project information

This leaflet has been produced as part of the DEFRA funded project **Conversion to organic field vegetable production.**
The project aimed to help farmers and growers thinking of converting to organic field vegetable production to make informed decisions with the aid of the agronomic and economic information collected through a case study approach.
The project is led by IOR-HDRA in collaboration with the OAS at IOR-EFRC, Warwick-HRI, and WIRS

HDRA the organic organisation | ELM FARM RESEARCH CENTRE | Warwick HRI | Prifysgol Cymru Aberystwyth The University of Wales

www.organicveg.org.uk

Would you like to take part in our research?
Contact
Phil Sumption or Anton Rosenfeld, HDRA, Coventry, CV8 3LG
Tel: 024 7630 8200
Fax: 024 7663 9229
E-mail psumption@hdra.org.uk or arosenfeld@hdra.org.uk

defra Department for Environment Food and Rural Affairs
Project funded by DEFRA

Conversion to organic field vegetable production Defra OF 0191

HDRA the organic organisation