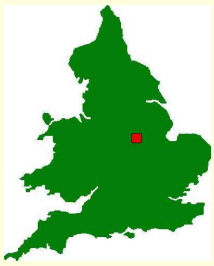
A case study of conversion to organic field vegetable production *Cambridgeshire*

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 was monitored between 1997 and 2001).
- 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: Cambridgeshire fens
Farm size: 121 ha (299 ac)
Area converted: 75 ha (187 ac)
Farm type: Arable farm converting with vegetables in the rotation.
Business : Partnership
Altitude: 0-4 m (0-12')
Rainfall: 587 mm (23")
Soil type: Light. Sandy to silty loams. Some parts predominately peat and others with a higher clay content.
Prior land use: Wheat, sugar beet, beans, potatoes, linseed and set-aside. 5.46 ha organic vegetables for box scheme and strawberries
Conversion: Phased conversion over 6 years.

Farm description

The farm is divided into three blocks of which one block was decided to be converted. All of the land is grade one, naturally fertile and easy to work. The fields are low-lying with mostly peaty soils. Top soil depth varies but is on average 50 cm (20"). The top soil overlays gravel, which means that it is exceedingly well-drained but can dry out quickly. The farm has a large irrigation licence for summer extraction. A flock of sheep (60 ewes) are run on the farm.

Reasons and suitability for conversion

- The farmer started growing a variety of organic vegetables on a 0.4 ha (1 ac) plot of the family farm in the mid nineties after studying horticulture and he started a box scheme.
- As demand grew he decided to convert more land and to grow for the supermarkets and/or processing.
- A main motivation for converting was to farm in an environmentally friendly way and to make better use of skilled labour and management skills on the farm.
- The conversion plan acknowledged that conversion of the farm would pose some challenges, including investment in livestock, equipment,and buildings and labour. Soils are generally well supplied with P and K , with the exception of two fields which are marginally low in K. The absence of manure could present a problem of K maintenance with the exploitable vegetable crops. It said that it might be possible to gain enough K reserves through grazing by sheep of the grass/clover leys.
- The high presence of couch and other weeds also presented a challenge.

Farming system

- The rotation in the conversion plan proposed 40% fertility building through grass/clover leys and set-aside and 60% cropping. Potatoes =>brassicas =>alliums =>carrots/parsnips => 3 years grass/clover. Green manures over-winter wherever possible and an optional undersown cereal crop after the carrots.
- The farmer wished to reduce the fertility-building component to over-winter green manures only, due to the fertile nature of the soil.
- The sheep flock are fed on hay and grass keep with concentrate cereal prior to lambing.

Soils and soil fertility

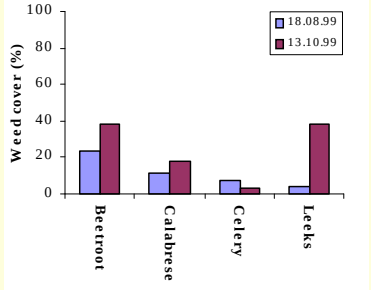
- No manures used or available.
- High levels of organic matter, remaining stable over the monitoring period.
- pH levels mostly 7 and above.
- Decline in phosphorus (P) levels in all fields monitored, apart from one. Soils are low in P for horticultural use
- Decline in potassium (K) levels in all fields monitored, apart from one. Potassium deficiency observed in beetroot and sweetcorn crops. Obtained derogation to apply potassium sulphate as K levels below index 2 and clay content below 20%. Problems incurred trying to source manure in the Eastern counties.
- Decline in magnesium levels in all fields monitored.
- Problems with soil compaction affected beetroot and celery crops, where soil cultivations had been shallower.

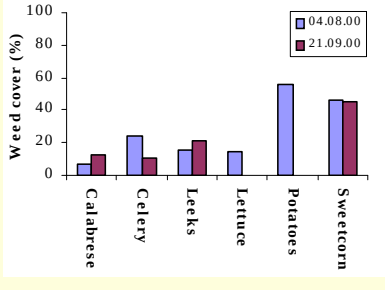
Crop performance

- Farmers yield data was only obtained for the 1999/00 season, when yields for calabrese and beetroot were well below figures for typical yields from the Organic Farm Management Handbook (Lampkin et al). Celery performed better but sufferred from poor cultivations in some plantings. Yields were poorer than potentially mainly through the effects of weed competition, though soil nutrition (K) and losses from slugs and birds also contributed.

Weed management

- The fertile black fen soils have high potential for weed growth. In 1999 there was additional pressure here due to their late date in the season for attaining full organic status. A June start meant that many crops were planted at the same time and the windows available for critical weeding operations often coincided with other demands on labour and machinery.
- In 2000 all crops had high levels of weed with the exception of lettuce and celery at time of harvest, averaging 19% with levels rising to 45% in sweet corn. The farm may have taken on too many crops and too great an area of vegetables than they were able to cope with given their staffing levels. The farm had invested in machinery, including a finger weeder, a brush weeder and a bed weeder but with many crops weeds had not been managed effectively. Large numbers of weeds set seed across one field with redshank (*Polygonum persicaria*) seeding liberally and a carpet of weed seeds were observed on the soil surface in September.
- A high diversity of weed species were recorded with 37 species in total. Weed beet was the second most common weed in 1999 and fifth most common in 2000.
- Couch (Elytigia repens) and creeping thistle were both commonly occurring prior to conversion and remained a problem, increasing in occurrence in 2000. Sowings of fertility-building crops in new fields that had been put into conversion in 2000 were delayed in order to bastard fallow.





Pests and diseases

- There were some serious problems with pests and diseases.
- In 1999 hares and rooks were damaging in calabrese and rabbits in celery in 2000. They took the precaution of using electrified rabbit fencing for some crops and suffered losses in celery (despite the fencing) and in calabrese (which was not fenced).
- Slugs caused more problems in 2000 than in 1999. A new field was brought out of its grass/clover fertility building in the spring and the plantings of calabrese and celery were severely damaged. The wet spring, high weed level in the crop and late cultivations may all have contributed to this problem. Due to the high levels of slug damage present throughout the first three plantings of celery, processing markets were established in order to reduce high grade-outs from the multiple pre-pack markets.
- Rust in leeks was also severe in 2000, in an early variety and blight in potatoes, possibly not helped by high humidity in the crop canopy caused by high weed levels.

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Management and labour issues

- Lack of labour has been a problem, together with a large expansion of vegetable cropping area without any increase in staff.

Marketing

- The farm had started a box scheme in the mid nineties. Initially local demand was strong and his box delivery business was thriving, but as the supermarkets moved into organic retailing they saw local demand drop dramatically from 80 to 30 boxes a week.
- At the start of conversion of the new block of land there were no definite markets identified, although supermarkets and processing (baby food) were options being considered.
- After conversion the supermarkets were the primary outlet for his produce through the packers. Eventually, though, he decided that this sort of business was too troublesome and unreliable to be worthwhile and he cut back on vegetable production. Since then he has been growing to supply Eostre Organics and concentrating on rebuilding the box scheme.

Farm output, variable and fixed costs during conversion

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Economics

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General conclusions

- The conversion of this farm posed considerable challenges due to the high weed burden, lack of manure availability and the variable nature of the soils.
- Although the farmer had experience of organic vegetable production on a small-scale there were problems in scaling up the operation to field vegetable production.
- Management and labour time was a significant constraining factor in this expansion.
- Weeds were the biggest problem and not managed effectively.
- Problems with supplying and meeting the supermarket demands and expectations, and lower prices were also contributory in a scaling down of operations after 2000.
- Lack of availability of manure in the East has been a constraint to this stockless rotation.

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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

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

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