

A case study of conversion to organic field vegetable production

Woodlands Farm - Lincolnshire

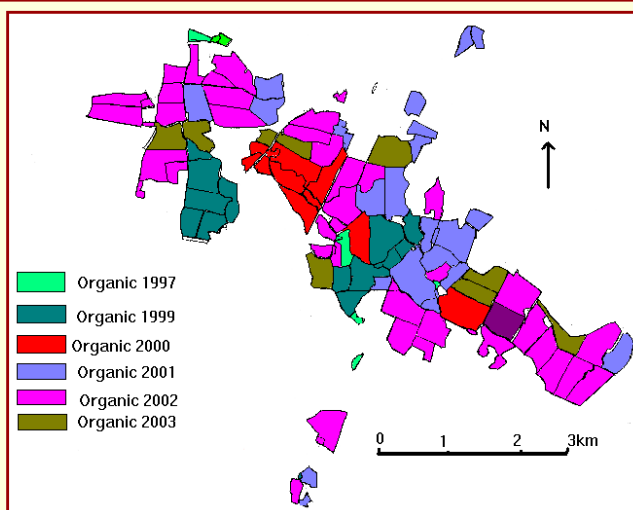
Project aims

- 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: Kirton, nr Boston Lincolnshire
Farm size: 1580 ha (3904 ac)
Area converted: 712 ha (1759 ac)
Farm type: Arable farm converting with vegetables in the rotation.
Business : Family owned company
Altitude: 3m (10')
Rainfall: 585 mm (23")
Soil type: Deep stoneless silty clay loams
Prior land use: Wheat, potatoes, sugar beet, peas, cabbage, oil-seed rape, daffodils, set-aside
Conversion: Phased conversion over 5 years. Originally planned arable, vegetable and beef enterprises



Farm description

This is one of the largest farms of its type to convert to organic production. This large family owned farm, situated in the fenland region close to the Wash, with fertile silt soils, consists of level fields that were said to have been reclaimed from the sea by the monks of Crowland abbey 900 years ago. The area is renowned for vegetable growing especially of brassicas. The farm had grown more vegetables in the past but had simplified in the 1990s into a largely cereal and roots farm with a small amount of vegetable and daffodil production. Irrigation is available but not to all fields.

The project monitored 12 ha in detail, agronomically and monitored economic performance of the whole farm.

Reasons and suitability for conversion

The main motivation for converting to organic vegetable production was for philosophical reasons but also for commercial reasons. The farmer defines himself as 'deep green' and that the decision to convert had been an easy one. He had become increasingly aware of the environmental costs of producing cheap food and decided that the future for him lay in organic farming. The Soil Association was the chosen certifying body as the grower could identify with their philosophy and felt that retailers preferred this standard.

The farm was considered suitable for conversion as;

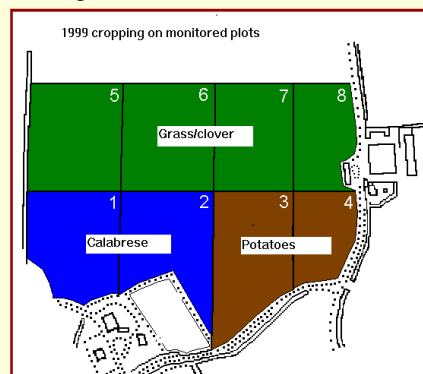
- Excellent soils with great crop type and yield potential suiting good organic markets.
- Good infrastructure, machinery and crop storage.
- Moderately low levels of the major weeds.
- A profitable current business and good financial security.
- High standard of management and experience of growing,
- Clear organic objectives.
- Eligibility for Organic Aid.



Farming system

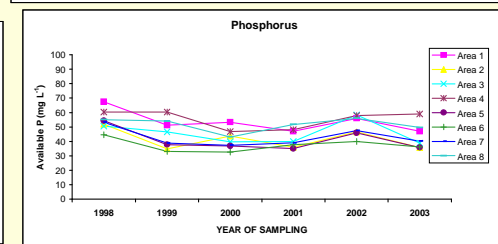
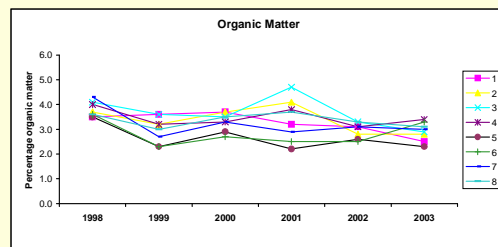
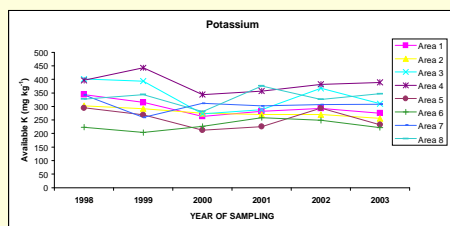
- Proposed rotation in Conversion plan was: 2 years grass/clover ley =>50% potatoes, 50% white cabbage =>Winter wheat =>Winter beans (vining peas) =>Winter wheat (or carrots) =>Spring barley or oats undersown.
- For a block of land with more fertile soils a more intensive rotation was proposed. Red clover / vetch / green manure => 50% potatoes, 50% brassica => Winter or spring wheat => Carrots =>Red clover / vetch =>50% onions, 50% brassica =>Spring barley
- Actual rotation has varied greatly due to the need to have a range of crops growing after the fertility-building period, usually a vegetable and 3 years of cereals (including beans), with the last cereal undersown. Irrigation not available to all fields. After first 2 years of organic production, vegetables only grown where could irrigate.
- Although stock were re-introduced into the system, this was only on a relatively small scale with the purchase of 12 in-calf Lincoln red suckler cows in 2000 and built up to 70 cows and 2 bulls by 2004.
- Largely relying on the grass/clover leys to provide fertility with manure both from own herd and brought-in manures.
- Introduced market garden area to supply own box scheme.
- HDRA agronomic monitoring on 12 ha. Rotation here was:

Field	1997	1998	1999	2000	2001	2002
W 1-2	Grass/clover	Grass/clover	Calabrese	Onions	W Beans	S Wheat
W 3-4	Grass/clover	Grass/clover	Potatoes	Onions	W Beans	S Wheat
W5-6		Grass/clover	Grass/clover	Potatoes	S Wheat	W Beans
W7-8		Grass/clover	Grass/clover	Calabrese	S Wheat	W Beans



Soils and soil fertility

- Organic matter levels low or marginally low for soil type but stable or declining slightly.
- pH levels 7.5-8 and stable
- Phosphorus levels adequate for soil type. Available P levels appear to have dropped after start of conversion and then stabilised.
- Potassium levels good. Available K levels appeared to drop in the first two years of conversion and then have stabilised.
- No problems with minor nutrients.
- Some problems with compaction in the headlands for onions. Compaction from wheelings apparent in wheat crop.



Crop performance

- Yields were variable. Potato yields at or above figures from the Organic Farm Management Handbook (OFMH) in some years, below in others
- Beetroot yields increased each year grown after conversion. Apart from first year well above OFMH figures.
- Onions yielded well below OFMH figures,
- Where figures available for other crops, yields similar to OFMH apart from leeks (considerably lower).
- For cereal crops in the rotation, field beans performed below OFMH apart from in 1999 when higher, Wheat and barley yielded higher than OFMH figures, in general, including the undersown crops. Sugar beet performed poorer than hoped.

	1999/00	2000/01	2001/02	2002/03
Potatoes	17.3	26	14.3	28.2
Calabrese	5.1	5.2		
Onions	10	13.3	7.9	
Beetroot	10.65	29.8	29.7	43
White cabbage		35.7		
Carrots		32.6		
Cauliflower		1235		
Spring greens		8.2	4.3	
Purple sprouting broccoli			3.8	
Leeks			3.2	2.79
Brussels sprouts			8.3	
Winter wheat			3.5	4.89
Spring wheat	3.48			
Spring barley u/s	4.1	3.6	2.9	3.58
Sugar beet			18.9	31.4
Field beans	4.67	2.6	2	2.3
Peas		2.7		

Weed management

- Weed pressure on the farm could be considered medium.
- Investment has been made in weed control equipment, with a brush weeder tined weeder and finger weeder available.
- Brassicac managed without hand labour achieving exceptionally good control in some crops.
- Over the rotation weeds have been managed fairly well. The main problem occurred in the onions in 2000 where weeds were left covering 80% of the ground area at point of harvest, despite considerable expense of hand weeding. Sourcing labour, work quality and management of casual labour has been problematic.
- Sporadic occurrence of creeping thistle and couch grass but no evidence of increase.



Pests and diseases

- The location of the farm in an intensive brassica growing area meant a high potential risk of losses from brassica pests and diseases.
- Originally fleece used for calabrese but later grown in open ground.
- A fairly intensive spraying programme has been adopted on the farm for blight control in potatoes (copper), caterpillars (Bt) and aphids (potassium soap) in brassicas. High risk associated with achieving supermarket specs. Good quality achieved with few major losses due to pests or diseases.
- On the monitored crops the most significant problem was White rot (*Sclerotium cepivorum*) in onions. This occurred in a large patch in the field. Fortunately the large number of fields available affords flexibility in the rotation and this field can be avoided in future.
- Common scab (*Streptomyces scabies*) was also a problem in the monitored area, not helped by the lack of irrigation in this field. It was decided to only grow potatoes and other vegetables where they could be irrigated and to concentrate on arable crops in that field.

Management and labour issues

- The farm had a challenge 'converting' many of the existing staff to organics and some left the farm.
- New people with new skills were needed for the set-up of the market garden and box scheme. The establishment of the box scheme also took considerable management time and effort.
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Marketing

- Prior to conversion marketed conventional vegetables through a local packhouse in Kirton. As converted, organic vegetables also marketed through this route. The farmer became very disillusioned with this form of marketing and began his own box scheme in 2001 and this grew rapidly. He also sold at farmers markets, although these were less profitable when labour was costed in, they proved a useful way of publicising the veg. box scheme and picking up new customers.
- Box scheme expanded to cover the whole of Lincolnshire and extends as far South as Bedford and Northampton. Box Scheme of the Year 2003.
- Most of produce still marketed through the packers. Some problems with slow sales in some crops such as cabbage in 2001.

Farm output, variable and fixed costs during conversion

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Economics

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General conclusions

- A separate business and brand was created for the organic enterprise—Woodlands Farm.
- A successful conversion was achieved on a large scale.
- The farmer had little experience of farming or growing vegetables prior to conversion and a skeptical staff. Ongoing advisory input through and after conversion has been important.
- Trials on a small-scale with wheat and vegetables in field-scale plots on a look-see basis to see how crops managed without chemicals was an important part of the learning process. Disappointing yields convinced them that improvements in soil structure and weed control would be needed for successful organic production.
- The creation of the box scheme has involved considerable investment, in new packing facilities, vans etc and much management effort in promoting and organising it. The establishment of a small market garden area to supply more unusual vegetables and fruit for the box scheme has also been necessary.
- Many field vegetable crops have been grown that the farm had not had previous experience of.
- Crop losses or failures that have occurred have been more due to the vagaries of the market than due to pests or diseases. E.g. A large area of cabbage was ploughed under in 2001, due to slow sales.
- The ability to use set-aside to provide income during the fertility-building period has been important.
- Grass/clover leys have been the basis for the fertility-building strategy. However, although livestock have been brought back onto the farm, there has still been a large quantity of imported farmyard manure brought into the system.
- There have been few problems with availability of major nutrients, although changes in bed set-up have been necessary for leeks from 4-6 rows per bed, where performance had been poor. Soil compaction has been a problem in patches and around headlands.



Project funded by DEFRA



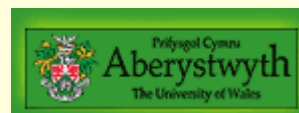
Project information

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



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Would you like to take part in our research?

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