A case study of conversion to organic field vegetable production Robert Thomas Farms - Notts

Project funded by DEFRA

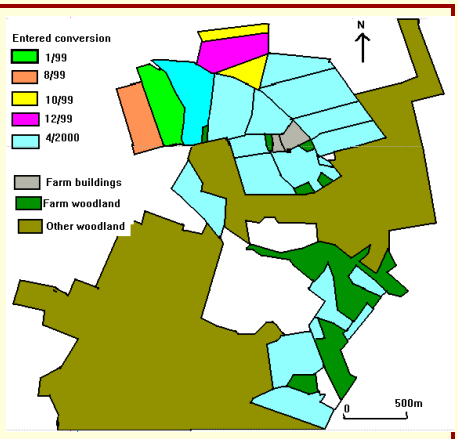
Conversion to organic field vegetable production Defra OF 0191

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: Haywood Oaks, nr Mansfield, Nottinghamshire
Farm size: 1500 ha (3700 ac)
Area converted: 190 ha (470 ac)
Farm type: Arable farm converting with vegetables in the rotation. Aiming to incorporate outdoor pigs into the system
Business : Limited company. Separate company *Haywood Oaks Produce* formed for organic business
Altitude: 70 -120 m (230 – 394')
Rainfall: 680 mm (27")
Soil type: Well drained sandy and coarse loamy soils often over soft sandstone. Risk of wind erosion
Prior land use: Sugar beet, potatoes, winter wheat, winter barley, sugar beet, carrots, linseed, onions. Nitrate Sensitive Area scheme (grass)
Conversion: Phased conversion over 5 years. Originally planned arable, vegetable and pig enterprises



Farm description

Robert Thomas farms is a large farming operation, on land that is one-third owned and two-thirds rented, growing a range of vegetable and arable crops The land is very sandy, which is light and easy to work and drains well allowing access to the land all year. The farm has full irrigation capability for all fields. The light land is particularly suitable for root crops. In addition to the arable land the farm has a conventional breeding herd of pigs, using a high welfare, straw based system. Countryside Stewardship has enabled extensive hedge planting and 2m grass margins to be established. The farm has considerable experience in vegetable, and in particular root vegetable production, marketing through Fresh Growers to the multiples. The home farm to be converted had mostly been in grass under the Nitrogen Sensitive Area (NSA) scheme.

Reasons and suitability for conversion

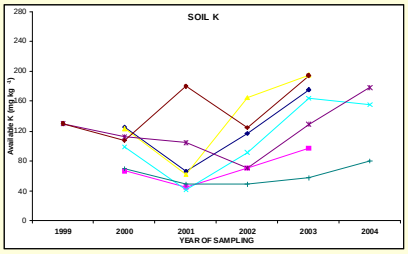
- Downward pressure on conventional prices was making it more difficult to make a living from producing conventional commodities. With the high demand from supermarkets in 1999 they felt it was important to be in the organic market and be one step ahead of the opposition.
- The farm was said to be well-suited to conversion due to it's structured and professional approach to its management, mixed system with arable / vegetable / root enterprises, with existing experience in livestock and vegetables, good infrastructure and existing marketing arrangements.
- Challenges were; the light soils requiring careful and timely management. Improving soil organic matter levels and biological activity, through the frequent use of green manures would be important.
- Balancing nutrient demands with supply would be very important, particularly in terms of potassium management.
- Investment in mobile housing, fencing and water infrastructure needed for outdoor pigs and weed control kit for vegetables/arable production

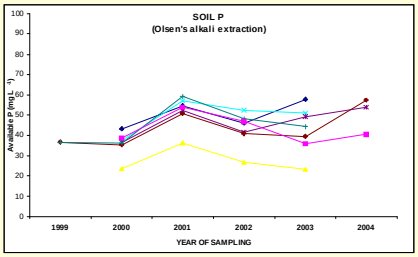
Farming system

- The plan was to develop an organic arable / vegetable rotation to operate alongside the conventional arable/ vegetable enterprise. The conventional indoor pig unit continued to operate whilst the outdoor organic unit was phased in. The goal was to establish and integrate an extensive outdoor organic pig enterprise, to assist in developing a livestock/arable/vegetable rotation, with the pigs utilising part of the ley phase. The pigs would assist in the control of weeds and in nutrient cycling.
- Rotation plan was originally; 2 year grass/clover ley => Carrots => Potatoes => Onions => 2 year grass/clover ley with pigs. Pigs were converted and incorporated into the system but the economics were not in their favour and they were phased out in 2003.
- Initially set-aside was used to enter conversion on three fields, using grass/clover/trefoil/mustard leys. Then NSA grassland, though no clover was allowed under this agreement, so these fields needed a fertility building period after the first year of cropping.
- Move into retailing meant the introduction and trial of a number of vegetable crops they had not grown before. At first they grew these in a separate field of mixed veg, but have since moved to integrating the minor crops with the main rotation.
- In 2003 the rotation was revised as; NSA grass => carrots => grass/clover => brassicas => onions => peas => grass/ clover (strip-cropped) =>brassicas => leeks

Soils and soil fertility

- In first year of organic cropping some crops (brassicas, in particular) became nutrient-stressed, despite following two years fertility-building and with FYM. They made the decision to compost their manure from the conventional pig unit, using the controlled microbial composting system of windrows and regular turning. This has produced a much more stable product that has sustained crops through the growing season.
- All fields have low levels of organic matter. Averaged 1.9% in 2000, 2.5% in 2004





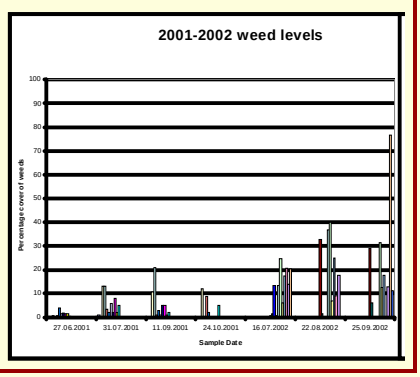
- Low or marginally low levels of P. No obvious changes (declines or increases) in available P levels.
- Low or marginally low K levels at start of conversion. Available K appears to have dropped initially following conversion in most fields and then has been rising.

Crop performance

- In 2001, carrots, parsnips, onions, leeks, potatoes, beetroot, calabrese, cauliflower, runner beans, sweet corn, pumpkins and courgettes were grown on 6.5 ha.
- Relatively small areas of crops and good attention to detail meant that the first years cropping was reasonably successful, particularly those crops such as carrots, parsnips and potatoes which they grow well conventionally, have most agronomic and marketing experience and for which the land is best suited. These crops achieved yields at or above organic standards (Organic Farm Management Handbook) Some nutrient-stress at end of season with brassicas, runner beans and sweetcorn.
- In 2002 they grew carrots, onions and potatoes on a field scale and had one field devoted to the smaller scale crops for direct marketing including leeks, parsnips, calabrese, cauliflowers, brussels sprouts, sweet corn, runner beans, beetroot, courgettes and squashes. The carrots performed well and weed control was good . Potatoes yielded well but skin finish and Spraing meant marketing was difficult and the majority went for processing. Onions had problems with weed control. Some of the more minor crops (in terms of area) like sweetcorn and courgettes did not perform well, with very poor emergence and establishment in the cold spring, with late frosts.

Weed management

- Weed pressure on the farm could be considered low, in comparison to other farms in the study. The intention was to grow many drilled root crops such as carrots and parsnips but they also wanted to try onions and leeks as drilled crops, as that is how they were familiar with growing them conventionally.
- Made investments in a infra-red burner for pre-emergence flame weeding and a harrow-comb for arable crops. They had a front and rear mounted lay-flat bed weeder made up for them for hand weeding and used an old Lilleston rolling cultivator for potatoes and the wheelings between beds.
- Co-operation with a neighbouring organic farmer in year two enabled the use of a vision-guided hoe in exchange for their flame weeder.
- Higher weed cover in 2002 than 2001 - problems with management time as expanded organic operation. Adapting machinery to larger area for example in flame-weeding for drilled onions and 30% of crop had to be ploughed in. Weed control in carrots good: flame-weeding =>vision-guided hoe => bed weeder.
- Problems with rye-grass and clover re-growth from fertility-building (some through seeding, some from incorporation.



Pests and diseases

- No sprays used on the organic crops.
- Pigeons biggest problem with brassicas, in 2001, effectively deterred by balloon kite scarer in 2002. No major problems with caterpillars or aphids. Ringspot (*Mycosphaerella brassicicola)* affected calabrese in 2002.
- Potatoes had blight infection on tubers in 2001, in prime foci of disease (dip in field). Trickle irrigation used to reduce scab severity while avoiding encouraging blight. Despite this scab in Sante and Spraing in Nicola affected marketability and much of the crop had to go for processing.
- Onions relatively trouble free.
- Parsnips grew well but suffered from canker (*Itersonilia pastinaceae)* at the end of the 2001/02 season.
- Carrots –few problems with carrot fly, due to late sowings and crop covers on early crops.
- No major problems on other crops grown for wholesale and direct marketing and more flexibility in sales with these crops in terms of specifications.

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Management and labour issues

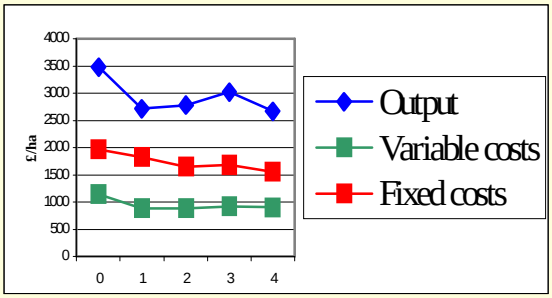
- Management of organic vegetable crops took a lot more time than the conventional ones
- The expansion of the organic cropping area caused problems as there was no corresponding increase in regular and management staff - stretched resources.
- The introduction of organic vegetables caused there to be a large increase in the use of casual labour (3 fold).
- Used various sources of labour, but in 2003 used Eastern European workers through the Concordia Seasonal Agricultural Workers Scheme and they were pleased with quality.

Marketing

- Conventionally this farm predominately sold to supermarkets through Fresh Growers, a farming Co-operative with EEC Producer Organisation status, whom are involved predominantly in the production and marketing of both conventional and now also organic root vegetables.
- As converting, took on person to develop the organic marketing side of the business.
- Created a brand - Haywood Oaks Produce
- Developed alternative marketing channels to shorten food chain and add value to final product
- Involved supplying wholesale market and supplying local retailers. Created shop units that they stock on a sale or return basis. Units placed in local post offices, garages and other outlets. Also sell to organic packers.
- In 2003 the farm started selling organic produce to a local school.

Farm output, variable and fixed costs during conversion

- Output fell during conversion, largely due to falling prices for conventional produce
- Variable costs fell slightly. Savings in fertilizer and crop protection chemicals were replaced with increases in casual labour.
- Overall fixed costs fell during years monitored.



Economics

- Vegetable gross margins have averaged between £3-5,000/ha
- A small amount of land in organic vegetables has generated a high income per ha (£14,000/ha). Costs have also been high with labour accounting for 66% of variable costs of production.
- The outdoor organic pig enterprise had to be stopped due to returns not covering costs.
- Since the farm is only currently converting 20% of farm area the overall economic impact on the farm's finances has not been great.
- Costs of conversion have been relatively low due to ability to convert land from NSA grass. Costs of new investments has been reduced by sharing weeding equipment with neighbouring farmers.

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General conclusions

- Only intended to convert part of the farm (20%).
- Farm basically converted from conventional arable/roots/vegetables to an organic arable/ roots and vegetables system.
- They have increased the number of vegetables grown and radically assessed their marketing strategies, moving from just packers to packers/ direct marketing/including schools, wholesalers. This diversity gives strength and flexibility and ability to market greater proportion of product, although it has added to costs, notably for casual labour.
- Selling locally has given the farm more presence in the local economy.
- Previous vegetable growing experience has been beneficial for organic vegetable production.
- Direct drilling of leeks and onions has been abandoned in favour of using transplants.
- Tried to integrate a livestock system (outdoor pigs) but lack of profitability in this led to them being dropped.
- Used NSA and set-aside as a way into conversion.
- The light nature of the land has been challenging for organic production. Started composting system which enabled crops to be sustained.
- After experimenting with a number of different crops on a small scale for local and wholesale markets, they have decided to concentrate on those crops that they can grow best, which are also the ones they grow conventionally - carrots, parsnips and onions on a field scale.
- Large amounts of investment have been needed for weed control and it has been a steep learning curve. Co-operation with other growers has been beneficial.
- Conversion has not had a major impact on the overall farm finances.

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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

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