A case study of conversion to organic field vegetable production
Underwood organics

Project funded by DEFRA

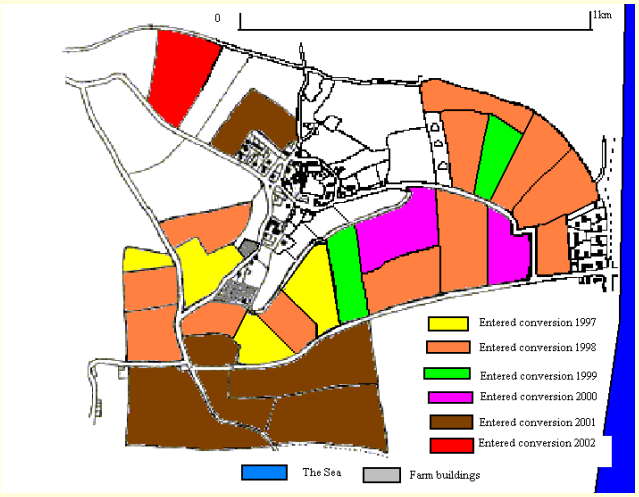
Conversion to organic field vegetable production Defra OF 0191

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: Beeson, nr Kingsbridge, Devon
Farm size: 72 ha (178 ac)
Area converted: Whole farm
Farm type: Mixed farm with livestock (dairy) and arable converting to mixed system with vegetables.
Business : Partnership (family owned)
Altitude: 10-110 m (30-360')
Rainfall: 1059 mm (42")
Soil type: Well drained fine loamy and fine silty soils over rock
Prior land use: Pasture and barley, fodder crops
Conversion: Phased conversion of original 39 ha over 6 years, further 33 ha bought or rented in 2001 also converted



Farm description

This is a traditional family owned mixed farm in South Devon. The farm has the advantage of being located very close to the sea, which means that it is mild and wet with few frosts and minimal snowfall. It is therefore suitable for growing niche crops such as early potatoes, over-winter cauliflowers and other speciality crops.

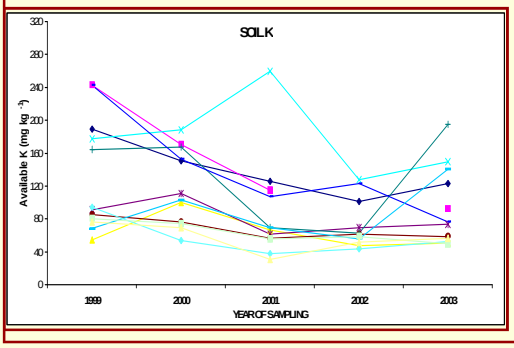
The accessibility of the farm, through a maze of Devon lanes and the distance from major markets is, however, a disadvantage. The well-drained loamy and silty soils are good for vegetable production though the sloping fields need careful management. The farm had not grown vegetables before and was primarily growing grass and fodder for the dairy herd. The farm consists of a number of small fields and hedgerows. Wildlife conservation is important and the farm entered the Countryside Stewardship Scheme in 1995, for the re-creation of grassland habitats with species rich swards, restoration of hedges, margins of tussocky grass around fields and the stubble from barley fields to be left uncultivated in order to encourage the endangered Cirl Bunting.

Reasons and suitability for conversion

The mixed farming system is a relatively easy one to convert and that is one reason why, historically, more farms have converted in the South West of England and Wales than in the East where farms have become more specialised. Farming under the Countryside Stewardship Scheme had made him question the need for some of the inputs that he had been using conventionally as through the use of field margins the aphid problems on his cereals reduced. Through this he had also come into contact with other local organic farmers. The final impetus for converting to an organic system came from the farmer's daughter who suggested that there was an increasing market for organic vegetables. These ideas also coincided with the availability of government grants for conversion and the expansion of the South Devon Organic Producers cooperative, which was looking for new members. The proximity of his farm to the sea gave him an advantage over other grower members in that he would be able to produce earlier crops.

Farming system

- Grass is the most important crop. The farm grows its own forage with Spring and Winter Barley for both forage and rolled grain. Silage is made from the grass leys and also peas and barley.
- The cattle are under normal conditions wintered outside except in bad weather conditions. Manure is stock-piled in the field and slurry is stored in a lagoon and spread through a dirty water system
- Prior to conversion the rotation was : Minimum 3 years in grass ley, with cereal/ peas break for 2 years and back to grass
- After conversion the basis of the rotation remained the same with a minimum of 3 years in grass ley => early potatoes followed by over-winter cauliflowers => spring barley => peas undersown with grass/clover mix
- The rotation is flexible and fields are chosen to be cultivated for potatoes according to their dock levels and productivity of sward
- Loss of dairy in 2003 (economic reasons) has long-term implications for sustainability (now rearing dairy replacements) .

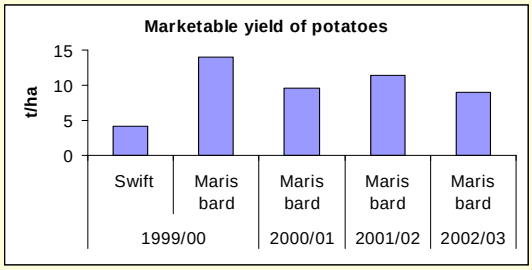


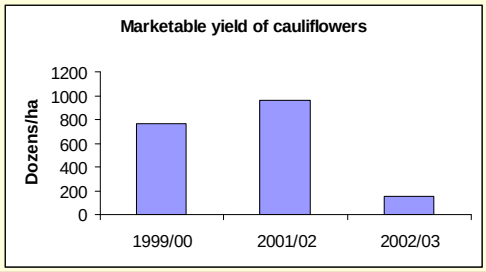
Soils and soil fertility

- Manure input from own organic dairy herd has provided fertility for crops
- No problems with availability of major nutrients. Crop performance good despite low Phosphorus (P) and Potassium (K) levels.
- All fields low in P apart from one (ex fishermen's allotments)
- All fields low or marginally low in K (apart from one). Levels declined during and after conversion but may be stabilising
- Organic matter levels mostly OK. Stable or slight decline.
- Halving of livestock numbers on farm (2003) means manure spread more thinly.

Crop performance

- First organic crop, lettuce performed poorly - fleece removed too early & slug damage.
- Early potatoes. In the first year, 1999, Swift performed poorly as checked during growth by ridging. Maris Bard performed better and has been consistent ever since. Grown for earliness and quality. Yield less important if price good. Slugs affected yield in 2002.
- Winter cauliflower. Club root affected yield in 1999/00; rabbits and geese caused losses in 2002/03





Weeds management

- Vegetables used as break crop in rotation, an opportunity in the rotation to deal with the build up of docks (*Rumex* spp.) in the grassland.
- Docks most problematic weed on farm, no evidence of increase, dealt with effectively through rotation and cultivation.
- Medium weed pressure, compared to other farms in the study. Inter-row rotavator purchased for weed control in cauliflowers.
- Potatoes and winter cauliflowers are both relatively simple crops for weed control. Ridging effectively used for weed control in potatoes, though damage to sprouts affected yields of Swift in first season. Winter cauliflower can establish quickly and out-compete weeds from a July planting, though absence of irrigation has delayed establishment in dry summers.
- Though there have been at times, high levels of weeds within the vegetable crops, for the main crops potatoes and cauliflowers they have not appeared to impact too much on yield. The farmer, however is happy to tolerate a certain level of weeds, which are not competing too much and may help in pest and disease control through biodiversity benefits. The long rotation, with at least five years in grass also helped. While it is not intended for weeds to seed, the consequences may be less than for a more intensive rotation.

Pests and diseases

- The cauliflower crops were grown with the minimum of intervention, no sprays being used or crop covers.
- Aphids have not been a big problem, generally speaking natural enemies built up towards the end of the season and kept aphid numbers in balance. Caterpillars only recorded at low levels. Little cabbage root fly damage.
- The most significant disease problem has been severe club root (*Plasmodiophora brassicae)* in one field in 1999.
- Rabbit and geese caused severe damage in cauliflowers in 2002/03
- No spraying used on potatoes. Generally crop has grown and harvesting started before blight too much of a problem. Skin finish has been good.

- Slugs caused extensive damage in the Maris Bard crop in 2002/03 with harvesting from one field having to be abandoned. The high slug populations were in part due to late cultivations prior to planting, a knock-on effect of health problems of the farmer. Ground preparations weren't possible until early spring and a large quantity of green material was ploughed in at this time, which may have encouraged the slugs. Barrier crops of Premiere, a more slug resistant variety being tried around edges of fields.

Management and labour issues

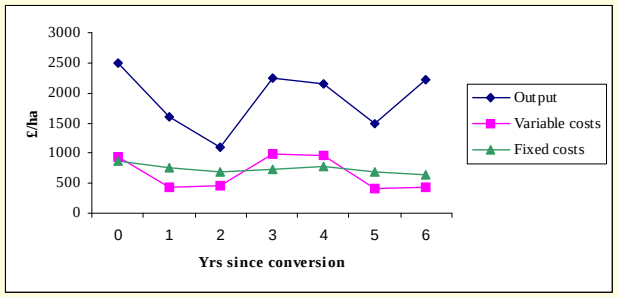
- Sourcing and managing labour for weed control and harvesting has been problematic. Labour from co-operative was charged from source, too expensive to continue. Few local people interested in manual labour. Labour input needed, under-estimated in first year of vegetable production.
- Labour and management needs of vegetables have been high and occasionally has conflicted with other important tasks within the farm such as hay/silage making. At times has not received sufficient attention e.g. weeds not controlled, delays in planting.
- Health problems of farmer in 2001 put farming system under pressure.
- Family issues led to uncertainty over future. Lack of continuity of family as labour/management source

Marketing

- Founder member of South Devon Organic Producers (SDOP) Co-operative but distance from packhouse and labour source meant this was uneconomic.
- Sells some produce to SDOP and another packer/wholesaler. Some produce sold locally through a farm shop and wholefood shop.

Farm output, variable and fixed costs during conversion

- Decline/movements in output largely affected by decisions to stop and restart dairying.
- Variable costs have largely mirrored changes in output
- Fixed costs have declined over the 6 year period.



Economics

- Returns and gross margins from vegetable production have been very variable. Early potato gross margins have ranged from £1013-5317 (average £2,398), and winter cauliflower ranging from £-539-2981 (average £1078). A high price for potatoes has been important in determining a good gross margin.
- Only in two years out of four (years 4&5) have organic vegetables made a positive contribution towards farm profitability.
- No investments in specialist machinery were required as this was provided by the co-operative.
- Savings have been made in the use of fertilizer and purchased concentrates but other variable costs such as casual labour have increased to take their place.

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General conclusions

- Vegetables had good potential to fit into mixed system, to boost income and provide a valuable breakcrop for control of weeds.
- Conversion completed over 7-8 years.
- Lack of experience of vegetable growing meant steep learning curve and some crop losses through inexperience/poor advice in first year. Attempt to grow early iceberg lettuce crop in first year was a disaster.
- Since then concentrated on early potatoes and winter cauliflowers, but with loss of dairy now diversifying into other crops (strawberries, salads, dried flowers for local sales).
- High levels of biodiversity on farm, including hedgerows, field margins and weeds within crop have probably contributed to low incidence of damage from insect pests. Rabbits and geese have been biggest problem - impact increased through pressure on management time.
- Problems of compatibility of countryside stewardship with organic farming. Can't go in to cut margins until after the docks have seeded.
- Despite the many changes on the farm, it has been able to maintain its profitability, although this is less following conversion.

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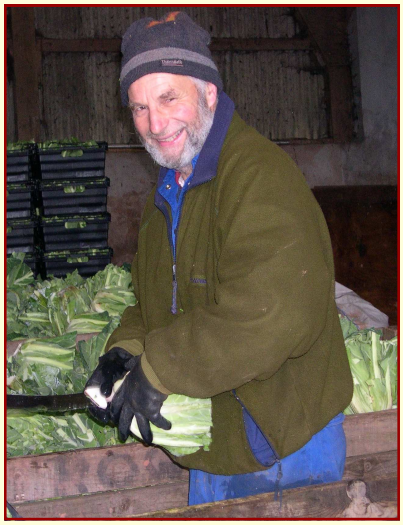

Project information

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?
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