

Case Study

Fruit trees improve land and productivity

October 2015



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Alley cropping system delivers greater profitability through increased vegetable yields and supplementary fruits, nuts and fuel



Over the last few years, Devonshire farmer Martyn Bragg has incorporated fruit trees onto his 170 hectare mixed organic farm, Shillingford Organics, to help improve productivity. Running an award-winning vegetable box business but in need of

some shelter for his land, Martyn was keen to improve conditions in a way that made commercial sense and so incorporated rows of fruit trees among his vegetables to maximise productivity both below and above ground.

Making positive changes

Martyn took over the farm from his father in 1982 and began developing his land management methods. In 1998, he started organic conversion, by the year 2000 was growing organic vegetables and by 2001 the whole farm was certified. Over time, he has implemented effective organic rotations, with the inclusion of arable and livestock benefiting the land. More recently, he also installed a biomass boiler to allow for the sustainable heating of his farm house and buildings.

Environmental issues

While farming methods were improved, Martyn was still aware of several issues affecting the site. Numerous areas were left exposed following the removal of trees in the 1960s, leaving the land vulnerable to strong winds – bad for both livestock and vegetable crops. Soil erosion also proved problematic in harsh conditions, with steep slopes being especially susceptible in instances of strong wind and rain.

With a need to increase shelter, Martyn considered trees a viable solution, which would offer protection and the potential of long-term commercial benefits. Having identified a local demand for fruit, Martyn incorporated his first alley cropping system and soon began to see how effective trees were as a windbreak for his vegetables, while at the same time providing produce of their own through fruit, nuts and wood fuel.

“The tree planting has been perfectly integrated into my organic farm system. Not only is it improving the vegetable crops, but we are producing high-quality fruit crops that we can sell commercially.”

Martyn Bragg, organic vegetable farmer, Devon



The case for tree planting

Trees can:

- Produce fruit crops that can be sold as an additional product to market.
- Improve soil structure and reduce the risk of erosion.
- Provide shelter that will bring on the early crops sooner and reduce the effects of drought.
- Attract pollinators and help with pest management.
- Provide nutrients into the soil which will help improve the growth of the vegetable crops.
- Perfectly complement the sustainable production of vegetable crops linked with an organic farming system.
- Reduce energy bills by using wood coppiced from the willow trees as an energy source.

The Woodland Trust receives funding for the integration of trees on farms from the PUR project which is funded by the hotel chain Accor who support reforestation and agroforestry projects across the world.

Lessons learned

However, while the benefits were clear; Martyn learnt some valuable lessons from his first scheme. As the trees established, it became apparent the alleys were not wide enough. This caused difficulty when navigating machinery, managing the dense understory and controlling the amount of shade impacting on vegetable growth nearest the trees.

Martyn comments: "We saw first-hand the benefits of trees on this first plot of land, but they soon grew bigger than anticipated. This was a valuable lesson learnt for our future tree planting activities."

After this initial scheme, Martyn set about incorporating a second alley cropping system. With help and support from the Woodland Trust, Martyn completed his planting in 2014 and now operates a silvo-vegetable system comprising apple, pear, mulberry, hazel and alder trees which provide fruit and nuts, and willow coppice for the production of biomass. The planting has taken place across an eight acre field, with trees 28 metres apart in 4 metre rows, providing a 24 metre alley for vegetable production.

Reaping the rewards

Much of the planting is on land already sheltered by a hedgerow Martyn had previously let grow high along the northern edge of the second agroforestry field to act as a shelterbelt. Alongside the trees in the alley cropping system, this collectively delivers multiple benefits. The increase in shelter helps to warm the soil earlier in the spring, so the vegetables can be harvested sooner, which is essential for Martyn's continuity of supply within the box scheme. Shelter also helps to limit the negative impact of drought, by reducing wind speeds and improving crop water efficiency.

As well as this, the trees and understory are a valuable habitat for pollinators and insects helping to support integrated pest control. Weeds are controlled by mulching in the first few years, and leaf litter and the deep root structure of trees can help to improve overall soil conditions.

Most significantly though are the commercial gains for Martyn in terms of product diversification. Although there

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are challenges associated with tree planting, short-term costs and labour are soon counteracted by the long-term benefits. With the production of high quality fruit in addition to the vegetables on the ground, Martyn can take advantage of additional commercial opportunities. He commented, "There will be an additional cost up-front which can put farmers off, and planting trees on farmland can mean you're losing some production for four to six years. However, in the long-term, this will prove to be incredibly productive by improving the vegetable crops and producing fruit that you can sell. Therefore, a long-term commitment is definitely required for farmers to realise these fantastic commercial opportunities."

Valuable help available

Like many farmers, Martyn is certain that without help from the Woodland Trust, he could not have gone ahead with the planting. The Woodland Trust supplied the materials and Martyn supplied the labour for ground preparation, measuring, marking, planting and maintenance. "We are amazingly grateful for the Woodland Trust funding – we couldn't have done it without it. The capital investment in fruit trees takes four or five years to give any return so it would have been very difficult. But funding always helps to persuade a farmer and the Trust can give access to help and bespoke advice to suit every situation."

Following the success of his agroforestry systems, Martyn is now keen to be involved in longer term evaluation with the Trust and to work on refining planting designs for maximum benefits, which he hopes will provide other farmers with valuable information should they consider alley cropping systems on their own land.



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