Study Tour Report from the Netherlands.

What does the future look like: disinterested government, no support for organic farming, prohibitive labour costs, prohibition of copper fungicides, cut throat supermarkets clamouring for product, booming export markets? In the Netherlands our future is now. Recently Mark Measures and clients travelled there to see how arable and field vegetable farms are coping.

Our host enthusiastic and knowledgeable hosts, Jos and Ana Pelgrom of http://manatmachine.com/ know the farms well and had selected some stimulating examples: weeds and soil management preoccupied us, with diversions into marketing, blight control and machinery.

Weed control is a universal challenge; don't think that because some of the land was only reclaimed from the sea 30 years ago that they don't have weeds in the Polders! All farms are using spring tined weeders in cereals and field vegetables to control annuals. Inevitably the Treffler harrow, as seen at NOC 2016, featured strongly: it is genuinely a third generation spring tined weeder, having a more sophisticated spring action which ensures constant ground pressure irrespective of undulations, shallow depth control and precise, on-the-move pressure control all of which allows operation at an earlier stage of plant growth. This of course means that weeds can be pulled out before they get roots established – critically important for control of all annuals in veg crops and weeds like poppies and charlock in arable. https://manatmachine.com/en/products/tined-harrow/

Treffler harrow

The field vegetable farms growing carrots, onions, brassicas, celeriac and beetroot are very highly mechanised. The Steketee www.steketee.com factory showed us the latest in inter-row hoe equipment, hoe blades, torsion weeders, finger weeders for working at the base of the plant and in-row weeders. The latter use a camera to identify the individual crop plants, notably brassicas, and it weeds between them with a pneumatic driven blade that flicks between the plants. Cost is about Euro 75,000 per bed.

In-row weeder

All toolbars can be camera guided and this is common practise now, giving extra precision and is needed even if GPS is available. Pre and post emergent weed control with weed strike using mechanical and /or flame weeders is standard practice, there is a willingness to use repeated passes with the flame weeder, despite the substantial gas use; the cost is more than compensated by the hand labour savings.

Of particular interest are the farms developing new ideas and techniques. Several farms have been operating without ploughing, one for 10 years; non-inversion tillage systems are fashionable now, for all sorts of good reasons – soil organisms and organic matter really are better left undisturbed and near the surface. However experience in the UK is variable with a few farms operating systems based on shallow L blades and deeper tined machines while elsewhere the EcoDyn on Cotswold clay loam has shown up some problems with soil structure and poor nitrogen supply. This contrasts with the exceptional soil structure, good weed control and crops that are found on some farms in the Netherlands and the farm at the home of the EcoDyn in Germany. The reason may be something to do with the soil type, or perhaps more significantly the fact that where non-inversion-tillage systems are working well there is much more emphasis on the use of green manures and the incorporation of very large quantities of organic matter. Whatever the reason it does feel right to have soils that allow you to plunge your hand in to a depth of 6 or 8 inches. You don't get that with a ploughed and power harrowed soil. At Steketee we saw their shallow Eco-plough: that might be a better way forward for many farms.


Shallow plough

Farms on heavier land are faced with the same problem as in the UK: how to create a seedbed without having to plough before Christmas in order to get frost action and weathering. Some are improving soil structure with non-inversion tillage; others are experimenting with later ploughing and use of green manures.

GPS is fitted to 80% of new tractors now; it allows the development of controlled traffic systems, particularly important for field scale vegetable production but potential for organic arable production as well. None of the farms we saw have succeeded in extending controlled traffic to forage harvesting but the problem of soil compaction at this point in the rotation urgently needs to be addressed. Wide beds with tractor wheels set at 3.2 meters help to reduce compaction.

Spot the driver!

Niek Vos has spent his life breeding blight resistant potatoes, supported by the Louis Bolk Institute. http://www.louisbolk.org/downloads/2974.pdf Varieties Bionica and Seville have good flavour and have found widespread acceptance in the multiples. Other farms are using Agrico's Carolus. For many years there has been a ban on copper for blight control in the Netherlands; this has been watched with incredulity from the UK, it turns out that some farms are evading the ban by applying copper for "soil nutrition" reasons but this is no longer tolerated by consumers and farmers are leading the call for stronger enforcement and putting more effort into get universal acceptance of resistant varieties.

Another farm has developed a machine for placing a 3 - 4 cm line of sieved green waste compost above the drill of small seeds such as carrots or onions. The trials with carrots undertaken over the last year or two show savings in hand weeding of 50 – 80 hours per hectare.

Drilling carrots with a compost strip

In my experience soil nutrient management remains the key to improving crop yields and the success of the Dutch farms is undoubtedly partly due their rotations, with at least 30 to 50% fertility building and attention to soil nutrient levels. They too have found that diverse leys with three of four legumes are more effective than simple mixtures.


Diverse ley including lucerne, red and white clover and grasses

Soil analysis prior to all crops is routine on most farms, although there was some over-reliance on the use of nutrient budgeting in the mistaken belief that organic farming should necessarily aim for always returning the same quantity of nutrients taken off by the crop in the form of brought-in manures or mineral fertilisers. Interestingly there is no use of alternative analytical techniques such as Base Cation Exchange Ratio or Soil Life. Mineral fertilisers are used and there is great emphasis on the precise use and timing of manure and slurry. There does not seem to be same draconian and unwarranted control over the gap between manure application and crop harvest that is imposed in the UK. The farms visited are predominantly arable farms, but they all had arrangements with nearby livestock farms; supplying them with forage, and getting FYM and/or slurry in return. Composted manure and in some cases green waste is applied in the spring prior to ploughing or cultivations. Cereal crops are receiving slurry applied by slot applicators and umbilical systems to the growing crop in the spring; this is probably the single most important reason that cereal yields are consistently so much higher in the Netherlands and Denmark than in the UK. Why don't UK farms with access to slurry follow suit?

A recent development is the use of onion oil in pellets as a means of carrot fly control; we hope to get access to that in the UK this year. And another is the use of mint oil as a sprout suppressant in potato stores.

A diversion from soil and weed management was the grain mill shown by man@machine with models arranging from 100 – 1,000 kg/hour. The interesting characteristic is that the machine cuts rather than grinds the grain with the consequence that the flour is more uniform, no dust and there is less heat

created than with either stone or steel milling, hence improved nutritional quality – maintaining oils, enzymes and proteins.

However good these farms are at growing they don't leave much room for wildlife conservation. There is certainly potential for greater integration of wildlife generally and specifically encouragement of natural predators through planting and natural regeneration.

The Dutch have always led the way in organic crop management, there are still new ideas coming forward and their level of optimism and willingness to invest is really encouraging.

Mark Measures mark.m@organicresearchcentre.com