

Report on

Carrot Conference

19th Nov, 2009

From Dr Hazel MacTavish-West

The carrot conference proceedings will be sent to STC. There were about 200 attendees. Please see official notes. Comments are my notes only and are supplied without prejudice. When in doubt please contact the relevant presenter for clarification.

Session 1. Understanding early virus complex, prediction and control. Adrian Fox, FERA.

See notes. Reduced pesticide costs are possible using better monitoring; costs for yellow traps are £16 per trap per week. HDC recommended that the results of potato monitoring should be made available to other veg growers under the new AHDB collaboration.

New Thinking on Sclerotinia and its control. John Clarkson, HRI.

See notes. Sclerotinia incidence can be >50% in a carrot crop; the increasing prevalence is due to shortened rotations, especially of oil seed rape, which is susceptible and has had a large increase in acreage in recent times. Ways to reduce Sclerotinia infection include improving the timing of fungicides, decreasing soil inoculums (Sclerotinia can live for 5 years in soil), and by cultivar selection (although there is no true resistance). Less susceptible cultivars have a different canopy architecture. Forecasting developments include a PCR test for ascospores, and predictions of sclerotia germination based on weather data (this model is now part of MORPH); infection and disease development is proportional to relative humidity and temperature. Senescent material is important for Sclerotinia disease development.

Sclerotia require chilling before germination, after germination a temperature of 14-18°C is required for growth: for both germination and growth, soil water is required. Leaves like lettuce may have microsites with sufficient RH for ascospore development, despite unsuitable ambient RH.

A decrease in inoculums may be achieved by lengthening rotations, potentially different tilling methods (more research needed on this), biocontrol and calcium cyanamide treatment. Wild hosts include fat hen, meadow buttercup, nettle and hog weed. *Sclerotinia sclerotiorum* is diverse, but 1 genotype is dominant in most crops.

Success and failure with herbicide programmes. David Martin, Plantsystems Ltd.

See notes. Talk covered a series of successful herbicide programs for carrots.

Pendimethalin and linuron and clomazone protects through early seed stage. Potatoes are a big problem:

- Loss of Metoxuron (final use 2007) meant carrots and parsnips were removed from rotations with potatoes, which were moved to cereal rotations.
- Prosulfocarb and linuron used to hit potatoes when they are small (Defy 2.5L, linuron 0.3kg a.i., 2 apps, PHI 84d)
- Weed wipe with glyphosate using vision tech and spot applications
- Hand weeding or weed wiping required for early carrots.

Mayweed is also a problem:

- Flumioxazine (0.1L Sumimax at 3 TL true leaves) SOLA: carrots/parsnips are only partially tolerant to this – it causes mottling and twisting, but regrowth is OK.
- Metribuzin needs to be applied when mayweed plants are very small
- Early metribuzin and linuron (0.1kg Sencorex at 1TL of crop or 0.2kg at 2 TL)

Advice was to make better use of existing materials. Improve timing to optimise performance (surface moisture). STOMP Aqua (BASF) 455 g/L enables post-emergence use of pendimethalin (SOLA is underway), but this needs linuron. 2013 is the last year for linuron. STOMP 400SC + linuron 0.5 + 0.4L/ha post emergence at 2 TL.

Pesticides Directive is to be published 24/11/09, with 18 months before implementation in 2011. The Sustainable Use Directive Consultation 2009 will be implemented 2012.

Life without linuron?

- Clomazone and pendimethalin pre emergence
 - Metribuzin post emergence +/- pendimethalin
 - Machine hoeing – more fuel and labour, restricts row width
 - Weed wipe/spotting
- = distinctly less options.

Session 2. Science in Support of UK horticulture: taking opportunities while countering threats. Prof Ian Crute, Chief Scientist AHDB.

Farmers and growers are still considered 'villains' of the last century, but have the opportunity to be considered the heroes of the 21st century. The UK has an increasing climatic advantage and has highly relevant new renewable technology. Ian talked about disconnected sectors in the industry at all levels – which requires policy, regulation, investment, market intelligence, training, skills, knowledge transfer, innovation – and this all needs to be joined up. It requires partnerships with shared ambition. The AHDB is a hub to broker/orchestrate industry led integration and co-ordinate research.

See Baldocchi et al, 2004 SCOPE 62 for maps of limitations for plant growth. Comment that 'people will come join us' from other countries, as we have a plant growth advantage. We have to get better at managing water. See also 'Global significance of crop losses' by DS Avery, US Hudson INst, FAO. The term 'Sustainable Intensification' was used; and reference to genetic modification as a renewable technology. GM is needed to induce resistance to pest and disease, to improve nutritional and functional properties, for cold and drought tolerance and resistance to herbicides. Genomics can lead genetic improvement for greater resource use efficiency – nutrients etc.

Ian said that crop production which was 'below potential' due to disease for example, was a waste of production resources. We must focus on functional diversity (not aesthetics). And system optimisation – economics vs greenhouse gas emissions (trade-offs).

Developing synthetic pesticides for future use. Wim Peterson, Bayer Crops Science.

See Notes. Bayer is the 3rd biggest (6.3 billion) and is 1/10th the size of Monsanto (the largest) in terms of biotech and seeds. €30billion in 2008 on conventional crop protection. Main comment of note: we will see a reduction to 0.5ha per person per annum to produce food on.

Challenges and advances in plant breeding. Bert Schriver, Bejo Zaden.

See notes. They breed carrots on the basis of % dry matter, °Brix, carotenoid complex (all carotenoids – 5-10 ppm lutein in yellow carrots, 60 ppm lycopene in red carrots), juice (ml/kg approx 500 ml/kg), colour of juice (scale from 0-9). Purple x Purple carrots produce completely purple F1 with no carotenes. Purple x Orange produce Purple carrots with an inner orange core F1. 1 carrot cell can be used to regenerate a whole plant, and are particularly easy for *Agrobacterium* manipulation. Carrots have 9 chromosomes, and breeding maps have been developed.

The road ahead. Patrick Holden, Director, Soil Association.

He doesn't have answers, but he has the questions. Ref Beddingtons 'Perfect Storm' – climate change, resource depletion, population increase, urbanisation, need to switch from current food production systems to those with operate within earth capital. Claims we have 10 years to address this.

There is a 1.5 hr documentary coming out in Feb 2010 (I missed the name of it) about the fragility and unsustainability of food systems. Soya and maize in the US find their way into many many food items in the US and here – 90% of soya is 'Roundup Ready GM', and 80% of maize is.

Talked about centralisation of food production – reduction in abattoirs, dairies and bakeries. Destroys the social capital of the nation and loss of people from the industry – and with a perfect storm – these people will suddenly be needed again. Centralisation may be better for carbon footprint but loss of social capital – which is an essential component of a nation being able to feed itself. Called for a **Food Strategic Plan** of staple/seasonal foods, given war effort priority. This is not on the political agenda as its not going to influence elections. Current food systems are not fit for purpose. He wanted to move beyond organic vs conventional and build bridges of communication. It takes 10 calories of fossil fuel to produce 1 calorie of food energy.

Much discussion about this – some comments that this would be rapidly brought to bear once there was a 'war'.

Opportunities in tough times. Sarah Pettitt, NFU

See notes. Sarah presented some Dunnhumby Tesco data re carrot sales, and talked about the opportunities facing UK horticultural production with the need to increase food security and home production. She also talked about ways to manage your business and made a few good jokes!

Consumption and promotion of British Carrots. Tim Mudge and Wendy Akers.

Tim outlined the impact of promotional campaign on sales and stressed the importance of keeping going. Wendy outlined various promotions for Halloween, diets and recipes, and claimed 50-100% better results than the previous campaign for less money!

End.

