



STOCKBRIDGE TECHNOLOGY CENTRE LTD NEWSLETTER – OCTOBER 2005

I do not know if it's climate change but autumns like this must be welcome. All is safely gathered in and next years planted. Climate change however needs us to look where we can help growers test new technologies before the changes occur. Of course the gradual warming will only move crops in a northerly direction. Water will be, I believe, the major constraint. There is already conflict in Spain between houses for incomers wanting to live or holiday in the sun and growers. This will limit water and make it very expensive. Will the Spanish industry move to Southern France or to Poland /Romania? Great pressure will be placed on water use in the UK regardless and certainly we shall all need to ensure we are watering and not wasting. There was some interesting stuff on this at the last Salads Day, basically saying we are wasteful and do not use the technology properly. Then there is work at Lancaster University where you wet one side of plant roots only. The plant roots send signals to the leaves saying it's OK and they adapt. Great results in Australia on vines. We are looking at it for glasshouse lettuce, basically to see if it affects nitrate but also to see effects on disease as far less humid besides using less water. Where climate change may have other implications is on materials used for protected structures. With more light we could possibly look again at the much improved polycarbonate double skinned materials or plastics. Here we are talking to Israel as they have the type of climate we might get and of course the plastic tunnel work with modified spectral materials could be very significant. The cost of energy will focus our minds and we need to ensure we are picking up the industry vibes on all these closely related developments to see what technologies you may need testing.

You, I hope will be pleased that STC has made another small surplus for 2004/2005. You will remember we have changed the Trust into a company limited by guarantee and this new company, STC Research Foundation, will be having its first Board Meeting in November. We have invited Mr Neil Bragg onto that Board and I am pleased to say he has accepted. Neil will bring a wealth of experience and will, I am sure, give great support to Mark on the ornamental side, but he will also bring a major input on how commercial companies manage research and technology. Neil joins Messrs Peter Branfield, John Molyneux, John Richardson, Michael Eustace, Roger Sayer and Prof Carlo Leifert.

At the meeting in November the Board will be discussing the strategy for the next five years. Where do STC and STC Research Foundation go? If you have views on this please let me know, as STC belongs to the industry, it has to reinvest any surplus and neither directors nor staff are rewarded from shareholdings. We are however run on a commercial basis and have to see how we will make a return on work we do or we go bankrupt. We have no sugar daddy guaranteeing us income. Of course all horticultural research and development is now private and most in the hands of Universities or high science establishments trying to gain BBSRC monies. This mitigates against technology in favour of pure science.

This brings me to the next major upheaval in research funding, namely the Radcliffe review of levy boards. We have as a technology business gained projects from HDC (or growers levy monies). The recommendations of how HDC is managed in future could reflect on future project income. There was major support across the industry for HDC and how it works given the comments in the five year review of last year were reiterated, however, enquires seldom say no change so there will be changes recommended. We were visited by a member of the Radcliffe team and demonstrated how your levy monies were being used.

Whilst on the subject of HDC you will be aware that Annette Carey has left for pastures new in New Zealand. Annette has given outstanding input into growers needs and spent great effort to make sure projects were relevant and delivered for growers. I have had some frank exchanges like many people but they were always argued logically and then we moved on. Annette will be missed and she deserves all our thanks for a great job for UK Horticulture.

Thanks Annette.

The other great topic, Sustainability. I think our farmers and growers are beginning to understand CAP reform. You can have flower margins and beetle banks and grass strips and get paid plus earn points for Entry Level Schemes to get back that modulated money. The pressure on land usage for production yields only is receding. There is public procurement which represents this market sector but with emphasis on benefit to the rural economy. Lots of stuff about "corporate responsibility" and "citizenship". I think it could be some time before these concepts penetrate capitalist market behaviour of both Govt and large retail chains as it conflicts with WHO and Global trading, but there is "fair trade". What is clear is that consumers are expressing in their thoughts that buying British has some connection with sustainability (latest IGD research).

The trick is to get this to take precedence over their consumer instinct for lowest price. What is certain is if we are to get the price we need in UK conditions, some element of responsibility for countryside and landscape will need to be part of that perceived price, otherwise global low will rule and it will be imports only. So at STC we are Countryside Stewardship, a LEAF Innovation Centre, applied for ELS and we have flower margins and beetle banks. We are looking for funding to do measurements of the real effects rather than "it's nice and nineteenth century" but even the PR has an effect on our urban visitors.

At the Curry meeting for great and good, Ms Sheila Dillon of BBC Food Programme was on about schools and school gardens. Our school project is in its third year and going great guns. It finishes this year and we have failed to raise more cash so one is rather sceptical about politicians and the establishment when it comes to putting money on their spinning insincere words.

Graham Ward OBE

Activity Update

A number of interesting projects have been undertaken during 2005. These have included:

- looking at the suitability of an agricultural by-product for use as a partial peat replacement
- comparing new 'wetter' products for enhancing water uptake in different peat types
- further evaluation of seeded mats for baby leaf production
- comparing a novel irrigation system for containerised plants
- phytotoxicity studies for new pesticide formulations and actives - applied as pre-emergence and post emergence applications

Examples of our more traditional trials have included:

- evaluating new insecticides on brassica crops
- comparing the effectiveness of insecticides on leeks
- crop safety work on brassicas

Open Day at STC

Our annual public open afternoon was held on Saturday 1st October. The public had an opportunity to look in the glasshouses where cucumbers, cherry and vine ripened tomatoes were being grown. They were also shown the modified plastics project where salad and flower crops were being trialled. Andrew Johnson from Home Harvest Salads was also on hand to explain his living salad product.

Many of the children involved in the schools project brought their parents along and went away with yet more produce! A chef gave two interesting demonstrations during the afternoon including stir frying vegetables after we heard that Friday 30th September had been designated 'Stir fry Friday'. How many people knew that?

Grateful thanks to all the staff who made the afternoon a success.

The Farm

On September 15th, we had an inspection by an Environment Agency officer in order to check our compliance with the Nitrate Vulnerable Zone regulations. Any non compliance will be reported to the Rural Payments Agency and can affect your Single Farm Payment. The meeting lasted nearly 3 hours and the past and present cropping of each field was checked, crop sowing dates, nitrogen fertiliser application, its type, quantity and date it was applied. We then toured the site looking at pesticide and fertiliser stores, also the fuel tanks to ensure that they are correctly banded.

This week we received the inspection report, stating that all the activities inspected comply with the relevant regulations. It also encourages us to continue our high standards of practice and to continue to maintain all the necessary records.

Planting of the seed cauliflower crops was completed on September 29th in total 8 glasshouse compartments and 2 polytunnels were filled with over five thousand plants. We have also just finished threshing this year's crop and yields look very promising. The early varieties have yielded around 25 grams per plant and the later, about 65 grams. Overall the total weight of cleaned seed will be in excess of 60kg.

Recyclable Growing Media

This HDC and WRAP funded project, in collaboration with Melcourt Industries, has involved assessing the potential of composted forest-residue based media for reducing disposal costs in commercial tomato production. We are now entering the final phase of a full-season investigation, where a tomato crop (Aranca, a truss variety) grown in media selected from initial trials (Fine Composted Conifer Bark, hereafter referred to as test growing media (TGM), was chosen from 5 candidate materials) was compared with a rockwool grown crop. Agronomic assessments of yield, fruit quality, plant extension, truss development, leaf length and area were carried out to investigate any differences.

In addition to a direct comparison of inputs between the rockwool and TGM system (in terms of irrigation and environmental control) we also included a treatment whereby TGM received 80% of the irrigation of the rockwool crop, as it was believed that there might have been benefits with this media in terms of water use efficiency.

The principle findings from this work have convinced us that there is real potential with this material. There were negligible differences in the numbers of trusses harvested from each treatment, and only a small decrease in fruit weight in the 80% irrigation treatment compared to 100% of rockwool irrigation. Fruit quality (brix index) was similar across all treatments and weekly plant extension showed negligible differences. The TGM treatment supplied with 80% irrigation developed thinner stems and had a lower leaf area than the other two treatments.

We have shown that we can grow a good crop of tomatoes with the TGM, with maybe a little fine-tuning still necessary to optimise production.

We are optimistic this once-used material can be re-composted and so reduce waste disposal costs through secondary use. The project is continuing and will address the economics of re-use.

For further information on this trial please contact adrianshort@stc-nyorks.co.uk

Biostimulant and 'Garden Plants' Projects

It has been a busy period at STC in the ornamentals sector in October with the start of two HDC funded trials, with one trial investigating the impact of a range of biostimulants.

There are a wide variety of products broadly described as 'biostimulants' being 'touted' around the ornamentals industry; some claiming to improve plant vigour and others able to improve resistance to disease. At present the current regulatory environment does not 'capture' such 'grey' products and growers are left in considerable doubt and uncertainty as to the validity of the various claims made for the products.

In a bid to resolve these uncertainties, STC has recently secured HDC funds with support from Neil Bragg & Stuart Coutts, for a new project which aims to answer some of the issues relating to these biostimulants. In a project that relies heavily on the STC pathologist Cathryn Lambourne and her assistants, ten commercially available products have been short-listed and applied to a crop of Pansies. A range of different growing media have been used in trial, and the crop was inoculated with the black root rot pathogen *Thielaviopsis basicola* one week after initial application of biostimulants. Over the coming weeks the plant vigour of the crop will be assessed relative to the growing media, applied inoculum, the biostimulant application and conclusions drawn from results. The full details of this work will be available in HDC report in the future.

The other trial, which is jointly managed with Andrew Fuller of ADAS, is a 3 year project which aims to develop new marketing opportunities based on controlled flowering of herbaceous perennials for early spring and late summer sales. This approach has been developed in USA over the past ten years, with Michigan State University leading the R&D. To date, they have developed protocols that enable growers to control flowering of over 40 species for specific marketing periods. This area has been of considerable interest to Stuart Coutts for a number of years, who is part of the steering group for this project, along with Neil Bragg, Dr. Steve Adams and Harry Kitchener.

However, the climate in the USA is quite different to that found in the UK, with even the most northerly portions of America such as Ohio, receiving twice the light levels over the winter months that we receive in the UK. Due to these differences, previous attempts to utilise these American protocols by UK growers and research establishments have proved unsuccessful, and there was a pressing need to develop similar protocols that are suitable UK conditions. We are assessing seed raised plants in the first year, investigating 9 species that may be suitable for forcing for early spring sales, and 15 species for the summer flowering marketing period. The spring flowering species will be subjected to a range of inductive conditions that can influence flowering in plants, such as exposing plants the long day extension with fluorescent bulbs, storing plugs in a refrigerator set at 1°C for up to 12 weeks, and assessing the impact of temperature on growth and quality. The subsequent years work will be used to fine tune protocols, with particular regard to growth control, and look at vegetative material which is increasing in popularity.

Plant Clinic Services

The Plant Clinic is an important resource for growers and is often their first point of contact with STC. It has continued to be busy throughout the season and hopefully the diagnostics team have assisted growers, consultants and others in resolving specific problems that have arisen during the year. We are always interested to hear from clients about ways we can improve the service and would welcome any feedback you can provide.

It is important to remember that the Clinic not only provides useful information or 'intelligence' for us to 'steer' R&D projects towards current economic crop problems in the various crop sectors but is also an important training ground for new diagnostics personnel. In this regard, succession planning is becoming ever more important (especially as the age profile of diagnostics specialists is heading towards the 'twilight zone') and we are currently looking to appoint another experienced pathologist to support the diagnostics team.

We continue to liaise closely with CSL with respect to diagnostics and are further exploring the concept of a joint initiative through SureID to strengthen the services we currently offer. We hope to be able to provide you with more information on this in due course.

National Horticultural Forum

Martin represented STC at an NHF R&D Providers workshop in September at Warwick-HRI. In an initial introductory presentation by Professor Chris Payne he indicated that the NHF report on "A vision for the future of UK horticultural industry and its strategic R&D needs", commissioned to Promar International, is due out in November 2005 and should make interesting reading. Chris also indicated that this was his last year in the chair at NHF and announced that Dr Susan Woodhead would be replacing him in the New Year. Professor Chris Pollock (Director IGER; Chairman of DEFRA's Sustainable Farming and Food Research Priorities Group or SFFRPG) then opened the morning session with a presentation on "Future research Priorities for Sustainable Farming & Food" the important point to note that the first report of the SFFRPG is now available both in hard copy and on the DEFRA website (www.defra.gov.uk) and this is likely to impact on the direction of government funded R&D in the future. The remainder of the morning was devoted to presentations from the key funding bodies (e.g. DEFRA, BBSRC, LINK & HDC) and this provided a useful update for members.

The afternoon session was devoted to a session on Invasive Plant Pathogens which not surprisingly focused on *P. ramorum* & *P. kernoviae* with an excellent presentation from Dr Joan Webber, Forestry Commission. One interesting snippet to come out of this presentation was that *Phytophthora* spp., including some quite unusual species, can be found surprisingly frequently on peoples shoes (ca. 30% of people tested apparently). This is certainly worth bearing in mind; not only with respect to the potential movement of *P. ramorum* onto and around HONS nurseries, but also more generally with respect to some of the other endemic species e.g. *P. cryptogea*, *P. cinnamomi* & *P. nicotianae* that commonly infect various horticultural crops in the UK.

Red Beet & Root Malformation Disorder – an Update

In conjunction with CSL we have continued to work on RMD on behalf of the red beet industry this year thanks to continued funding from HDC in 2005. However, we can report that there has been little or no problem with the disorder/disease during the 2005 season to date and harvesting is now well advanced. This is excellent news for the industry...though less so for those of us trying to conduct large-scale trials in the field.

All the indications to date, based on molecular (PCR) testing of affected and healthy roots, are that the problem appears to be associated with a systemic infection by downy mildew (*Peronospora farinosa* f.sp. *betae*) though this has yet to be confirmed through Koch's Postulates. CSL are currently validating a modification to the molecular method for testing red beet seed for infection by *P. farinosa* as this could potentially help explain the sporadic occurrence of the problem in some years.

If, for various reasons, we are unable to demonstrate efficacy with oomycete specific fungicides* then it may be necessary in future to focus on artificial inoculation studies to demonstrate cause and effect. We are currently in discussion with industry and HDC in this respect.

** the widespread commercial use of oomycete fungicides, courtesy of the SOLA programme, may be a factor in dampening down inoculum levels in red beet crops thereby preventing economic infection levels and hindering trials.*

Hebe Leaf-Spot

This joint HDC funded project with CSL has gone very well and not only have we identified the fungus as a new pathogen on the crop but we have also identified a number of fungicides with good activity against it too. Recent reports from growers have been promising and suggest that they are now getting better control of the disease than previously. However, after a surprisingly low incidence of the disease throughout the 2005 season we have recently seen a considerable upsurge in leaf-spot on susceptible cultivars and this appears to be related to the onset of wetter weather this autumn.

We have been undertaking a fungicide timing trial during this period and initial indications are that we are getting some good results from the work. It would appear from visual observations that we are getting as good a control of leaf-spot with a well-timed 2-spray programme compared to a full programme (8 sprays) of the same fungicide applied throughout the trial period. This ought to provide a good opportunity for cost-savings providing we can accurately predict when the disease is likely to be active in a particular year.

The Future for Glasshouse Lettuce in the UK

Glasshouse lettuce growers currently face a number of challenges. Firstly they need to resolve the persistent problem of pesticide residues (both MRL exceedances and illegal use) which has caused them to endure some 6-7 years of enforcement monitoring by the UK pesticide regulators. Secondly, they need to find a cost-effective and sustainable solution to the control of soil-borne disease following the withdrawal of Methyl Bromide as a soil sterilant. Thirdly, and perhaps most importantly, they need to address the problem of increased labour and energy costs in an industry where there has been little reinvestment in recent years and an increasing likelihood of businesses ceasing to trade as the current generation retires.

Efforts are being made by Assured produce and others to try and minimise the residue risk by reducing application rates, adjusting the frequency of sprays and extending harvest intervals though this will potentially exacerbate some of the current soil-borne disease problems.

One possible strategy is to investigate sustainable production through enhancement of naturally occurring antagonists in the soil and this is currently the subject of considerable debate. Whilst it may ultimately be achievable there is much we don't yet know about the soil environment and it could take several years before robust alternatives to conventional chemical pesticides could be found, and that is assuming the regulatory environment is improved compared to the current situation.

As a result of this we have been considering the possibility of an alternative 'hi-tech' approach using floating hydroponics; a technology that is already fairly well developed in other countries such as Israel, Scandinavia, Canada & Australia. We hope to have wider debate on the subject at the Lettuce Technology Group meeting in November but in the meantime are proposing a feasibility study is undertaken to look at the economics and practicality prior to wider uptake. It is interesting to note that we already have one company interested in investing in a 1,000m² demonstration unit at STC.

Water for Irrigation – ‘Due Diligence’ Testing

Cathryn Lambourne attended a meeting entitled "Water Quality - An issue for Irrigators" at Cranfield University, Silsoe on the 12th October. It looked at the potential risk of microbial contamination for salad crops by bacteria and viruses following irrigation with abstracted water, from a scientific, supermarket and grower perspective. The evidence presented indicates that salad crops may potentially be contaminated from irrigating, spraying and cleaning the crop with water abstracted from rivers or storage reservoirs.

The major multiples want to be able to promote their produce as healthy and risk free though they are concerned of the potential for adverse publicity following food scares i.e. 'naming & shaming'. They therefore require growers to carry out 'due diligence' testing to provide a paper trail documenting the use of good agricultural practice to maintain the confidence of the supermarkets and ultimately their customers. Many growers now carry out regular water quality testing along with other monitoring.

Against all this, it is important to note that no cases of food poisoning have actually been traced back to salad crops and their production. Whilst it is important that customers have confidence in the final product, it is equally important to get the right balance with regard to 'due diligence' testing. Most importantly, there is a need for all parties to recognise the increased costs associated with crop production. If the market ultimately requires healthy, risk-free produce then they may have to pay a little more to achieve it.

The HDC DVD "Keeping It Clean" gives very sound advice on managing the risks and should be used as a training aid in our industry. There will be an Industry Code of Practice developed in 2006 for FSA as they implement the new EU regulations. This will be done by the NFU in consultation with appropriate crop associations.

For further information on the newsletter or anything else you would like to ask us, please call on 01757 268275, Fax 01757 268996.