

More Science - More Yield

Hutchinsons Winter Technical Farmer Conference



Jeremy Macklin (Hutchinsons Director of Technology and Innovation) reviews the very successful farmer conference held on 19th November.

The annual Hutchinsons Winter Technical Farmer Conference was held this year at Peterborough, under the title "More Science - More Yield," in front of 350 farmers, and with fourteen academic and technical organisations displaying their projects during the breaks.

There was a great atmosphere with some top quality presentations and lively discussions in the main meeting room and throughout the coffee and lunch breaks. The meeting recognised that the year 2015 was the 'International Year of Soils', and also acknowledged the great results achieved in the Yield Enhancement Network (YEN) project with regard to Cereal yields.

The meeting opened with a keynote presentation from **Prof Achim Dobermann**, Director of Rothamsted Research. Achim has explored the status of yield increases in different crops across the world, and has come to the conclusion that climate change is only responsible for 10% of the yield stagnation in wheat in the UK. On the contrary, his analyses have highlighted the correlation between yield plateaus and the reductions in the use of nitrogen and phosphorus. Furthermore, the long term work on cereal yields at Rothamsted since 1843 has identified the importance of soil management, and this combined with genetics, are the keys to unlock the yield barriers.

Dick Neale, Hutchinsons Technical Manager, then looked at some of the impacts of cultivation techniques on soil health. He observed that many farmers prepare their seedbeds to accommodate the type of drill that they use, rather than the specific requirements of different crops. He worries that many soil inspections are done in the summer when soils are dry and hard, creating potentially the wrong conclusions, in particular regarding soil compaction.

Dick suggested to the audience that many of the answers to these problems can be solved by reduced tillage, as a way to increase soil strength, and that the power of plant roots to maintain soil conditions was under-estimated. He invited the audience to visit the new research farm that Hutchinsons have established in Hockwold near Mildenhall to explore this area of research.

The next session brought **Prof Roger Sylvester-Bradley** from ADAS and **Dr David Ellerton**, Hutchinsons Technical Development Director, to the platform to talk about the important contribution of solar energy in the creation of yield. Both speakers are involved in the YEN project, so Roger reminded the audience of the importance of understanding the resources available to growers - light, soils, water - and then employing farming techniques which would capture and exploit to the maximum these available resources.

In terms of light capture, Roger insisted that the choice of varieties plays a major role through the leaf size and leaf angle, and that growers and agronomists must then optimise the development phase of the plant,

continue overleaf >>>



Prof Achim Dobermann

Prof Roger Sylvester-Bradley

Prof Tim Osborn

Andy Brown

>>> and secure the protection of the plant through the maturation phase. Roger identified also the key role of the root structure in this process to ensure the maximum capture of water and nutrients from the soil.

David presented the results of work with fungicides in recent years and in particular their capacity to influence the physiology of the crop. He presented clear evidence of the role in rooting structure of some of the SDHI fungicides, and also of the correlation between increased green leaf area with increased photosynthesis.

However, the battle for disease control is being complicated by the development of disease resistance, especially with *Septoria tritici*.

Work last year by Hutchinsons and ADAS showed that triazole mixtures gave a better control of disease than straight triazoles, as different active ingredients can have different levels of control of the different strains of *Septoria*.

The work also highlighted the efficacy of SDHIs, and the importance to UK farming of preserving their efficacy through applications in mixtures with other chemical groups.

The final session was all about the future management of water availability, which will be required to fuel increased crop yields. The session kicked off with a fascinating presentation from **Prof Tim Osborn** of the University of East Anglia. Drawing on many years of observations, and using sophisticated weather models, Tim led the audience to realise that the future will bring heavy winter rainfall followed by hot and dry summers. This will lead to changes in practice for the production of wheat, but Tim left farmers to reflect on the very difficult situations that will be faced by our European competitors in France and Germany, who will have a much more hostile water environment than the UK.

Andy Brown, Head of Sustainability at Anglian Water followed on, explaining the general water requirements in the future caused by the increasing population in East Anglia. Whilst the time deadline looks far away, Andy urged growers to get involved in the local consultations over the next 2 years, as these will determine key issues surrounding water storage and availability.

Dr Bob Bulmer, Hutchinsons Trials and Research Manager, closed the presentations by describing some of the agronomic practices which growers will need to adopt if they want to continue to increase yields. Essentially farmers and agronomists will need to work together to manage the soil in ways which will permit enhanced water storage and increased root depth for their crops.

For further information, please visit the Hutchinsons website www.hlhtd.co.uk





Yield improvement – breaking the plateau

This is the third year that Hutchinsons have been involved in a successful project called the Yield Enhancement Network (YEN). Dr Bob Bulmer (Hutchinsons Trials and Research Manager) provides an update on progress, with some record breaking results.

The aim of the YEN project is to break through the yield plateau that we have been experiencing in winter crops over the last fifteen years. The average National yield of wheat has not exceeded 8t/ha over this time period and the aim of the project is to examine the critical factors that contribute towards high yields. The other aims of the project are to identify arable innovators and to support these innovators with applied research. The YEN project is also building a database of high yielding crops that can be analysed to investigate the main factors that influence yield including, climate, soil conditions and agronomic practices. The YEN is attracting a lot of interest from farmers, agronomists and researchers, the number of entries has tripled this year and there have also been entries from Denmark and the Netherlands.

This has literally been a record breaking year for winter wheat yields in the YEN competition with one entry exceeding the previous New Zealand world record of 15.7t/ha with a yield of 16.5t/ha. Two other farmer entries got extremely close with yields of 15.68 and 15.52 t/ha respectively. It will be interesting to see how the New Zealanders respond. Cereal yields have been good this year and the winter wheat Recommended List yield has increased by 18% to 11.6t/ha. The National wheat yield has increased by 15% to 8.8t/ha and barley yields have also increased by 15%. A North, South divide in wheat yields is also apparent this year with the East Midlands, Northern England and

Scotland experiencing higher yields than the South and East of England. The reasons behind this significant lift in cereal yields were explored in the YEN awards meeting held on 11th November. The two main factors behind high yield, the availability of light and water cannot explain these extraordinary results. Water availability was not thought to be limiting in most areas and the amount of solar radiation in March to July was 1.2 terra- joules/ha more than normal, but this would only increase yield by 0.71t/ha.

The main explanation for these higher yields was the cooler temperatures during the growing season particularly in June during grain filling. This extended the growing season, particularly in the North, enabling crops to convert more light into grain yield and cool conditions will reduce crop respiration rates, which help to conserve crop biomass. High crop biomass is very closely associated with yield. Interestingly, a number of wheat crops seem to have used more water than was calculated to be available to them - this points to healthier more extensive root systems in 2015 capturing more water. Protein levels were also high this year and nobody has a satisfactory explanation for this, high yields normally have a dilution effect on protein levels.

A YEN report will give feedback on how the crop grew and its use of light, water and nitrogen. The crop's components of yield are also presented. Crop biomass has the closest link with yield and crop biomass increased by 3t/ha on average this year. There does not seem to be a strong correlation between the other components of yield: tillering, grains per ear, grain size and final yield. Crop specific weight was higher than average, indicative of a prolonged grain filling period.

The next stage in the project will be to look for crop factors that are linked to high or low yields earlier in the season. This will aid crop management and help to target inputs more effectively.

Two prizes are awarded to growers as part of the YEN competition, one for the highest yield and one for the crop that is closest to theoretical yield. The second award encourages farmers and agronomists to maximise the potential of their site, even though they may not be in a high yielding situation.

The winner in this category was able to achieve 81% of the theoretical yield of the site which was 14.1t/ha. This site is a very droughty, sandy soil where water is the factor limiting yield. The grower selected hybrid rye, which is far more tolerant of dry conditions than either hybrid barley or wheat, and he achieved a very good result. The YEN average performance against potential is 60% - a 4% improvement compared to last year. The calculated theoretical yield range varied from 14 to 23t/ha depending on whether the site was water or light limited.

The Recommended list results were discussed at the YEN meeting - there was on average a 1.5t/ha difference in yield between varieties at any site, but a 10t/ha difference between individual sites. There is obviously a lot to learn about managing different sites to best effect and this has been one of the interesting observations from the Hutchinsons Regional Technology Centres, where different nutritional approaches were explored. Each development site responded differently to the treatments that were applied, there was no common theme. The key seems to be identifying the management technique or techniques that will have the biggest impact on yield, guided by the soil type and nutritional analysis.

The 2016 YEN competition is now open to applicants, and if you would like to take part please contact your agronomist, or Bob Bulmer mobile 07810 515892, e: bob.bulmer@hlhld.co.uk

FARMER COMPETITION YIELD

GOLD

Tim Lamyman
Worlaby Farms, Louth, Lincolnshire (Hutchinsons)

SILVER

Ian Howard
Co.Louth (Open Entrant)

BRONZE

David Hoyles
G H Hoyles Ltd, Lutton, Lincolnshire (Hutchinsons)

YIELD POTENTIAL

GOLD

Andrew Hunt
Great Melton Farms, Norwich (Hutchinsons)

SILVER

Tim Lamyman
Worlaby Farms, Louth, Lincolnshire (Hutchinsons)

BRONZE

David Fuller-Shapcott
Sweethope Farm, Kelso (Open Entrant)

TRIALS YIELD

GOLD

Ben Giles
Bayer CropScience

SILVER

Lars Bond Eriksen
SEGES, Denmark

BRONZE

Limagrain UK

TRIALS YIELD POTENTIAL

GOLD

Dr Bob Bulmer
(Hutchinsons)

SILVER

Ben Giles
Bayer CropScience

BRONZE

Limagrain UK

Fieldwise

Vegetable Update

In this issue, our **specialist vegetable agronomists** give a summary of the growing season so far and highlight the pest and disease issues most commonly encountered.

Brassica

It has been a strange season in brassicas, with in general very low amounts of insect pressure seen, other than at a couple of key timings.

Early on in the season we saw a massive influx of aphids, of various species but mainly Black Bean aphid, Mealy Cabbage aphid and Peach Potato aphid. These pests were challenging to control, mainly due to the constant arrival of more winged aphids on the very mild winds that we saw in early summer. Even crops which had been treated with the emergency approval for 'Cruiser 70WS' dummy pills often required foliar applications. As this issue goes to print, we still have no approval for Cruiser for the 2016 season and it is not clear what will happen over the winter months regarding product approvals.

In the late autumn, there was a small influx of Mealy Cabbage and Peach Potato aphid, with a very small amount of White Fly in places; although nothing compared to populations we have seen in the past. Thankfully, with very few sightings of Diamond Back moth and a few localised Cabbage White butterflies, we did not have the Lepidoptera pressure which we experienced last season.

On a similar note, until the very last of the overwintered cauliflower, Cabbage Root Fly (CRF) infestation has not been as bad as in previous years (Cornwall being an exception). This definite lack of Cabbage Root Fly, along with lower levels of aphids and the absence of Lepidoptera has unfortunately not helped our insecticide screening work, with very limited data on efficacy being gathered this season.

Again, as this document goes to print we are currently unaware of the approval situation with Chlorpyrifos, namely 'Dursban WG', especially for the control of Cabbage Root Fly as a module drench. The feeling is, the product will remain with only the

module drench approval - if this is not the case then the only option will be 'Tracer' (Spinosad). We have however been working on coded products for Cabbage Root Fly control which have excellent performance on CRF, along with activity on Lepidoptera and aphids, but are still yet to be registered.

In line with the challenge from insect pests, disease levels throughout most of the season had been relatively low, other than a few periods of high White Blister risk. However, that all changed in the latter half of Autumn, with high pressure from Light Leaf Spot, even in areas which in the past have not necessarily suffered from the disease. Light Leaf Spot has been problematic on certain varieties of white cabbage, as well as an issue on susceptible varieties of Brussels sprouts. This has certainly highlighted the need for selecting the correct variety, along with fungicide choice, and more importantly application timing. Ringspot and Alternaria have also been found, but only at low levels.

Onions and Leeks

With all the onions now in the store, harvest 2015 will probably be one to forget for most growers. The cool, wet end to August, which kept crops green and standing, led to very little crop being harvested in early September. The wet weather which followed then meant more people were harvesting into October than had planned. One consolation is that yields have been good and the quality, apart from very late lifted crops, is good. Disease levels through the season were low, apart from some localised hot spots. The same can be said for Thrips, with generally low levels except for some localised high pressure sites.

Next season's overwintered sets have made best use of the mild autumn and if anything, are too advanced. With next season being the last with 'Totril', allium weed control was the main trial focus again this season.

Results have been quite conclusive, however more trial work will be carried out next year to gain more experience before the 2017 season.

Carrots and Parsnips

With carrot crops now back to budgeted yields after a relatively low yielding start to the season, 'strawing down' finished and the Christmas push underway, perhaps we can summarise the season so far: The main issue in carrots, especially in the south east, would be the virus levels after the unprecedented influx of aphids. This aphid migration was prolonged and with high levels entering crop on a daily basis. This meant that a standard treatment could not protect the crop for long enough to avoid virus infection. Where crops were treated with Cruiser, the benefits were that virus transmission was significantly lower and the need for foliar insecticides was reduced.

Disease levels, as with most crops this year, have been low. Sclerotinia was basically a 'no show' this year, with some localised issues where Alternaria and Powdery Mildew could be found at low levels. Cavity Spot was evident on some early crops, but thankfully is not currently causing too many problems.

With the issues looming over carrot weed control, (mainly due to the potential loss of Linuron and some label stipulations with Prosulfocarb), then herbicide trials in carrots and parsnips this season and next will be essential. The two very interesting areas being evaluated are the crop safety of new actives pre and post-emergence and the efficacy and crop safety of some currently approved (although not used) actives.

We hope to update you on our trial work with vegetables in future editions of Fieldwise. In the meantime, please speak to your agronomist for more information.



NROSO Training Roadshows

– ‘Sprayer Care and Technology’

(This course qualifies for 10 NROSO CPD and 5 BASIS CPD points)

Hutchinsons is pleased to invite you to attend a practical farm workshop, as a continuation of the training commenced through the Voluntary Initiative. This year NROSO members can participate in a 3 hour interactive training event which covers ‘Sprayer Care and Technology’. Our workshops listed below cover topics for broad-acre / arable crop production.

The latest NROSO course uses 10 short videos for delegates to learn from practical situations. Operators will have the opportunity to share tips and solutions that work for them and learn from their colleagues and others attending the event, as well as look at best practice techniques that they can adopt in the future.

A summary of the latest course content is given below:-

Sprayer Care and Technology:

- Troubleshooting – application problems
- The National Sprayer Testing Scheme (NSTS), the type of equipment to test and frequency of testing
- Operator checks for regular maintenance
- Jug test and calibration
- New technologies available to make the spray operation more efficient, looking at GPS and RTK as well as automated systems and drones.

Topical Update:

Rodenticides - EAMUs - New Hazard Pictograms - Safety Data Sheets - Purchase of Products after 26th November 2015 - Endocrine Disruptors

Adjuvants:

What they are - How they work
- Why they are used - Registration
- Record keeping.

Delegates will receive:-

- 3 hours of interactive training on the course syllabus

List of forthcoming NROSO arable training events and venues in date order:

DATE	LOCAL DEPOT / AREA	VENUE & LOCATION
06/01/2016	Leicester (Hinckley)	Farol UK– John Deere, Hinckley, Leicestershire, LE10 ONB
06/01/2016	Whittlesey	Flegcroft Farm, Peterborough, PE7 2LA
07/01/2016	Soham	No Hurry Inn, Upware, nr Ely, Cambridgeshire, CB7 5ZR
08/01/2016	Grantham (AM Only)	The Wyndam Garden, Marston, Grantham NG32 2HT
08/01/2016	Melton Mowbray (PM Only)	RES Tractors Limited, Melton Mowbray, Leicestershire LE14 4DB
12/01/2016	Dundonald (AM Only)	Dundonald Depot, Drybridge Road, Dundonald KA2 9BE
12/01/2016	Easingwold	The Galtres Centre, Easingwold, York YO61 3AD
12/01/2016	Tendring	Brook Fm Meeting Room, Great Bentley, Colchester, CO7 8QP
13/01/2016	Alnwick	Alnwick Rugby Club, Greensfield Avenue, Alnwick, NE66 1BE
13/01/2016	Boston	Boston West Golf Club, Boston, Lincolnshire, PE20 3QX
13/01/2016	Tewkesbury (AM Only)	The Beckford Inn, Tewkesbury, Gloucestershire GL20 7AN
14/01/2016	Fife (AM Only)	The Lomond Hills Hotel, Freuchie, Fife KY15 7EY
14/01/2016	Carlisle (AM Only)	The Auctioneer, Carlisle, Cumbria. CA1 2RR
14/01/2016	Stowmarket	Cedars Hotel, Stowmarket, Suffolk, IP14 2AJ
15/01/2016	Falkirk (AM Only)	Dutch Inn, Skinflats, Falkirk, FK2 8NU
15/01/2016	Beccles	Ilkeshall St Andrew, Village Hall, Ilkeshall St Andrew, NR34 8HX
15/01/2016	Kent (Arable)	Hobbs Parker, Orbital Park, Ashford, TN24 0HB
15/01/2016	Cirencester	Somerford Keynes, Somerford Keynes, Cirencester GL7 6DS
18/01/2016	Leics/West Lincolnshire	Park Hill Golf Club, Seagrave, Leicestershire, LE12 7NG
19/01/2016	Notts/Mid Lincs	The Wyndam Garden, Marston, Grantham NG32 2HT
20/01/2016	Ledbury (Arable)	Ledbury Rugby Club, Ledbury, Hereford, HR8 2LP
21/01/2016	North West Lincs	Uncle Henry's, Grayingham, Lincs DN21 4JD
21/01/2016	Worcester (AM Only)	The Holt Fleet, Holt Heath, Worcester, WR6 6NL
22/01/2016	D Market/Soham (AM Only)	Southery Village Hall, Southery, Norfolk, PE38 0NB
26/01/2016	Dorrington	Lodge Fm Meeting Room, Burton Pedwardine, Lincolnshire, NG34 0DF
27/01/2016	Wetherby	The Bridge, North Yorkshire, LS22 5HS
27/01/2016	N.E. Norfolk (AM Only)	Beckhithe Farms, Reedham, Norfolk, NR13 3HW
27/01/2016	Boston	Boston West Golf Club, Boston, Lincolnshire, PE20 3QX
28/01/2016	Darrington (AM Only)	Kyte Hotel, Darrington, West Yorkshire, WF8 3HR
28/01/2016	Cambridge	Burgh Hall, Swaffham Bulbeck, Cambridgeshire, CB25 0NA
28/01/2016	Harling	Harling Depot, East Harling, Norfolk, NR16 2SQ
29/01/2016	Soham	No Hurry Inn, Upware, nr Ely, Cambridgeshire, CB7 5ZR
01/02/2016	Stowmarket (AM Only)	Cedars Hotel, Stowmarket, Suffolk, IP14 2AJ
02/02/2016	South Lincs/Northants/Leics	Grange Farm Equestrian, Wansford, Peterborough, PE8 6NR
09/02/2016	North East Lincs (AM Only)	The Oaklands Hotel, Laceby, Grimsby, DN37 7LF
10/02/2016	Banbury (AM Only)	Bloxham Mill Business Pk, Bloxham, Banbury, Oxon, OX15 4FF
11/02/2016	Tendring	Brook Fm Meeting Room, Great Bentley, Colchester, CO7 8QP
11/02/2016	Banbury	Brogborough Manor Farm, Brogborough, Milton Keynes, MK43 0YD
12/02/2016	D Market/Soham (AM Only)	Southery Village Hall, Southery, Norfolk, PE38 0NB
12/02/2016	Burnham (AM Only)	T Rayner & Son, Burnham, Bucks. SL1 8PG
15/02/2016	Royston area	Bayer Cropscience, Great Chishill, Royston, SG8 8SS
16/02/2016	Notts/West Lincolnshire	Dunham Village Hall, Dunham on Trent, Notts, NG22 0UE
16/02/2016	Leominster (AM Only)	Luctonians Sports Club, Kingsland, Leominster, HR6 9SB
17/02/2016	Shrewsbury	Four Crosses Inn, Bicton, Shrewsbury, SY3 8EF
18/02/2016	Bridgnorth	Ye Olde Punch Bowl Inn, Bridgnorth, Shropshire, WV16 5

- Delegate Work Book incorporating relevant best practice guides
- Certificate of attendance showing CPD points
- Refreshments and lunch provided.

Reserving places on courses:

Courses are charged at **£45.00 + VAT per delegate place**. If you are interested in attending a course, please view further course details and book online using your account, or with a credit or debit card, via our company website.

You can book your place(s) online by visiting: <http://www.hlhltd.co.uk/events-calendar.html>

Other ways to pay:

Course fees can be either invoiced via your Hutchinsons account or payable by cheque before attending the event – please phone us for details. Morning sessions generally commence at 9.00am and afternoon sessions after lunch at 1.00pm (see individual course details on our website for local start times).

Maize Varieties

REGIONAL TECHNOLOGY CENTRE RESULTS

Colin Button (Hutchinsons Seeds Manager) reviews the results of our comprehensive maize trials carried out in Suffolk this year, which were harvested in late September.

This season has been the complete opposite from 2014, when we saw almost perfect conditions for maize growing in the UK. This year many farmers had a late start to sowing, and those who did go early saw poor establishment conditions, with a decline in soil temperature and cool wet conditions.

All this adds up to what we saw with the harvest this autumn, which was late and in many cases, of very poor quality going into the clamp, whether the end use was for animal feed or Anaerobic Digestion (AD). These crops were wet, with low starch and relatively low Dry Matter too.

Agronomists and farmers will be asking what can be done about this for the next season, to help mitigate the impact of similar circumstances to this year, whilst still allowing for a season which could just be like 2014 – near perfect.

The answer lies in careful consideration of varietal choice and in the mix of maturity classes of the varieties selected.

This needs to reflect not only the required harvest date, but also the performance under differing situations, soil type and condition, and the management of erosion where soils are prone to this. This is especially the case when conditions do not allow vigorous establishment, or when there is a late harvest situation with the likelihood of wet soils.

Suffolk Trials Site

Our maize trials from across the country will eventually provide some deeper insight to what the output has been, but we have one site where harvest was taken on the 23rd September – Great Livermere, near Bury St Edmunds, courtesy of Strutt and Parker Farms.

The choice of harvest date was due to the fact we had the trials harvest equipment on site and the host estate had started their commercial harvest on the same date.

The results provided some surprises. The site had, despite the ‘human’ perception of summer, received some 2877 heat units, the 10 year average for this site being 2670, therefore 8% up.

The cool conditions that had prevailed in the month or so leading up to the harvest had prevented a dry-down, the crop was still full of water even on the earlier varieties and despite growing in a well-drained, sandy loam soil.

The Dry Matter (DM) yield ranged from the highest at 19.84 t/ha to the lowest at 13.11 t/ha. The big contributor to DM is the cob and here we saw the range of cob number from the highest of 19 cobs per 10 plants to 10 cobs per 10 plants at the lower end.

This trial and selection of varieties was all about growing for AD use. The end result – **methane**, and the results on this score ranged from 6,443,000 litres/ha to 4,258,000 litres/ha.

So what can we learn from this?

1. Select the variety carefully.
Take into account the site aspect, fertility, management requirements over harvest date and erosion risks (especially if late harvest)
2. Look at a range of maturity types.
In Germany, where they are some years ahead of us in experience in growing large areas of maize for AD use, there is a move towards the earlier, higher quality varieties, where the cob is really important for maximum energy availability – Digestible Organic Matter or Metabolisable Energy/ha.
3. Consider the time of sowing – waiting for soil temperatures to be 10°C and rising.
4. Seeding rates – adjust accordingly for conditions and if late sowing, reduce the seeding rate to allow the crop to use the resources available and to still reach maturity.



Varieties:

From the range we have tested, three varieties topped the methane production scale: **P7892** from Pioneer, **KXB 4001** from KWS and a new Monsanto variety in development, **DK3343**. RAGT's **INDEXX** came in 4th place despite being a later maturing variety – this variety had 19 cobs per 10 plants and if we had let it grow for another month, the results would have been better still. **Movanna** from DSV, a new entry variety for 2016 was close behind.

In addition, although not tested in this site, we have a new variety from Pioneer – **P7326** which is looking very impressive against some of the industry stalwarts for earliness – we will have more information when all the results are in.

So, to sum up, we have a broad range of maize options, with the breeders supplying varieties which offer a range of maturity and production capacity in terms of Dry Matter.

In the end, it is a question of making time to plan properly, get the best from the site and meet your management demands. Discussing this with someone you trust, with an insight to the issues, will be the best solution.

Talk to Hutchinsons.

For more information on any of our products or services please contact your local Hutchinsons agronomist or contact us at:

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