

Sittingbourne Monitor Farm

Meeting 3: Breaking Your Yield Barrier as part of YEN (Yield Enhancement Network)

9 February 2017

Bapchild and Tonge Village Hall, Sittingbourne

Speakers:

- **Dr Daniel Kindred (Plant Scientist, RSK ADAS)**
- **Tim Lamyman (Farmer and YEN Winner 2014/15)**

**For more information, visit:
cereals.ahdb.org.uk/Sittingbourne**

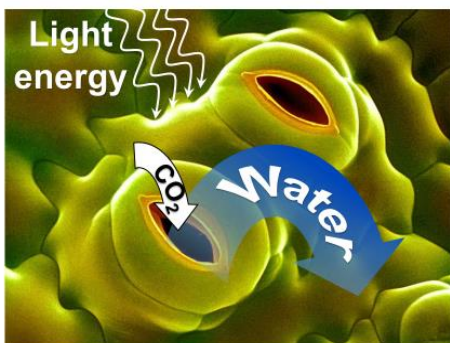


Mark Bowsher-Gibbs, Sittingbourne Monitor Farmer

Meeting Summary – Key Messages

1. **The Yield Enhancement Network (YEN)** - exists to encourage all cereal growers to develop strategies to increase their through yields through better understanding that the biophysical potential of crop is set by incident light energy, rainfall and soil water storage
2. **Crop Performance** - the longer you can keep your crop growing and capturing sunlight your plant the higher the yield potential is going to be
3. **Develop** good fibrous root structures that can penetrate deep into the soil so to ensure more water absorption
4. **Ensure** you know the complete nutritional status of your soils, having a too much or too little of micro nutrient can have a detrimental “knock-on effect” on other nutrients.

YEN (Light, Energy & Water)



Crops are energy converters: changing solar energy to edible energy.

- When light shines on leaves their photosynthetic mechanisms fix CO₂ to make sugars the edible energy. However, they must absorb more CO₂ by opening their stomata, and thereby they let water out.
- There are good physical reasons for the loss of water by crops being in close proportion to the solar energy they intercept. So, when the sun shines, carbon dioxide is fixed in sugars and water is transpired in close proportion.

Yield is a factor of Resource x Capture x Conversion

- Potential yield depends very much on multiple elements working out in a balanced way.
- Unfortunately, some of these elements are not so controllable (e.g sunlight, temperature and water)
- Therefore, when these are available you need to ensure that your crop can utilise them efficiently and effectively in order to increase your yield.
- Keeping canopies alive for longer is crucial when considering yield production but obviously the main constraint on this may be your soil and, how much water it can retain in order for the crop to be regularly and sufficiently supplied throughout its growing life.

So why is it so important to maintain a green canopy?

- Maintaining a green canopy after flowering means that a crop is using water and producing starch from photosynthesis that can be translocated directly into grain growth.
- Crops that are able to grow during this time can also translocate protein from leaves and water-soluble carbohydrates from the stem into grain.
- Water that is available during this period is used very efficiently to support the production of grain – 20mm of water is required per grain required

Tim Lamyman, Worlaby Farms

New world record yields, 2015

Grain cv. Reflection	16.5 t/ha
- 15% MC & 11.5% protein - Grain N 'offtake'	
Incident solar radiation	36 TJ/ha
Summer water supply	470 mm
- 200 mm summer rain - 270 mm soil water	
Nitrogen supply	>330 kg/ha
- After OSR. Soil mineral N kg/ha? - Last manure: cattle, autumn 2012	
ESTIMATED POTENTIAL	21.0 t/ha
Yield achieved (% of potential)	79%

Smart nutrition

- Using a targeted approach to identifying and helping the plant not suffer stress is the way forward
- If you have high PH soils you may have plenty of nutrients but most of them are locked up and unavailable to the plant
- Using smart nutrition can help unlock this problem
- Standing power and tillering capacity can be dramatically improved with smart N

- **For winter wheat** on or before 15 September – (those with black grass will be later)
- After this date in wheat you are limiting the grain set capacities of the ear
- Raise seed rate the later you drill
- **For oilseed rape** on or before 15 August This gives the rape plant plenty of time to put down large tap roots and form a canopy large enough to withstand the winter or pigeons

Variety choice (what to look for)

- High Yielding and fits in to your growing types
- Good disease resistance and standing power
- Maturity date
- Plant and leaf architecture

Manganese, Magnesium, Zinc, Copper, Iron, Molybdenum, etc.

- Yield is proportional to the most limiting nutrient, whichever nutrient it may be?
- Aim to keep canopies as even as possible

For more information, visit the ADAS YEN [website](#)

Next meetings

9 March 2017

Soil health and crop nutrition

10:30am at Bapchild and Tonge Village Hall, School Lane, Bapchild, Sittingbourne, ME9 9NL

To attend the meetings or find out more about benchmarking, please contact your AHDB Cereals & Oilseeds Knowledge Exchange Manager:

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