



September Crop Tour Summary

Thanks again to all who attended the recent Crop Tour. We enjoyed it and the feedback is that you guys did too, and as much as anything else there is real value in simply allowing growers to learn from growers with help from people like us to put the structure and technical detail in place.

The day confirmed that biological farming is about systems management, nutrition (the what, where and when), minimising disease pressure and maximising beneficial biology in a variety of soil types.

Many thanks must go to our hosts on the day, Robbie Blatchford, Dave Partridge, Stu and James Gall, Rob & Di Mitchell & Bruce Hall, and to all those who were able to attend and contribute to the discussions, it was extremely valuable to have innovators from different regions represented. Particular thanks to Tim Watt from BioSys Agribusiness of South Australia for his energy and Anne Coote from CGS for her attention to detail.

Key principles covered on the day

- We have to assume that moisture will become limiting at some stage during the season, so it is essential to build crops with larger root to leaf ratio's to sustain them through dry spells.
 - ✓ This can be achieved using nutrients and biology through liquid injection at planting. Not just Phosphorus and Zinc, but soluble Calcium, all trace elements and triggers for root growth.
- When there is excess Nitrogen in the system, it will push vegetative growth, which creates a need for more Calcium and Potassium during rapid growth. Our soils tend to be able to supply Potassium but SAP testing shows that Calcium does not keep up to the requirement of rapid cell division in leaves.
 - ✓ Inadequate Calcium leads to weaker stem strength and susceptibility to lodging.
 - ✓ Lower pectin levels in the leaf, creates plants with weaker cell wall strength and hence lower resistance to disease. Leaf disease produces an enzyme called pectinase which dissolves pectin in the leaf to produce an entry point. Calcium is essential to increased pectin for defence.
- There are three stages to the winter cereal cycle;
 - ✓ setting heads per hectare from tillers (to the end of tillering),
 - ✓ setting grains per head and
 - ✓ fill per grain in each head.



SAP testing can provide information before the end of each stage, thus allowing better management. SAP testing across a large area and collaborating with other groups, such as BioSys in SA and western Victoria, has allowed cumulative learning about the importance of nutrition management.

- Key sap testing results;
 - Sap pH is an indicator of plant health. Low pH indicates disease susceptibility and high nitrates increases insect susceptibility. This is our experience in the field and simply reflects the nutrient balance in plant sap flow.
 - Nitrogen is overdone early in the crop and under done in latter stages for yield and protein.



- Phosphorous and Zinc have not been a limiting factor in the majority of samples this year, trace elements Boron and Copper have been.
- Sodium and Chloride accumulation in the crop increases with moisture stress and inhibits optimal plant performance. Recognizing and managing for this is essential. CalPac liquid injected at planting or as a foliar has reduced the impact of Sodium in the crops we visited, the best examples were:
 - The barley of Stu and James Gall grown in sodic soil which generally doesn't hang on in a dry spell.
 - The faba beans of Rob Mitchell which turned around after a foliar CalPac with increased Phosphorus, Sulphur, Boron and Zinc when the high Sodium was diluted down 50%.

Overall, the crops visited have been grown on very little in crop rain and lower than conventional Nitrogen. The common denominator to all was;

1. Liquid injection of nutrition at planting, including Nitrogen, Phosphorus, Zinc, Calcium and trace elements, ie CerealRS. Remember, for Summer crop we use a specific formulation called Ignition®.
2. Inclusion of biology in the liquid injection at planting;
 - Eco-N azotobactor at planting for the cereals,
 - Rhizobium inoculant for the legumes, ie EasyRhiz
 - Remidi (Trichoderma) for crown-rot susceptible country – as at Bruce Halls.
3. Use of CalPac as a foliar during periods of rapid growth to consume excess nitrate in the crops and convert to protein.

BNSEasyflo – Liquid injection distribution kits

We looked at the planter set-up with Robbie Blatchford and Dave Partridge. The BNSEasyflo distribution heads have ensured that there are minimal blockages when handling liquids. Discussion on water rates concluded that less water is better to avoid product settling. Dry sowing cereals with liquids is fine, legumes are more sensitive and we could see the result of either too low a rate or when the injection was turned off.

Compost

Dave Partridge and Stu Gall ran us through their compost production process, which they are utilising to replacing soil mineral requirement whilst also adding biology and additional Calcium for higher sodium areas. The compost has been spread prior to planting and during the season.





Disease Management

Dave Partridge discussed his experiences growing Chickpeas, after two years of using a systems approach to nutrition and biology they are seeing significantly less *Ascochyta* incidence.

Bruce Hall has a system driven by back to back Durum wheat which has forced him to develop Crown-rot management strategies which are working. The crop we saw was 3rd year Durum on Durum and as at today is showing no crown-rot incidence. Bruce reports that adjoining fields without Remidi applied are showing up to 25% infection.

Calcium and CalPac

As explained by Stu Gall, Calcium in compost and CalPac at planting and in foliar has allowed them to achieve the best root development and crop potential they have seen on sodic soils. Like all the farms visited, the Galls have come from a Urea and MAP program history to the present program of Stubble Digestion and liquids, with compost in the mix for soil improvement as well.

Phosphorous levels in this years' sap testing were the highest they have achieved – without MAP.

Summary of Products Used

Planting:

CerealRS – 8-15L/ha liquid injection

(Use Ignition in Summer crop)

CalPac – 7-10L/ha liquid injection in sodic soils

Eco-N – 1-2L/ha liquid injection

EasyRhiz legume inoculant – 1 vial/Tonne

Remidi (*Trichoderma* for crown-rot) – 250g to 1kg/ha depending on severity of pressure and rotation

Foliar:

CalPac – 7-12L/ha during rapid growth stages

ZincPac – 2L/ha with broadleaf herbicides

StrengthN – low of 5L/ha up to 50L/ha for nitrogen top ups in crop

Cytoprime – 15-20L/ha biology culture for injection and leaf application ahead of disease pressure



Summer Crop Forecast:

Being a manufacturer of products which are more complex than dissolving nutrient in water has its upsides and down. The positives are that we, and hence you, achieve better crop response and soil performance than from dissolved synthetics. The downsides are that we don't always have the luxury of un-forecast finished stock on hand without notice, it goes with the territory of innovation. So please help us help you by taking the time to fill out the Indication of Needs following and fax or email back to Helen so you get better outcomes.

Do not think this means you are committed, we don't, it just allows us to avoid the strain of saying no, when with a bit of planning and forecast we can say yes, easy done! Thanks again.