



## Soil trial at Toobeah

Ian Moss from FARM Agronomy likes to conduct an end of season review with his clients. He did this with Steve Wilkins at Toobeah. Together they looked at the nutritional status, the soil biology and the soil structure across the farm. As a result they developed a plan to implement on one site, Lorraine. The plan involved trialling the use of liquid gypsum in the form of Gyp-Life, and deep placement Phosphorus in the form of MAP.

The soils consist mainly of grey vertosols but have some areas of red chromosols or tighter red clays which are often dispersive and prone to compaction. The idea was to look at a range of treatments as a commercial scale strip trial. This meant that standard farm machinery could be used and results collected on a commercial basis using yield mapping and satellite imagery.

In early 2014 they initiated the trial on Lorraine. The pre-plant treatments were;

1. Zero MAP + 50kg/ha urea (shallow) + 5L/ha Gyp-Life (majority of paddock left of waterway end).
2. 120kg/ha MAP + 50kg/ha urea (deep placed) with 5L/ha liquid Gyp-Life (east of waterway end).
3. Zero MAP + 50kg/ha urea (deep-placed) + 5L/ha Gyp-Life (far eastern edge of paddock).

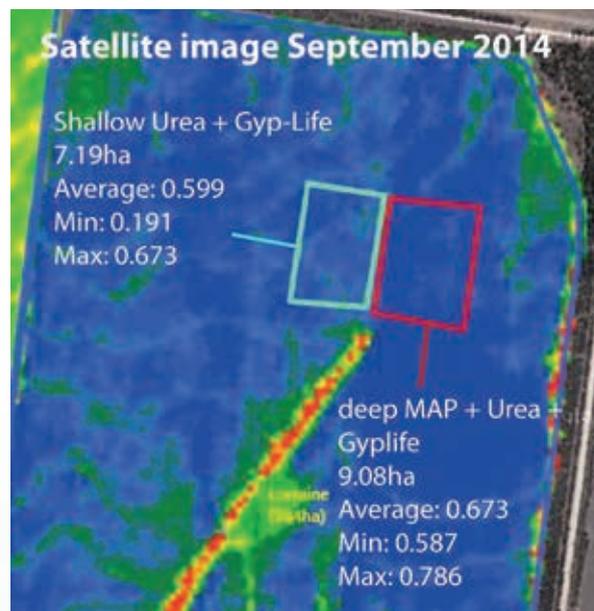
The deep placement/tillage with and without MAP were done using a 12m Gyrat Penetrator fitted with narrow sowing tines at 15 inch spacing. Conditions were very dry and they were only able to till to a depth of four to five inches, six was the target. The liquid gypsum was applied down a tube in the same pass, and probably applied at a depth of two or three inches. The shallow-placed urea + Gyp-Life was also applied with the same machine.

The farm received 156mm of rain from November to March, and a further 85mm in-crop from May to September. Planting took place in late April.

A further 6L of CalPac (6% Calcium) and 50kg/ha of urea were applied at planting across the whole field. Germination across most of the field was good, although there were a few spots where the seed placement was too shallow and germination delayed until rain.

The strips were monitored all season with differences in plant biomass picked up by satellite images early in the season.

The satellite image included shows 12% higher NDVI (biomass/green cover) in the deep MAP + Urea + Gyp-Life compared to shallow Urea + Gyp-Life. The field averaged 3.01tonnes/ha with 12.7% protein, a test weight of 80 and no screenings. This yield is much higher than the majority of the farm.



The yield results of the 3 treatments across the NE portion of the paddock showed:

1. 3.0 T/ha (shallow urea + Gyp-Life)
2. 3.4 T/ha (deep MAP + urea + Gyp-Life) (13% above field standard)
3. 3.3 T/ha (deep urea + Gyp-Life) (10% above field standard)

MAP 120kg/ha + UREA 50kg/ha deep placed + Gyp-Life 5L/ha				
Layer 1 - Grain Harvest   2014   Lorraine				
Main Layer				
Total area	70.74 ha			
Length	185,586 m			
Count	3043			
Description	Average	Total	Minimum	Maximum
Yield Mass (Dry)	3.395 tonne/ha	240.14 tonne	1.329 tonne/ha	12.44 tonne/ha
Moisture	8.400 %		8.400 %	8.400 %
Elevation	225.23 m		218.58 m	230.27 m

Ian is encouraged by the results; he believes they were able to improve moisture infiltration and storage. Ian also feels that there were benefits from the deep tillage which improved the soil structurally and enabled better root systems to develop. The ongoing benefit of the deep P application will be monitored via satellite and yield mapping.

Steve and Ian will be looking further into the use of liquid gypsum and deep tillage, with and without Phosphorus. Ian is especially interested in finding practical solutions to improve soil structure which is essential to infiltration and storage of moisture as well as the crops ability to utilise that moisture.

Steve has initiated a trial on a block which had a sorghum crop in early 2014. The trial includes treatments of 100kg/ha MAP applied in August 2014 to a depth of five to six inches. The intention is to plant this to winter crop in 2015.