

## Suggestions for on-farm trials testing for deep fertiliser response

Recent research by Mike Bell and colleagues has shown stratification of immobile nutrients such as phosphorus can be yield limiting, particularly in dry seasons. Deep fertiliser placement may alleviate this problem. What follows is a basic approach to test for responses under commercial conditions.

### Site selection:

Best to test in paddocks with a decent PAWC/yield potential. Soils with subsoil constraints (eg. salinity) limiting yield potential in dry seasons may show only limited responses to deep P. The primary limit to yield at those sites is often water.

Highly P responsive sites are likely to be where Colwell P is <5ppm at 10-30 cm depth and BSES P <30ppm. Responses are unlikely if Colwell P is >10ppm or where BSES P >100ppm. Responses are less certain for intermediate soil test results.

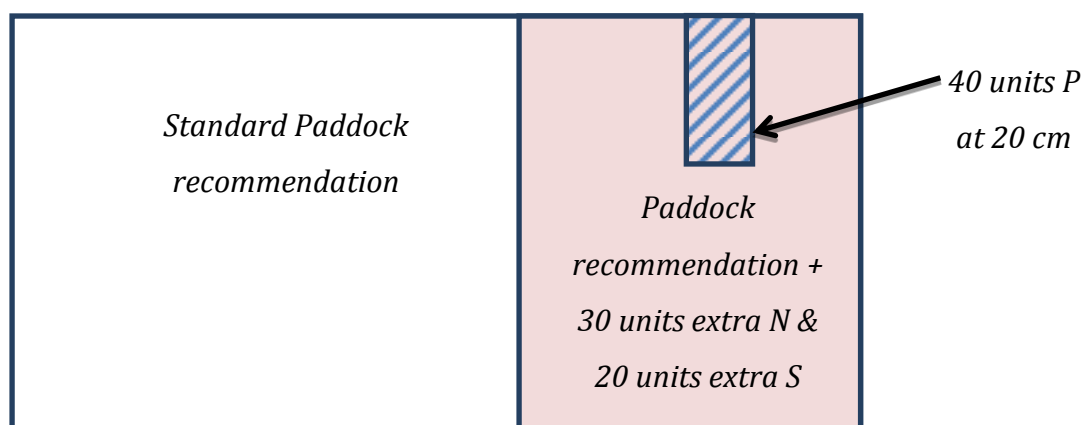
K is not normally responsive (would consider if < 0.4 meq/100g at 0-10 cm and <0.25 meq/100g at 10-30 cm, especially in sodic soils)

### Test strip design:

P yield responses of 30 – 40% may be achieved. However there is a need to ensure that enough nitrogen and sulphur is present to not limit this potential increase. Suggest that for a portion of the paddock you apply an extra 83 kg/ha Gran-Am plus 29 kg/ha Urea (**To achieve an extra 30 kg/ha N & 20 kg/ha of S**). NB Soils where subsoil S or KCl-S >8-10ppm occur in the top 10cm are unlikely to be S responsive. In these soils all the extra nitrogen can be applied as Urea.

Within this area apply a strip of 40 kg/ha P in bands at maximum 50 cm spacing. Aim for ~20 cm depth. Equipment used for deep planting of chickpeas will work. This could be achieved by applying 193 kg/ha of Triple super. If you use MAP, responses will be hard to interpret....they could be due to the extra P OR the extra N.

May not see a response in the 1<sup>st</sup> year, especially if the application causes the strip to be cloddy and lose soil moisture. However, residual effects should be seen for the next 3-4 years.



### Feedback wanted:

Mike Bell would appreciate copies of soil tests and responses measured to help validate his work. Please send information to [lawrie.price@nga.org.au](mailto:lawrie.price@nga.org.au)