Plain English Summary

Project Title:	Increasing Profitability through the Utilisation of Combined Technologies to Target Input Strategies to Productive Capacity of Soils – 2015 Expansion
GRDC Project No.:	2014.04.19
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Objectives	The project aimed to address the hypothesis that a greater return on investment can be achieved through targeted nutrition applications according to crop variety, production capability of soil and seasonal conditions and is an expansion of previous GRDC Project 06.07.2014.
Background	Grain growers are moving away from blanket rate seed and fertiliser applications across whole paddocks to a more targeted approach whereby inputs are applied according to production capability of different soil types – Variable Rate Technology (VRT). Whilst the capital outlay involved in becoming VRT capable can be significant, there is a substantial number of modelling and monitoring tools becoming available to aid growers with their decision making once they are capable. Little replicated research has been conducted to evaluate the benefits of utilising these new technologies in conjunction with VRT to maximise return on investment.
Research	Replicated small plot trials were conducted across three different soil types within single paddocks at two locations in WA – Allanooka and Warradarge. Treatments allowed assessment of 1. Profitability of targeting nutrition to soil type. 2. Key nutrient drivers - Nitrogen or Potassium - across each soil type 3. The benefit of using decision tools to enhance the management of post emergent fertiliser.
Outcomes	Challenging seasonal conditions were experienced at both sites, however results suggested: 1. Sufficient variation existed between soil types at Allanooka to target nutritional inputs. 2. Different soil types had different key nutritional drivers at each site. 3. Gross margin associated with targeting nutrition to soil types could be calculated at up to $49/ha in a best case scenario at the Allanooka site. 4. Crop modelling tool Yield Prophet® was useful in providing yield guidance when run during the season.
Implications	The trial is generally supportive of the use of Variable Rate Technology to target nutrition to soil type where sufficient variability exists.
Publications	Complete final report is available from GRDC.