

Foreword: Better fertiliser decisions for the Australian grain industry

Fertiliser represents the highest variable cost input for Australia grain farmers. In recognition of this, the Grains Research and Development Corporation initiated a project to develop a framework for Making Better Fertiliser Decisions for Cropping Systems in Australia (BFDC). The framework allowed fertiliser response data to be gathered together into a National Database for the main grain crops grown in Australia:

- (i) cereal crops: wheat (*Triticum aestivum*) barley (*Hordeum vulgare*), maize (*Zea mays*), oats (*Avena sativa*), sorghum (*Sorghum bicolor*), and triticale (\times *Triticosecale rimpaui*).
- (ii) oilseed crops: canola (*Brassica napus*) linola (*Linum usitatissimum*), linseed/flax (*Linum usitatissimum*), mustard (*Sinapis alba*), safflower (*Carthamus tinctorius*), and sunflower (*Helianthus annuus*).
- (iii) pulse crops: narrow leaf lupins (*Lupinus angustifolius*), narbon bean (*Vicia narbonensis*), faba bean (*Vicia faba*), field pea (*Pisum sativum*), lentil (*Lens culinaris*), albus lupin (*Lupinus albus*), peanut (*Arachis hypogaea*), and soybean (*Glycine max*). The project has gathered high quality data sets from State Departments of Agriculture, CSIRO, Universities and, importantly, fertiliser companies. The re-examination of fertiliser response surfaces and soil test interpretations has led to a superior understanding of fertiliser management.

The papers in this Special Edition of *Crop & Pasture Science* have arisen from a project that has not only collected and synthesised a very valuable set of historical nutrient response data, but has also demonstrated highly effective involvement of stakeholders that guarantees widespread application of the conclusions.

From the inception of the project, a broad range of scientists from the public and private sector, practising agronomists and policy managers from the fertiliser industry have been intricately involved. This included the provision of data, review and development of data collection and entry standards, development of the interpretation methods, and

the provision of training and subsequent access to the analysed data.

As a result of this broad engagement, the outputs of the project are guaranteed wide spread acceptance, adoption and use by all those with significant influence on how the outputs will be put into practice by farmers and also how they will shape future research into areas most likely to result in improved crop nutrition practice in the fields of the future.

The conclusions of the papers presented here will be used directly in the Fertcare Accredited Advisor program ensuring their consistent application in the development of nutrient management advice for growers. Under the program Fertcare Accredited Advisors are subject to a biennial audit of randomly selected recommendations based on soil and/or plant analyses.

Recommendations are tested against standards for sampling, analysis, interpretation, recommendation, and monitoring. The onus is on the advisor to demonstrate that they are using acceptable procedures and supporting data in each of these areas. The conclusions from papers presented in this Special Edition and data from the BFDC database will be regarded as the standard for many of these parameters in making fertiliser use decisions.

Plant nutrition is a critical component of sustainable intensification of agriculture to feed the world's growing population. The work of this project, and conclusions of these papers, provide the best available knowledge to underpin decisions on crop nutrition and the project has ensured that it will be put into use for the benefit of Australian agriculture.

The project has also identified soil testing knowledge gaps for certain crops and nutrients and this will provide valuable guidance for where future research can provide significant benefits.

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