Making Better Fertiliser Decisions for Cropping Systems in Australia
OVERVIEW

Soil test calibration trials are common in Australia, but there is currently no central repository for the results of these trials. Making Better Fertiliser Decisions for Cropping Systems in Australia (BFDC) is aimed at building confidence in soil test-crop response calibrations nationally. This task involves the collation and assessment of 3500–4000 regional soil test calibration trials for Australian cereal, pulse and oil seed crops. BFDC will develop:

- Nationally and regionally agreed soil test-crop response calibrations for nitrogen (N), phosphorus (P), potassium (K), and sulphur (S);
- A national web-based database of crop nutrient response trials and an interrogator interface for future users of the database; and
- Training resources and technical publications for communicating soil test-crop response calibrations and scientific findings across the grains and fertiliser industries.

BFDC will make accessible all available fertiliser trial data across all Australian cropping regions. This will include data gathered by the:

- fertiliser industry;
- government agencies;
- universities; and
- private consultants.

The fertiliser and grains industries will benefit from BFDC with the products of the project being available online for access by:

- agribusiness and consultants;
- the fertiliser industry;
- public advisors; and
- researchers.

What is being developed for making better fertiliser decisions?

BFDC will have three major components:

- a searchable online database;
- updated soil test interpretations; and
- training resources.

The searchable national database will hold all available fertiliser trial data across all Australian cropping regions. The database will include data from across the grains and fertiliser industries with many fertiliser companies, all agricultural agencies, universities and some private consultants contributing soil test-crop response trial data.

The database will be available online to the grains and fertiliser industries for approved access through an interrogator (the BFDC Interrogator) developed by Geographic Web Solutions. The findings of the project will be published through a project technical manual, through advisor publications and in peer-reviewed scientific publications.

Once collected, the trial results will be used to calibrate soil test data against crop responsiveness to applied N, P, K or S. Critical soil test values for each nutrient will be defined so that optimal yields for various crops in different soils and environments can be determined. These values can be used to generate improved and paddock-specific fertiliser advice.

A training package will be developed by the Back Paddock Company to guide advisors and researchers using the interrogator. Training will focus on:

- understanding how responsiveness data can be used;
- developing abilities to use the data held in the database to develop useable knowledge; and
- understanding the science and processes used in soil test calibration.

The framework represents a significant investment by the fertiliser and grains industries and by government agencies across Australia.
Why do we need better fertiliser decisions for cropping?

Growers and advisors lack confidence in fertiliser recommendations based on soil test results because there is no consistent approach for delivering advice on crop nutrient requirements. These inconsistencies can lead to ill-informed investments in fertilisers. At a time when fertiliser prices are highly volatile, eliminating these inconsistencies is a priority for cropping industries.

To increase grower confidence, improve fertiliser usage and reduce environmental impacts from over-use of fertilisers, there is an urgent need to create a database that captures all the soil testing and fertiliser trial data and knowledge that exists within the public sector and the fertiliser industry.

How will the grains industry make better fertiliser decisions?

BFDC relies on strong support across Australia from the grains and fertiliser industries, and includes research and extension agencies, fertiliser companies and advisors.

The development of the searchable database involves researchers from across Australia who will provide access to relevant trial and soil test data. After these data have been independently reviewed they will be incorporated into the online database.

To search the online database, the BFDC Interrogator is being developed so that approved users can develop statistically valid crop nutrient-soil test responsiveness calibrations. This will be done through a series of queries relating to:

- nutrient (N, P, K or S) and nutrient specific criteria (e.g. PBI and Soil Organic Carbon);
- crop type;
- state region;
- cropping year and climate; and
- soil type and surface soil texture.

The BFDC Interrogator will have a mapping function that shows the included trial sites across Australia where the user can select trials for a specific area of interest. It will also allow the user to view aggregated statistical information for a specified selection of trials and/or trial data for specified individual trials. This will help users to interpret calibration responsiveness functions where data are held in the database.

Concurrent with the development of the database, the interrogator and training materials, will be the implementation of a communications strategy to keep interested parties advised of the framework’s progress.

Go to www.DPI.NSW.GOV.AU/INFO/BFDC to find out more information.

The Better Fertiliser Decisions Framework will make accessible all available fertiliser trial data across all Australian cropping regions. Its success relies on you.
Who is contributing to the development of better fertiliser decisions?
The main contributors to BFDC will be:
- soil and crop scientists across Australia;
- extension officers from state departments;
- fertiliser industry agronomists; and
- cropping industry representatives.

Who will benefit from better fertiliser decisions?
Grain growers and the broader grains industry:
- improved skills in soil test interpretation;
- greater confidence in soil testing and determination of crop nutrient requirements; and
- increased productivity by better matching nutrient supply to crop demand.
The fertiliser industry:
- access to a national database of collated and independently analysed soil test-crop response trial results;
- increased confidence in the use of soil testing as part of crop production systems;
- up-to-date and on-going training of field staff in nutrient management and fertiliser requirements;
- increased ability to identify knowledge gaps and better target future industry soil test-crop response calibration trials; and
- opportunity to incorporate national and regional BFDC results into fertiliser company reporting procedures.
State and federal agencies:
- continued use of key soil test-crop response calibration data;
- increased knowledge of the regional and national role of soil testing as part of crop production systems;
- increased ability to identify knowledge gaps and better target future industry soil test-crop response calibration trials; and
- opportunity to investigate interactions between crop nutrient response and changes in farming systems and/or climate.

When will the better fertiliser decisions tools be available?
The BFDC project began in November 2009. The national database, BFDC Interrogator, updated national and regional soil test interpretations and the training program will be delivered to the grains and fertiliser industries within three years from the project start date.

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