RESEARCH WITH IMPACT

THE CHALLENGE:

An important first step in determining fertilizer strategies is soil testing. The critical value for a soil test indicates the likelihood of a crop response to an added nutrient but often these values are not substantiated or accessible. The grains industry in Australia recognized that making the data behind soil test critical values visible and available to cross examination would assist growers and their advisers make better fertilizer decisions.

Access to Critical Soil Test Values Makes Better Fertilizer Decisions

THE RESEARCH SOLUTION:

The IPNI Australia and New Zealand program joined with government and private agencies to collect and scrutinize crop responses to fertilizer nitrogen (N), phosphorus (P), potassium (K), and sulfur (S) at different soil test values from over 6,000 trials. The data are stored in a national crop nutrition database (www.bfdc.com.au) that can be queried by crop, nutrient, soil type, and many other filters to derive critical soil test values.

THE RESULTS:

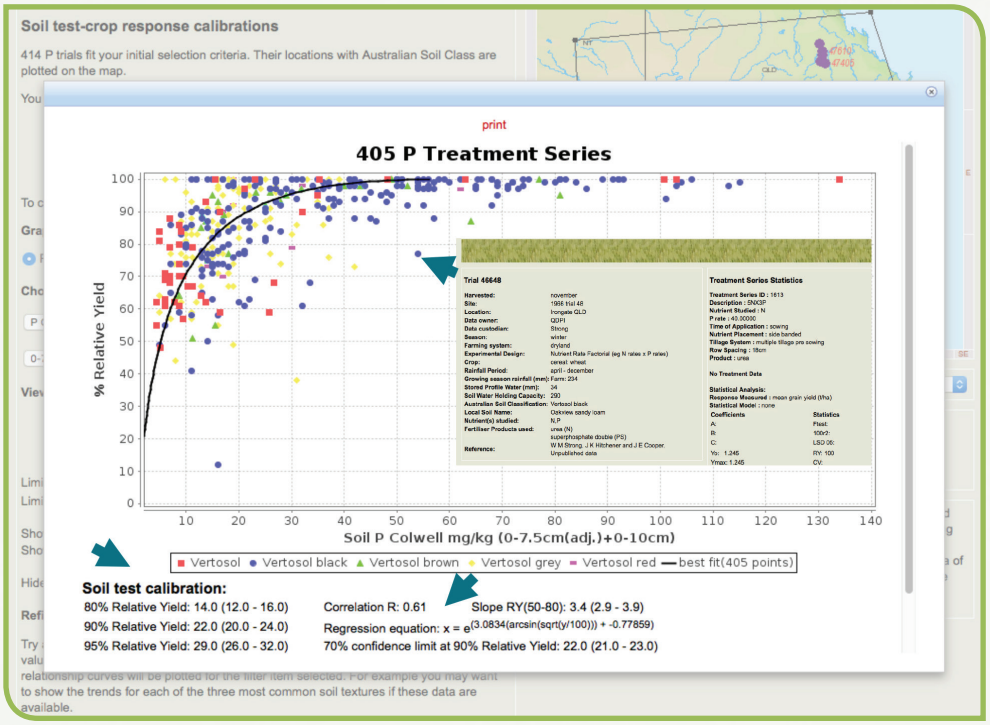
The BFDC database was used to revise soil test critical values for P, K, and S for summer and winter crops in Australia, and the results were published in a special issue of *Crop and Pasture Science*. Data within the database provides validation for test values used in proprietary fertilizer decision support systems that are accredited through the FertCare® industry stewardship program.

The database was also used by researchers who used a network of field data to refine critical soil test values for cereals based on the interactions between crop rotation and soil P immobilization[1]. The tool helped the group to discover that cereals following canola had a higher need for P compared to cereals following pulses. The database also helped them identify that organic carbon and P buffering capacity were important in determining soil test and yield response relationships.

The project has trained and certified over 700 users in retail, wholesale, and post-secondary education sectors. The project has also identified gaps in the database, such as P and K for pulse crops, and K for wheat and canola in southern Australia. Subsequent research has been undertaken to address these gaps through a network of field trials. Refinements to the database and its interface are continually being done.

Reference

1. Neuhaus, A. et al. 2015. Better Crops 99(4):21-22.



Example output identifying phosphorus fertilizer response trials matching user-selected criteria.