South Australian Grains Industry Trust Project

New fertiliser formulations for highly calcareous soils of South Australia

Timeline and Aims

The project commenced in 2000 and was completed in 2002. Project aims were to

1) Identify the main soil chemistry factors responsible for improved phosphorus efficiency using liquid fertilisers for cereal production on the highly calcareous soils of South Australia.
2) Develop new P-fertilisation strategies to improve phosphorus nutrition in cereals on the highly calcareous soils of South Australia.

The team

The project team comprised Mike McLaughlin, Isabelle Bertrand, Enzo Lombi and Caroline Johnston from CSIRO Land and Water and Bob Holloway and Dot Brace from SARDI (Minnipa).

The project

The main aims of this project were to understand the behaviour of new P/Zn-fertilisers in the calcareous soils of Eyre Peninsula and to develop new P/Zn-fertilisation strategies for wheat on these soils. This project ran in collaboration with GRDC research project CSO200 'Improving phosphorus nutrition of cereals in alkaline soils' and GRDC project DAS264 "The Minnipa Strategic Initiative".

Phase 1 of this proposal investigated the chemical reactions that occur between differing types of solid and liquid P/Zn-fertilisers and these calcareous soils. For each type of P/Zn-fertiliser, sorption experiments and measurement of isotopically exchangeable phosphorus and zinc (E values) were performed. The availability of P from P-fertiliser was investigated by classical methods (extractions) and by using newer techniques (desorption with cation-anion exchange resin associated with isotope tracers).

Phase 2 of the project assessed the residual availability of P from the new formulations to determine if long-term fixation reactions were reduced with the new formulations.

Final Report

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