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USING SMART FUNGI TO INCREASE FERTILISER IMPACT

By Geoff Thomas, SAGIT Project Manager

Research funded by SAGIT and the Australian Research Council and conducted by Prof Sally Smith of the University of Adelaide, is finding out whether or not the use of certain soil fungi can be used to increase the availability and uptake of phosphorus fertilizers.

These organisms, called mycorrhizal fungi (or AM fungi)have been shown overseas to improve the use by the plant of P fertilizer. They might even make available some of the fixed P in the soil.

Given that our soils a naturally low in P, our farming systems have a heavy reliance on this fertilizer, the rapid decline in world reserves of phosphate rock, and the rapidly increasing fertilizer costs, it is important that we do everything we can to improve efficiency.

It is important therefore is to understand what influences the level of these mycorrhizal fungi in our soils, what can be done to increase them, and more exactly what their impact is in our environment

The research is evaluating the effects of different cropping and fertilizer regimes on the level of fungi. Wheat yield responses to both fluid and granular fertilizers and the level of fungi will then be assessed.

The fungi work through invading the roots of plants which then receives a considerable proportion of its total P via the complementary relationship between fungus and plant.

Already the work has shown a high level of colonization by the fungi in wheat, medic and clover on a range of soils.

It also confirms that plant roots and the fungi are poor at extracting P from MAP or from the residual P in the soil. However when fluid P was used AM fungi were able to take over at least part of the role of plant roots in scavenging for P.

Unfortunately the recent work has also shown that growth of wheat can sometimes be depressed when colonized by AM fungi. Finding out the reasons for this are crucial if we are to maximize the potential of plant breeding programs to capture the benefits of AM fungi that are normally present in cropping soils.

This is a good example of SAGIT supporting innovative research, which involved some risk of failure, but would bring enormous benefits if successful.

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