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Chatham rock phosphate use would improve water quality by dramatically reducing farm run-off, says CRP

Chatham Rock Phosphate (NZ: CRP, TSX.V: NZP) ("CRP" or "the Company") this week advised that improved water quality will result from the use by farmers of Chatham rock phosphate.

Fertiliser run-off into waterways can be dramatically reduced, without any loss of production, by using naturally occurring reactive phosphate rock (RPR), according to Chatham Rock Phosphate chief executive Chris Castle.

Mr Castle said scientific studies over many years have shown RPR offers strong environmental benefits.

Studies comparing the use of RPR and superphosphate on farmland show that, when applied directly, RPR is both a very effective sustained-release fertiliser and not susceptible to run-off.

CRP holds New Zealand's only material source of RPR.

The findings of the studies – some going back decades – are supported by Dr Bert Quin, probably New Zealand's pre-eminent expert on the use of different phosphate rocks as phosphate fertilisers. Dr Quin designed and coordinated New Zealand's 'National Series' of RPR vs superphosphate field trials while working as a senior government agricultural research scientist during the 1980s.

Dr Quin believes phosphate nutrient continues to enter waterways from agricultural land mainly because we use predominantly water-soluble types of chemically-manufactured phosphate fertiliser, especially single superphosphate ('super'), which supplies phosphorus (P) and sulphate-sulphur.

"Super is prone to run-off of applied phosphorus into waterways during run-off events in the first 8-10 weeks after application, entering streams, rivers and lakes, and causing eutrophication in the form of excessive water-weed growth and algal blooms" says Dr Quin. "It can even be leached right through soils with low phosphorus retention such as those in Northland and on the West Coast.

Dr Quin estimates switching from superphosphate to RPR and RPR/DAP (diamonium phosphate) blends would reduce average run-off losses of phosphorus by 80%.

“This would take P losses back below the trigger levels that have resulted in most of our lakes becoming eutrophied. Within 5-10 years, water quality in the Rotorua lakes, for example, would be massively improved.

“By far the most cost-effective option for phosphorus is reactive phosphate rock or ‘RPR’. This is a natural mineral, formed on the sea floor originally, which is a very effective source of sustained-release phosphorus, ideal for maintaining high-producing pasture and extremely resistant to run-off losses”.

Dr Quin says that he has been very disappointed that the NZ fertiliser industry, ironically largely comprised of a duopoly owned by farmers, has not had the courage to follow the example set by Summit-Quinphos over the period 1989 to 2007. “For their management to replace true RPR with agronomically ineffective ‘direct application phosphate rock’ from Morocco is as cynical as anything I have seen” he says. “The time is right for people with the political will and determination to save New Zealand’s environment to stand up and force change”.

He also says anecdotal evidence over the nearly 30 years some New Zealand farmers have been using RPR shows maintenance requirements for phosphorus start to drop significantly because of both reduced run-off and reduced fixation onto soil clay particles. The higher P run-off from soluble P in the 8-10 weeks after application comes largely from particles and granules of the soluble fertiliser being floated off in run-off. RPR particles are 50% heavier. At the other end of the scale, the very low pH that exists around granules of super lead to increased fixation of P onto allophanic clay particles. So it is a lose-lose for super.”

He believes there is a need for specific advice for farmers regarding managing or minimising any minor lag in production following a switch to RPR. “The easiest way is to use a bit of DAP mixed with the RPR for the first 2 years”.

About Chatham Rock Phosphate

Chatham Rock Phosphate is the custodian of New Zealand’s only material resource of environmentally friendly pastoral phosphate fertiliser. Our key role is connecting the resource with those who need it.

Using this phosphate will support sustainable farming practices, including healthier soils and reduced accumulation of the heavy metal cadmium, dramatically lowering P runoff to waterways and shrinking fertiliser needs over time.

The resource has an estimated worth of $5 to $7 billion, representing one of New Zealand's most valuable mineral assets and is of huge strategic significance because phosphate is essential to maintain New Zealand's high agricultural productivity.

New Zealand's current access to phosphate is vulnerable to economic and political events in the six countries controlling 98% of the world's phosphate reserves, with 85% of the total in the Western Saharan state of Morocco.

Chatham takes very seriously the responsibility vested in it through its mining permit to use the world's best knowledge and technology to safely extract this resource to help sustainably feed the world.

Our initial environmental consenting process established extraction would have no significant impact on fishing yields or profitability, marine mammals or seabirds.

Other New Zealand and international research

Reports of research into P run-off into waterways by New Zealand and overseas scientists considered by CRP were:

1. RPR revisited (1): Research, recommendations, promotion and use in New Zealand by BF Quin and M Zaman.

2. RPR revisited (2): Long-term farmer experience helps define the role of RPR in grazed pastures by M Zaman and BF Quin.

3. Phosphorus fertiliser form affects phosphorus loss to waterways: a paired catchment study by R. W. McDowell, R. P. Littlejohn and J. D. Blennerhassett.

4. Evaluation of two management options to improve the water quality of Lake Brunner, New Zealand by RW McDowell**.**

5. Potential phosphorus losses in overland flow from pastoral soils receiving long-term applications of either superphosphate orreactive phosphate rock by RW McDowell, RM Monaghan and PL Carey.

6. Rainfall intensity and phosphorus source effects on phosphorus transport in surface runoff from soil trays by Francirose Shigaki, Andrew Sharpley and Luis Ignacio

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7. Phosphorus Leaching in an Acid Tropical and Triple Superphosphate by E Gikonyo, AR Zaharah, MM Hanafi, and R Anuar.

8. Effectiveness of rock phosphate, coastal superphosphate and single superphosphate for pasture on deep sandy soils by MDA Bolland, MF Clarke, and JS Yeates.

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