



## Soil Amelioration: the effective way

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### **Biography:**

Paul graduated from University Newcastle in 1970 with B.Sc (Eng) in Civil Engineering. He is currently a member of the civil and Structural Colleges with IE Australia. Paul has worked in the construction industry since 1965 and was the Managing Director of Civil Contracting Company from 1978 to 1985. He has worked consistently in the revegetation industry since 1981.

Paul has been commissioned on two occasions by RTA NSW to review and make recommendations on the RTA R178 Revegetation Specification.

He has presented at several IECA conferences, seminars and workshops. Paul has made numerous submissions regarding revegetation methods and processes during tendering for major freeway upgrades and mining developments over the last fifteen years.

Valley Hydramulch and Revegetation is an operating division of the Paul Clarke & Associates Group. Paul designed and built Hydramulch and straw mulch units for use in the revegetation industry. Valley Hydramulch and Revegetation is currently an Emerald Member of IECA Australasia.

### **Abstract:**

Revegetation on civil sites often requires topsoil amelioration. The 'Top-Down' approach to soil fertilisation and amelioration has been proven as a cost effective methodology, requiring only a soil analysis to determine. Ameliorants can effectively be incorporated to a hydraulically applied seeding application.

Revegetation strategies for civil construction tend to focus on erosion prevention and pH levels, rather than soil health. Soils need to be chemically balanced, supplied with adequate nutrition and organic matter to achieve a successful outcome for long-term revegetation and erosion control. Correct amelioration and fertilisation of topsoil, allow the system to begin functioning correctly again with the addition of lime, gypsum and compost which work to unlock nutrients within the soil.

It is a common misconception that lime and gypsum are used simply to balance the pH of a soil. They have a far greater function than just pH in the soil rehabilitation process. Gypsum is a source of calcium and does not necessarily change soil pH. It is used to help restore the structure of sodic soils by displacing sodium ions with calcium ions, reducing the dispersiveness of the soil and improving water infiltration and hydraulic conductivity. Lime is used not only to add calcium, but also to increase the pH of an acidic soil. The addition of lime also triggers buffering processes which change the balance of exchangeable cations and the dissolution of minerals and the addition of organic matter will increase the CEC of the soil.

In comparison to standard applications, and ameliorated application may increase the cost per square metre initially. Cost savings are achieved in eliminating the need to manually mix ameliorants into the topsoil and minimising reworks through using an application tailored to the site, 'kick-



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starting' the natural regeneration process. Site runoff is also minimised by effective ground cover and ERSED controls.

Adequate site preparation, along with soil testing and using the recommendations to determine the necessary quantity of ameliorants and fertilisers is a proven methodology of successful revegetation. The methodology of ameliorating a topsoil in situ via the 'Top-down' approach is based on the old ways of revegetating a civil construction site. Proposing that this method is still easily achieved in an all-in-one application with a hydromulch is the more effective, better way, not only economically, but also in the uniformity.