

# FARM SCALE SOIL MAPPING FOR BETTER PRODUCTION AND ENVIRONMENTAL MANAGEMENT ON DAIRY AND CROPPING FARMS

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In the current regulatory, social and business environment that New Zealand dairy farmers find themselves, purchasing a detailed soil map and compilation of soil properties would be a wise decision. However, many of the existing soil maps, which are mostly at scales of 1:63,360 or 1:50,000, are beset by errors even when reinterpreted with topographic and landscape control. These errors could potentially be costly to a farming business and to the environment. Only a few areas of the country have existing soil maps at a useful scale. It has been demonstrated that 1:10,000 is adequate for most farms although farms with rapidly changing soil types and environmentally sensitive soil types may need to be surveyed at 1:5000.

During a soil survey, an experienced pedologist collects information on: soil colour (organic matter, drainage, mineralogy, soil age and soil forming processes); soil texture (drainage, moisture storage, parent material, hydraulic conductivity, infiltration rate, fertility); and structure (drainage, moisture storage, rooting depth, hydraulic conductivity) amongst other information. The concept of functional soil horizons is useful in this regard. These parameters assessed qualitatively in the field, or related quantitative measures are the basis for soil assessments.

A detailed farm soil map (FSM) can help dairy and cropping farmers manage many production and environmental issues. A FSM will aid these farmers in the selection of soils and/or best management practises for: nutrient and fertiliser management, dairy effluent application, irrigation, cropping and future planning. A series of real and hypothetical case situations are used to illustrate the value of a FSM.

**Editor's Note:** An extended manuscript has not yet been submitted for this presentation.