On-farm Management of Soil Quality for Sustainable Crop Production in New Zealand. (S05-beare002645-Oral)

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Abstract:

New Zealand cropping farmers increasingly demanding better tools for monitoring and managing soil quality to help ensure the sustainability of their production systems. On-farm monitoring of soil quality was completed on 70 paddocks on the Canterbury Plains in each of 3 years. Quantitative indicators of soil quality were measured to address seven key issues of soil management (e.g. soil structural stability, water storage, compaction, nutrient availability). Relationships between the indicator results, crop and soil management history (e.g. tillage type and frequency, crop type, residue management) and crop performance were investigated to define indicator optimum ranges and management recommendations. For example, structural condition scores (SCS range = 1-10) were positively related to crop yields and the scores decreased (poorer structure) with increases in tillage intensity (from no-tillage to intensive tillage). For an average wheat crop, a decline in SCS from 5 to 3 produced a 20% decline in crop yield, resulting in a loss of 440 NZ dollars/ha.

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