Report Card

Soil condition in the Southern Region, Tasmania

Soil Condition Evaluation and Monitoring (SCEAM)

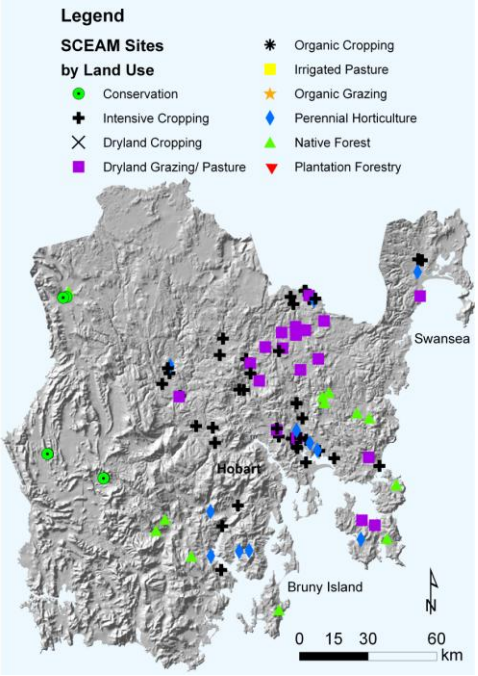
Soil condition is monitored to provide information about how particular land uses are affecting soils in the long-term. The SCEAM program provides a consistent and scientifically based soil condition assessment at nearly 100 sites across each of three Regions in Tasmania and is part of a National monitoring program. Measurements of soil condition began in 2003 and have continued through to 2008. The results provide a baseline dataset against which future monitoring will be assessed. It is anticipated that sites will be revisited every 5 years. Sites were selected to represent major soil types and key land uses in each Region.

The program will provide an early-warning system to identify effects and trends of key land uses on long-term soil condition. The soil properties reported are relatively simple to measure, they are useful indicators of soil condition with respect to many processes and functions, and they respond to changes in land management and environmental conditions at measurable rates.

Participating farmers have been provided with their individual results. The soil condition monitoring program will allow farmers, industry groups, and planners to understand impacts and rates of change in order to make informed decisions so they can avoid irreversible degradation because degraded land is difficult, expensive or impossible to repair.

Soil condition reporting will be used by the NRM Regions as a basis for setting investment priorities and assessing the benefits accruing from these investments. State agencies can use this reporting for a broader State of the Environment picture of soil condition.

Site locations



Prepared by Bill Cotching (TIAR) and Darren Kidd (DPIPWE)

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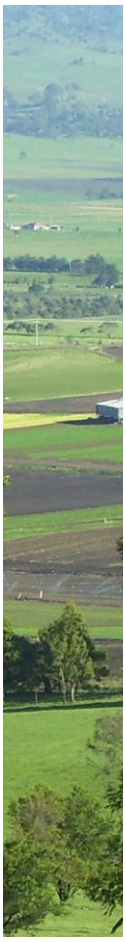

Key findings in the 2009 report card

- Intensive cropping and perennial horticulture are putting soil condition under pressure by reducing soil carbon levels and degrading soil structure as indicated by reduced aggregate stability and increased bulk density.

- Soils in the Region are naturally very strongly acid but this acidity has been addressed by most farmers applying locally sourced lime or dolomite, but some dryland pastures are below pH targets. Where pH (in water) is below 5.5, application of lime is recommended to help prevent damaging acidification of grazing land.

- Nearly all soils used for pasture grazing have below optimum levels of plant available soil Phosphorus, which may be reducing pasture production, but also means that excessive use of phosphorus fertilisers is not occurring with associated nutrient enrichment in waterways.

- Elevated levels of exchangeable sodium (sodic soils) were identified at 10% of intensive cropping sites. This indicates the need for careful management to avoid damage to soil structure and plant productivity.

Targets – what do they mean

Six key soil condition parameters were measured at each monitoring site. Soil condition parameters reported relate to the potential soil degradation issues of: structure (bulk density, sodium saturation and aggregate stability), organic matter and biological activity (organic carbon), acidity (pH), nutrient depletion (plant available phosphorus), and erosion susceptibility (aggregate stability).

Each soil condition parameter has an acceptable target range which differs depending on the land use and the type of soil. The defined soil condition targets take account of the natural variability of soils from different soil orders, are land use specific, and are a balance between maximizing agronomic production and minimizing environmental impact.

Soil condition results were analysed to identify sites that fall outside the target range for each different soil and land use combination. Results were grouped together for each land use to give the percentage of sites that meets (or fails) soil condition targets. This analysis allows for the identification of soil condition issues for particular land uses.

Proportion (%) of sites not meeting soil condition targets in surface samples

Land Use Category	% of total Sites	Acidity	Organic carbon	Phosphorus	Exchangeable Sodium	Bulk density	Water stable aggregates
Dryland Cropping	0	n/s	n/s	n/s	n/s	n/s	n/s
Dryland Grazing/ Pasture	28	20	4	93	4	4	4
Intensive Cropping	43	0	44	n/a	10	10	26
Irrigated Pasture	0	n/s	n/s	n/s	n/s	n/s	n/s
Native Forest	16	0	14	n/a	0	0	7
Organic Grazing	0	n/s	n/s	n/s	n/s	n/s	n/s
Organic Cropping	0	n/s	n/s	n/s	n/s	n/s	n/s
Perennial Horticulture	12	8	18	n/a	0	9	27
Plantation Forestry	0	n/s	n/s	n/s	n/s	n/s	n/s
Conservation	1	n/a	n/a	n/a	n/a	n/a	n/a

n/s = not sampled; n/a = not applicable

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