

Journal article

SAMDB NRM region soil carbon baseline

Natural Resources SA Murray-Darling Basin (SAMDB) Sustainable Agriculture Team recently commissioned a ground breaking project to assess the soil carbon stocks across the entire NRM region covering 5.6 million hectares.

Natural Resources SAMDB contracted Amanda Schapel from Rural Solutions SA who, with support from the South Australian Department for Environment and Water, designed and undertook the study to review 7,395 soil tests taken between 1989 and 2017. Soil Organic Carbon (OC) levels and the proportion of soil samples analysed within low, medium and high OC classifications were categorised according to their year of sampling, soil texture, land use (eg. horticulture, crop, pasture) and district (as a surrogate for rainfall zone).

The investigations revealed topsoil OC values increased with increasing clay content in the soil and there was a narrower benchmark range of OC values for lighter textured soils than heavier textured ones. Overall, 49% of topsoil samples were in the high category, 35% in the moderate category and 16% was in the low OC level category. Soil texture, rainfall and land use strongly influenced soil OC values. The pH, nitrate-nitrogen and phosphorus levels were also important and in combination, explained nearly 60% of the variation in OC values.

There was a 0.07% per annum increase in OC from 1989-2007. A definitive value was not able to be determined from 2008-2017 because of the statistical unreliability of the low number of soil samples taken during this period. However, there did appear to be a trend of increasing OC. Using 5 year time periods, the proportion of samples in the high OC range increased from 23% in 1989 to 60% in 2007.

This investigation, the first of its type in South Australia, is being used as a benchmark for soil OC levels over time and to guide field project development and delivery. Long term monitoring sites will soon be established to improve and standardise the monitoring of soil OC levels across the region.

The report can be viewed on the SAMDB NRM Board website at:

<https://www.naturalresources.sa.gov.au/samurraydarlingbasin/land-and-farming/soils/soil-carbon>

More information can be obtained by contacting Tony Randall on 0427 834 396 or email tony.randall2@sa.gov.au.

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For more information

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