

Active Organic Matter as a Simple Measure of Field Quality

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Maintaining a healthy and productive soil is the foundation of sustainable agriculture.

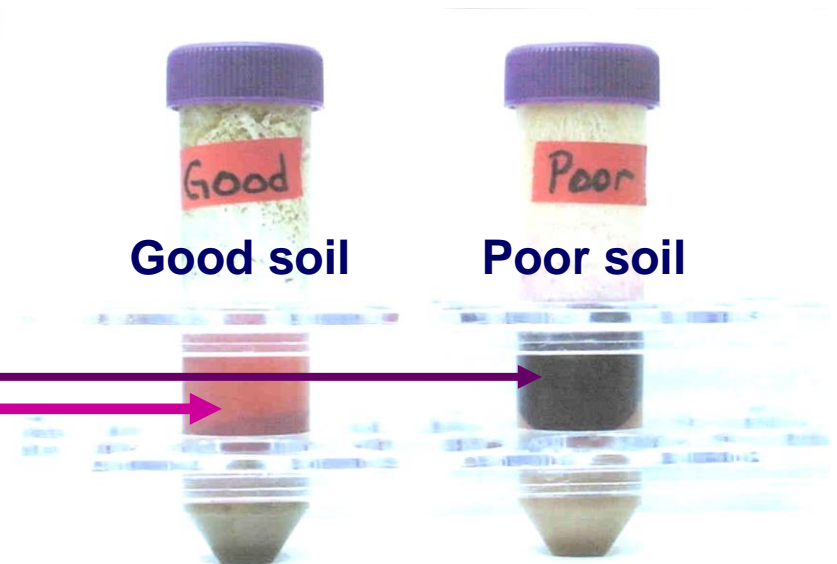
Understanding the importance of sustainable agriculture and the role of management practices to influence soil quality are critical to define economically viable, environmentally sound, socially participatory, and morally responsible agriculture.

There is a strong interest among farmers, Extension educators, Ag-consultants, and state/federal agency personnel for simple evaluation of field soil quality.

Most important to evaluate soil's capability related to ecosystem services is the labile (active) organic matter (AOM) fraction.

We report on a simplified, visual, reliable, sensitive, non-toxic, affordable and quick field test of AOM as a routine measure of soil quality.

The test based on color change from 2 min shaking of partially air-dried soil with salt stabilized 0.02M solution of KMnO_4 reagent (pH 7.2). The lighter the color of the solution after reacting with soil is the better the quality of the soil.



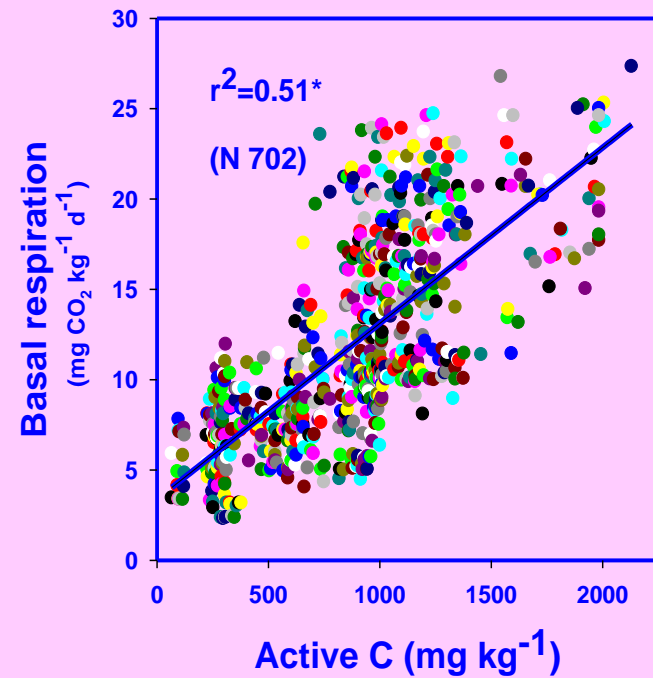
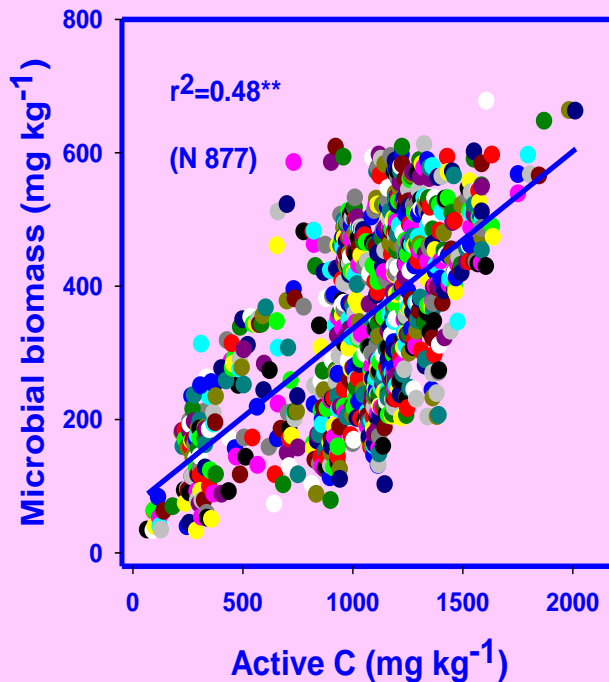
The test based on color change from 2 min shaking of partially air-dried soil with salt stabilized 0.02M solution of KMnO_4 reagent (pH 7.2).

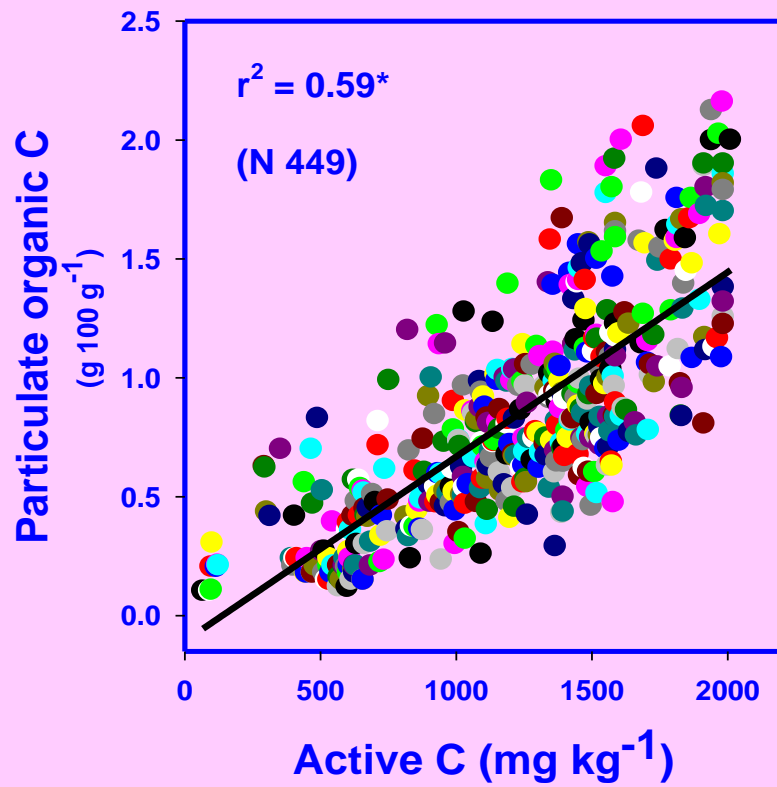
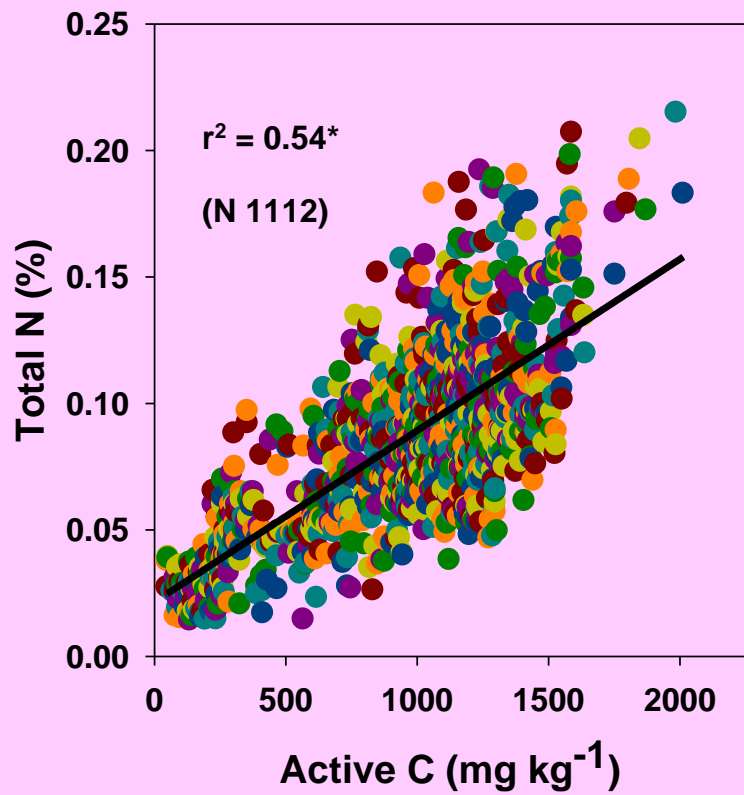
Soil quality is evaluated by changes in the deep purple color to different shades of pink or colorless in poor, fair, good and excellent ratings by using a simple color chart.

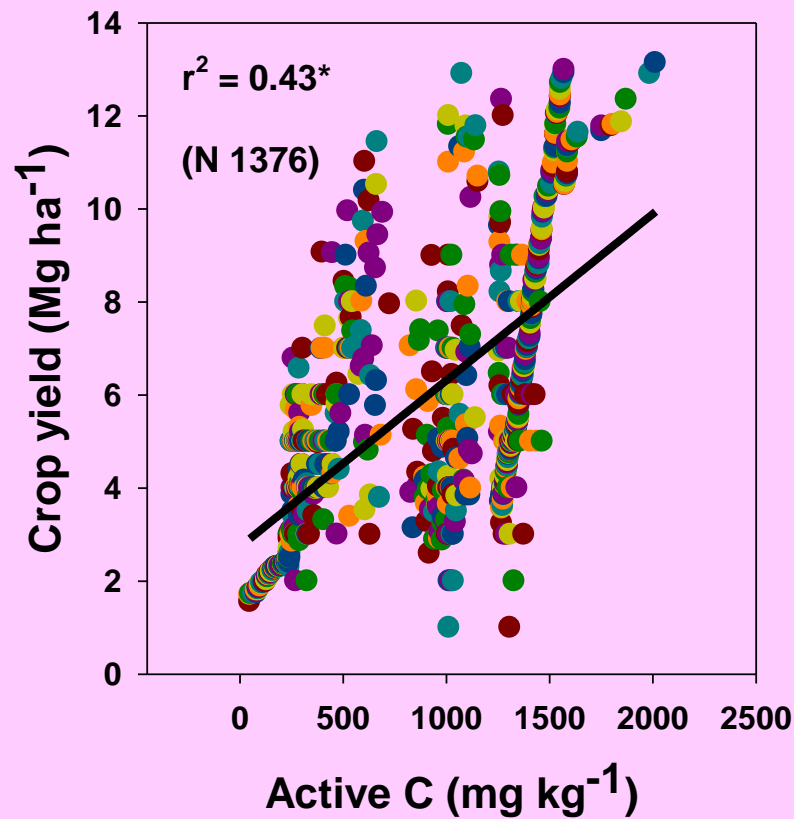
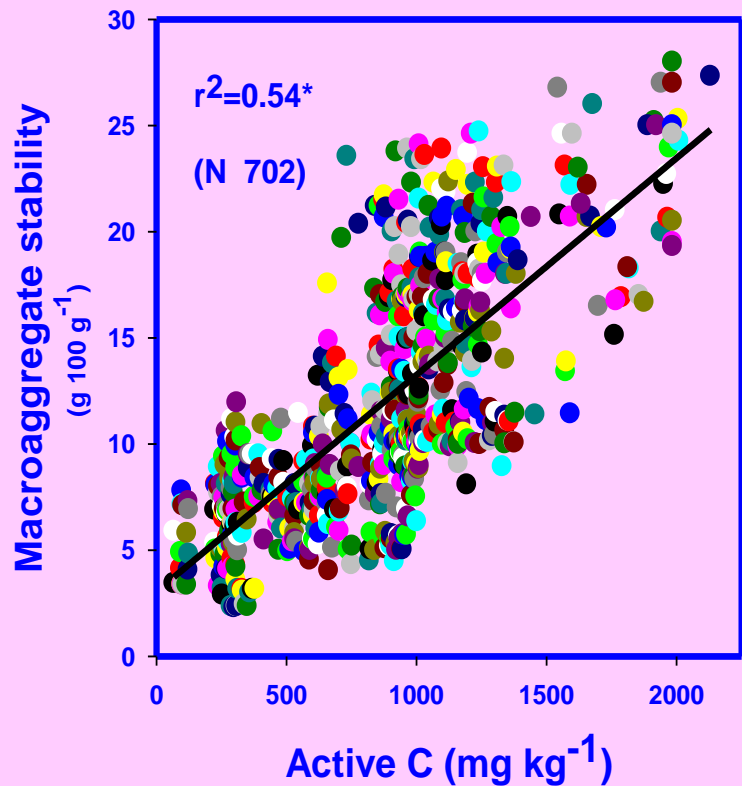
Poor soil quality	Fair soil quality	Good soil quality	Excellent soil quality
> 0 to 400 AOM kg/ha	> 400 – 800 AOM kg/ha	> 800 – 1600 AOM kg/ha	> 1600 AOM kg/ha
> 0 - 12 kg available N/ha	> 12 - 26 kg available N/ha	> 26 - 40 kg available N/ha	> 40 kg available N/ha

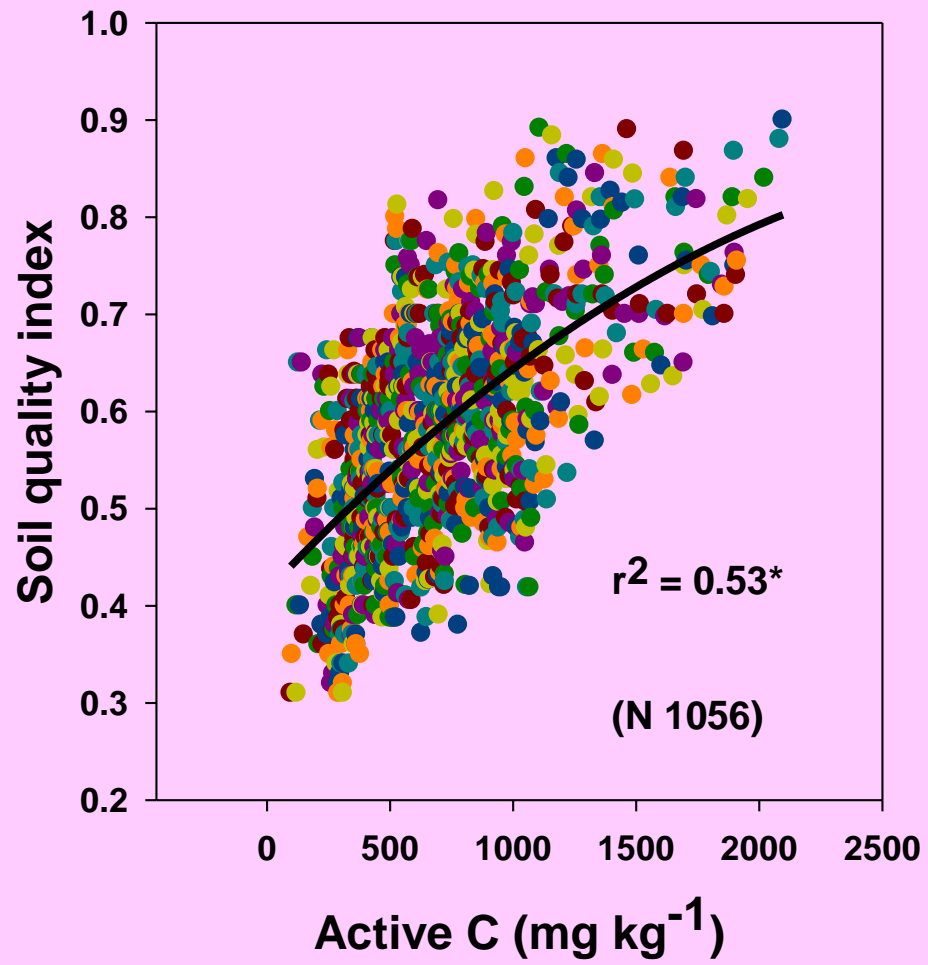
Soil quality, active organic matter (AOM),
and available N color chart

The test was developed and scientifically validated after correlating AOM with soil biological, chemical, and physical quality indicators and soil quality index based on additive inductive and deductive properties of soil-plant ecosystems.









We engage stakeholders to use the soil quality test after demonstrating the test at field day/night, soil quality workshops, county fairs, and regional/national meetings.

Farmers engagement regarding our test based on their response during hand-on activity related to simplicity, visual contrast, consistency, sensitivity, non-toxicity, affordability and rapid measurement of AOM as a routine tool of soil quality evaluation.