

The influence of seaweed on soil respiration

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Summary

Soil respiration is an indicator of soil health, i.e. biological activity. It can be an indicator of healthy soil, capable of decomposing organic residues and distributing the nutrients necessary for crop growth. The aim of this research is to determine the effect of the addition of seaweed to the soil on the intensity of respiration. Seaweeds were added to the soil at different concentrations (2% and 4%) and the respiration intensity was measured over 21 days using the titration method, i.e. the amount of CO₂ released was measured by “capturing” the released carbon dioxide in a template with NaOH. Fluvisol and two types of seaweed from Norway were used in the experiment, and the results were expressed as mg CO₂ /g dry matter/day. A statistically significant effect of seaweed added to the soil on the intensity of respiration was determined. On the day of the first measurement, seaweed1 (0.018), seaweed2 (0.078), and soil (0.145) had the statistically significant lowest values of respiration intensity. Significantly higher values than these were found in the soil combined with seaweed1 and seaweed2, and the highest respiration intensity was found in the soil mixed with seaweed1 (1.911), respectively seaweed2 (1.837) in a concentration of 4%. The highest values of the sum of respiration intensity on day 21 were determined in the combination of soil and both seaweeds (seaweed1 5.615 mg CO₂ /g dry matter) (seaweed2 5.750 mg CO₂ /g dry matter) at a concentration of 4%, while the soil alone had 0.565 mg CO₂ /g dry matter.

Keywords: fluvisoil, respiration, seaweed, CO₂