

Turkish Journal of Agriculture and Forestry

Turkish Journal



of

Agriculture and Forestry

Impact of Alkaline Dust Pollution on Soil Microbial Biomass Carbon

Ömer KARA, İlyas BOLAT

Department of Forestry, Zonguldak Karaelmas University, 74100 Bartın - TURKEY

 [Keywords](#)
 [Authors](#)



agric@tubitak.gov.tr

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Abstract: The effect of alkaline dust pollution emitted from Bartın cement plant on the soil microbial biomass carbon was investigated using the chloroform fumigation-extraction (CFE) method. Microbial biomass C (C_{mic}) values ranged from 157.82 to 1201.51 $\mu\text{g g}^{-1}$ soils in the polluted area and from 726.70 to 1529.14 $\mu\text{g g}^{-1}$ soils in the control area. Soils polluted with alkaline cement dust resulted in significant reductions in C_{mic} levels compared to control soils. Microbial biomass C correlated negatively with CaCO_3 content ($r = -0.52$, $P < 0.05$) and positively with soil organic C ($r = 0.67$, $P < 0.01$). $C_{mic}:C_{org}$ ratio proved to be a reliable soil microbial parameter for describing the change in the man-made ecosystem. Mean $C_{mic}:C_{org}$ ratio was 2.55 and 3.09 in the polluted soils and control soils, respectively. The decrease in this ratio was an indication of soil degradation in the polluted soils. A significant decline in the $C_{mic}:C_{org}$ ratio in cement dust-polluted soils also indicated that this parameter can serve as a good indicator of soil health.

Key Words: Microbial biomass C, cement dust pollution, $C_{mic}:C_{org}$ ratio, soil health

Turk. J. Agric. For., **31**, (2007), 181-187.

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