

ORGANIC FERTILIZERS MINERALIZATION AND THEIR EFFECT ON POTATO "SOLANUM TUBEROSUM" PERFORMANCE IN ORGANIC FARMING

Ahmed Harraq^{1*}, Kenza Sadiki^{1,2}, Mohamed Bourioug¹, Rachid Bouabid³

¹Department of Agronomy and Plant Breeding, National School of Agriculture, Meknes, MOROCCO

²Regional Center for Agricultural Research, Tadla, MOROCCO

³Departement of Soil Sciences and Agricultural Machinery, National School of Agriculture, Meknes, MOROCCO

*corresponding author: aharraq@enameknes.ac.ma

Nitrogen resulting from the mineralization of organic fertilizers is of great importance in organic farming. Two tests (incubation and pot test) were conducted on poor organic matter soil. The objective of the first test was the study of the mineralization under incubation conditions of four organic fertilizers commonly used doses (worm-compost: 5 t ha⁻¹; compost: 5 t ha⁻¹; sheep manure: 30 t ha⁻¹; fishmeal: 3,5 t ha⁻¹), while that of the second test was the study in pot experiment of the effect of adding worm-compost (0, 5, 10 and 15 t ha⁻¹) and fishmeal (0, 1.75 and 3.5 t ha⁻¹) on N mineralization, and growth and yield of potato. During incubation, N mineralized from the four organic fertilizers tested differ significantly. The maximum N mineralization apparent rates (NMAR) were 62.3%, 38%, 30% and 18%, for fishmeal, compost, worm-compost and sheep manure, respectively. For the pots test, the use of fishmeal had a significant effect on leaf number, plant height, plant dry matter, aerial nitrogen uptake, tuber number and tuber yield, while the addition of worm-compost had an effect, on leaf number and tuber yield only. The combination of these two fertilizers (10 t ha⁻¹ of worm-compost and 1.75 t ha⁻¹ of fishmeal) generated at harvest a maximum of underground N uptake (2.96 g plant⁻¹; 123 kg ha⁻¹) and total N uptake (3.26 g plant⁻¹; 136.5 kg ha⁻¹). This was favored by NMAR of 71% and 64.3% for fishmeal and worm-compost, respectively, generating the optimal yield (554.4 g plant⁻¹; 23.1 t ha⁻¹).