Journal of Elementology ISSN 1644-2296

Przygocka-Cyna, K., Biber, M., Cyna, W., Gryszczyńska, B. and Przygodzka, A. (2026) 'The effect of organic-magnesium fertilizer on the yield and the content of minerals in radish against the background of a double cropping sequence', *Journal of Elementology*, 31(4), , available: https://doi.org/10.5601/jelem.2026.31.2.3896

RECEIVED: 26 June 2026
ACCEPTED: 28 October 2026

ORIGINAL PAPER

The effect of organic-magnesium fertilizer on the yield and the content of minerals in radish against the background of a double cropping sequence

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Abstract

Radish is a plant that responds very well to organic fertilization, both in terms of yield and the quality of its edible parts. In this article, quality is related to the mineral content of roots and leaves. This hypothesis was validated in a microplot experiment in which organic fertilizer made from post-consumer waste, characterized by elevated concentrations of base cations – particularly magnesium – was applied. Fertilizers at doses of 0, 50, 100, and 200 g m^{-2} were applied once before sowing the radishes, which were grown in a main- residual cropping sequence. In the first harvest (main crop, MC), the combination with 50 g m^{-2} of fertilizer yielded 1.615 kg of roots and 0.776 kg of leaves per m^2. The second, residual (unfertilized) yield obtained from the same combination was 0.890 kg of roots and 0.573 kg of leaves per m^2. The nutritional factor determining root and leaf yield on MC was potassium. The cause of the yield decline on residual crop (RC) was leaf nitrogen deficiency, which disrupted N, P, and K metabolism in leaves. Among the macronutrients analyzed, magnesium was identified as the nutrient that most effectively meets human daily dietary requirements – particularly those of women – based on its concentrations in both roots and leaves. Regarding the micronutrients evaluated in the study, iron exhibited the highest nutritional value, particularly in leaf tissues. Both magnesium and iron showed significantly higher levels, especially in leaves, than the reference values. Organic fertilizer, enriched with alkaline cations, mainly magnesium, allows for obtaining a high yield with a high content of mineral elements, especially magnesium and iron. Potassium is a critical factor, even in nutrient-rich soil.

Keywords: Fertilizer dose; cropping sequence; root yield; leaf yield; content of minerals

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