

Accumulation of Heavy Metals in Safflower (*Carthamus tinctorius* L.)

Authors : Violina R. Angelova, Mariana N. Perifanova-Nemska, Galina P. Uzunova, Elitsa N. Kolentsova

Abstract : Comparative research has been conducted to allow us to determine the accumulation of heavy metals (Pb, Zn and Cd) in the vegetative and reproductive organs of safflower, and to identify the possibility of its growth on soils contaminated by heavy metals and efficacy for phytoremediation. The experiment was performed on an agricultural field contaminated by the Non-Ferrous-Metal Works (MFMW) near Plovdiv, Bulgaria. The experimental plots were situated at different distances (0.1, 0.5, 2.0, and 15 km) from the source of pollution. The contents of heavy metals in plant materials (roots, stems, leaves, seeds) were determined. The quality of safflower oils (heavy metals and fatty acid composition) was also determined. The quantitative measurements were carried out with inductively-coupled plasma (ICP). Safflower is a plant that is tolerant to heavy metals and can be referred to the hyperaccumulators of lead and cadmium and the accumulators of zinc. The plant can be successfully used in the phytoremediation of heavy metal contaminated soils. The processing of safflower seeds into oil and the use of the obtained oil will greatly reduce the cost of phytoremediation.

Keywords : heavy metals, accumulation, safflower, polluted soils, phytoremediation

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