

THE EFFECT OF IRRIGATION LEVEL AND THE PREVIOUSLY CULTIVATED PLANT SPECIES ON ¹³⁴Cs UPTAKE BY THE VEGETATIVE PART OF SUNFLOWER PLANTS

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EXTENDED ABSTRACT

The effect of irrigation level on ¹³⁴Cs uptake by the vegetative part of sunflower plants (leaves and shoots) was studied in a greenhouse experiment. Plants were grown on seven soils, in pots contaminated in 1998 by spraying ¹³⁴Cs in layers as CsCl. ¹³⁴Cs plant uptake was expressed in terms of soil to plant transfer factor (TF) (Bq kg⁻¹ plant / Bq kg⁻¹ soil). Since pots were previously cultivated with sunflower and soybean plants for three and two successive periods respectively, the effect of the plant species on ¹³⁴Cs uptake by the following sunflower cultivation was also examined. Time dependency of ¹³⁴Cs TFs in a period of three years was also discussed. Though the lower irrigation level was 60% of that of the higher, no significant effect either on vegetative biomass production or on ¹³⁴Cs TFs was observed. Concerning the effect of previously cultivated species, ¹³⁴Cs TFs were significantly lower when sunflower followed soybean cultivation. K concentration in the vegetative part of sunflower plants significantly influenced by soil type, level of irrigation and the preceding crop, while no differences for P content were found. No constant trend of ¹³⁴Cs TFs with time was observed. However, in most soils ¹³⁴Cs TFs showed a decreasing tendency, not always significant. ¹³⁴Cs TFs were significantly negatively correlated with K and P concentrations in the vegetative part of sunflower plants.

Key words: ¹³⁴Cs transfer factor, soil, irrigation level, previously cultivated plant species, time