

# Distribution of cesium and strontium in cereals



Klas Rosén<sup>1\*</sup>, Stefan B. Bengtsson<sup>1</sup>, Daniela Markocsan<sup>2</sup>, Mats Isaksson<sup>2</sup>

## 1 Introduction

In case of radioactive fallout, the food-chain, *cereals-bread-human* and *fodder-cow-milk-human*, will be affected by the deposition.

1. Direct contamination, on the aerial parts of the vegetation, followed by transport into the plant.
2. Indirect contamination, through the root system.

## 2 Objectives

Develop a method to measure the differences in radioactive between the entire ear and cereal grain. To quantify distribution from direct wet deposition and root uptake.



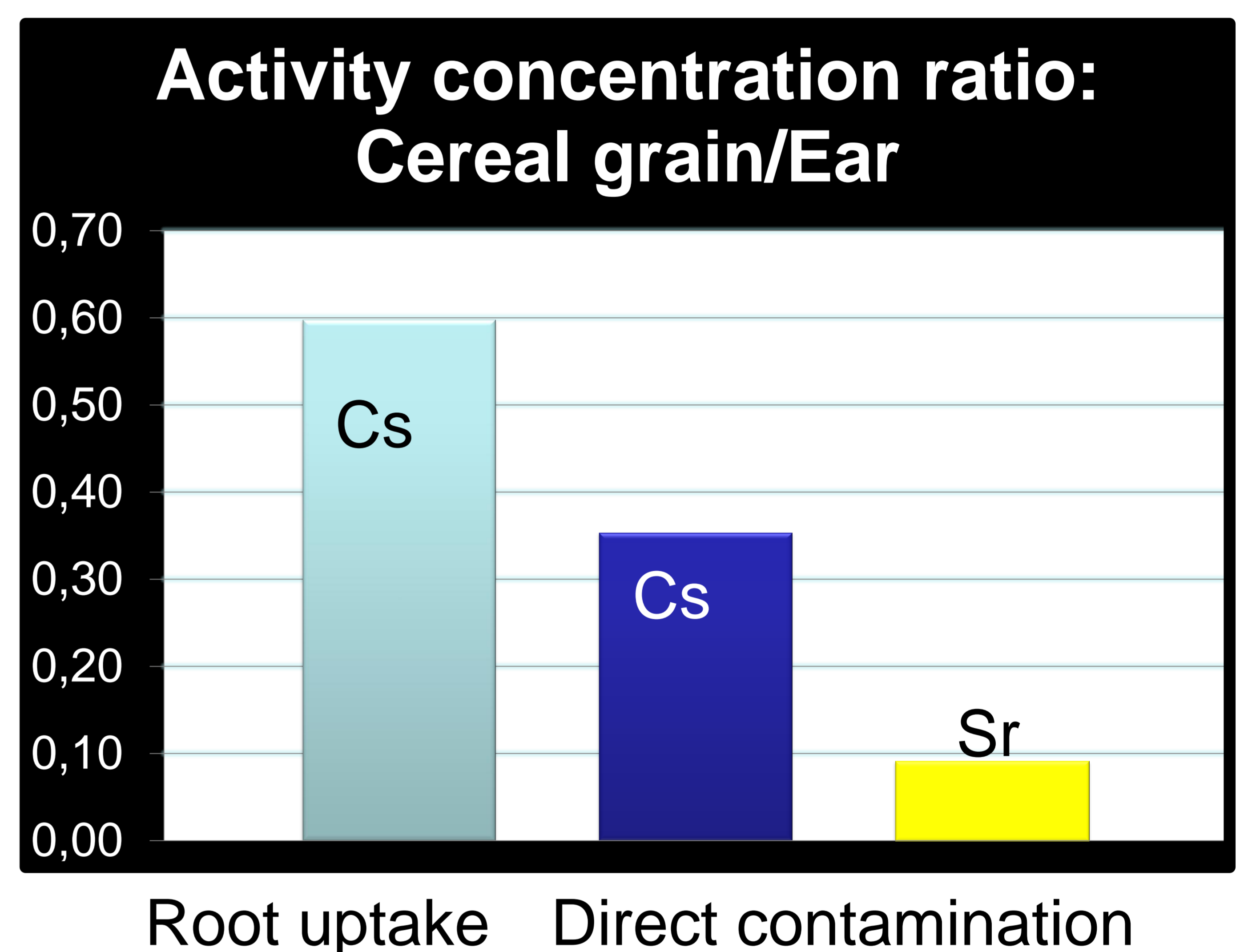
## 3 Method

Crops were grown in accordance with regional agricultural practice. <sup>134</sup>Cs and <sup>85</sup>Sr were wet deposited on wheat (rain simulator). Oats was grown on Chernobyl contaminated land (<sup>137</sup>Cs). Sampling was in the last growing stage from 1 m<sup>2</sup> and divided into stem, ear, and cereal grain. They were analyzed by High Purity Germanium (HPGe) spectroscopy.

## 4 Results

There was a difference between in activity of root uptake and direct contamination.

For rapid estimations (in emergency situations) of activity in grains, suffice using the ratios (cereal grain/ear) 0.60 (oat) and 0.35 (wheat) for caesium and 0.10 (wheat) for strontium.



The straw of oats and wheat, were about 2-4 times and 1-2 times higher levels of caesium than the ear.

## 5 Conclusions

This pilot study show that cereal grain do not have to be threshed; it is sufficient to measure only the entire ear.

This study was financed by the Swedish Radiation Safety Authority, (SSM)

<sup>1</sup>Swedish University of Agricultural Sciences, Department of Soil and Environment, P.O. Box 7014, SE-750 07 Uppsala, \*[Klas.Rosen@slu.se](mailto:Klas.Rosen@slu.se)

<sup>2</sup>Department of Radiation Physics, Institute of Clinical Sciences at the Sahlgrenska Academy, University of Gothenburg, SU/Sahlgrenska, SE-413 45 Gothenburg

