

## **I** Soil-to-plant transfer of radioactivity in tropical systems: development of field study in Northern Australia

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Previous work carried out within an IAEA CRP to evaluate tropical transfer of radionuclides into human food showed that soil-to-plant transfer factors were not, on average, different to those measured in temperate regions (particularly within the Northern Hemisphere). However, closer examination of the data showed that some systems gave extreme transfer factor values. There also seemed to be a higher proportion of environments within the tropics and sub-tropics that tended towards the extreme. This is to be expected given the much wider range of conditions and climatic differences observed when comparing tropical and temperate regions.

The observed differences were isotope specific but not plant specific. That is, if transfer factors were appreciably higher (or lower) than average for any particular isotope then that factor was observed in all samples taken, irrespective of the type of plant. However, it was not necessary that any other isotope would behave similarly.

Soil type was identified as the most probable reason behind the observed differences. Hence, a follow-up study has been designed to identify which soil types are extreme by observing bioaccumulation by an agreed sub-set of two plants (a leafy vegetable and a grain, which typically give the highest and lowest factors respectively) growing on a range of different soil types. The study is also designed to identify the specific characteristics of the soil, the climate and the agricultural practices that have most influence on transfer to crops.

This presentation will outline the background and design of the current IAEA CRP with specific reference to the Australian contribution that involves a field study of plant uptake following an addition of Cs, Sr and Zn to two soils in the Northern Territory of Australia. Results-to-date from the recently established site will also be discussed.