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Uptake of ^{137}Cs by Leafy Green Vegetables, Root and Grain Crops in a Newly Established Garden Setting on Utrōk Atoll, Republic of the Marshall Islands

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UPTAKE OF ^{137}CS BY LEAFY GREEN VEGETABLES, ROOT AND GRAIN CROPS IN A NEWLY ESTABLISHED GARDEN SETTING ON UTRŌK ATOLL, REPUBLIC OF THE MARSHALL ISLANDS

DRELOÑLOK IN ^{137}CS ILO BŌLŌK IN BEJTEBŌL KŪRIIN KO, OKOR KO, IM MENIN EDDŌK KO REJ BŌK JEN ATŌKE EO EKĀĀL ILO UTRŌK ATOLL, REPUBLIC EO AN MARSHALL ISLANDS

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Abstract (Kōmlele ko ilo Tu Kadu In)

A demonstration garden experiment was conducted on Utrōk Atoll in the northern Marshall Islands. The aim of the project was to assess the comparative dose contributions from ingestion of ^{137}Cs contained in locally grown leafy green vegetables, along with other root and grain crops, in comparison with more traditional subsistence tree-crop foods and medicinal plants.

Ear wōr juōn atōke in bejtebōl kar kōmmane ñan ekkatak kake ilo Utrōk Atoll, mōttan āne kan tuiōñ in Majōl. Kōtōbar eo an būrojāāk in ej ñan joñe aorōk in joñan radiation eo enbwin ej bōk im jemaroñ keidi jen ad wōroñlok ^{137}Cs ko im rej bed ilo kūriin bejtebōl ko jej katōki kobalok okor ko im kenikkan ko ilo ad keidi ibben mōñā in kenikkan ko kijed make im uno ko ad būki jen menin eddōk ko.

The combined average activity concentration of ^{137}Cs in experimental garden vegetables, excluding mizuna (*Brassica rapa var. japonica*) and amaranth (*Amaranthus*), was 0.9 ± 0.6 Bq kg^{-1}, wet weight. The associated combined average soil-to-plant transfer factor (TF) value for ^{137}Cs was 1.1 ± 0.6. By comparison, the combined average activity concentration of ^{137}Cs in coconut (*Cocos nucifera*) meat and juice, Pandanus fruit (*Pandanus spp.*), and breadfruit (*Artocarpus artilis*) collected from Utrōk Island was 10.1 Bq kg^{-1}, wet weight, with a range between 0.7 and 20 Bq kg^{--1}, wet weight. The estimated island average TF value for ^{137}Cs in tree-crop foods was about 10 or a factor 8 to 12 times higher than that observed in garden vegetables.

Joñan bōnbōn eo ej walok jen aolep, radiation eo ej debdeb jen ^{137}Cs ilo atōke in bejtebōl kūriin ko ekkatak kaki jab kobalok mizuna im amaranth ej 0.9 ± 0.6 Bq kg^{-1}, eddo in. Joñan eo ej walok jen an emakkūt jen būdej ñan menin eddōk ko (TF) ikijien joñan ^{137}Cs ej 1.1 ± 0.6. Ilo ad keidi, joñan eo ej walok jen radiation eo ej debdeb jen ^{137}Cs ilo kaniek im drenin ni, leen bōb, im mā ko kar būki jen Utrōk Atoll ej 10.1 Bq kg^{-1} eddo in kin joñan kōtaan ne 0.7 and 20 Bq kg^{-1}, eddo in. Joñan eo antoonelok jen aelōñ eo kin joñan eo ej emmakūt jen būdrej ñan kein ikkan ko aorōkin ikijien ^{137}Cs emaroñ joñan ne 10 ak 8 -12 kattōn laplokjen joñan ilo jikin kallūb bejtebōl eo.

Under the conditions employed, dietary substitution of a daily portion of a traditional subsistence food, such as coconut meat, for plantings of vegetable products will potentially help reduce the

ingestion dose delivered to island residents from internally deposited ^{137}Cs and help support healthy lifestyle change and sustainable resettlement.

Bedbed wot iumin jekjek ko kar kommani, einwot kaniek in waini ko, non ekkat bejtebol ko naj maron jiban kadriklok jonan jonan dose eo ej itok non enbwindid non aolep armij in ailin eo jen ^{137}Cs ko bed iloan enbwindid, im jiban komanmanlok ejmour im wawen ko rejijet non bar jokwe ilo ailin eo.

All food products collected from Utrōk met applicable international food safety standards for radioactivity. Aolep mona ko buk jen Utrok emoj aer tobar jonan eo jikin ko jet ilo lalin emoj kile ikijien kejbarok mona.

Keywords: Cesium-137, soil-to-plant transfer factor (TF) values, Marshall Islands, Utrōk Atoll, radioactive fallout.

Naan ko raurōk: Cesium-137, joñan eo ej emmakūt jen budrej ñan menin eddōk ko, Majōl in, Aelōñ in Utrōk, wōtlokin radiation ko.