Agricultural Implications of the Fukushima Nuclear Accident (III)
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After 7 Years
Seven years have passed since the Fukushima Daiichi Nuclear Power Plant accident caused by the Great East Japan Earthquake in March 2011. Fukushima Prefecture was severely damaged by radioactive contamination. The contamination disrupted agriculture in Fukushima Prefecture, which is a major industry in that Prefecture. In the Graduate School of Agricultural and Life Sciences, the University of Tokyo, many faculty members initiated research activities in their specific fields, such as in soil, crops, livestock, fish, and wildlife, in cooperation with other research organizations such as the Fukushima Agricultural Technology Centre. Our research results not only aided the recovery in agriculture, forestry, and fisheries but also helped the general public understand the extent and the implications of the contamination. We held the first public meeting to report our initial research results on radioactive contamination in the environment on November 11, 2011. The research has continued, and the 14th public meeting was held on November 25, 2017. The research results have been published in scientific journals and books. Internationally, two books reporting the results of research undertaken in Fukushima were published by Springer in 2013 and 2016, and the contents of both books can be downloaded freely.

The decontamination of agricultural land and residential dwellings has continued for 7 years, and the evacuation order zone has gradually decreased in area. Potassium fertilization of crops to exclude the absorption of radioactive cesium is also continuing, as has the monitoring of radioactivity of agricultural, forestry, and fishery products and the inspection of entire crops of rice. Most of the contaminated area in Fukushima Prefecture is covered by forests, and decontamination work has only been carried out in limited areas close to dwellings; forests throughout the Prefecture remain contaminated. In areas of Fukushima Prefecture where the evacuation order has been lifted, local residents are gradually returning to their homes, but they have had difficulties on returning. These difficulties may be from uncertainty on the future effects of the environmental contamination. Because it will take a considerable long time for decontamination by the natural decay of radioactive cesium, long-term monitoring of food and continued study of the spatiotemporal dynamics of radioactive cesium in the forest ecosystem will be required.
It will take a considerable amount of time for agriculture, forestry, and fishery in Fukushima Prefecture to recover and return to the pre-accident conditions. The Graduate School of Agricultural and Life Sciences, the University of Tokyo will continue to research and aid the recovery of these industries and local communities into the future.

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Preface

Over seven years have passed since the Fukushima Nuclear Power Plant accident occurred. With a focus on Fukushima Prefecture, the recovery of regions contaminated with radioactive fallout is continuing, and the citizens are returning to their homes. For the agricultural industries in Fukushima Prefecture, the government is recommending farming methods that exclude radioactive materials, e.g., potassium fertilization during crop cultivation. At the same time, the authorities in Fukushima Prefecture have been conducting radioactivity inspections of all agricultural products prior to sale. Especially in the case of rice, the entire Fukushima rice crop of about 10 million bags (30 kg of rice per bag) has been monitored every year. From this inspection, the number of contaminated rice bags has been decreasing from 71 bags in 2012 to zero in 2015, and thereafter no contaminated rice bags have been detected. Because of the abovementioned countermeasures, all agricultural products on the market are now below the threshold levels for radiation exposure.

Since more than 80% of the contaminated region was related to agriculture, the Graduate School of Agricultural and Life Sciences, the University of Tokyo created an independent team immediately after the accident consisting of about 40–50 academic faculty who are specialists in soil, crops, wild and domestic animals, fisheries, forestry, etc. Since the study of the fallout behavior is so closely related to the agricultural environment itself, a multidisciplinary approach was needed. Therefore, faculty members entered the contaminated areas together and performed collaborative research to understand what was happening to the radioactive materials in the agricultural environment. Some of the basic questions we had included: how does radioactive material move within the contaminated soil, and how is it taken up by crops? Can contaminated forests affect agricultural land, etc.?

Although we have been able to accumulate a large amount of data over the past 7 years, data on any one topic is still relatively low. For example, in the case of cereals or rice, we can only harvest the crop once per year, resulting in one data set per year. Therefore, it will take many years to obtain sufficient data to be able to understand the persistence of the fallout in the agricultural environment and the long-term impact on agriculture. We have decided to continue our research for the foreseeable
future so that the general public, farmers and other stakeholders can have a much better understanding of the effect of radioactive contamination on agriculture.

The nuclear accident in Fukushima was the first nuclear plant accident in the Asian monsoon region, and because Japan shares a similar agricultural environment to other Asian countries (e.g., rice cultivation in paddy fields), we have an important role to disseminate the findings of our research to the relevant stakeholders around the world, especially those concerned with nuclear fallout and agriculture in the Asian region. The motivation behind publishing this third book was the large interest shown by readers in our previous two books published by Springer Japan in 2013 and 2016 (downloaded 124,000 and 58,500 times, respectively, as of July 2018). For readers interested in the effect the nuclear accident had on the agricultural environment in Fukushima Prefecture, the current book summarizes the latest research undertaken by our faculty.

Tokyo, Japan

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