



# **CLEANUP OF FARMLAND CONTAMINATED BY THE FUKUSHIMA NUCLEAR ACCIDENT**

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# “Decontamination Pilot Projects” by JAEA

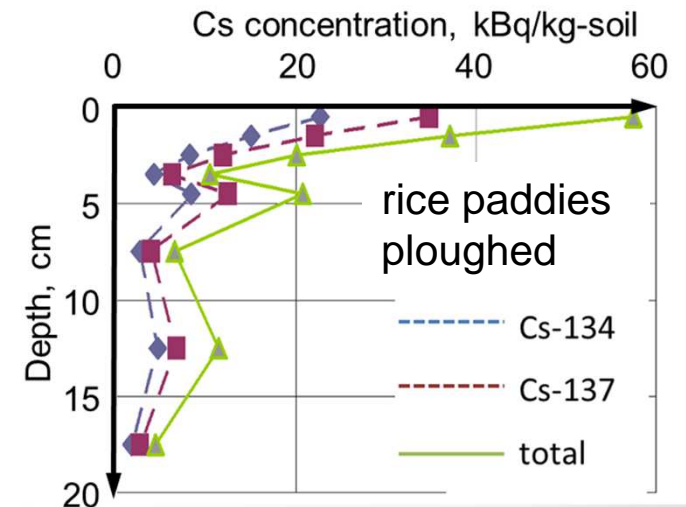
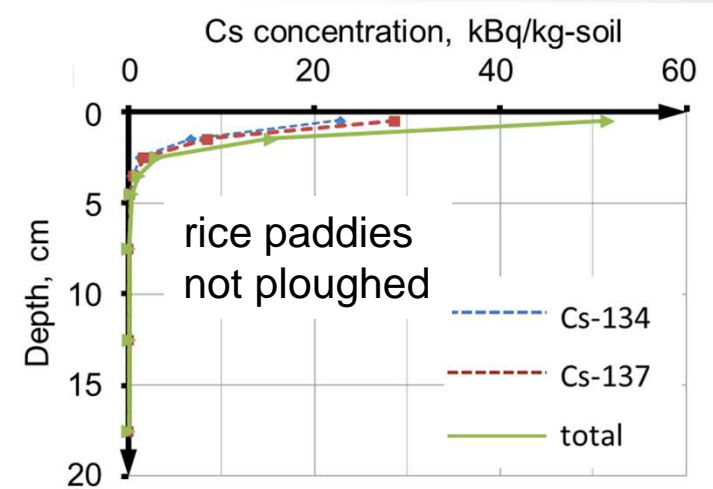
1. Regional remediation was initiated last summer and is now ongoing in Fukushima.
2. To prepare for this, JAEA conducted “Decontamination Pilot Projects” at selected sites in Fukushima prefecture.
3. The purpose was to develop a knowledge base to support effective planning and implementation of stepwise regional remediation of the evacuated zone.

*(Ref.)* K. Miyahara, “Overview of the Results of Fukushima Decontamination Pilot Projects” Wednesday, January 30

4. The cleanup targets include buildings, roads, farmland and forest adjacent to living areas.

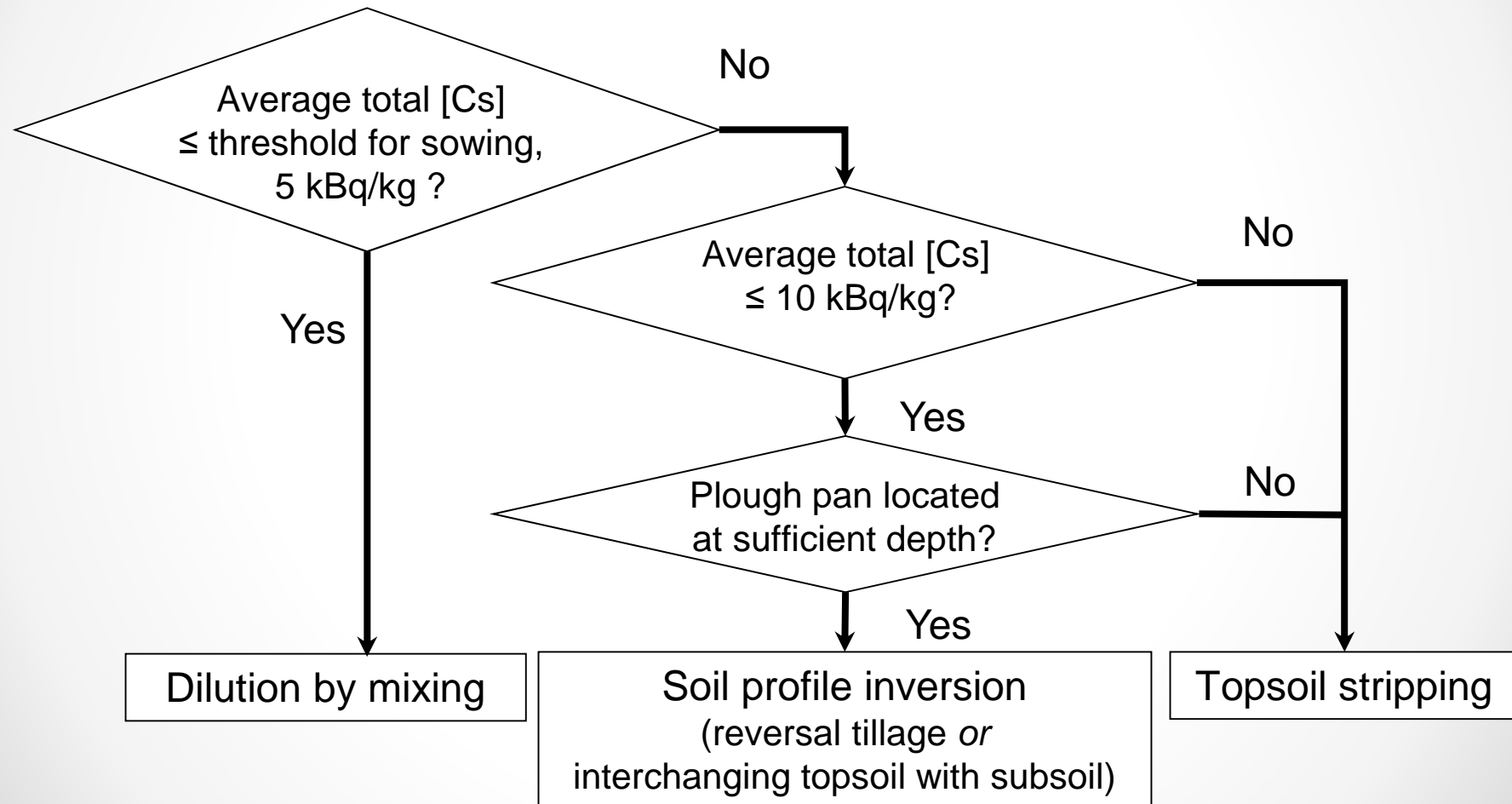
# Contamination of Farmland in Fukushima

1. In March 2011, more than half of the farmland in Fukushima Prefecture was waiting to be ploughed for planting.
2. About 8,400 hectares of farmland (rice paddies, pasture and cropland) were contaminated with  $> 750 \text{ kBq/m}^2$ , almost all of which is currently Cs-134 and Cs-137.
3. More than 80% of the Cs was found within a depth of  $\sim 5 \text{ cm}$  in farmland that had not been ploughed before the accident.
4. Somewhat deeper penetration is found in farmland that had been freshly ploughed before the accident.



# Cleanup Options

... depends on the total Cs (-134 & -137) concentration averaged over the top 15-cm of soil\*  
(\*based on sampling procedures issued by Agriculture Ministry guideline)



# Cleanup Methods and Machinery

## Reverse tillage



## Interchanging topsoil with subsoil



## Topsoil stripping



# Recommendations for Regional Cleanup

1. Select option based on assessment of effectiveness, efficiency and cost:
    - dose rate decrease ▪ workforce ▪ speed ▪ cost
    - workers' radiation exposure ▪ waste generated
  2. Technical prioritisation of cleanup techniques:
    - For highly-contaminated topsoil, a hammer knife mower, which can strip thin layer of soil, is preferred to a backhoe due to the much lower waste volumes produced.
    - For soils with low Cs concentrations, reversal tillage by ploughing was much more efficient and less costly than topsoil-subsoil interchange.
- Deciding between options for a specific site needs to consider not only the Cs depth profile and the depth of plough pan, but also site characteristics such as field size, future agricultural use, capacity of temporary storage, agricultural practices and desires of the landowner.