OK Seed Project

Press Release
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OK Seed Project's Position on Heavy Ion Beam Irradiation Breeding

In 2018, the Ministry of Agriculture, Forestry and Fisheries (MAFF) announced its policy that cadmium-low absorbing varieties bred using heavy ion beam irradiation will be the mainstream varieties in Japan in the future, as a countermeasure against cadmium contamination. From 2025, Akita Prefecture plans to switch from the conventional Akita-Komachi to Akita-Komachi R, bred by crossing with Koshihikari Kan No. 1, which was bred using heavy ion beam irradiation. However, the introduction of this variety is not limited to Akita Prefecture as its use is planned to be expanded nationwide.

There are concerns that the method of developing this variety is similar to genome editing in that some of the gene bases have been disrupted. Also, the introduction of this variety alone will not solve the key problem of cadmium and other pollution-related issues. Consequently, OK Seed Project has decided to publish its views on the introduction of this variety.

1. Breeding using heavy ion beam irradiation

The fact that gamma breeding has ended: The Ministry of Agriculture, Forestry and Fisheries states that irradiation breeding has been practiced in many parts of the world for a long time, but the gamma irradiation facilities that have been used for irradiation breeding are practically closed almost all over the world. Also, in Japan the facilities were closed in FY2022 and this technology has ended. In Japan, irradiation breeding by gamma irradiation no longer produces new varieties, except for backcrosses. The Government of Japan has given no explanation of what led to the closure of a project that had been funded with public money for many years.

The problem with heavy ion beam breeding: This new technology, called heavy ion beam irradiation that produced the Koshihikari Kan No.1, was introduced rather than gamma irradiation that had been used for a long time. Heavy ion beam breeding concentrates irradiation at a single point, giving it a much higher destructive power over genes than gamma irradiation. There is little experience outside Japan with this technology, and there is no scientific verification of its safety, so it is false and unacceptable to describe it as if it were something that has been used widely and been long proven worldwide. We oppose the use of heavy ion beam irradiation for food.

Organic agriculture certification issues: We oppose the acceptance of rice varieties bred using irradiation (especially heavy ion beam irradiation) for 'Organic' certification.

2. Regarding the right of producers and consumers to choose

- We oppose the total conversion to heavy ion beam bred varieties as it deprives producers and consumers of their right to choose. Local governments should continue to provide seed rice that is not bred using heavy ion beam irradiation.

- If Koshihikari Kan No.1 is distributed under the old and well-known brand name Koshihikari, and Akita-Komachi R as Akita-Komachi, consumers will not be able to distinguish them from conventional Koshihikari and Akita-Komachi and will not have a choice. We oppose the distribution of heavy ion beam bred varieties under conventional variety names. In addition, there is currently no obligation for seeds to be labelled as irradiation-bred, and producers are unable to obtain basic information. If heavy ion beam bred seeds are to be distributed, at the very least they should be obliged to indicate the breeding method.

- The Koshihikari Kan No.1 variety has a damaged gene for manganese absorption, making it susceptible to sesame leaf blight and yield shortfalls. The total switch to such varieties is unacceptable from the point of view of forcing unnecessary disadvantages on producers.

- The Koshihikari Kan No.1 variety is covered by a genetic patent. We note that there is strong criticism around the world regarding patents on seeds. In particular, there is even stronger criticism of gene patents that go beyond species and lead to food domination and monopolies. Saving seeds of such varieties is also not permitted, and this is likely to place significant restrictions on agricultural practices. We strongly oppose the introduction of gene-patented varieties in rice, our staple food.

3. A regional long-term and comprehensive roadmap for the problem of cadmium and arsenic pollution is needed

- It is necessary to identify the sources of cadmium and arsenic pollution, i.e. the polluters and to prevent further pollution. The pollution should be removed and the environment restored, based on a pollution fact-finding survey. Also, a health survey should be conducted of the residents in the affected areas and compensation provided. It should be reaffirmed that the burden of such projects should be borne by the company responsible for the pollution, based on the polluter-pays principle, and that the national and local governments are obliged to support the residents of the affected areas so that they can recover their rights.

- We oppose imposing variety and patent licence fees on farmers for the Koshihikari Kan No.1 variety, as this is contrary to the polluter-pays principle.

- The introduction of the Koshihikari Kan No.1 variety may result in rice with low levels of cadmium and arsenic, but it will not improve the cadmium and arsenic contamination of soil and water systems. A comprehensive soil contamination control policy is needed, including the revision of the Agricultural Land Soil Contamination Prevention Act 1970.

- The government and local authorities should draw up a long-term, comprehensive roadmap for pollution reduction and develop such a plan with the participation of the local people and producers concerned, for a future with less polluted areas.

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