

Study about Gene flow and Stability Assessment in GM rice

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[Introduction]

According to the Food and Agriculture Organization (FAO) statistics, GM crops are now commercially planted on about 100 million hectares in some 22 developed and developing countries. and global cultivation area of GM soybean, maize, cotton and canola (oilseed rape) reached 114 million hectares in 2007, the total area cropped with GM crops in the European Union (EU) was approximately 110 thousand hectares (James, 2007). Recent global abnormal weather, desertification associated with global warming, dry land soils, and salinization of ground water associated with the large-scale agricultural irrigation agriculture all demonstrate that the agricultural environment is deteriorating rapidly (Long & Ort., 2010; Park et al., 2009).

[Materials and Methods]

The field experiment was carried out in Gunwi GM field, Kyungpook Province in South Korea (4,700m², 36°6' 41.54' N, 128°38' 26.17' E). This study used drought-resistant of Agb0103 GM rice, the donor plant, inserted CaMsrB2 gene that obtained from pepper (*Capsicum annuum*) is considered as a novel defence regulator against oxidative stress and pathogen attack (Oh et al., 2010). Agb0103 and Ilmi, and Junam, Baekjinju, and Nagdong as control varieties. The total area of the experimental plot was 119 × 36 m, plants were spaced at 30 × 15 cm intervals and angle was 15° (Figure 1). Fertilization of the GM field was with N-P₂O₅-K₂O (9.0-4.5-5.7 kg·10a⁻¹) according to the Rural Development Administration rice standard cultivation method.

[Results and Discussions]

In agriculture, the rice is the one of important things. Many farmers and scientists have long tried to increase the yield of rice. So many technologies have been developed these days. One type of technology has given rise to a host of concerns and questions, namely Genetically Modified Organisms (GMOs). The significance of environment change and genetic safety has been recently recognized by the commercialization of GM (genetically modified) crops. The increasing cultivation of GM crops has raised a wide range of concerns with respect to food safety, environmental effects and socio-economic issues and now commercially planted on about 185 million hectares in some 26 developed and developing countries. The scientific evidence concerning the environmental and health impacts of GMOs is still emerging, but so far there is no conclusive information on the definitive negative impacts of GMOs on health or the environment. Nevertheless, public perceptions about GMOs in food and agriculture are divided with a tendency toward avoiding GM food and products in many developed and developing countries. Also Korea is one of that country and is not allow the GMOs now. So I studied whether these GMOs are actually dangerous for environment and whether there are differences in cultivar characteristics such as germination test with TTC tetrazolium, germination test in frozen soil and gene-flow test with glufosinate and strip-bar test. These experiments will indicate that drought-tolerant GM rice may be used to detect genetic safety and evaluation standards in GM rice progeny.

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