# OBTAINING OF INITIAL FORMS FOR SYNTHETIC SELECTION OF DROUGHT-RESISTANT RICE CROPS USING RADIATION MUTAGENESIS ON FAST NEUTRONS

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It is known that viruses and cosmic rays make a decisive contribution to the evolution of biological species on Earth, participating in their transformation at the genetic level, largely determining the processes of selection [1].

Rice (Oryza sativa L.) is the world's most important food crop [2]. Also, rice represents a key model for studying the genomics of agroecosystems, due to the relative simplicity of its genome [3]. The use of neutrons as a mutagen leads to an increase in the diversity of mutant forms and makes it possible to solve the urgent problems of a declining amount of fresh water resources, soil salinization, and the increasing aggressiveness of flora and fauna pathogens.

This work is conducted to the mechanism study of the cosmogenic neutron radiation effect on the mutagenesis of biological objects on the example of rice cultures.

Within the framework of the project of the Ministry of Agriculture of the Republic of Kazakhstan No. BR10765056, along with the Kazakh Research Institute of Rice named after. Zhakhaev (Kyzylorda, Kazakhstan), Budker Institute of Nuclear Physics (Novosibirsk) as a result of irradiation of rice seeds with fast neutrons mutant forms of rice varieties Aikerim, Leader and Syr Suluy were obtained. They are resistant to salinity, drought and both stress factors at the same time.

The largest number of mutant lines resistant to stress factors were obtained in the Syr Suluy variety (98 pcs.), other varieties gave fewer mutant plants – for the Leader varieties it was 44 pcs. and Aikerim – 16 pcs. All the isolated M1 plants differ significantly from the original forms in morphological features – plant height, length and laceration of panicles. Most plants are characterized by stunting and dwarfism (40-80 cm), as well as shortness and high empty-grain (up to 100%) of panicles, which indicates that they are mutant forms that are resistant to salinity, drought or both stress factors.

The obtained plants will be used as initial forms in synthetic breeding to create varieties with agronomically important properties.

**References**

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