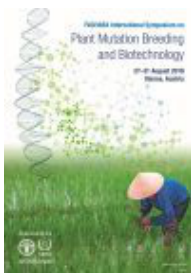


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## FIRST SLOVAK AMARANTH VARIETIES GENERATED THROUGH RADIATION MUTAGENESIS

Neglected or minor species like amaranth (*Amaranthus* spp.) can markedly contribute to the promotion of environmental sustainability, agrobiodiversity enhancement, global food production and to the preparation of healthy foods. A nutty-flavoured amaranth grain has an attractive chemical composition and promising nutritional value when compared to other grains, whether cereals or food legumes, with high impact on human health. Amaranth is suitable for diets of people suffering from coeliac disease as only very low amounts of prolamins are present in their grains. Breeding work on grain amaranth has just begun in Europe and shows the necessity of further research for drought resistance, grain maturation, and yield improvement. Our research is oriented towards enhancement of the quality and quantity of amaranth grain using radiation-induced mutagenesis. In the frame of multi-lateral IAEA-coordinated project two amaranth accessions - *A. cruentus* L. genotype Ficha and *A. hypochondriacus* x *A. hybridus* L. hybrid genotype K-433 were used for the irradiation treatment. Fifteen generations of mutant genotypes with their non-irradiated (M0) counterparts were established. Finally, two stable mutants with significantly increased 1,000-seed weight were selected. Multi-year phenotypic characterization for important yield parameters were performed in two different fields. The investigated mutants showed a seed size advantage over non-irradiated control seeds, with predictable yield performance. Based on a long-term significantly increased yield parameter and stable nutritional and dietetic value we have passed these mutants on to official DUS trials. Successful DUS trials led to the registration of the tested mutant genotypes as first Slovak amaranth varieties „Pribina“ (*A. cruentus*) and „Zobor“ (*A. hypochondriacus* x *A. hybridus*). Currently, we are working on the identification of proteins responsible for enhanced traits, that will provide potential biotechnological targets for crop improvement in amaranth and other species.

### Country or International Organization

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