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RADIATION BASED INDUCED MUTAGENESIS FOR DEVELOPING NUTRITIONALLY ENRICHED RICE VARIETIES

Rice is the staple food of more than half of the world's population as well as more than 70% of the Indian population, yet it lacks many life-supporting nutrients. People who cannot afford a balanced diet through costly supplementary foods, suffer from multiple micronutrient deficiencies and malnutrition problem. Some 600 rice landraces of Chhattisgarh state, India were agro-morphologically characterized to screen for high yielding rice genotypes. A total of 215 high yielder rice landraces were selected and subjected to grain nutritional and quality profiling. Several landraces were identified as having high nutritive value but they are tall in nature, late maturing and some have undesirable plant stature. Superior rice landraces identified for these traits were subjected to further improvement for reduced height, early maturity and better plant stature by radiation based induced mutagenesis. Gamma radiation was used to irradiate seed of selected landraces with 250 Gy and 300 Gy at the Bhabha Atomic Research Centre (BARC), Mumbai, India. Field screening and mutation breeding activities have been carried out at the Indira Gandhi Krishi Vishwavidyalaya, Raipur, India. Landraces, Luchai, Vishnubhog and Badshahbhog'were identified as superior for overall grain quality traits. Landraces, 'Karhani, Kareni Dhan, Jhilli'had higher amount of both, iron and zinc contents. Landraces, 'Gangachur, Maidubraj, Chhindmauri'had higher quantity of linoleic acid and linolenic acid. Highest oleic acid was observed in 'Kadamphool, Bathrash, Badshabhog Selection-1'. Out of these, Karhani, Vishnubhog, Jhilli, Luchai, Maidubraj landraces were subjected to further improvement through induced mutagenesis. Some desirable mutants with high nutritive value have been selected at the M4-M6 generations. Nutritionally enriched rice mutants with reduced height, early maturity and better plant stature will be very fruitful for poor farmers of Chhattisgarh for increasing their income and for eradicating the malnutrition problem.

Country or International Organization

India

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