Supaporn Phromphan 2010: Screening in a Large Mutagenized Rice Population and Genetic of Grain Iron Content. Master of Science (Plant Breeding), Major Field: Plant Breeding, Interdisciplinary Graduate Program. Thesis Advisor: Associate Professor Apichart Vanavichit, Ph.D. 88 pages.

Iron (Fe) deficiency anemia (IDA) is a worldwide problem particularly in Asia. It most affect on the pre-school children and pregnant woman. IDA has been caused from staple food that the people consume. It has not enough nutrients especially in rice and cereal. Rice is the most staple food for people in a half of the world and has the lowest Fe concentration in grain among the cereal. Increased iron in a grain should have done to solve the symptom. The objective of this study was to screen high iron density and bioavailability on rice from 12,000 varieties of Jao Hom Nin mutant that were induced with fast neutron radiation. Four seeds per variety from mutant population was analyzed with Perls' Prussian blue method. High intensity of Prussian blue staining type was selected for Inductively Coupled Plasma-Mass Spectrometer (ICP)at for institution of nutrition, Mahidol University and Atomic Absorption Spectrometer (AAS). Furthermore, high iron type were analyzed for free phosphorus with high inorganic P (HIP) method. It was found that 3 mutant types to include 4643, 10599 and 1255 have high iron density than Jao Hom Nin about 29.2, 28.71 and 25.7 mg/kg Fe respectively. Furthermore, we found high inorganic phosphate mutant that have about 4.6 - 13.9 mg/L P 10 types. A study of inheritance of Fe concentration in grain analyzed with Perls' Prussian blue method between Jao Hom Nin 4643 mutant line. Found that all of them were accepted at 3: 1 phenotypic ratio. The chi-square test at df = 1agreeable with Mendel’s law of segregation.

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