

(05-1-77)

Characterization and morphological observation of floury mutant of rice

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Objectives

We characterized floury mutant of rice using morphological and micro-scopic method. The location of the floury mutant gene was investigated by mapping with 1500 F2 mutant plants.

Materials and Methods

1. Materials

Kinuhikari (japonica rice cultivar), Floury Mutant of *Kinuhikari* (Mutant caused by γ -ray radiation), *Kasalath* (indica rice cultivar)

2. Methods

Scanning Electron Microscopy: Scanning endosperm especially amyloplasts and starch granules of normal and mutant grain with S.E.M.

Particle Size Analyzer: Particle size distribution of the rice flour prepared from the normal and mutant grains.

Polymerase Chain Reaction: PCR achieved using 57 marker for the mapping of the mutant gene.

Mapping: SNPs genotyped with SNaPshot kit

Results and Discussion

Normal grains were more transparent than mutant grains, when we observed cross section of normal and mutant grains. Grain weight of floury mutant was lighter than normal grain due to decrease width, thickness and density of the mutant grain. Amyloplasts were less developed and had more spaces between them when observed with S.E.M. of the mutant endosperm. Although mutant grain became finer particle quickly in milling process, the usefulness of the property requires further study. The floury mutation is caused by one recessive gene. We obtained F2 grains from the cross between the floury *Kinuhikari* (Japonica) and *Kasalath* (Indica). Therefore we used F2 grains with floury phenotype using the mapping of the mutant gene. And detected mutant gene on chromosome 5 by mapping. The candidate gene is coding for PPDK that related with carbohydrate metabolism.

Acknowledgements

We are grateful for financial support from the BioGreen 21 (grant 1005013-1-1)