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Enhancement of Seed Longevity in Japonica Rice Cultivars Using Weed Rice

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Abstract : Seed germination is a main factor in japonica rice cultivation. For japonica strains unlike indica lines, fast loss of germination ability during storage leads to risk of seeding and deterioration in the quality. To resolve these problems, germplasms screening for longevity was conducted using six days of compulsory aging stress of high temperature (50℃) and humidity (~95% RH). 'Dharial', a weedy rice collected in Bangladesh, was chosen as a source of seed longevity for long term storage. The strong germination trait originated from 'Dharial' was incorporated into Korean elite japonica cultivars, 'Ilmi' and 'Gopum', through backcross method. The germination ratio was evaluated after two years of room temperature storage conditions. A high germination ratio of 80.5% in donor plant of 'Dharial' and 77.3% in an introgression line were observed based on the two years of storage while the recurrent japonica cultivars, 'Ilmi' and 'Gopum', were failed in germination. As a result, we investigated the changes of quality affected by germination ability during storage. A gentle slope of palatability which is one of the measurement items for indirect selection indicator of high eating quality in japonica varieties was studied in a high germination ratio introgression line during storage. The introgression line could be useful to increase longevity and quality of japonica rice seed if molecular breeding strategy such as QTLs analysis is combined.

Keywords : rice, longevity, germination, storage
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