

Bacterial leaf blight resistance in rice: a review of conventional breeding to molecular approach

ABSTRACT

Breeding for disease resistant varieties remains very effective and economical in controlling the bacterial leaf blight (BLB) of rice. Breeders have played a major role in developing resistant rice varieties against the BLB infection which has been adjudged to be a major disease causing significant yield reduction in rice. It would be difficult to select rice crops with multiple genes of resistance using the conventional approach alone. This is due to masking effect of genes including epistasis. In addition, conventional breeding takes a lot of time before a gene of interest can be introgressed. Linkage drag is also a major challenge in conventional approach. Molecular breeding involving markers has facilitated the characterization and introgression of BLB disease resistance genes. Biotechnology has brought another innovation in form of genetic engineering (transgenesis) of rice. Although, molecular breeding cannot be taken as a substitute for conventional breeding, molecular approach for combating BLB disease in rice is worthwhile given the demand for increased production of rice in a fast growing population of our society. This present article highlights the recent progress from conventional to molecular approach in breeding for BLB disease resistant rice varieties.

Keyword: Bacterial leaf blight; Conventional breeding; Gene pyramiding; Molecular breeding; Rice