

MOLECULAR CHARACTERIZATION AND OPTIMIZATION OF ANTHER CULTURE CONDITIONS FOR AT405 AND BG360 RICE VARIETIES

K.S.I. Senevirathne¹, H.A.M. Wickramasinghe² and P.A. Weerasinghe¹

¹ Department of Plant Sciences, Faculty of Agriculture, Rajarata University of Sri Lanka, Anuradhapura, Sri Lanka.

² Department of Agricultural Biology, Faculty of Agriculture, University of Peradeniya, Peradeniya, Sri Lanka.

Development of a study population with grain quality traits is favored for rice breeding. Doubled haploid lines derived from haploid cultures are considered as study population since, they produce homozygous lines even after single round of combination without interfering heterozygosity. At405 and Bg360 with contrasting grain quality characters were selected in this study to give more information on grain quality. Molecular characterization, optimization of anther culture conditions and production of F₁ line are pre-requisite for developing study population. Therefore, At405 and Bg360 were molecular characterized with eight RAPD primers. Bands were obtained only for OPP 03, OPP 04, OPP 05, OPP 07 and OPP 15, RAPD primers. 80% genetic polymorphism was recorded. OPP 03, OPP 05 and OPP 15 showed distinct banding pattern. No band was observed for Bg360 for OPP 15. Thus, it can be used as a marker to distinguish At405 and Bg360 rice varieties. Further, OPP 03, OPP 05 and OPP 15 can be employed to characterize the doubled haploid line to be produced.

Cold pre-treated anthers of At405 and Bg360 were cultured on Chu's N6 medium to optimize anther culture conditions. No callus was found for any hormone combination tried with; 2, 4-D (1- 2 mg/l), NAA (1-2 mg/l) and kinetin (1-2 mg/ l). The most possible reasons could be poor androgenesis of *indica* type varieties and high ammonium concentration in N6 medium which hampers the anther performance.

At405 and Bg360 were reciprocally cross pollinated to obtain F₁ hybrid. Seed setting and germination recorded were 10% and 66.6% to 80% respectively. Seedlings died week after transplanting showing their poor hybrid vigor. Since F₁ seeds viable, production of F₁ line with cross pollination between Bg360 and At405 is possible.

Key words: RAPD primers, Molecular characterization, Anther culture, At405, Bg360