## Inheritance of Ultra-Short Plant Type and Associated Characteristics in Rice

(Oryza sativa)

Dharmawardhana HM<sup>1</sup>, Abeysiriwardena S<sup>2</sup>, Senanayake SGJN<sup>1</sup> and Ranawaka L<sup>1</sup>

<sup>1</sup>Department of Agricultural Biology, Faculty of Agriculture, University of Ruhuna <sup>2</sup>CIC Farm, Pelwehera

## Abstract

Natural ultra short mutant in rice has recently been identified in the rice field at CIC farm, Palwehera. One F<sub>2</sub> population of the cross between Dwarf mutant and Bg300 and three F<sub>2</sub> populations each from the cross between Dwarf mutant and Bg 300, Dwarf mutant and Bg 357 and Dwarf mutant and CIC 300 were planted . At maturity, Plant height panicle length, number of spikelets/panicle, filled grain % and maturity duration each plant of the  $F_2$  population of the cross between Dwarf mutant and Bg 300 . To confirm the rest of other three  $F_2$  populations, only the number of dwarf and tall plant types were identified as the time did not permit to wait until maturity to measure other characteristics. Different measurement categories in each characteristic and the observed F<sub>2</sub> segregation ratios within each characteristic were identified. Chi-square analyses were performed on F<sub>2</sub> data to test goodness of fit to expected segregation ratios. All observed F<sub>2</sub> segregation ratios showed a good fit to 13 Tall: 3 Dwarf (5% at one degree of freedom). This newly identified dwarf rice mutant was found to be controlled by three genes: which the expression is suppressed by a third dominant inhibitory gene. Panicle length, number of spikelets/panicle, filled grain % and maturity duration were also found to be as exactly same as the inheritance of ultra short plant type and all these characteristics were found to be controlled by the same genes that control ultra short plant type probably showing pleiotropyc gene effect. Short panicles, low number of spikelets/panicle, low filled grain % and long maturity duration were found to be genetically associated with ultra short rice plant

**Keywords:** dwarf mutant, filled grain %, inheritance, maturity duration, number of spikelets per panicle, plant height, panicle length, pleiotropic effect

93