

## Inheritance of Biological Yield and Harvest Index and Their Relationship with Grain Yield in Rice

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This paper deals with the inheritance of the biological yield and harvest index of rice and their relationships with grain yield. The experiment was conducted during the period 1976-1983. The main results are as follows.

1. The correlation coefficient ( $r$ ) between the grain yield and the harvest index was equal to 0.5404 ( $d.f = 464$ ,  $p < 0.01$ ) and the regression coefficient ( $b$ ) on harvest index was equal to 0.9523. The  $r$  and  $b$  between the grain yield and biological yield were equal to 0.9865 ( $p < 0.01$ ) and 0.6128, respectively. These results indicate that it is very important to increase the biological yield and harvest index in order to improve grain yield in rice.

2. The regression relationships of grain yield for 5 characters including the biological yield and harvest index, etc. were analyzed in 450 plants and in 15 crosses by the multiple regression analysis method. The Up of the biological yield was equal to 1148.2 which was the highest, followed by the Up of the harvest index which was equal to 710.4. This finding indicated that the biological yield contributed most to grain yield, followed by the harvest index. Among all the combinations of 5 characters, wherever the biological yield and/or harvest index were included, the regressions were significant, or the regressions were not significant.

3. Among 26 combinations of 5 characters, the multiple correlation coefficients ( $R$ ) of 8 combinations were all equal to 0.99. It was found by the determination of the coefficients ( $R^2$ ) that these 8 character-combinations controlled 98% of the grain yield variations, indicating that these character-combinations were the major factor affecting grain yield. It is suggested that indirect selection for grain yield through these character-combinations may be effective.