Thesis Title Efficiency of Line Selection Procedures in Barley

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ABSTRACT

Study of efficiency of line selection procedures in four crosses of barley included Stirling x BRB2, BRB2 x BRB9, CMU93-3 x BRB9 and CMU93-6 x BRB9 was conducted in 1997 and 1998 growing seasons at Agronomy farm, Faculty of Agriculture, Chiang Mai University. Three selection procedures comprised of head row, single plant and bulk method were employed to select the segregating plants in F_3 generation of each cross. Then, their progenies of two subsequent generations, F_4 and F_5 plants were planted for evaluating of each line selection procedure.

Results of study in F_4 generation indicated that there were significant difference among the selection procedures for selecting 1,000 grain weight and number of grain per spike. Bulk method gave number of grain per spike significantly higher than head row and single plant selection whereas in selecting of 1,000 grain weight, head row and single plant selection performed significantly better than bulk method. In addition, interaction effect was found among the selection procedures and crosses of barley in selecting of 1,000 grain weight. Transgressive segregation was also identified among the selected traits i.e. number of spike per plant exhibited

largely in bulk and single plant selection of each cross, while 1,000 grain weight was found in head row selection.

In F_5 generation, it also indicated that there were significant difference among the selection methods for selecting of 1,000 grain weight and number of grain per spike. It was not significant difference between bulk and head row in selecting of number of grain per spike but these two selection methods showed significantly difference to single plant selection. Single plant and head row selection performed similarly in selecting of 1,000 grain weight but showed superiorly of selection with bulk method. Interaction effect between the selection procedures and crosses of barley were also found in selecting of 1,000 grain weight and number of grain per spike in this F_5 generation.

Path coefficient analysis revealed that number of spike per plant showed the highest direct effect to grain yield in each selection procedure of each cross. Traits which showed moderately direct effect to grain yield involved number of grain per spike and 1,000 grain weight.

It could be summarized of study that using of head row and single plant selection were much more efficiency than bulk method for selecting in improving of 1,000 grain weight while bulk and head row selection are more appropriate methods than single plant selection for selecting in increasing of number of grain per spike in barley crop.