

THESIS TITLE : THE USE OF PLANT PARTS, SAND AND THE
COMPACTNESS OF SEED TO PREVENT OR
REDUCE OVIPOSITION BY THE BRUCHID BEETLE
[*Callosobruchus maculatus* (F.)]

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Abstract

The objective of this experiment was to investigate the use of plant parts (clove, pepper and curcuma), sand and the compactness of the seed to prevent or reduce oviposition by the bruchid beetle [*Callosobruchus maculatus* (F.)] by using mungbean seed (U-Tong 1) as the experimental material with the initial moisture content and percentage of germination of 8.00 and 92.50 % respectively. The experimental design was completely randomized with 4 replications. The samples were randomly taken by using the glass tube with the size of 15 c.c. (contained/approx. 235 seeds). Number of seeds with laid egg(s) and the consequent damaged seeds were counted after 1 week and 1 month respectively from the samples taken and compared among the treatments of each set.

The results of the experiment showed that the compaction of the seeds could completely prevent the damage caused by the bruchid beetle ($P < 0.01$). The results from the experiment using three different sizes of sand

i.e. coarse sand(0.50-1.00 mm.) medium sand(0.25-0.50 mm.) and fine sand(0.10-0.25mm.) to cover the seeds to a depth of about 3 cm, showed that all sizes of the sand tested could also completely prevent the outside insects from laying egg on the seed below the sand cover ($P < 0.01$). But in the case of seed with the bruchid's eggs on them were covered with sand, the fine sand could completely prevent the damage of the seeds while in the treatment of the coarse and medium sand, the damage occurred gradually and reached 100.00 % in the fifth month. When the seeds were covered by the plant parts about the depth of 1 cm., it was found that dry ground clove, pepper and curcuma could prevent the damage of seeds by 100.00 %, although the potency of chemical substances in the plants were subsequently reduced. In the case of mixing the mungbean seeds with clove, pepper and curcuma at the rate of 10, 13 and 13 grams per 500 grams of seeds respectively, it was found that the clove was the best in preventing the egg laying and the damage of the seeds by the bruchid. In the treatment of pepper the damage occurred gradually and reached 100.00 % in the fifth month, while the curcuma could not protect the seeds at all. Lastly, when the mixed seeds were covered with the medium sand about 3 cm. in thickness, there was no damage of the seeds in the treatment of the clove and the pepper while the curcuma could not prevent the infestation of the bruchid and complete damage occurred in the fourth month.

During the period of 8 months the coverage of seeds with sand and the mixing of seed with clove, pepper and curcuma had no effects on the reduction of germination of the mungbean seeds when compared with the control.