

ADAPTABILITY OF LEGUME CROPS UNDER
// DIFFERENT SALINITY LEVELS

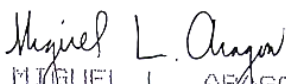
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Submitted to the Faculty of the Institute of Graduate
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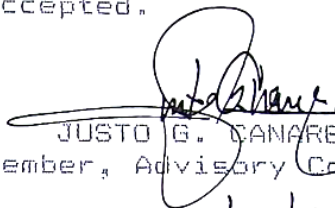
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This thesis entitled, ADAPTABILITY OF LEGUME CROPS UNDER DIFFERENT SALINITY LEVELS, prepared and submitted by ARAK CHANTUMA in partial fulfillment of the requirements for the degree of MASTER OF SCIENCE IN CROP SCIENCE (AGRONOMY), is hereby accepted.


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Arak Chantuma
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ABSTRACT

CHANTUMA, ARAK. Institute of Graduate Studies, Central Luzon State University, Muñoz, Nueva Ecija, Philippines, October, 1989. ADAPTABILITY OF LEGUME CROPS UNDER DIFFERENT SALINITY LEVELS.

Major Adviser: Lun G. Mateo

The study involved two experiments aimed to compare the performance of four field legumes soybean, mungbean, cowpea, and white bean grown under different salinity levels, 0, 3000, 6000, and 9000 ppm (experiment 1) and to determine the effect of chicken manure application on soybean and mungbean grown under different salinity levels, 0, 6000, and 9000 ppm (experiment 2). In both experiments, sodium chloride was used as the source of salts. The experiments were conducted at the screenhouse of the Department of Soil Science, College of Agriculture, Central Luzon State University, Muñoz, Nueva Ecija, Philippines from January to May 1989.

In experiment 1, the results showed that the germination, plant height, yield components, dry matter yield, and seedyield of all field legumes were

significantly affected by salinity levels. On the average, percent germination 15 DAP was in the order of cowpea > white bean > mungbean > soybean with means of 90.00, 70.42, 64.38, and 50.62 percent, respectively. The germination of mungbean, soybean, and white bean was significantly reduced at 6000 and 9000 ppm but not at 3000 ppm. In contrast, the germination of cowpea was not significantly affected even at the highest salinity level of 9000 ppm. However, based on visual score done 28 DAP, soybean and cowpea appeared to be more tolerant to salinity than mungbean and white bean. White bean seemed to be the least tolerant to salinity among the field legumes as indicated by the zero survival of the plants on all salinized soils 45 DAP. Among the field legumes, soybean yielded the highest followed by cowpea, mungbean, and white bean with seedyield of 19.80, 15.10, 4.45, and 1.16 g/plot, respectively. At salinity level of 6000 ppm, the reduction in yield was 31.70, 68.70, 86.40, and 100.00 percent for soybean, cowpea, mungbean, and white bean, respectively.

In experiment 2, results showed significant interaction between field legumes and salinity levels but not between salinity level and the application of

chicken manure. The results further indicated that application of chicken manure did not improve the germination, yield components, dry matter yield, and seedyield of soybean and mungbean when the soil was salinized with NaCl at 6,000 and 9,000 ppm.

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