

STUDIES ON THE CULTURAL MANAGEMENT OF SOYBEANS  
(Glycine max (L.) Merrill) IN LOWLAND  
RICE-BASED CROPPING SYSTEM

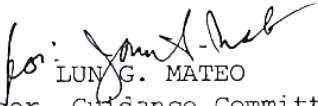
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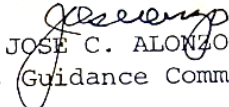
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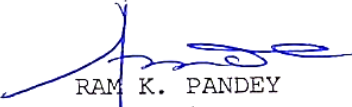
MASTER OF SCIENCE IN CROP SCIENCE  
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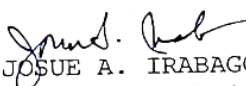
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This thesis entitled STUDIES ON THE CULTURAL MANAGMENT OF SOYBEANS (*Glycine max* (L.) Merrill) IN LOWLAND RICE-BASED CROPPING SYSTEM, prepared and submitted by CARLOS C. ABON, JR., in partial fulfillment of the requirements for the degree of Master of Science in Crop Science (Agronomy), is hereby accepted.

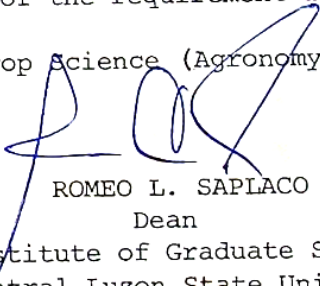
  
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## BIOGRAPHICAL SKETCH

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He is married to the former Miss Marilou Santos Gilo with whom he is blessed with a son, Rhys Carlo (RC).

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The author expresses his heartfelt thanks to all his friends who provided help, advice, fun, pleasure, and companionship in the conduct of his research.

Sincere appreciation is due to all his friends in the Rice Farming Systems Program, IITA and Soil Physics Group: Jun Rebanco, Remy Vivas, Luth Ramos, Susan Maghari and to all the laborers for helping him in his field work; Cesar Maligalig for his assistance in the statistical analysis; and all other researchers for their friendly cooperation.

The author fondly remembers his departed father and his beloved mother who sacrificed for his education.

Finally, the author wishes to express his deepest gratitude to his wife, Marilou, his son, Rhys Carlo, brothers, sisters and to all relatives for their love, inspiration, and moral support.

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## ABSTRACT

CARLOS ABON, JR. C., Institute of Graduate Studies, Central Luzon State University, Muñoz, Nueva Ecija, Philippines. October 1985. Studies on the Cultural Management of Soybeans (*Glycine max* (L.) Merrill) in Lowland Rice-Based Cropping System.

Major Adviser: Dr. Josue A. Irabagon and Dr. Ram K. Pandey

Field studies were conducted to determine the effects of frequency of irrigation on the growth and yield of soybeans planted after lowland rice in tilled and untilled conditions. It also sought to find out population density, soybean varieties, weed control methods, and rice straw mulch.

Irrigation was found to affect the height of plant at harvest, seed yield, and yield components of soybeans. Irrigation at 30 days after emergence produced higher seed yield than either irrigation at 14 DAE or the control. Tillage and mulch did not significantly affect seed yield.

Under conventional and no-tillage system, differences in soybean cultivars were observed. SJ-2 variety was found to be more productive than UPLSy-2 under no-tillage condition in CLSU. Yield, plant height, LAI, and biomass increased as population density increased. Pod number decreased as the population density increased. Row spacing was not significant at both locations; however, variety and row spacing interaction effect was found to be significant at IRRI.

Use of rice straw mulch and one handweeding at three weeks after emergence under zero-tillage planting was the most effective in controlling weeds and in relatively increasing the yield. Tillage and one handweeding, or one interrow cultivation or burning of rice straw before planting had similar effect on controlling weeds.

The most predominant weed species were Rottboella exaltata L., Echinochloa colona (L.) Link and Trianthema portulacastrum L. The number and weight of weeds were inversely proportional to the control methods employed, indicating that addition of handweeding and/or interrow cultivation at 3-4 week after emergence will increase the yield of soybeans.

Although zero-tillage did not give higher yield, use of this method of growing soybeans will conserve soil moisture and reduce the cost of production.

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