



**MAJOR PRACTICE IN AROMATIC RICE (CL 4 Variety) SEED PRODUCTION
UNDER LOWLAND CONDITION (2018 WET SEASON)**

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An undergraduate major practice manuscript submitted to the faculty of the Department
of Crop Science, College of Agriculture, Central Luzon State University
in partial fulfillment of the requirements
for the degree

**BACHELOR OF SCIENCE IN AGRICULTURE
(Crop Science – Agronomy)**

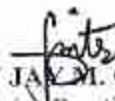
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ACCEPTANCE SHEET

This major practice report entitled "MAJOR PRACTICE IN AROMATIC RICE (CL 4 VARIETY) SEED PRODUCTION UNDER LOWLAND CONDITION (2018 WET SEASON)," prepared and submitted by JONAS MICHAEL L. MARIANO, in partial fulfillment of the requirements for the degree BACHELOR OF SCIENCE IN AGRICULTURE (CROP SCIENCE), is hereby accepted:

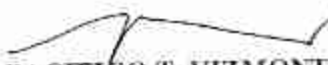

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BIOGRAPHICAL SKETCH

The Author Jonas Michael L. Mariano lives in Brgy Lennec, Sitio San Felipe, Guimba, Nueva Ecija. He was born on October, 07, 1996 in Nueva Ecija Doctors Hospital Inc. (NEDHI) Cabanatuan City, Nueva Ecija. He is the eldest among the six siblings of Mr. Wilfredo C. Mariano and Mrs. Elmora L. Mariano. He has four brothers and one sister namely: Joseph, Jake, Jeff, Justine and Zyrine. He finished his elementary education at Narvacan II Elementary School, and he finished his secondary education at Pacac High School in Guimba, Nueva Ecija.

He pursued his collegiate degree at Central Luzon State University (CLSU), Science City of Muñoz, Nueva Ecija. As such he took up Bachelor of Science in Agriculture Major in Crop Science specialization in the field of Agronomy. During his college days, he joined the Society of Crop Science Major (SCSM) in CLSU and the Confederation of Ilocano Association as known as Samahang Ilocano (CLASI) in Guimba Community Chapter. He believes that joining this organization and fraternity helped him to improve his personality, skills and allowed him to have a closer relationship with his classmates, friends, brothers and sister.

Like other students, the author has experienced trials, encountered a lot of problems and difficult times. It took a lot of hard work, patience and help of Almighty God for these trials to be conquered.

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ABSTRACT

MARIANO, JONAS MICHAEL L. Department of Crop Science, College of Agriculture, Central Luzon State University, Science City of Muñoz, Nueva Ecija from June 2018 to October 2018.

Major Practice in Seed Production of Aromatic (CL 4 Variety) Under Lowland Condition (2018 Wet Season)

Venue: Rice Seed Production Area of the Research Office
Central Luzon State University, Science City of Muñoz, Nueva Ecija.

Adviser: Prof. CHARLITO R. JUICO

This major practice in aromatic rice seed production was conducted at the Research Office Rice Seed Production Area from June to October 2018, with an area of 0.5 ha. The major practice aimed to produce 3,500 kg ha⁻¹ of quality CL 4 seeds for planting purposes, applying the recommended technologies in CL 4 seed production, acquire necessary skills and knowledge, and determined the cost and return analysis of CL 4 seed production. The field practice student experienced the actual field activities such as land preparation, seedbed preparation, soaking, sowing of seeds, pulling and transplanting of seedlings, replanting, weedicide and fertilizer applications, roguing, harvesting, threshing and drying, cleaning/blowing, packaging and storing.

A total yield of 2,030.1 kg (4,060.2 kg ha⁻¹) dry seed was produced from the 0.5-hectare seed production area, which was higher by 13.8% than the objective of the field practice student of 3,500 kg ha⁻¹ due to timely application of recommended cultural practices (such as transplanting, fertilizing, irrigating, pest management, etc.) and the favorable conditions during the production period.

The project incurred a total expenses of Php 31,186.70 (Php 62,373.4 ha⁻¹) and a gross income of Php 66,343.1 (Php 132,686.2 ha⁻¹) with a net income of Php 35,155.40

(Php 70,312.8 ha⁻¹). The return of investment was 112.7%, which means that the production of CL-4 seed was profitable.

LITERATURE CITED

- [AFMIS] **AGRICULTURE AND FISHERIES MARKET INFORMATION SYSTEM. 2012.** Department of agriculture to produce basmati rice.
- AKRAM, M, 2009.** Aromatic rice of Pakistan a-review. Rice Program,Crop Science Institute National Agricultural Research Centre, Islamabad, Pakistan. Retrieved from on July 20, 2012 <http://agropedia.iitk.ac.in/?q=content/organic-basmati-rice-pest-management-0>].
- ALVARAN, P., C. R. JUICO, PAGADUAN, N. D. 2012.** Advance yield trial for Aromatic White rice. CLSU Agency in House Review of On-going and Completed Project.
- BUMANLAG, 2012.** Major Practice in Inbred Rice Production cv NSIC Rc 222 BSA Major Practice (Unpublished). Central Luzon State University, Science City of Muñoz, Nueva Ecija, Philippines.
- CHOUDHURY, P.R., S. KOHLI, K. SRINIVASAN, T. MOHAPATRA AND R.P. SHARMA, 2001.** Identification and classification of aromatic rices based on DNA fingerprinting. *Eupytica*, 118:243-251.
- CHATURVEDI, I. 2005.** Effect of nitrogen Fertilizer on Growth yield of hybrid rice (*oryza sativa* L.) *journal of Central European Agriculture* 6(4): 7-12.
- DATTA A., H. ULLAH, FERDOUS Z. 2017.** Water Management in Rice. In: Chauhan B., Jabran K., Mahajan G. (Eds) *Rice production worldwide*. Springer, Cham.
- DAWANG. 2014.** Major practice in Seed Production of Basmati 370.BSA Major Practice.Central Luzon State University, Science City of Muñoz, Nueva Ecija, Philippines.
- DELA CRUZ, Q.D. 2007.** Technology for Aromatic Rice. Retrieved on June 5, 2013
- DENT, D. 1995.** Integrated Pest Management. School of Pure and Applied Biology, University of Wales, Cardiff, U.K. pp.10-71.
- FAO. 2006.** Quality Declared Seed: Technical Guidelines for Standards and Procedures. Plant Production and Protection Paper 185 Rome Italy.
- GARWAR, R.K., JAVERIA, S., YADAW, K., TYADI, S.& SING, R. (MAR 2015.** Survey and surveillance of major insect-pest of basmati rice of Western Uttar

- Pradesh (India). **IMPACT: International Journal of Research in Applied, Natural and Social Science**, Vol .3, Issue 3 pp. 1-8.
- GORGONIA, J. R. 2006.** Major Practice in Hybrid Rice Seed Production. BSA Major Practices (Unpublished). Central Luzon State University, Science City of Muñoz, Nueva Ecija, Philippine.
- JAISSWAL, ILK & SINGH, R.P, 2005.** Department of Genetics and Plant Breeding, Institute of Agricultural Science, Banaras Hindu University, Varanasi, India Email: jaiswal_hemant@rediffmail.com.
- KUMAR M & SHAMAR G. 2005.** Effect of herbicides alone and in combination on direct seeded rice. *Indian Journal of Weed Sciences* 37(3/4): 197-201P.
- KUMAR V. 2013.** Climate and Soil Requirement of Paddy Crop Cultivation. Retrieved from <http://agropedia.iitk.ac.in/content/climate-and-soil-requirement-paddy-crop-cultivation>.
- LIU, Z. Y., HUANG, J. F. , SHI, J. J ., TAO, R. X. , ZHOU, W AND ZHANG, L.** Characterizing and estimating rice brown spot disease severity using stepwiseregression, principal component regression and partial least-square regression. *J.Zhejiang Uni. Sci. B.8* (10): 738-744.
- MERINO, V. B. 2000.** Ramai rice and its introduction and culture, *Philippine agriculturist* 18(9): 535-542.
- NASER, B.A. 2005.** Temperature requirement of Basmati Crop. Philippines. Retrieved Jan 10, 2018 from <http://www.basmati.org/temp.asp.ph>.
- [NABARD] NATIONAL BANK FOR AGRICULTURE AND RURAL DEVELOPMENT. 2007.** retrieved on May 27, 2016 from <http://www.basmati.org/temp.asp.ph>.
- PADMANABHAN , S.Y. 2003.** The great Bengal famine. *Annu. Rev. Phylopathol.* 11:1126.
- PINOY RICE KNOWLEDGE BANK 2009.** Pest management form <http://pinoyrkb.com/main/pestmanagement>.
- [PHILRICE] PHILIPPINE RICE RESEARCH INSTITUTE. 2006.** Question and Answer on rice Post- production Technology. Pamphlet Maligaya, Science City of Muñoz, Nueva Ecija.

- [PHILRICE] PHILIPPINE RICE RESEARCH INSTITUTE. 2007. Palay check handbook. Maligaya, Science City of Muñoz, Nueva Ecija.
- PHILIPPINE STATISTIC AUTHORITY, 2017. Philippine's rice production from January to March 2017. www.psa.gov.ph.
- RANI, N.S., M.K. G.S.V. PRASAD AND SUDHARSHAN, I 2006. Historical significance, grain quality features and precision breeding for improvement of export quality basmati varieties in India. *J crop sci* 1, no.1-2(2006):29-41.
- RICE KNOWLEDGE BANK 2009. Isolation and rouging for quality seed May 4 2016 from <http://www.knowledgebank.irri.org/qualityseedcourse4women/index.php/module-2-rice-seed-production/4-isolation-and-rouging-for-seed-production>.
- RICE KNOWLEDGE BANK. 2009. Water management in rice seed production retrieve from <http://www.riceknowledgebank.irri.org> on May 17,2016.
- RICEPEDIA 2015. Retrieve from <http://http://ricepedia.org/philippines> on May 17 2018.
- SHAMIMAGRIMET,2012. An Overview on Aromatic Rice retrieved on march 2016 from <http://www.rkmp.co.in/extension-domain/uttar-pradesh>.
- SMRITICHAND CULTIVATION OF RICE: SUITABLE CONDITIONS REQUIRED FOR THE CULTIVATION OF RICE (6 CONDITIONS) Retrieved on May 18, 2016 from <http://www.yourarticlelibrary.com/cultivation/cultivation-of-rice-suitable-conditions-required-for-the-cultivation-of-rice-6-conditions/25491/>.
- SINGH V P, GOVINDRA S AND MAHENDRA S. 2004. Effects of fenoxaprop-p ethyl on transplanted rice and associated weeds. *Indian Journal of Weed Science* 36(1/2):190-192.
- SINGH, A.N. AND SINGH, V. P. 2003. Extent, distribution and growing environments of aromaticricesiin India. (in) A treatise on the scented rices of India (Singh, R. K. and Singh, U. S., eds.) Kalyani Publisher, New Delhi. P. 211-229.
- SORIA, J.G 2006. MAJOR PRACTICE IN SEED PRODUCCION OF BASMATI 370 (AROMATIC) RICE BSA MAJORPRACTICE (Unpublished). Central Luzon State University, Science City of Muñoz, Nueva Ecija, Philippines.

- TRAORE, K. 2005.** Characterization of Novel Rice Germplasm from West Africa and Genetic Marker Association with Rice Cooking Quality, Texas, USA: Texas A and M University, PhD thesis.
- YADAV, M., PAUL, A. BHOWMICK., ADHIKARI, B., BHOWMICK, M.K. & SANTRA, C.K. (2014).** Indigenous Aromatic Rice; Quality seed production and area expansion in west bengal, vol. 18, pp. 72-93. ATSA Mukhapatra.