

**MAJOR PRACTICE IN SEED PRODUCTION OF AROMATIC RICE (CL 1)
UNDER LOWLAND CONDITION (2018 DS)**

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An Undergraduate Major Practice Submitted to the Faculty of the Department of
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in Partial Fulfillment of the Requirements
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(Crop Science – Agronomy)**

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ACCEPTANCE SHEET

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BIOGRAPHICAL SKETCH

The author Rolly P. Alfante II lives at Brgy. San Antonio Weste, Lupao, Nueva Ecija. She was born on the 11th day of August 1999. He is the youngest child among the three children of Mr. Rolly M. Alfante and Mrs. Rosita P. Alfante. He has one brother and sister namely; Rustie and Roselle.

He finished his elementary education at San Antonio Weste Elementary School at Barangay San Antonio Weste, Lupao, Nueva Ecija in 2011 and his secondary education at Doña Juana Chioco National High School (DJCNHS) at Barangay Poblacion West, Lupao, Nueva Ecija in 2015.

He pursued his collegiate at Central Luzon State University, Science City of Muñoz, Nueva Ecija. He grew up in a community where the main occupation of the people is farming, thus sparked his interest in plants and animals. As such he took up Bachelor of Science in Agriculture major in Crop Science with Agronomy as his field of specialization.

The author has experienced trials, difficulty, hardship and determination that made him strong and more ready to his future career. It took a lot of hard work, patience and help of Almighty God for these trials to be conquered.

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ABSTRACT

ROLLY P. ALFANTE II, Department of Crop Science, College of Agriculture, Central Luzon State University, Science City of Muñoz, Nueva Ecija from December 2018 to April 2019.

Major Practice in Seed Production of Aromatic Rice (CL 1) Under Lowland Condition (2018 DS)

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

Adviser: **Prof. Charlito R. Juico**

An area of half hectare (0.5 ha) was used for the seed production of aromatic rice was conducted from December 2018 from April 2019 at the Research Office Rice Seed Production Area, Central Luzon State University, Science City of Muñoz, Nueva Ecija. The major practice aimed to produce a minimum of 4 t ha^{-1} quality CL 1 seeds for planting purposes, applying the recommended technologies in aromatic seed production, acquire necessary skills and knowledge and determined the cost and return analysis of CL 1 seed production. The field practice student experienced the actual field activities such as sowing, seedbed and land preparation, pulling and transplanting of seedlings, irrigation management, weed management, fertilizer application. Most importantly, the student learned the proper technique/timing of roguing, harvesting, threshing, drying and cleaning/blowing considered crucial is seed production.

A total yield of 2,891.5 kg (5,782.02 kg ha⁻¹) obtained was higher by 30.82% than the objective of the field practice student of 4,000kg ha⁻¹. After processing, 2,616.35 kg (5,232.7 kg ha⁻¹) quality seeds were produced with a germination of 99%.

The project incurred a total expenses of Php 36,861.85 (Php 73,723.70 ha⁻¹) and a gross income of Php 101,807.60 (Php 203,615.20 ha⁻¹) with a net income of Php 64,945.75 (Php 129,891.50 ha⁻¹). The return above operating expenses was 176.18%.

LITERATURE CITED

- AKRAM, M. 2009.** Aromatic Rices of Pakistan-A Review, *Pakistan J. Agric. Res.* Vol 22 No. 3-4, 2009, pp. 154-160.
- ASEA, G., ONAGA, G., PHIRI, N. A. and KARANJA, D. K. 2010.** Quality Rice Seed Production Manual. Published by National Crops Resources Research Institute, Kampala, Uganda and CABI Africa, Nairobi, Kenya. 75 pages.
- BONITA, S. G. 2005.** Performance of Sprinkle Irrigation Method on the Growth and Yield of Ph-21 Rice Variety. Undergraduate Thesis. Central Luzon State University, Science City of Munoz, Nueva Ecija, Philippines.
- CHAUDHARY, D., D.V. TRAN and R. DUFFY. 2003.** Specialty Rices of the World: Breeding Production and Marketing. FAO books, Roma, 358.
- CHAUDHARY, R.C., TRAN, D.V., DUFFY, R.R., and NATIONS., F.A.O.U. 2001.** Speciality rices of the world : breeding, production, and marketing.
- COLLEY, M. 2010.** Selection and Roguing in Organic Seed Production, Retrieved on March 24, 2018 from <http://articles.extension.org:80/pages/18447/selection-and-roguing-in-organic-seed-production>
- DAS, T. and BAQUI, M.A. 2000.** Aromatic Rice of Bangladesh. In: *Aromatic Rice*, pp: 184-87. Oxford and IBH Publishing Co. Pvt. Ltd. New Delhi.
- DAWANG, D. 2014.** Major Practice in Seed Production of Basmati 370 (Aromatic rice). BSA Major Practice (Unpublished). Central Luzon State University, Science City of Munoz, Nueva Ecija, Philippines.
- DELA CRUZ, A. 2014.** Major Practice in Seed Production of Aromatic rice (Basmati 370). BSA Major Practice (Unpublished). Central Luzon State University, Science City of Munoz, Nueva Ecija, Philippines.
- DELA CRUZ, Q.D. 2007.** Technology for Aromatic Rice. Retrieved on 18 May 2019 at <http://www.bar.gov.aromatic.ph>
- ESPINO, A.L. 2011.** Water Management of Rice. Retrieved on 18 may 2019 at <http://www.water.aromatic.mgt.gov.ph>.
- [FAO] Food and Agricultural Organization. 2018.** FAO Rice Market Monitor (RMM). Vol. 21, Issue 1. Retrieved on May 20, 2018 from

<http://www.fao.org/economic/est/publications/rice-publications/rice-market-monitor-rmm/en/>.

GULP NEWS, 2012. Philippines conduct test on Basmati rice varieties. Retrieved on June 10, 2018 from <https://gulfnews.com>news>asia>.

JOSHI, K.D, STHAPIT, B.R., VAIDYA, A., KADAYAT, K.B., TULADHAR, J.K., SUBEDI, K.D. and LOHAR, D.P. 1997. Findings of postal survey and rapid rural appraisal on aromatic and fine grain rice in Pokhara valley of Nepal: Issues for future research. LARC Working Paper no. 97/2. Pokhara, Kaski, Nepal: Lumle Agricultural Research Centre.

KHAN, A.S. and SALIM, M. 2005. Rice Harvesting and Threshing. Pak. J. Food Sci. 15 (1,2): 45-52.

KUMAR, V. 2013. Climatic and Soil Requirement of Paddy Crop Cultivation. Retrieved on 18 May 2019 at <http://agropedia.itk.ac.in/content/climate-and-soil-requirement-paddy-cultivation>

[NABARD] National Bank for Agriculture and Rural Development, 2007. Retrieved on May 1, 2018.

[PCARRD] Philippine Council for Agriculture, Forestry and Natural Resources Research, 2007. How to grow Aromatic rice

[PhilRice] Philippine Rice Research Institute 2004. Palay Check Handbook. Maligaya, Science City of Muñoz, Nueva Ecija.

[PhilRice] Philippine Rice Research Institute 2007. Palay Check Handbook. Maligaya, Science City of Muñoz, Nueva Ecija.

PhilRice PRODUCTION TRAINING MANUAL, 2007. Philippine Rice Research Institute (PhilRice), 2007

[RMKP] Rice Management Knowledge Portal 2011. Climatic and Soil Requirement contributed by rmkp.drr on 18 May 2019

RICE KNOWLEDGE BANK, 2015. Measuring moisture content. <http://knowlegdebank.irri.org/step-bystep-production/postharvest/milling/milling-and-quality/measuring-moisture-content-in-milling>.

SALAM, M.A., ALI, F., ANWAR, M.P. and BHUIYA, M.S.U. 2004. Effect of level of nitrogen and date of transplanting on the yield and yield attributes of transplanted Aman rice under SRI method. J. Bangladesh Agril. Univ. 2(1): 3 1-36.

- SEED BIOTECHNOLOGY CENTER, 2019.** Seed Production/Quality Assurance. Retrieved on 15 May 2019 at http://sbc.ucdavis.edu/About_US/Seed_Biotechnologies/Seed_Production_Quality_Assurance
- SHIVAY, Y.S. and SINGH, S. 2003.** Effect of planting geometry and nitrogen level on growth, yield and nitrogen use efficiency of scented hybrid rice (*Oryza sativa*). Indian J. Agron. 48(1): 42-44.
- SIDHUE, M.S. SIKKA, R. and SINGH, T. 2004.** Performance of transplanted Basmati rice in different cropping system as affected by N application. Intl. Rice Res. Notes 29(1): 63-65. Yoshida, S. 1981.
- SINGH V.P. 2000.** Aromatic Rice. In The Basmati Rice of India (p.149). Los Banos. Philippines: IRRI
- SINGTA, A.C. 1998.** Climatic Requirement of Aromatic Rice (Basmati) India. Retrieved on 18 May 2019 at <http://climate.req.itk.ac.=content/india-basmati-ricemanagement-0>
- TAJIMA, M., HORINO, T., MAEDA, M., and ROK SON, J. 1992.** Maltooligosaccharides extracted from outer-layer of rice grain. Nippon Shokuhin Kogyo 39, 857-861.
- VERGARA, B.D. 1996.** A Farmer's Primer on Growing Rice. International Rice Research Institute (IRRI) Retrieved on 18 May 2019 at <http://www.irri.org>
- YADAV, K. 2009,** Climatic Requirements for Rice. Agropedia. Retrieved on April 29, 2018.
- YADAV, M., PAUL, A., BHOWMICK, K., ADHIKARI, B., BHOWMICK, M. K., and SANTRA, C. K. 2014.** Indigenous Aromatic Rice: Quality Seed Production and Area Expansion In West Bengal, Vol. 18, pp. 72-93. ATSA Mukhapatra.