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Introduction

Rice is the main staple food of Myanmar; it is not only the most important crop for home consumption, but also a crop with large export potential. Rice sown area occupied 7.21 million hectares, and its production was 28.21 million metric tons with an average yield of 3.97 tons per hectare in the 2015-2016 growing season (MOALI 2016). Myanmar constitutes part of the center of genetic diversity of cultivated rice (*Oryza sativa* L.), an area where includes East Nepal, Bhutan, Assam, Myanmar, Laos and northern Thailand (Chang 1976). The Ayeyarwady region is the rice bowl of Myanmar, though it is highly vulnerable to the impacts of climate change; particularly salt water intrusion and flooding are major concerns. In recent years, rising sea level have intensified the encroachment of seawater, which increases soil salinity and decreases monsoon rice paddy yields. Since sticky rice plants are more resilient to salt water intrusion, growing sticky rice as a summer crop helped rice farmers in order to cope with their problem (Minzayar Oo 2016). The main variety sown was an improved variety in 59% and a local variety in 41% in the lower Ayeyarwady delta. In the upper Ayeyarwady delta, improved varieties are predominant with 98% of the fields sown with such varieties. Farmers closely follow rice market trends which in turn impact variety selection (Subedi et al. 2017).

Objectives

- ❖ To identify the varietal diversity of monsoon season rice in Ayeyarwady delta
- ❖ To assess farmers' preferences for rice varietal traits

Materials and Methods

Study area

Ayeyarwady region occupies the delta region of the Ayeyarwady river, which is the longest river in Myanmar. The total area of paddy in Ayeyarwady region was 2 million hectares, which is 28% of the total cultivated rice area in Myanmar. The surveyed area covered fifteen villages in five townships:

- ✓ 5 townships
- ✓ 15 villages
- ✓ 150 respondents

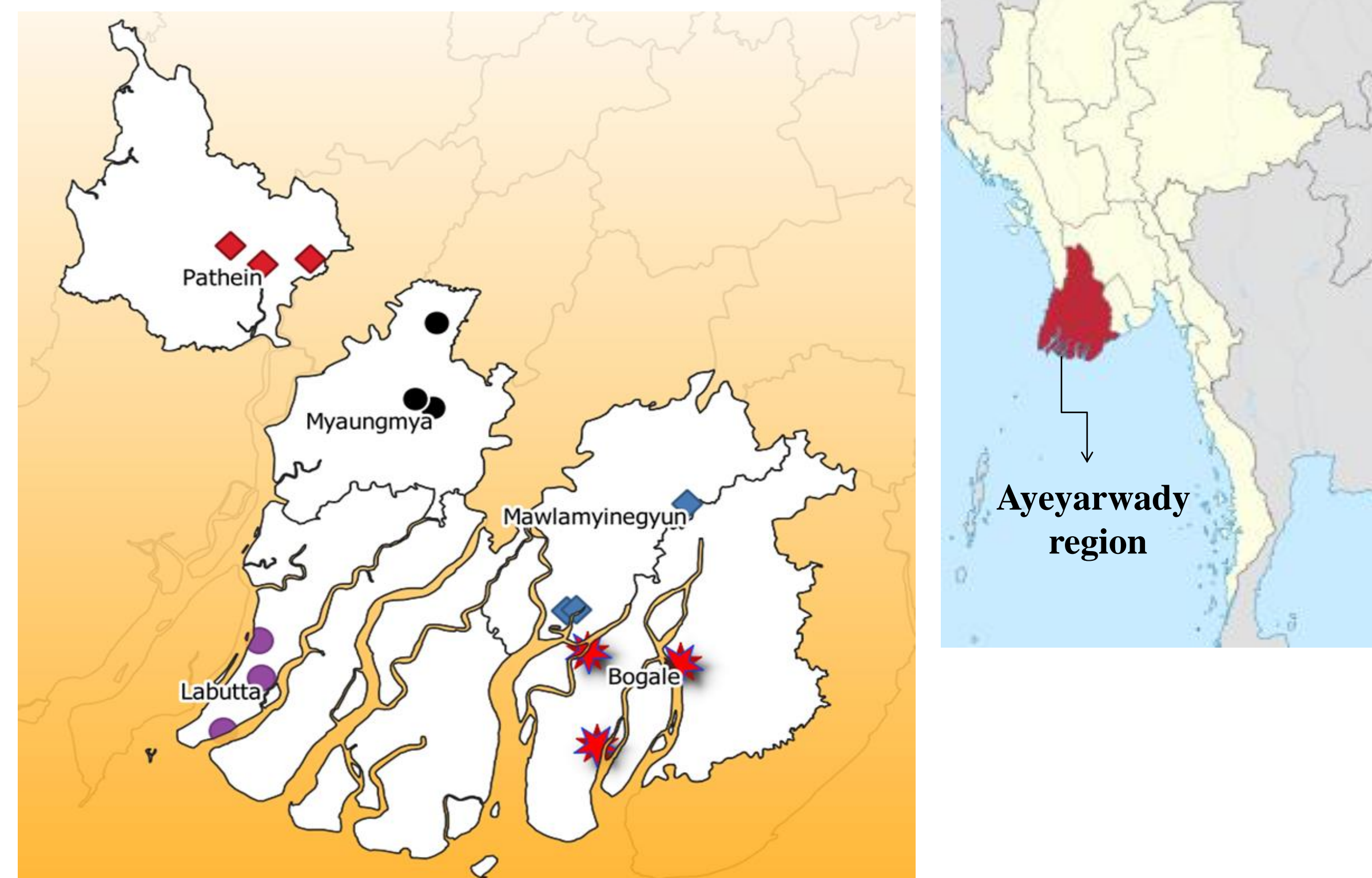


Fig. 1 Study area-showing location of surveyed villages in five townships



Fig. 2 Surveying and discussing with farmers

Main questionnaires

- Basic information,
- Household characteristics,
- Landholding,
- Crops grown and rice varieties,
- Rice varieties and seeds,
- Farmers' preferences for rice variety traits,
- Major constraints in rice production,
- Awareness of traditional rice varieties.

Results

Table 1. Demographic characteristics of 150 farmers in the study area

Item	Mean	Min.	Max.	Standard Deviation
Age (year)	48	20	73	11.74
Family size (no.)	4	2	10	1.42
Farming Experience (year)	24	1	53	13.12
Education (year)	6	0	15	2.93
Total sown area (ha)	7.85	0.4	80.94	9.89
Tenure status (%)				
Owner cultivator	94	-	-	-
Share-tenant	2.7	-	-	-
Leasehold	2.7	-	-	-

Source: Field survey

Table 2. Number of varieties used per farmer in 2016 monsoon rice production

No. of var.	BGL		MG		LBT		MM		PT		Total	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
1	7	23.3	5	16.1	2	6.67	7	24.1	5	16.7	26	17.3
2	9	30	12	38.7	17	56.7	13	44.8	19	63.3	70	46.7
3	12	40	9	29	11	36.7	9	31	5	16.7	46	30.7
4	2	6.67	5	16.1	0	0	0	0	1	3.33	8	5.33

Source: Field survey

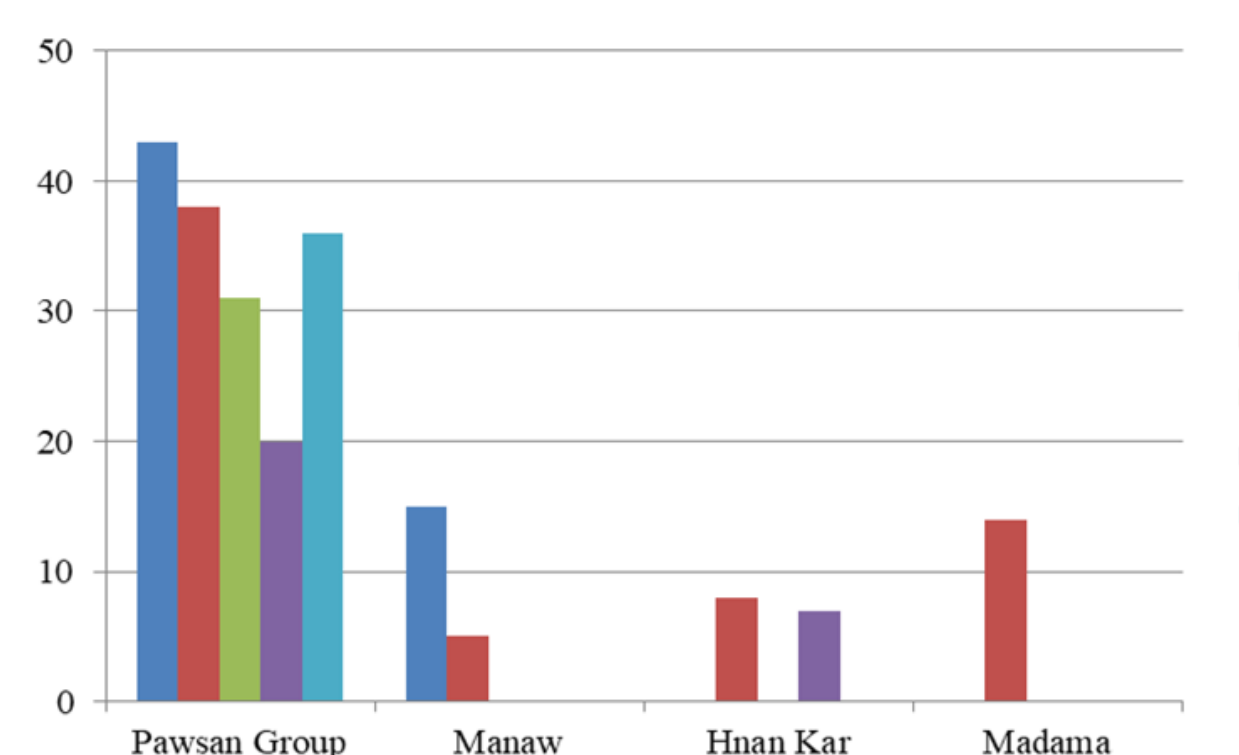


Fig. 4 Frequencies of main varieties per township

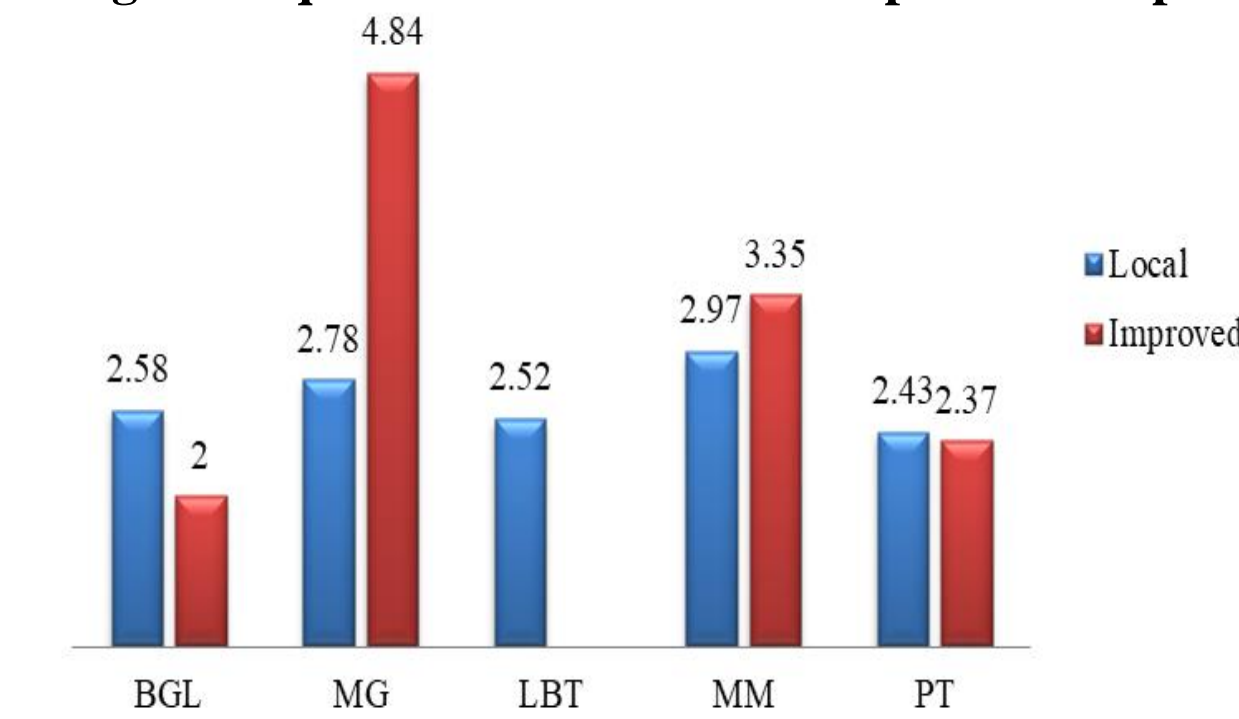


Fig. 5 Average yield (t/ha) for type of variety in each township

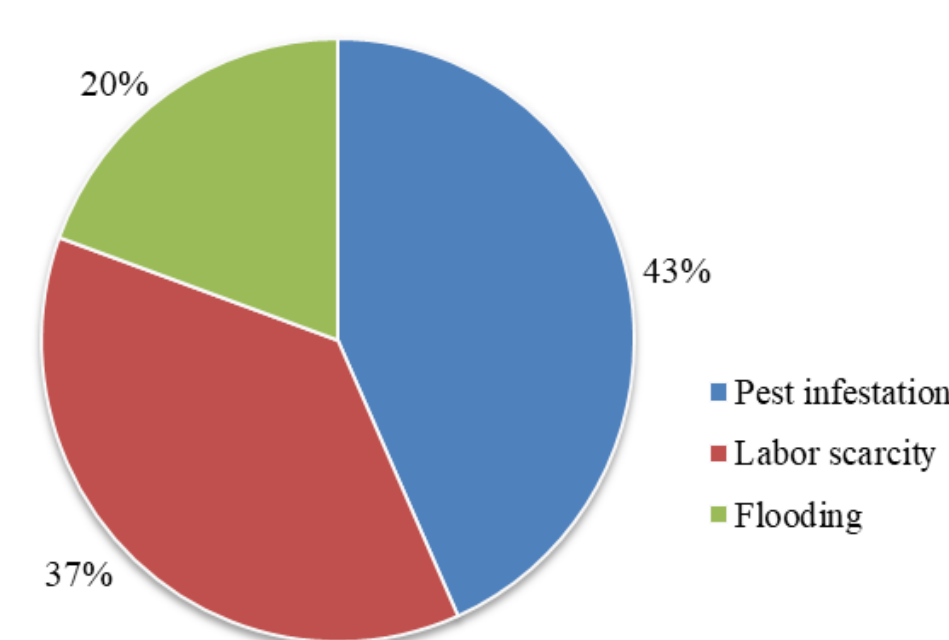


Fig. 6 Major constraints in rice production

Summary and Conclusion

Eighty-three percent of the sampled farmers cultivated more than one variety in monsoon rice season. It implied that growing several varieties per season served as a function of risk management and for resilience to diverse weather conditions. The diversity on-farm was high since 35 different rice varieties were found, categorizing 26 landraces and 9 improved varieties. This result indicated the persistence of indigenous rice varieties still cultivated by all farmers of this locality. Thereby they become instrumental in saving it from extinction of landraces. Local varieties, particularly the aromatic Pawsan varieties, were of high importance in Ayeyarwady delta region for its high market price, grain texture, aroma and flavor. Sixty-one percent of total cultivated land was occupied by Pawsan group and the average yield was 2.62 t/ha. Market price, yield potential, resistant to insects/diseases, head rice percent and milling recovery were mentioned by farmers as the most important characteristics for variety selection. Thus, incorporation of farmers' preferences in development of rice varieties in breeding process and improvement programs would increase likelihood of the adaptation of the varieties to agro-ecology condition.

References

- Chang TT. 1976. The origin, evolution, cultivation, dissemination and diversification of Asian and African rices. *Euphytica* 25: 425-441.
- Minzayar Oo. 2016. Ayeyarwady Paddy Farmers Step Up Productivity with Smart Farming Methods. World Bank. Available from <http://www.worldbank.org> (accessed August 2016).
- MOALI. 2016. Myanmar Agriculture Sector in Brief, 2016. Ministry of Agriculture, Livestock and Irrigation.
- Subedi A, Thijssen MH, Audet-Belanger G, Maung Shwe T, Lin Oo N. 2017. The Rice Seed Supply and Demand System in the Delta, Myanmar Study report. Wageningen Centre for Development Innovation, Wageningen University & Research. Wageningen.