

Abstract The field experiment was conducted at Yezin Agricultural University Farm, Yezin, Nay Pyi Taw, during wet season from July to November, 2020 to investigate the effect of chicken manure and chemical fertilizer applications on growth, yield and yield components of rice. The experimental design was randomized complete block (RCB) design with four replications. The four treatments were arranged as T1 (control) (no application), T2 (80 N, 20 P, 32 K) kg ha⁻¹ (recommended rate), T3 (5 ton ha⁻¹ of chicken manure), T4 (2.5 ton ha⁻¹ of chicken manure) + (recommended rate). The urea, triple superphosphate and muriate of potash were used as N, P, K sources and chicken manure was applied as basal. The Sinthukha rice variety was used as a tested variety. The plant growth parameters were recorded at biweekly interval and the yield and yield components data were also collected at harvest time. The results showed that the combined application of organic manure and recommended rate of fertilizer (T4 treatment) increased number of panicles hill⁻¹, number of spikelets panicle⁻¹, filled grain percent, and harvest index compared to other treatments. Moreover, the highest grain yield (6.87 ton ha⁻¹) was observed in T4 and the minimum grain yield (6.09 ton ha⁻¹) was found in T1. Among the treatments, T2 showed the second highest yield of rice in this study. The combined application of chicken manure and chemical fertilizer increased up to 12% grain yield over control. The application of chemical only increased 7% than control. The application of chicken manure increased 6% compared to control. The combined application of chicken manure and chemical fertilizer increased yield per ha up to 6-12 % than control. It was necessary to apply combined fertilization (chicken manure + chemical fertilizer) to improve the yield of Sinthukha rice variety.

Keywords Rice, chicken manure, chemical fertilizer, growth, yield

INTRODUCTION

Myanmar is an agricultural country and rice constitutes the most predominant segment in agriculture and agribusiness of the country. It is the main food and its farming contributes significantly to livelihood of the rural population which is the majority of the country's population and occupies by 70% of the total population (FAO 2015). Due to the increasing cost of chemical fertilizers, depletion of soil micronutrients, environmental and health hazards, the use of organic manure in farming has much attention (Ramesh *et al.*, 2005).

OBJECTIVES

(1) to investigate the effect of chicken manure and chemical fertilizer applications on growth, yield and yield components of rice and (2) to examine the proper the proper application rate of chicken manure and chemical fertilizers to improve yield of rice.

METHODOLOGY

The field experiment was conducted at Yezin Agricultural University Farm, Yezin, Nay Pyi Taw, during wet season from July to November, 2020. The experimental design was randomized complete block (RCB) design with four replications. The four treatments were arranged as T1 (control) (no application), T2 (80 N, 20 P, 32 K) kg ha⁻¹ (recommended rate), T3 (5 ton ha⁻¹ of chicken manure), T4 (2.5 ton ha⁻¹ of chicken manure) + (recommended rate). The Sinthukha rice variety was used as a tested variety.

RESULTS AND DISCUSSION

The result showed that the highest plant height and number of tillers were observed in T4 treatment (2.5 ton ha⁻¹ of chicken manure) + (recommended rate) and the lowest plant height was occurred in T1 (control) at different growth stages (Fig.1). The highest grain yield was observed in T4 followed by T2 (recommended rate) (6.53 ton ha⁻¹), T3 (chicken manure) (6.49 ton ha⁻¹) and T1 (6.09 ton ha⁻¹) (Table. 1).

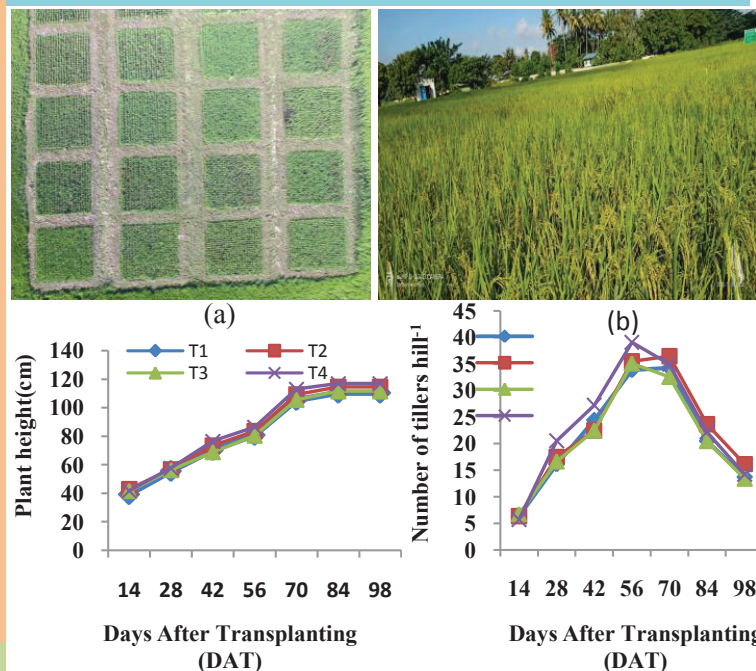


Fig. 1 Influence of chicken manure and chemical fertilizer applications on (a) plant height and (b) number of tillers hill⁻¹ of rice

Table 1 Effect of chicken manure and chemical fertilizer applications on yield and yield components of rice

Treat-ment	Number of panicle hill ⁻¹	Number of spikelets panicle ⁻¹	Filled grain %	1000 grain weight (g)	Grain yield (t ha ⁻¹)
T1	10.80	145.60	65.61	20.48	6.09
T2	12.50	152.40	78.10	21.88	6.53
T3	11.35	146.15	76.48	21.45	6.49
T4	12.50	158.40	80.10	22.49	6.87
LSD _{0.05}	3.35	23.56	18.89	2.30	1.91
Pr>F	0.68	0.59	0.36	0.30	0.83
CV%	17.94	9.78	15.73	6.63	18.34

CONCLUSION

The present study indicated that the combined application of chicken manure and chemical fertilizer improved the growth and yield of rice compared to individual treatment.

REFERENCE

FAO (Food and Agriculture Organization) 2015. "Postharvest losses along the rice supply chain in Myanmar" (Manual) FAO/MYA/3504,2015.