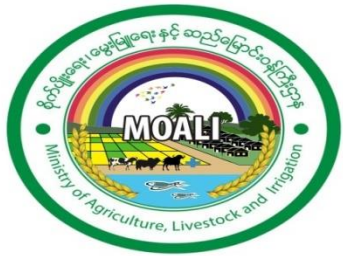


Compare the Effect of Different Rate of Compound (21-17-17) Fertilizer on Yield and Yield Components of Rice (*Oryza sativa* L.)



by

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Introduction

- Rice - the most important human food crop in the world
 - directly feeding more people than any other crop
 - nearly half of world's population – more than 3 billion of people – relied on rice every day

(IRRI 2012)
- Fertilizer - a critical strategy for increasing rice yield

(Fageria and Baligar, 1996)
- In Myanmar - increase for rice production, associated with use of fertilizer

Kayin State, Hlaing Bwe Township

Lower
in soil
N,P,K
content

Farmers
Seldom
Apply
N,P,K
fertilizer

Inefficient
utilization
of
fertilizer

Poor
Cultivation
methods

Lower
rice
yield
(50-70
bsk/ac)

2018-19 Land Use in Hlaing Bwe

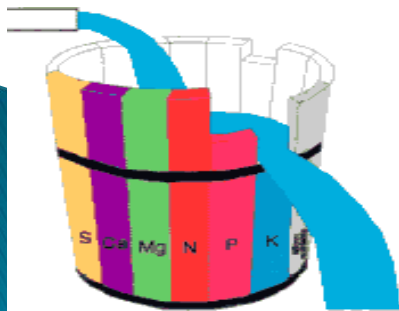
No.	Argumental	count	Area
1.	Net Production	Acre	199304
	Wet Land	Acre	150458
	Dry Land	Acre	1932
	Alluvial Land	Acre	4866
	Garden Land	Acre	40099
	Up Land	Acre	1949
2.	Fallow Land	Acre	11067
3.	Virgin Land	Acre	190363
4.	Forest Land	Acre	183052
5.	Other Land	Acre	486130
	Total		1069916



Objective



- (1) To examine the effect of different rate of compound (21-17-17) fertilizer in yield and yield components of rice
- (2) To determine the appropriate amount of compound (21-17-17) fertilizer for rice production farmers in Hlaing Bwe township
- (3) To evaluate the suitable profit for rice production farmers in Hlaing Bwe township





Materials and Methods



Materials and Methods

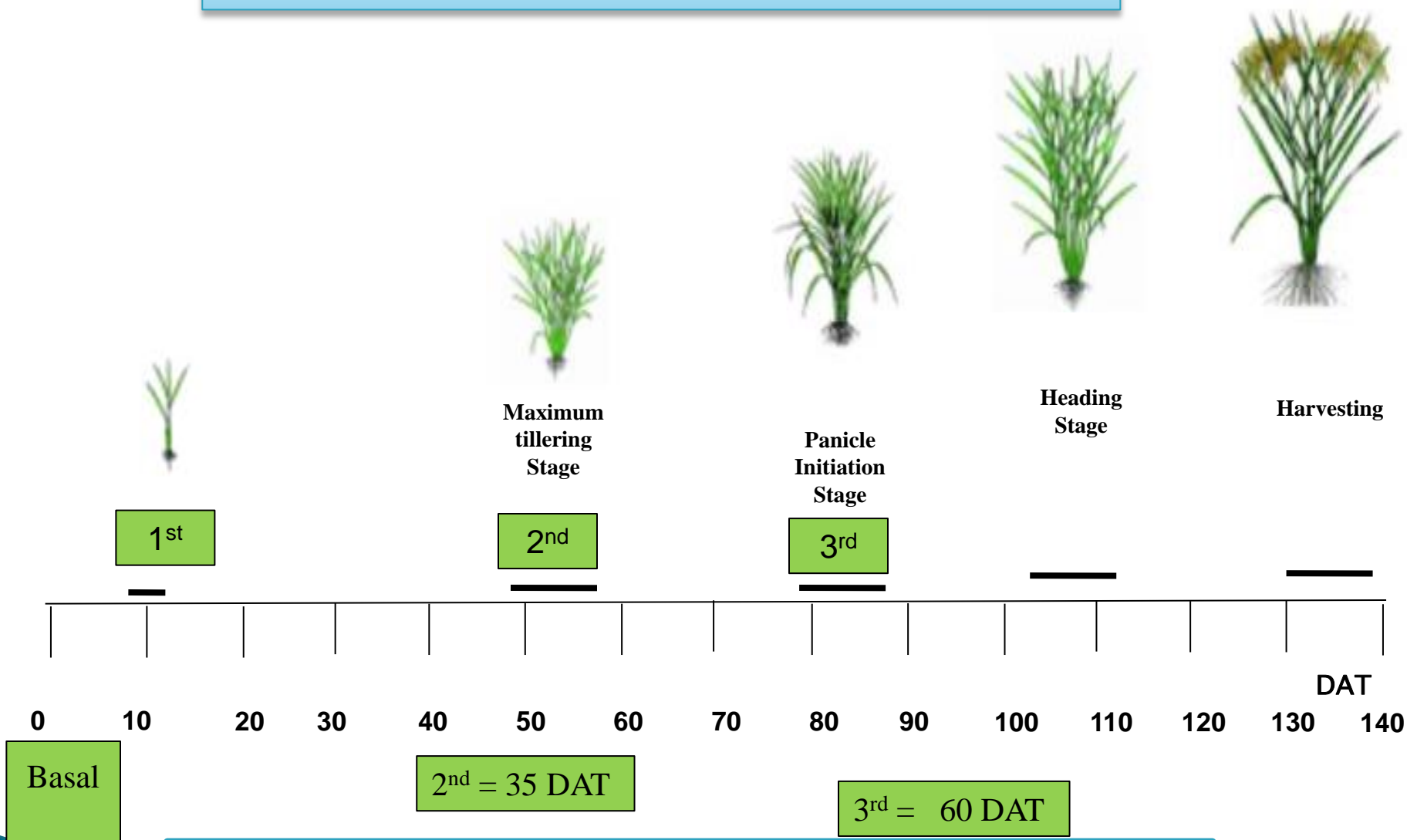
- ❖ Experimental site - Thanbum Village, Hlaing Bwe Township, Kayin State
- ❖ Farmer Name - U Kyauk Lone
- ❖ Tested Cultivar - Manawthukha with 25 day old seedling
- ❖ Seedling Date - 9.7.2019
- ❖ Transplanting Date - 3.8.2019
- ❖ Harvest Date - 23.11.2019
- ❖ Fertilizer Name - One Pro (Compound, 21-17-17)
- ❖ One Pro (1 bag) - 20 kg
- ❖ Spacing - 8" × 8"

Materials and Methods

No	Treatment	Sown Area
1	T1 Control	0.50 acre
2	T2 21-17-17 (3 bag)	0.50 acre
3	T3 21-17-17 (5 bag)	0.50 acre
4	T4 21-17-17 (7 bag)	0.50 acre
5	T5 21-17-17 (8 bag)	0.50 acre

1 bag = 20 kg

Manaw Thukha Rice Variety



All of the treatments were used three time at basal, maximum tillering and panicle initiation stage

Measurement of Physicochemical properties of experimental soil

Characteristics	Rating (content)
Soil pH	5.2 (Strongly acid)
Cation Exchange Capacity	Low
Ca (meq/100g)	3.359(Low)
Total N %	2.14 (low)
Total P (ppm)	2.95(low)
Total K (mg/100g)	5.12 (Low)
Organic matter (%)	1.359

❖ Crop measurement

Growth parameters

- Plant height (cm)
- Panicle length (cm)
- Number of tillers hill⁻¹
- Number of panicles hill⁻¹

Yield and yield component parameters

- Number of grains panicle⁻¹
- Filled grain percentage (%)
- Grain Yield (bsk/ac)

Results and Discussion

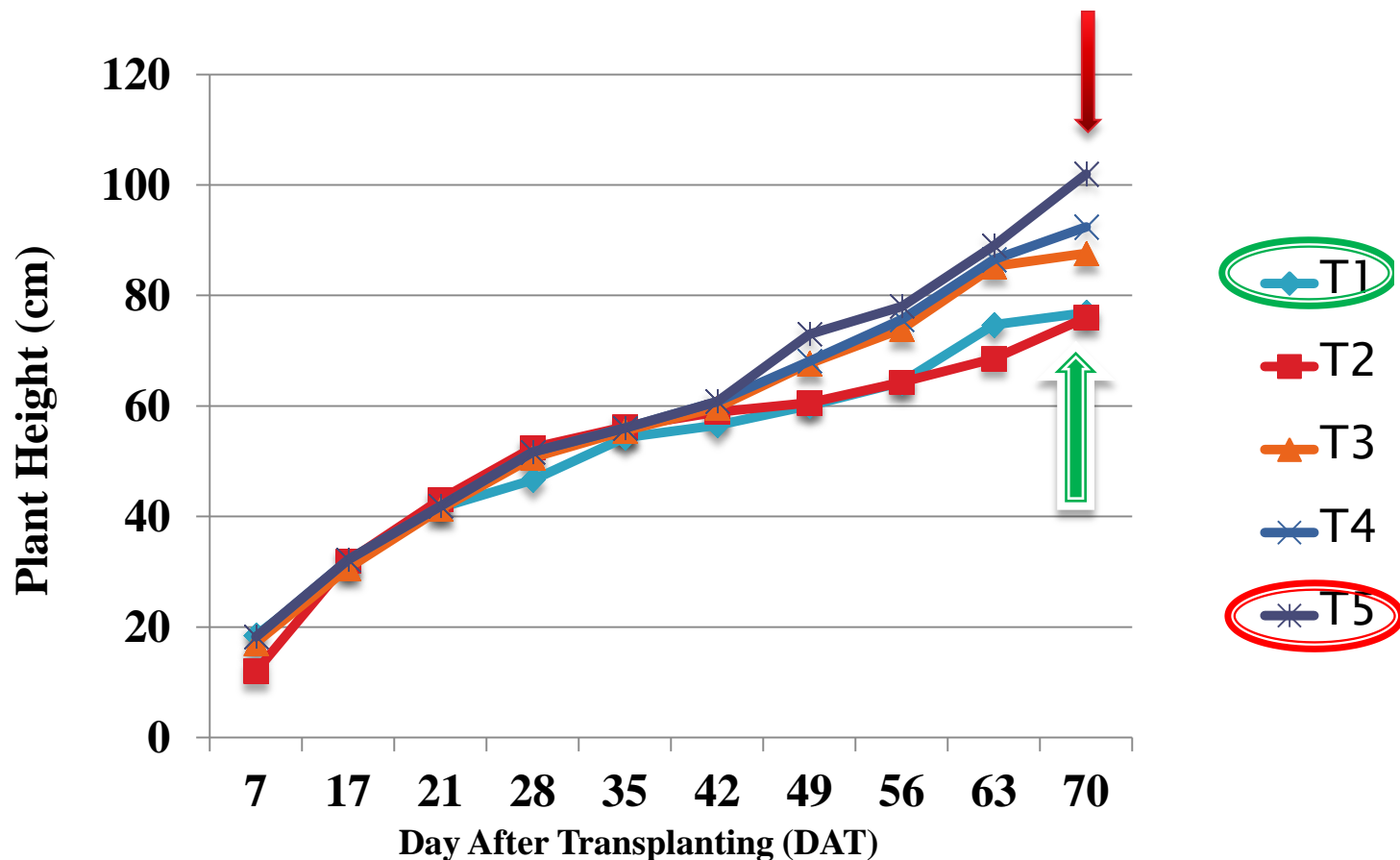


Figure 1. Mean value of plant high as effected by different rate of compound (21-17-17) fertilizer in rice

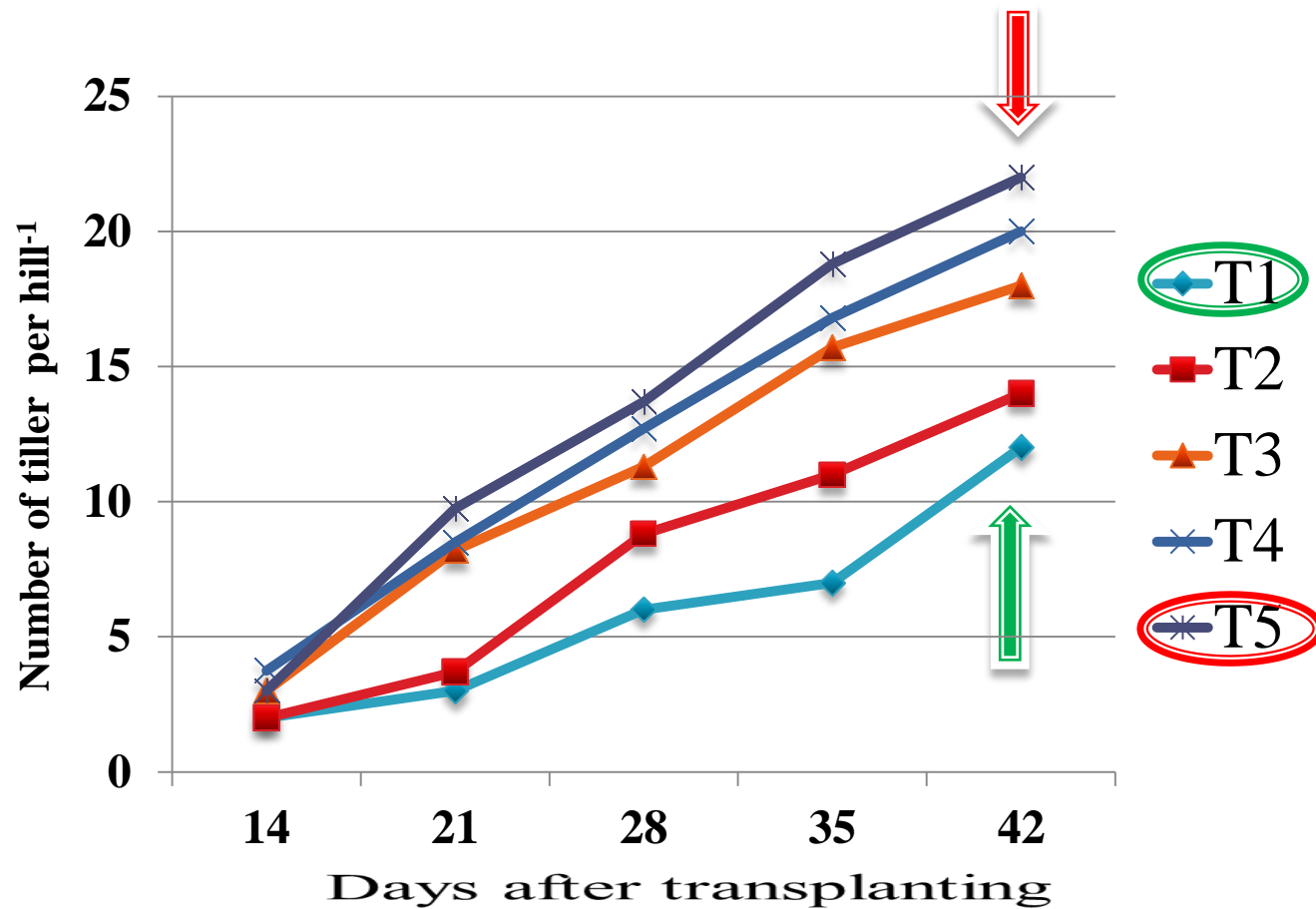


Figure 2. Mean value of Number of tiller per hill⁻¹ as effected by different rate of compound (21-17-17) fertilizer in rice

Table 1. Yield and yield components as affected by different rate of compound fertilizer (21-17-17) in rice

Treatments	Panicle Length (cm)	No. of spikelets panicle ⁻¹	Filled grain %	No. of panicles hill ⁻¹	1000 grain weight	Yield (bsk/ac)
T1	18.21	86	77.14	7.89	19	56
T2	19.57	95	80.40	9.78	19	75
T3	20.56	96	82.79	11.75	19	95
T4	20.38	111	83.79	12.34	19	109
T5	21.23	109	82.46	13.23	19	115

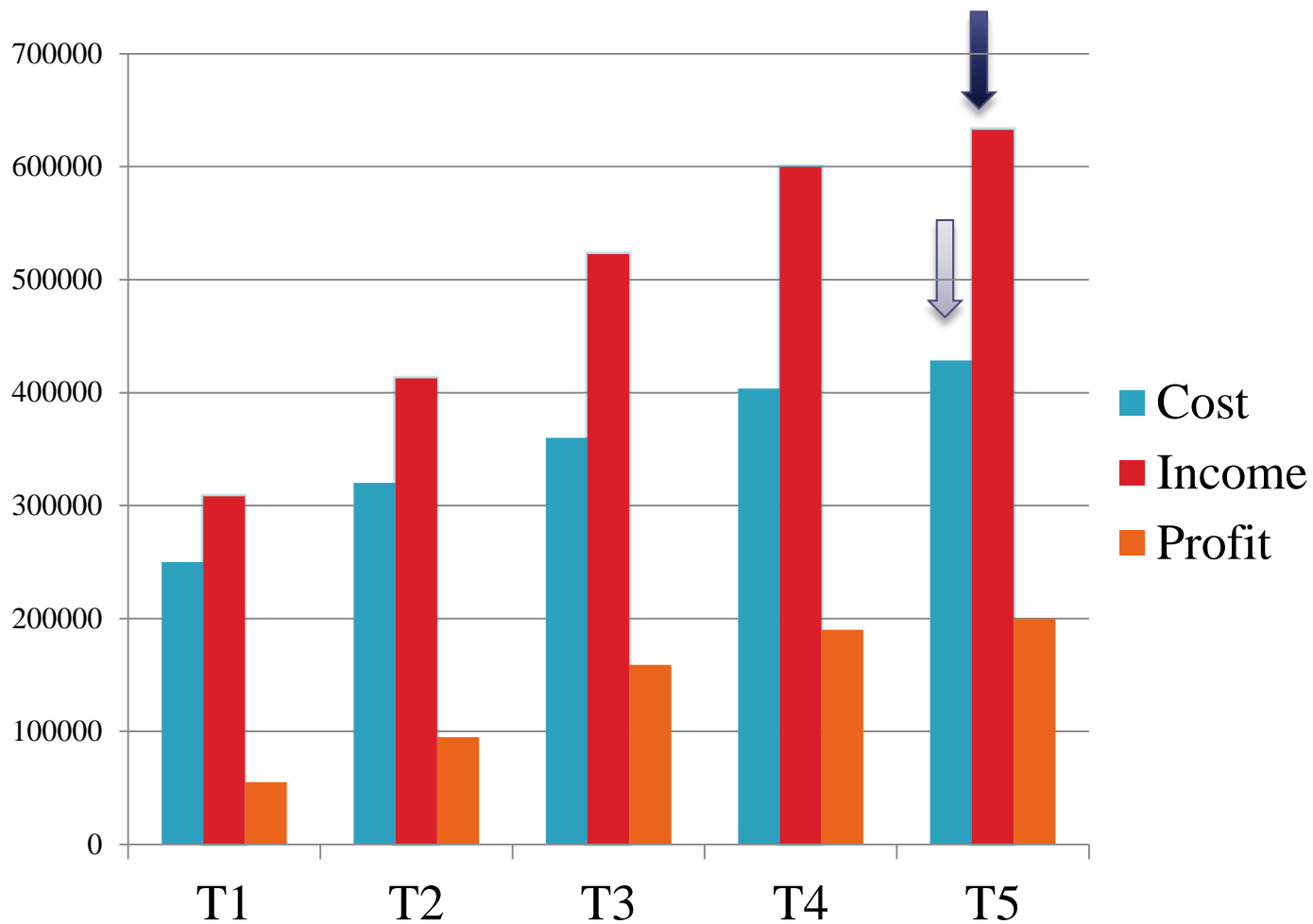


Figure 3. Compare the cost, income and profit as affected by different rate of compound (21.17.17) fertilizer in rice

Conclusion

- According to the result of this experiment, the maximum grain yield was obtained from T5 (115 bsk/ac) and lowest yield obtained from T1 (56 bsk/ac) .
- The highest profit was obtained from T5 but it did not significantly differ from T4 and T3.
- It can be concluded, T3 is also obtain suitable yield and profit.

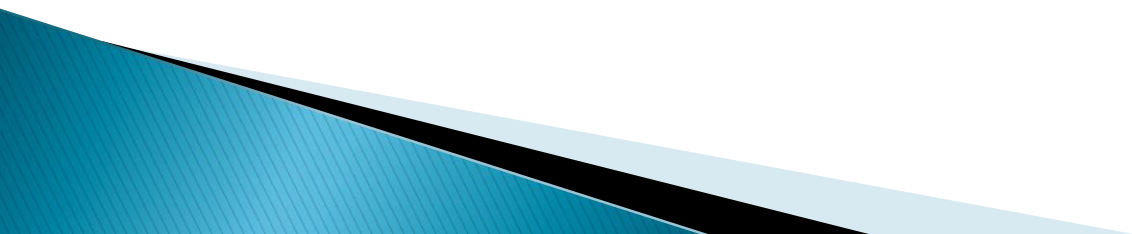


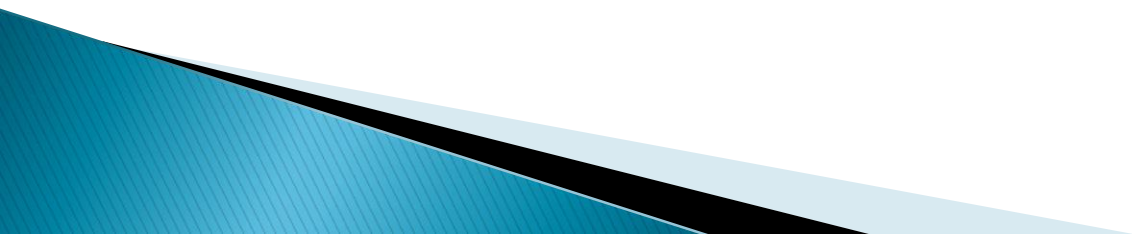
- So, I think farmer should be used T3 because T3 is not only increase yield but also can get suitable profit for rice production farmers in Hlaing Bwe township.
- Base on this experimental result, our HlaingBwe DOA civil servant will go to the rice productive farmers villages in HlaingBwe Township for training and education.

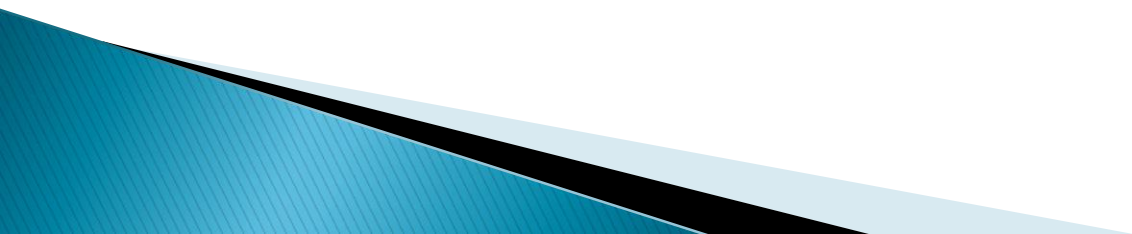


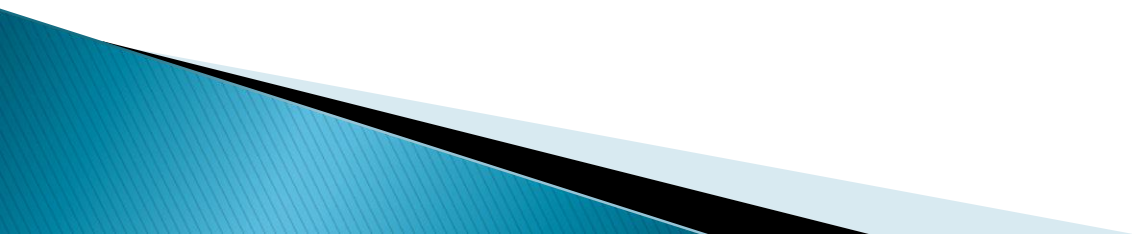


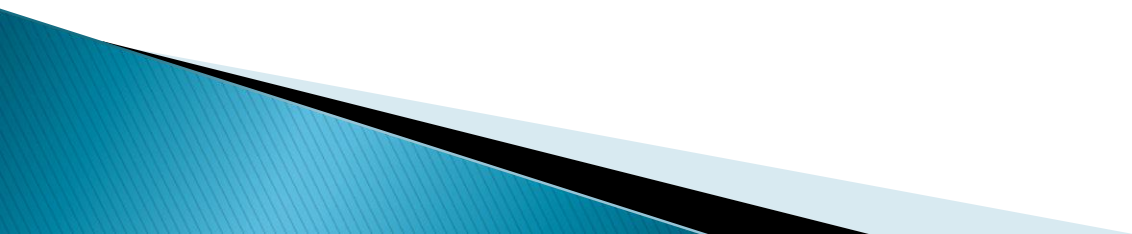
THANK YOU

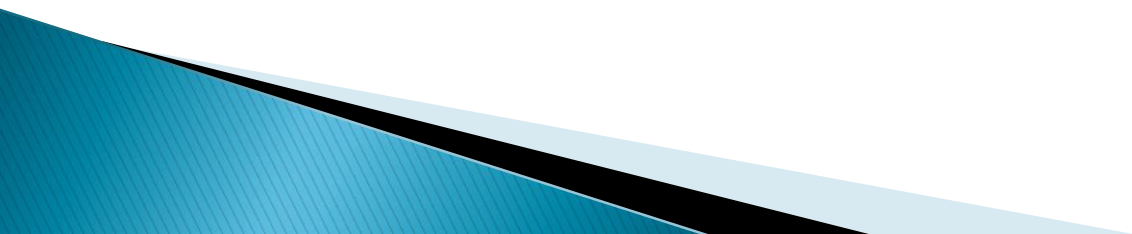


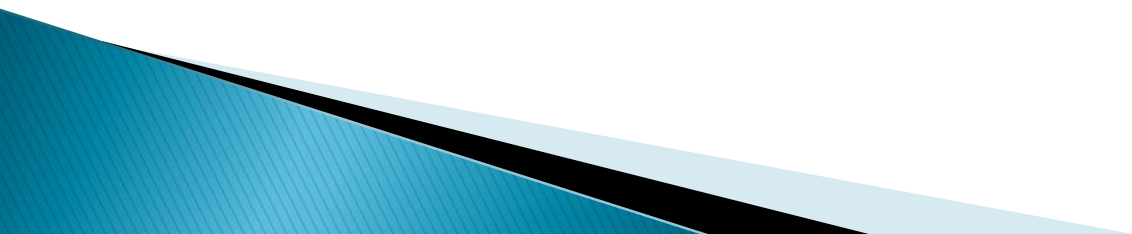


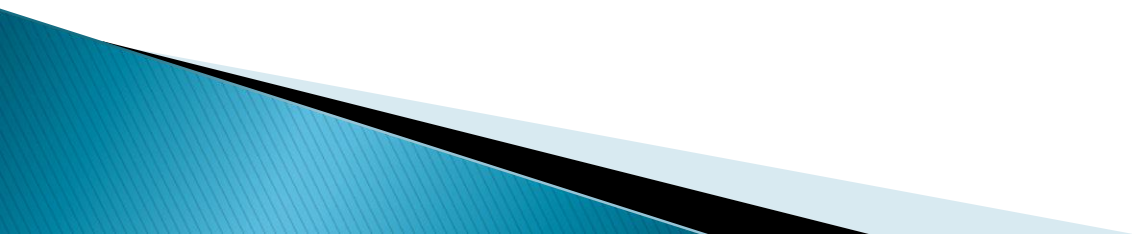


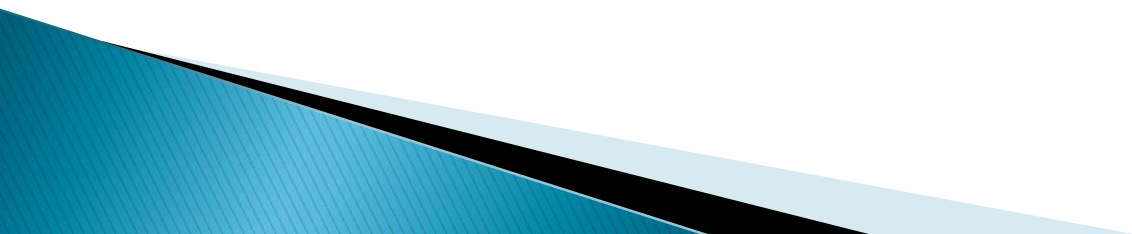










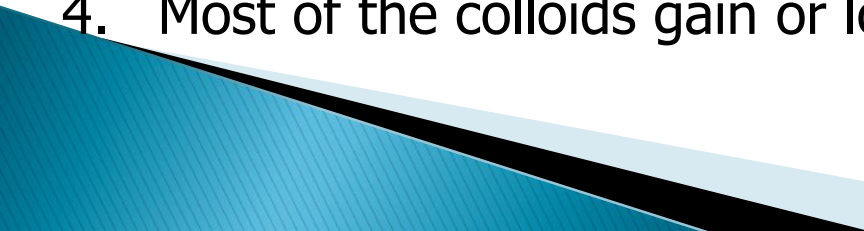


Recommend rate of Manawthukha Rice

Urea	-	188.3 kg ha⁻¹	N	-	87 kg ha⁻¹	N	-	87 kg ha⁻¹
TSP	-	62.7 kg ha⁻¹	P₂O₅	-	29 kg ha⁻¹	P	-	13 kg ha⁻¹
MOP	-	31.3 kg ha⁻¹	K₂O	-	19 kg ha⁻¹	K	-	16 kg ha⁻¹

CEC is controlled by four soil factors:

- ❖ Soil texture
- ❖ Clay type
- ❖ OM content
- ❖ Soil pH

1. The colloids in the soil are the source of charge. The greater the content of colloids, the greater the CEC.
 2. Some minerals (smectite, vermiculite) have more charge than others (kaolinite).
 3. Organic colloids have more charge per gram of material than do minerals colloids.
 4. Most of the colloids gain or lose charge with changes in pH.
- 

Duration of growth stages of Manaw Thuka

Growth stage

Vegetative

Germination	3-5
Seedling	25-30
Active tillering	40-45
Maximum tillering	55-60
Total	70

Reproductive

Panicle initiation	75
Booting	90
Heading	105
Total	30

Ripening

Soft dough	110
Hard dough	120
Mature grain	135
Total	30

Estimated cost

No.	Name	Cost(kyat)
1	Land Preparation	80000
2	Seed bed preparation	30000
3	Rice	10000
4	Transplanting	80000
5	Harvesting	50000
		250000
6	Fertilizer 20kg (1 bag)	20000
7	Labor	10000
8		
9		



2017-18 Main Crops Production in Hlaing Bwe

No.	Crops	count	Area
1.	Rice	Acre	121053
2.	Maize	Acre	1359
3.	Groundnut	Acre	8164
4.	Sesame	Acre	9130
5.	Sunflower	Acre	198
6.	Green gram	Acre	2074
7.	Black gram	Acre	195
8.	Pigeon pea	Acre	170
9.	Sugarcane	Acre	3770
10.	Cotton	Acre	-
	Total		166417

$$\text{Yeild } \left(\frac{\text{bsk}}{\text{ac}} \right) = \frac{A B C D E}{454.5 \times 1000 \times 46 \times 100}$$

A = hill / acre (spacing 8" x 6")

$$= (43560 \times 12" \times 12") / (8 \times 6) = 130000 \text{ (approximately)}$$

B = panicle / hill

C = spikelets / panicle

D = filled grain%

E = 1000 grain weight

Lb/ac = x 1.123 (kg/ha)

Kg/ha = / 1000 (ton/ha)

Bsk/ac = / 20 (ton/ha)