MINISTRY OF AGRICULTURE, LIVESTOCK AND IRRIGATION
DEPARTMENT OF AGRICULTURE
IN-SERVICE TRAINING CENTRE AND
STATE AGRICULTURAL INSTITUTE DIVISION

Comparison of Different Rates of Urea Fertilizer on Growth, Yield Components and Yield of Maize

Daw Lin Sandar Oo
Demonstrator
State Agriculture and Livestock Institute (Pyinmana)

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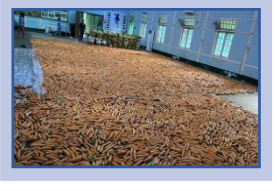


Introduction

Maize

- grown in temperate, tropical and sub-tropical regions
- highest productivity10t / ha in USA (largest producer), 6.0 t/ ha in China
- raw material for hundreds' of industrial products

Myanmar

- important cereal after rice, grown in the whole country except Mon State
- important crop for animal feed for domestic livestock farms
- sown area 487,000 ha & production is 3.24 MT/ha in 2018-2019 (MOALI, 2019)

- **Maize being a high nutrient mining crop it needs a higher amount of NPK for its economic production (Adhikary et al., 2020)**
- **N is very important because this element is responsible for major activities for the growth and development of maize crops (Jat et al., 2013)**

- **Improved management practices - for optimizing crop yield, minimizing N losses, & increasing nitrogen uptake efficiency**
- **Synchronizing N fertilizer supply with crop N demand through appropriate timing, rate, method of application, as well as using split applications (Qiu et al. 2015)**

Problem Statement

- Most of the farmers use a high amount of N fertilizer haphazardly
- Area-specific researches have not yet been done on a different level of nitrogenous fertilizer especially with hybrid maize varieties under local environmental and soil conditions
- To know the constraints and get experiences of commercial maize production for the final year students

Objectives

To study the effects of different rates of Urea fertilizer on growth, yield components and yield of maize

To know the processes of commercial maize production for the students

Materials and Methods

Experimental Site

Field of Department of Agronomy, SALI, Pyinmana, Total area (2 acre)

Experimental Design

Randomized Completed Block Design with 4 replications

Tested Cultivar

Yezin – 14 (120 Days)

Spacing and Plant Population

2 ft × 9 inches, 29000 plants per ac

Treatments

Treatment 1

100 kg Urea acre^{-1}

Treatment 2

125 kg Urea acre^{-1}

Treatment 3

150 kg Urea acre^{-1}

Replications

Replication 1

Replication 2

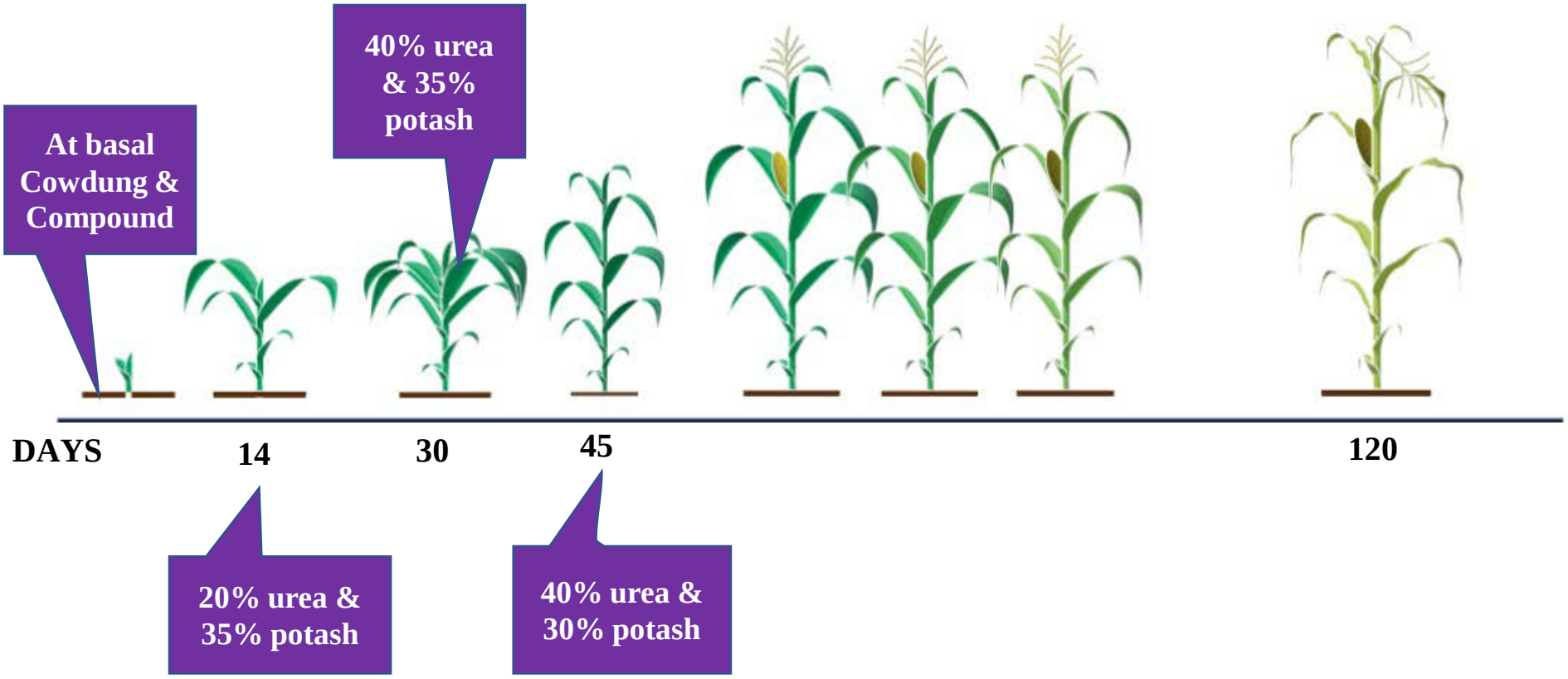
Replication 3

Replication 4

Experimental Layout

Rep I	Rep II	Rep III	Rep IV
T1	T2	T2	T1
T2	T1	T1	T2
T3	T3	T3	T3

Fertilizer application



NPK (15:15:15) compound fertilizer 50 kg/ac and Potash 50 kg/ac were applied in all treatments.

Care and Management

- Pesticide Spraying (14, 24, 25, 27.7.2023) 4 times (အမဲနက် WDG 5, မိုးပျံ 70 WDG)
- Fungicide Spraying (15.8.2023)
- Hormone Spraying (26.7.2023) ကောမက်၊ ဘိုစတာ
- Gypsum (11, 15. 8.2023)
- Hand weeding, earthing up
- cultural control according to condition

Data Collection

Plant Height (cm)

Number of leaves

Days to flowering

Ear length (cm)

Ear diameter (cm)

Number of seeds per ear

1000 grain weight (gm)

Yield per acre (bsk)

Data Analysis

- ✓ **Data - analyzed by STATISTIX (Version 8.0)**
- ✓ **Mean comparison - LSD 5 % level**

Results and Discussion

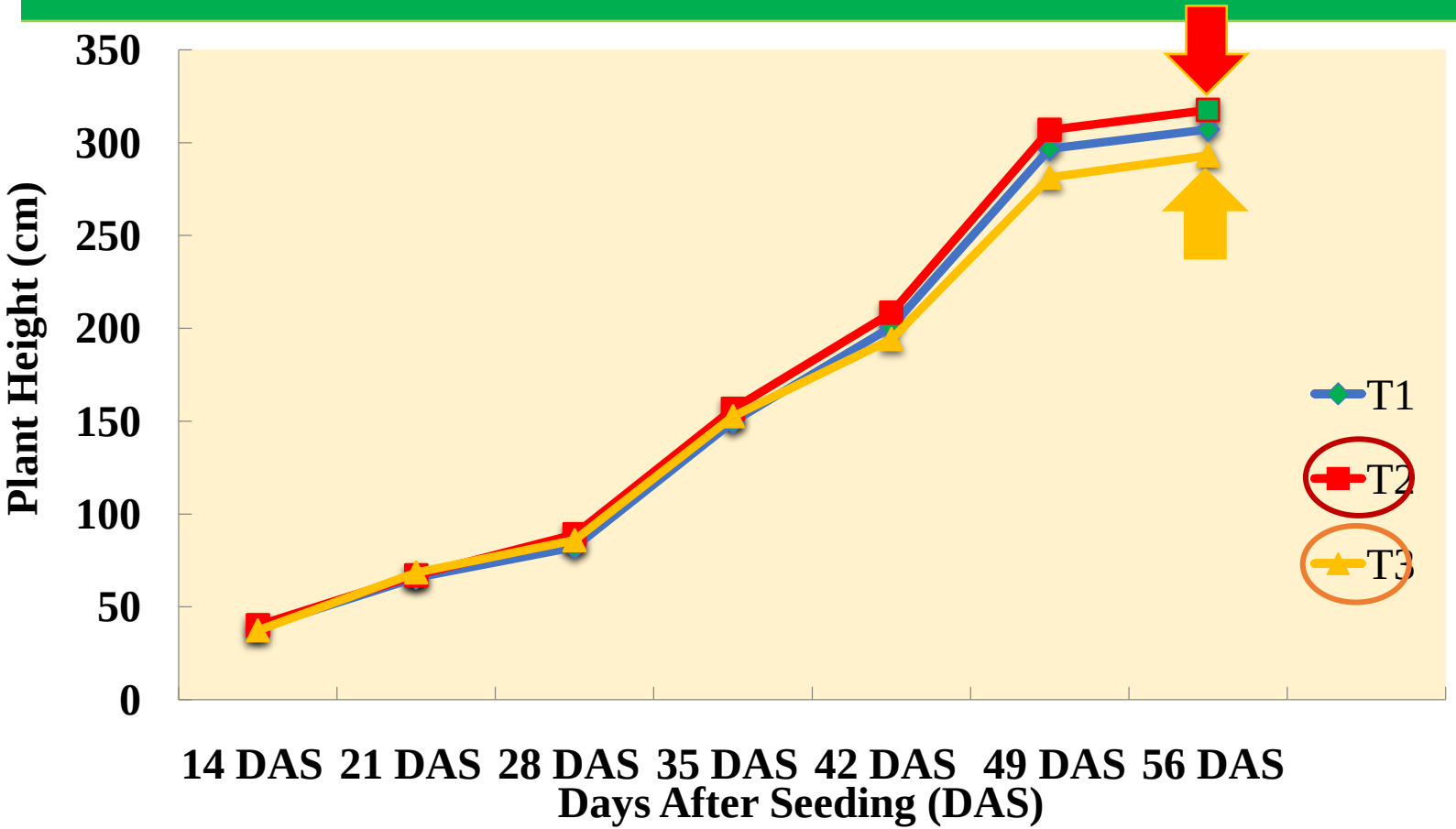


Figure 1. Mean value of plant height (cm) of maize as affected by different rate of urea fertilizer application

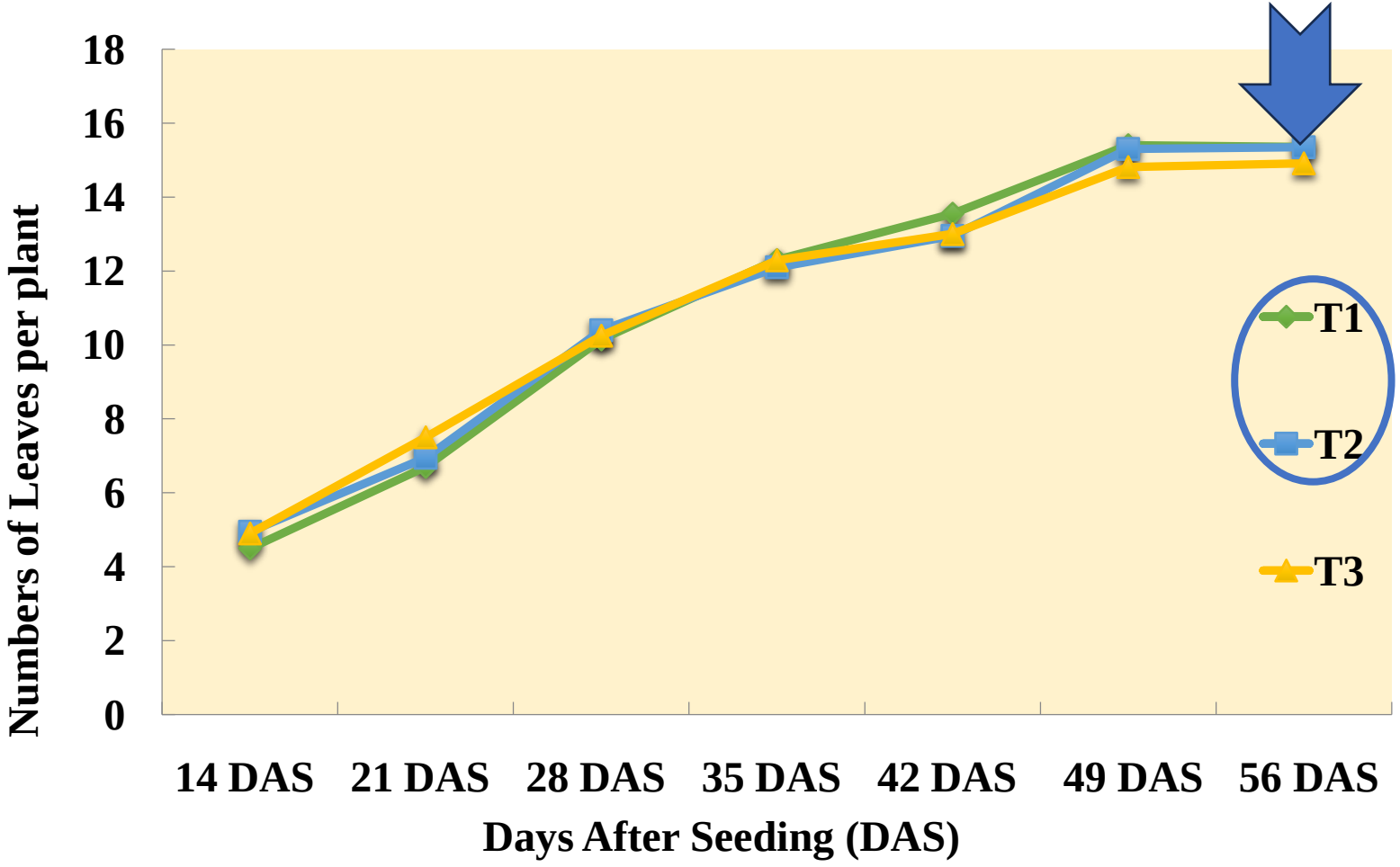


Figure 2. Mean value of numbers of leaves per plant of maize as affected by different rate of urea fertilizer application

Table 1. Mean Value of Yield and Yield Components parameters of maize as affected by different rate of urea fertilizer

Treatments	Effective node	Ear length (cm)	Ear Diameter (cm)	No. of row per ear
T1	7.80	20.64	4.49	12.45
T2	7.80	21.40	4.53	13.15
T3	7.90	21.67	4.56	13.1
$LSD_{0.05}$	1.11	0.86	0.18	1.28
Pr>F	0.97	0.07	0.63	0.39

- **Grain yield, ear height, kernel rows per ear, no. of kernels per row, and ear length, significantly affected due to growing seasons and split applications of nitrogen** **(Adhikari et al., 2016)**

Table 2. Mean Value of Yield and Yield Components parameters of maize as affected by different rate of urea fertilizer

Treatments	No. of seed per ear	1000 grain weight (g)	seed weight per ear (g)	seed yield per acre (bsk/ac)
T1	423.55	363.75	124	83.25
T2	437.70	365.25	125.5	84.00
T3	463.35	359.25	130.5	87.00
$LSD_{0.05}$	33.18	22.36	6.19	7.13
Pr>F	0.06	0.79	0.09	0.44

- **Application of nitrogen fertilizer at the rate of 150 kg ha^{-1} increased the grain yield and yield attributing traits in hybrid maize varieties**

(Sharma et al., 2019)

Conclusion

- All parameters – not significant differences
- Maximum yield 87 bsk/ac from T3 (150 kg/ac), follow T2 (84 bsk) and T1 (83 bsk)
- Students understood the constraints and difficulties of commercial maize production
- Integrated management practices requires an accurate estimation of the fertilizer N rate that provides the highest crop yield at which optimum economic returns can also be achieved by the producer

Future Plan

- နောက်လာမည့်နှစ်တွင် စမ်းသပ်စိုက်ပျိုးမည့် ကျောင်းသား/သူများ အတွက် အတွေ့အကြုံများ၊ အခက်အခဲများ၊ လုပ်ဆောင်ရမည်အချက်အလက်များနှင့် အသိပညာဗဟုသုတများကို လက်တွေ့ လေ့လာသိမြင်ခွင့် ရရှိစေရန်
- စိုက်ပျိုးထုတ်လုပ်သော အသိပညာများ၊ ကြုံတွေ့ရသော အခက်အခဲများ၊ နည်းပညာများကို ကျောင်းပြီး၍ လုပ်ငန်းခွင်ဝင်ရောက်သောအခါ တောင်သူများကို လက်ဆင့်ကမ်းမျှဝေ၍ နိုင်ငံစီးပွားတိုးတက်အောင် တစ်ထောင့်တစ်နေရာမှ ပါဝင်ဆောင်ရွက်သွားရန်အတွက် လက်တွေ့နယ်ပယ်နှင့် ကိုက်ညီသော ပိုမိုကောင်းမွန်သည့် စမ်းသပ်မှုများကို နောင်လာမည့် စာသင်နှစ်မှ ကျောင်းသား/သူများနှင့် ဆက်လက်လုပ်ဆောင်သွားပါမည်။




Thank You For Kind Attention