Proposal of a field experiment

Title: Put more carbon into field soils to fight global warming.

Presenter: Kiyoshi Tsutsuki

Purpose:

We have to stop or retard the tendency of global warming, because it has serious effects on human life. Storing carbon in soil will also contribute in decreasing atmospheric CO_2 and retard the tendency of global warming.

Method:

Apply rice straw and rice straw compost into paddy field and upland field every year. Check soil C and N as well as crop yields every year for 10 years or longer.

Rice straw compost is made by piling rice straw and cow droppings.

Treatments: (Control treatments 1 and 2 were added after the presentation.)

1) Paddy field without any organic matter application except the root and stubbles.
2) Upland field without any organic matter application except the root and stubbles.
3) Rice straw 2t/1000 m^2 in paddy field.
4) Rice straw 2t/1000 m^2 in upland field.
5) Rice straw compost 2t/1000 m^2 in paddy field.
6) Rice straw compost 2t/1000 m^2 in upland field.

Comments from the trainee.

Rice straw will not be decomposed under the upland condition and will remain on the soil surface.

Field experiment to be proposed

Title of the experfiment _ **Effect of split nitrogen application for cotton cultivation**

Name of the presenter _ Thu Zar Win

Purpose

Nitrogen is the nutrient, which is easily lost in soil under various processes. Hence, there is need to enhance nitrogen use efficiency from the applied fertilizers. Split application is likely to be one of the best ways to enhance the nutrient use efficiency in cotton crop. As N requirement is more and losses of N are higher and cause of potential to environment pollutant. Thus, the purpose of this experiment is to comaper different split nitrogen application for cotton cultivation.

Method

Cotton variety – Ngwe Chi-6
Area of 1 plot = 6.8 m ×5.3 m = 36 m2
Spacing = 75 cm × 75 cm
There will be 7 rows in 1 plot with 75 cm distance between the rows. In each row, there will be 9 hills and 5-6 cotton seeds will be sown. At 18 days after emergence, thinning will be done leaving two plants per hill. Therefore, there will be 126 plants per each plot.

Treatments

Plot 1 (T1) = recommended N, P, K dose at sowing time

Plot 2 (T 2) + Recommended P, K at sowing time and two split of N (50% at sowing and 50% at 30 DAS)

Plot 3 (T 3) + Recommended P, K at sowing time and three split of N (20% at sowing, 40 % at 30 DAS and 40% at 30 DAS)

Plot 3 (T 4) + Recommended P, K at sowing time and four split of N (20% at sowing, 30 % at 30 DAS, 30 % at 60 DAS and 20% at 30 DAS)

Here, 4 replication will be tested.

In Myanmar, to obtain the target yield 1000 viss per acre, recommended dose of chemical fertilizers are 2 bags of compound fertilizer (50 kg) and 1 bag (50 kg) of urea fertilizer. For one hectre, we must be used 5 bags of compound fertilizer and 2.5 bags of urea fertilizer. If we use 15:15:15 compound fertilizer, recommended rate of NPK for 1ha to obtain the target yield 4000 kg per ha is as follow.

N	P_2O_5	K_2O
94 kg	37 kg	37 kg

N will be used from urea, 46 % N.

P_2O_5 will be used from triple super phosphate, 45% P_2O_5.

K_2O will be used from muriate of potash, 60 % K_2O.

Applied amount/10a

N = 9.4 kg, P_2O_5= 3.7 kg, K_2O = 3.7 kg

Dose (kg/36 m^2)

N = 0.338 kg, P_2O_5= 0.133 kg, K_2O = 0.133 kg

Dose/row

N = 0.048 kg, P_2O_5= 0.019 kg, K_2O = 0.019 kg

For each treatment (Dose/row)

Treatments	sowing			30 DAS			60 DAS			90 DAS		
	N	P_2O_5	K_2O	N	P_2O_5	K_2O	N	P_2O_5	K_2O	N	P_2O_5	K_2O
T1	48 g	19 g	19 g	-	-	-	-	-	-	-	-	-
T2	24 g	19 g	19 g	24 g	-	-	-	-	-	-	-	-
T3	9.6 g	19 g	19 g	19.2 g	-	-	-	19.2 g	-	-	-	-
T4	9.6 g	19 g	19 g	14.4 g	-	-	14.4 g	-	-	9.6 g	-	-

Effects of urea fertilizer, organic amendments (rice straw and compost) on soil fertility and corn production

❖ **Names of presenters; Group -2**

Ma Lin Sandar Oo
Ma Ei Phyu
Ma Khin Khin Mu

❖ **Purpose**; the objectives of this experiment are as follows

(1) To study the effects of urea fertilizer, organic amendments (rice straw and compost) on the performance of corn crop (*Zea mays* L.),

(2) To study the effect of urea fertilizer, organic amendments (rice straw and compost) on the chemical and physical properties of cultivated soils, and

(3) To formulate a profitable agriculture system which will improve soil fertility and productivity without causing deterioration of the environment

❖ **Methods;**

Field experiment

Replication;	3
Experimental design;	RCB (5 × 3)
Plot size;	15 ft × 7.5 ft
Spacing;	2.5 ft × 0.75 ft
Rows	6 rows / plot
Hills	10 hills / row
Plant	1 plant/hill

Data collection

(i) Before sowing plant- soil sample collection for soil fertility (chemical and physical) determination

(ii) Sowing time – Germination %

Plant height (cm- weekly data)

Corn- cob length (cm)

Number of seed per corn-cob

1000 seed weight (g)

Leave sample for determination of nutrient N, P, K content

(iii) After harvesting

Soil sample collection for soil fertility (chemical and physical) determination

❖ **Treatments;**

Five treatments; T1 = Control

T2 = Rice straw

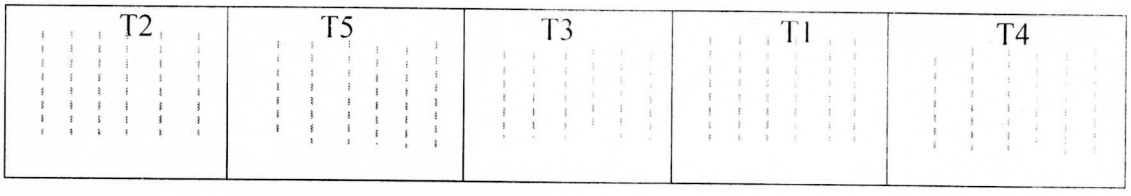
T3 = Rice straw compost

T4 = Urea Fertilizer

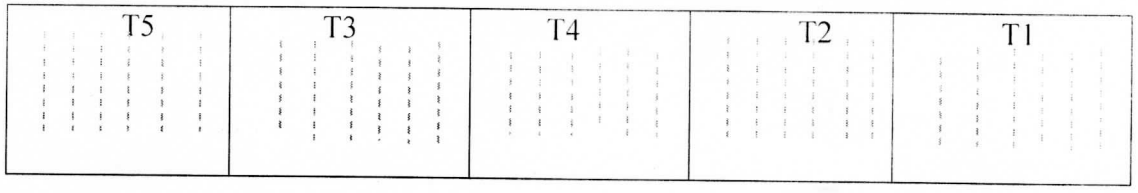
T5 = Urea fertilizer + Rice straw compost

Experimental Lay out

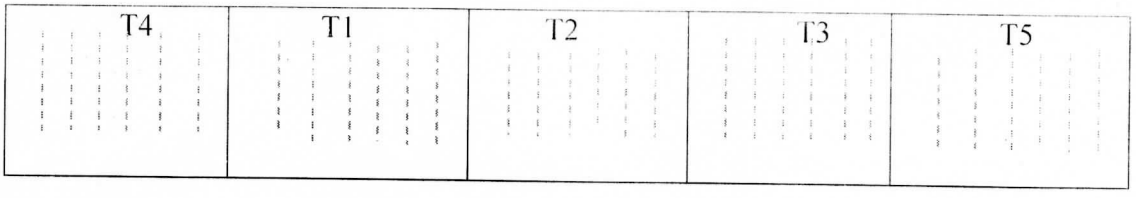
Replication I



Replication II



Replication III



❖ **Expect output;** The long-term use of chemical fertilizers in crops production have created serious problems such as decline in soil productivity and environmental pollution. Therefore, We expect to give a profitable agriculture system which will improve soil fertility and productivity without causing deterioration of the environment in farmers' fields.

Improving soil fertility status in rice soil

Myanmar is a country based on agriculture. About 70 % of people engaged on agricultural production. Rice is our staple crop and it occupies about half of total production area. Because of rice-rice production, the soil becomes gradually acidic and decreased in their fertility. So this study will be conducted to improve the soil fertility status of rice soil.

Objective-

- ❖ to evaluate the fertility of rice soil with amendment of organic manure and water management
- ❖ to evaluate the performance of rice under amendment of organic manure and water management

Methods-

Split-plot pot arrangement will be conducted.

Main-plot factor- Water management

(1) Continuous flooding

(2) Alternate Wetting and Drying

Subplot factor- Organic manure amendment

(1) Recommended NPK only

(2) Recommended NPK + Lime

(3) Compost (5 t ha-1) + Recommended NPK

(4) Rice straw (2.5 t ha-1) + Recommended NPK

(5) Cowdung manure (5 t ha-1) + Recommended NPK

Replication-3, total number of pot is 30.

The pot with 30 cm height and 30 cm diameter will be filled with 10 kg soil which will be collected from 0-15 cm depth of rice soil.

The 21-day old seedlings will be transplanted at two hills per pot.

Fertilization-Recommended fertilizer rate (86.8 kg N ha^{-1}, 30.2 kg P_2O_5 ha^{-1}, 18.9 kg K_2O ha^{-1}). Nitrogen will be applied as three equal splits at active tillering, panicle initiation and heading. Phosphate fertilizer will be applied as basal only and Potassium will be applied at basal and panicle initiation in equal. The organic manure will be applied at 14 days before land preparation.

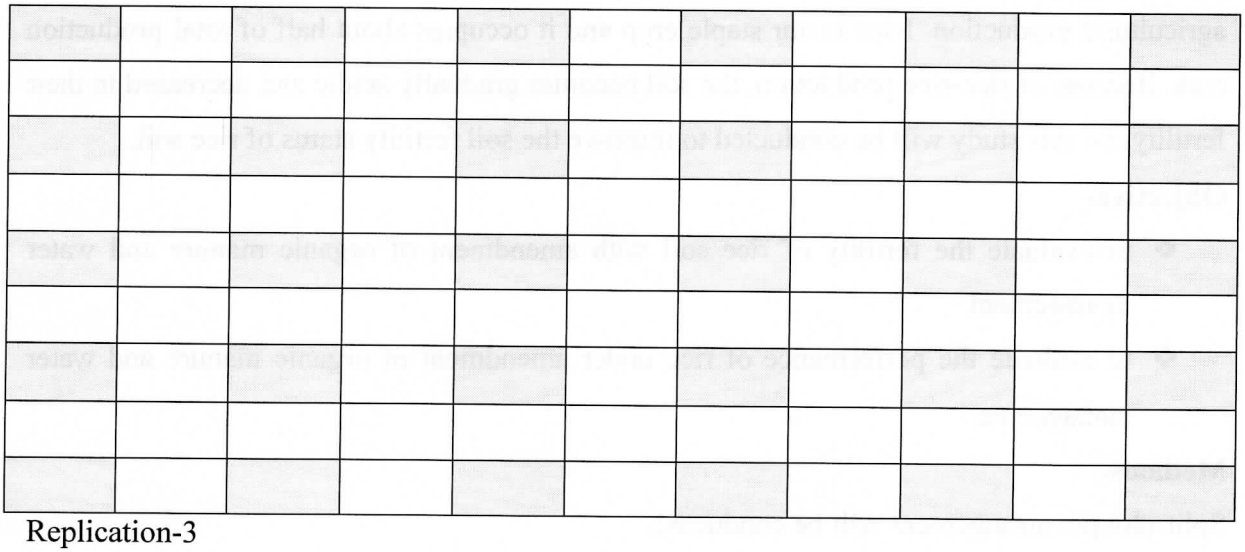
Expected outcome-

The organic manure amendment with AWD water management improve the fertility status of rice soil.

Pot Layout

Mainplot- Water management

Subplot-Organic manure amendment



Replication-3

Experimental unit-30

Pot / field experiment to be proposed.

Title of the experiment:

Names of presenters:

- Study of subsoil its improving method by planting gallic

Purpose:

- To study of subsoil its improving method

Methods: Size of pot: Height = 45 cm, diameter = 30 cm
Number of seed gallic: 15 " seed gallic / pot
Soil = Subsoil (Loamy soil)
Repetition = 3 / each treatment
Number of pot = 18 pot

⇒ Three seeds are placed in each hole and seedlings are reduced to one per hole.

Treatments:

1. Control
2. Compost
3. N:P:K — $N = 250 kg/ha$, $P_2O_5 = 100-200 kg/ha$, $K_2O = 180-360 kg/ha$
4. No N — $N = 0$, $P_2O_5 = 100-200 kg/ha$, $K_2O = 180-360 kg/ha$
5. No P — $N = 250 kg/ha$, $P_2O_5 = 0$, $K_2O = 180-360 kg/ha$
6. No K — $N = 250 kg/ha$, $P_2O_5 = 100-200 kg/ha$, $K_2O = 0$