

ENHANCING THE PRODUCTIVITY OF OKRA (*Hibiscus esculentus*)

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Abstract

Results of this study were encouraging because a highly significant effect has been noted on pod number and pod weight. Treatment combination T₂V₂, the new smooth green variety of okra plants applied with rejuvenated method of cropping system, respectively greatly improved the yield of okra than the other.

Keywords: rejuvenated, cropping, pod, conventional cropping, variety/cultivar

Introduction

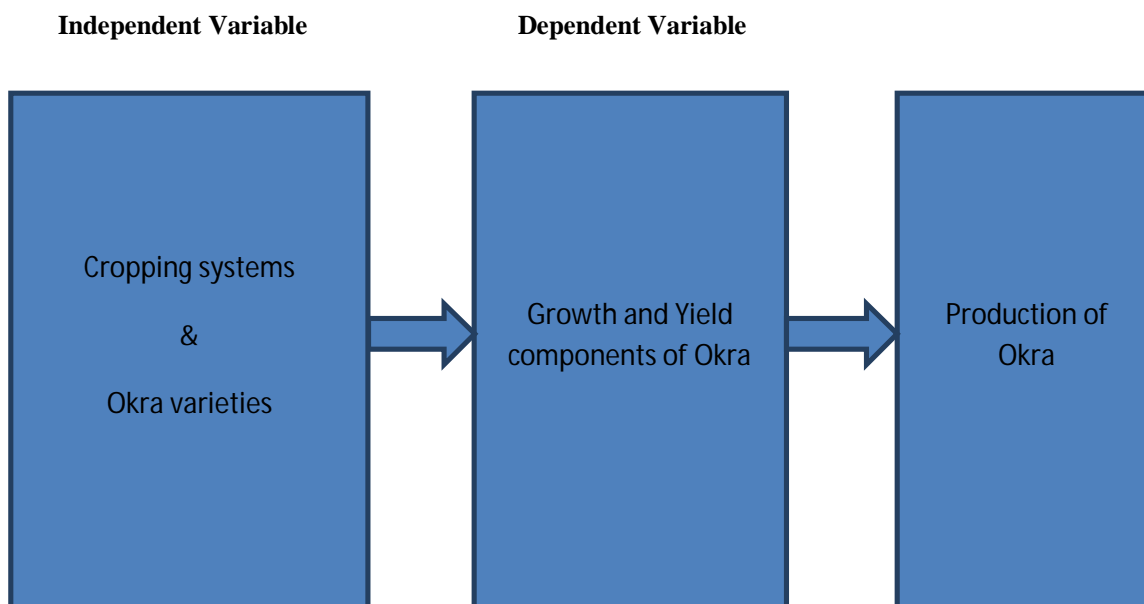
Production of okra is limited. There is no regular source of continuous supply of its year – round. Most of our farmers have felt the difficulty of growing this vegetable as their primary source of income. They raise/plant okra for additional income while doing other farm works because of the high inputs need in growing okra. Rejuvenation is a technology that reduces the inputs of cultivating okra. This technology is a regrowth cropping system from the cut stalks of previous crop while conventional methods a cropping practice of planting/growing one after another of the same kind in an area throughout the year (Flauta, 1990).

Okra (*Hibiscus esculentus*) is a vegetable crop that has proven to be very profitable. Young okra fruits provide fresh and delicious vegetable meals. It has also many uses because of its protein, calcium and iron content. The mature okra pods can be cooked for viand. Some eat okra with the seeds extracted from the cover, while others eat as well as the seeds. Sometimes, the matured dried okra are roasted and ground as a coffee substitute or addition to coffee.

Okra seed is highly suitable fat. It has high unsaturated fatty acids, linoleic and oleic of about 70 percent. The oil is readily hydrogenated for use as solid shortening and which could be used in place of margarine. Because of the above uses, production of okra at present cannot cope up with the demand considering increase of population. Hence, this study encourages and motivates our okra growers to raise okra in a wide range of land, and as a primary source of income perhaps.

The result of this study enhanced the production of okra growers with minimal inputs. Provide sustainable supply of okra and cope up the demand of the community.

Conceptual Framework



There are two cropping systems; the conventional and the rejuvenated cropping system and three (3) varieties of okra that influenced the growth and yield parameters of okra. The appropriate cropping system and varieties of okra optimized the production of okra.

Objectives

To attain a profitable production of okra this study aimed to:

1. determine the production performance of three (3) varieties of rejuvenated okra plants.
2. verify the economic aspects between rejuvenated and conventional cropping system of okra.
3. determine the right variety of okra suitable for the system of cropping that can optimize farm productivity.

Methodology

Location and Duration of the Study

This study was conducted at the Department of Agriculture-Provincial Office, Tagbina, Surigaodel Sur from April to July 2012.

Soil Sampling and Analysis

Soil sampling was done before preparing the land. Soil samples were collected at random, air-dried and sent for analysis at the Bureau of Soils and Testing Laboratory, Tagibu, Butuan City. The soil samples were analyzed for the application of fertilizer.

Land Preparation

The field was thoroughly plowed and harrowed. Then, it was left uncultivated for seven days to allow weed seeds to germinate and grasses to decompose. After seven days, plowing and harrowing was done immediately to break soil clods not pulverized in the first plowing and harrowing to obtain excellent soil texture.

Experimental Design

The experimental plots were laid out in two-factor Factorial Experiment in Randomized Complete Block Design (RCBD) with four (4) replications. It has a total area of 378 sq. m. divided into 24 treatment plots with an area of 15.75 sq.m.

Planting

Okra seeds were directly seeded in the field and planted in a slightly moist soil. Three (3) seeds were dropped per hills of 30 centimeters apart with 60 centimeters between rows. The dead or missing hills that emerged after three days were replaced to have a uniform population. Fifteen days (15) after planting, the plants were thinned to two seedlings per hill. Small and sickly seedlings were removed by hand-pulling in order not to disturb or destroy the healthy seedlings.

Fertilization

The application of fertilizer was uniform to all treatment and based on the result of the soil analysis. Split application of fertilizer was done. One-half (1/2) of mixed NPK was applied basically on or before sowing and the remaining half amount of fertilizer was sidedressed one week after thinning.

Weeding and Cultivation

Weeding was made as soon as weeds began to appear on the beds and after each young plant developed two parts of leaves.

Cultivation was made by off-barring the field the field with passing plows or hoe 75 cm away from the base of the plants to a depth of 5 centimeters. Soil clods were thrown between the entire spaces. The plants covered by the soil were removed by applying hilling up after the second application of fertilizer. It was to cover and protect the fertilizer from evaporation during dry season, and erosion during rainy days.

Rejuvenation Method

The rejuvenated plants were cultivated 4 months after sowing with a height of 30 meter from the base of okra plant.

Okra plants were attacked by several insects and disease like common cutworm, flea beetle, eelworm, mosaic pod spot of okra. Integrated pest management was recommended as control measures of the above mentioned insects and disease and resistant varieties were used in planting and crop rotation.

Harvesting

Okra fruits were harvested when they were still young and tender. Harvesting commenced two to three months after sowing.

Results and Discussion*Pod Length*

In Table 1.0 results show that the longest pod was observed from the plants grown in a conventional cropping system with a mean of 36.07 cm. However, the two methods of cropping system were not significantly different from each other.

Table 1. Mean pod length of three varieties of okra grown with the different cropping system.

Cropping system	Pod Length in (cm)			Mean
	V ₁	V ₂	V ₃	
T ₁ (Conventional Method)	34.72	35.93	35.74	35.46
T ₂ (Rejuvenated Method)	35.63	36.84	36.22	36.22
Mean	35.18	36.38	35.96	

Pod Number

Okra plants applied with rejuvenation of cropping system revealed a significant difference from other treatment. Although, T₂V₂ treatment combination got the highest number of pods with a mean of 29.21 and the lowest number of pods was exhibited by T₁V₁(local variety grown in conventional method of cropping system). However results revealed that there was no significant difference between treatment combinations (Treatment 2).

Table 2. Average pod number of three varieties of okra grown with the different cropping system.

Cropping system	Pod Number			Mean
	V ₁	V ₂	V ₃	
T ₁ (Conventional Method)	18.36	21.35	19.55	19.75_b
T ₂ (Rejuvenated Method)	21.27	29.21	25.50	25.33_a
Mean	19.82_{bc}	25.28_a	22.52_{bc}	

Pod Diameter

Significant effects were observed on pod diameter of okra (Table 3). Treatment 1 (plants grown in conventional method of cropping system) gave the biggest pod diameter while rejuvenated plants produced a medium size of okra pod diameter and this is the standard / sellable size of okra pod diameter that suits market demand.

Table 3. Mean pod diameter of three varieties of okra grown with the different cropping system.

Cropping system	Pod Diameter in cm			Mean
	V ₁	V ₂	V ₃	
T ₁ (Conventional Method)	4.32	4.32	4.19	4.28_a
T ₂ (Rejuvenated Method)	4.40	4.18	4.33	4.30_b
Mean	4.36_{bc}	4.25_a	4.26_{ab}	

Pod Weight

Table 4 represents a highly significant effect on the different cropping system and a significant response on the treatments, varieties of okra pod weight. The heaviest pod of okra with a mean of 4.04 kilograms was taken from the plants grown in rejuvenated method of cropping system.

Table 4. Mean pod weight in kilogram of three varieties of okra grown with the different cropping system.

Cropping system	Pod Weight (kg)			Mean
	V ₁	V ₂	V ₃	
T ₁ (Conventional Method)	2.35	2.98	2.59	2.64_b
T ₂ (Rejuvenated Method)	3.55	4.72	3.84	4.04_a
Mean	2.95_{bc}	3.80_a	3.22_b	

On the other hand treatment combination T₂ V₂ (New Smooth Green Variety) grown in a rejuvenated system of cropping produced the heaviest pod of okra in kilogram and T₁V₁ (Local variety of okra grown in conventional cropping system) exhibited the lighter weight of okra pods.

Pod Yield

Table 5 reveals highly significant effect on the different cropping system and a significant response on the treatments, varieties of okra yield. T₂V₂ (New Smooth Green Variety) grown in a rejuvenated system of cropping obtained the highest pod yield and the lowest pod yield was exhibited by T₂V₂ (local variety) of okra grown in a conventional system of cropping.

Table 5. Pod Yield of three varieties of okra grown with the different cropping system.

Cropping system	Pod Length(cm)			Mean
	V ₁	V ₂	V ₃	
T ₁ (Conventional Method)	1.46	1.90	1.62	1.66_b
T ₂ (Rejuvenated Method)	2.22	2.95	2.40	2.52_a
Mean	1.84_{bc}	2.42_a	2.01_b	

Return on Investment (ROI)

Conventional Method of Cropping System

$$\text{ROI} = \frac{\text{Net Income}}{\text{Production cost}} \times 100$$

$$= \text{Php. } \frac{7,560}{6,200} \times 100$$

$$= 62 \%$$

Rejuvenated method of cropping system

$$\text{ROI} = \frac{\text{Net Income}}{\text{Production cost}} \times 100$$

$$= \text{Php. } \frac{7,140}{4,500} \times 100$$

$$= 76 \%$$

Conclusions

1. The length of okra pod did not significantly affect the varieties of okra and different cropping system.
2. The pod number, pod diameter of okra varieties revealed a significant response as influenced by the different cropping system.
3. T₂V₂ the New Smooth Green Variety of okra grown in a rejuvenated cropping system appeared as the most appropriate treatment combination to optimize yield of okra.

Recommendation

More verification on the rejuvenated system of okra cropping should be made to confirm the initial findings to finally recommend its use for economical, efficient and potential production of okra.

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