HORTICULTURE NOTE NO. 32

EFFECTS OF PRUNING AND THE USE OF STAND SUPPORT POLES ON CUCUMBER YIELD IN PAPUA NEW GUINEA

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ABSTRACT

This trial compares the yield of commercial varieties of cucumbers using traditional PNG methods and the effects of pruning and the use of stand support poles. For the cucumbers with more lateral branches, the yield was highest for those supported with poles while the yield was low for those not supported on poles. After topping off the cucumber plants at five leaf stage, there is no need to prune the lateral branches. However, the crop should be supported with stand poles to ensure the highest possible yields.

INTRODUCTION

The traditional method of growing cucumbers in Papua New Guinea less frequently employs the use of stand support poles (SSP) nor the pruning of cucumber is undertaken. The crop is thus allowed to creep along the ground. In the Asian countries on the other hand, the use of stand support poles is a standard practice. The object of this experiment is to make clear and compare the effects of pruning and the use of stand support poles on the yields of cucumber. Recommendations are also made to farmers as the result of this trial.

EXPERIMENTAL MATERIALS AND METHODS

Variety:
Swallow - from Taiwan.

Location:
At R.O.C. model farm, Bubia, Lae, Morobe Province.

Planting Method:
Date of sowing; October 24th, 1994.
Spacing: ridge - 1 metre.
between plants - 0.6 metre.
block - 6 metres square.

Sowing:
Direct

Management:
Usual way of daily crop management as used in Taiwan

Date of Topping:
December 1st, 1994 at five leaf stage.

Method of Treatment:
Complete Random block Design (CRBD)

- Plants in each treatment: 10
- Replication: 4
- Treatments: 5 as listed below.

Figure 1 - Shows one Lateral Branch with SSP

Figure 2 - Shows two Lateral Branches with SSP

Figure 3 - Shows three Lateral Branches with SSP

Figure 4 - Shows all Lateral Branches with SSP

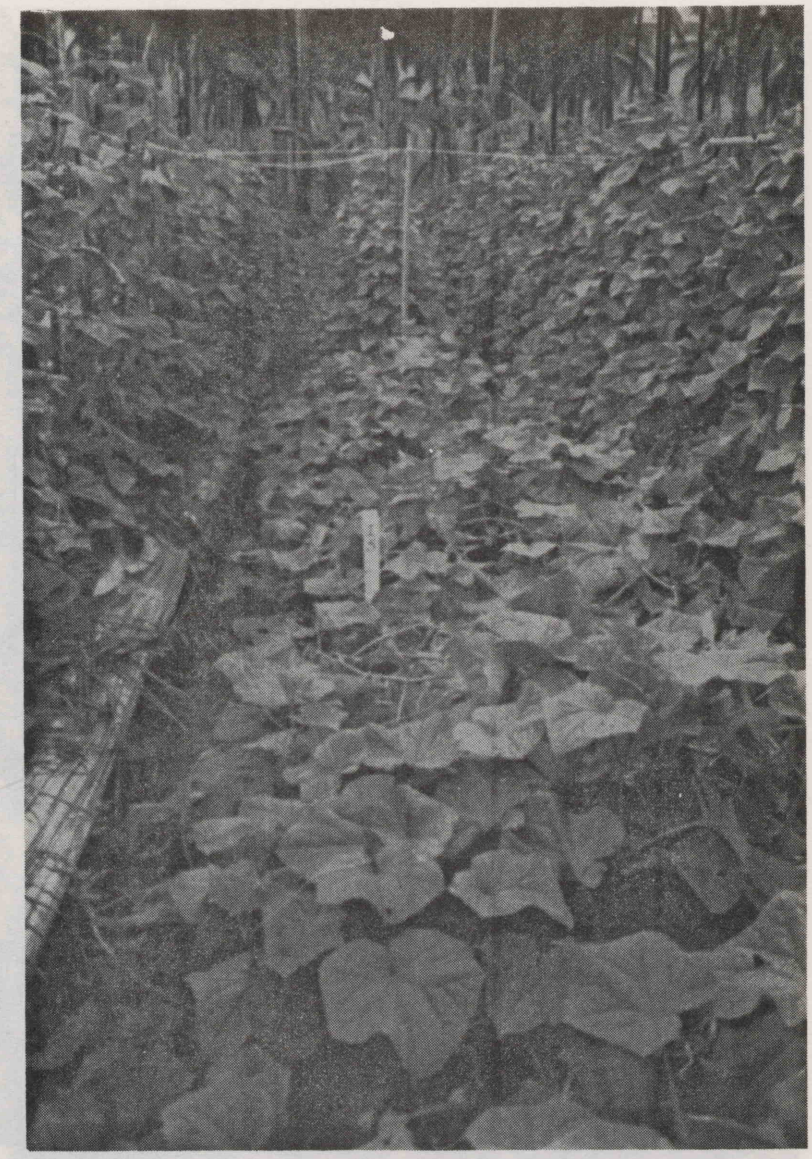

Figure 5 - Shows all Lateral Branches with ***no*** SSP

Treatments:

T 1 - Keep one lateral branch plus stand support pole.
T 2 - Keep two lateral branches plus stand support poles (SSP).
T 3 - Keep three lateral branches plus stand support poles.
T 4 - Keep all lateral branches plus stand support poles.
T 5 - Keep all lateral branches but no stand support poles.

Harvest Record:

- First harvest on December 19th, 1994.
- Then harvested at four day intervals to January 24th, 1995.
- Total number of harvests: 10
- Count and weigh the fruits for analysis.

Table 1. *Mean number of fruit per plant by treatment*

Average over four replicates

treatment	mean
T1	17.100 a
T2	23.350 b
T3	28.975 c
T4	37.550 d
T5	15.475 a
Mean	24.490

Table 2. *Mean weight (kg) of ruits per plant by treatment*

Average over four replicates

treatment	mean
T1	2.950 a
T2	4.275 b
T3	4.700 c
T4	6.450 d
T5	2.800 a
Mean	4.235

RESULTS AND DISCUSSIONS

The results of the trial are discussed below under the respective headings according to the data recorded and analysed, viz:

Table 1. shows the results of treatment 4, in which all lateral branches were kept plus the stand support poles. The average number of fruits per plant is 37.6, much more than all other treatments. The analysis using means comparision indicate as significant difference of 1% when compared to other four treatments. Treatment 3(T3) where three lateral branches are kept and stand support poles are provided, the average number of cucumber fruits per plant at 29.0 is next in the order of ranking. Treatment 2 (T 2) with two lateral branches plus stand support poles gives an average fruits per plant at 23.4 is third in order. Treatments 2 & 3 (T 2 & T 3) have the same significant difference between them. Control, which is treatment 5, that is to keep all lateral branches but no stand support pole is the lowest yielding with an yield per plant of 15.0 fruits. There is no significant difference between the control and treatment one (T 1) i.e one lateral branch and stand support pole.

According to the above result, the more the number of lateral plus stand support poles the more the average number of fruits obtained, but the more lateral branches there are without stand support poles results in the lowest yields of cucumber.

Table 2. shows the average weight of fruits per plant obtained. The results show similar trend as the results for fruit counts in table 1. Thus, to keep all lateral branches plus stand support poles (T 4) produce fruits averaging

at 6.5 kg per plant. This is the highest of the treatments in the weight comparision. The results for treatment four (T 4) has a significant difference of 1% when compared to the other four treatments. To keep three lateral branches plus stand support poles (T 3) produce an average of 4.7 kg per plant is next in order followed by treatment two (T 2) -keep two lateral branches plus stand support poles, but treatment 2 shows no significant difference from treatment three (T 3). By keeping all lateral branches but without stand support poles (Creeping along the ground) (T 6) produce an average pe of only 2.8 is the lowest of all treatments.

The above results show us that, by keeping more lateral branches plus stand support poles can produce many more fruits than all other treatments. Though, to keep more lateral branches, but without stand support poles, the yield of fruits is lesser than even by keeping two or three lateral branches with stand support poles. To keep all lateral branches with stand support poles gives a yield 2.3 times more than without stand support poles (T 4 & T 5). Thus the more the lateral branches with stand support poles the aeration within the plant is better and avoids infection to the fruits by insect pests, while also the fruits grow down erect. Due to the fruits hanging down, the fruits do not deteriorate quickly and also that the cucumber lying down on the ground makes it difficult for harvest. Also to pick up the fruits from the vines creeping along the ground causes much damage to the crop, thus lowering yields.

CONCLUSION

In cucumber cultivation it is advisable to keep all lateral branches supported by stand support poles after topping the shoot at five leaf stage. As shown in this experiment, this technique can produce many more cucumbers. Otherwise, though with more lateral branches but without stand support poles allowing the cucumber crop to creep along the ground, the aeration between and within the cucumber plants is poor creating high humidity. The plant is easily infested with insect pests causing fruit losses and quick deterioration. Also that the lateral branches are easily damaged when harvesting cucumbers. This cause low yields from the cucumber crop.So, we do not need to pick off the lateral branches after topping at five - leaf stage, but it seem necessary to stand the support pole, otherwise the better yields of cucumber cannot be guaranteed.The experiment has shown that the traditional methods of cucumber cultivation as employed by the farmers in Papua New Guinea, i.e allowed to creep on the ground without stand support poles is limiting and hindrance to obtaining higher cucumber yields. For a little extra efforts yields can be increased 2 to 3 times and in monetary term, makes the effort worthwhile. I therefore dare to recommend to PNG farmers to:

1. Top off the shoot at five leaf stage
2. Keep all lateral branches.
3. Use stand support poles as a practice for cucumber cultivation

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