International Journal of Agricultural Technology 2016 Vol. 12(7.1):1419-1424
Available online http://www.ijat-aatsea.com
ISSN 1686-9141

A Comparative Study of Sweet Corn Yields by the Different Corn Top Cutting Methods

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Sinturat, P. and Nongsignai, P. (2016). A Comparative Study of Sweet Corn Yields by the Different Corn Top Cutting Methods. International Journal of Agricultural Technology 12(7.1):1419-1424.

Randomize complete bock design: RCBD with 3 replications was employed in this study: 1) non-top cutting; 2) top cutting which was close to the corn shuck; and 2) Top cutting above the corn shuck for one node. Data were collected in terms of length (cm) and diameter of corn shuck, weight of corn shuck with husk (gram/shuck) and corn shuck without husk. Findings showed that there was no Statistical difference in the three methods. However, there was a tendency that the top cutting which was close to the corn shuck was the best, followed by non-top cutting.

Keywords: sweet corn, top cutting method

Introduction

At present, corn is a crop having a good price and it is widely consumed both in the country and abroad (fresh and canned corn). Besides, corn had high nutrition value i.e. carbohydrate, protein, vitamin A, B and minerals. All of these help prevent heart disease, cancer, and it improves digestive system, eye sight, and skin. In fact, corn is a cash crop generating an income to Thailand for 61,189 baht per year. Corn market abroad of the country includes Australia, Japan, and South Korea. Also, corn processing for export are frozen sweet corn, canned sweet corn, and canned sweet corn soup. Nowadays, an increase in sweet corn yields can be done by several methods such as fertilizer application, good quality varieties, and top cutting. Thus, the researchers conducted a study on appropriate top cutting to increase sweet corn yields and be a guideline for corn farmers.

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Objective of the Study

Specifically this study aimed to compare sweet corn yields of the different methods of sweet corn top cutting.

Method of Experimental Planning

This study employed randomizes complete block design: RCBD having 3 treatments and replications together with 9 experimental units. Each unit used Sugar 75 sweet corn varieties (64 seeds) and 576 seeds altogether.

Experiment 1. Non-top cutting (Control group)
Experiment 2. Top cutting which was close to the corn shuck
Experiment 3. Top cutting above the corn shuck for 1 node

Steps of the Study

1. Land area preparation
   1.1 Ploughing the land once and dried in the sunlight for one week.
   1.2 Preparing sweet corn growing plots with 9 units, each experimental unit covered an area of 2 x 4 meters with the distance of 1 meter between each unit and 2 meters between each plot.
2. Practice step
   2.1 Placed one sweet corn seed in holes with the distance of 25 cm. between each hole and 75 cm. between each row and 2 m. between each plot. Each row had 16 holes.
3. Care-taking
   3.1 water was supplied immediately after sweet corn was grown. After that, water was supplied every 3-5 days before fertilizer application.
   3.2 Fertilizer application was done 3 times:

First,	Application of 15-15-15 fertilizer (50 kg./rai)
Second,	Fertilizer application when the corn was 25 days old 46-0-0 fertilizer when the corn was 45 days old (50 kg./rai)
Third,	Application of 46-0-0 fertilizer when the corn was 45 days old (50 kg./rai)

   3.3 Weed elimination This was done by hand pulling once a week.
   3.4 Methods of top cutting This was done when the sweet corn was 68 days old based on the following:

Experiment 1 Non-top cutting (Control group)
Experiment 2 Top cutting which was close to the corn shuck
Experiment 3 Top cutting above the corn shuck for 1 node

3.5 Harvesting was done when the sweet corn was 75 days old (2 central rows) for an analysis.

Data Collection

1. Measuring the length of corn shuck (cm.)
2. Measuring the diameter of corn shuck (cm.)
3. Weighing the corn shuck with husk (gram/shuck)
4. Weighing the corn shuck without husk (gram/shuck)

Data Analysis

Obtained data were analyzed by using an analysis of variance (ANOVAs). If there was a statistical difference, Least Significant Difference (LSD) method was employed.

Results

According to the comparison of the three sweet corn top cutting methods in terms of shuck length, shuck diameter, weight of the shuck with husk, and weight of the shuck without husk, there was no statistical difference.

1. Length of the sweet corn shuck (cm.), Regarding top cutting which was close to the corn shuck, it was found that the sweet corn ear was 14.13 cm. in length on average most, followed by 13.41 cm. (Non-top cutting), and 13.06 cm. (Top cutting above the corn shuck for cone node) as shown in table 1.

Table 1. An average length of a sweet corn shuck (cm.)

Top cutting methods	Block			Total	Average
	1	2	3		
Non-top cutting	12.07	12.25	15.92	40.24	13.41
Top cutting which was close to the corn shuck	14.55	13.56	14.29	42.40	14.13
Top cutting above the corn shuck for one node	12.32	13.72	13.46	39.20	13.06
Total	38.94	39.53	43.37	121.84	40.06
Average	12.98	13.17	14.45	40.61	13.53

2. An average diameter of a sweet corn shuck (cm.), It was found that the top cutting above the corn shuck for one node had an average diameter most

(4.44 cm./shuck) followed by non-top cutting (4.30 cm./shuck) and top cutting which was close to the corn shuck (4.27 cm./shuck) as shown in Table 2.

Table 2. An average diameter of the sweet corn shuck

Top cutting methods	Block (Plot)			Total	Average
	1	2	3		
Non-top cutting	4.37	4.16	4.39	12.92	4.30
Top cutting which was close to the corn shuck	4.47	4.34	4.00	12.81	4.27
Top cutting above the corn shuck for one node	4.75	4.34	4.24	13.33	4.44
Total	13.59	12.84	12.63	39.06	13.01
Average	4.53	4.28	4.21	13.02	4.33

3. Weigh of the sweet corn shuck (gram/shuck), It was found that the sweet corn shuck of non-top cutting had an average weight most (199 grams/shuck) whereas that of top cutting above the corn shuck for one node had the least average weight (173 grams/shuck) as shown in Table 3.

Table 3. An average weight of the sweet corn chuck (gram/shuck)

Top cutting methods	Block (Plot)			Total	Average
	1	2	3		
Non-top cutting	181	154	228	563	187
Top cutting which was close to the corn shuck	210	196	192	598	199
Top cutting above the corn shuck for one node	156	200	163	519	173
Total	547	550	583	1,680	559
Average	182.33	183.33	194.33	560	186.3

4. Weight of the sweet corn without husk, It was found that the sweet corn ear of top cutting which was close to the corn shuck had an average weight most (146 grams/ear), followed by that of non-top cutting (137 grams/ear), and top cutting above the corn shuck for one node (131 grams/ear), respectively, (Table 4)

Table4. An average weight of the sweet corn shuck without husk (gram/shuck)

Top cutting methods	Block (Plot)			Total	Average
	1	2	3		
Non-top cutting	127	116	168	411	137
Top cutting which was close to the corn shuck	165	142	132	439	146
Top cutting above the corn shuck for one node	116	163	115	394	131
Total	408	421	415	1,244	414
Average	136	140.33	138.33	414.66	138

Discussions

Based on the comparison of sweet corn yields by using the different methods in sweet corn top cutting with 3 treatments and 3 replications. Data were collected based on length of the sweet corn shuck, diameter of the sweet corn shuck, weight of the sweet corn shuck with husk, and weight of the sweet corn shuck without husk. The cutting methods were as follows: 1) non-top cutting, 2) top cutting which was close to the corn shuck, and 3) top cutting above the corn shuck for one node. Findings showed that the difference in top cutting methods had no effect on the difference in yields. This might be because top cutting was done 9 days before harvesting. It was the period which the sweet corns were pollinated and developed with adequate nutrient accumulation. Thus, sweet corn top cutting had no effect on growth performance of the sweet corn.

Conclusions

According to the comparison of sweet corn yields by using different methods of top cutting, it was found that there was no statistical difference in the sweet corn yields. The tendencies were as follows:

1. The length of the sweet corn shuck (cm.) of top cutting which was close to the corn shuck was the best (14.13 cm. on average).
2. The diameter of the sweet corn shuck of top cutting above the corn shuck for one node was the best (199 grams per shuck on average)
3. The weight of the sweet corn shuck of top cutting which was close to the corn shuck was the best (199 grams per shuck on average).
4. The weight of the sweet corn shuck without husk of the top cutting which was close to the corn shuck was the best (146 grams per shuck on average).

Suggestions

1. Weeds must be eliminated so that the sweet corn will fully get nutrients and minerals.
2. The sweet corn should be closely taken care.

References

Chaipo, P. (2008). Influence of Growing Period Having an Effect on Yields and Quality of Sweet Corn. A research project of Phetchabun Rajabhat University.

Department of Agriculture. (1981). Corn, Academic document, p.p. 15-22.

Foengfupong, S. et.al. (1986). Top Cutting Methods. Department of Agriculture, Bangkok.

Juthanon, O. (1970). Maize. Department of Agronomy, Kasetsart University, Bangkok.

Sathonghoi, P. and Thongpapoomchawalit, S. (2012). A Comparative Study of Time Span of 46-0-0 Fertilizer Application Having an Effect on the Yields. Of 75 Sugar Varieties Corn. A research project of Kanchanaburi College of Agriculture and Technology.

Soonsuwan, W. (2000). Growth Period and Developmetn. http://www.baanjomyut.com, 10th June, 2015.