Effects of Fertilizer Levels on Growth and Yield Attributes of Three Dwarf Sweet Corn Varieties (*Zea Mays L. Saccharata Strut*) in Itu Flood Plain, Akwa Ibom State, Nigeria

Canadian Journal of Agriculture and Crops
Vol. 2, No. 1, 60-67, 2017
e-ISSN: 2518-6655

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ABSTRACT

A study was conducted at the Cross River Basin flood plain located at Itu, during the early and late planting seasons of 2015 to assess the effects of fertilizer levels on growth and yield attributes of three dwarf corn varieties. Treatments consisted of four fertilizer levels (0, 200kg/ha, 300kgha and 400kg/ha) and three varieties of dwarf corn [Early sungrow hybrid (88544), Burpees triple crown AP white (88543), and Bi licious hybrid (89092)] and were laid in a randomized complete block design (RCBD) and replicated three times. Results showed significant different (≤0.05) in establishment percentage at early and late planting among the corn varieties but no significant effect on all other growth parameters studied. The 300kg/ha fertilizer rate produced tallest plants(15.17cm, 16.61cm and 43.45cm, 47.17cm) at 3 and 5WAP and highest number of leaves (4.69, 4.59) at 3WAP while 400kg/ha produced highest length of internode (2.73cm, 2.5cm and 6.79 cm, 7.14cm).The Cob length and number of seeds per Cob were significant in both seasons (p≤0.05%) with 400kg/ha fertilizer level producing highest number of seeds per Cob .Among the sweet corn varieties, white corn produced h longest cobs (18.00cm and 20.50cm), largest cob circumference (19.50cm and 18.58cm), and number of seed per cobs (306.60seeds and 410.00seeds) when treated with 400kg/ha NPK 15:15:15 fertilizer. The study revealed that 400kg/ha fertilizer level produced the highest grain yield compared with others in yield and some growth parameters, while 0 kg/ha competed fairly with 200kg/Ha, 300kg/Ha and 400kg/Ha.

Keywords: *Fertilizer levels, Growth, Yield attributes, Dwarf corn, Flood plain.*
DOI: 10.20448/803.2.1.60.67
Citation | Akpan, E.A.; Udoh, V.S. (2017). Effects of Fertilizer Levels on Growth and Yield Attributes of Three Dwarf Sweet Corn Varieties (Zea Mays L. Saccharata Strut) in Itu Flood Plain, Akwa Ibom State, Nigeria. Canadian Journal of Agriculture and Crops, 2(1): 60-67.

Funding: This study received no specific financial support.
Competing Interests: The authors declare that they have no competing interests.
History: Received: 6 March 2017/ Revised: 19 June 2017/ Accepted: 30 June 2017/ Published: 6 July 2017
Publisher: Online Science Publishing

1. INTRODUCTION

Sweet corn (*Zea mays L. saccharat strut*) also known as sweet maize, sugar corn, or vegetable corn is one of the corn types containing 13-15% sugar in the immature grains [1]. It is a mutant of the dent and flint sub species mostly grown in the United States of America, East Asia, and some European countries and has become popular among the elites in African countries [2]. Corn (*Zea mays*) is the third most important cereal crop in Nigeria grown largely in the rainforest and guinea savannah vegetation zone [3]. Sweet corn is cultivated mainly for human, livestock and industrial uses Muoneke, et al. [4]. Emuh [5] surmised that corn has strong industrial uses in the production of germ oil, starch and alcohol. Among other dwellers, sweet corn is consumed at the soft dough stages with succulent grains as an alternative dish of urban dwellers as vegetable, roasted ear, soup, corn syrup, sweeteners etc [6]. It is a source of carbohydrate, mineral and also contains some quality of oil used in salad making, cooking and production of margarine.

In the rainforest agroecolgy of south eastern Nigeria where Cross River Basin flood plain is located, intensive cropping has become more common among the people and the primary function of soil productivity and fertility restoration has become effective Okigbo [7]. Emede and Alika [8] observed that fertilizer can improve soil fertility but, high cost and economic return to investment in tropical regions are a factor of high risk, for producers. The situation is further aggravated by poverty, which incapacitates small- holder farmers from affording fertilizers in the absence of government subsidy. Beside, in the farming systems of cross River flood plains stretching over 1,265 hectares of land, fertilizer application is rarely adopted by farmers due to high level of alluvar deposit by flood, from fish exudates, plant debris and humification of dead aquatic plants and animal [9]. But, the estimated annual loss of maize grain yield due to low nitrogen stress alone varies from 10 to 50% [10, 11]. According to Emede and Alika [8] one effective strategy to sustain maize production and enhance fertilizer use efficiency is screening for maize genotypes with high nitrogen use efficiency and high yield potential. Uwa and Okopedeghe [6] posited that, sweet corn matures earlier than other maize types, posses shorter and smaller stature and can be harvested within 70-80 days after sowing depending on the variety.

Presently there is an increasing trend in the production of sweet maize at commercial level due to increasing demand. However, same can be said of farmers the in Cross River Basin flood plain, south eastern Nigeria where sweet maize production has been introduced and planting done without fertilizer application. A Study by Uwa and Okopedeghe [6] further revealed that higher grain yield in crops depends heavily on optimum plant density and adequate nutrient supply. According to Iken and Amose [12] maize has a high requirement for nutrients which justifies it being a good indicator of nutrients status in the soil and it responds readily to the application of Nitrogen fertilizer. Trial by Jaliya, et al. [13] further indicated that ear weight/plant were obtained, ear yield/ha and grain weight /plant were obtain at 150:26:50 and 180:35:66 kg NPK/ha which were higher than other rates. Adekayode and Ogunkoya [14] obtained the best performance in terms of vegetative growth and grain yield from plots treated with 300kg/ha NPK 15:15:15 fertilizer, Similarly, Uwa and Okopedeghe [6] obtained highest grain yield of 4.4 t/ha from 200kg/ha NPK 15:15:15 fertilize and described it adoptable by farmers producing sweet maize in south eastern agro ecological zone of Nigeria. In line with the growing interest in sweet corn production in the Cross River Basin flood plains the study was undertaken to evaluate the effect of fertilizer levels on the performance of three sweet corn varieties, under variable NPK 15:15:15 fertilizer rates with a view to identifying varieties with high nutrient use efficiency and high yield.

2. MATERIALS AND METHODS

The study was conducted during the early and late planting seasons of 2015 at the Cross River Basin flood plain Itu. The Cross River Basin flood plain of Itu is located along Calabar- Itu in the Cross River Basin, within latitude $5^0$30" north and $7^0$59" east of the equator. The basin is characterized by a bimodal annual rainfall pattern ranging from 3000-3500mm, with peaks in July and September. The aim was to evaluate growth and yield attributes of three dwarf corn varieties (Early sungrow hybrid (ESH) 88544-yellow; Burpees triple crown hybrid (BTCH) 88543-white and Bi licious hybrid (BLH) 89092) obtained from Fredonia Lawn and garden Washington, subjected to four fertilizer levels (0,200kg/ha, 300kg/ha and 400kg/ha). The experiment was laid out in a randomized complete block designed (split-plot) with three replicates. A land area of (19m by 76m) was ploughed, harrowed and demarcated into three replicates with three main plots each measuring 5m by 24m and four sub plots each measuring 5m by 5m, and separated by 1m path. Sowing was done on flat, with two seeds per stand at 50cm by 50cm spacing and thinned to one per stand at 2 weeks after planting (WAP) giving a plant population of 40,000 stands/ha. Four plants were randomly selected and tagged per sub-plot for data collection. Growth and yield parameters measured were: establishment percentage, number of leaves per plant, plant height, length of internodes, cob length, cob circumference, number of seeds per cob and grain yield/ha. The data generated were subjected to analysis of variance and the least significant difference (LSD) used to compare means ($P \leq 0.05$).

3. RESULTS

Table 1 presents effect of fertilizer levels on growth attributes of three dwarf sweet corn varieties (*Zea mays L. saccharata Strut*). Results showed significant difference in establishment percentage at early season planting among the corn varieties, but no significant effect on all other growth parameters studied ($P \leq 0.05$). The BTCH-88543 had highest emergence. However, the 300kg/ha fertilizer rate produced tallest plants (15.17 cm, 16.61 cm and 43.45 cm , 47.17 cm) at 3 and 5 WAP and highest number of leaves (4.69 cm, 4.59 cm) at 3 WAP while 400kg/ha produced longest internodes 2.73 cm, 2.5 cm and 6.79 cm, 7.14 cm, respectively. The result also indicated least plant height (15.68cm, 15.80cm and 38.44cm, 41.58cm) and length of internodes (2.10cm and 6.47cm) in both seasons at 0kg/ha fertilizer level. Numbers of leaves per plant were highest at 300 and 400kg/ha NPK level. Among the sweet corn varieties, BTCH-88543 produced tallest plant (20.38 and 50.33cm, 58.15cm) except at 3WAP during early season while the BLH-89092 produced the highest internodes (7.25cm and 2.88cm, 7.94cm), and number of leaves (4.88, 4.98 and 9.95) except at 3WAP (early) for the internodes and 5WAP (late) for the number of leaves with the increase of NPK rates increasing their vegetative attributes.

The NPK fertilizer rates significantly ($P \leq 0.05$) increase cob length, total grain yield/ha but showed no significant increase ($p \leq 0.05$) for cob circumference and number of seeds per cob. Cob length (17.00 cm and 19.07 cm), cob circumference (13.83 cm and 15.14 cm) and number of seeds per cob (240.67 and 351.33) peaked at 400kg/ha NPK rates. Equally, highest total grain yield/ha (3.50 and 5.47) was obtained from 400kg/ha NPK 15:15:15 fertilizer rates. Results also revealed that every increase of NPK fertilizer, resultant increase in cob length, cob circumference, number of seeds per cob and total grain yield/ha of the sweet corn varieties in both seasons. The BTCH-88543 variety produced longest cob, (18.00 cm and 20.50 cm), cob (19.50 cm and 18.58 cm),number of grains per cob (306.60 and 410.00) and total grain yield/ha (4.56 t/ha and 6.32 t/ha) among the sweet corn varieties. Generally, the 400kg/ha NPK 15:15:15 fertilizer rate interacted effectively with the sweet corn varieties to increase optimum yield (4.56 and 6.32, 3.10 and 5.56, 2.84 and 4.52) t/ha and yield components of sweet corn varieties.

4. DISCUSSION

The effect of fertilizer levels on growth attributes of the three dwarf corn varieties were not significantly ($p \leq 0.05$) difference for all the vegetative attributes. This significant effect may be attributed to their genetic endowments. The maize varieties being dwarf, their dwarfed attributes may have influenced the vegetative growth response to increasing rates of NPK fertilizer treatment. However, rates of NPK 15:15:15 fertilizer application to maize had been reported to significantly increased vegetative attributes [6, 15, 16]. The fertilizer at higher rates (200 to 400kg/ha) promoted better growth across cultivars and resulted in higher up take of nitrogen, phosphorus and potassium. Their inherent dwarf traits prevented lodging, [17-19]. The growth performance of sweet corn may probably be further linked with the role of breeding for fertilizer uptake [8].

Rates of fertilizer application produced significant differences on the length and number of grains per cob, and grain yield (t/ha), indicating that NPK nutrient elements are essential for enhanced sweet corn yield in the Cross River basin. These observations are in consonant with findings earlier reported by researchers [6, 15, 20-22] on the significant effect of NPK fertilizer on maize crop.

Increase in fertilizer rates increased significantly ($p \leq 0.05$) some yield attributes in the sweet corn cultivated, since NPK is part of the nutrients required for the promotion of the meristematic and physiological activities. These activities lead to efficient absorption, translocation of nutrients, utilization of solar radiation and carbon dioxide assimilation to promote photosynthetic activities leading to the production of enough assimilates for subsequent translocation to the various sinks in maize. This is in conformity with findings of Adedrain and Banjoko [23]; Arumkumar, et al. [24]; Jaliya, et al. [13]; Asghar, et al. [25]; Uwah, et al. [26] who observed that yield and yield components such as grains weight per ear, ear weight (t/Ha) increased with increase in fertilizer rates among the cultivars.

5. CONCLUSION

Maize has a high requirement for nutrient. As one of the effective strategy to sustain maize production and enhance high yielding potential, 400kg/ha NPK 15:15:15 fertilizer gave the highest grain yield of 3.50 t/ha and 5.47 t/ha when properly applied. Among the sweet corn varieties, BTCH (4.56 t/ha and 6.32 t/ha) gave the highest grain yield and could be recommended for cultivation in the Cross River flood plains at 400kg/ha fertilizer level.

REFERENCES

[1] P. S. Bhatt, "Response of sweet corn hybrid to varing plant densities and nitrogen levels," *African Journal of Agricultural Research*, vol. 7, pp. 6158-6166, 2012. *View at Google Scholar | View at Publisher*

[2] B. Badu-Akpraku and M. A. B. Fokorede, *Zea mays L. In: Brink, M and Belay, G (Eds) Plant resources of tropical Africa 1. Cereals and pulses. PROTA foundation.* Wageningen, Netherlands, Leiden: Backhys Publishers, 2006.

[3] E. S. Attah, C. I. Oyewole, and A. E. Agahiu, "Effect of planting pattern on the performance of intercropped maize (Zea Mays) and Egusi melon (Colocinthis Citrullus) Anyigba in Kogi State," in *Proc. of the 1st Annual Conference, Crop Science Society of Nigeria*, 2013, pp. 25-28.

[4] C. O. Muoneke, E. U. Mbah, and U. Orji, "Weed control and yield of sweet corn (Zea mays (L) var. Saccharata) Egusi melon (C. Citrullus (L) O Kitz) intercrop as influenced by plant population of Egusi melon in the humid tropics," *Journal of Crop Science*, vol. 1, pp. 1-9, 2013.

[5] F. N. Emuh, "Economic yield and sustainability of maize crop (Zea Mays L.) in association with cowpea (V. Unguieulata (L) Walp) and Egusi melon (C. Lunatus (Thumb) in South Western Nigeria," *Journal of Agronomy*, vol. 6, pp. 157-161, 2007. *View at Google Scholar | View at Publisher*

[6] D. F. Uwa and U. E. Okopedeghe, "Effect of row-spacing and NPK fertilizer on agronomic performance of sweet maize (Zea Mays L. Sacchrata Strut)," in *Proc. of the 1st National Annual Conference of the Crop Science Society of Nigeria*, 2013, pp. 142-149.

[7] B. N. Okigbo, "Development of sustainable agricultural production systems in Africa. Role of international and national research systems. In: Asadu, C.L.A., Egbobe, O.B., and Asiedu, R (Ed), Storage life of eleven cultivars of white yam (D. rotundata) grown with or without NPK fertilizer and the relationship with Residual soil NPK," *Journal of Tropical Agriculture, Food Environment and Extension*, vol. 7, pp. 235-241, 1989.

[8] T. O. Emede and J. E. Alika, "Phenotypic and genetic variation for S2 maize (Zea Mays L) selections from high and low input conditions in contrasting nitrogen environments Nig," *Journal of Crop Science*, vol. 1, pp. 94-104, 2013.

[9] V. S. Udoh, "Impediments to farming in the flood plain of Cross River, Itu, Akwa Ibom State, Nig," in *Proc. of the 1st National Annual Conference, Crop Science Society of Nigeria*, 2013, pp. 487-490.

[10] D. W. Wolfe, D. W. Henderson, T. C. Hasian., and A. Alvia, "Interactive water and nitrogen on maize1. Photosynthetic decline and longevity of individual leaves," *Agronomy Journal*, vol. 80, pp. 865-870, 1988. *View at Google Scholar* | *View at Publisher*

[11] M. Lagrono and J. E. Lathrop, *Impact of drought and low nitrogen on maize production in Asia. In: G.O, (Ed), Developing drought-and low N-tolerant maize.* Mexico, D.E: Cimmyt/UNDP, 1997.

[12] J. E. Iken and N. A. Amose, "Maize research and productivity in Nigeria," *African Journal of Biotechnology*, vol. 3, pp. 302-307, 2014.

[13] N. M. Jaliya, A. M. Falaki, M. Mahmud, and Y. A. Sam, "Effect of sowing date and NPK fertilizer rate on yield and yield components of quality protein maize (Zea Mays L.)," *ARPN Journal of Agriculture and Biology Science*, vol. 3, pp. 23-28, 2008. *View at Google Scholar*

[14] F. O. Adekayode and M. O. Ogunkoya, "Effect of quality and placement distance of inorganic 15:15:15 fertilizer improving soil fertility and the performance and yield of maize in a tropical rain forest zone of Nigeria," *Journal of Soil Sci. and Environmental Management*, vol. 1, pp. 155-163, 2010.

[15] N. U. Ndaeyo, O. S. Aderi, A. O. Ikeh, E. A. Akpan, and U. A. Idem, "Effect of rate and time of potassium fertilizer application on maize performance in Uyo, South Eastern Nigeria," in *Proceedings of the 2nd National Annual Conference of Crop Science Society of Nigeria*, 2014, pp. 28-35.

[16] A. Y. Adepoju, "Complementary use of cowpea and inorganic fertilizer for sustainable rice production," Proceeding of the 25th Annual Conference of Soil Science Society of Nigeria, 2001, pp. 96-101.

[17] V. Kovcevic and V. Vuladinovic, *Potassium requirements of maize and Soya beans on a high K-fixing soil, Potash review No.11P1.* Basel, Switzerland, 1992.

[18] J. S. Bohra and K. Doerffling, "Potassium nutrition of rice (Oryra Sativa L.) varieties under sodium chloride salinity, Potash Review No.4.1P1. Basel Switzerland," pp. 1-9, 1993.

[19] W. Grzebissz, *Inter relationship between water and nutrient supply and response of potassium In: M.A.E. Johnston (Ed), Essential role of potassium, in diverse cropping systems.* 1P1 Basel, Switzerland, 1999.

[20] J. Rwan, X. Wu, and R. Hardter, *Efficiency of K and Mg in China's tea gardens In: A.E. Johnson (Ed), Essential role of K in diverse cropping systems.* Switzerland: Int. Potash Inst. Basel, 1999.

[21] M. M. Hefny and A. A. Aly, "Yield ability and nitrogen use efficiency in maize inbred lines and their crosses," *International Journal of Agricultural Research*, vol. 3, pp. 27-29, 2013.

[22] U. E. Esiere, "Effect of potassium fertilizer rates and times of application on maize performance in Uyo, South Eastern Nigeria," An Unpublished M.Sc Dissertation, Department of Crop Science, University of Uyo, Uyo, Nigeria 119, 2003.

[23] J. A. Adedrain and V. A. Banjoko, "Response of maize to nitrogen, phosphate and potassium fertilizer in Savanna zones of Nigeria," *Communications in Soil Science and Plant Analysis*, vol. 26, pp. 593-606, 1995. *View at Google Scholar | View at Publisher*

[24] M. A. Arumkumar, S. K. Galiand, and N. S. Hebsur, "Effect of different levels of NPK on growth and yield parameters of sweet corn," *Journal of Agricultural Science*, vol. 20, pp. 41-43, 2007.

[25] A. Asghar, A. Ali, W. H. Syed, M. Asif, T. Khaliq, and A. A. Abid, "Growth and yield of maize (Zea Mays L.) cultivars as affected by NPK application in different proportions," *Pakistan Journal of Soil Science*, vol. 62, pp. 211-216, 2010. *View at Google Scholar*

[26] D. F. Uwah, A. E. Eneji, and U. J. Eshiet, "Organic and mineral fertilizers effects on the performance of sweet maize (Zea Mays L. Saccharata Strut) in South Eastern rain forest zone of Nigeria," *International Journal of Agriculture Sciences*, vol. 3, pp. 54-61, 2011. *View at Google Scholar | View at Publisher*

Table-1. Physico-chemical properties of the experimental site before planting

Parameters	Depths (E)	Depths (L)	Depths (E)	Depths (L)
	0-15	0-15	15-30cm	15-30cm
Ph	5.80	5.80	5.20	5.20
EC (ds/m)	0.015	0.015	0.023	0.023
Organic matter (%)	4.07	4.06	1.98	1.98
Total N (%)	0.05	0.04	0.05	0.05
P (mg/kg)	36.23	36.23	36.22	36.22
Ex Ca (cmo1/kg)	4.00	4.00	3.20	3.20
Ex Mg (cmo1/kg)	2.00	2.00	1.60	1.60
Ex Na (cmo1/kg)	0.09	0.09	0.10	0.10
Ex K (cmo1/kg)	0.16	0.16	0.17	0.17
Exchange acidity	2.88	2.90	5.44	5.44
ECEC	9.13	9.13	10.51	10.51
Base saturation	68.46	68.46	48.24	48.24
Particle size analysis				
Sand (%)	51.8	51.8	48.80	48.80
Silt (%)	6.60	6.60	8.60	8.60
Clay (%)	41.60	41.60	42.60	42.60

E: Early; L: Late

Table-2. Establishment percentage, Plant height (cm) and length of internodes (cm) of sweet corn varieties as affected by NPK fertilizer rates in Cross River Flood Plains, Itu, Akwa Ibom State, Nigeria.

TREATMENTS		ESTABLISIMENT PERCENTAGE		PLANT HEIGHT (cm)				LENGTH OF INTERNODES (cm)			
		EARLY SEASON	LATE SEASON	EARLY SEASON		LATE SEASON		EARLY SEASON		LATE SEASON	
		3WAP	**5WAP**	**3WAP**	**5WAP**	**3WAP**	**5WAP**	**3WAP**	**5WAP**	**3WAP**	**5WAP**
O	ESH	75.66	94.00	13.15	39.33	14.75	41.01	2.09	6.17	2.46	6.40
	BTCH	90.00	98.00	15.83	44.50	16.09	45.24	2.08	6.75	2.86	6.08
	BLH	65.20	81.12	17.97	31.50	16.55	38.50	2.13	6.50	1.98	6.94
	Mean	**78.95**	**91.04**	**15.65**	**38.44**	**15.80**	**41.58**	**2.10**	**6.47**	**2.43**	**6.47**
200	ESH	65.00	84.00	10.28	27.50	10.76	29.28	1.93	5.50	1.34	5.54
	BTCH	100.00	76.40	16.76	50.33	20.38	58.15	2.00	6.00	2.82	6.97
	BLH	50.45	78.38	15.79	44.33	17.28	48.60	2.86	7.01	2.66	7.40
	Mean	**71.82**	**79.59**	**14.28**	**40.72**	**16.14**	**45.34**	**2.26**	**6.17**	**2.27**	**6.64**
300	ESH	60.80	76.66	16.82	45.67	17.88	49.67	2.83	7.01	2.46	7.04
	BTCH	95.00	100.00	16.62	45.67	16.76	50.17	2.76	6.83	2.88	6.86
	BLH	55.00	85.10	14.01	39.00	15.33	43.00	2.61	6.00	2.05	6.15
	Mean	**70.27**	**87.25**	**15.82**	**43.45**	**16.66**	**47.54**	**2.73**	**6.51**	**2.46**	**6.58**

400	ESH	66.69	86.25	13.58	37.54	14.86	41.58	2.86	6.26	2.08	6.82
	BTCH	95.00	98.00	16.93	46.89	17.86	52.34	2.88	6.86	2.62	6.66
	BLH	56.85	96.60	15.66	42.50	16.86	47.59	2.46	7.26	2.88	7.94
Mean		**72.85**	**93.62**	**15.39**	**42.31**	**16.53**	**47.17**	**2.73**	**6.79**	**2.53**	**7.14**
	A	2.80	NS	NS	Ns	NS	NS	NS	NS	NS	NS
	B	3.16	NS	NS	NS	NS	NS	NS	NS	NS	NS
	AB	NS	NS	2.02	3.51	2.01	3.04	2.14	2.83	2.00	3.14

NS= Non significant, ESH=Early sungrow hybrid BTCH= Burpees triple crown hybrid BLH= Bi licious hybrid

Table-3. Number of leaves of sweet corn varieties as affected by NPK fertilizer rates in Cross River Flood Plains, Itu, Akwa Ibom State, Nigeria.

TREATMENTS	**NUMBER OF LEAVES**				
		E3	L3	E5	L5
	ESH	3.35	3.73	6.67	6.86
O	BTCH	4.06	4.61	8.00	8.51
	BLH	4.56	4.94	9.00	8.96
	Mean	3.99	4.43	7.89	8.11
	ESH	3.63	3.95	6.11	7.09
200	BTCH	3.46	3.88	7.67	7.84
	BLH	4.66	4.78	9.10	9.50
	Mean	3.32	4.30	7.53	8.14
	ESH	3.86	4.80	7.00	7.74
300	BTCH	3.65	4.00	7.67	8.06
	BLH	4.86	4.96	9.33	9.86
	Mean	4.68	4.59	8.00	8.55
	ESH	3.85	4.80	7.67	8.00
400	BTCH	3.59	4.09	7.78	8.35
	BLH	4.88	4.98	9.16	9.95
	Mean	4.12	4.52	8.30	8.77
	A	NS	NS	NS	NS
	B	NS	NS	NS	NS
	AB	3.52	3.04	4.00	1.80

NS= Non significant, ESH=Early sungrow hybrid BTCH= Burpees triple crown hybridBLH= Bi licious hybrid

E: Early; L: Late

Table-4. Cob length (cm), Cob circumference (cm), Number of seeds per cobs and Total grain yield (t/ha) of sweet corn varieties as affected by NPK fertilizer rates in Cross River Flood Plains, Itu, Akwa Ibom State, Nigeria.

TREATMENTS		**COB LENGTH(CM)**		**COB CIRCUMFRENCE (CM)**		**NUMBER OF SEEDS PER COBS**		**TOTAL GRAIN YIELD t/ha**	
		EARLY SEASON	LATE SEASON	EARLY SEASON	LATE SEASON	EARLY SEASON	LATE SEASON	EARLY SEASON	LATE SEASON
	ESH	10.50	10.86	7.20	9.13	93.00	42.00	1.00	0.72
O	BTCH	10.90	10.98	9.90	9.92	180.00	188.00	2.00	2.73
	BLH	14.00	13.95	9.90	9.94	80.00	76.00	0.86	0.84
	Mean	**11.80**	**11.93**	**9.00**	**9.56**	**117.67**	**102.00**	**1.30**	**1.43**
	ESH	14.24	15.00	10.50	10.86	180.00	166.00	2.28	2.08
200	BTCH	17.24	18.96	12.50	18.50	200.00	268.00	3.00	3.64
	BLH	11.00	13.20	11.50	12.00	170.00	204.00	2.12	3.04
	Mean	**14.16**	**15.72**	**11.50**	**13.79**	**183.33**	**212.67**	**2.47**	**2.92**
	ESH	18.00	18.96	13.00	13.11	204.00	280.00	3.00	4.16
300	BTCH	13.00	18.10	9.50	10.46	100.00	203.00	1.08	3.02
	BLH	14.00	13.11	10.00	10.56	36.00	230.00	0.44	3.16

	Mean	**15.00**	**16.72**	**10.83**	**11.38**	**113.33**	**237.67**	**1.51**	**3.45**
	ESH	17.00	19.02	10.00	13.00	192.00	304.00	2.84	4.52
400	BTCH	18.00	20.05	19.50	18.58	306.00	410.00	4.56	6.32
	BLH	16.00	18.15	12.00	13.84	224.00	340.00	3.10	5.56
	Mean	**17.00**	**19.07**	**13.83**	**15.14**	**240.67**	**351.33**	**3.50**	**5.47**
	A	3.55	5.56	NS	NS	0.94	2.81	1.25	0.44
	B	3.03	3.36	NS	NS	2.88	0.25	0.24	1.30
	AB	2.88	1.44	1.30	0.25	5.67	5.36	NS	NS

NS= Non significant, ESH=Early sungrow hybrid, BTCH= Burpees triple crown hybridBLH= Bi licious hybrid