

Effect of Ridges Size and Spacing on Yield of Pumpkin

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Abstract: An experiment was carried out for two seasons at Hudeiba Research Station farm, in River Nile State, seasons 2012/013-2013/014 to study the effect of ridges size and spacing of Pumpkin. The experiment based on a randomized complete block design with three replications. The ridges size (250, 300 and 350cm), spacing (50, 70, 90 and 110cm). The results showed significantly differences in yield of pumpkin in two seasons, the highest yield obtained is 6.7ton/ha⁻¹ in ridges size 350cm and spacing 50cm between plants in the first season and the lowest yield is 3.1 ton/ha⁻¹ obtained in 350cm ridges size and 110cm spacing between plants in the second season. Also the study shows the significant differences in number of plant per plot, large number obtained from 300 cm ridges size and 50cm spacing between plants is 79plant in the first season and small number of plant per plot is 40.2plant obtained in 300cm ridge size and 110cm spacing between plants in the first season. No significant differences in number of leaves per plant, number of flower per plant, number of fruit per plant, fruit weight (g) and T.ss% in two seasons.

Keywords: Optimum Ridges Size, Pumpkin, Yield, pH.

1. INTRODUCTION

Pumpkin is the domesticated crop belong to the Cucurbit family, genus Cucurbita may divided from *C. pepo*, *C. maxima* and *C. moschata* (Whitaker and Davies, 1962). The center of origin for the temperate species *C. pepo* and *C. macime* are located throughout Mesoamerica (Decker, 1988). And the subtropical *C. moschata* originated in North Colombia (Nee, 1997). Pumpkins are a warm season annual crop, reaching maturity at around fifth month (Loy, 2012). Pumpkins were harvested from 19.140 hectares in the United State and the crop was valued at approximately \$130 million (USDA, 2012). Beside cocked pumpkins are used in manufacturing of pies, custard, bread and soup (Loy, 2012). Pumpkin is the one of the important vegetables in cucurbit family grown in the most part of the Sudan. There is no cultural practice released for pumpkin production. The yield and quality are affected by many factors of which ridges size and spacing are important. The objective of this study, to obtain high yield of pumpkin with optimum ridges size and spacing.

4. RECOMMENDATIONS

From the above data recommended that the optimum ridges size and spacing for obtaining high yield of pumpkin is 350cm and spacing 50cm between plants in RIVER NILE STATE.

Table 1. Season 2012-2013

Ridges(cm)	Space(cm)	No. plant/plot	No. leave/plant	No. flower/plant	No. fruit/plant	Fruit wt(g)	T.SS%	Yield (ton/ha ⁻¹)
250	50	78.6	40.1	10.1	3.8	3.9	4.00	5.4
	70	58.5	42.0	10.2	3.9	3.8	3.96	4.9
	90	48.7	41.4	10.0	4.1	3.8	3.99	4.6

2. MATERIALS AND METHODS

The field experiment was carried out during seasons 2012/013 and 2013/014 at Hudeiba Research Station (Lat 17° 34' N, Long 33° 56' E, elev. 350) in River Nile State. The soil pH is 7.8-8.4. The seeds are sowing 15 October in two seasons, in plot 8meter long. Three ridges size (250, 300 and 350cm) and four spacing (50, 70, 90 and 110cm), treated in Randomize Complete Block Design with three replications. Irrigation and hand weeding used when needed, the commonly cultivar used is Baladi. Three or four seeds per hole, seeds are germination 4-6 days from first irrigation, 10 plants selected randomly from each plot to calculate number of leaves per plant, number of flower per plant and number of fruit per plant. Number of plant per plot used two times to calculate the average number of plant per plot, average fruit weight (g) weighted 10 fruits from each plot and calculate the average. The harvest about 90 days from first irrigation, yield tons per hector by weighted the plot yield per kg and transfers to tons per hector ($yield\ ton/ha^{-1} = yield\ per\ plot \times 10000 / 12 \times 1000$). The data analysis with the Genostat and the means separated with (LSD) at 5% level.

3. RESULTS AND DISCUSSION

Tables (1 and2) show the significant differences in plan per plot and yield ton per hector and no significant differences in number of leaves per plant, number of flowers per plant, number of fruit per plant, fruit weight(g) and Total soluble solid(Tss%) in two seasons. These results agree with study of Robert J. Dufault and Ahmed Korkmas (1997) they treated the distant between rows 6, 9, and 12feet and the distant with in row was 3, 6, 9 and 12feet apart, obtained highest marketable yield from 12feets in row spacing and 3feet between plants. Also T. Jude Boucher (2012), review increasing yield through increasing plant population. Further research is required in breeding, fertilization, water requirement, weed control, pest and disease and etc...in pumpkin crop in the Sudan.

	110	43.1	43.6	10.2	3.9	4.0	3.97	4.5
300	50	79.0	39.4	10.3	3.7	3.7	3.90	5.1
	70	62.9	39.0	10.2	4.0	3.9	3.79	4.8
	90	54.9	40.3	10.1	4.0	4.1	3.99	4.1
	110	40.2	42.2	9.7	3.7	4.0	3.97	3.7
350	50	71.7	39.8	10.3	4.3	3.8	3.96	6.7
	70	56.4	39.7	10.2	3.5	3.7	4.00	4.1
	90	49.1	39.9	10.1	3.5	4.0	3.99	3.9
	110	41.0	42.4	9.7	3.5	3.9	4.00	3.7
SE-+		6.9	4.1	0.9	0.4	0.3	0.4	0.5
LSD		11.7	7.1	1.6	0.8	0.5	0.6	0.8
CV%		12.2	10.4	9.7	12.7	8.8	9.9	11.3

Table 2. Season 2013-2014

Ridges(cm)	Space(cm)	No. plant/plot	No. leave/plant	No. flower/plant	No. fruit/plant	Fruit wt(g)	T.SS%	Yield (ton/ha ⁻¹)
250	50	78.7	39.9	13.0	4.7	4.6	5.41	4.9
	70	69.3	42.4	13.7	4.8	4.7	5.30	4.7
	90	57.8	43.6	13.0	4.9	4.6	5.49	4.4
	110	51.1	43.6	13.2	5.0	4.8	5.00	3.9
300	50	78.2	37.9	13.0	4.7	4.9	5.55	4.7
	70	67.0	38.5	13.8	4.9	4.8	5.50	4.0
	90	54.8	40.9	13.9	4.9	4.9	5.61	3.9
	110	47.2	42.2	14.0	5.0	5.0	5.53	3.7
350	50	74.5	40.5	13.0	5.1	4.9	5.00	6.1
	70	63.9	38.0	13.3	4.7	5.0	5.66	3.6
	90	52.6	39.3	14.1	4.7	5.0	5.56	3.3
	110	48.7	43.9	14.1	4.9	4.8	5.0	3.1
SE-+		4.5	4.7	0.7	0.4	0.3	0.4	0.3
LSD		7.6	7.9	1.1	0.6	0.5	0.79	0.6
CV%		7.3	11.5	5.2	7.7	7.6	7.6	9.1

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