

Original Research Article

<https://doi.org/10.20546/ijcmas.2017.606.278>

Response of Muskmelon (*Cucumis melo* L.) cv. Durgapur Madhu to Different Levels of Gibberellic Acid and Time of Seed Soaking on Yield Parameters and Economics

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ABSTRACT

The present investigation entitled, "Response of muskmelon (*Cucumis melo* L.) cv. Durgapur Madhu to different levels of gibberellic acid and time of seed soaking on yield yield parameters and economics," was carried out from February to May 2013 in the summer season at Horticulture Instructional Farm, College of Horticulture, Sardarkrushinagar Dantiwada Agricultural University, Sardarkrushinagar. Experiment was laid out in randomized block design with factorial concept having four replications. There were five levels of GA₃ (0ppm, 250 ppm, 500 ppm, 750 pm and 1000 ppm) with two soaking periods 16 and 24 hours. There was treatment combinations altogether ten. The results revealed that maximum fruit set per cent, maximum number of fruit per plant, maximum yield of fruit per plant was recorded with treatment GA₃ at 750 ppm, whereas in case of time of seed soaking maximum fruit set per cent, minimum days taken for first harvest, maximum average weight of fruit was recorded with S₁ treatments. Over all treatment combination G₃S₂ (GA₃ 750 ppm, 24 hours seed soaking) found to be beneficial.

Keywords

Muskmelon,
GA₃, Yield,
Yield parameters
and Economics.

Article Info

Accepted:
26 May 2017
Available Online:
10 June 2017

Introduction

Muskmelon is an annual climbing or creeping herb with large, soft, hairy leaves and elliptical fruits of varying size and colour. It is an important vegetable crop cultivated throughout India particularly in the hot and dry North Western part of the country. Muskmelon fetches premium price in the market compared to other vegetables and is a popular vegetable grown under both rainfed and irrigated conditions almost throughout the year. It has great importance due to its short duration and high production potential as well

as high nutritive value. It contains 78.0 % edible portion, 95.2 g moisture, 0.3 g protein, 0.2 g fat, 0.4 g fiber, 0.11 mg riboflavin, 0.4 g minerals, 32 mg calcium, 26 mg vitamin C, 3.5 g carbohydrate per 100 g of fresh edible portion (Chaudhary, 2000).

In India area under muskmelon are about 41 (000) hectare with the production of 868 (000) MT (Anon. 2013). It is widely grown in Bihar, Uttar pradesh, Punjab, Rajasthan, Gujarat and some parts of Maharashtra

(Chaudhary, 2000). It is grown on small scale but it has great prospects for large scale cultivation in the Gujarat state due to congenial soil and climatic conditions.

Materials and Methods

The investigation was conducted at Horticulture Instructional Farm, College of Horticulture, S. D. Agricultural University, Sardarkrushinagar during the year 2013. The experiment was laid out in four replications with Randomized Block Design with Factorial Concept. Five levels of gibberellic acid G₀ (0 ppm GA₃, soaking of seeds in distilled water), G₁ (250 ppm GA₃), G₂ (500 ppm GA₃), G₃ (750 ppm GA₃) and G₄ (1000 ppm GA₃) and two levels of seed soaking viz. 16 hours (S₁) and 24 hours (S₂) were taken singly and with combined form and thus total number of treatment combinations were

altogether ten.

To raise the crop recommended package of practices was followed. The crop was sown on 21st February, 2013. The effect of different treatments was studied on three randomly selected plants. The mean values were subjected to statistical analysis following analysis of variance technique (Panse and Sukhatme, 1995).

Results and Discussion

Maximum per cent fruit set was recorded with treatment G₃, whereas in case time of seed soaking maximum per cent fruit set was recorded with treatment S₂. These findings are closely in accordance with Gopalkrishnan and Choudhury (1978) in watermelon, Biradar (2008) in bitter gourd and Mollier (2010) in cucumber.

Table.1 Response of musk melon (*Cucumis melo* L.) cv. Durgapur Madhu to different levels of gibberellic acid and time of seed soaking on yield parameters

GA ₃	% Fruit set	Days taken for first harvest	Average fruit weight (g)	No. of fruits / plant
G				
G ₀	51.77	77.73	566.05	4.25
G ₁	56.85	76.47	695.43	5.31
G ₂	58.46	76.21	717.72	6.83
G ₃	62.18	75.25	701.55	7.46
G ₄	59.03	75.93	732.16	6.51
S.E.m±	1.23	0.56	24.83	0.35
CD @ 5 %	3.58	NS	72.07	1.01
S				
S ₁	56.34	77.18	654.40	5.95
S ₂	58.98	75.46	710.77	6.20
S.E.m±	0.78	0.35	15.71	0.22
CD @ 5 %	2.26	1.02	45.58	NS
G X S				
S.E.m±	1.74	0.79	35.12	0.49
CD @ 5 %	5.06	2.28	101.92	1.43
CV%	6.04	2.06	10.29	16.22

Table.2 Response of musk melon (*Cucumis melo* L.) cv. Durgapur Madhu to different levels of gibberellic acid and time of seed soaking on yield and benefit cost ratio

GA ₃	Yield /Plant (kg)	Yield /ha (q)
G		
G ₀	2.68	89.33
G ₁	3.91	130.45
G ₂	4.80	160.18
G ₃	5.31	177.14
G ₄	4.55	151.88
S.Em±	0.87	10.02
CD @ 5 %	0.30	29.04
S		
S ₁	4.08	136.03
S ₂	4.42	147.56
S.Em±	0.19	6.34
CD @ 5 %	NS	NS
G X S		
S.Em±	0.42	14.17
CD @ 5 %	1.23	41.18
CV%	19.98	19.98

Table.3 Response of musk melon (*Cucumis melo* L.) cv. Durgapur Madhu to different levels of gibberellic acid and time of seed soaking on economics

Treat. No.	Cost of cultivation ₹/ha	Yield (q) per hectare	Gross income ₹/ha	Net income ₹/ha	Cost Benefit Ratio
G ₀ S ₁	67418.46	69.09	138180	70761.54	1:1.04
G ₀ S ₂	67418.46	109.56	219120	151701.54	1:2.25
G ₁ S ₁	69370.46	112.30	224600	155229.54	1:2.23
G ₁ S ₂	69370.46	148.60	297200	227829.54	1:3.28
G ₂ S ₁	71322.46	149.56	299120	227797.54	1:3.19
G ₂ S ₂	71322.46	170.79	341580	270257.54	1:3.78
G ₃ S ₁	73274.46	175.71	351420	278145.54	1:3.79
G ₃ S ₂	73274.46	178.58	357160	283885.54	1:3.87
G ₄ S ₁	75226.46	173.48	346960	271733.54	1:3.61
G ₄ S ₂	75226.46	130.27	260540	185313.54	1:2.46

Days taken for first harvest was influenced by time of seed soaking and minimum days required for first harvest was recorded with treatment S₂. Similar result was observed by Ram *et al.*, (2003) in muskmelon.

Maximum number of fruit per plant was recorded

with treatment G₃. Similar result was found with by Ram *et al.*, (2001 and 2003) in muskmelon. Maximum number of fruit per plant may be due to more number of hermaphrodite flower and better vegetative growth (Biradar *et al.*, 2008). Maximum average weight of fruit was recorded with treatment G₂ whereas in case of time of seed

soaking, maximum average weight of fruit was recorded with treatment S₂. These findings are closely in accordance with the findings of Ram *et al.*, (2001, 2003) in muskmelon and Hidayatullah *et al.*, (2011) in cucumber (Table 1). Maximum yield of fruit per plant was recorded with treatment G₃ whereas in case of time of seed soaking, maximum yield of fruit per plant was recorded with treatment S₂. These findings are closely in accordance with the findings of Ram *et al.*, (2001 and 2003) in muskmelon, Hidayatullah *et al.*, (2011) in cucumber, Deepthi (2008) in muskmelon and Biradar (2008) in bitter gourd.

Yield of fruit per ha (q) was significantly influenced by different levels of GA₃. Maximum fruit yield per ha (q) was recorded with treatment G₃. These findings are closely in accordance with the findings of Deepthi, (2008) in muskmelon and Biradar (2008) in bitter gourd and Mollier (2010) in cucumber (Table 2).

The results summarized in table 3 indicated that maximum net income Rs. 2, 83, 885.54 ha⁻¹ and highest net CBR (1:3.87) was obtained with G₃S₂ (750 ppm GA₃, 24 hour seed soaking). The minimum net income Rs. 70,761.54 ha⁻¹ and lowest net CBR (1: 1.04) was obtained with G₀S₁ (0 ppm GA₃, 16 hour seed soaking).

From the investigation it can be concluded that different levels of GA₃ and time of seed soaking was significantly influenced yield and economics of muskmelon. The treatment G₃ (750 ppm GA₃) and treatment combination G₃S₂ (750 ppm GA₃, 24 hours seed soaking) found to be beneficial.

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How to cite this article:

Pandya, K.S., L.R. Varma, T. Thomson, J.B. Thakar and Pawar, Y.D. 2017. Response of Muskmelon (*Cucumis melo* L.) cv. Durgapur Madhu to Different Levels of Gibberellic Acid and Time of Seed Soaking on Yield Parameters and Economics. *Int.J.Curr.Microbiol.App.Sci.* 6(6): 2352-2355. doi: <https://doi.org/10.20546/ijcmas.2017.606.278>