

Original Research Article

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

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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 physico – chemical parameters," 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 GA<sub>3</sub> (0 ppm, 250 ppm, 500 ppm, 750 ppm and 1000 ppm) with two soaking periods 16 and 24 hours. There was treatment combinations altogether ten. The results revealed that maximum number of seeds and maximum non reducing sugar was recorded with treatment GA<sub>3</sub> at 750 ppm, whereas in case of time of seed soaking maximum diameter of fruit, maximum thickness of pulp, maximum non reducing and total sugar was recorded with S<sub>1</sub> treatments. Over all treatment combination G<sub>3</sub>S<sub>2</sub> (GA<sub>3</sub> 750 ppm, 24 hours seed soaking) found to be beneficial.

#### Keywords

Muskmelon, GA<sub>3</sub>,  
Physico - Chemical  
parameters.

#### Article Info

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### 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 G<sub>0</sub> (0 ppm GA<sub>3</sub>, soaking of seeds in distilled water), G<sub>1</sub> (250 ppm GA<sub>3</sub>), G<sub>2</sub> (500 ppm GA<sub>3</sub>), G<sub>3</sub> (750 ppm GA<sub>3</sub>) and G<sub>4</sub> (1000 ppm GA<sub>3</sub>) and two levels of seed soaking *viz.* 16 hours (S<sub>1</sub>) and 24 hours (S<sub>2</sub>) 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 21<sup>st</sup> 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 diameter of fruit (cm) was recorded with G<sub>4</sub> whereas in case of time of seed soaking, maximum diameter of fruit (cm) was recorded with treatment S<sub>2</sub>.

This might be due to possible reason may be cell elongation and cell multiplication in fruits. These findings are closely in

accordance with the findings of Mollier (2010) in cucumber and Derle (2012) in muskmelon.

Minimum diameter of seed cavity (cm) was recorded with treatment G<sub>1</sub> whereas in case of time of seed soaking, minimum diameter of seed cavity (cm) was recorded with treatment S<sub>1</sub>.

These findings are closely in accordance with the findings of Derle (2012) in muskmelon.

Maximum thickness of pulp (cm) was recorded with treatment G<sub>4</sub> whereas in case of time of seed soaking, maximum thickness of pulp (cm) was recorded with treatment S<sub>2</sub>.

Similar result was found with treatment of GA<sub>3</sub> (30 ppm) sprayed at 3 to 4 true leaf stage by Derle (2012) in muskmelon.

Maximum number of seeds per fruits was recorded with treatment G<sub>3</sub> (750 ppm GA<sub>3</sub>).

Maximum number of seeds was recorded with treatment G<sub>3</sub> whereas in case of time of seed soaking, maximum number of seeds was recorded with treatment S<sub>2</sub>.

Maximum TSS was recorded with treatment G<sub>2</sub> whereas in case of time of seed soaking, maximum TSS was recorded with treatment S<sub>2</sub>.

Similar result was found by Ram *et al.*, (2001 and 2003) in muskmelon and Hidayatullah *et al.*, (2011) in cucumber. Maximum TSS should be increased due to diversion of more solids toward developing fruits and might also have enhanced the conversion of complex poly saccharides in to simple sugar (Deepthi *et al.*, 2008).

**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 <sub>3</sub>	Diameter of fruit (cm)	Diameter of seed cavity (cm)	Thickness of pulp (cm)	No. seeds / fruit
<b>G</b>				
G <sub>0</sub>	8.31	5.01	2.25	310.50
G <sub>1</sub>	8.20	4.77	2.07	141.12
G <sub>2</sub>	9.51	5.43	2.32	263.12
G <sub>3</sub>	9.33	5.08	2.37	416.75
G <sub>4</sub>	10.51	5.98	2.45	323.12
S.Em±	0.11	0.07	0.04	9.77
CD @ 5 %	0.32	0.20	0.13	28.35
<b>S</b>				
S <sub>1</sub>	8.73	4.97	2.23	284.70
S <sub>2</sub>	9.61	5.55	2.36	297.15
S.Em±	0.07	0.04	0.03	6.18
CD @ 5 %	0.20	0.13	0.08	NS
<b>G X S</b>				
S.Em±	0.16	0.10	0.06	13.82
CD @ 5 %	0.45	0.28	0.18	40.10
CV%	3.40	3.73	5.40	9.50

**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 <sub>3</sub>	TSS (°brix)	Reducing sugars (%)	Non reducing sugars (%)	Total Sugars (%)
<b>G</b>				
G <sub>0</sub>	9.36	3.68	5.17	8.86
G <sub>1</sub>	10.17	3.57	5.40	8.98
G <sub>2</sub>	11.60	3.50	5.66	9.16
G <sub>3</sub>	10.00	3.62	5.71	9.34
G <sub>4</sub>	10.52	3.75	5.68	9.43
S.Em±	0.085	0.05	0.06	0.08
CD @ 5 %	0.25	0.14	0.18	0.23
<b>S</b>				
S <sub>1</sub>	10.28	3.58	5.45	9.03
S <sub>2</sub>	10.38	3.67	5.60	9.27
S.Em±	0.05	0.03	0.04	0.05
CD @ 5 %	NS	NS	0.19	0.15
<b>G X S</b>				
S.Em±	0.12	0.07	0.08	0.11
CD @ 5 %	0.35	0.20	0.24	0.32
CV%	2.33	3.86	3.02	2.45

Maximum reducing sugar was recorded with treatment G<sub>4</sub> whereas in case of time of seed soaking, Maximum reducing sugar was recorded with treatment S<sub>2</sub>.

Maximum non reducing sugar was recorded with treatment G<sub>3</sub> whereas in case of time of seed soaking, maximum reducing sugar was recorded with treatment S<sub>2</sub>.

Maximum total sugar was recorded with treatment G<sub>4</sub> whereas in case of time of seed soaking, Maximum reducing sugar was recorded with treatment S<sub>2</sub> (Tables 1 and 2).

Similar results were observed by Deepthi (2008) in muskmelon and Mollier (2010) in cucumber.

From the investigation it can be concluded that different levels of GA<sub>3</sub> and time of seed soaking was significantly influenced physico-chemical parameters of muskmelon. The treatment G<sub>3</sub> (750 ppm GA<sub>3</sub>) and treatment combination G<sub>3</sub>S<sub>2</sub> (750 ppm GA<sub>3</sub>, 24 hours seed soaking) found to be beneficial.

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