

International Journal of Statistics and Applied Mathematics

ISSN: 2456-1452
Maths 2023; SP-8(4): 13-18
© 2023 Stats & Maths
<https://www.mathsjournal.com>
Received: 21-03-2023
Accepted: 22-04-2023

Mayank Sharma
Research Scholar, Department
of Horticulture, Naini
Agriculture Institute Sam
Higginbottom University of
Agriculture, technology and
Science, Prayagraj, Uttar
Pradesh, India

VM Prasad
Professor, Department of
Horticulture, Naini Agriculture
Institute Sam Higginbottom
University of Agriculture,
technology and Science,
Prayagraj, Uttar Pradesh, India

Vijay Bahadur
Associate Professor, Department
of Horticulture, Naini
Agriculture Institute Sam
Higginbottom University of
Agriculture, technology and
Science, Prayagraj, Uttar
Pradesh, India

Corresponding Author:
Mayank Sharma
Research Scholar, Department
of Horticulture, Naini
Agriculture Institute Sam
Higginbottom University of
Agriculture, technology and
Science, Prayagraj, Uttar
Pradesh, India

Effect of ta41 on growth, yield and quality of long melon (*Cucumis melo* L.)

Mayank Sharma, VM Prasad and Vijay Bahadur

Abstract

A field experiment was conducted during March to May, 2022 at Horticulture Research Farm, Department of Horticulture, Naini Agricultural Institute. The experiment was laid out in a randomized block design with three replications and ten treatment combinations. Kakri Chandra was selected for this study. The results indicated that application of (T8) Soil drenching of TA41 @ 25ml/l + foliar spray 50ml/spray tank recorded maximum Vine length (96.07cm), leaf length (12.07cm), Leaf area (85.73cm²), No. of leaves per plant (23.87), Days to first flowering (36.73 DAS), No. of fruit per plant (10.78), Length of fruit (29.65cm), Weight of fruit (144.63g), fruit Width(25.09mm), Weight of fruit per plant (1.56 kg), and yield (37.14 t/ha) TSS (12.55 OBrix), shelf life (3 Days).

Keywords: Long melon, Ta 41, growth promoter, growth, yield and quality

Introduction

Long Melon (*Cucumis melo* var. Utilissimus) is one of the foremost critical vegetable crop. The cucurbits frame a particular bunch of species with numerous likenesses in botany, agronomy biological necessities and defenselessness to creepy crawly bothers and diseases. Long melon is additionally one of them. A few of them are utilized within the form of serving of mixed greens, cooked as vegetables, and protected within the frame of desserts. It is developed basically developed in tropical, subtropical and milder zones of India. Long melon prevalently known as kakri is values for delicate fruits which are eaten crude at the side salt and pepper. Due to its cooling impact this can be exceptionally well known amid summer months in most portion of the nation. In the event that it is taken without salt, it isn't effortlessly processed. Essentially, drinking of water quickly after eating natural products cause indigestion. Plants are monoecious in nature. Corolla is pompous, yellow in colour, Petals are 5 in number, and joined together stamens are joined to calyx tubes. The ovary is inferior. Long melon contains moisture 94.8 g, protein 0.6 g, carbohydrate 3.69g, fat 0.02 g, fiber 1.2g, vitality 15 k-cal, minerals 0.3 g, press 0.25 mg, thiamine 0.029 mg, niacin 0.39 mg, vitamin-C 8.5 mg, calcium 24 mg, phosphorus 13 mg per 100 g of consumable parcel (Ertan *et al.*, 2008, Iranbakhsh and Ebadi, 2008,).

TA41 is a multifunctional organic growth promoter that takes care of viral, fungal, and sucking pests manufactured by Rayan Farming Solution Pvt. Ltd. TA41 effectively controls and prevents soft-bodied sucking pests such as whiteflies, aphids, mites, scale insects, thrips, mealy bugs, and planthoppers. It is very effective & works quickly against sucking pests. TA41 also helps in retaining soil moisture and prevent soil erosion and develops healthy soil for high yield. TA41 contains bacteria (19x10⁸cfu/ml), Fungi (5x10⁸cfu/ml) and Actinomycetes (9x10⁸cfu/ml). Microorganisms can help to improve soil fertility by fixing atmospheric nitrogen, solubilizing phosphorus, and releasing other nutrients such as potassium and iron, which can improve plant growth and yield. Beneficial microorganisms can produce plant growth-promoting substances such as auxins, gibberellins, and cytokinin's, which can stimulate plant growth and development. They also produce antibiotics and other compounds that can protect plants against pathogenic fungi and bacteria, reducing the need for chemical pesticides. Microorganisms can improve soil structure by producing polysaccharides and other substances that can increase soil porosity and water-holding capacity, leading to better soil aeration and drainage.

Materials and Methods

The present investigation entitled “effect of ta41 on growth, yeild and quality of long melon (*Cucumis melo L.*)” was conducted at the central research farm of Department of Horticulture, Sam Higginbottom University of Agriculture, Technology and Sciences Prayagraj during 2022.

T₀ Control T₁ soil drenching of TA41 @10ml/L T₂ soil drenching of TA41 @ 10ml/L+ Foliar spray 20ml/spray tank T₃ Soil drenching of TA41 @ 15ml/L T₄ Soil drenching of TA41@ 15ml/+Foliar spray 30ml/Spray tank T₅ Soil drenching of TA41@ 20ml/L T₆ Soil drenching of TA41 @ 20ml /L + foliar spray 40ml / spray tank T₇ Soil drenching of TA41 @ 25ml /L T₈ Soil drenching of TA41 @ 25ml/l + foliar spray 50ml/spray tank T₉ Foliar spray of TA41 @ 30 ml/spray tank Prayagraj is situated at an elevation of 78 meters above sea level at 25.87 North latitude and 81.150 E longitudes. This region has a subtropical climate prevailing in the South-East part of U.P. with both the extremes in temperature, i.e., the winter and the summer. In cold winters, the temperature sometimes is as low as 20C in December – January and very hot summer with temperature reaching up to 500C in the months of May and June. During winter, frosts and during summer, hot scorching winds are also not uncommon. The average rainfall is around 1013.4 (cm) with maximum concentration during July to September months with occasional showers in winters.

Results and Discussion

Growth Parameters

Vine Length (cm) at 20, 40, and 60 DAS

The effect of suitable doses of TA41 on vine length of Long melon is very obvious and consistent. There was significant difference among the doses of the different treatments at 20, 40, and 60 DAS, among the treatment applied the maximum vine length was recorded in T₈(Soil drenching of TA41 @ 25ml/l + foliar spray 50ml/spray tank) with (29.20, 62.67 and 96.07) cm which was followed by T₆ (Soil drenching of TA41 @ 20ml /L + foliar spray 40ml / spray tank) with(28.22, 61.53 and 90.87) cm which was significantly superior over T₀ Control with (20.53, 34.53 and 75.47). Similar findings were reported by Macis-Rodriguez *et al.*, (2020)

Number of Leaves at 20, 40, and 60 DAS

The effect of suitable doses of TA41 on number of leaves of Long melon is very obvious and consistent. There was significant difference among the doses of the different treatments at 20, 40, and 60 DAS, among the treatment applied the maximum number of leaves was recorded in T₈(Soil drenching of TA41 @ 25ml/l + foliar spray 50ml/spray tank) with (5.60, 13.13 and 23.87)which was followed by T₆ (Soil drenching of TA41 @ 20ml /L + foliar spray 40ml / spray tank) with (5.07, 11.07 and 19.80) which was significantly superior over T₀ Control with (4.00, 9.80 and 18.80). Tthe similar findings were found according to Dinesh *et al.*, (2019)^[1]

Length of leaves at 20, 40, and 60 DAS

The effect of suitable doses of TA41 on length of leaves of Long melon is very obvious and consistent. There was significant difference among the doses of the different treatments at 20, 40, and 60 DAS, among the treatment applied the maximum length of leaves was recorded in T₈ (Soil drenching of TA41 @ 25ml/l + foliar spray 50ml/spray tank) with (7.01, 12.07 and 17.22) cm which was followed by T₆ (Soil drenching of TA41 @ 20ml /L + foliar spray 40ml / spray tank) with (6.74, 11.64 and 16.80) cm which was significantly superior over T₀ Control with(4.51, 9.47 and 14.60 cm). Similar result was found in Kadi *et al.*, (2018)^[16]

Leaf area (cm²) at 20, 40, and 60 DAS

The effect of suitable doses of TA41 on Leaf area of Long melon is very obvious and consistent. There was significant difference among the doses of the different treatments at 20, 40, and 60 DAS, among the treatment applied the maximum Leaf area was recorded in T₈(Soil drenching of TA41 @ 25ml/l + foliar spray 50ml/spray tank) with (34.76, 59.43 and 85.73 cm²)which was followed by T₆ (Soil drenching of TA41 @ 20ml /L + foliar spray 40ml / spray tank) with (33.43, 57.72 and 84.69) cm² which was significantly superior over T₀ Control with (25.66, 50.58 and 76.86cm²) the similar findings were found according to Li *et al.*, (2019)

Table 1: Effect Of Ta41 On Growth Parameters of Long Melon

Treatment	Treatment combination	Vine length			Number of leaves per plan			Leaf area (cm ²)			Length of leaves (cm)		
		20 DAS	40 DAS	60 DAS	20 DAS	40 DAS	60 DAS	20 DAS	40 DAS	60 DAS	20 DAS	40 DAS	60 DAS
T ₀	control	20.53	34.53	75.47	4.00	9.80	18.80	25.66	50.58	76.88	4.51	9.47	9.47
T ₁	soil drenching of Ta41 @10ml/L	20.87	46.67	78.33	4.40	9.93	18.80	28.01	52.93	79.23	4.61	9.48	9.48
T ₂	soil drenching of Ta41 @ 10ml/L+ Foliar spray 20ml/spray tank	24.60	52.53	82.60	4.60	10.53	19.15	30.57	54.73	81.03	5.77	10.73	10.73
T ₃	Soil drenching of Ta41 @ 15ml/L	22.53	48.80	80.33	4.40	9.93	19.07	28.37	53.29	79.59	4.83	9.54	9.54
T ₄	Soil drenching of Ta41@ 15ml/+ Foliar spray 30ml/Spray tank	27.47	53.47	85.80	4.67	10.67	19.60	32.68	56.70	84.30	6.68	11.48	11.48
T ₅	Soil drenching of Ta41@ 20ml/L	24.40	51.13	82.40	4.53	10.07	19.07	29.27	54.19	80.49	5.41	10.29	10.29
T ₆	Soil drenching of Ta41 @ 20ml /L + foliar spray 40ml / spray tank	28.22	61.53	90.87	5.07	11.07	19.80	33.43	57.72	84.69	6.74	11.64	11.64
T ₇	Soil drenching of Ta41 @ 25ml /L	27.07	52.73	82.60	4.60	10.53	19.47	29.81	55.49	81.79	6.11	11.25	11.25
T ₈	Soil drenching of Ta41 @ 25ml/l + foliar spray 50ml/spray tank	29.20	62.67	96.07	5.60	13.13	23.87	34.76	59.43	85.73	7.01	12.07	12.07
T ₉	Foliar spray of Ta41 @ 30 ml/spray tank	27.47	52.87	84.60	4.60	10.60	19.53	31.78	57.12	83.00	6.19	11.37	11.37
	F-Test	S	S	S	S	S	S	S	S	S	S	S	S
	S. Ed. ±	0.49	6.57	0.93	0.16	0.28	0.27	0.31	0.40	0.28	0.21	0.12	0.18
	CD at 5%	1.03	13.82	1.95	0.34	0.59	0.57	0.66	0.84	0.60	0.45	0.26	0.38
	CV	2.37	15.58	1.35	4.29	3.26	1.70	1.27	0.90	0.42	4.60	1.45	1.40

Yield parameters**Number of Flower**

The effect of suitable doses of TA41 on number of flower per plant of Long melon is very obvious and consistent. There was significant difference among the doses of the different treatments, among the treatment applied the maximum number of flowers per plant was recorded in T8 (Soil drenching of TA41 @ 25ml/l + foliar spray 50ml/spray tank) with (14.73) Days which was followed by T6 (Soil drenching of TA41 @ 20ml /L + foliar spray 40ml / spray tank) with (13.67) which was significantly superior over T0 Control with (8.07). the similar findings were found according to Dinesh *et al.*, (2019)^[1]

Number of Fruit per Plant

The effect of suitable doses of TA41 on maximum number of fruit per plant of Long melon is very obvious and consistent. There was significant difference among the doses of the different treatments, among the treatment applied the maximum number of fruit per plant was recorded in T8 (Soil drenching of TA41 @ 25ml/l + foliar spray 50ml/spray tank) with (10.78) Days which was followed by T6 (Soil drenching of TA41 @ 20ml /L + foliar spray 40ml / spray tank) with (9.95) which was significantly superior over T0 Control with (6.26)) the similar findings were found according to Sinojiya *et al.*, (2015)^[30]

Fruit Length (cm)

The effect of suitable doses of TA41 on fruit length of Long melon is very obvious and consistent. There was significant difference among the doses of the different treatments, among the treatment applied the maximum fruit length was recorded in T8 (Soil drenching of TA41 @ 25ml/l + foliar spray 50ml/spray tank) with (29.65) cm which was followed by T6 (Soil drenching of TA41 @ 20ml /L + foliar spray 40ml / spray tank) with (29.47) cm which was significantly superior over T0 Control with (22.55). Similar result was found by Altinats and Bal (2015)

Fruit Width (mm)

The effect of suitable doses of TA41 on maximum fruit width of Long melon is very obvious and consistent. There was significant difference among the doses of the different treatments, among the treatment applied the maximum fruit width was recorded in T8 (Soil drenching of TA41 @ 25ml/l + foliar spray 50ml/spray tank) with (25.09) mm which was followed by T6 (Soil drenching of TA41 @ 20ml /L + foliar spray 40ml / spray tank) with (24.54) mm which was significantly superior over T0 Control with (19.84).) the similar findings were found according to Altinats and Bal (2005).

Fruit weight (g)

The effect of suitable doses of TA41 on fruit weight of Long melon is very obvious and consistent. There was significant difference among the doses of the different treatments, among the treatment applied the maximum fruit weight was recorded in T8 (Soil drenching of TA41 @ 25ml/l + foliar spray 50ml/spray tank) with (144.63) which was followed by T6

(Soil drenching of TA41 @ 20ml /L + foliar spray 40ml / spray tank) with (135.61) g which was significantly superior over T0 Control with (81.28) g.) the similar findings were found according to Li *et al.*, (2019)

Fruit Yield plant-1 (kg)

The effect of suitable doses of TA41 on maximum fruit yield of Long melon is very obvious and consistent. There was significant difference among the doses of the different treatments, among the treatment applied the maximum fruit yield was recorded in T8 (Soil drenching of TA41 @ 25ml/l + foliar spray 50ml/spray tank) with (1.56) kg /plant which was followed by T6 (Soil drenching of TA41 @ 20ml /L + foliar spray 40ml / spray tank) with (1.34) kg /plant which was significantly superior over T0 Control with (0.51) kg/plant.) the similar findings were found according to Sinojiya *et al.*, (2019)^[30] and Kadi *et al.*, (2018)^[16]

Fruit yield t ha-1

The effect of suitable doses of TA41 on maximum fruit yield of Long melon is very obvious and consistent. There was significant difference among the doses of the different treatments, among the treatment applied the maximum fruit yield t ha-1 was recorded in T8 (Soil drenching of TA41 @ 25ml/l + foliar spray 50ml/spray tank) with (37.14) t ha-1 which was followed by T6 (Soil drenching of TA41 @ 20ml /L + foliar spray 40ml / spray tank) with (32.11) t ha-1 which was significantly superior over T0 Control with (12.10) t ha-1.) the similar findings were found according to Sinojiya *et al.*, (2019)^[30]

Days to flowering

The effect of suitable doses of TA41 on days to flowering of Long melon is very obvious and consistent. There was significant difference among the doses of the different treatments, among the treatment applied the minimum days to flowering was recorded in T8 (Soil drenching of TA41 @ 25ml/l + foliar spray 50ml/spray tank) with (36.73) Days which was followed by T6 (Soil drenching of TA41 @ 20ml /L + foliar spray 40ml / spray tank) with (36.73) which was significantly superior over T0 Control with (46.73). Similar findings were found in Acharya *et al.*, (2020)^[2]

Days to Harvesting

The effect of suitable doses of TA41 on days to harvesting of Long melon is very obvious and consistent. There was significant difference among the doses of the different treatments, among the treatment applied the minimum days to harvesting was recorded in T8 (Soil drenching of TA41 @ 25ml/l + foliar spray 50ml/spray tank) with (43.33) Days which was followed by T6 (Soil drenching of TA41 @ 20ml /L + foliar spray 40ml / spray tank) with (45.00) which was significantly superior over T0 Control with (54.00). Similar findings were found in Acharya *et al.*, (2020)^[2], Dinesh *et al.*, (2019)^[1]

Table 2: Effect of Ta41 On Yield Parameters of Long Melon

Treatment	Treatment Combination	Number of Flower	Number of Fruit per Plant	Fruit Length (cm)	Fruit Width (mm)	Fruit weight (g)	Fruit Yield plant- 1 (kg)	Fruit yield t ha-1	Days to flowering	Days to Harvesting
T ₀	Control	8.07	6.26	22.55	19.84	81.28	0.508	12.10	46.73	54.00
T ₁	Soil drenching of ta41 @10ml/l	8.67	7.51	24.28	21.50	96.20	0.723	17.21	44.73	52.00
T ₂	Soil drenching of ta41 @ 10ml/l+ foliar spray 20ml/spray tank	10.27	8.90	27.38	22.83	121.37	1.081	25.75	43.40	50.33
T ₃	Soil drenching of ta41 @ 15ml/l	9.33	7.84	26.36	22.55	106.35	0.834	19.85	43.50	50.00
T ₄	Soil drenching of ta41 @ 15ml/+ foliar spray 30ml/spray tank	11.30	9.49	28.34	23.43	132.32	1.255	29.89	41.13	48.33
T ₅	Soil drenching of ta41 @ 20ml/l	10.23	8.47	26.36	22.72	117.21	0.992	23.63	44.43	50.67
T ₆	Soil drenching of ta41 @ 20ml /l + foliar spray 40ml / spray tank	13.67	9.95	29.47	24.54	135.61	1.349	32.11	36.73	45.00
T ₇	Soil drenching of ta41 @ 25ml/l	10.27	9.04	28.23	23.36	124.79	1.128	26.85	43.20	50.00
T ₈	Soil drenching of ta41 @ 25ml/l + foliar spray 50ml/spray tank	14.73	10.78	29.65	25.09	144.63	1.560	37.14	36.73	43.33
T ₉	Foliar spray of ta41 @ 30 ml/spray tank	1.060	9.40	28.28	23.37	128.40	1.207	28.74	41.53	49.33
F-Test		S	S	S	S	S	S	S	S	S
S. Ed. ±		0.40	0.26	0.12	0.26	4.10	0.05	1	0.37	1.21
CD at 5%		0.84	0.55	0.26	0.54	8.61	0.10	2.58	0.78	2.54
CV		4.61	3.70	0.56	1.39	4.22	5.94	5.94	1.07	3.01

Quality Parameters

Total Soluble Solid TSS (0Brix)

The effect of suitable doses of TA41 on Total soluble solid of Long melon is very obvious and consistent. There was significant difference among the doses of the different treatments, among the treatment applied the maximum fruit weight was recorded in T₈(Soil drenching of TA41 @ 25ml/l + foliar spray 50ml/spray tank) with (12.55) 0B which was followed by T₆ (Soil drenching of TA41 @ 20ml /L + foliar spray 40ml / spray tank) with (12.39) 0B which was significantly superior over T₀ Control with (11.51) 0B. the similar findings were found according to Sinojiya *et al.*, (2019)^[30]

Test Weight (g)

The effect of suitable doses of TA41 on test weight of Lon melon is very obvious and consistent. There was significant difference among the doses of the different treatments, among the treatment applied the maximum test weight was recorded

in T₈(Soil drenching of TA41 @ 25ml/l + foliar spray 50ml/spray tank) with (35.77)g which was followed by T₆ (Soil drenching of TA41 @ 20ml /L + foliar spray 40ml / spray tank) with (35.76)g which was significantly superior over T₀ Control with (35.21)g. the similar findings were found according to Sinojiya *et al.*, (2019)^[30]

Shelf Life (No. of days)

The effect of suitable doses of TA41 on shelf life of Long melon is very obvious and consistent. There was significant difference among the doses of the different treatments, among the treatment applied the maximum test weight was recorded in T₈(Soil drenching of TA41 @ 25ml/l + foliar spray 50ml/spray tank) with (3.00) days which was followed by T₆ (Soil drenching of TA41 @ 20ml /L + foliar spray 40ml / spray tank) with (2.93) Days which was significantly superior over T₀ Control with (1.27) Days. the similar findings were found according to Sinojiya *et al.*, (2019)^[30]

Table 3: Effect of Ta41 on quality parameters of long melon

Treat ment	Treatment Combination	TSS (0Brix)	Test Weight (g)	Shelf Life (No. of days)
T ₀	Control	11.51	35.21	1.27
T ₁	Soil drenching of ta41 @10ml/l	11.62	35.25	1.27
T ₂	Soil drenching of ta41 @ 10ml/l+ foliar spray 20ml/spray tank	11.70	35.32	1.80
T ₃	Soil drenching of ta41 @ 15ml/l	11.64	35.26	1.60
T ₄	Soil drenching of ta41 @ 15ml/+ foliar spray 30ml/spray tank	12.11	35.41	2.20
T ₅	Soil drenching of ta41 @ 20ml/l	11.68	35.28	1.67
T ₆	Soil drenching of ta41 @ 20ml /l + foliar spray 40ml / spray tank	12.39	35.76	2.93
T ₇	Soil drenching of ta41 @ 25ml /l	11.87	35.36	1.80
T ₈	Soil drenching of ta41 @ 25ml/l + foliar spray 50ml/spray tank	12.55	35.77	3.00
T ₉	Foliar spray of ta41 @ 30 ml/spray tank	11.87	35.35	1.93
F-Test		S	S	S
S. Ed. ±		0.09	0.17	0.08
CD at 5%		0.19	0.36	0.17
CV		0.93	11.06	0.29

Conclusion

From the present investigation it is concluded that treatment T₈ (Soil drenching of Ta41 @ 25ml/l + foliar spray 50ml/spray tank) was found best in terms of growth

parameters, yield parameters and quality parameters followed by T₆ (Soil drenching of Ta41 @ 20ml /L + foliar spray 40ml / spray tank) and minimum in T₀(Without any treatment of Ta41). These finding suggest that the use of Ta41 has the

great potential to enhance long melon production and may be effective strategy for long melon farmers.

References

- Dinesh A, Prasanth P, Lakshminarayana D, Nagaraju K, Gouthami P. Efficacy of Plant Growth Regulators on Growth and Flowering of Cucumber (*Cucumis sativus* L.) cv. Malini under Shade Net Conditions, International Journal of Current Microbiology and Applied Sciences. 2019;8(9):313-317.
- Acharya SK, Thakar Chirag, Brahmabhatt JH, Joshi Nikunj. Effect of plant growth regulators on cucurbits: A review, Journal of Pharmacognosy and Phytochemistry. 2020; 9(4): 540-544
- Arora SK, Siyag Satish. Effect of nitrogen (N) and Phosphorous (P) on fruit yield and quality of sponge gourd (*Luffa cylindrical* L.) C.V. Pusa Chikani Crop Res. (Hissar). 1989;2(1):26-29.
- Bindiya Y, Reddy IP, Srihari D, Narayanamma M, Reddy RS. Effect of integrated nutrient management on growth and yield of cucumber (*Cucumis sativus* L.). J Res. ANGRAU. 2006;34(4):8-1.
- Brantly BB, Warren GF. Effect of nutrition on flowering, fruiting and quality of watermelon. Proc. Amar. Soc. Hort. Sci. 1961;75:644-53.
- Choudhari SM, More TA. Fertigation, fertilizer and spacing requirement of tropical gynocious cucumber hybrids. Acta Hort. 2002;588:233-240.
- Dalai S, Singh MK, Singh KV, Kumar M, Malik S, Kumar V. Effect of Foliar Application of GA 3 and NAA on Growth, Flower-Ing Yield and Yield Attributes of Cucumber (*Cucumis sativus* L.). Annals of Horticulture. 2015;8(2):181-194.
- Ebert. The Role of Vegetable Genetic Resources in Nutrition Security and Vegetable Breeding. Plants (Basel). 2020;9(6):736. doi: 10.3390/plants9060736
- Eguchi T, Matsumura T, Ashizawa M. Studies on the effect of nutrition on flower formation in vegetable crops. Bul. Nat. Sci Hiratasuka, ser, E. No 1961, P7.
- Ghani MA, Amjad M, Iqbal Q, Aami R Nawaz, Ahmad, T, Hafeez OSA. Efficacy of plant growth regulators on sex expression, earliness and yield components in bitter gourd. Pak. J. of Life Sciences. 2013;11.3.1-7.
- Gopalan C, Rama Satri BV, Balasubramanian SC. Nutritive value of Indian Food. Indian Council of Medical Res. National Institute of Nutritive, Hyderabad 1982.
- Goyary Danswring, Gupta Neelam, Khare Neeraj, Anandhan Sivalingam, Rathore Meenal, Ahmed Zakwan In Vitro Propagation of Long Melon Var. Karnal Selection (*Cucumis melo* L.) from Shoot Tip, International Journal of Applied Agricultural Research ISSN 0973-2683. 2010;5(1):55-62.
- Hassan MA, Sasidhar VK, Peter KV. Effect of graded dose of nitrogen, phosphorus and potassium on growth and yield of oriental picking melon (*Cucumis melon* var. conomon). Agric. Res. J Kerala. 1984;22(1):43-47.
- Jassal NS, Randawa KS, Nandpuri. A study on the effect of irrigation and certain does of N, P and K on the weight of fruit and yield of muskmelon. Punjab Hort J. 1970;10:143-149.
- Jilani MS, Abu Bakar KW. Effect of different levels of NPK on the growth and yield of cucumber (*Cucumis sativus*) under the plastic tunnel. J. Agric. and Soc. Sci 2009;5(3):99-101.
- Kadi Ajay S, Asati KP, Barche Swati, Tulasigeri RG. Effect of Different Plant Growth Regulators on Growth, Yield and Quality Parameters in Cucumber (*Cucumis sativus* L.) under Polyhouse Condition, International Journal of Current Microbiology and Applied Sciences. 2018;7(4):3339-3352
- Khan AU. Muhammad Subhan Khan AU, Khan Bahader. Effect of NPK alone and in combination on the growth and yield of cucumber. Indus J plant Sci. 2005;4(4):428-431.
- Kumari R, Singh DP. Nano-biofertilizer: An Emerging Eco-friendly Approach for Sustainable Agriculture. Proc. Natl. Acad. Sci., India, Sect. B Biol. Sci. 2019. <https://doi.org/10.1007/s40011-019-01133-6>
- Kurup SS, Al-Auraifan S, Al-Hunaidi M, Al-Salem SM, Al-Khabbas SA, Al-Sumei WA, Al-Gullaf GA. Response of cucumber (*Cucumis sativus* L.) to different levels of NPK fertilizers under soilless culture. Indian J Agric. Res 2011;45(2):134-139.
- Macías-Rodríguez L, Contreras-Cornejo HA, Adame-Garnica SG, del-Val E, Larsen J. The interactions of Trichoderma at multiple trophic levels: inter-kingdom communication. Microbiological Research, 126552. doi:10.1016/j.micres.2020.126552
- Meena MK, Naik M Chandra, Meena Shashi, Praveen KG. Foliar spray of plant growth regulators in cucurbits: A review, The Pharma Innovation Journal. 2022;11(9):1132-1136
- Anju P, Bahadur Vijay, Deepanshu, Topno Samir E, Paul Anupriya. Effects of Ta41 on Growth, Yield and Quality of Brinjal, International Journal of Plant & Soil Science, 2022;34(22):1162-1171. 2022; ISSN: 2320-7035.
- Pandey RP, Singh K. Note on the effect of nitrogen and maleic hydrazide on sex expression, sex ratio and yield of bottle gourd. Indian J Agri. Sci. 1973;43(3):882-883.
- Randhawa KS, Cheema DS, Sandhu DS. The effect of nitrogen, phosphorous and potassium on the growth, yield and quality of new muskmelon varieties. Haryana J Hort. Sci. 1981;10(1/2):88-94.
- Rebolledo-Prudencia OG, Dautt-Castroa M, Estrada Rivera M, González-López MC, Jijón-Moreno S, Casas-Flores S. Trichoderma in the rhizosphere: an approach toward a long and successful symbiosis with plants. In: Vijai Kumar Gupta *et al.* (Eds.), New and Future Developments in Microbial Biotechnology and Bioengineering: Recent Developments in Trichoderma Research, 2020, 3-88. <https://doi.org/10.1016/B978-0-12-819453-9.00001-5>, Elsevier B.V
- Rivera-Méndez. Trichoderma Interactions in Vegetable Rhizosphere Under Tropical Weather Conditions. In: A. K. Sharma, P. Sharma (Eds.), Trichoderma, Rhizosphere Biology, 2020, p: 293-314. https://doi.org/10.1007/978-981-15-3321-1_15. Springer Nature Singapore Pte Ltd
- Shanmugasundaram S. Vegetable Surmountate challenges. The Hindu Survey of Indian Agriculture, M/S Kasturi and Sons Led, Chennai, 2001, P126-127.
- Singh DN, Chhonkar VS. Effect of nitrogen, phosphorus, potassium and spacing on growth and yield of muskmelon (*Cucumis melo* L.) Indian J Hort. 1986;43(3/4):265-269.
- Sinikov D, Mukhammedov A, Baisakhatov R. Effect of fertilization on the productivity of the melon cultivar Vakhman-499 in Tedzhensk region. [Russian] Izvestiya Akademii Nauk Turkmenistana. Seriya Biologicheskikh Nauk. 1992;3:17-22.

30. Sinojiya AG, Kacha HL, Jethaloja BP, Jat Giriraj. Effect of Plant Growth Regulators on Growth, Flowering, Yield and Quality of Watermelon (*Citrullus lanatus* Thunb.) CV Shine Beauty, environment and ecology.com, Environment & Ecology. 2015;33(4A):1774—1778.
31. Sood M, Kapoor D, Kumar V, Sheteiwiy MS, Ramakrishnan M, Landi M. Trichoderma: The “Secrets” of a Multitalented Biocontrol Agent. Plants (Basel). 2020;9(6):762. doi: 10.3390/plants9060762
32. Srinivas K, Prabhakar BS. Response of muskmelon (*Cucumis melo* L.) to varying levels of spacing and fertilizers. Singapore J Primary Industries, Singapore, v. 1984;12:56-61.
33. Thappa Mukesh, Kumar Satish, Rafiq Romisa. Influence of Plant Growth Regulators on Morphological, Floral and Yield Traits of Cucumber (*Cucumis sativus* L.), Kasetart J. (Nat. Sci.). 2011;45:177-188.
34. Zhang F, Huo Y, Cobb AB, Luo G, Zhou J, Yang G. Trichoderma Biofertilizer Links to Altered Soil Chemistry, Altered Microbial Communities, and Improved Grassland Biomass. Front Microbiol. 2018;9:848. Doi:10.3389/fmicb.2018.00848.