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Vegetative growth, flowering behaviour and fruit development of green house cucumber cultivars (*Cucumis sativus* L.)

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Abstract

The field experiment was conducted at Experimental Farm of Indian Institute of Vegetable Research, Varanasi, U.P. during two consecutive years 2007 and 2008 on growth, flowering behavior and fruit development of greenhouse cucumber (*Cucumis sativus* L.). The farm soil is sandy loam in texture having 6.6 to 7.4^{pH}. The experiment consisted 12 cucumber varieties such as, CH-20, Prasad-10, CH-24, Pusa Sanyog, SPP-44, NH-150, Patna, Rachi-3, Poin settle, Green long, Swarna Ageti and SPP-56 with 3 replication in randomized Block Design. Results showed that varieties Pusa Sanyog at 14th D.A.A. while, 28th, 42nd D.D.A. maximum fresh weight was associated with cultivar Ranchi-3 and dry weight was noted C.V. NH-150 at 28th D.A.A. than other rest varieties. Male flowers were earlier than female flowers in all the cultivars of cucumber in the both years. Prasad-10 is suitable for earlier flowering anthesis of flower on lower nodes. The fruit size of cucumber was maximum developed at initial stages *i.e.* from 7th to 14th and 21st days after anthesis of different cucumber varieties in study years.

Keywords: D.A.A.- days after anthesis, cucumber - cultivar

Introduction

Among the vegetables, cucurbit play an important role in human diet. They are known for their nutritional, medicinal and curative properties, especially being a low calories vegetable. In India cucurbits form an important and big group of vegetables crops cultivated extensively (Singh 2006) [4]. Cucumbers are produced around the world with the U.S. being the fourth largest producer, after china, India and Russia. In the India, cucumbers are produced in many states across the country with Haryana, Karnataka, M.P., Tamil Nadu, Andhra Pradesh, Telangana, Assam and Uttar Pradesh leading production. In India, cucumber is the most important vegetable crop occupying an area of 76 thousand hectares contributing an annual production of 1217 MT in 2017-18 (Anonymous, 2019) [6]. Cucumbers (*Cucumis sativus* L) is a most popular fruit vegetables of north and south India. It can be grown as well as lower, high hills and river bank of India. It belong cucurbitaceae family and play an important role in human diet. The tender green fruits of cucumber are used as salad, pickles, culinary purpose and known a super food in recent days. Now a day, it is widely used to manufactures various cosmetics items like face cream, face wash, shampoo etc. The cucumber peel contains caffeic acid and ascorbic acid for maintaining healthy skin, relieving irritation and reducing inflammation in human being. The cucumber is characterized by monoecious sex expression but andromonoecious, gynoeccious and trimonoecious forms are also found. The nature of plant is trailing or climbing with hairy, angular stems, leaves with three to five lobes and long petioles. Cucumber are often eaten as a vegetable but they are scientifically considered a fruit as they contain enclosed seeds and develop from a flower.

The optimum stage of harvest for good quality is not specified. It become imperative to underline the optimum stage of harvesting of fruits. Hence, the present investigation was done with the objective to select best cultivar in early production and flowering behavior in green house condition.

Material and Methods

The present investigation was carried out at Research Farm of Indian Institute of Vegetable Research, Varanasi, U.P. during the year 2007 and 2008.

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The Research Farm geographically located at 85.52 longitude and 25.1 North latitude. The soil of experimental plots under poly house condition was sandy loam with average fertility levels. The P^H was in the range of 6.6-7.4. Availability of nutrients such as N 260kg/ha, P_2O_5 10.31 kg/ha and K_2O 217.24 kg/ha and electrical conductivity is 282 μ mhos/cm. Twelve treatments (varieties viz CH-20, Prasad-10, CH-24, Pusa Sanyog, SPP-44, NH-150, Patna, Ranchi-3, Poin sette, Greenlong, Swarna Ageti and SPP-56) replicated thrice in Randomized Block Design. Land of the poly house prepared by digging with spade followed by three hoeing and planking was done to obtain fine tilth. After preparation of plots of above mentioned dimensions were carried out as per layout, seed sowing, distance was maintained 30cm. The observation were recorded.

Results and Discussion

Vegetative growth

Data on seeding length (cm), fresh weight (g) and dry weight (g) at different stages of cucumber have been portrayed in Table-1, Table-2 and Table-4. It is evident from the Table-1, Table-2, Table-4. There was gradual increase in the length of seedling with increasing age of crop from 14th to 42nd days after anthesis and maximum length of seedling fresh weight and dry weight of vine was noted under cv- Ranchi-3 upto 35th days while at 42nd days Maximum growth attributes were associated with culiver Prasad-10. Minimum was found in CH-20. The trend of data were similar during both the years of experimentation findings of present experiments are in agreement with the report of Adetio loye *et al* (1978) [1].

Table 1: Seedling length (cm) and fresh weight (g) influence by Cucumber (*Cucumis sativus* L) during experiment year.

Varities	Seedling length(cm)										Fresh weight(g)									
	2007					2008					2007					2008				
	14 DAA	21 DAA	28 DAA	35 DAA	42 DAA	14 DAA	21 DAA	28 DAA	35 DAA	42 DAA	14 DAA	21 DAA	28 DAA	35 DAA	42 DAA	14 DAA	21 DAA	28 DAA	35 DAA	42 DAA
CH-20	4.85	7.33	8.09	10.86	11.59	5.10	7.69	8.50	11.41	11.36	0.71	0.83	1.74	2.49	2.73	0.75	0.88	1.83	2.61	2.68
Prasad-10	8.87	9.22	10.08	13.43	14.01	9.36	9.88	10.58	14.10	13.73	0.77	0.82	0.95	1.23	3.03	0.81	0.86	1.00	1.29	2.97
CH-24	8.78	10.12	11.91	12.14	13.60	9.22	10.62	12.51	12.75	10.33	0.77	0.84	1.83	2.41	2.98	0.81	0.89	1.92	2.53	2.92
Pusa Sanyog	8.60	10.31	11.15	12.11	13.07	9.09	10.82	11.70	12.72	12.81	0.81	0.97	1.73	2.63	3.06	0.85	1.02	1.81	2.77	3.00
SPP-44	8.91	10.04	10.51	11.37	13.10	9.36	10.55	11.04	11.94	12.83	0.76	0.87	1.77	2.54	2.82	0.79	0.91	1.86	2.67	2.76
NH-150	9.41	10.15	10.72	11.19	11.64	9.88	10.66	11.26	11.75	11.31	0.75	0.86	1.76	2.60	2.96	0.78	0.90	1.85	2.73	2.90
Patana	7.76	8.93	10.34	11.50	12.19	8.20	9.37	10.85	12.08	11.95	0.76	0.89	1.91	2.70	2.97	0.80	0.93	2.00	2.83	2.91
Ranchi-3	9.34	10.73	10.84	11.76	12.21	9.81	11.27	11.38	12.35	11.97	0.75	0.89	2.07	2.73	3.10	0.79	0.94	2.17	2.87	3.04
Poin Sette	9.07	9.34	10.60	11.83	12.25	8.52	9.81	11.13	12.42	12.00	0.74	0.83	1.74	2.36	2.77	0.77	0.88	1.83	2.47	2.72
Green Long	9.58	10.40	11.81	11.65	12.12	10.06	10.92	11.35	12.23	11.87	0.73	0.84	1.69	2.36	1.77	0.77	0.89	1.77	2.48	2.71
Swarna Ageti	9.26	10.31	10.62	1.59	12.17	9.72	10.83	11.15	11.12	11.92	0.71	0.88	1.83	2.66	2.73	0.75	0.92	1.92	2.79	2.68
SPP-56	9.80	10.40	10.69	11.34	12.02	9.92	10.95	11.23	11.91	11.78	0.80	0.87	1.72	2.51	2.71	0.78	0.91	1.81	2.64	2.66
SEm \pm	0.51	0.50	0.43	0.37	0.48	0.48	0.37	0.39	0.41	0.44	0.03	0.04	0.10	0.14	0.11	0.02	0.03	0.06	0.08	0.10
CD.5%	1.50	1.47	1.25	1.10	1.41	1.42	1.08	.15	1.21	1.28	0.10	0.11	0.29	0.40	0.33	0.07	0.08	0.19	0.22	0.30

Note: D.A.A. Days after anthesis.

Table 2: Dry weight (g) influence by Cucumber (*Cucumis sativus* L) during experiment year.

Varities	Dry weight (g)									
	2007					2008				
	14 DAA	21 DAA	28 DAA	35 DAA	42 DAA	14 DAA	21 DAA	28 DAA	35 DAA	42 DAA
CH-20	0.06	0.08	0.10	0.13	0.16	0.05	0.09	0.10	.014	0.15
Prasad-10	0.04	0.06	0.11	0.14	0.16	0.04	0.06	0.11	0.14	0.15
CH-24	0.02	0.06	0.10	0.13	0.15	0.03	0.06	0.10	0.12	0.14
Pusa Sanyog	0.04	0.06	0.12	0.10	0.16	0.04	0.07	0.12	0.14	0.15
SPP-44	0.04	0.06	0.11	0.14	0.16	0.04	0.06	0.11	0.17	0.18
NH-150	0.04	0.07	0.12	0.15	0.18	0.05	0.07	0.13	0.15	0.17
Patana	0.03	0.06	0.06	0.10	0.16	0.03	0.06	0.07	0.10	0.15
Ranchi-3	0.04	0.06	0.09	0.14	0.16	0.05	0.07	0.10	0.14	0.15
Poin Sette	0.03	0.05	0.10	0.16	0.18	0.04	0.05	0.10	0.15	0.17
Green Long	0.05	0.08	0.11	0.13	0.17	0.05	0.08	0.12	0.14	0.16
Swarna Ageti	0.04	0.06	0.10	0.17	0.16	0.03	0.06	0.11	0.14	0.15
SPP-56	0.03	0.05	0.10	0.12	0.16	0.04	0.05	0.10	0.13	0.16
SEm \pm	0.00	0.00	0.01	0.01	0.01	0.00	0.00	0.01	0.01	0.01
CD.5%	0.01	0.01	0.02	0.03	0.01	0.01	0.01	0.03	0.03	0.02

Note: D.A.A. Days after anthesis

Table 4: Diameter (cm) of fruits influence by Cucumber (*Cucumis sativus* L) during experiment year.

Varieties	Diameter of fruits (cm) at different days after anthesis.											
	2007						2008					
	7DAA	14DAA	21DAA	28DAA	35DAA	42DAA	7DAA	14DAA	21DAA	28DAA	35DAA	42DAA
C.H.-20	1.47	2.53	3.10	3.40	4.63	6.10	1.54	2.66	3.26	3.57	4.87	6.41
Prasad-10	1.33	2.53	2.90	3.80	4.10	6.23	1.40	2.66	3.05	3.99	4.94	6.55
C.H.-24	1.6	2.73	3.23	3.53	4.80	6.20	1.68	2.87	3.40	3.71	5.04	6.51
Pusa Sanyog	1.70	2.80	3.23	2.43	4.80	6.10	1.79	2.94	3.40	3.61	5.04	6.41
SPP-44	1.44	2.53	3.17	3.30	4.70	6.17	1.47	2.66	3.33	3.47	4.94	6.48
N.H.-150	1.57	2.37	3.13	3.47	3.63	6.10	1.65	2.49	3.29	3.64	4.87	6.41
Patana	1.43	2.70	3.03	3.43	4.57	6.00	1.51	2.84	3.19	3.61	4.80	6.30
Ranchi-3	1.47	2.40	2.97	3.40	4.57	6.27	1.54	2.52	3.12	3.57	4.80	6.58
Poin Sette	1.53	2.63	3.00	3.67	4.50	6.17	1.61	2.77	3.15	3.83	4.73	6.48
Green Long	1.43	2.77	3.27	3.50	4.53	6.7	1.51	2.91	3.43	3.68	4.76	6.7
Swarna Ageti	1.40	2.60	3.00	3.60	4.77	6.13	1.47	2.73	3.15	3.78	5.01	6.44
SPP-56	1.37	3.13	3.13	3.77	4.73	5.90	1.44	3.29	3.29	3.96	4.97	6.20
SEm±	0.04	0.06	0.05	0.08	0.09	0.08	0.06	0.08	0.08	0.10	0.10	0.12
C.D. 5%	0.13	0.17	0.15	NS	NS	NS	0.17	0.23	0.25	NS	NS	NS

Note: D.A.A. Days after anthesis

Flowering behaviour

The such characteristics of cucumber varieties viz- Emergence of first male flower on main branch and secondary branch, first female flower on main branch and secondary branch, node to first male flower on main branch and secondary branch and node to first female flower on main branch and secondary branch are presented in Table(3). Clearly indicates that minimum duration of 33 and 33.6 days for emergence of first male flower on main branch, 37.33 and 38.66 days for emergence of first female flower on main branch during 2007 and 2008 respectively was noted cv Prasad-10. The maximum period for the same was 41, 42 days and 45, 46.33 days both respective characters in both the year. The maximum period was 41, 42 and 47, 48.33 days during the respective characters were noted cv Pusha Sanyog.

The significant influence on number of node to first male flower and number of node to first female flower on main

branch. Earlier flowering on lowest 3.3rd, 3.5th and 5.0th, 5.1st number of nodes were observed in above characters during 2007 and 2008 in cv Prasad-10, which was significantly lower to the rest varieties except Swarna Ageti which was statistically on par. Next variety producing first male flower on next lowest node was Swarna Ageti which was produce first male flower on 6th and 7.1st node during both years. Pusa sanyog was the having first male flower on highest 9th and 9.3rd node which was at par with the cv Poin Sette, CH-24 and NH-150. The similar trends were found in node to first female flower on main branch and secondary branch during both the year. The cucumber being the monoecious plant, family cucurbitaceae early appearance of male flower than female flower have been observed by Trivedi and Roy (1970) [5] and Seshadari (1990) [3].

Table 3: Flowering behaviour influence by Cucumber (*Cucumis sativus* L) during experiment year.

Varieties	Emergence of first male flower				Emergence of first female flower				Node to first male flower				Node to first female flower			
	Main branch		Secondary branch		Main branch		Secondary branch		Main branch		Secondary branch		Main branch		Secondary branch	
	2007	2008	2007	2008	2007	2008	2007	2008	2007	2008	2007	2008	2007	2008	2007	2008
C.H.-20	36	37	38	39	40	41	42	43	4.5	4.9	7.0	7.8	6.8	7.4	10.08	11.08
Prasad-10	33	34	35	36	37	39	39	41	3.3	3.5	5.3	5.6	5.5	5.1	8.0	8.1
C.H.-24	39	40	41	42	43	44	45	46	5.0	5.5	5.0	8.8	7.5	8.3	12.0	13.3
Pusa Sanyog	41	42	43	45	45	46	47	48	5.6	5.8	9.0	9.3	8.8	9.0	13.8	14.2
SPP-44	35	36	37	38	39	40	41	42	4.6	5.0	7.4	9.0	6.9	7.5	11.0	12.0
NH-150	39	40	41	42	43	44	45	46	5.2	5.7	8.3	9.2	7.8	8.5	12.5	13.3
Patana	36	37	38	39	40	41	42	43	4.4	4.8	7.0	7.7	6.6	7.2	10.5	11.5
Ranchi-3	37	38	39	40	41	42	43	44	4.8	5.3	7.7	8.5	7.0	8.0	11.2	12.6
Poin Sette	38	39	40	41	42	43	44	45	5.3	5.7	8.5	9.1	8.0	8.5	12.8	13.4
Green long	36	37	38	39	40	41	42	43	4.8	5.1	7.4	8.2	7.0	7.6	11.0	12.0
Swarna Ageti	35	36	37	38	39	41	41	42	4.1	4.5	6.6	7.1	6.2	6.8	9.9	10.7
SPP-56	34	35	36	37	38	39	40	41	4.3	4.7	6.9	7.4	6.4	7.0	10.1	11.0
SEm±	1.18	1.18	1.18	1.20	1.21	1.23	1.29	1.28	0.19	0.19	0.41	0.46	0.36	0.40	0.60	0.67
C.D. 5%	3.45	3.37	3.47	3.52	3.55	3.61	3.79	3.74	0.55	0.54	1.20	1.34	0.36	0.40	0.60	0.67

Fruit development

Diameter of fruit data portrayed in Table (4). The diameters were taken 6 times at weakly intervals. The fruit size of cucumber was significant developed at initial stages i.e.- from 7th to 14th and 21st days after anthesis. Whereas, on later stages from 21st, 28th and 42nd days, there were no significant differences among diameter of fruit of different cucumber varieties. The range of diameter increasing in 2008 (2.8-

4.8%) than 2007 respectively. The maximum diameter of fruit was attributed with the greater accumulation of nutritional reserves with the maturity of fruit, Madhvi and Solumkhe (1998) [2].

Summary and Conclusion

The length of seedling, fresh weight and dry weight increasing age of crop from 14th to 42nd days after anthesis

and maximum length of seedling, fresh weight and dry weight were noted under c.v. Ranchi-3 upto 35th days while at 42nd day maximum length, fresh weight and dry weight were obtained with c.v. Prasad-10, minimum seedling length, fresh weight and dry weight at all stages of crop were noted in variety CH-20.

Male flowers were earlier than female flowers in all the cultivar of cucumber. Minimum duration of 37.33 and 38.66 days for emergence of first female flower and 35 and 36 days for emergence of first male flower on secondary branch was noted under c.v. Prasad-10. Maximum periods were taken in variety Pusa Sanyog. Diameter of fruit during 2007 and 2008 at 7th to 35th days after anthesis were measured 1.33-6.58 cm.

Variety Prasad-10 is a short duration cultivar and gives early flowering on lower node.

References

1. Adetioyoye PO, Ezedinma FOC. Effect of stages of maturity on seed moisture content, dry weight germination and seedling vigour in cowpea [*Vigna unguiculata* (L.) Walp.] Ghana J Agric. Sci. 1978; 11:179-184.
2. Madhvi DL, Sulunkhe DK. Tomato In Hand book Vegetables Science and Technology. Marcel Dekka Inc., USA, 1998.
3. Seshadri VS. Cucurbits in Vegetable Crops in India (Bose, T.K. and Som, M.G. eds.) Naya Prakash, Bidhan Sarani Calcutta, 1990.
4. Singh HP. An overview of Cucurbit Research. In: Proceeding of cucurbits breeding and Production Technology, G.B. Pant University of Agriculture and Technology, 2006, 21-40.
5. Trivedi RN, Roy RP. Cytological studies in Cucumis and Citrullus. Cytologia. 1970; 35(4):561-569.
6. Anonymous. National Horticultural Board, Website: [http://nhb.gov.in/statistics/State_Level/2017-18\(1st%20Adv.%20Est\).pdf](http://nhb.gov.in/statistics/State_Level/2017-18(1st%20Adv.%20Est).pdf), 2019.