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Seasonal incidence and screening of different cultivars of pest complex of cucumber

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Abstract

Field experiment was conducted during *Rabi* season of 2017-18 with nine modules, replicated thrice, in the 'Randomized Block Design'. The studies on population dynamics of cucumber revealed that, maximum aphids (4.2 aphids/leaf) were recorded at the 6th MW. The maximum number of jassids population in the 3rd MW (4.3 jassids/leaf) and the whitefly population were recorded the 3rd MW (5 whitefly/leaf). The maximum fruit infestation by melon fruit fly was recorded of 56.67 per cent in 5th MW. The maximum leaf infestation by American serpentine leaf miner was recorded of 3.84 per cent in 1st MW. In screening of different cultivar of cucumber Kheera was found to be less infested by melon fruit fly (19.75 per cent), American serpentine leaf miner (1.51 per cent) and sucking pests of cucumber like aphids (5.33 aphids/leaf), jassids (3.45 jassids/leaf) and whitefly (3.60 whitefly/leaf) and next promising varieties are Phule Shubhangi, Himangi and Sheetal.

Keywords: cucumber, screening, cultivar

Introduction

Cucumber, (*Cucumis sativus* L.), crop is grown worldwide and it ranks fourth in the list of economic vegetables in Asia after tomato, cabbage and onion. The nutritional composition of cucumber fruit per 100 g edible portion is water (96.30%), carbohydrate (2.7%), protein (0.40%), Total fat (0.10%), fiber (0.40%), mineral matter (0.4%). and enrich the diet of people living in the tropical regions (Vimala *et al.* 1999) [5]. One of the major constraints not attaining higher yields of cucurbits, as they are infested with various insect pests right from primordial stages of the crop to harvest of the products. Besides the direct damage, many pests act as vector for viruses.

Materials and Methods

The field experiments were carried out during *Rabi* 2017-18 with Nine treatments replicated Thrice in the 'Randomized Block Design' with gross plot size 4.00 m x 3.00 m cucumber namely Kheera (local), Phule Shubhangi, Himangi, Sheetal, Padmini, Chitra, Gypsy⁺ at Post Graduate Research Farm, Department of Horticulture, RSCM College of Agriculture, Kolhapur. Weather data was obtained from Meteorological observatory of Agronomy section RSCM college of Agriculture, Kolhapur.

Method of recording observations

Observations on sucking pest count were recorded on five randomly selected plants in each module plot on each selected plant, three leaves from top, middle and bottom portion were observed from lower side for presence of aphids, jassids and whitefly. Pre count was taken one day prior to spraying. The observations of fruit fly damage were recorded at weekly interval throughout the crop season. The damaged and healthy fruits were recorded at each picking for recording fruit infestation by fruit flies. Observations on per cent damaged leaves by American leaf miner were recorded on randomly selected three plants in each plot for these purpose five plants per plot were tagged. The observations were recorded by counting total number of leaves per plant and number of leaf miner infested leaves. The natural counts were subjected to transformation as per statistical methods suggested by Panse and Sukhatme, (1967) [3].

Results and Discussion

Seasonal incidence of aphids

Seasonal incidence of *A. gossypii* presented in the Table 1 clearly indicated that the infestation of *A. gossypii* was recorded throughout the cropping season. The aphids' incidence first

appeared in the 50th MW corresponding to the December third week with mean population 0.2 aphids/leaf. The population steadily increased and reached to its peak in the 6th MW corresponding to January 2nd week (4.2aphids/leaf) when the maximum and minimum temperature was 28.2 °C and 12.5 °C respectively and average relative humidity was 46.4 per cent. The aphids population were positively significant with maximum temperature ($r = 0.61755$) and negatively non significant with minimum temperature ($r = -0.60263$) and relative humidity ($r = -0.71188$).

Seasonal incidence of jassids

Seasonal incidence of jassids *A. biguttula* incidence first appeared in the 50th MW corresponding to the December third week with mean population 0.1 jassids/leaf. The population steadily increased and reached to its peak in the 3rd MW corresponding to January 3rd week (4.3 jassids/leaf) when the maximum and minimum temperature were 29.6 °C and 12.9

°C respectively and average relative humidity was 48.1 per cent. The jassids population were negatively non significant with maximum temperature ($r = -0.5174$), minimum temperature ($r = -0.5279$) and relative humidity ($r = -0.72427$).

Seasonal incidence of whitefly

Seasonal incidence of whitefly *B. tabaci*. Incidence first appeared in the 50th MW corresponding to the December third week with mean population 0.15 whitefly/leaf. The population steadily increased and reached to its peak in the 3rd MW corresponding to January 3rd week (5whitefly/leaf) when the maximum and minimum temperature were 29.6 °C and 12.9 °C respectively and average relative humidity was 48.1 per cent. Whiteflies population were negatively non significant with maximum temperature ($r = -0.57716$), minimum temperature ($r = -0.44126$) and relative humidity ($r = -0.69207$).

Table 1: Population dynamics of pest of cucumber under field condition

Week after sowing	Meteorological week	No. of Aphids	No. of Jassids	No. of Whitefly	Melon Fruit fly (%)	American serpentine leaf miner (%)
1	49	0.2	0.1	0.15	0.0	0.2
2	50	2.6	2.3	2.5	0.0	1.12
3	51	3.1	3.5	3.1	0.0	2.12
4	52	4.3	2.4	2.52	1.0	2.27
5	1	3.9	3.9	3.9	50.00	3.84
6	2	4.2	3.3	3.6	32.00	2.72
7	3	3.8	4.3	5.0	29.68	1.48
8	4	2.1	2.6	3.2	27.27	1.1
9	5	2.8	2.3	1.5	25.71	0.05
10	6	2.0	1.9	2.1	46.52	0.00
11	7	1.6	1.1	1.1	50.00	0.00
12	8	0.4	0.9	0.01	56.67	0.00

Table 2: Correlation number during between abiotic factors and major insect pests of cucumber during *rabi* 2017 Correlation coefficient (r) values

Sr. No.	Insect pest of cucumber	Temperature (°C) (r)		Average Relative Humidity (%) (r)	Pest Incidence
		Maximum	Minimum		
1	Aphids	0.62	-0.60	-0.71	1.000*
2	Jassids	-0.52	-0.53	-0.72	1.000
3	Whitefly	-0.58	-0.44	-0.69	1.000
4	Melon Fruit fly	0.70	-0.17	0.49	1.000*
5	American serpentine leaf miner	-0.67	-0.31	-0.82	1.000

*significant at 5 percent level

Seasonal incidence of melon fruit fly

Seasonal incidence of Frui fly *B. cucurbitae* Coq. Was noticed from 1 to 56.67 per cent. The incidence of fruit infestation noticed during 5th week of December 1 per cent. The fruit infestation was recorded of 56.67 per cent in 5th MW corresponding to the January fifth week which was higher than rest of the weeks when the maximum and minimum temperature was 30.4 °C and 9.4 °C respectively along 63.1 per cent average relative humidity. However, the least fruit infestation was observed 1 per cent was observed in 52th MW i.e. last week of December when maximum and minimum temperature was 28.26 °C and 9.76 °C respectively along with 44.28 per cent average relative humidity. The fruit infestation positively significant with maximum temperature ($r = 0.70378$) and negatively non significant with minimum temperature ($r = -0.16868$) and positively significant with relative humidity ($r = 0.493933$).

Seasonal incidence of American serpentine leaf miner

Seasonal incidence of leaf miner *L. trifolii* was noticed from 0.2 to 3.84 per cent. The incidence of leaf infestation noticed during 3rd week of December 0.2 per cent. The leaf infestation was recorded of 3.84 per cent in 1st MW corresponding to the January first week which was higher than rest of the weeks when the maximum and minimum temperature was 29.2 °C and 10.5 °C respectively along 58.85 per cent average relative humidity. However, the least leaf infestation was observed 0.05 per cent was observed in 5th MW. American leaf miner population were negatively non significant with maximum temperature ($r = -0.66668$), minimum temperature ($r = -0.31272$) and relative humidity ($r = -0.8244$).

Screening of popular cultivars against sucking pests infesting cucumber

The data observed against aphids Table 3. on seven cucumber

cultivars viz., Phule shubhangi, Himangi, Kheera, Sheetal, Chitra, Gypsy⁺ and Padmini revealed that the infestation was in the range of 5.33 to 8.05 (aphids/plant). The maximum population was observed in Gypsy⁺ cultivar which recorded 8.05aphids/plant while remaining cultivars viz., Phule shubhangi, Himangi, Sheetal, Chitra and Padmini recorded 6.15, 7.38, 7.40, 7.55 and 7.70 (aphids/leaf) respectively. The minimum population was observed in Kheera cultivar which recorded 5.33.Kheera was found to be significantly superior to all other varieties.

Similar trend was observed in case of jassids and white fly the maximum population was observed in Gypsy⁺ cultivar which recorded 7.40jassids/plant and 7.33 whitefly/plant while remaining cultivars viz., Himangi, Phule shubhangi, Sheetal, Chitra and Padmini recorded 4.55, 5.45, 6.30, 6.50 and 7.20 (jassids/leaf) and 5.47, 5.33, 6.20, 5.70 and 6.90 (whitefly/leaf)respectively. The minimum population was

observed in Kheera cultivar which recorded 3.45.Kheera was found to be significantly superior to all other varieties. These findings are in harmony with the results of Ghallab *et al.* (2011)^[1] Zaeim variety was more susceptible to the aphid.

Screening of popular cultivars against melon fruit fly infesting cucumber

The data observed against fruit infestation on seven cucumber cultivars The maximum infestation was observed in Gypsy⁺ cultivar which recorded 46.39 percent while remaining cultivars viz., Phule shubhangi, Himangi, Sheetal, Chitra and Padmini recorded 22.54, 35.66, 41.83, 42.83 and 42.83 per cent, respectively. The minimum infestation was observed in Kheera cultivar which recorded 19.75%. Kheera was found to be significantly superior to all other varieties. Phule shubhangi was found to be on par with Kheera.

Table 3: Screening different cucumber cultivars against pest complex of cucumber

Cultivars	Aphids/leaf	Jassids/leaf	Whitefly/leaf	Fruit fly (%)	Leaf miner (%)
Phule Shubhangi	6.15	5.45	5.47	22.54	1.63
Himangi	7.38	4.55	5.33	35.66	1.70
Kheera	5.33	3.45	3.60	19.75	1.51
Chitra	7.55	6.50	5.70	42.83	2.07
Sheetal	7.40	6.30	6.20	41.83	1.67
Gypsy ⁺	8.05	7.40	7.33	46.39	2.03
Padmini	7.70	7.20	6.90	42.83	2.32
S.E.±	0.52	0.70	0.65	1.09	0.29
C.D. (5%)	1.60	2.15	2.00	3.36	0.98
CV	12.71	20.84	19.66	5.91	13.81

These findings are in harmony with the results of Maharjan *et al.* (2015)^[2] evaluated six different varieties of cucumber against fruit flies and revealed that the per cent infestation of fruit flies was in the range of 41.04 to 51.95. The maximum per cent of fruit flies infestation was recorded in Kasinda (51.95%) followed by Kamini (51.21%), Kusle (50.37%), Kathmandu Local (47.58%), Malini (45.05%) and the lowest (41.04%) in Mahyco Green Long.

Screening of popular cultivars against American serpentine leaf miner infesting cucumber

The data observed against leaf infestation on seven cucumber cultivars. The maximum infestation was observed in Gypsy⁺ cultivar which recorded 2.32percent while remaining cultivars viz., Phule shubhangi, Himangi, Sheetal, Chitra and Padmini recorded 1.63, 1.67, 1.70, 2.03 and 2.07 per cent respectively. The minimum infestation was observed in Kheera cultivar which recorded 1.51%.Kheera was found to be significantly superior to all other varieties. These findings are in harmony with the results of Sahoo and Karmarkar (2004)^[4] screened seven promising pumpkin cultivars, viz., PPU-39, PPU-46, HP-1, Baidyabati Local, Arka Suryamukhi, NDPH-1 and NDP-130 against leaf miner but none of them were found to be resistant.

References

- Ghallab Mona M, Nadia Habashi H, Aida Iskandar KF, Marguerite Rizk A. Sensitivity of four Cucumber Cultivars To Some Piercing Sap Sucking Pests Infestation and Their Impact on Yield. Egypt. J Agric. Res 2011;89(4):2011-1363.
- Maharjan RR, Regmi, Poudel K. Monitoring and varietal screening cucurbit of fruit fly, *Bactrocera cucurbitae*

Coquillett (Diptera: Tephritidae) on cucumber in Bhaktapur and Kathmandu, Nepal. International Journal of Applied Sciences and Biotechnology 2015;3(4):714-720.

- Panse VG, Sukhatme PV. Statistical Method for Agricultural Workers. Second edition. Indian Council of Agricultural Research. New Delhi 1967, 381.
- Sahoo SK, Karmarkar K. Screening of pumpkin cultivars against leaf miner (*Liriomyza trifolii* Burgess) (Agromyzidae: Diptera) and white fly (*Bemisia tabaci* Genn.) (Aleyrodidae: Hemiptera). Genn.) (Aleyrodidae: Hemiptera). Journal of Interacademia 2004;8(4):575-581.
- Vimala P, Ting CC, Salbiah H, Ibrahim B, Ismail L. Biomass production and nutrient yields of four green manures and their effects on the yield of cucumber. J Trop. Agric. And Food Sci 1999;27:47-55.