INTENSITY OF "POLLU" BEETLE, *LONGITARSUS NIGRIPENNIS* MOTS. (COLEOPTERA : CHRYSOMELIDAE) INFESTATION ON DIFFERENT CULTIVARS OF BLACK PEPPER, *PIPER NIGRUM* L.

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ABSTRACT

Intensity of infestation by the pepper "pollu" beetle *Longitarsus nigripennis* Mots. (Coleoptera : Chrysomelidae) on different cultivars of black pepper, maintained in the germplasm assemblage at the Pepper Research Station, Panniyur, Taliparamba, Kerala State, was studied. Observations on the total number of spikes and pollu beetle - infested spikes and berries present in three unit areas each of 50 sq. cm. from each of the five standards each of 44 cultivars were recorded during three crop seasons from 1972 to 1974. Analysis of the date collected revealed that though the cultivars like Uthirankotta Types I and II, TMB IV and Shimoga were practically free of pollu beetle incidence, the total number of spikes per unit area and the number of pepper berries per spike were quite meagre. But the cultivars like Karivally, Karimunda and Panniyur-1 (hybrid), which are high yielders producing larger number of spikes per unit area and greater number of closely set berries in each of the spikes, suffered higher intensity of pollu beetle infestation ranging from 40.1% to 56.8%. However, Kalluvally Type-II, a popular North Kerala cultivar, which is a fairly good yielder, was free from pollu beetle incidence in 1974 and recorded only negligible percentage infestation, 0.2% and 1.8%, in 1973 and 1972 seasons respectively.

INTRODUCTION

The flea beetle *Longitarsus nigripennis* Mots. (Coleoptera: Chrysomelidae) is the most serious pest responsible for making hollow berries (known in Malayalam as "pollu") in black pepper *Piper nigrum* Linn. This pest is prevalent in different degrees of intensity in almost all the pepper growing tracts of Kerala, which contributes about 95% of the country's pepper production. The

adult beetle lays eggs in shallow depressions scoopped on the rinds of developing tender berries. The eggs hatch out and the tiny grubs tunnel into the berries, feed on their soft inner contents and make them hollow. The external indication of pest infestation is the presence of dark brown drying berries possessing characteristic circular holes in the midst of green healthy berries.

The intensity of "pollu" beetle infestation assumes severe proportions in certain endemic areas and the extent of losses may then go even up to 30—40% of the total yield of vines (Sayeed, 1968). Observations on the seasonal abundance of this pest revealed that the beetle is active in the field from July to February, the peak period of pest abundance being November (Pillai, 1978). However, data on the field intensity of pest incidence on different cultivars of pepper grown in different parts of Kerala are lacking. With a view to filling in this lacuna a study was undertaken under the *aegis* of the All India Co-ordinated Spices and Cashewnut Improvement Project, at the Pepper Research Station, Panniyur, Taliparamba, Kerala State in the year 1972 and continued for a period of three years. The results obtained from the same form the subject matter of this short paper.

Materials and Methods

Forty four cultivars of *Piper nigrum* Linn. maintained in the germplasm assemblage at the Pepper Research Station, Panniyur, Taliparamba, Kerala State, formed the experimental material for this study. Five bearing pepper vines of more or less same age and uniform canopy growth trained on the live *Erythrina indica* standards having uniform shade, were selected for each of the above 44 cultivars. Three unit areas each of $50cm^2$ were marked on each on the five selected vines of all the cultivars and tagged with aluminium foil labels in the early period of the flowering season itself. Observations on the total number of spikes, pollu beetle infested spikes and the number of infested berries present in each of the marked unit areas were recorded from the selected plants, twice a year, in October and January. These observations were continued for three consecutive crop seasons from 1972 to 1974. The results obtained are discussed here

RESULTS AND DISCUSSION

The data on the total number of spikes and the percentage of infested spikes present in three unit areas each of the selected plants recorded during three consecutive crop seasons from 1972 to 1974 and the overall means of the total number of spikes and the percentage of 'pollu' beetle infested spikes in 44 cultivars of pepper are presented in Table 1. A perusal of the data indicates that the cultivars like Uthirankotta—type I and II, TMB V and Shimoga were practically free of "pollu" beetle incidence. However, the number of spikes per unit area and number of berries per spike were comparatively less in these cultivars. The cultivars like Karivally and Karimunda-I and the hybrid Panniyur-I, the latter two being the most popular high yielding types producing larger number of spikes per unit area and greater number of closely set berries in each of the spikes, suffered higher intensity of 'pollu' beetle infestation ranging from 40.1% to 56.8%. The availability of closely set succulent berries appears to be a factor quite congenial to "Pollu" beetle infestation. The grub after emptying an infested berry could very easily migrate to the adjoining one and continue its feeding activity, as each grub requires 3—4 tender berries for completion of its larval phase. It is interesting to note that the hybrid pepper, Panniyur-I recorded the highest percentage of "pollu" beetle infestation (56.8% spikes infested), whereas its parents, Uthirankotta and Cheriakaniakadan showed only 0.0% and 10.3% incidence respectively.

Another important result obtained from this study was that Kalluvally-Type II, a popular north Kerala cultivar, which is a fairly good yielder, was totally free from pollu beetle incidence in 1974 season and recorded only very negligible infestation, 0.2% and 1.8% in 1973 and 1972 seasons respectively, the overall mean infestation being 0.7% only. Other popular cultivars like Balankotta, Kuthiravaly and Kottanadan recorded infestations ranging from 11.6% to 35.4%. But, cultivars like TMB-II, TMB-VI, Karimunda II, Kaniakadan, Ceylon, Sullia, Karimundi, Arikottanadan, Kottaram kalpetta recorded an overall mean infestation of less than 10% spikes only.

Table 1. Data on incidence of *Longitarsus nigripennis* Mots. on different cultivars of *Piper nigrum* L.

Sl. No.	Name of cultivar	Total no. of spikes	1972 % infested	Total no. of spikes	1973 % infested	Total no. of spikes	1974 % infested	Total no. of spikes	Mean % infested
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1	Uthirankotta-type II	41	0	76	0	5	0	122	0
2	Uthirankotta-type I	0	0	0	0	0	0	0	0
3	TMB V	0	0	0	0	30	0	30	0
4	Shimoga	0	0	0	0	4	0	4	0
5	Kalluvally Type II	58	1.8	344	0.2	34	0	436	0.7
6	TMB - III	0	0	72	0	54	4.0	126	2.0
7	Kalluvally Pattambi	78	3.3	0	0	41	2.2	119	2.8
8	Nilgiris	125	7.1	152	4.0	44	0	321	3.7
9	TMB - IV	60	10.2	0	0	40	5.1	100	5.1
10	Narayakodi	147	4.0	162	3.2	152	8.2	461	5.1
11	Vally	233	5.4	147	5.4	128	5.4	508	5.4
12	Perumkodi	20	3.3	0	0	37	8.2	57	5.7
13	TMB - II	28	0	270	10.3	40	7.3	338	5.9
14	TMB - VI	15	6.7	121	3.4	38	8.3	174	6.1
15	Karimunda - II	214	1.2	281	3.8	114	13.5	609	6.2
16	Kaniakkadan	129	8.1	33	4.7	68	7.6	536	6.8
17	Ceylon	0	0	44	1.1	8	12.5	52	6.8
18	Sullia	152	8.2	207	6.5	106	11.7	465	8.8
19	Karimundi	185	9.3	688	2.6	71	14.6	944	8.8
20	Arikottanadan	262	1.9	338	20.8	184	4.1	784	8.9
21	Kottaram Kalpetta	29	2.7	216	16.2	25	8.3	270	9.1
22	Cheriakaniakadan (TMB-I)	309	5.9	492	6.1	121	18.9	922	10.3
23	Mundi	122	15.8	415	10.9	36	5.6	573	10.3
24	Kalluvally-type III	28	15.0	127	2.3	103	16.6	258	11.8
25	Balankotta type I	248	11.0	0	0	114	12.1	362	11.6
26	Doddigya	0	0	56	0	41	23.4	97	11.7
27	Karuvilanchi	24	19.5	87	0.4	72	16.7	183	12.2
28	Balankotta-type II	206	30.4	144	6.7	91	4.4	441	13.8
29	Munda	170	23.8	268	1.3	55	25.5	468	16.9
30	Kumbhakodi	248	35.0	377	3.4	196	26.3	821	21.6
31	Kuthiravaly	167	43.5	591	3.4	23	30.4	781	26.4
32	Chola	209	19.6	409	0.3	63	60.5	681	26.8
33	Kalluvally-type I	72	36.3	0	0	67	20.8	139	28.6
34	Telukbanjkulen	24	8.8	59	0	6	0	89	29.3
35	Kuthiravaly ARS	287	43.4	298	13.6	32	33.9	617	30.3
36	Kottanadan	170	45.5	209	6.6	165	54.1	544	35.4
37	Veluthanamban	118	57.4	172	1.1	131	48.1	421	35.5
38	Palulauta	41	77.3	36	0	88	29.6	165	35.6
39	Perumunda	103	52.1	171	0	66	57.4	330	36.5
40	Karimunda-III	414	55.6	173	1.0	159	58.7	746	38.4
41	Chumala	25	55.1	90	1.0	12	61.9	127	39.3
42	Karivally	77	71.2	54	0	80	49.1	211	40.1
43	Karimunda-I	315	62.5	202	4.7	183	71.4	700	46.2
44	Panniyur-I	296	39.9	173	92.8	240	37.8	709	56.8

The need for adoption of suitable pest management practice at the appropriate time for realisation of the yield potential of high yielding types also becomes quite evident from this study. The high yielding cultivars which show less intensity of 'pollu' beetle infestation could be beneficially made use of in the future breeding programmes on pepper.

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