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Spatial and Temporal Distribution of Yellow Mite (*Polyphagotarsonemus latus*) on Mulberry

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Abstract

Distribution pattern of yellow mite, *Polyphagotarsonemus latus* (Bank) was studied on mulberry plants by counting the mites on infested leaves at Bengaluru (GKVK) and farmer's field in Kanakapura taluk. The number of eggs per leaf varied from 0 to 1081.75, number of motiles from 0.05 to775.80 and the total number, which includes both eggs and motiles from 0.05 to 1817.75. More number of eggs and motiles were observed on fourth and fifth leaf from the tip and the least number of eggs as well as motiles were found on tenth to fifteenth leaf from the tip. In terms of density of mite population per cm^2 leaf area, the number of mite eggs / cm^2 leaf area varied from 0.00 to 72.98, the number of motiles from 0.001 to 49.88 and the total number (eggs + motiles) from 0.001 to 125.86. The third leaf from the tip recorded significantly highest total number of mites *i.e.,*125.86/cm^2 leaf area followed by the fourth (93.03) and second leaf (90.08), which were on par with each other. Yellow mites remained active through out the year on all the 20 popular mulberry varieties studied; mite population reached peak during the month of August, 2020 and a lower population during the month of December 2020. Though the population fluctuation of yellow mite on mulberry was not significantly influenced by the ambient weather conditions, build-up of mite population showed positive relationship with temperature, bright sunshine hours, rainfall and negative relationship with humidity and wind speed.

Keywords: Yellow mite, Distribution pattern, Population dynamics, Mulberry

Mulberry (*Morus* spp.) is a fast growing, deciduous woody tree species of perennial nature under Moraceae family with its origin in Himalayan foot hills of India and China (Khan *et al*., 2013; Yuan & Zhao, 2017 and Rohela *et al*., 2020). Mulberry is widely recognized for its importance in producing the silk through the feeding of leaf to silk worm (*Bombyx mori*). Since centuries, mulberry is known as a plant used for silk production and its ecological significance is often neglected. Mulberry has been regarded as a unique plant in global distribution with better adaptability under varied climates and soil conditions (Khan *et al.,* 2013 and Sarkar *et al.,* 2017). Like most economic plantations and field crops, mulberry is also attacked by a vast complex of insect and mite pests like bihar hairy caterpillar, leaf roller, wingless grass hopper, thrips, mealybug, red hairy caterpillar, treehopper and mites (Dar *et al*., 2011 a & b and Ramegowda *et al*., 2012). Though the usual practice of frequent leaf picking and shoot harvesting restrict the pest build up, many of the pests still find ample space and time for feeding and breeding on the mulberry plant. Mites constitute a major group of economically important in vertebrate arthropods, which in habit a wide range of habitats. Though several insect pests have been documented on mulberry, the information of severe incidence and damage of yellow mite, *Polyphagotarsonemus latus* (Banks) on mulberry has been very recent. *P. latus* is well known by various names such as broad mite, yellow mite, tropical mite, chilli mite, dahlia mite, tea mite, cyclamen mite, jute mite, whitecitrus mite etc. This mite has a wide host range including cultivated crops like potatoes, sweet pepper, chilli, tomato, egg plant, beans, cowpea, greengram, horsegram, melons, celery, Chinese white cabbage, cotton, jute, coffee, tea, pears, guava, passion fruit and flower crops like chrysanthemum, marigold, dahlia etc. An annotated list of 33 host plants of this mite is provided by Almaguel *et al.* (1984) and sporadic severe infestation

of yellow mite on the foliage of popular mulberry varieties (*Morus indica*) was reported from parts of Kolarin Karnataka in the year 2013 (Srinivasa *et al.,* 2014).

The yellow mite is known to cause considerable damage to tea crop in Assam and Nilgiris in Tamil Nadu (Chauhan *et al.*, 2002). Damage to leaves of mulberry plant in the sub tropics of India *viz.*, Jammu, Dehradun and Delhi was common, where the mite infestation begins during I week of August and reaches peak by last week of August. Mite infestation decreases with the on set of winter and reaches the lowest by the end of November (Bathari *et al.,* 2016). Mites prefer to feed on younger leaves and buds by sucking the sap, as a result leaf becomes rough, brittle, loses healthy green colour and looks corky in its appearance, has been a serious threat to sericulture industry. With this background, the present study was undertaken on the spatial and temporal distribution pattern of yellow mite on mulberry.

Material and Methods

Spatial Distribution of Yellow Mite

The study on distribution pattern was carried out during the first week of September 2019 by collecting the yellow mite infested leaves of mulberry plants (popular variety V-1) from the experimental plot of Sericulture Department at UAS, GKVK, Bengaluru (where no control measures were undertaken against the pests). Also, mite infested leaves from mulberry plants (popular variety V-1) were collected from farmer's field in Kanakapura taluk of Ramanagara district (where measures were undertaken against major pests of mulberry including yellow mite).

Distribution of yellow mite on mulberry plant was studied by recording the number of mites on the leaves at different positions starting from the tip region. For recording observations on the mulberry twig with a growing tip andat least 20 number fully opened leaves were observed under a stereo binocular micro scope count the number of mites, including eggs and active stages on each of these entire leaves and the growing tip (with no opened leaf). The mite population data are expressed as the number/ leaf as well as number/ cm^2 leaf area were subjected to statistical analysis (one-way ANOVA) with $\sqrt{x+0.5}$ transformation and compared across leaves in different positions from the tip region of the branch.

Temporal Distribution of Yellow Mite

The incidence of yellow mite was recorded at monthly interval from December 2019 to March 2021. Mite counts were made from top five leaves, sampled separately from 20 popular mulberry varieties planted at GKVK, Bengaluru (13^0 05" N; 77^0 34" E; altitude of 924 m above MSL; mean annual rainfall of 915.8 mm). The leaves sampled were observed under astereo binocular microscope to record the number of mites, including eggs and active stages on each of these entire leaves and the mite population was expressed as mean number per entire leaf as well as mean number / cm^2 leaf area.

The meteorological data in respect of temperature (max. and min.), relative humidity (morning and evening), wind speed, bright sun shine hours and total rainfall at GKVK campus for the period of investigation were made used to as certain the influence of different weather parameters on population fluctuation of yellow mite on mulberry crop by correlation and regression analysis using SPSS statistical software package version 23.

Results and Discussion

Spatial Distribution of Yellow Mite

The distribution pattern data of yellow mite from two different locations (Bengaluru and Kanakapura) were expressed as mean number / leaf and are presented in Table 1.

Eggs : The number of yellow mite eggs per leaf varied from 0 to 1081.75 on leaves at different positions from the tip region. The maximum number of eggs was found on fourth (1081.75/leaf) and are on par with fifth leaf (1040.05/leaf) followed by the sixth leaf (848.75). Third leaf, seventh leaf and second leaf harboured maximum number of eggs in the same order (702.75,279.25 and 208.80 mites, respectively) and

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TABLE1

Distribution pattern of yellow mite, *Polyphagotarsonemus latus* on mulberry

Leaf number from the tip	Number per leaf					
	Eggs		Motiles		Total (eggs + motiles)	
Growing tip	7.70	(2.86) gh	11.65	(3.49) h	19.65	(4.49) h
1	48.25	(6.98) f	29.70	(5.50) g	77.95	(8.86) g
2	208.80	(14.47) e	135.20	(11.65) e	335.10	(18.32) e
3	702.75	(26.52) c	420.25	(20.51) c	1099.35	(33.16) c
4	1081.75	(32.90) a	693.90	(26.35) ab	1758.75	(41.94) a
5	1040.05	(32.26) a	775.80	(27.86) a	1817.75	(42.64) a
6	848.75	(29.14) b	624.65	(25.00) b	1481.90	(38.50) b
7	279.25	(16.73) d	314.32	(17.74) d	632.47	(25.16) d
8	34.80	(5.94) f	99.95	(10.02) f	139.45	(11.83) f
9	18.65	(4.38) g	90.60	(9.54) f	109.25	(10.48) g
10	5.85	(2.52) gh	26.00	(5.15) gh	31.50	(5.66) h
11	3.60	(2.02) gh	7.80	(2.88) hi	11.25	(3.43) hi
12	0.20	(0.84) h	1.35	(1.36) i	1.13	(1.28) i
13	0.00	(0.71) h	0.10	(0.77) i	0.10	(0.77) i
14	0.00	(0.71) h	0.15	(0.81) i	0.15	(0.81) i
15	0.05	(0.74) h	0.05	(0.74) i	0.05	(0.74) i
F-test	*		*		*	
S.Em±	(6.49)		(5.96)		(8.88)	
C.D.	(18.49)		(16.99)		(2.30)	

* Significant at P=0.05; Figures in the parentheses are √x+0.5 transformed values

were significantly different from each other. First fully opened leaf and 8th leaf from the tip recorded similar number of eggs (48.25 and 34.80), respectively. Further, leaf in the 9th, 10th, 11th position and growing tip comparatively recorded fewer number of eggs (3.60 to 18.65). Negligible number of eggs was recorded on leaves from 12th position on wards.

Motiles : Distribution of motile stages which includes, larvae, nymphs and adults followed similar pattern as that of eggs. Statistically, on 4th and 5th leaf, motile stages were distributed similarly (693.90 and 775.80, respectively). This was immediately followed by 6th, 3rd, 7th and 2nd leaf from the tip with 624.65, 420.25, 314.32 and 135.20 motiles and all the seleaves were significantly different from each other with respect to the number of motiles. Further, 8th and 9th leaf recorded 99.95, 90.60 motiles / leaf, respectively, while leaves in the 10th, 11th, 1st position and growing tip region harboured 7.8 to 29.70 motiles / leaf and were statistically on par.

Total mites (eggs + motiles) : The overall distribution of yellow mite (which includes eggs and active stages of larvae, nymphs and adults) was significantly high on 4th and 5th leaf from the tip (1758.75 and 1817.75 mites, respectively), followed by 6th (1481.90), 3rd (1099.35), 7th (632.47), 2nd (335.10) and 8th (139.45) mites/ leaf, which were significantly different from each other statistically. Ninth (109.25) and first leaf (77.95) recorded next lower intensity of mites, while the growing tip, 10th and 11th leaf from the tip were statistically on par and harboured 19.65, 31.50 and 11.25 mites/ leaf, respectively.

Descending order of yellow mite population and the corresponding leaf position from the tip on a mulberry branch was 5th leaf (1817.75) > 4th leaf (1758.75) > 6th leaf (1481.90) > 3rd leaf (1099.35) > 7th leaf (632.47)> 2nd leaf (335.10) > 8th leaf (139.45) > 9th leaf (109.25)> 1st leaf (77.95) > 10th leaf (31.50), 11th leaf (11.25) > growing tip (19.65).

The distribution pattern of yellow mite is depicted in Fig. 1 and it isevident that both eggs and active stages were more abundantly distributed on leaves in the 4th and 5th position from the tip followed by 3rd, 7th, 2nd and 8th positioned leaf compared to the leaves in other positions. As shown in the figure the distribution pattern of yellow mite, *P. latus* on the whole leaf of mulberry plant, the infestation of mites started from the growing tip region and gradually increased up to the 5th leaf and later started declining in the number. Thus, the mite population was high on leaves in the top region and mites preferred to feed by sucking the sap from the lower surface of these leaves. A smaller number of mites were observed on leaves in the lower region,which were comparatively less succulent. The number of mite eggs found was more on the young leaves at the top as compared to the motile stages. Motile stages were more on leaves in the lower region. Significantly, a greater number of eggs and motile stages were observed on fourth and fifth leaf from the tip. Least number of eggs as well as motile stages were found from tenth to 15th leaf from the tip.

Taking into account the total surface area of each leaf at different positions, the corresponding population record of yellow mite eggs and motile stages was expressed as the mean number per cm^2 leaf area at each position and are present edin Table 2.

Eggs : The mean number of eggs per cm^2 leaf area varied significantly from 0 to 72.98 at different positions. The highest number of eggs was found on the third leaf from tip (72.98) followed by 4th leaf (56.85) and 2nd leaf (52.68), which were statistically on par. The leaf number 5th, 1st and 6th harboured next highest number of eggs (31.00, 25.93 and 21.18), which were on par and are significantly different from all other leaves (Table 2) followed by Seventh leaf and growing tip were (4.21 and 2.64, respectively). A very low number of eggs were laid by mites on leaves in the 8th position and below.

Motiles : The density of motiles per cm^2 leaf are aranged from 0.001 to 49.88 across different leaves. As observed with eggs, density of motiles was also

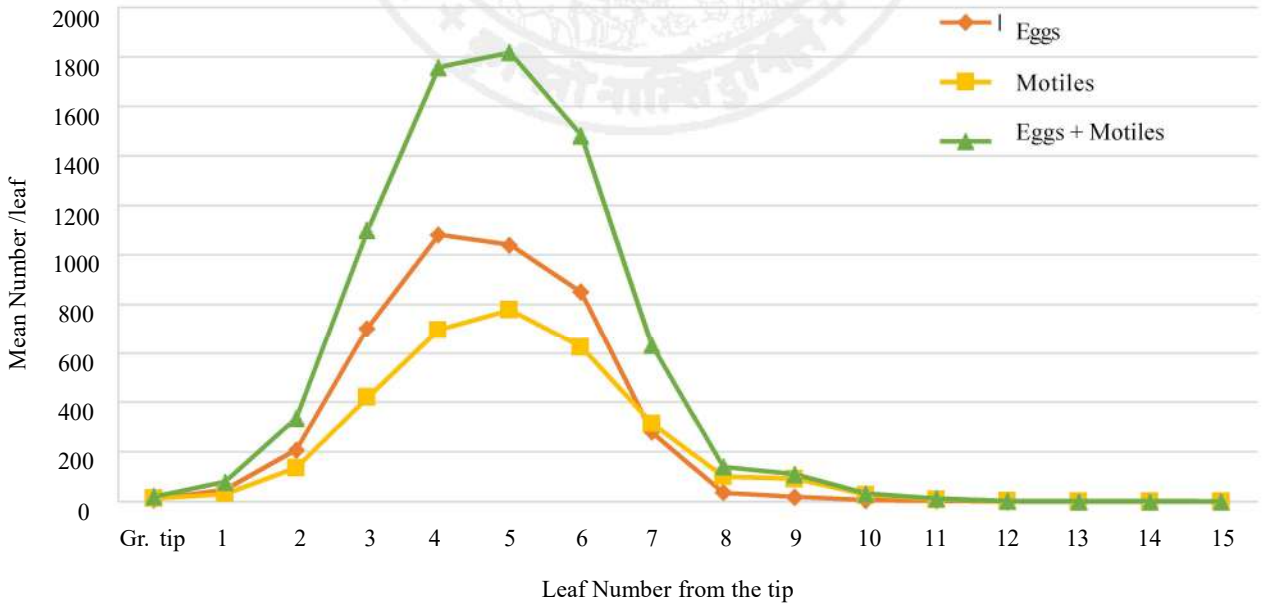

Fig.1 : Distribution pattern of yellow mite, *Polyphagotarsonemus latus* on mulberry

TABLE 2

Distribution pattern of yellow mite, *Polyphagotarsonemus latus* on mulberry per unit leaf area

Leaf number from the tip	Number per cm² leaf area					
	Eggs		Motiles		Total (eggs + motiles)	
Growing tip	2.64	(1.77) ef	3.88	(2.09) e	7.52	(2.83) f
1	25.93	(5.14) cd	15.74	(4.03) d	40.17	(6.38) d
2	52.68	(7.29) b	35.40	(5.99) b	90.08	(9.52) b
3	72.98	(8.57) a	49.88	(7.10) a	125.86	(11.24) a
4	56.85	(7.57) b	40.68	(6.42) ab	93.03	(9.67) b
5	31.00	(5.61) c	25.63	(5.11) c	48.63	(7.01) c
6	21.18	(4.66) d	19.05	(4.42) cd	17.89	(4.29) e
7	4.21	(2.17) e	5.96	(2.54) e	4.59	(2.26) g
8	0.47	(0.98) f	1.01	(1.23) f	1.18	(1.30) h
9	0.07	(0.76) f	0.67	(1.08) f	0.75	(1.12) h
10	0.05	(0.74) f	0.17	(0.82) f	0.16	(0.81) h
11	0.04	(0.73) f	0.06	(0.75) f	0.06	(0.75) h
12	0.002	(0.71) f	0.01	(0.71) f	0.01	(0.72) h
13	0.00	(0.71) f	0.001	(0.71) f	0.001	(0.71) h
14	0.00	(0.71) f	0.002	(0.71) f	0.002	(0.71) h
15	0.00	(0.71) f	0.001	(0.71) f	0.001	(0.71) h
F-test	*		*		*	
S.Em±	(6.49)		(5.96)		(8.88)	
C.D.	(18.49)		(16.99)		(2.30)	

* Significant at P=0.05; Figures in the parentheses are √x+0.5 transformed values

recorded in the similar pattern. The highest number of motiles was found on 3rd leaf from the tip (49.88/cm² leaf area) leaf and are on par with 4th leaf (40.68), 2nd (35.40), 5th (25.63), 6th (19.05), 1st (15.74), 7th (5.96) and growing tip with no opened leaf (3.88). Further, a very low density of motiles was recorded from the 8th leaf onwards and continued upto 15th leaf.

Total number of mites (eggs + motiles)/ cm² leaf area ranged from 0.001 to 125.86 on leaves at different positions and mite density across leaves also differed significantly (Table 2). The highest mite density was on the 3rd leaf from the tip *i.e.,* 125.86/cm² leaf area and was significantly different from leaves in other positions followed by 4th and 2nd leaf (93.03 and 90.08 mites/ cm²), respectively. The number of mites was in a decreasing trend (48.63) on 5th leaf, 1st leaf (40.17), 6th leaf (17.89) and growing tip (7.52) and all of which are significantly different with respect to the mite density/cm² leaf area. It was found that, the intensity of mites on the leaves in the lower positions *i.e.,* 8th leaf from the tip and below decreased rapidly (Table 2).

As shown in the Fig. 2, the mite population, (eggs + motiles) was more dense on the younger leaves, which then became less dense on the older leaves below. The highest number of mites/cm² leaf area was recorded in the 3rd leaf and significantly low population was recorded from the 8th leaf onwards.

With regard to yellow mite abundance on mulberry leaf at different positions from the tip, the descending order of mite population density (eggs + motiles) is 3rd leaf (125.86) > 4th leaf (93.03) > 2nd leaf (90.08) > 5th

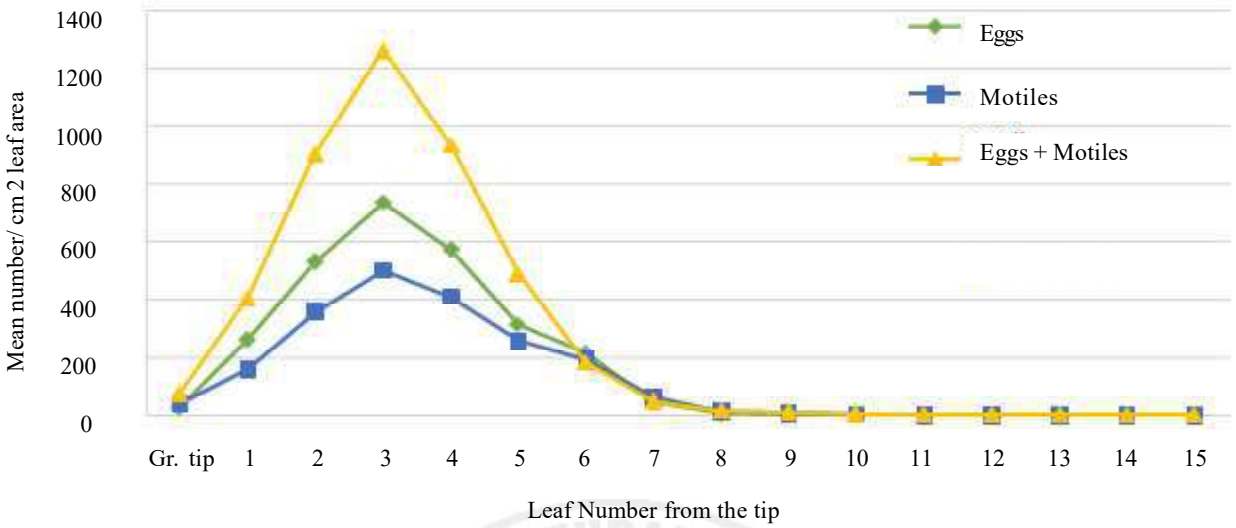

Fig. 2 : Distribution pattern of yellow mite, *Polyphagotarsonemus latu*s on mulberry

leaf (48.63) > 1st leaf (40.17) > 6th leaf (17.89) > growing tip (7.52) > 7th leaf (4.59) > 8th to 15th leaf (0.001 to1.18).

The distribution pattern of yellow mite on different leaves of mulberry branch as shown in Fig.1 and 2 follow a normal bell-shaped trend. The number of eggs or motiles gradually increased from growing tip to 4th or 5th leaf, the number tend to decrease further from 6th leaf onwards and the lowest or negligible number recorded from the 8th leaf onwards. It was found that, the population density of yellow mite on mulberry plant was high on the younger leaves as compared wit holder leaves in lower stratum. Perez-Otero *et al.* (2007) reported that the yellow mite developed and multiplied on tender leaves of Camellia japonica owing to suitable conditions of moisture, shade and food on such leaves. Rai *et al.* (2007) also found that *P. latus* usually seen on freshly emerged leaves of chilli plant and caused malformation of terminal leaves, plants become stunted in growth, which ultimately reduced the fruit yield significantly. Ashraf *et al.* (2011) noticed that yellow mites were more on the top leaves followed by middle leaves and the lowest population was recorded on the leaves in the bottom canopy of pepper plant. The present findings are in corroborate with the above findings.

Temporal distribution of yellow mite

Data in respect of population fluctuation of yellowmite on twenty different popular mulberry varieties at Bengaluru from December 2019 to March 2021 are presented in the Table 3 and depicted in Fig. 3. It is evident that them eanmite population from twenty varieties of mulberry during the month of December 2019 was 26.87 mites/cm^2 leaf area, gradually increased up to the month of March 2020 (85.83) and slightly declined during the month of April, 2020 (77.89) and May, 2020 (64.53). The number of mites was in an increasing trend from the month of June and reached the highest peak during August 2020 (117.33). Adec line in the mite population was observed from the month of September 2020 and reached to the lowest of 24.28 mites during the month of December 2020, while an increasing population was recorded from January 2021 upto March 2021 (Table 3). It was found that the temporal distribution of yellow mites was almost similar on all the twenty (Fig. 3).

The present data on mite abundance is in close agreement with that of Yadav *et al.* (2008) and (2009), where it was reported the peak activity of *P. latus* on jute crop was observed during 3rd week of August. Trivedi and Rajgopal (1999) and Basavaraju (2009) also recorded peak populations of *P. latus* between last week of July and 1st week of August on *kharif*

TABLE 3

Temporal distribution of *Polyphagotarsonemus latus* (no.of mites/cm^2 leaf area)* on different mulberry varieties at Bengaluru (GKVK)

Varieties	Dec-19	Jan.20	Feb.20	March 20	April 20	May 20	June20	July 20	Aug.20	Sept. 20	Oct. 20	Nov. 20	Dec.20	Jan.21	Feb.21	March 21
V-1	48.06	77.8	88.2	101.6	84.3	82.9	101.5	122.2	154.6	120.8	85.4	56.2	43.4	73.0	88.6	96.0
RFS 135	45.63	55.65	84.4	98.0	86.3	87.2	99.4	122.4	147.5	117.2	82.4	48.6	35.4	47.4	84.4	92.0
S 54	36.4	43.1	80.9	93.1	81.8	85.8	96.8	121.8	133.8	108.8	81.8	43.8	28.8	43.8	80.5	88.4
MI-012	39.15	41.4	80.5	92.4	80.5	62.5	93.4	120.5	129.5	111.3	78.4	44.3	25.3	51.5	78.5	82.4
Mysurulocal	35.74	38.7	78.1	94.0	78.6	68.6	91.6	118.6	128.3	108.6	75.8	38.7	28.2	57.0	78.9	68.0
MI516	32.13	36.6	77.2	91.6	84.2	68.2	89.4	104.2	124.2	108.2	73.2	38.2	27.8	48.2	77.2	81.6
S 34	28.76	38.8	76.5	89.8	81.2	67.2	88.3	112.2	126.6	107.4	73.2	37.3	27.2	57.6	76.5	79.8
MI–79	26.67	31.1	72.7	89.1	79.6	67.1	87.4	108.0	122.3	104.8	74.5	36.3	27.2	36.7	68.0	66.9
S 13	27.9	29.4	68.9	88.4	81.0	64.2	86.2	109.6	118.8	107.3	71.2	33.4	27.0	58.6	78.1	82.0
MI-139	14.64	28.9	68.2	86.9	81.7	63.7	85.4	101.7	116.7	106.3	70.7	29.7	26.7	42.2	72.7	79.1
M-5	18.77	27.3	69.2	86.4	82.6	62.6	84.3	99.6	114.3	104.2	70.6	26.9	24.6	38.8	66.1	65.4
S 36	21.82	26.4	66.1	86.1	82.4	61.4	82.6	97.4	111.2	102.8	70.4	24.4	22.8	34.5	61.7	65.0
Vishwa/DD	32.4	26.1	61.8	84.0	82.1	62.6	82.1	97.1	109.1	102.1	67.8	24.1	22.1	32.0	54.3	55.6
Vishala	24.65	25.7	53.1	82.7	73.4	60.4	80.9	96.4	107.3	100.4	66.4	27.2	21.8	33.1	63.1	62.7
S 1635	21.1	24.6	52.1	81.6	79.3	59.3	79.3	94.5	106.3	99.3	68.2	19.8	19.3	40.4	58.5	50.5
MI– 21	14.65	21.9	48.5	78.9	74.5	54.5	77.5	91.8	105.5	94.5	61.3	29.5	18.2	30.4	48.6	58.9
RFS 175	18.99	20.6	44.6	75.6	71.3	52.4	76.2	87.7	104.6	92.6	58.2	19.2	15.8	26.4	67.2	66.4
MR 2	24.71	18.5	43.1	78.5	70.9	56.9	69.9	86.4	98.9	90.2	56.1	19.4	18.9	39.3	62.1	61.6
S-41	14.74	17.8	38.6	69.7	60.6	50.7	64.4	85.7	92.7	84.7	52.6	17.3	12.7	30.9	53	40.3
Tr–10	10.51	16.3	44.6	68.3	61.5	52.4	61.3	88.5	94.4	86.5	50.8	16.2	12.5	26.5	44.3	49.7
Mean	26.87	32.33	64.86	85.83	77.89	64.53	83.89	103.31	117.33	102.9	69.45	31.52	24.28	42.41	68.11	69.61

*Mean from top five leaves

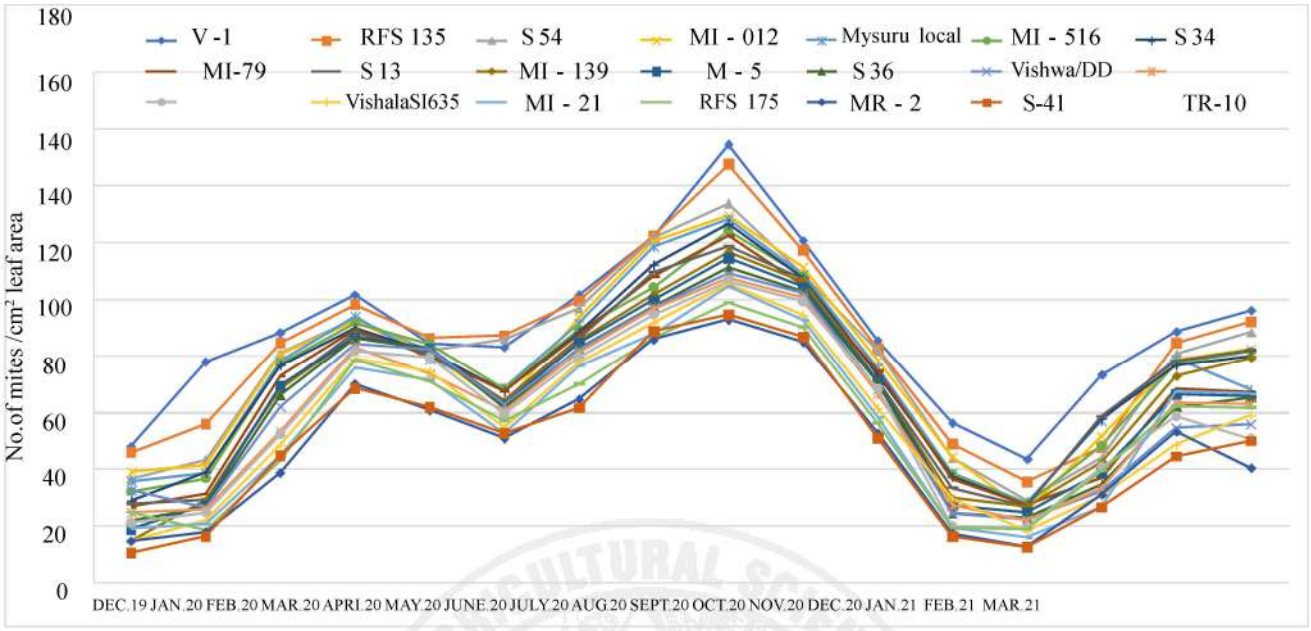

Fig.3. Temporal distribution of yellow mite, *Polyphagotarsonemus latus*on different mulberry varieties at Bengaluru (GKVK)

potato. Meena *et al.* (2013) reported that greater abundance of yellow mite on chilli crop in Tamil Nadu between June and September month and declined during October - November with the on set of north east monsoon. In Gujarat, summer crop (April to August) harboured more number of mites than the *kharif* crop (October - February) (Anonymous, 1996). It was opined that *P. latus* was favoured by warm - humid conditions of autumn or late summer season rather than cool - humid conditions of the winter season. During summer months (March to May), higher incidence of mite on lime (Pena, 1989), potato (Fernandez and Ramos, 1995) and jute (Zaman & Karimullah, 1987 and Sarma & Borah, 2009) has been recorded.

The correlation study between mite population and weather parameters (Table 4) revealed non-significant positive correlation with maximum temperature (r=0. 356), minimum temperature (r=0. 428), bright sun shine hours (r=0.241) and rainfall (r=0.280) and non-significant negative correlation with morning Relative Humidity (r=-0. 183), evening Relative Humidity (r=-0. 349) and wind speed (r=-0. 077). However, no ambient weather conditions were found to influence the abundance or activity of yellow

TABLE 4
Relationship between abundance of yellow mite on mulberry and weather parameters at Bengaluru (GKVK)

Weather parameters	Correlation coefficient
Max.temperature (^{0}C)	0.356
Min.temperature (^{0}C)	0.428
Morning RH (%)	-0.183
Evening RH (%)	-0.349
Wind Speed (km/hour)	-0.077
BrightSunshine (hours)	0.241
Rainfall (mm)	0.280

mite on mulberry crop significantly. As noticed in the present study, the maximum and minimum temperature showed positive correlation with abundance of yellow mite on chilli has been reported by Patil and Nandihalli (2009); Bhede *et al.* (2008); Rajput *et al.* (2017) and Samantha *et al.* (2017). Similarly, negative relationship of morning and evening humidity (Patil & Nandihalli, 2009 and Bhede *et al.,* 2008), positive influence of bright sunshine hours (Bhede *et al.,* 2008; Roopa & Ashok Kumar, 2014; Rajput *et al.,* 2017 and Samantha *et al.,* 2017), positive correlation of rainfall with mite

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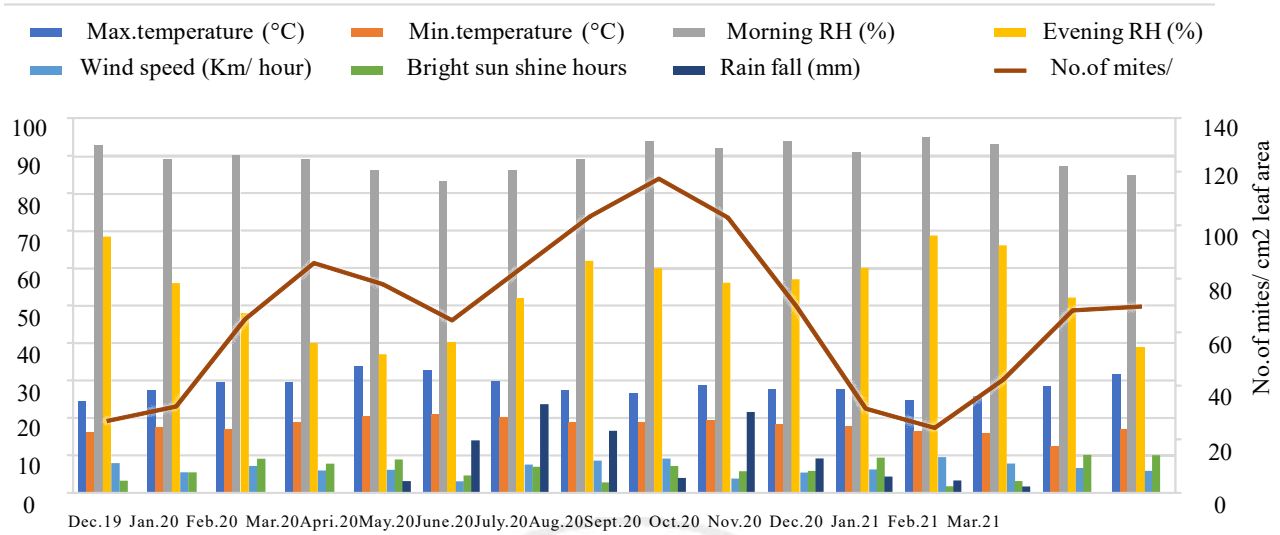

Fig. 4 : Relationship between abundance of yellow mite on mulberry and weather parameters at Bengaluru (GKVK)

incidence on chilli or capsicum was reported by Bhede *et al*. (2008) and Roopa and Ashok Kumar (2014) are found to be in link with the present study. Differential influence of different weather parameters on the abundance of yellow mite pest across different annual crops has been reported. However, the present data envisaged on the non-significant influence of all the weather parameter on the abundance of yellow mite as it is attributed to perennial growth habit of the crop, because of which foliage would be available for infestation by mites all-round the year. Hence, activity of mites and result ant feeding damage by mites were noticed all through the year.

The distribution pattern of yellow mite, *Polyphagotarsonemus latus* (Banks) in space (mulberry plant) and time (calendar month) was studied from December 2019 to March 2021 in the experimental field of Department of Sericulture at GKVK campus, Bengaluru. The distribution of the mite was noticed on the under surface of the young leaves in the top canopy of mulberry plant and more particularly on 15 leaves counted from the tip of the branch. Fifth leaf (1758.75 mites) and 6th leaf (1817.75 mites) from the tip harboured significantly more number of mites (both eggs and motile stages). In terms of population density expressed as number / cm^2 leaf area, it was highest on the 3rd leaf (125.86) from the tip followed by 90.08 and 93.03 mites/cm^2 leaf area recorded on 2nd and 4th leaf, respectively from the tip region. Yellow mites remained active through out the year on all the 20 popular mulberry varieties studied and the mite population reached peak during the month of August, 2020 while alower population was observed during the month of December, 2020. Though the population fluctuation of yellow mite on mulberry was not significantly influenced by the ambient weather conditions, build up of mite population showed positive relationship with temperature, bright sunshine hours & rainfall and negative relationship with humidity and wind speed.

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