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Control of Spiraling White Fly (*Aleurodicus dispersus* Russel) of Guava by Spraying Detergent

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Abstract: An experiment on the control of spiraling white fly (*Aleurodicus dispersus* Russel) by spraying detergent (wheel powder, Liver Brothers Ltd.) was conducted. Wheel powder, a cheap and readily available detergent in Bangladesh was sprayed to control the white fly. Wheel powder was sprayed in different concentration among which 10 g litre^{-1} of water and 15 g litre^{-1} of water were found more effective in controlling white fly. The concentration 20, 30 and 40 g litre^{-1} of water were found serious leaf burning, even total leaf dropping after 3rd spray.

Key words: Spiraling white fly, detergent, guava

Introduction

Guava is an important fruit crop and getting an important commercial fruit in Bangladesh. There are a lot of problems in guava cultivation in Bangladesh among which the guava spiraling white fly (*Aleurodicus dispersusu* Russel) has become a serious problem to guava cultivation in Bangladesh. In the recent time, it has been a common and major pest of Kazi Piara, a high yielding guava variety released by Bangladesh Agricultural Research Institute (BARI). Severe infestation of this pest may result in defoliation of the whole plant causing serious yield reduction of the fruit crop. Indirectly, the white fly causes reduction of yield by transmitting viral pathogens and through secretion of wax and honey dew, reduces the photosynthetic areas of the plant (Alam *et al*., 1998). Heavy colonization of white fly may cause a serious indirect damage to the crop due to honeydew excretion on the leaves or on fruit surfaces which encourages growth of the sooty mould by a fungus, *Capnodium citri* and in turn affects the yield both in quantitative and qualitative way (Byrnee *et al*., 1990, Kajita and Alam, 1996). Among 46 species, 3 species, *Aleurodicus nubilans* (Buckton), A. spiniferus (Quaintance) and A. woglumi (Ashby) were reported to be the pest of guava in Bangladesh including *Aleurodicus dispersus* Russel (Alam, 1962). From a two time study at the Germplasm Centre of Fruit Tree Improvement Project (FTIP) showed that the incidence and abundant of white fly from August to May (Rahim and Rahman, 2001).

To control white fly, use of chemicals is common in Bangladesh, which causes hazards to health through residual effect of chemical insecticides. It also creates natural imbalance through killing the beneficial insects. Moreover, sometimes it was for the chemicals, do not control white fly completely. So, to save the environment for the better health of the human being and making a friendly environment for the beneficial insect, an attempt was undertaken to control the spiraling white fly of guava by spraying wheel powder, a common, cheap and readily available detergent of Bangladesh.

Materials and Methods

The experiment was conducted in the Guava Orchard of Germplasm Centre of Fruit Tree Improvement Project, Department of Horticulture, Bangladesh Agricultural University, Mymensingh during October-January 2000 and 2001. Different levels of concentrations, viz., 1.0, 2.5, 5.0, 7.5, 10.0, 15.0, 20.0, 30.0 and 40.0 g litre^{-1} detergent (wheel powder) were mixed with tube well water and were sprayed 3, 10 and 20 days after the 1st spray. The total population of the insect was counted before 1st spray, 3 days after 1st spray but before 2nd spray, 10 days after 10 1st spray but before 3 rdspray and 21 days after 1 stspray but before 4th spray as 2nd, 3rd and 4th spray was done 3, 10 and 21 days after 1st spray respectively. Knapsack sprayer was used to spray the detergent. It was sprayed during 10-12 am. The two-factors experiment was laid out in randomized complete block design (RCBD) with 4 replications having 3-unit plant per replication.

Results and Discussion

Spraying with 10 g litre^{-1} of detergent was found most effective after 4th spray having no white fly in guava leaves without any leaf burning followed by 15 g litre^{-1} after 3rd spray having no white fly in the leaves with little burning of the leaves (Table 1). Sprayed with detergent @ 20 g litre^{-1} of water was effective in white fly control causing little, medium and serious leaf burning after 2nd, 3rd and 4th spaying respectively.

Table 1: Effect of different concentration of detergent (wheel powder) on the control of guava white fly

	Mean number of white fly survived/plant and leaf burning after different time intervals of spraying of detergent					
				Leaf burning		
Concentrations of detergent	3 DAFS	10 DAFS	21 DAFS	3 DAFS	10 DAFS	21 DAFS
1 (g litre^{-1} of water)	536.61	515.01	531.48	No	No	No
2.5 (g litre^{-1} of water)	373.20	352.33	367.68	No	No	No
5 (g litre^{-1} of water)	624.55	623.23	665.44	No	No	No
7.5 (g litre^{-1} of water)	110.19	88.88	13.35	No	No	No
10 (g litre^{-1} of water)	10.47	2.66	0.00	No	No	No
15 (g litre^{-1} of water)	1.33	0.00	0.00	No	Little	Medium
20 (g litre^{-1} of water)	0.50	0.00	0.00	Little	Medium	Serious
30 (g litre^{-1} of water)	0.00	0.00	0.00	Serious	Serious	Serious
40 (g litre^{-1} of water)	0.00	0.00	0.00	Serious with leaf dropping		
LSD (0.01) value	121.56	116.16	127.17	-	-	-
Level of significance	**	**	**	-	-	-

DAFS= Days after first spray ** = P<0.01

Table 2: Effect of frequency of spraying of detergent on the control of guava white fly

	Mean number of white fly/plant after different time intervals of detergent spraying		
Frequency of spraying	3 days after 1st spray	10 days after 1st spray	21 days after 1st spray
Once	199.23	185.20	188.79
Twice	178.00	173.39	170.75
Thrice	175.05	168.77	166.44
LSD (0.01) value	70.20	67.06	73.42
Level of significance	**	**	**

Table 3: Effect of different concentrations of detergent (wheel powder) and frequency of spraying on the control of guava white fly

		Mean number of white fly survived/plant after different time intervals of spraying			Leaf burning		
Concentration of detergent	Frequency of spraying	3 DAFS	10 DAFS	21 DAFS	3 DAFS	10 DAFS	21 DAFS
1 g litre^{-1}	Once	562.59	558.27	607.07	No	No	No
	Twice	529.15	523.69	523.17	No	No	No
	Thrice	518.08	463.07	464.21	No	No	No
2.5 g litre^{-1}	Once	373.44	346.90	373.44	No	No	No
	Twice	369.75	336.90	373.75	No	No	No
	Thrice	376.40	373.46	355.87	No	No	No
5 g litre^{-1}	Once	674.20	635.73	695.95	No	No	No
	Twice	608.69	616.57	629.26	No	No	No
	Thrice	590.76	617.41	671.12	No	No	No
7.5 g litre^{-1}	Once	153.44	117.97	22.66	No	No	No
	Twice	91.65	83.61	10.58	No	No	No
	Thrice	85.49	65.08	6.84	No	No	No
10 g litre^{-1}	Once	27.43	8.00	0.00	No	No	No
	Twice	8.50	0.00	0.00	No	No	No
	Thrice	3.50	0.00	0.00	No	No	No
15 g litre^{-1}	Once	10.50	0.00	0.00	No	No	No
	Twice	2.25	0.00	0.00	No	Little	Medium
	Thrice	1.25	0.00	0.00	Medium	Medium	Serious
20 g litre^{-1}	Once	1.50	0.00	0.00	Serious leaf burning		
	Twice	0.00	0.00	0.00			
	Thrice	0.00	0.00	0.00			
30 g litre^{-1}	Once	0.00	0.00	0.00	Serious leaf burning		
	Twice	0.00	0.00	0.00			
	Thrice	0.00	0.00	0.00			
40 g litre^{-1}	Once	0.00	0.00	0.00	Serious leaf burning followed by		
	Twice	0.00	0.00	0.00	immediate dropping		
	Thrice	0.00	0.00	0.00			
LSD (0.01) value		210.57	201.15	220.28			
Level of significance		**	**	**			

DAFS= Days after first spray **: P<0.01

Sprayed with detergent @ 30 and 40 g litre^{-1} of water was also found effective in controlling white fly with serious leaf burning followed by total leaf dropping.

The effect of different time intervals of spraying of the detergent (wheel powder) on the control of the guava white fly showed that most effective control was recorded

at 4th spray spraying 21 days after the first spray followed by 10 days after the 1st spray (Table 2). The mean number of guava white flies alive after each time intervals of the spray was significantly varied among the treatments.

Detergent (wheel powder) spraying @ 10 g litre^{-1} of water at 4th spray (21 days after the 1 stspray) was found the most effective to control the guava white fly successfully followed by 15 g litre^{-1} at second spray 10 days after 1st spray with out any leaf burning (Table 3). A little leaf burning was found while spraying the detergent @ 15 g litre^{-1} of water after the 2nd spray. Spraying of the detergent @ 40 g litre^{-1} of water was found to cause serious leaf burning followed by leaf dropping.

In conclusion, the cheap and readily available detergent, wheel powder was found most effective to control white fly. Spraying of the wheel powder @ 10 g litre^{-1} of water at 4th spray (21 after 1st spray) was found most effective to control the white fly without any burning of the guava leaves. The 2nd spray was done 3 days after the 1st spray, 3rd spray was done 10 days after the 1st spray and the 4th spray was done 21 days after the 1st spray.

Spray of the detergent @ 15 g litre^{-1} of water was also found most effective if it was sprayed two times with out any leaf burning.

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