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Survey for Anar butterfly (*Virachola isocrates*) on pomegranate in Banaskantha district

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Abstract

Pomegranate (*Punica granatum* L.), a member of the Punicaceae family, is one of Gujarat's most significant fruit crops. In Gujarat, districts like Kachchh, Bhavnagar, Ahmedabad, Patan, Banaskantha and Sabarkantha. Majority of the production is hampered due pest during the harvesting time. To understand the pest situation on pomegranate, a roving survey was conducted in 2020- 2021 in major pomegranate growing areas of Banaskantha district. Banaskantha district consist of three Taluka, (Tharad, Lakhni, and Dhanera) were purposively selected. From each Taluka, two villages were selected for observations of Anar butterfly. The maximum fruit damage was recorded in the month of September (17.14%) followed by the August month (13.97%) and the minimum damage of fruits was in the month of July (2.31%). The maximum fruit damage 12.51 percent was recorded at Motameda village of Dhanera and minimum fruit damage (8.85%) was recorded at Aagethla village of Lakhani.

Keywords: Pomegranate, Anar butterfly, *Virachola isocrates*, survey

Introduction

Pomegranate (*Punica granatum* L.) is one of the most adaptable subtropical minor fruit crops, commonly known as Anar, Dalim or dalimbe. It belongs to one of the smallest families of plant kingdom, Punicaceae. Pomegranate is native to Iran, where it was first cultivated around 2000 BC and spread to the Mediterranean countries that observed by Everein off, in 1949. It is extensively cultivated in Spain, Morocco, Egypt, Iran, Afghanistan, Arabia and Baluchistan. Its cultivation spread further to other countries like China, Japan, USA, USSR, Pakistan and India. In India was increased due to the introduction of high yielding soft seeded variety "Ganesh" in the states of Maharashtra, Karnataka and Gujarat. Pomegranate is grown in tropical and subtropical regions of the world. The demand for export quality pomegranate certainly shows an increasing trend. In order to maintain good quality yield of pomegranate fruits, appropriate package of practices plays important role, in which pest control based on seasonal incidence, critical monitoring of pest stages with their intensity and execution of selected control measures is of high significance. There are three main fruiting seasons in a year which are locally known as *bahars viz. Ambia* (March to June), *Mrig* (July to October) and *Hasta* (November to February). This situation is therefore most favourable to perpetuate the pests throughout the year. Cultivation of high yielding varieties of pomegranate with intensive care and management in the recent past under irrigated condition with early stage exploitation of plant has lead to certain severe pest problems. Among them, infestation by sucking pests like aphids, thrips and whiteflies results in reduction of pomegranate fruit yield and put the growers into hardship. The growers loose in terms of quantity and quality of fruits also. The major constraint in increasing export potential is the quality of fruit in terms of size, colour, freedom from blemishes and pesticide residue levels. Anar butterfly, bark eating caterpillar and sucking pests (aphids & thrips) are the most common pests damaging this crop in Gujarat. Now a days, fruit sucking moth is a new threat damaging the fruits of pomegranate next to cotton. Gilbert (1986) [4] reported that thrips, *Scirtothrips dorsalis* (H.) is one of the most important pests infesting pomegranate crop. It feeds on the foliage as well as fruits deteriorating quality of the fruits. At International level thrips are considered as a potential pest in pomegranate being responsible for deteriorating quality of the fruits (Wang, 1994). Therefore, the present study was designed to know the extent of damage of insect pests in pomegranate for effective management measures there by.

Materials and Methods

Investigation was undertaken to study the incidence of major insect pests of pomegranate in different villages of Banaskantha districts during *mrig* bahar.

Survey

Surveys was conducted in major pomegranate growing area of Tharad, Lakhani and Dhanera talukas of Banaskantha district in Gujarat during *mrig* bahar by using of multistage random method. For this, two villages of each taluka's having maximum area was selected for the study. In each village, three pomegranate orchards owned by the farmers were randomly selected. In each orchard, five pomegranate plants was selected randomly and marked for taking observation on the incidence of insect pests.

Insect pests

The insect pests infest pomegranate was recorded on the selected plants at monthly interval. From each orchard, five pomegranate plants were selected randomly and marked for taking observations on the incidence of anar butterfly. For recording observations, from each plant, five branches were randomly selected. Observations of anar butterfly were recorded by counting the number of damaged fruits out of total fruits/per plant during *Mrig* bahar.

Result and Discussion

Survey was conducted at monthly interval in Tharad, Lakhani and Dhanera taluka of Banaskantha district during 2020.

Table 1 revealed that the in Tharad taluka two villages (Malupur and Motipavad) were selected, in which the highest fruit damage percentage was found in Motipavad (11.64%) and the lowest fruit damage was found in Malupur village (10.80%). In the lakhani taluka, two villages (Gela and Agethla) were chosen, with Gela having the highest fruit damage percentage (9.89%) and Agethla having the lowest fruit damage (8.85%). Whereas, in Dhanera taluka of Banaskantha Motameda having the highest fruit damage (13.16%) and Bhatib having the lowest fruit damage (12.51%). Fruit damage percentage of anar butterfly in pomegranate in six different villages of Tharad, Lakhani and Dhanera taluka of Banaskantha district showed that minimum damage of fruits in the month of July (2.31%) and maximum damage in month of September (17.14%) followed by August (13.97%). Anitha Kumari (2011) ^[1] was conducted survey during 2006-2008 to investigate the population dynamics of major pests of pomegranate and observed that major pests on vegetative parts were stem borer and while fruit borer recorded on reproductive parts. Fruit borer *Deudorix isocrates* (Fabricius) is the major pest which is constantly and regularly injurious in pomegranate during flowering and fruit set stage. Oviposition was observed on calyx and young larvae damage the fruits from fruit set to maturity stage. The incidence of fruit borer was maximum during monsoon season (*Mrig* bahar crop). Low temperatures coupled with high humidity were congenial for the development of borer during the second fortnight of August.

Table 1: Survey of Anar butterfly (*V. isocrates*) in pomegranate growing area of Banaskantha district

District	Taluka	Village	Field	Fruit damage (%)				Mean fruit damage (%)
				July	Aug.	Sept.	Mean	
Banaskantha	Tharad	Malupur	1.	0.97	11.42	15.34	9.24	10.80
			2.	2.00	13.49	18.91	11.47	
			3.	1.84	15.10	18.15	11.70	
		Motipavad	1.	1.64	12.81	15.34	9.93	11.64
			2.	2.79	16.45	18.91	12.72	
			3.	1.76	16.92	18.15	12.28	
	Lakhani	Gela	1.	2.21	14.82	19.58	12.20	9.89
			2.	1.18	9.57	11.24	7.33	
			3.	2.75	12.84	14.78	10.12	
		Agethla	1.	0.79	9.15	17.21	9.05	8.85
			2.	1.97	10.82	15.76	9.52	
			3.	0.90	8.95	14.11	7.99	
	Dhanera	Motameda	1.	3.79	18.15	19.97	13.97	13.16
			2.	2.91	15.88	17.38	12.06	
			3.	3.85	17.54	19.00	13.46	
		Bhatib	1.	3.72	15.49	16.48	11.90	12.51
			2.	3.98	16.98	18.72	13.23	
			3.	2.50	15.14	19.54	12.39	
		Mean	2.31	13.97	17.14	11.14		

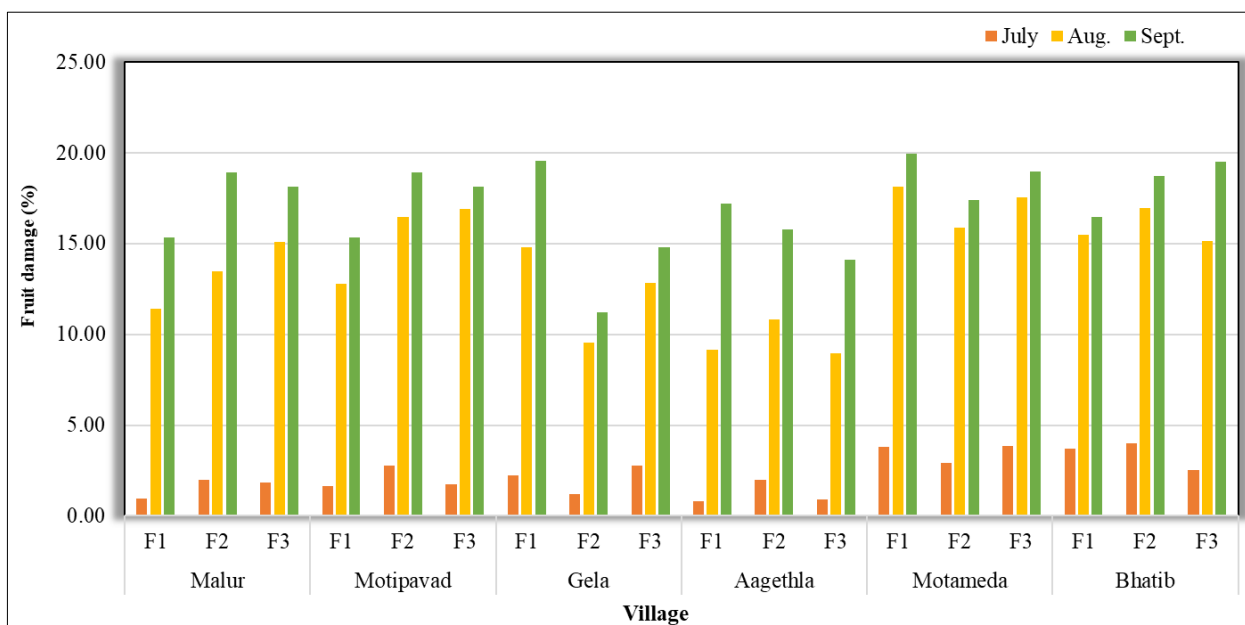


Fig 1: Survey of infestation Anar butterfly (*V. isocrates*) in pomegranate in Banaskantha district

Conclusion

The peak activity of pomegranate Anar butterfly was observed during the 3rd week of September (38th SMW). Among the different insecticides evaluated against pomegranate fruit borer Spinosad, chlorantraniliprole and emamectin benzoate proved to be effective in managing the Anar butterfly. The survey among the six different villages of Banaskantha district recorded the maximum damage during the month of September.

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