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Studies on species composition of mango leafhoppers in different agro climatic zones of South Karnataka

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Abstract

Study was conducted to know the species composition of mango leafhoppers in different Agro climatic zones of South Karnataka during 2016-17. In each zone, leafhoppers were collected separately from irrespective of mango varieties by using a sweep net and aspirator and identified species wise using taxonomic keys. Results showed that a total of five species of mango leafhoppers were recorded viz., *Idioscopus nitidulus*, *Idioscopus nagpurensis*, *Amrasca splendens*, *Amritodus atkinsoni* and *Idioscopus clypealis*. Among these five species, three species of mango leafhoppers viz., *I. nitidulus*, *I. nagpurensis* and *A. atkinsoni* were dominant and noticed in all the surveyed places of zone 4, 7, 9 and 10.

Keywords: Mango, leafhoppers, *Idioscopus nitidulus*, *Idioscopus nagpurensis*, *Amrasca splendens*, *Amritodus atkinsoni*, *Idioscopus clypealis*, species composition

1. Introduction

Mango is the most ancient among the tropical fruits and is believed to have originated in Indo-Burma region. *Mangifera indica* L. is the national fruit of India and since long it is the choicest fruit in India. This fruit has been in cultivation in India sub-continent for well over 4000 years and has been the favourite of the kings and commoners because of its nutritive value, taste, attractive fragrance and health promoting qualities. Among the pests that occur on mango, leafhoppers are economically important [1]. A total of 37 species of Auchenorrhyncha in seven families is associated with mango all over the world [2]. These groups form major pest taxa of mango in India. A total of six subfamilies of Cicadellidae having 26 species are reported to feed on mango leaves and inflorescence. Subfamily idiocerinae is a predominant group of leafhoppers on mango [3]. As a first step, the study was conducted to know the species composition of mango leafhoppers in four different Agro climatic zones of South Karnataka (zone 4, 7, 9 and 10).

2. Materials and Methods

The present investigation was carried out during 2016-17 to study the species composition of mango leafhoppers in four different Agro climatic zones of South Karnataka mentioned in table 1. In each zone, two locations were selected and visited twice once during off season (July-August) and another during peak flowering time (January- February), leafhoppers were collected from irrespective of mango varieties by using sweep net and aspirator. A total of 100 adult leafhoppers were collected from each place and identified species wise using taxonomic keys [3].

Table 1: Zone number, name and places selected for the study of species composition

Zone number	Zone Name	Places selected
Zone 4	Central Dry Zone	Chitradurga, Hiriya
Zone 7	Southern Transition Zone	Shikaripura, Channagiri
Zone 9	Hilly Zone	Mudigere, Chickmagalur
Zone10	Coastal Zone	Udupi, Brahmavara

3. Results

The perusal of the data presented in table 2 revealed that out of the total collections of both seasons in zone 4 (Central Dry Zone), three species of mango leafhoppers were recorded

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during off season those were *Idioscopus nitidulus* (earlier called as *Idioscopus niveosparsus*) (Figure 1), *Idioscopus nagpurensis* (Figure 2) and *Amritodus atkinsoni* (Figure 3). In addition to the three species one more species (*Amrasca splendens*) (Figure 4) was recorded during flowering season; a total of four species of mango leafhoppers were identified in zone 4. In zone 7 (Southern Transition Zone) out of the total collections of both seasons, same four species (*I. nitidulus*, *I. nagpurensis*, *A. atkinsoni* and *Amrasca splendens*) of mango leafhoppers were recorded as seen in zone 4. In zone 9 (Hilly Zone), in addition to the four species of mango leafhoppers one more species i.e. *Idioscopus clypealis* (Figure 5) was identified during flowering season. In zone 10 (Coastal Zone), same three species of mango leafhoppers, *I. nitidulus*, *I.*

nagpurensis and *A. atkinsoni* were identified as seen in zone 4, 7 and 9.

A total of five species of mango leafhoppers were recorded. During off season, *I. nagpurensis* is the dominant species with an average percentage of 56.00, 60.00, 58.00 and 55.00 in zone 4, 7, 9 and 10 followed by *I. nitidulus* and *A. atkinsoni*. During flowering season, *I. nitidulus* is the dominant species with an average percentage of 77.00, 79.00, 75.00 and 78.00 in zone 4, 7, 9 and 10 followed by *I. nagpurensis* and *A. atkinsoni*. Irrespective of the season *I. nitidulus* is the dominant species with an average percentage of 59.50, 58.00, 57.20 and 60.00 in zone 4, 7, 9 and 10 followed by *I. nagpurensis* and *A. atkinsoni*.

Table 2: Species composition of mango leaf hoppers in different Agro climatic zones of Karnataka

Zone number	Zone Name	Places selected	Species recorded	Percent of each species observed		Average Percent
				Off season (Jul-Aug)	On season (Jan- Feb)	
Zone 4	Central Dry Zone	Chitradurga, Hiriyr	1. <i>Idioscopus nitidulus</i>	42.00	77.00	59.50
			2. <i>Idioscopus nagpurensis</i>	56.00	20.00	38.00
			3. <i>Amrasca splendens</i>	0.00	1.00	0.50
			4. <i>Amritodus atkinsoni</i>	2.00	2.00	2.00
Zone 7	Southern Transition Zone	Shikaripura, Channagiri	1. <i>Idioscopus nitidulus</i>	37.00	79.00	58.00
			2. <i>Idioscopus nagpurensis</i>	60.00	17.00	38.50
			3. <i>Amrasca splendens</i>	0.00	2.00	1.00
			4. <i>Amritodus atkinsoni</i>	3.00	2.00	2.50
Zone 9	Hilly Zone	Mudigere, Chickmagalur	1. <i>Idioscopus nitidulus</i>	40.00	75.00	57.20
			2. <i>Idioscopus nagpurensis</i>	58.00	19.00	38.50
			3. <i>Amrasca splendens</i>	0.00	1.00	0.50
			4. <i>Amritodus atkinsoni</i>	2.00	2.00	2.00
			5. <i>Idioscopus clypealis</i>	0.00	3.00	1.50
Zone 10	Coastal Zone	Udupi, Brahmavara	1. <i>Idioscopus nitidulus</i>	42.00	78.00	60.00
			2. <i>Idioscopus nagpurensis</i>	55.00	18.00	36.50
			3. <i>Amritodus atkinsoni</i>	3.00	4.00	3.50

* Total no. of leafhoppers collected from each zone per each visit =100



Fig 1: *Idioscopus nitidulus*

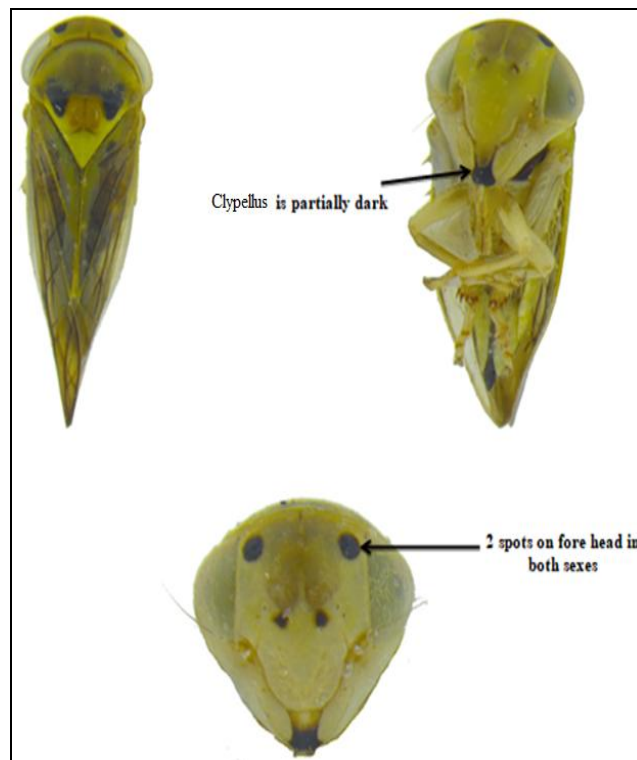


Fig 2: *Idioscopus nagpurensis*



Fig 3: *Amritodus atkinsoni*



Fig 4: *Amrasca splendens*

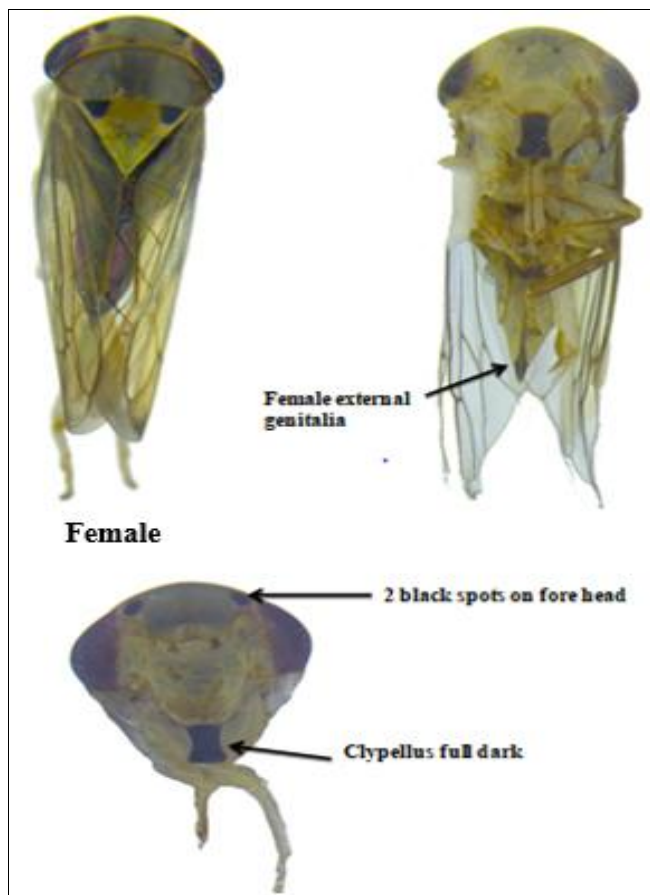


Fig 5: *Idioscopus clypealis*

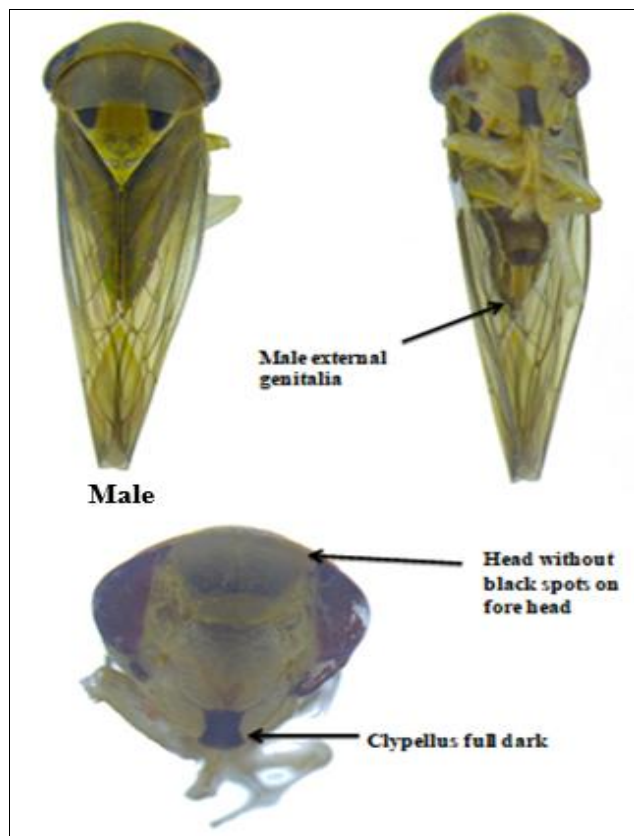


Fig 6: *Idioscopus clypealis*

4. Discussion

Mango leafhoppers species distribution varies with region to region due to their fair adaptation. Among the five species of mango leafhoppers recorded, three species viz., *I. nitidulus*, *I. nagpurensis* and *A. atkinsoni* were dominant. The present finding was in confirmation with the findings of [4] who recorded as many as 20 species of leafhoppers on mango in Konkan region of Maharashtra. Among them, *I. nitidulus*, *A. atkinsoni* and *I. nagpurensis* were found to be major ones. The species *I. clypealis* was recorded from zone 9 (hilly zone) which confirms the reports of earlier research workers [2, 3] who reported that *I. clypealis* was common in north India and occasionally seen in cold climatic conditions in south India.

5. Conclusion

A total of five species of mango leafhoppers were recorded. Among these five species, three species of mango leafhoppers viz., *I. nitidulus*, *I. nagpurensis* and *A. atkinsoni* were dominant and noticed in all the surveyed places of zone 4, 7, 9 and 10. In addition to these three species of mango leafhoppers two more species i.e. *Amrasca splendens* was noticed in zone 4, 7 and *I. clypealis* was noticed in zone 9 respectively.

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