

DETECTION AND MONITORING OF FRUIT FLIES (DIPTERA:TEPHRITIDAE) IN CENTRAL SUDAN

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Introduction

Fruit flies of the family Tephritidae are well-known pests. Their attacks reduce both yield and quality of fruits. Fruits production in Sudan is hampered by a number of insect pests, specially fruit flies. Nearly 40 species are recorded (Abdelata 2007, Ali, 2007). The most important ones are *B.dorsalis*, *B.zonata*, *C.cosyra* , *C.capitata* and *C.quinaria*. The objectives of this research are to determine the prevailing species, relative abundance and seasonal distribution of fruit fly species in Gezira and Sennar States.

Materials and Methods

Trapping was conducted for one full year's cycle. The focus was on fruit infesting species, mainly Ceratitid, in particular the genus *Ceratilis* and *Dacine*, with emphases on *Bacterocera* and *Dacus* genera. Samples were collected from mango orchards from the two locations using four types of male lures (parapheromones), Trimedure, Terpinylacetate, Cue lure and Methyl eugenol, in the form of plugs to collect adults of fruit flies. Captured flies were then collected in plastic bags using a fine hair brush, brought to the laboratory where they are identified. Representative specimens of the collection were sent to the Royal Museum for Central Africa in Belgium to confirm the identification.

Table 1: Fruit fly species caught using different male lures in Gezira State during June 2009-May 2010.

Genus	Species	Methyl eugenol	Cue lure	Terpinyl acetate	Trimedure
Bacterocera	Dorsalis	2951	-	-	-
	cucurbitae	-	175	-	-
Ceratilis	Cosyra	-	-	10	-
	Capitata	-	-	6	6
	quinaria	-	-	73	73
Total		2951	175	89	79
Total of species		1	1	3	2

Results and discussions

During the surveys conducted (2009- 2010) five fruit fly species namely *B. dorsalis*, *Z. cucurbitae*, *C. cosyra*, *C. capitata*, *C. quinaria* were detected (Table 1 and 2). *D. ciliatus* was only detected in Sennar State, where only two specimens of this species were caught using the sexual attractant CueLure. Results showed that *B. dorsalis* was the dominant species in Gezira State, representing 98.4% of fruit fly composition. This reveals that *B. dorsalis* was able to compete and quickly replacing the indigenous fruit fly *C. cosyra*. *C. capitata* and *C. quinaria* constitute 0.04 and 0.5% of fruit fly composition in Gezira State respectively.

In Sennar State, *Z. cucurbitae* is the abundant fruit fly species representing 58% followed by *C. cosyra*, *B. dorsalis*, *C. capitata* and *C. quinaria* 20.9, 20.5, 0.5 and 0.04% of fruit fly composition respectively. *B. dorsalis* was present all year around in Sennar and Gezira States. The highest population of *B. invadens* in Sennar State was 762 adult/trap/week was observed on the second week of January 2010 (Fig. 1). Population of *Z. cucurbitae* was higher in Sennar State compared to Gezira. (Fig. 2).

Population of *C. cosyra* was very low in Gezira State it was always remains near the zero ranging between zero-4 adult/trap/week (Fig. 3). In Sennar State, the population of *C. cosyra* was much higher compared to that of Gezira, the highest population was observed during the first week of June till the second week of July ranging between 129-343 adult/trap/week (Fig. 4).

Population of *C. capitata* was very low in the two States, the population ranged between 0-12 adult/trap/week in Sennar state while in Gezira the population in most cases was zero except for four counts which ranged between 1-4 adults/trap/week (Fig.5). Weekly counts of *C. quinaria* showed that the two states were almost free from this species during June-October 2009, the rest of the other counts remains very low ranging between 0-22 adult/trap/week. Population of the species was relatively higher in Gezira, peak of 22 compared to 15 adult/trap/week in Sennar State (Fig. 5). These results indicated that these species has less impact on fruit production in these States.

Table 2: Fruit fly species caught using different male lures in Sennar State during June 2009-May 2010.

Genus	Species	Methyl eugenol	Cue lure	Terpinyl acetate	Trimedure
Bacterocera	Dorsalis	4778	-	-	-
	cucurbitae	-	13112	-	406
Dacus	Ciliatus	-	2	-	-
Ceratilis	Cosyra	-	6	4885	-
	Capitata	-	-	2	116
	quinaria	-	-	34	-
Total		4778	13120	4921	522
Total of species		1	3	3	2

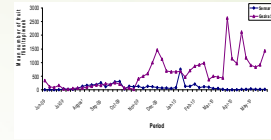


Figure (1): Weekly catches of *B. dorsalis* by using Methyl eugenol in mango during June 2009 – May 2010 in Sennar and Gezira States

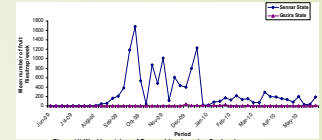


Figure (2): Weekly catches of *Z. cucurbitae* by using CueLure in mango during June 2009 – May 2010 in Sennar and Gezira States

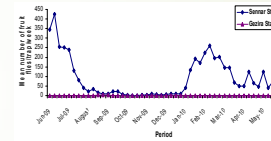


Figure (3): Weekly catches of *C. cosyra* by using Terpinyl acetate in mango during June 2009 – May 2010 in Sennar and Gezira States

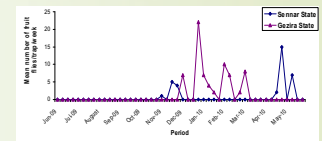


Figure (4): Weekly catches of *C. quinaria* by using Terpinyl acetate in mango during June 2009 – May 2010 in Sennar and Gezira States

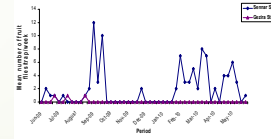


Figure (5): Weekly catches of *C. capitata* by using Trimedure in mango during June 2009 – May 2010 in Sennar and Gezira States

References

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