

# **SPECIES OF SHOOT FLIES REARED FROM SORGHUM AT PATANCHERU, ANDHRA PRADESH, INDIA**

Presented at the Symposium on the occasion of  
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SPECIES OF SHOOT FLIES REARED FROM SORGHUM AT PATANCHERU, ANDHRA PRADESH,  
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ABSTRACT

A total of 12 species of shoot flies from two genera, *Atherigona* and *Acritochaeta* were reared from a range of sorghum cultivars showing typical "dead heart" symptoms over a 3 year period. *Atherigona soccata* Rond. was the dominant species, accounting for more than 97 percent of the male flies reared. The second most common species was *Acritochaeta orientalis* Schin. An interesting record was *Atherigona eriochloae* Mall. reared from tillers of ratooned sorghum. Two species new to science were recorded.

INTRODUCTION

The shoot fly *Atherigona soccata* Rondani (Muscidae) (Syn. *A. indica infusata* Emd.), is a serious pest of sorghum in Africa and Asia (Ponnaiya 1951, Swaine and Wyatt 1954, Blum 1969, Jotwani et al. 1970, Deeming 1971, Granados et al. 1972). Surprisingly there appears to be little information on the range of species actually reared from sorghum. Pont (1972) recorded four, while Deeming (loc cit) recorded eight, only two of which occurred in significant numbers. There was a suggestion by Baliddawa and Lyon (1974)

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and Taksdal and Baliddawa (1975) that the erratic results with insecticide obtained in shoot fly control operations (Davies and Jowett, 1966) was due to the presence of upto six species of *Atherigona* in sweep net catches from sorghum fields and that evaluation of the role of minor species was important. Clearwater and Othieno (1977) in Kenya, using sweep netting and suction traps, also noted the presence of a range of species in sorghum fields. In none of these reports is there record of actual breeding from crop sorghum.

#### METHODS

From 1974 to 1978, seedlings and tillers from a range of sorghum cultivars showing typical "dead heart" symptoms have been collected throughout each year from both farmers' fields and from ICRISAT Center at Patancheru, Andhra Pradesh, India. The material was placed in breeding cages and all flies emerging were sexed and the males identified, as at the start of the study identification of females was not possible. Determinations were made at two periods - the first from September 1974 to December 1975, which was a time when ICRISAT Center was being developed and the crop acreage was relatively low compared to the grassed area, the second in the period from June 1977 to September 1978, when extensive areas of sorghum were sown in both the rainy and post rainy seasons.

#### RESULTS

In the first period, the total number of flies recorded was low - but this was partly related to the amount of effort put into collection and rearing (See Table 1).

Table 1. Species and totals of shoot flies bred from Sorghum at ICRISAT Center, Patancheru, September 1974 - December 1975.

Species of male flies bred	Totals
<i>Atherigona soccata</i> Rond.	644
<i>Atherigona eriochloae</i> Mall.	7
<i>Atherigona falcata</i> Thom.	3
<i>Atherigona approximata</i> Mall.	1
<i>Acritochaeta orientalis</i> Schin.	7
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Grand Total:	662 (1981)*
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( )\* Total flies, male and female reared.

Approximately one third of the flies recorded were males, and of these, 97 percent were *A. soccata*, obtained mainly at the times of seedling growth in the rainy and post rainy season. Four additional species were recorded, but in very low numbers.

Far more extensive rearing work was carried out in the second period and of a total of 11 species recorded two are as yet undescribed (Table 2). Again *A. soccata* was the dominant species (just under 99 percent of those bred), with *Acritochaeta orientalis* accounting for the bulk of the remainder.

#### DISCUSSION

Clearly during both periods, species other than *A. soccata* were insignificant as sources of dead heart damage in sorghum. *Acritochaeta*

Table 2. Species and totals of shoot flies reared from sorghum at ICRISAT Center and nearby farmers' fields. June 1977 - September 1978

Species of male flies bred	Totals
<i>Atherigona soccata</i> Rond.	24400
<i>Atherigona falcata</i> Thom.	15
<i>Atherigona punctata</i> Karl.	4
<i>Atherigona pulla</i> Wied.	3
<i>Atherigona approximata</i> Mall.	2
<i>Atherigona reversura</i> Villen.	1
<i>Atherigona atripalpis</i> Mall.	1
<i>Atherigona simplex</i> Thom.	1
<i>Atherigona</i> sp. III	1
<i>Atherigona</i> sp. X	1
<i>Acritochaeta orientalis</i> Schin.	237
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Grand Total:	24666 (55473)*
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( )\* Total flies, male and female reared.

*orientalis*, which is suspected to being a predatory (Deeming, 1971) or a saprophytic species (Pont, 1972), was the second most common species. The record of *A. eriochloae* in the first period was not repeated in the second. This species was bred from ratoon tillers which were present on a rainy season crop growing in a pesticide free isolated area which was not ploughed out. The record of *A. approximata*, which is normally associated with pearl millet, attacking sorghum is important, however it is clear that

sorghum supports only very low numbers of this species. The record of *A. falcata* in both periods is of significance since this species has been shown to be the dominant species on a range of grass hosts at ICRISAT, particularly *Echinochloa colonum* in the rainy season, and is by far the most common species numerically in attractant trap studies. (Seshu Reddy and Davies 1977). *Atherigona oryzae*, a species which was recorded from sorghum by Pont (1972), was not reared in these studies. This species is however present at ICRISAT Center, particularly in *Digitaria adscendens*.

*A. punctata*, the main species reared from grass at ICRISAT Center, particularly in August and September clearly does not favour sorghum.

It appears very unlikely therefore, that species other than *A. soccata* will need much attention in considering the entomological aspects of sorghum cultivation.

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