

RESEARCH NOTE

# Effect of weather factors on population of shoot fly, *Atherigona soccata* (Rondani) on sorghum crop

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## ABSTRACT

Study on population dynamics of shoot fly revealed that the infestation of shoot fly on sorghum commenced in 1<sup>st</sup> week after germination *i.e.* 2<sup>nd</sup> week of July with 25.00 per cent dead heart. The pest infestation increased fast during next week (*i.e.* 2<sup>nd</sup> week after germination) and formed at first peak in 2<sup>nd</sup> week after germination of the crop and reached at the pest infestation (dead heart) 39.00 per cent. However, the damage decreased during 3<sup>rd</sup> and 4<sup>th</sup> week after germination of the crop (4<sup>th</sup> week of July and 1<sup>st</sup> week of August). Thereafter the damage caused by this pest disappeared from 5<sup>th</sup> week after germination of crop.

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In India, sorghum crop is cultivated throughout the year but in Saurashtra region of Gujarat, it is cultivated mostly during *Kharif*. The crop has to withstand diversified weather changes over their growth period. It is exposed to many insect pests resulting in varying levels of infestation. The sorghum shoot fly, *Atherigona soccata* (Rondani) is considered to be the most destructive pest of sorghum in Asia, Mediterranean Europe and Africa. The maggot damages 1 to 3 weed old seedlings by killing the central shoot known as dead heart. The tillers produced subsequently are also infested by the pest and thus, an enormous loss occurs. This may lead to complete failure of crop (Usman, 1968). Environmental components thus, become directly responsible for limiting the extent of survival, degree of development, fecundity and so on. Thus, the study on population dynamics of shoot fly needed to be worked out in relation to environmental conditions prevailing at Junagadh.

The experiment on the population dynamics of the pest infesting sorghum was carried out at College Farm, College of Agriculture, Junagadh Agricultural University, Junagadh in a block size of 10 m × 10 m (100m<sup>2</sup>) keeping the spacing of 45 cm × 10 cm from row to row. The seeds of sorghum variety GJ-39 were sown on 24<sup>th</sup> June, 2004 after sufficient rain. All the recommended agronomic practices and crop husbandry were

adopted timely to raise the good crop. Randomly ten spots were selected from the plot and ten plants were selected randomly from each spot for observation. Observations were recorded on the basis of dead heart counts at weekly intervals after seed germination, up to 50 days. Damaged plants were tagged after observation.

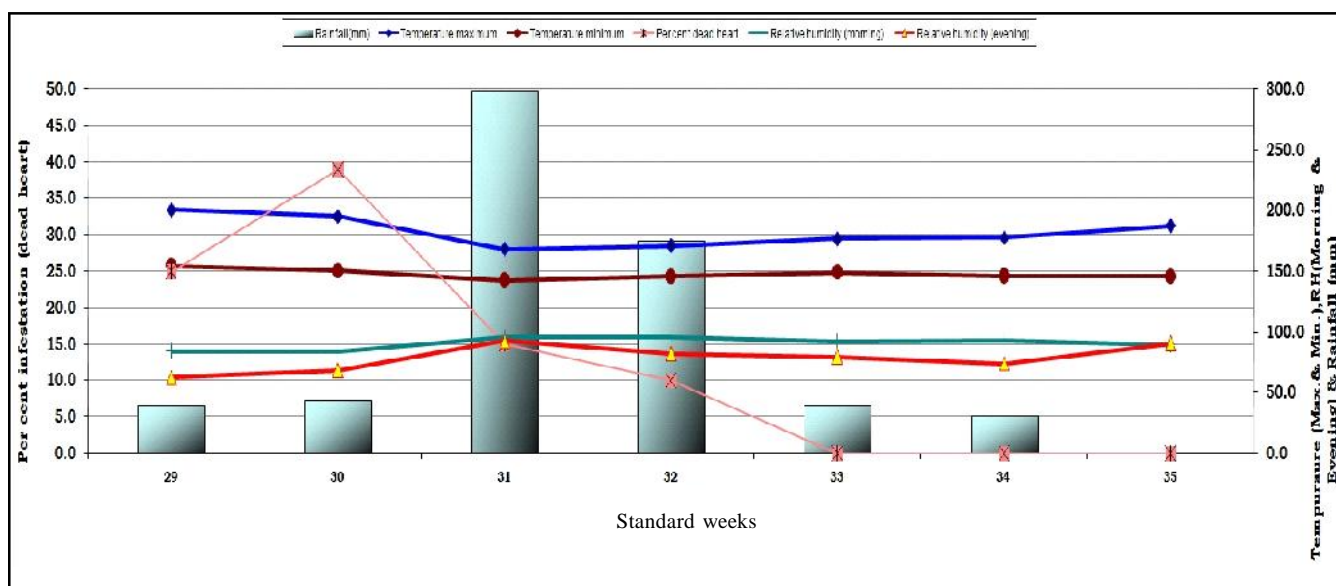
The data on population dynamics of shoot fly infesting sorghum variety GJ-39 during *Kharif* 2004 are presented in Table 1 and depicted in histogram in Fig. 1.

The data showed that the mean per cent dead heart caused by shoot fly on sorghum commenced in 1<sup>st</sup> week after germination of crop *i.e.* 2<sup>nd</sup> week of July with 25.00 per cent dead heart. The per cent dead heart increased fast during next week (*i.e.* 2<sup>nd</sup> week after germination) and formed first peak in 2<sup>nd</sup> week after germination of the crop and reached at 39.00 per cent dead heart. However, the damage (dead heart) caused by shoot fly decreased during 3<sup>rd</sup> and 4<sup>th</sup> week after germination of crop (4<sup>th</sup> week of July and 1<sup>st</sup> week of August) which showed 15.00 and 10.00 per cent dead heart, respectively. Thereafter the damage caused by shoot fly was disappeared from 5<sup>th</sup> week after germination of crop.

From the data, it can also be concluded that the population of shoot fly appeared during 2<sup>nd</sup> week of July *i.e.*

**Table 1 : Population of shoot fly (*A.soccata*) on sorghum (variety G.J-39) in relation to different weather parameters during Kharif 2004**

Sr. No.	Standard week	Date of observation	Week after germination of crop	Mean of per cent dead heart	Av. temperature (°C)		Relative humidity (%)		Rainfall (mm)
					Max.	Min.	Morning	Evening	
1.	29	6-7-2004 to 12-7-004	1	25.0	33.5	25.8	84	63	40.5
2.	30	13-7-2004 to 19-7-2004	2	39.0	32.6	25.1	84	69	43.7
3.	31	20-7-2004 to 26-7-2004	3	15.0	28.1	23.8	96	93	298.6
4.	32	27-7-2004 to 2-8-2004	4	10.0	28.5	24.3	96	82	175.4
5.	33	3-8-2004 to 9-8-2004	5	0.0	29.5	24.9	93	80	40.2
6.	34	10-8-2004 to 16-8-2004	6	0.0	29.7	24.4	94	74	31.0
7.	35	17-8-2004 to 23-8-2004	7	0.0	31.3	24.3	90	91	0.0

**Fig. 1 : Meteorological data with population dynamics of *A. soccata* recorded during Kharif 2004**

1<sup>st</sup> week after germination of crop and remained active at crop age of 4<sup>th</sup> week after germination during season with a peak activity during 2<sup>nd</sup> week after germination of crop *i.e.* 3<sup>rd</sup> week of July.

Thus, the data clearly indicated that the pest infestation continued from July to August on sorghum crop (*i.e.* at crop age of 4<sup>th</sup> week after germination).

Kandalkar *et al.* (1996) revealed that peak period of shoot fly infestation occurred 13 to 41 days after sowing. Similar observations have been recorded by Kandalkar *et al.* (2001). Balikai (2000) reported that shoot fly population began to increase in July on sorghum. Thus, the present finding corroborates with the results reported by earlier workers.

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