



## SURVEY ON THE INCIDENCE OF CIGARETTE BEETLE *LASIODERMA SERRICORNE* F. IN STORED TURMERIC

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### ABSTRACT

A survey was conducted to evaluate the incidence of cigarette beetle *Lasioderma serricorne* F. in three districts of Telangana state viz., Nizamabad, Ranga Reddy and Warangal. The survey was conducted twice- July and October 2014. These surveys revealed the prevalence of five species in stored turmeric viz., cigarette beetle *Lasioderma serricorne* F., drug store beetle *Stegobium paniceum* L., red flour beetle *Tribolium castaneum* Herbst, lesser grain borer *Rhyzopertha dominica* F. and saw-toothed grain beetle *Oryzaephilus surinamensis* L. Among these, *L. serricorne* was found to be the most dominant in all the three districts, with maximum infestation being observed in Ranga Reddy district.

**Key words:** Turmeric, *Lasioderma serricorne*, *Stegobium paniceum*, *Tribolium castaneum*, *Rhyzopertha dominica*, *Oryzaephilus surinamensis*, survey, storage pest, rhizomes, fingers, incidence

Turmeric is a rhizomatous herbaceous perennial plant belonging to the ginger family (Zingiberaceae), botanically known as *Curcuma longa* L., originated from tropical south Asia (India). Various insects have been recorded on dry turmeric, which belong to the order Coleoptera, and these include cigarette beetle (*Lasioderma serricorne* F.), drugstore beetle (*Stegobium paniceum* L.), red flour beetle (*Tribolium castaneum* Herbst), lesser grain borer (*Rhyzopertha dominica* F.), saw toothed grain beetle (*Oryzaephilus surinamensis* L.) and coffee bean weevil (*Araecerus fasciculatus* De Geer). Among these, the cigarette beetle is serious, and the loss in turmeric in terms of quantitative weight at three and six months after storage being 7.15 and 22.75%, respectively (Vidya and Awaknavar, 2004). Very little work has been done on the incidence of cigarette beetle and other pests on cured turmeric rhizomes during storage. In view of such serious losses, searching a method for detection of the hidden infestation is required. Hence, the present study on the storage pests attacking the stored turmeric, and also their incidence level in the three districts of Telangana state.

### MATERIALS AND METHODS

Survey on the incidence of cigarette beetle and relative incidence of storage pests in turmeric was conducted in three districts of Telangana state viz., Armoor, Kammarpally, Ankapur in and Morthad villages of Nizamabad; Raghavapur, Laxmidevally,

Narayanapur and Jaffarpalli villages of Ranga Reddy; and Kothur, Ameenapuram, Upparapally and Arpanapally villages in Warangal. The survey was conducted two times during July and October 2014, And from each village, samples of cured turmeric rhizomes weighing approximately 2 kg were collected. The samples surveyed during July were three to four months old, while it was eight to nine months old when surveyed during October. Each sample was thoroughly mixed and divided into four parts, from which a subsample of 500g was collected in a polythene bag (20x 10 cm), and thus there were three replications from each village. The samples were analysed physically and examined under microscope to identify the infested ones. The data obtained were subjected to square root transformation before statistical analysis in two factorial CRD.

### RESULTS AND DISCUSSION

The results on survey of insect pests in cured turmeric rhizomes conducted in three districts of Telangana state viz., Nizamabad, Ranga Reddy and Warangal during July 2014 and October 2014 are given in Table 1. During July, 2014, five species viz., *L. serricorne*, *S. paniceum*, *T. castaneum*, *R. dominica* and *O. surinamensis* were observed, of which *L. serricorne* was 19.88 while others re ranged from 0.36 to 4.13; with maximum being in samples from Ranga Reddy (6.05) on par with those of Nizamabad (5.50) and Warangal (5.08). During October, 2014, the species observed were similar, with

Table 1. Species composition of storage insect pests in cured turmeric rhizomes

Pest/ District	Pest incidence/ 500g (July, 2014)					Pest incidence/ 500g (October, 2014)					Mean
	<i>L. serricorne</i>	<i>S. paniceum</i>	<i>T. castaneum</i>	<i>R. dominica</i>	<i>O. surinamensis</i>	<i>L. serricorne</i>	<i>S. paniceum</i>	<i>T. castaneum</i>	<i>R. dominica</i>	<i>O. surinamensis</i>	
Nizamabad	20.00 (4.58)	4.75 (2.39)	1.83 (1.68)	0.91 (1.38)	0.25 (1.11)	25.67 (5.16)	7.16 (2.85)	2.33 (1.82)	2.50 (1.86)	1.25 (1.50)	7.80 (2.64)
Ranga Reddy	21.83 (4.77)	4.08 (2.25)	1.33 (1.52)	2.16 (1.76)	0.83 (1.35)	28.00 (5.38)	6.00 (2.64)	3.08 (2.01)	3.41 (2.10)	1.66 (1.61)	8.43 (2.75)
Warangal	17.83 (4.33)	3.58 (2.14)	2.75 (1.93)	1.25 (1.49)	0.00 (1.00)	22.33 (4.83)	5.91 (2.62)	4.58 (2.36)	2.83 (1.95)	0.00 (1.00)	7.13 (2.55)
Mean	19.88 (4.56)	4.13 (2.26)	1.97 (1.71)	1.44 (1.55)	0.36 (1.15)	25.33 (5.12)	6.36 (2.71)	3.33 (2.06)	2.91 (1.97)	0.97 (1.37)	
Districts ( $F_1$ )		CD (P=0.05)	SE(m)			CD (P=0.05)		SE(m)			
Pest ( $F_2$ )		0.10	0.03			0.18		0.06			
Interaction ( $F_1 \times F_2$ )		0.11	0.04			0.20		0.07			
CV (%)		0.26	0.09			0.21		0.12			
		2.97				3.59					

Figures in parentheses square root transformed values

*L. serricorne* being maximum (25.33) while others ranged from 0.97 to 6.36; and as observed earlier Ranga Reddy (8.43) samples showed more. Adesuyi (1966) reported that *L. serricorne* was the major stored product pest of turmeric, while Rajesh et al. (2015) reported that *L. serricorne* was in large number in the stored turmeric samples from Coimbatore; Abraham (1975) observed that in India, 30 to 60% of the market samples were infested. Patil et al. (1988) during 1985-86 from Maharashtra revealed that *L. serricorne* was a major pest of stored cured turmeric. Srinath and Prasad (1975) with samples collected from markets and processing centres found that, about 115 samples were infested, and 88 of them by *L. serricorne*, while only three were with *S. paniceum*; Kotikal and Kulakarni (2000) detected the infestation of *S. paniceum* and *T. castaneum*; and Srivastava (1959) reported *S. paniceum* from Rajasthan. In the present study turmeric samples surveyed during July were three to four months old while it was eight to nine months old when surveyed during October.

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