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## Earwigs as potential pests of groundnut

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Earwigs belong to insect order Dermaptera and are characterized by the presence of pair of sclerotized forceps-like cerci on the last abdominal segment and membranous hind wings tucked beneath short hardened forewings. These are tiny insects which live in chambers 1-inch deep inside debris or soil crevices. Unusual among non-social insects, mother earwigs care for their eggs and nymphs. Earwigs are abundant in America and Eurasia and are mostly scavengers but some species are omnivorous feeding on plants as well as preying on arthropods.

Earwigs species infesting groundnut in India are, *Euborellia* (= *Anisolabis*) *annulipes* (Lucas), *E. plebeja* (Dohrn), *Forcipula quadrispinosa* (Dohrn) and *E. stali* Dohrn (Barwal, 1985; Anitha, 1992; Nandagopal and Prasad, 2004). The former three earwig species are widely distributed across groundnut growing regions of India while, *E. stali* is mainly reported from Tamil Nadu (Burr, 1910; Thangarajan, 1939; Cherian and Basheer, 1940; Senguttuvan and Dhanakodi, 1997; Das and Ray, 1988; Srivastava, 2003).

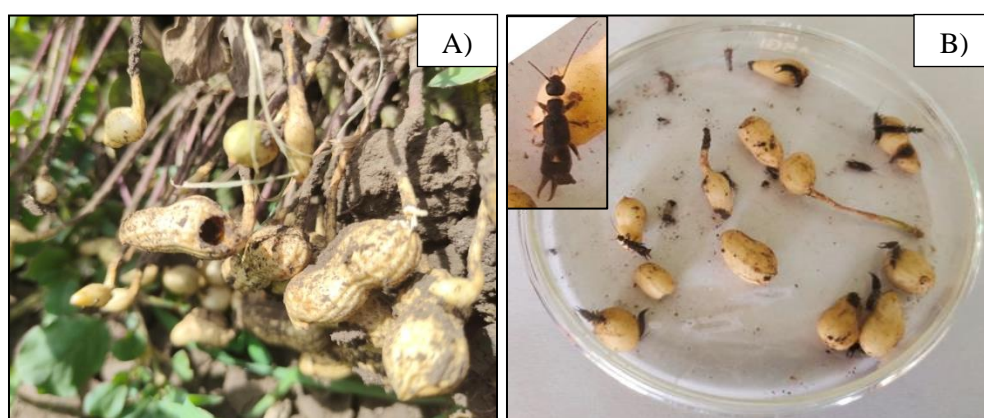
Adults are elongated, dark brownish to black insect measuring 30-35 mm in length.

Female earwigs lay 20-100 eggs in clusters on pods or in the soil. Eggs hatch in 3-11 days and nymphs pass through five instar stages to become adults. Nymphal period lasts between 30-60 days. Adults survive as long as 250 days and one generation takes 56-101 days. Both nymphs and adults of *E. stali* bore holes into tender groundnut pods and feed on the developing kernels/seeds and fill the pods with soil and/or excreta (Purushothaman *et al.*, 1970; Amin, 1988; Senguttuvan and Dhanakodi, 1997). On mature pods, earwigs fail to bore holes but can cause orange to brown colored superficial pits.

The earwig, *E. stali* on groundnut was observed from the pod developmental stage till harvest (Sahayaraj and Raju, 2003). Cherian and Basheer (1940) first recorded infestation of *E. stali* on groundnut pods and kernels at Coimbatore and South Arcot districts of Tamil Nadu. Senguttuvan and Dhanakodi (1997) also identified *E. stali* as a predominant pod borer of groundnut in Tamil Nadu. However, *E. stali* was also noted infesting groundnut pods in Bombay and Manipur (Barwal, 1985). At Tindivanam, Tamil Nadu, around 47% of pods of an introduced groundnut cultivar, Asiriya Mwitunde were earwig damaged wherein, 44% of matured pods and 52% of immature

Pods were found with bored holes (Purushothaman *et al.*, 1970). However, at Pudukkottai, Tamil Nadu both earwigs and wireworms caused pod damage ranging from 1.2 to 11.5% (Senguttuvan and Dhanakodi, 1997). Giridharan *et al.* (1985) reported that earwigs preferred Virginia bunch varieties (0.8-6.7%) over Virginia runner varieties (0.3-4.3%) of groundnut.

Since 2016, *E. stali* infestations were observed on groundnut in Saurashtra (21.4843°N, 70.4405°E), peninsular region of Gujarat. Pod damage by earwigs ranged from 2 to 25% in *Kharif* groundnut while in rabi-summer groundnut it ranged from 2 to 5% (Harish, 2021).



**Fig 1.** Characteristic earwig damage observed on groundnut. A) Hole bored on an immature pod; and B) Earwigs feeding on immature pods (**Inset:** Adult earwig).

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