



Short communication

New report of insect pests and their natural enemies in pomegranate

Sachin S. Suroshe*, Jyotsana Sharma, N.V. Singh and R.K. Pal

National Research Centre on Pomegranate, Kegaon, NH-9, Solapur 413255, Maharashtra

ABSTRACT

Different insect pests and their natural enemies got identified and reported for the first time in pomegranate. Among the borer pests, shot hole borer (*Xylosandrus compactus*) and hairy caterpillars (*Olene mendosa*, *Somena scintillans* and *Euproctis fraterna*) have been reported for the first time in pomegranate. Gummosis has also been reported for the first time in pomegranate on 5 to 10 per cent plant from orchards in Solapur and Sangli districts of Maharashtra. A new species of shot hole borer, *X. compactus* was suspected to be associated with gummosis for which, confirmatory tests could be carried out to find out its role for its effective control. Among sucking pests, vine mealybug, *Planococcus ficus*, Cottony cushion scale, *Icerya aegyptiaca*, and Brown soft scale, *Coccus hesperidum* are first report on pomegranate from Maharashtra.

Key words: Pomegranate, insect pests, gummosis, natural enemies.

Pomegranate (*Punica granatum* L.) is an important fruit crop suitable for arid and semi-arid regions. India is world's leading country and Maharashtra is the leading state with respect to area and pomegranate production. Pomegranate productivity in India is diminishing due to incidence of various diseases and insect pests. Among the insect pests, borers like fruit borer, *Deudorix isocrates* (Fabricius), shot hole borer (*Xyleborus* spp.) and stem borer, *Coelosterna spinator* (Fabricius) and *Zeuzera* spp. are causing losses due to their concealed habitats and lack of understanding of their bio-ecology. Of late, many other insect pests, i.e. coccids and leaf eating caterpillars are causing economic losses to pomegranate growers of the country. Therefore, surveys were carried out in different pomegranate growing regions, viz., Solapur, Nashik, Sangli, Satara and Ahmednagar districts of Maharashtra from 2010 to 2013 for ascertaining the status of different insect pests and their natural enemies. Collected insect pests from fields were brought to the laboratory and reared for adult and their natural enemy emergence. The samples of insect pests and their natural enemies were later identified from National Pusa Collection (NPC), Division of Entomology, ICAR-IARI, Pusa, New Delhi.

Among the insect pests identified (Table 1; Fig. 1) shot hole borer, *Xylosandrus compactus* (Eichhoff) and hairy caterpillars, *Olene mendosa* Hubner, *Somena scintillans* (Walker) and *Euproctis fraterna* (Moore) have been noticed for the first time on pomegranate. Pupal parasitoid, *Brachymeria* sp. is also being reported for the first time from hairy

caterpillar, *O. mendosa*. Leaf eating caterpillar, *O. mendosa*: Larvae were found feeding on tender shoots, buds, flowers and young fruits both in nethouse and orchard. Pupation takes place on the plant inside the cocoon covered with hairs of last larval instar. To study the moulting habits, ten newly hatched crawlers were kept for rearing in individual plastic jars and fed with flowers and tender fruits. The observations related to the moulting were recorded. First, second, third, fourth, fifth and sixth moulting took on average 6.4, 5.6, 5.7, 6.0, 6.2 and 4.0 days, respectively.

Natural enemies of *O. mendosa* (hairy caterpillars) were collected during November from pomegranate plants in nursery and kept in plastic jar for rearing. Larva then pupated inside the hairy cocoon and in few days yielded puparium, from which Sarcophagid, Dipteran flies emerged. It shows that parasitoid is nothing but an internal gregarious larval-pupal parasitoid of *O. mendosa*. Out of 188 pots kept in nursery 53 (28.19%) were found to be having parasitized pupae of *O. mendosa*. Out of 39 pupae collected from pomegranate plants planted in pots 25 (64%) were found to be parasitized by "Sarcophagid" fly belongs to order Diptera. A field collected pupa of *O. mendosa* yielded the hymenopteran parasitoid, which later identified as *Brachymeria* sp. Emerged chalcidid was offered fresh larva and pupa of *O. mendosa*, but could only parasitized pupa that later yielded a lone adult of chalcidid. It shows that it is an internal solitary pupal parasitoid. Earlier, Gupta (1) reported *Brachymeria jambolana* Gahan as a pupal parasitoid of *Graphium doson* (Lepidoptera: Papilionidae).

Similarly, Yellow tail tussock moth, *S. scintillans* larvae were found feeding on tender shoots, buds,

*Corresponding author's present address: Biological Control Laboratory, Division of Entomology, ICAR-IARI, Pusa, New Delhi 110012; E-mail: sachinsuroshe@gmail.com

Table 1. Identification of borer, leaf eating caterpillars and their natural enemies.

RRS No.	Common name	Scientific name	Family
639-646/11	Shot hole borer	<i>Xylosandrus compactus</i> (Eichhoff)	Scolytidae
647-655/11	Shot hole borer	<i>Xyleborus fornicatus</i> Eichhoff	Scolytidae
2597-2598/11	Hairy caterpillar	<i>Olene mendosa</i> Hubner	Lymantriidae
2600/11	Hairy caterpillar	<i>Somena scintillans</i> Walker	Lymantriidae
2601/11	Hairy caterpillar	<i>Euproctis fraterna</i> Moore	Lymantriidae
2576-2577/11	Pupal parasitoid of hairy caterpillar (<i>Olene mendosa</i>)	<i>Brachymeria</i> sp.	Chalcidae
2583-2586/11	Larval-pupal parasitoid of hairy caterpillar (<i>Olene mendosa</i>)	--	Sarcophagidae








Sl. No.	Name of insect pest/natural enemy	Photo
1.	<i>Xylosandrus compactus</i>	
2.	<i>Olene mendosa</i> (female)	
3.	<i>Olene mendosa</i> (male)	
4.	<i>Somena scintillans</i>	
5.	<i>Euproctis fraterna</i>	
6.	Sacophagid (Diptera)	
7.	<i>Brachymeria</i> sp. (Chalcidae)	

Fig. 1. Borer, leaf eating caterpillars and their natural enemies recorded on pomegranate.

flowers and young fruits both in net house and orchard. Hatched crawlers and early instars bite the growing tip and nodes of branches, which led to

drooping of growing tips of branches. Larvae of this species was also found feeding on fruits of guava grown in the vicinity of pomegranate. Adults were light yellow and forewings had brownish-grey markings. In yellow tail tussock moth, *E. fraterna*, the hatched crawlers scrap the epidermis of leaves and feed on the green matter (chlorophyll). Other larval instars were found feeding on leaves, buds, flowers and fruits. Scrapping marks were seen on the tender fruits too. Adults were dark yellow with black dot marks on fore wings.

Black twig borer, *X. compactus* was found to be one of the few ambrosia beetles that infest healthy plants. Adult female are black and grow upto 1.4 to 1.9 mm length, while adult males were reddish-brown with length of 0.8 to 1.1 mm. Grownup larva has, *i.e.* length of 2 mm and pupal length was found similar to adults. In Italy, *X. compactus* attacks have been recorded on many other trees and shrubs such as cherry laurel, pitto-sporum, spindle, strawberry tree, hazelnut, holm oak, English oak, maple, alder, beech, elm, lime, sweet gum, tulip tree, magnolia, common dogwood, pomegranate, azalea, rhododendron, camellia, gardenia, lemon and olive (Pennacchio *et al.*, 10). It has also been reported from India in Tamil Nadu from Robusta coffee and avocado (Regupathy and Ayyasamy, 11) and as a new record from Karnataka (India) on grapes mainly confined to rooted cuttings (Keshava Reddy *et al.*, 7).

Gummosis affected (5 to 10% plants) orchards were noted in Pandharpur (Solapur) and Kavathemahakal (Sangli) (Fig. 2a). Affected parts of twig from which gum was exuding were seen with small holes of uniform size as inflicted by the shot hole borer. Earlier reports have also shown that infestation by different insects, *viz.*, shot hole borer, bark beetle and stem borer is accompanied by gummosis in horticultural plants (Rexrode, 12; Barnd and Ginzal, 3). Observed infested twigs (Fig. 2b) also showed the presence of live and dead adults of shot hole borer. The association of shot hole borer species,

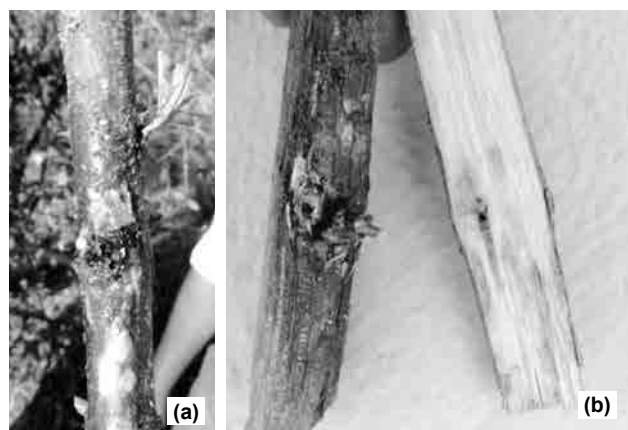


Fig. 2. Gummosis on pomegranate. a) Exuding gum and small hole on twig, b) Split open twig showing hole.

Xyleborus fornicatus Eichh. with pomegranate is known for years, but the symptoms of gummosis were not known earlier. However, our observations show that a new species of shot hole borer, *X. compactus*, may be associated with gummosis. Confirmatory tests should be carried out to find out association of this borer and gummosis in pomegranate. It was interesting to note that, Granulate ambrosia beetle, *Xylosandrus crassiusculus* Motschulsky (Coleoptera: Curculionidae: Scolytinae) has already been reported to cause heavy gummosis on tree trunks of *Prunus* sp. (Anon, 2)

Identification of sucking pests and their natural enemies have been shown in Table 2 and Fig. 3. These comprised of vine mealybug, *Planococcus ficus* Signoret; cottony cushion scale, *Icerya aegyptiaca* (Douglas); brown scale, *Coccus hesperidium* L. and plant hopper (*Flata* sp.) have been noticed for the first time on pomegranate in India. Vine mealybug, *P. ficus* has already been reported from Israel on pomegranate and grapevine in 1977 (Gol'berg, 5; Dreistadt, 4). It was always found feeding near crown region of well developed fruits.

Cottony cushion scale, *I. aegyptiaca* has been reported as a pest of pomegranate from Egypt (Mesbah, 9). This pest assumes severe form on pomegranate






Sl. No.	Name of pest	Photo
1.	<i>Rhipiphorothrips cruentatus</i>	
2.	<i>Flata</i> sp.	
3.	<i>Planococcus ficus</i>	
4.	<i>Icerya aegyptiaca</i>	
5.	<i>Coccus hesperidium</i>	

Fig. 3. Sucking insect pests of pomegranate.

grown under controlled condition, i.e. greenhouse, polyhouse and net house. In field condition this is of minor nature.

Grape thrips, *Rhipiphorothrips cruentatus* Hood: Always noticed on the fruits of var. Ganesh and not on fruits of var. Bhagwa, Mridula and Arakta. It feed on fruits by scrapping the rind near crown region. It has been reported as a pest of pomegranate by many workers (Kotikal *et al.*, 8) in India. Many farmers in western Maharashtra grow pomegranate and grape side by side that might aggravate its damage in future. Adults of brown scale, *C. hesperidium* were noted to have yellow to brown and has multiple generations

Table 2. Identification of sucking pests and their natural enemies.

RRS No.	Common name	Scientific name	Family
3083-3087/11	Thrips	<i>Rhipiphorothrips cruentatus</i> Hood	Thripidae
2602-2607/10	Mealybug	<i>Planococcus ficus</i> (signoret)	Pseudococcidae
2608-2612/11	Cottony cushion scale	<i>Icerya aegyptiaca</i> (Douglas)	Margarodidae
2613-2617/11	Brown scale	<i>Coccus hesperidium</i> L.	Coccidae
2618/11	Plant hopper	<i>Flata</i> sp.	Flatidae

and all stages were present on pomegranate tree at the same time. It is already known as a pest of pomegranate in California, USA (www.ipm.ucdavis.edu, 6). *Flata* sp. is a first report on pomegranate and known to be of minor importance. Found in good numbers on pomegranate planted in pots under nethouses and greenhouses. Being a member of Flatidae is a plant-feeding insect. They are about 15 mm long and they resemble small leaves and are generally found on trees. Their wings are triangular, and the back edge and corners of their wings are lined with dotted red. Adults live for about two months.

In conclusion, a new species of shot hole borer, *X. compactus* may was suspected to be associated with gummosis in pomegranate. Among sucking pests, vine mealy bug, *Planococcus ficus* cottony cushion scale *Icerya aegyptiaca* and brown soft scale, *Coccus hesperidum* are first report on pomegranate belts of Maharashtra.

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