

APHIS-PPQ

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Order: Family

Hemiptera: Lygaeidae

Pest

COTTONSEED BUG
Oxycarenus hyalinipennis (Costa)

Economic
Importance

This lygaeid infests the seed of cotton in the field as the bolls open. Weight loss in cottonseed in Egypt has been estimated at 2.5-15 percent annually. Severe infestations in that country may decrease germination by as much as 75 percent. Oil quality of the seed is also reduced. A secondary loss, staining of the lint, occurs when the bugs are crushed during ginning. Populations build up to high levels in Egypt and the Sudan; as many as 749 nymphs and adults have been recorded in a single boll (Kirkpatrick 1923). In Brazil, observations indicate the insect is generally a minor pest of cotton, but it can become a nuisance problem in stored unginned cotton.

Hosts

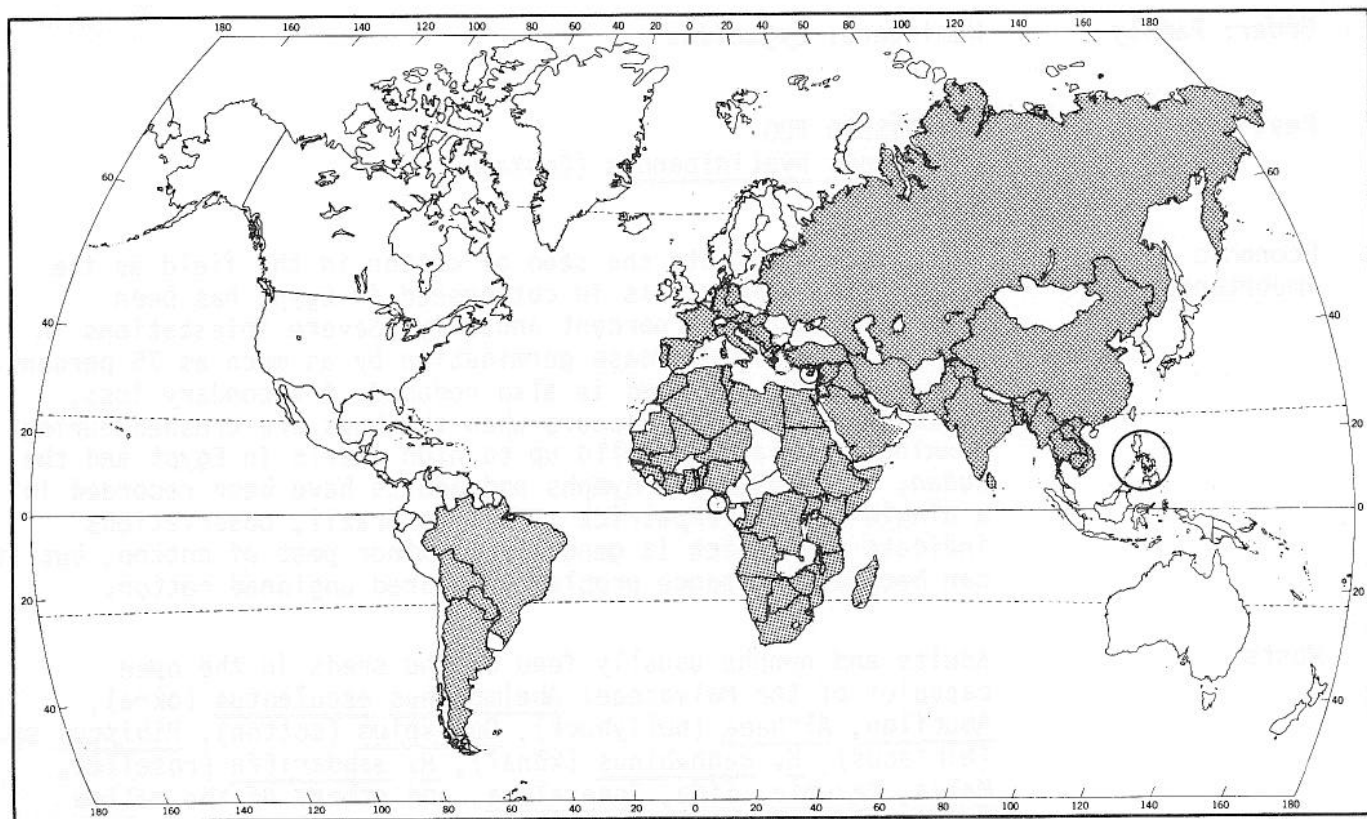
Adults and nymphs usually feed on the seeds in the open capsules of the Malvaceae: Abelmoschus esculentus (okra), Abutilon, Althaea (hollyhock), Gossypium (cotton), Hibiscus sp. (hibiscus), H. cannabinus (kenaf), H. sabdariffa (roselle), Malva, Pavonia, Sida, Spaeralcea, and others of the mallow family (Samy 1969, Slater 1972). Other host genera include Brachychiton, Melhania, and Sterculia. Kirkpatrick (1923) did not observe much movement by this bug from one host to another but noted that development can readily continue on another host. Dimetry (1973) found cotton, kenaf, okra, and roselle the most conducive to supporting growth of this pest. Avidov and Harpaz (1969) also noted that this species has been observed sucking the fruits of Cydonia (quince), Diospyros (persimmon), Malus (apple), Prunus (apricot, peach), Pyrus (pear), and Vitis (grape) in Israel.

General
Distribution

Slater (1964) or the Commonwealth Institute of Entomology (1982) listed the following countries for this pest: Algeria, Angola, Argentina, Austria, Bangladesh, Benin, Bolivia, Botswana, Brazil, Burma, Burundi, China, Congo, Cyprus, Egypt, Ethiopia, France, Germany, Ghana, Greece, Guinea, Hungary, India, Iran, Iraq, Israel, Italy (including Sicily), Ivory

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Oxycareus hyalinipennis distribution map prepared by
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Coast, Kampuchea, Kenya, Laos, Libya, Madagascar, Mauritania, Morocco, Mozambique, Malawi, Mali, Namibia, Niger, Nigeria, Pakistan, Paraguay, Philippine Islands, Portugal, Rwanda, Sao Tome, Sardinia, Saudi Arabia, Senegal, Somalia, South Africa, Soviet Union, Spain, Sri Lanka, Sudan, Swaziland, Syria, Tanzania, Thailand, Togo, Tunisia, Turkey, Uganda, Vietnam, Yemen (Aden), Yemen (Sanaa), Yugoslavia, Zaire, and Zimbabwe.

Characters

Oxycareus hyalinipennis belongs in the subfamily Oxycareninae with at least 20 other genera, three of which occur in the New World (Slater 1972, 1974). Dycoderus Uhler occurs in the western United States, Crophius Stal is known from the United States and Neotropical America, while Neaplix Slater is found only in Mexico. So far, Oxycareus is limited to the Old World and South America (introduced). Potentially, O. hyalinipennis could survive in southern California and other parts of the southern United States (cotton-growing areas) where climatic conditions are similar to those of many parts of Africa, Asia, and Europe.

Technical description

ADULTS (Fig. 1) - Newly emerged individuals pale pink but rapidly turn black. Length of male about 3.8 mm; female 4.3 mm. Male abdomen terminates in round lobe, while female is truncate. The insects have three tarsal joints and a pair of ocelli. Second antennal segment usually in part pale yellow. Hemelytra hyaline and usually whitish; clavus, base of corium, and costal vein more opaque than rest. Setae of 3 different types: More or less erect stiff setae, blunt at tip terminating in 4-7 small teeth; normal, straight, tapering setae; and very thin, curved, flat-lying setae.

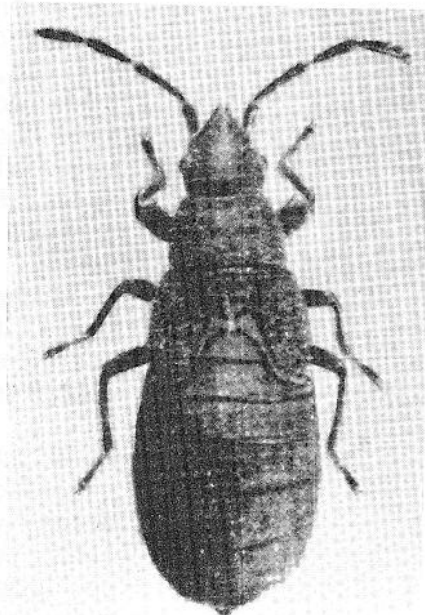
EGGS - Oval 0.28 x 0.95 mm, longitudinally striated, pale yellow becoming pink.

NYMPHS (Fig. 2) - Head and thorax brownish-olivaceous, abdomen pinkish. Fifth instar darker brown on head and thorax, wingpads distinct, extending to at least third abdominal segment.

(Figs. 1-2)



1



2

Oxycarenus hyalinipennis: 1. Adult, dorsal view. 2. Fifth instar nymph, dorsal view (From Barbosa 1950).

Characteristic
Damage

Lint in which the bugs have been crushed is stained pinkish. Cotton seeds appear undamaged on the outside; internally, the embryos are shriveled and discolored (Kirkpatrick 1923).

A report on several tree fruits (see Hosts) in Israel described feeding damage appearing as greasy spots that exude light-colored gum. Black feces also disfigured the fruit (Avidov and Harpaz 1969).

Detection
Notes

1. A few O. hyalinipennis are intercepted each year at U.S. ports of entry. All were taken at airports, mostly in baggage; none was taken on the preferred malvaceous hosts. Half of the interceptions was made on pomegranate (Egypt, Greece, Israel, Italy, Jordan, and Saudi Arabia). The remainder was taken from leaves of curryleaf tree (India and Pakistan), citrus leaf (Dominican Republic), persimmon (Italy), guava (India), and quince fruit (Jordan). This species was intercepted in air cargo twice in 11 years on flowers from the Netherlands and on Ruscus sp. from Israel.

These interceptions point to the risk of O. hyalinipennis moving on commodities that are not its hosts and from countries (Jordan, Dominican Republic, and the Netherlands) that have not been recorded for its distribution in the literature. Entry into the United States is possible on fruits and other plant material in passenger baggage from tropical and subtropical areas. Movement on commercial plants and cut flowers may be another means of entry.

2. Ginned cotton may be stained pinkish, sometimes with a trace of green, and contaminated by the crushed fragments of the insect. Cotton seeds cut lengthwise reveal shriveled, discolored embryos (Kirkpatrick 1923).

3. Adults prefer crevices in such resting sites as tree trunks, undersides of leaves on trees, pods of legumes, dried flower heads, roots of grasses, under sheath leaves of corn and sugarcane, telephone poles or wooden posts, old nests of Polistes sp. (paper wasps), and crevices between strands of barbed wire (Kirkpatrick 1923). Samy (1969) also observed adult clusters on leaves of mango, guava, and citrus.

4. Submit adults for identification in alcohol or mounted dry on triangular points. Nymphs can be identified by their association with adults.

Biology

Cottonseed bugs begin feeding, mating, and egg laying when the seeds of their hosts become available. Kirkpatrick (1923) described the biology of O. hyalinipennis on cotton in Egypt. In April, the resting adults leave their shelters, move to young cotton plants, and wait for the bolls to ripen. The bugs cannot pierce unopened bolls to feed. Each female usually lays about 20 eggs in the lint of opened bolls, and less often on green bolls. Dimetry (1973) found that females deposited eggs near the micropylar end of the seeds or on the bracts of the boll. The bugs prefer feeding on the radicle end. Hatching occurs about 4 days later at optimum temperatures of about 35° C but can extend to 43 days at 14° C. The nymphs undergo five nymphal instars in 2 weeks or more, depending on the temperature. A generation from egg to adult can be completed in 20 days. There are 3-4 generations annually.

At the end of the breeding season, the last generation of O. hyalinipennis undergoes aestivation. This dormant period appears to allow the bugs to rest while host seeds are not available. During this time, the adults hibernate on branches or leaves of grass and weeds or other such shelters. These adults are never completely inactive, but they do not feed or mate until their host food is again available.

Some effects of temperature and relative humidity on O. hyalinipennis are known. Males withstand a wider range of temperatures than females, but females better tolerate low relative humidities. At 30° C and lower, almost 100 percent relative humidity is the optimum for extending the life span, but with higher temperatures, this species needs lower relative humidity (Kirkpatrick 1923). Under laboratory conditions of 75-85 percent relative humidity, Dimetry (1973) observed that a female can lay up to 110 eggs, and egg laying can last for 20 or more days at 25° C and 30° C. The males can live almost a month while the females live longer.

Controls

Eliminating hibernation sites and destroying weed shelters help to reduce the cottonseed bug population. Shorter picking intervals reduce damage to the seed. Postponing ginning of the harvested cotton to allow the bugs to escape or to allow any trapped ones to die and dry up avoids much staining of the lint. Practices of handpicking the bugs, setting traps of cotton seed in early summer, growing trap crops of okra or kenaf, or removing all totally damaged bolls at first harvest are either useless or impractical (Kirkpatrick 1923).

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