

## Neem, *Azadirachta Indica* Juss. A New Host Plant of Insect *Aeolesthes Holosericea* Fabricius from Maharashtra, India

U. S. Salve

Head Department of Botany, Swa. Sawarkar Mahavidyalaya, Beed, Maharashtra, India

### Abstract

Neem, *Azadirachta indica* Juss. is a small to medium-sized tree, usually evergreen. It is commonly called 'Indian Lilac' or 'Margosa' belongs to the family Meliaceae. Most of the plant parts such as leaves, fruits, seeds and bark contain components which show characteristics such as antiseptic, antiviral, antipyretic, anti-inflammatory, antiulcer and antifungal uses. It has great potential in the field of pest management and in medicine. Neem is a natural source of insecticide, pesticides and agrochemicals. Neem is well-known for its durable wood. In addition, the non-wood products of neem like flowers, fruits, bark and gum also find various uses. The antifungal, insecticidal and other versatile biological varieties of these products are well known. Neem is also used as a bio-control agent to control many plant diseases. Neem tree is having antifungal and insecticidal biological activity even though the Neem trees are infested by insect, taking it into consideration present investigation is undertaken. During present investigation it is observed that Neem trees from Maharashtra, India are infested by the insect *Aeolesthes holosericea* fabricius. Neem plant is found as a host plant for insect *Aeolesthes holosericea* fabricius first time from Maharashtra, India.

**KEYWORDS:** Neem, Host Plant, *Aeolesthes holosericea* fabricius, Maharashtra, India.

### Introduction:

Neem, a member of the family Meliaceae, is a botanical cousin of mahogany. Family Meliaceae consists of near about 50 genera and 800 species. The members of this family are found to be distributed in tropical regions. In India the family is represented by *Azadirachta indica* Juss. and some other plants. *Azadirachta indica* is a small to medium-sized tree, usually evergreen, up to 15 (30 max.) m tall, with a round, large crown up to 10 (20 max.) m in diameter; branches spreading; bole branchless for up to 7.5 m, up to 90 cm in diameter, sometimes fluted at base; bark moderately thick, with small, scattered tubercles, deeply fissured and flaking in old trees, dark grey outside and reddish inside, with colorless, sticky foetid sap. Most of the plant parts such as leaves, fruits, seeds and bark contain components which show characteristics such as antiseptic, antiviral, antipyretic, anti-inflammatory, antiulcer and antifungal uses. It has great potential in the field of pest management and in medicine. Neem is a natural source of insecticide, pesticides and agrochemicals.

Neem is well-known for its durable wood. In addition, the non-wood products of neem like flowers, fruits, bark and gum also find various uses. The antifungal, insecticidal and other versatile biological varieties of these products are well known. Neem is also used as a bio-control agent to control many plant diseases. This plant may usher in a new era in pest control, provide millions with inexpensive medicines,

cut down the rate of human population growth and even reduce erosion, deforestation, and the excessive temperature of an overheated globe." Neem's other descriptions, such as "nature's gift to mankind," "the tree for many an occasion," "the tree that purifies," "the wonder tree," "the tree of the 21st century," and "a tree for solving global problems," are its recognitions. The ingredients of Neem tree have remarkable pest control properties besides medicinal values. Neem tree is known for rich pesticide properties, even though the neem trees are infested by insect, taking it into consideration present investigation is undertaken. During present investigation it is observed that Neem trees from Maharashtra, India are infested by the insect *Aeolesthes holosericea* fabricius. Neem plant is found as a host plant for insect *Aeolesthes holosericea* fabricius first time from Maharashtra, India. No previous records are available from Maharashtra, India for such type of infestation caused by *Aeolesthes holosericea* fabricius on Neem plant.

### **Material and Methods:**

For the experiment twenty different sites from Maharashtra, India are selected randomly on the basis of number of Neem trees present in the field. From these places one hector of land is selected for observation and the observations are made during the months January to December 2012. Plants infested by the stem borers are counted and are noted as infested plants. The symptoms of stem borer *Aeolesthes holosericea* fabricius infestation includes, holes on the stem, entry point, Zig - Zag galleries beneath the bark, tunnels in the sap wood, ejection of powdery mass through entry holes, Frass accumulation near the trunk, accumulation of saw dust on the ground at the base of the tree, shot holes on the stem, wilting and shedding of foliage and drying of twigs and total plant parts.

### **Result and Discussion:**

Neem, *Azadirachta indica* Juss. is an evergreen, spreading branches with dark green leaves form a dense, round canopy up to 20 meters across., tall, fast-growing tree, which can reach a height of 25m and 2.5m in girth. Its trunk usually straight is 30-80 cm in diameter. The plants are mostly trees or shrubs. The wood of this family emits a characteristic smell. The bark is hard, rough and scaly, fissured even in young trees. It's often brown, but in older trees it can be pale or grayish-black. For study twenty different sites were selected randomly on the availability of Neem & by geographical background.

**Photo: 1 to 6-** Infestation pattern of insect *Aeolesthes holosericea* fabricius on neem *Azadirachta indica* Juss. host plant from Maharashtra, India.



**Photo: 1** Infested Neem tree



**Photo: 2** Larvae on Neem stem



**Photo: 3** Loosen bark of the neem stem



**Photo: 4** *Aeolesthes holosericea* fabricius on neem stem



**Photo: 5** Totally Infested neem tree



**Photo: 6** *Aeolesthes holosericea* fabricius

Infested neem trees show various symptoms of infestation these symptoms and infestation pattern is shown in photos- 1 to 6. In severe infection cases all the plant parts such as root stem & braches are infested by stem borers. These findings support the results mentioned by Salve U. S., 2012, "Stem borers forms hole on the stem

which is generally of oval shaped in some cases they are rounded". These wholes traverse from the stem portion and enter in to the trunks likewise whole tree parts were infected by the Stem Borers and so the plants become dead and dry. Total survey study reveals that average infection of Neem is of 37.99 % and highest infection (41.30%) is reported from Beed district which is very high and it may leads to the destruction of maximum number of Neem trees which will directly cause loss to the Neem cultivars. These findings support the results mentioned by Salve U. S., 2012, "Study of Neem Trees from Beed District (Maharashtra) affected by Stem Borers" and Neem infestation by Cerambycidae: Coleoptera Stem Borers from Beed district Maharashtra, India by Salve U. S. & Salve B. S., 2012. During the course of entomological investigation in 1998, three percent of neem (*A. Indica*) trees in the natural forest stand in Neyveli region of Tamil Nadu, India became unfit for timber due to the infestation of new species of stem borer. The borer was identified by Kerala Forest Research Institute (KFRI), Pocchi, Kerala as *Aeolesthes holosericea* fabricius (Cerambycidae: Coleoptera). *Aeolesthes holosericea* fabricius is mainly a pest of cherry and also infest apple, apricot, peach, pulm, walnut, guava, mulberry in high altitude areas. The infestation of *Aeolesthes holosericea* fabricius on neem is significant from the view point of bio-diversity and geological distribution as this species has no previous record on neem from Maharashtra, India. From this course of investigation it is confirmed that the infestation of neem tree from Maharashtra, India is caused by the insect *Aeolesthes holosericea* fabricius. Such finding is reported from Maharashtra, India first time.

### Conclusions:

Neem, *Azadirachta indica* Juss. From Maharashtra, India is infested by insect stem borer *Aeolesthes holosericea* fabricius. Neem *Azadirachta indica* Juss. is the new host plant for insect *Aeolesthes holosericea* fabricius from Maharashtra, India. The infestation of *Aeolesthes holosericea* fabricius on neem is significant from the view point of bio-diversity and geological distribution as this species has no previous record on neem from Maharashtra, India. It is first time reported from Maharashtra, India.

### References:

- 1) Agro forestry Database 4.0 (Orwa et al.2009) Page 1 -8.
- 2) Ambethgar V. (2001). Record of Stem borers, *Aeolesthes holosericea* Fab. (Cerambycidae: Coleoptera) on Neem from Tamil Nadu (India), *Conservation and utilization of medicinal and aromatic plants* edited by S. Sahoo., pp- 413-416.
- 3) Brahmachari, G., (2004) Neem - an omnipotent plant: retrospection. *Chembiochem* **5**: 408-421.
- 4) Dr. Rahman, (14 Oct 2011). Neem: The wonder tree.
- 5) Dr. Ramesh C. Saxena (July 18 2007). Neem for sustainable development and environmental conservation

- 6) Dr. Ramesh C. Saxena, (Oct 27- 2005). *Neem for sustainable development and environmental conservation: Indian perspective.*
- 7) Girish K., Shankara Bhat S., (2008) *Neem – A Green treasure.* Electronic Journal of Biology, Vol. 4(3):102-111
- 8) Jattan S. S., Shashikumar, Pujar, G., et al., (1995) *Prespective in intensive management of neem plantations.* Indian For, **121**: 981-988.
- 9) Kak R. D., (2000) *Biocontrol of plant diseases through neem.* In: *Proceedings of International Conference on integrated plant disease management for Sustainable Agriculture* (Vol. I). Indian Phytopathological Society, IARI, New Delhi, India, pp. 368-369.
- 10) National Research Council, (1992). *Neem: A Tree for Solving Global Problems.* Report of an Ad Hoc panel of the Board, National Academy Press Washington D. C.
- 11) Pandey, B. N. (1999). *Taxonomy of Angiosperms*, pp 257-261.
- 12) Salve U. S., Salve B. S., (2012), *Neem Trees from Beed District (Maharashtra) affected by Stem Borers Cerambycidae: Coleoptera, National Conference Proceeding-ISBN- 978-81-920120-2-5*, pp-153-157.
- 13) Salve U. S., (2012), *Study of Neem Trees from Beed District (Maharashtra) affected by Stem Borers, Online International Interdisciplinary Journal, Volume II, Issue – VI, Nov-Dec- 2012*, pp- 34 to 40.
- 14) Sateesh M. K., (1998) *Microbiological investigations on die-back disease of neem (Azadirachta indica A. Juss.)* Ph. D. thesis. University of Mysore, India.