



## Major insect pest of willow –Wood used for manufacture of cricket bat industry

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**Cricket bat industry of India :** Traditional Indian cricket bats are made in the regions of Jammu and Kashmir, Punjab, Haryana, Gujarat, Uttar Pradesh and Rajasthan. In Kashmir they are made out of willow found in northern India. Some bats made in Kashmir are of international standards and are/were used by national players.

**Kashmiri willow bats:** The willow used in making these bats was brought in by the British, who ruled India, during the 1820s. The industry, established in Kashmir, combines



Fig. 1: Kashmir willow cricket bat

traditional tools with modern technology.

Kashmiri bats require constant knocking and oiling to make the bat good enough to use in a cricket match. Knocking makes the fibres of the willow blade compress together, which helps the bat bear the impact of the ball. Another major aspect of taking care of such bats is oiling. Oil is applied on the back, toe, front and edges of the bat to make it more durable and to ensure the fibres get knitted properly. Some of the areas where these bats are made in Kashmir are Anantnag, Baramula and Pahalgam. There are many Pests which attack willow plant in Kashmir. One among them is giant willow Aphid.

*Tuberolachnus salignus* (Giant Willow Aphid)

**Identification and distribution:** *Tuberolachnus salignus* are very large aphids with a body length of 5.0-5.8 mm. Apteræ are mid-brown to dark brown with several rows of black sclerotic patches. The body is



### Scientific classification

Kingdom:	Animalia
Phylum:	Arthropoda
Class:	Insecta
Order:	Hemiptera
Suborder:	Sternorrhyncha
Superfamily:	Aphidoidea
Family:	Aphididae
Genus:	<i>Tuberolachnus</i>
Species:	<i>T. salignus</i>

### Binomial name

*Tuberolachnus salignus*



Fig. 2: Willow leaves covered by black sooty mould fungi growing on honeydew secreted by giant willow aphid, *Tuberolachnus salignus*

covered with numerous fine hairs (see first picture below), which give a greyish-golden sheen to the abdomen. There is a large dark brown tubercle in the centre of the back, just in front of the siphunculi which are on large dark cones. The antennae are less than half the body length. Alates have the forewing membrane unpigmented but the pterostigma and costal margin are dark brown.

The giant willow aphid lives on the stems and branches of numerous willows and sallows (*Salix* spp.) and is also very occasionally recorded from poplar (*Populus*). Its distribution is almost cosmopolitan wherever willows are grown.

**Feeding and honeydew:** Like other Hemiptera, the giant willow aphid has sucking mouth parts. The long stylets, special shaped rods, are held in the rostrum. When it wishes to feed the aphid moves the tip of the rostrum to the surface of a branch or shoot. The stylets are then gradually pushed into the plant. The inner pair of stylets, form two tubes, one through which saliva is injected into the plant and a second through which plants juices are sucked up into the insect. The giant willow aphid inserts its stylets into the phloem, the plant vessels for transmitting sap from the leaves to other parts of the plant. The sap has a high volume of water and sugars, more than the insect needs. It excretes the excess water and sugar, which is called honeydew. Black fungi (sooty moulds) grow on the honeydew.

**Control:** Giant willow aphid can reach high numbers on many kinds of willow trees. It is regarded as a pest, because it may weaken or even kill trees and because of its copious production of honeydew. The honeydew and associated sooty mould fungi cause problems for honey producers, wool producers and fruit orchardists. Also the sooty mould is unsightly and the honeydew attracts wasps in the autumn that may be hazardous.

**Insecticides:** It is not practical to use insecticides to control giant willow aphid on large trees. However, they may be the best current solution for coppiced willows used for basketry. The plants will be vulnerable to colonisation after winged aphids start being produced, from mid-October onwards in Kashmir. It is best to regularly monitor plants for aphids and apply insecticides in response to finding colonies of aphids. It may be easier to look for honeydew on leaves and then check if there is an aphid colony on a stem above the honeydew. Thoroughly treat the affected trees and in periods of high risk, e.g. in summer, treat all trees.

**Biological control :** The only predators found in Kashmir are ladybirds. Up until April 2016, ladybirds only occasionally fed on giant willow aphids and provided no control. In April 2016, the harlequin ladybird, *Harmonia axyridis*, was discovered in Kashmir and both adults and larvae readily feed on giant willow aphids.

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