

XII. INSECTICIDAL PROPERTIES OF THE NEEM TREE (*Azadirachta indica*):IT'S FOR THE BIRDS!

J.F. Veldkamp

Rijksherbarium, P.O.B. 9514, 2300 Leiden, The Netherlands

New Scientist (6 June 1985, p. 10) reported that *Azadirachta indica* (Meliaceae), the Indian neem tree, would be a 'new' wonder plant. Its medical properties have been known for ages to local people and western botanists (e.g. Garcia de Orta, 1567). In India about 14 million trees, typically planted along roadsides, produce fruit, wood and leaves, all of which have special uses to the villagers.

Parts of the tree have strong insecticidal and anti-nematode properties and have been used traditionally in India and Indonesia. Infusions or tinctures prepared from the bark are believed to be beneficial against malaria, although experiments have not yet confirmed this. Although the leaves (as the other parts of the plant) are very bitter, they have been used in Madura as a fodder (Heyne, 1950). Dried leaves mixed among grain in storage, placed in books, among paper and clothes would keep insects away. Fruits on market stalls are wrapped in fresh leaves to ward off insects. The fruit is crushed in water to spray on crops. The cake left behind after the crushing can be ploughed into the land as mulch, where it acts both as a fertilizer and against the nematodes. Various authors have mentioned the oil, which may be used for a rather inferior soap, but Heyne warns that crushing of the seeds (after they have been heated) to extract it causes such a disgusting smell of garlic that no factory would be tolerated in the proximity of any inhabited place.

Now that its usefulness has become more widely known, the species has become cultivated also in Africa, the Middle East and East Asia. About 40,000 trees have thus been planted in the Philippines (after an initial defeat, for the seeds have a short viability). It seems to grow anywhere except in waterlogged soils. It prefers areas with a rainfall between 45 and 113 cm/yr. In the U.S. the Environmental Protection Agency is about to approve one derivate for protection of non-food crops, such as flowers. One worry is that neem's extracts seem to act as a spermicide to monkeys and humans.

Independent of man Indian house sparrows are apparently also aware of its value (New Scientist, 2 January 1986, p. 31). They build their nests in holes or reuse sites where other birds have bred previously. However, such places are heavily infested with parasites of feather and skin, and disease-causing bacteria. This is perhaps one of the reasons why so many birds build new nests all the time. Now, the sparrows add quantities of fresh leaves to their nests before and during breeding, but not randomly so, but with a preference for green neem leaves with their volatile oils. The general view that birds can not or barely smell appears to be due for reconsideration. Another thought: it would be worthwhile to inspect such nests to see what other plants the birds have gathered. Species with yet unknown medical properties may thus very well be discovered.