

Diversified Use of Borkesseru (*Ailanthus Excelsa* Roxb.): A Secondary Host Plant Of Eri Silkworm

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Introduction

Eri silkworm (*Samia ricini* Donovan) being a polyphagous non-mulberry silkworm feeds on several host plants, out of which castor and kesseru are primary food plants. Borkesseru, a potential perennial secondary host plant of eri silkworm can be utilized during the scarcity of primary host plant without compromising the yield and quality of cocoon. Four species of *Ailanthus* is found in India viz., *Ailanthus excelsa* Roxb., *Ailanthus grandis* Prain, *Ailanthus altissima* and *Ailanthus malabarica*. *Ailanthus excelsa* originated in Moluccus island. Wild eri silkworms often found on *Ailanthus excelsa*.

Borkesseru (*Ailanthus excelsa* Roxb.), the tree of heaven under family simaroubaceae is deciduous in nature which is defined in Engler's Syllabus consists of six subfamilies with 32 genera and over 170 arborous or shrubby species (Kumar *et al.*, 2010). It emanated from Europe and in India it is grown in eastern, western and north-eastern region (Chakravorty and Neog, 2006).

The trees are perennial, tall, grow swiftly and may attain up to a height of about 25 meters when the trees are fully grown. These trees throw up abundant root suckers. The trunk is straight with a diameter about 60-80cm. The wood is soft and whitish in colour which is covered by bark of grey-brown colour (Kumar *et al.*, 2010). The leaves are alternate, pinnately compound, hairy and the leaflets are very coarsely toothed (Lavhale and Mishra, 2007). The flowers are polygamous, small and yellow in colour appears in large open cluster among the leaves. The fruit of the plant is 1 seeded samara. The seeds are very light in nature and are mainly dispersed by the wind. The borkesseru plant is mainly propagated through seeds. The ripe seeds are collected during May-June from mature trees and should be sown

immediately after collection. It is well adapted in arid, semi-arid and semi-moist regions (Chaturvedi, 1956). The silkworms can be reared on the leaves of about 2-3 years old plant. Besides rearing, the trees were grown as a shade tree throughout the hotter parts of India and used as fence along the borders of the fields. The *A. excelsa* plant is used in the Indian school/system of medicine for variety of purposes (Kirtikar and Basu, 1995).

Medicinal use: In Ayurveda it is used to remove the bad taste of mouth. In Asian, African and Australian countries *Ailanthus excelsa* bark is used to cure diarrhoea and dysentery, if there is a blood in stool; tape worm infestation, excessive vaginal discharge, malaria, asthma, cramps, gonorrhoea, epilepsy, dyspepsia, heart troubles and high blood pressure. Leaves are used to prepare mats for the children suffering from fever. The plant is also used as natural anti-fertility agent and to induce permanent sterility in women. Fruits are used in diarrhoea, polyurea, piles and fever. Pilex, ointments for piles and Lukol tablets used in leucorrhoea contains *Ailanthus excelsa*.

Pesticide: The extract and purified fractions of *A. excelsa* can be considered as potent, effective and environmentally safe agricultural pesticides. Diwan (2013) found that 3% concentration of extracts of *Ailanthus excelsa* was lethal to *Callosobruchus maculatus*.

Fodder: Leaves are highly nutritious and palatable tree yields an average of about 500-700 kg of green leaves twice a year and also, found to be suitable fodder for cattle, sheep and goats (Singh and Patnayak 1977).

Industrial use: The wood is short fibered, admixture with long fiber pulp, such as bamboo pulp, used in the manufacture of paper (Anon., 1956.). It is also used for the preparation of pencils (Pandey *et al.*, 2000.). The timber is used in the plywood industry. The wood of the borkesseru plant is used as matchwood boxes and wooden toys. The wood is not suitable when considering the wood for sports equipment and handles of striking tools where higher impact strength is very important. It could be suitable for flooring, boat building, matches, match boxes, and veneer manufacturing (Elzaki and Khider, 2013). An inferior quality gum can be extracted from the bark of borkesseru.

Seed: *A. excelsa* seed oil is a good source of essential fatty acids. The seed oil of borkesseru is rich in two unsaturated fatty acids i.e, oleic and linoleic acids which are important from the nutritional point of view as well as for oil stability (Kundu and Laskar, 2007). Dietary fats rich in linoleic acid, prevent cardiovascular disorders such as coronary heart diseases and

high blood pressure and also its derivatives also serve as structural components of the plasma membrane and as precursors of some metabolic regulatory compounds (Vles and Gottenbos, 1989). Presence of high content of linoleic acid in the the seed oil of borkesseru will make it possible for the use in the cosmetic industry in near future.



Borkesseru plant



Borkesseru leaves



Seeds of Borkesseru



Full grown Borkesseru plant

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