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Popular Article

Cultivation practice of *simarouba glauca*

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Propagation

simarouba glauca propagated from seeds, grafting, air layering, cutting and tissue culture. sexual Propagation of *S. glauca* will take 5-8 years while asexual Propagation attains stability of inflorescence types and sexual characteristics within 18 months to 3 years. Budding and the rooted cuttings were unsuccessful whereas the cuttings of 4-6 inches diameter and 8 feet long sticks are

inserted at monthly intervals which are found successful in the development of root and shoot system. Whip and tongue grafting methods are suitable for grafting *S. glauca* during June to August.

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Climate and Soil

S. glauca is tropical tree established in regions with 250 mm to 2500 mm rainfall and found to grow up to 1000m above sea level [14]. It is found to grow luxuriantly up to altitude 0-800 m and in between the temperature 21.5^{0}C to 28.6^{0}C can tolerate mean maximum monthly temperature up to 45^{0}C in all types of well drained soils and with an average annual rainfall of 1,769 mm in central region and 1,833 mm for those in eastern region [1]. It prefers to grow well in soils with 5.5 to 8.5 P^H.

Artificial Regeneration, Seed Maturity and seed collection

According to ICRAF Agroforestry Tree Database and TNAU, the Simarouba seeds attain physiological maturity, maximum germination capacity and longevity at 11-13 weeks after flowering. These ripe seeds are available during April and May. April ripe blackish purple berries are considered as good material for its regeneration from seeds. They advised that the time of seed collection discard green fruits which account for poor quality and dark purple-colored fruits are collected and pulp must be removed immediately after collection either by hand or in a depulper. Immediately dried in shade for few hours followed by sun drying to reduce the moisture content up to 12-15 % after drying and cleaning, empty, immature, broken or insect damaged seeds are removed. They recommended that Separation of full and empty seeds due to specific gravity differences can be accomplished by liquid flotation techniques.

Storage and viability

Germination of fresh Simarouba, seed is 70 to 80 %. The Simarouba, seeds have short viability of 2-3 months. Seeds are stored in paper or cloth bags at room temperature for 9- 12 months or at low temperature to retain high viability for several years.

Development of nursery

S. glauca can be easily propagated from seeds. It can also be grown through vegetative propagation techniques like grafting, air layering etc. The mature depulped seeds after drying for 2-3 days under shade are good for raising seedlings. The seeds are sown in a nursery bed or directly in containers. The polybags (15 ×25 cm size) are filled with the nursery mixture (soil: sand: FYM in the ratio of 3:1:1) the single seed is sown in each bag. The seed start germination on 15th day after sowing and requires 25 days for complete germination. The germination rate varies between 60-80 % which depends upon local factors. Hence, to ensure higher viability of the seeds, sowing the seeds

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within six months of collection is highly recommended further enumerates the technique of sowing in mother bed. A raised nursery bed has to be prepared at a size of 10 m × 1m. The soil mixture used to fill the bags consists of garden soil, sand and compost in the ratio 1:1:1. The mixture is thoroughly pulverized and sieved. The bags are watered twice a day. The seeds are generally sown in lines. Usually, the lines are made at 10-15 cm apart and the seeds are sown in 3-5 cm apart. The depth of the sowing should be 2-4 times the diameter of seeds, and ensure that the seeds are just covered with soil. The transplanting of seedlings can be done the seedlings are 7-10 cm tall with taproot about 15 cm long (40-50 days after sowing). Pricking out of seedlings is done generally at the stage of 10-22 cm or 15-22 cm. Since, the taproot grows faster than shoot, frequent shifting of seedlings should be done to prevent the roots from striking the ground. Six months old seedlings are ready for out planting. Application of biofertilizers may enhance the quality of seedlings and reduce the nursery period. The NOVOD board database indicates that 30-45 days old seedlings are good for planting in the main field, April harvested fruits produces seedlings of one month ago by first week of June. This ensures better post monsoon stand in the field. This database also depicts the late planting often inhibits growth due to short rainy season or aberrant weather condition. Thus, to attain this objective, seedlings are raised from previous year stock or through vegetative propagation methods of clonal propagations, grafting and air layering ensuring good results of 70-80% success. The NOVOD board database also indicated that saplings or grafts are planted in a space interval of 5.0 m (7.0 to 8.0 meters in high rainfall areas) in the pits of 45× 45× 45 cm size half filled with top soil and 2.0 kg compost + 20 g phosphorus+ 20 g nitrogen. Chemical fertilizers like N, P and K may be applied in the proportion of 50 g, 25 g and 25 g respectively during first year of planting in two spilt doses that is pre monsoon and post monsoon application for good result. Simarouba can be cultivated profitably in alley cropping, boundary planting, and bund planting, as plantations or as avenue trees. They can be also planted as dooryard trees. In first 3-4 years, during the pre-bearing period, the traditional short term annual crops such as sunflower, soybean, groundnut, pulses are chosen as intercrops depending upon type of soil and requirement of crops, shade loving crops also be grown as intercrops after gestation period. For effective pollination and good bearing, planting of high yielding and andromonoecious plants (pollen donors) at a distance of about 60.0 meters from each other among the female plants in the right geometry is advocated or some selected female plants may be grafted with high yielding andromonoecious scions. Wind and honeybees act as pollinating agents.

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Yield

Though all parts of this plant are useful in one way or other, the seeds are important as they contain 60-70% oil. Each well grown tree yields 15-30 kg nutlets equivalent to 2.5 to 5.0 kg oil and about same quantity of oil cake. The annual returns in kg/ha from a moderately well managed 10-year-old plantation of Simarouba is as follows. Oil: -1000-2000, cake: - 1000-2000, Fruit pulp: -8000-10000, Leaf litter: -10000-15000, Shell: - 4500-9000

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