

SIDA (Bala)

A PLANT FOR STRENGTH



Sida alnifolia



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Introduction

Sida, with a popular trade name Bala and Kurunthotti in Malayalam, is an important medicinal plant used in the Indian Systems of Medicine as well as folklore practices. Acharya Charaka has described the drug Bala as one of the best medicines or Agra-ousadha. According to him “Bala sangrahika balya vataharanaam shreshtam” (Bala or Sida is the best plant for treating diarrhoea and dysentery, for gaining strength, and for pacifying vitiated rheumatism). As per the text Bhavaprakasha Nighandu, there are four types of ‘Bala’, namely, Bala, Atibala, Nagabala and Mahabala, and all have similar use.



Sida or Bala has multitude of medicinal properties. In the Ayurvedic system, it is used as antirheumatic, analgesic, antipyretic, antiasthmatic, nasal anticongestant, antiviral, laxative, diuretic, aphrodisiac, hypoglycaemic, hepatoprotective and in the treatment of Parkinson's disease. It is used as a single drug and as an ingredient in most of the popular and extensively used formulations. For instance, Bala is an important ingredient for the preparation of most popular formulations in Ayurveda, such as, Ksheerabala, Dhanvwanthram, Balarishtam, Rasnadhikashayam, Asvagandhilehyam, Agastyarasayanam, Aravindasavam; in the form of medicated oil, fermented drugs, medicated ghee, powder etc. Bala or Sida is chiefly used to treat rheumatism and to impart strength. It is one of the main components of ‘Chyavanprash’, which is a popular Ayurvedic preparation placed under ‘Rasayana’ group of drugs and widely used as tonic in improving health and boosting immunity.

Sida belongs to family Malvaceae, the cotton family. It is a subshrub with strong and stout roots and stems, grows well throughout the plains of India, especially, in damp climate. Out of about 200 species of Sida distributed in the tropical and subtropical parts of the world, 20 species are recorded from India. Among these twenty species, Sida cordifolia is the most sought species in Central and Northern India, and the Ayurvedic Formulary of India accepted this species as Bala. In the State of Kerala, 18 species of Sida are recorded and among them Sida alnifolia is the most preferred botanical source of Bala.

Sida alnifolia or Kurunthotti is a subshrub that grows to 150 cm in height with strong branches. Leaves are simple, alternately arranged, 1-3 cm × 0.8-2.5 cm in size. Leaf margin is irregularly serrate-dentate or crenate. Flowers are yellow, axillary, solitary. Fruits to 4 mm long when mature becomes dry contain 7-10 one-seeded mericarps, with a pair of short obtuse mucro at apex which are included within the calyx. Seeds are ovoid in shape and about 2 mm long, black in colour.

Sida cordifolia is an erect, branched subshrub growing up to 150 cm in height; stem densely tomentose. Leaves are simple, alternately arranged, 1.5-5.5 x 1-3.5 cm in size and ovate or rarely suborbicular in shape, apex subobtusate or acute, base cordate, margins serrate to the base, densely stellate-tomentose beneath and soft tomentose above. Flowers are yellow, solitary or aggregated terminally in congested inflorescence. Fruits 6-7 mm long when mature with 8-10 mericarps of the size 3 x 2 mm, trigonous with acute angles, apically 2-awned. Seeds are 2 mm long, ovoid in shape and brownish or black.



Based on stem colour, there are two distinct types of *Sida alnifolia*, namely, Vellakurunthotti and Karimkurunthotti in Kerala. In the case of Vellakurunthotti, stem is pale green or grey and the stem of Karimkurunthotti is purple-black. Some practitioners prefer Karimkurunthotti.

In Kerala, as in several other regions of the country, roadside in villages and rural areas was a good source of Kurunthotti. Since, there were no clearing of bush growth along the road sides, Kurunthotti was regenerating profusely and its availability was more or less adequate to the herbal industry till two decades ago. Kurunthotti is a highly reputable medicinal plant with a number of therapeutic uses in the Ayurveda and other traditional systems of medicine in India and various other countries. According to National Medicinal Plants Board (NMPB), *Sida* or Bala is the 3rd most consumed raw drug by the Ayurvedic pharmaceutical industry, the annual requirement has exceeded 10,000 MT. It is estimated that the annual consumption of Bala, particularly *Sida alnifolia*, by the Ayurvedic industries in Kerala is 1,194 tons. However, recent assessment of supply and demand of Kurunthotti shows that its availability from wild source is declining and at the same time consumption is increasing every year. Therefore, it is necessary to take measures to promote Kurunthotti cultivation and create awareness among the people, particularly the farmers, about the cultivation practices and economics. In this brochure, scientifically validated agro-techniques and economics of cultivation are provided.



Agro-techniques

Kurunthotti can be cultivated in variety of soils, but grows well in well-drained gravelly soil. Though *Sida alnifolia* and *S. cordifolia* are light demanding species; they can be cultivated in open fields as a sole crop as well as intercrop with cash crops. Among the two *Sida* species, better growth and yield registered when *S. cordifolia* was grown in the open filed under full sunlight.

Propagation methods

In the case of Kurunthotti, seeds are the best propagation material. Mature seeds can be collected during November to March. Seeds are small and around 62,500 seeds together weigh one kg. Seeds remain viable for one year.



Kurunthotti seeds can be sown in the nursery beds in March-April. For better germination, soak the seeds in normal water for 24 hours prior to sowing. Seeds can be sown in raised mother beds of size 10 m length, 1 m width, and 30 cm height, or in suitable containers. Prepare nursery bed or fill containers using equal quantities of soil, sand, and farmyard



manure. After emerging, the seedlings of 7-14 days old can be plucked and transplanted into main field.

Planting stock of Kurunthotti can also be produced from stem cuttings. For this, tender stem cuttings of 15 to 20 cm long and with three to four nodes are used. Fill the polybags with well drained potting mixture prepared using equal quantities of farmyard or vermicompost, top soil and sand. Place the fresh and tender stem cuttings, each per polybag, and keep them in a

moist humid environment. Treating the stem cuttings with rooting hormones will increase rooting percentage. It will take 20 to 30 days for rooting and then well grown propagules can be plucked and transplanted into the main field. Fresh stem cuttings can also be successfully planted in the field, if the soil is loose and moist.

Planting and management in the field



Field planting of Kurunthotti seedlings, produced from seed or stem cuttings, can be done during the onset of South-west monsoon in May – June. Plough the land well and remove weeds and pebbles. Prepare pits of size 30 cm × 30 cm × 30

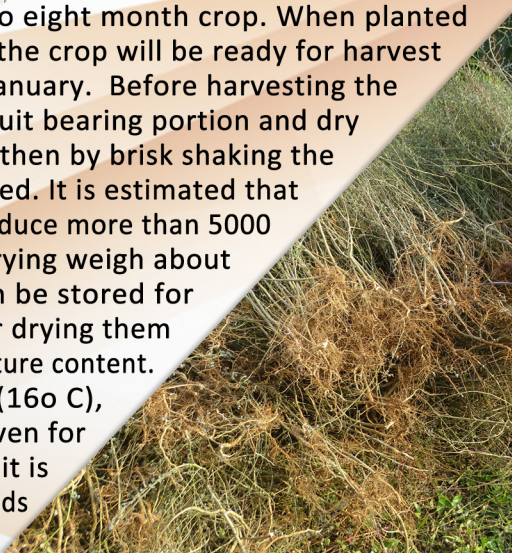
cm at a spacing of 75 cm × 85 cm and transplant the seedlings.

Carry out periodic weeding and hoeing at an interval of 20-30 days for improving the yield. Although manure is not applied on fertile soil, application of cow dung improves productivity.

Harvesting

Kurunthotti is a six to eight month crop. When planted during May or June, the crop will be ready for harvest during November - January. Before harvesting the plants, cut the top fruit bearing portion and dry them under sun and then by brisk shaking the seeds can be separated. It is estimated that a single plant can produce more than 5000 seeds, which after drying weigh about 100 g. The seeds can be stored for about one year, after drying them to about 6 to 8% moisture content.

Under cold storage (16o C), they remain viable even for two years. However, it is better to use fresh seeds for raising seedlings.



In about six to seven months after planting, Kurunthotti plants will reach an average height of 1.00 to 1.50 m with root length of 30 to 50 cm. The entire plants are harvested by pulling out manually if the soil is wet or they may have to be ploughed out.



Post-harvest processing

After discarding leaves, small branches and apical portion, the harvested plants are washed thoroughly for removing soils and other impurities, and sun dried. The dried plants are tied into 2 kg bundles and stored under lowest possible humidity condition.

Economics of cultivation of Kurunthotti



The dry weight of harvested Kurunthotti will be around 1 to 1.5 tons per hectare. Cultivation of Kurunthotti is profitable to farmers. When Kurunthotti is grown as a sole crop, Rs. 60,000/- per hectare will be the total cost towards cultivation, management, harvesting and post-harvest processing. With an expected sale price of Rs. 80 to 90 per kg of dry Kurunthotti, the income from one ha will be around Rs. 89,000 to Rs. 1,35,000. The cost of cultivation can be reduced in subsequent years as natural regeneration takes place in the next season.



NMPB-RCFC (SOUTHERN REGION)

NMPB-RCFC (Southern Region) is one of the seven Regional cum Facilitation Centres of the National Medicinal Plants Board (NMPB). NMPB is functioning under the Ministry of AYUSH (Govt. of India).

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