



Agroforestry Facts
Yelachi



Botanical Name	<i>Zizyphus mauritiana</i> Lamk.
Name in English	Berr or Indian jujube
Name in Kannada	Yelachi
Family	Rhamnaceae
Seeds Collection	The stones must be taken from fruits that have fully ripened on the tree.
Seeds Processing & Treatment	The stones are put into a 17 to 18% salt solution and all that float are discarded. The stones that sink are dipped in 500 ppm thiourea for 4 hours, then cracked and the separated seeds will germinate in 7 days. Seeds in uncracked stones require 21 to 28 days. If seeds are sown in spring, the seedlings will be ready for budding in 4 months. Great care must be taken in transplanting nursery stock to the field because of the taproot. Therefore, the rootstocks may be raised directly in the field and budding done in situ. Inferior seedling trees, including wild trees, can be topworked to preferred cultivars in June and some fruit will be borne a year later.
Nursery	Ber is vegetatively propagated by 'I' or 'T' (shield) budding method. seeds are sown in well-prepared nursery bed at 30x30cm. spacing and at 2cm. depth during March-April.



	<p>These seedlings are either transplanted in the field during July-August for in-situ budding or can be budded in the nursery beds. In irrigated conditions, transplanting can be done in bare rooted stage during January-March after treatment with 12% Waxol or after defoliation.</p> <p>In rainfed areas, seeds are sown in 300-gauge polythene tubes of 25 cm. length and 10 cm. diameter, filled with a 1: 1: 1 mixture of farmyard manure, sand and clay. In northern India, sowing is done during April in north India so that the seedlings become buddable during July. The budlings become ready for transplanting 1-2 months after budding. The budlings raised by this technique retain their deep rooting tendency and prove to be suitable under low rainfall drylands. In drylands, Ber orchard can also be raised by transplanting tube-raised Ber seedlings with the onset of monsoon, leaving them to grow in the field until the forthcoming summer for budding in-situ.</p>
Plantation Management	<p>Planting is usually done at the beginning of monsoon. Ber grows under varying climatic conditions at elevations up to 1,000 m. above m.s.l. It can withstand extremely hot conditions but is susceptible to frost. High atmospheric humidity is not suitable for its cultivation. Ber grows on a wide variety of soils-sandy, clayey, saline and alkaline soils. Pits of 60 x 60 x 60 cm. are dug during summer and refilled after mixing two baskets of farmyard manure and 50 g. of heptachlor dust to protect from termite attack. A fertilizer dose of 750 g. N/tree gives highest yield whereas 250 g. N and 250 g. P₂O₅ increase fruit yield. Application of K does not give any response. Irrigation is provided at an interval of 3-4 weeks. Irrigation provided during October results in shedding of flowers and that during March-April causes fruit spoilage and delays ripening.</p> <p>Trees are trained to develop a strong framework during the first 2-3 years after planting. Annual pruning is essential to induce maximum no. of new healthy shoots which would bear good quality fruits. The undesirable, weak, interposing, diseased and broken branches are removed from time to time in order to encourage healthy growth for maximum fruit bearing. Pruning is done during the dry season when the tree sheds leaves and enters into dormancy. Spraying with 3% thiourea or potassium nitrate once in two days before pruning induces bud sprouting from maximum no. of nodes.</p> <p>Under favourable conditions, height increment on loose soil is 75 cm in 1 year and 1.2 m in 2 years; growth is stragglier by the 3rd season, when under similar growth conditions plants are thick and bushy, up to 1.5 m high.</p>



Model/Spacing	6 x 8 m ideal spacing.
Pests, diseases and Management	<p>Pests: Insect pests mostly observed are fruit fly, fruit borer, leaf-eating caterpillars, mealy bug, scale insect and thrips. Selection of healthy planting material and suitable inter-cultural operations apart from application of pesticides are effective in controlling the pests.</p> <p>Diseases: Main diseases reported are powdery mildew, leaf spot, rust and black spot. Application of Kavach Rovral/Mancozole (2 g./l.)/wetttable sulphur etc. depending on type of infection has been found to be effective in most cases.</p>
Plant Rotation	They are generally come under short rotation preferably on slopy plains.
Yield	The average yield during the prime bearing period (10-20 years) ranges from 80 to 200 kg. /Tree. In dry areas, under rainfed conditions, 50-80 kg. fruits/tree can be obtained. Trees remain productive for 25-30 years.
Uses	<p>Fruits are rich in Vitamin C, A and B complex. About 5.6% digestible crude protein and 49.7% total digestible nutrients are present in the leaves making it a nutritive fodder for animals. Ber can be processed to prepare murabba, candy, dehydrated ber, pulp, jam and beverage. Wood has been used to line wells, to make legs for bedsteads, boat ribs, agricultural implements, house poles, tool handles, yokes, gunstocks, saddle trees, sandals, golf clubs, household utensils, toys and general turnery. It is also valued as firewood; is a good source of charcoal and activated carbon. In tropical Africa, the flexible branches are wrapped as retaining bands around conical thatched roofs of huts, and are twined together to form thorny corral walls to retain livestock.</p> <p>The leaves are readily eaten by camels, cattle and goats and are considered nutritious. Analyses show the following constituents (% dry weight): crude protein, 12.9-16.9; fat, 1.5-2.7; fiber, 13.5-17.1; N-free extract, 55.3-56.7; ash, 10.2-11.7; calcium, 1.42-3.74; phosphorus, 0.17-0.33; magnesium, 0.46-0.83; potassium, 0.47-1.57; sodium, 0.02-0.05; chlorine, 0.14-0.38; Sulphur, 0.13-0.33%. They also contain ceryl alcohol and the alkaloids, protopine and berberine.</p> <p>Fruits has medicinal values.</p>
Buyers /Industries	Majority of the growers sell their produce either through trade agents at village level or commission agents at the market.
Harvesting	Ber matures 150-175 days after flowering. A pre-harvest spray of 750 ppm. 2-chloro-ethyl phosphoric acid



	(ethephon) induces early maturity. Fully mature fruits are harvested by picking which is usually done in the forenoon. The time of harvesting is October-November in southern India, December-March in Gujarat, January-March in Rajasthan and during February-April in north India. Under rainfed conditions, bearing starts from second year. Budded plants come to bearing after 3-4 years.
Economic Returns	In dry and rain fed conditions one can expect 50-80 kgs
Current Market Rate	Rs 638/- per KG