



Influence of Different Planting Dates on Their Survival and Growth Parameters of Ber (*Zizyphus mauritiana*)

(*Shubham, Devi Singh, Saket Mishra and Shashi Kant Ekka)

Sam Higginbottom University of Agriculture Technology & Sciences, Naini, Prayagraj

*Corresponding Author's email: chaudharyshubham254@gmail.com

Ber (*Zizyphus mauritiana* Lamk) is popularly called the king of arid zone fruits. It is an important fruit crop for arid and semi-arid regions in tropical and subtropical regions. Its origin is India. It is known for its ability to withstand adverse conditions. It is truly a desert apple of Thar Desert. About 125 varieties of ber are available in India. A few of these varieties are known for taste, size, amount of pulp and higher yields. The cultivars Umran, Kathapal and Gola are the most promising varieties of ber in North India. A few of these varieties are known for taste, size, amount of pulp and higher yields. The area under cultivation with this fruit is 8.7 lakh ha with an annual production of 8.9 lakh tones in India (Bolada et al.2012).

Ber (*Zizyphus mauritiana* Lamk, Rhamnaceae) is a tropical/subtropical fruit native to Indo-China or India. It is also known as Indian jujube, kind of arid fruit, poor man' apple, summer deciduous fruit, desert apple and Indian plum among other names. Ber is an economically important tropical fruit tree, which is grown all over the drier parts of the Indian subcontinent, Africa and northern Australia for its fresh fruits. It is a particularly good tree to grow in dry regions, because it can withstand long periods of drought. It has a long taproot and can withstand high temperatures during the summer. The genus *Zizyphus* has 135-170 species (Islam and Simmons, 2006), of which 17 are native of India (Bailey, 1947). Although ber plantations in the country are widespread, its systematic cultivation is rare. Exact acreage under this fruit is not known. It is, however, estimated that there is about 12,000 ha area under ber orchards in India. The major ber growing states are Madhya Pradesh, Bihar, Uttar Pradesh, Punjab, Haryana, Rajasthan, Gujarat, Maharashtra and Andhra Pradesh. In recent years, there is a lot of enthusiasm to take up ber orchards in arid regions of Andhra Pradesh, Gujarat and Rajasthan.

Botany: *Zizyphus mauritiana* is a medium-sized tree that grows vigorously and has a rapidly developing taproot, a necessary adaptation to drought conditions. The species varies widely in height, from a bushy shrub 1.5 to 2 m tall, to a tree 10 to 12 m tall with a trunk diameter of about 30 cm. *Z. mauritiana* may be erect or wide-spreading, with gracefully drooping thorny branches, zigzag branchlets, thornless or set with short, sharp straight or hooked spines.

The leaves are alternate, ovate or oblong elliptic with rounded apex, with 3 depressed longitudinal veins at the base. The leaves are about 2.5 to 3.2 cm long and 1.8 to 3.8 cm wide having fine tooth at margin. It is dark-green and glossy on the upper side and pubescent and pale-green to grey-green on the lower side. Depending on the climate, the foliage of the *Z. mauritiana* may be evergreen or deciduous.

Origin and Distribution: The original home of *Zizyphus jujaba* Lamk, or *Zizyphus mauritiana* Lamk, is India while China is the home of *Zizyphus vulgaris* Lamk. These are the most commonly grown species found in India and China, respectively since ancient times.

According to Decandole (1886) the centre of origin of ber is central Asia. This includes north west India, Afghanistan, areas of Todijaskistan, Uzbekistan and China. It is found growing wild, semi-wild and in cultivated forms in almost all parts of India. Various cultivares of (*Zizyphus mauritiana*) are found growing commercially in the north-west plains of India. Species like *Zizyphus nummularia* is also found growing wildly. In the eastern parts of India. Seedlings of *Zizyphus rotundifolia* are found growing abundantly with a few plantations of grafted cultivars of ber.

Manuring and Fertilization (per plant/year): Farmyard manure (FYM) is applied in the month of May-June. Half dose of nitrogen and full dose of phosphorus should be applied in July-August and remaining half dose of nitrogen should be applied in September-October at fruit set stage in irrigated condition, while in rainfed condition all the fertilizers should be applied during monsoon period. In general, potash is not applied to the ber orchard as these soils are quite rich in potash. In western Rajasthan for a mature tree 50 kg of FYM, 500 g bone meal, 450 g N, 150 g P₂O₅ and 150 g K₂O per tree per annum are recommended. In rainfed orchards, it is desirable to apply the entire quantity of fertilizers and manures just before monsoons (Asen, 2002).

Manures and Fertilizers	1st year	2nd year onwards
FYM	20 kg	50 kg
N	200 g	500 g
P	100 g	200 g
K	200 g	500 g

Manuring should be done immediately after pruning. Spray 2% KNO₃ thrice at monthly intervals in January, February and March.

Varieties of Ber used in research

Apple ber: *Zizyphus mauritiana* (*Zizyphus jujuba* Mill.), also known as Indian plum, is a tropical fruit tree species belonging to the family Rhamnaceae. Apple Ber is a small or medium-sized subtropical tree, popular for its small berry-like fruit. Apple Ber is a Thailand variety ber. The taste of these ber is very sweet. The weight of each plum is about 100-200gm. It looks similar to green apples. That is why seed is known as apple plum. This kind of plant starts giving fruits after 6 months. It gives fruits twice in a year. Plums are produced mainly December to January. This tree gives 25-30kg fruits during first year and in the second year it gives 40-45kg fruits.

The fruit has been used in traditional medicine as an emollient, expectorant, coolant, anodyne and tonic and has been used as an antidote for aconite poisoning. It is given to relieve abdominal pains during pregnancy and can be applied to wounds when used in a poultice.

Kashmiri Red Apple ber: Kashmiri Red Apple Ber, also known as Indian jujube, is a fruit-bearing plant native to South Asia, including India, Pakistan, and Bangladesh. It is a small to medium-sized tree that can grow up to 15 meters in height. The plant has a thorny trunk and branches with glossy green leaves that turn yellowish in the fall. The fruit of the Kashmiri Red Apple Ber plant is a small, round, red or yellowish fruit that is commonly used in traditional Indian medicine. The fruit is also eaten fresh or dried and is used in cooking to add flavor to dishes. The fruit is rich in nutrients such as vitamin C, iron, and calcium, and is believed to have medicinal properties that can improve digestion and boost immunity. Kashmiri Red Apple Ber plants are hardy and easy to grow, making them a popular choice for home gardens. They prefer well-drained soil and full sunlight and can tolerate a wide range of temperatures. The plants are also drought-tolerant and can survive in areas with limited water availability.

Miss India: Miss India ber is a new variety within Apple ber. Many people call this ber Bharat Sundari apple ber. This Miss India ber cultivar yields in one year. Miss India Apple Ber Plant is ideal for commercial and home garden use. The height of the seedlings is one to one and a half feet. All seedlings are grafted. The advantages of Bharat Sundari apple ber are:

1. This apple ber is highly profitable as it is an early fruit.
2. More red color is it is very attractive.
3. High yield is possible in every plant that is a Thai variety

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