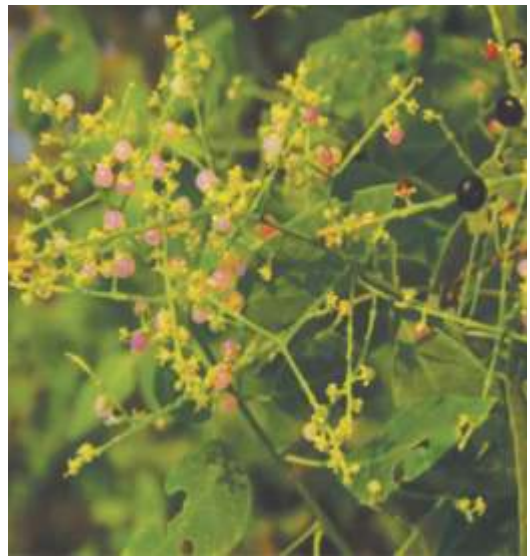
Salvadora persica Linn.

Syn. *S. indica* Wt.

Fam. Salvadoraceae

Ayurvedic name	Pilu
Unani name	Pilu, Miswak
Hindi name	Khara Jhal, Chota Pilu, Meswak
English name	Mustard Tree, Salt Bush Tree,
Trade name	Khara Jhal, Tooth Brush Tree
Parts used	Roots



Salvadora persica

Morphological Characteristics

Salvadora persica is a large shrub or small tree of Thar Desert. The branches are drooping, terete and glabrous. A typical desert plant grows as a mangrove perennial tree as well as under extreme saline (salt stress) and drought conditions. Thus the seeds are dispersed by the birds. The plant produces three types of fruits, *i.e.* pink, purple and white. The purple fruit bearing plants showed better seed traits, *viz.* seed weight, size, thickness, volume, density and viability and germination percentage as compared to other two types of fruit bearing plant. Hence, in the present studies seeds of purple fruit bearing plants were selected to develop agro-techniques. The leaves are shed twice in a year, *i.e.* October-November and February-March, but plant never becomes leafless throughout the year. New leaves appear twice in a year, first during April-May and second during September to December and thereafter new leaves develop slowly. During winter season (cold stress) anthocyanin pigments have been noticed in leaves. The gall formation has been commonly observed on every plant part except roots. These galls have been reported to possess some growth promoting principles.

Floral Characteristics

The plant bear flowers in September-October. The flowers are greenish-yellow borne in axillary and terminal compound panicles. Calyx is glabrous, lobes rounded; corolla is twice as long as calyx; stamens exerted; fruit is a drupe, globose, red when ripe. The plants produce

fruits with and without seeds. The fruits are formed in autumn and takes 3 months to increase in size and mature during April-May. In natural conditions the germination of seeds takes place during rainy season (July and August).

Distribution

It survives under both saline and drought conditions throughout the Indian arid zone.

Climate and Soil

It grows well under arid environment, salt stress conditions and low moisture with high temperature. Soil mixture of 1:2:1 ratio of sand, clay, FYM is best; higher clay content is preferable.

Propagation Material

Seeds collected during April-May from purple coloured healthy fruits.

Agro-technique [28]

Nursery Technique

- **Raising Propagules:** Seeds are soaked for 24 hours in fruit pulp solution *(Salvadora persica).* They gave maximum germination and shoot growth. Two seeds are sown per polybag at 1.0-2.0 cm depth during June under nursery conditions. Thus 15 gm seeds are required for planting one hectare area at a spacing of 5 X 5 meter under field conditions.

Planting in the Field

- **Land Preparation and Fertilizer Application:** First ploughing of land is done in the first week of June, and left fallow for 20-25 days for solar exposure for drying weeds, aeration and facilitating decaying crop residues. Thereafter, a second ploughing is done and field leveled through planking. The crop is given NPK at 30:20:15 kg/ha plus hexameal treatment. Half of N and entire quantity of P and K are applied basally and the rest is given after 120 days.
- **Transplanting and Optimum Spacing:** Spacing of 5X5 meter is optimum for good growth under field conditions.
- **Interculture and Maintenance Practices:** Weeding and hoeing are carried out manually at 20 days after planting repeated after every 20 days in rainy season and after rains at 45 days intervals upto 3-4 years of age.
- **Irrigation Practices:** Fortnightly irrigation schedule is more suitable for increasing the collar diameter, biomass, bark & root yields and Harvest Index, while monthly irrigation is suitable for growth and height of the plant.

[28] *Agro-technique study carried out by Department of Botany, Jai Narain Vyas University, Jodhpur, Rajasthan.*

- **Weed Control:** Manual hand weeding is a better option for weed control in *S. persica* plantations.
- **Disease and Pest Control:** No serious insects, pests and nematodes were observed in this crop.

Harvest Management

- **Crop Maturity and Harvesting:** Seeded fruits require 4-5 months for maturity, *i.e.* from December to April-May. The whole plant is used medicinally, but roots are used for preparation of Meswak toothpaste. The plant may be uprooted after 2 years of growth at any time of the year for root production. The roots are separated dried.
- **Post-harvest Management:** Uprooted whole plants are separated into leaf, stem and roots with the help of stainless knife/scalpels. Stem branches and roots are used freshly. If these are not used freshly, then these should be stored in well ventilated shady places, so that moisture loss takes place continuously.
- **Chemical Constituents:** Root contains elemental y-monoclinic sulphur, benzyl glucosimolate, a methoxylbenzyl derivative of urea named salvadourea, m-anisic acid and sitosterol. Root bark and stem bark contain trimethylamine. Seed oil is rich in myristic, lauric and palmitic acids.
- **Yield and Cost of Cultivation:** Plantation of crop at 5X5 meter spacing in one hectare area yielded 200 kg roots after two years. Rs. 6800/- is the estimated cost of cultivation for one hectare.

Therapeutic Uses

The root contains steam-distillable oil, which has 90% Benzyl isothiocyanate, a compound responsible for decreasing dental caries and used in the preparation of Meswak toothpaste. The chemical present in the plant can control gingivostomatitis, skin infection and conjunctiva. The root bark is tonic, stimulant, emmenagogue. The stem bark is good for gastropathy.