Cultivation of Capparis decidua

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Vernacular Names:-

Language	*Name*
English	*Caper*
Hindi	Karel, karil, karu
Marathi	Karil, ker, nevati
Persian	Bergesodab
Sanskrit	Patra
Tamil	Sengam, Senkum
Telagu	Kariramu
Urdu	Titali
Rajasthan	Kair, Ker, Dhalu

Capparis decidua

- **Common name :-** Kair
- **Botanical Name :-** ***Capparis decidua***
- **Order :-** Brassicales
- **Family :-** Capparidaceae
- **Genus :-** Capparis
- **Species :- decidua**
- **Origin :-** India
- **Chromosome no. :-** x=7,8

Capparis decidua

➢Distribution:-

- ➢It is found in tropical and subtropical region of India, Africa, Arabia, Pakistan, Egypt.
- ➢In India 26 species found.
- ➢It is an excellent crop for extreme arids of Rajasthan and Gujarat.

➢ Morphology :-

- ➢ The plant is densely branched, shrubs with green, thorny stem and scanty, small caducous leaves found only on young shoots.
- ➢ Red scarlet flowers appear in march- april; berries of varying size, globose, green when immature turning to red on ripening.

Use of *Capparis apphylla*

Edible:-

- Both ripe and unripe fruits are eaten,
- They can be made into bitter taste pickle.
- Unripe fruit are cook and eaten or preserved for pickle.

Agronomical use :-

- Best species to establishing shelter belt to check the movement in Thar desert of India.
- This species is useful in arid area as live hedge providing edible fruit.

Cont….d

Medicinal use:-

- In Sudan, part of shrub remedy used in jaundice and infection.
- As per a 2012 study published in the *Asian Pacific General of Tropical Medicine,* the stem of ker have **cytotoxic** activities, as they inhibit the proliferation of metastatic cancer cell.
- According to 2011 study published in *Journal of Ethnopharmacology,* the alkaloids in plants extracts display **anti diabetic** activity.

Agronomical use :-

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Others :-

- Wood use as charcoal and firewood.
- Wood also use at home construction work as it is resistant to termite attack.

Nutritional value

- **Calories** – 41.6 kcal
- **Protein** – 8.6g
- **Carb.** – 1.8g
- **Fiber** – 12.3g
- **Vit.C** – 7.81mg
- **Calcium** – 55mg
- **Phosphorous** – 57mg
- **Iron** – Negligible

(A report publish in the *Journal of Horticulture and Forestry* provide following nutrition value for 100g of Kair)

Other Nutrition Value:-

- Ash – 5.96%
- Crude fiber – 12.12%
- Digestible carbohydrate – 59.41%
- Beta carotene – 5.4mg
- Cupper – 1.1mg
- Manganese – 1.9mg/100g etc. present

Species:-

- *C.granadis* - It produce oil which is used as an illuminant.
- *C.sepiaria* – It is climbing shrub used as a hedge plant.
- *C.spinosa* – The flower buds known as capers.
- *C.zeylanica* – It is a thorny shrub and suitable to grow as hedge.

  The fruit used as vegetable.

Propagation :-

- Seeds and root suckers.
- If grown from seed, mature fruits must be collected from during May- June.
- Sowing is best done during August.
- Seedlings can be raised in nursery, but early mortality is severe.
- Seed sown in polyethylene tubes gauge, filled with mixture of sand, clay and powdered fym in equal proportion.
- Germination starts after about 15-20 days and continue upto 40 days.
- Initial growth of seedling is quite slow and they require one year in the nursery, then ready to transplant just prior to onset of next rainy season.
- The plant need to be irrigated every 15 days except during rainy season for a year after planting out.
- After that they become well established in soil and does not require any more irrigation.

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- Artificial propagation by root suckers can be done, but often with little success.
- Vegetative propagation through hard wood cutting has been done using treatment with IBA(1000ppm) in July but success rate is again very poor (Meghwal and Vashishta1998).
- Micro propagation could be effective means of mass propagation. Deora and shekhwat(1995) obtain multiple shoot from nodal explant on Murashige and Skoog(MS) (1962) medium supplement with 0.1 mg/lt NAA + 5.0 mg/lt BAP.

Fig. 3 Root pattern of a mature plant of C. decidua

Availability of kair in India :-

- Ker grows wild and unattained throughout arid northwest region.
- In Rajasthan and Gujarat the little berry is staple within the rural economics.
- Over 7,000 tonnes of fruits produced in Rajasthan districts of Jodhpur and Bikaner alone.
- A prime reason for the fruit significance is the tree's ability to survive in regions where no other vegetation can : Indeed, its growing requirements are low rainfall, shallow soils, and dry, hot temperature.

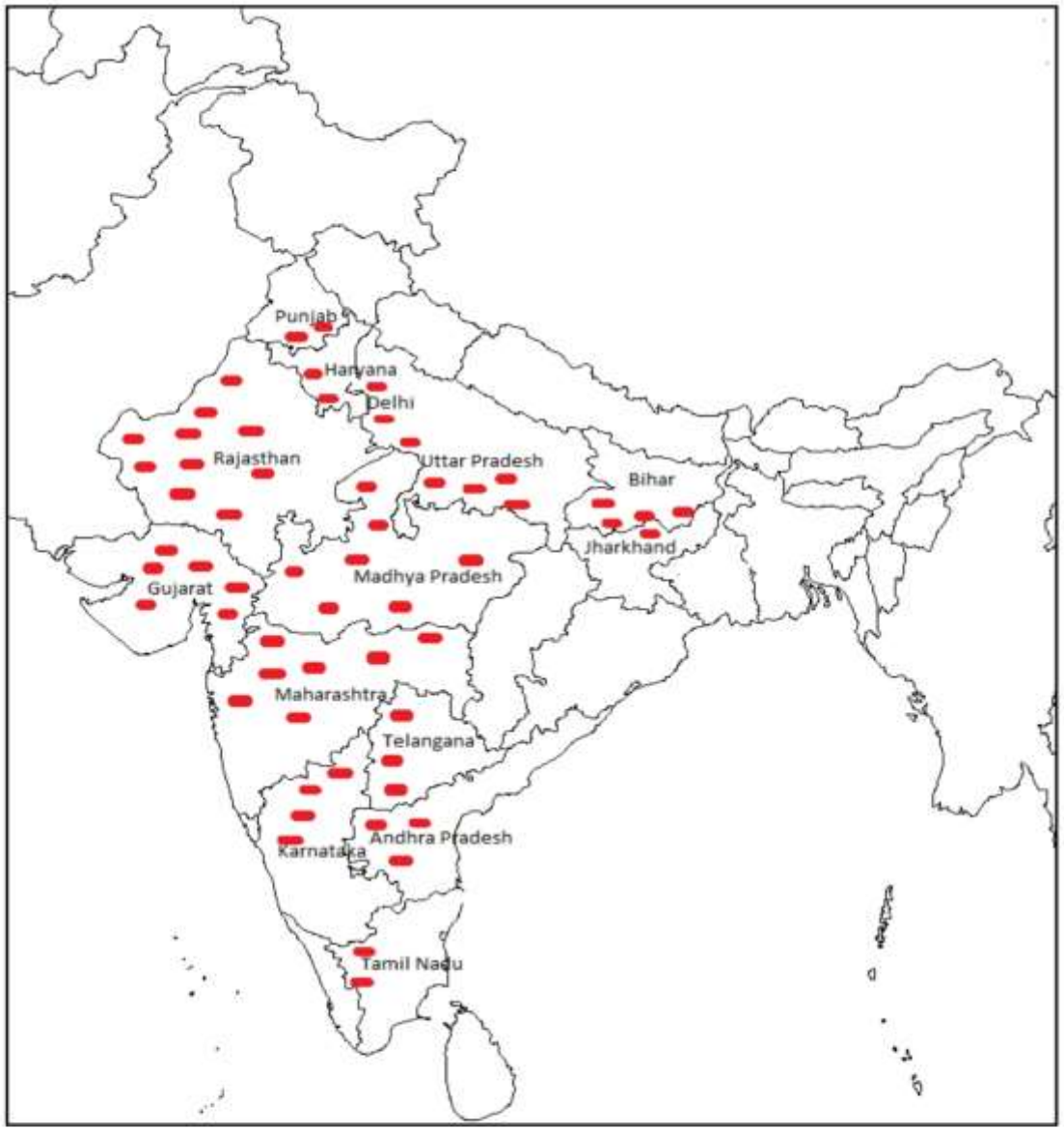

Figure 1. Map of India showing growth of *Capparis decidua* (Forssk.) Edgew.

Source :-www.hrpub.org

Climate and Soil

➢Climate

- ➢It can be grown in dry climate of tropical and subtropical region, and therefore widespread in Deccan plateau, Rajasthan and Punjab.
- ➢Highly suitable for arid and semi arid areas.
- ➢Drought resistant but frost susceptible.
- ➢Xerophytic in nature.
- ➢Can survive in rainfall as high as 600 and low as 150mm.

Manure and Fertilizers :-

- FYM :- 15-20 Kg
- Nitrogen :- 200g
- P_2O_5:- 200g
- K :- 50g

Pits dug 50 cm size during June.

Pits should be fill with FYM 10-20kg, SSP 200g, 50g MOP.

SOIL:-

- Light sandy soil where most of the crop would fall to grow.
- Tolerate salinity to great extent.
- Grow well on soil with low sodicity.
- pH :- <9
- ESP :- <35
- EC :- 4 Ds/m

Capparis decidua

➢Varities:-

➢Since it exists in only in semi wild form, no varieties are known. However great variation is found in fruit size and pulp.

➢ Planting and care :-

➢No regular planting of kair is known.

➢It should be planted 3*3 m in the beginning of the shower.

➢Once established it does not need any special care.

➢ Sowing :-

➢Best done in August.

➢After 6-7-month seedlings are ready to transplant in March and July - August.

Interculture and Intercropping :-

- Shallow cross cultivation are done between the rows and plants so that weeds may be kept down.
- The interspace available between rows during early plant growth of 2-3 years can be utilized for raising intercrop during rainy season.

Training and pruning :-

- At the time of planting, staking may be done to provide support to young plants to grow straight.
- Kair plant does not require pruning.
- However, unwanted such as dead, diseased and criss cross branches are removed to facilitate fruit harvesting and other cultural operations.

Flowering

- Normally its flowering take twice a year, i.e. in March to April and July to August after the plants had attain the age of 5 years.
- From March to April flowering, the green immature acidic fruits are harvested during May to June for pickling, dehydration and vegetable purpose.
- From July to August flowering fruits harvested in October.

- Inflorescence are both lateral and terminal.
- Flowers are mainly pink and scarlet red, about 2-2.5mm size.
- During recent years yellow flowers are seen in Jaisalmer district of Rajasthan (Deora and Shekhawat reported yellow flowers in kair).

Table 2- Flower bud development in *kair*

Day of observation (Julion)	Average length (cm)	Average diameter (cm)	Size index (LXD)	Colour appearance
70	0.62	0.27	0.167	Greenish white hairy at base
81	0.90	0.36	0.319	Greenish red at top, greenish white at lower portion
83	1.05	0.43	0.473	Dark brownish red with tinge of greenish white
85	1.30	0.47	0.580	Dark brownish red with tinge of greenish white
87	1.44	0.56	0.806	Dark brownish red with tinge of greenish white

(Research paper published by Dheeraj and Ranjay k Singh in 2011 at KVK CAZRI Pali.

Changing for Ripeness in Kair :-

Kair berries ripen from a small, green berry no bigger then a peppercorn to a much larger caper the size of a blueberry. When at its largest, the fruit ripen from green to whitish green, lastly settling on a light cherry red.

Capparis apphylla

Harvesting and Yield :-

- Plant raise through seed bear fruit at 6-7 years of age.
- Through vegetative propagation fruiting starts after four year.
- Initial yield of green mature fruit is 2-3 kg per plant, however a fully grown wild plant can give 10-15 kg of fruit.
- Harvesting done manually, as thorny nature nature of plant create greater difficulty through hand picking so fruits collected by beating through sticks.

Post harvest handling and storage

- No standard market fruits are available.
- Kair fruits always cured before pickling, drying or chutney making due to their astringency.
- Fruit attain best taste when they are cured in buttermilk and salt 10% at room temperature.
- For better appearance and color, texture, aroma and flavor they are cured in lactic acid 2% and salt 2%.
- Fruits may packed in oil and vinegar.

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- Fresh fruits have astringent due to presence of tannins and phenolic substances.
- The astringent can be removed by immersing fruits in 5% solution of common salt, or in butter milk for 4-5 days in an earthen pot.
- After astringent removal, green fruit can be preserved by sun drying for use in off season.
- Dried fruit with 5-7%moisture, can be preserved for 2-3 years in airtight containers and can be marketed when price is high.

Plant protection

- Being an arid crop, where intense heat and environmental stress is found, so no serious pest and disease are seen on kair plant except fruit borer which cause damage to berries.

- Control – spray of dimethoate 0.03% at the time of fruit setting.

Figs. 8-12 Fruiting in *Kair*, 9 Harvesting of *kair*, 10 Biodiversity conservation by *Kair*, 11 *Kair* growing at sacred place, 12 Animals resting under *Kair*

Reference :-

- International journal of Phytomedicine.
- Book : The earth of India.
- Book : Production Technology of fruit crop in wasteland.
- Book :- Cultivation practices of Arid Fruit Species.
- CAZRI :- Shrubs of INDIAN ARID ZONE