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Cultivation and utilization in Phalsa (*Grewia asiatica* L.) under Garhwal Himalayas region

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Abstract

Phalsa is a fruit of Indian and Southeast Asia origin. Phalsa (*Grewia asiatica* L.) belongs to Tiliaceae family. It prefers dry and hot environment during fruiting. In winter it goes dormant and shed its leaves. High temperature of June help in fruit ripening. Phalsa is commercially propagated by seed. The fruits are eaten fresh as dessert, are made into sirup, and extensively employed in the manufacture of soft drinks.

Keywords: *Grewia asiatica*, medicinal, use, cultivation

Introduction

Phalsa (*Grewia asiatica* L.) belongs to Tiliaceae family, is an important minor fruit crop of India. Phalsa is a hardy and small bushy in nature and preferred as an ideal crop for growing in arid and hot regions. It can be grown successfully on the slop of hills. It is also preferred for dry land horticulture and silvi-horticulture. Ripe fruits of Phalsa are consumed fresh, as desserts, or processed into refreshing fruit and soft drinks enjoyed in India during hot summer months as it has cooling tonic and aphrodisiac effects which overcomes thirst and sensation

Other Names

Phalsa (Hindi, Marathi, Urdu), Shunkri (Bengali), Phulsa (Kannada), Phutiki (Telegu), Unnu (Tamil), Shukri (Gujarati), Chadicha (Malayalam).

Botanical Description

The stem is a hard woody, circular and non-hairy. It has rough grey coloured bark. Flowers are hermaphrodite, flowers appear in leaf axils in clusters of 2-8. Yellow flowers are produced in axillary cymes. Largest fruits are 1.25-1.6 cm. The skin turns from green to purplish-red and finally dark-purple or nearly black during ripening. Small fruits are single-seeded. Since Phalsa bear fruits, there is a need for regular but severe annual pruning before the on-set of spring. yearly pruning to a height of about 1 m encourages new shoots and higher yield of marketable fruit than those of more drastic trimming.



Fig 1: Phalsa plant with unripe fruits

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Classification

Kingdom	Plantae
Phylum	Magnoliophyta
Class	Rosopsida
Order	Malvales
Family	Tiliaceae
Genus	<i>Grewia</i>
Species	<i>Asiatica, asiatica</i> L.

Origin and distribution

Phalsa is a fruit of Indian and Southeast Asia origin. Phalsa grow in the Himalayan regions of India, and thrives at elevations up to an elevation of 3,000 ft (914 m). The major areas in India cultivating the fruit are the southern outskirts of Punjab, Delhi and Mumbai. Phalsa is a summer fruit, ready for picking in the south from March to April, and in the north, from May to June. Phalsa is 30 hectares with annual production of 196 tonnes approximately.



Plate 1A. Phalsa plant and **B.** Ripe fruits of Phalsa

Climate and Soil

Phalsa grow under sub-tropical climate. It prefers dry and hot environment during fruiting. In winter it goes dormant and shed its leaves. High temperature of June help in fruit ripening. The plant can tolerate temperature as high as 44 °C. It can very easily be grown on poor soils. Loam soils are considered good. It makes good growth under scanty irrigation conditions. The ph of the soil should be 7.5-8.5 for successful cultivation.

Propagation

Phalsa is commercially propagated by seed. Plants appear from the seedling are fairly true to type. Seed require 15-20 days for germination and seedling get ready for planting in the field by 3-4 months. Hardwood cutting and planting date influence rooting of Phalsa. Some success has been achieved in rooting of stem cuttings in phalsa with the use of synthetic auxins, especially Indole-3-butyric acid (IBA). The best rooting was obtained following treatment of Phalsa hardwood cuttings with IBA at 200ppm and the semi-hardwood cuttings did not root as well as hardwood cuttings (Kathrotia and Singh, 1995) [2]. The treatment of hard wood cutting of Phalsa with IBA (2000 and 3000ppm) significantly increased the root length, number of roots per cutting and percentage survival (Shrivastava, 1996) [5].

Cultivars

There is no distinct cultivars available in phalsa. Some growers have, however, given names as Local and Sharbati. Two phalsa type, i.e. Dwarf and Tall were recognized, of which the former is more productive.

Table 1: Characteristics of tall and dwarf types of *Grewia asiatica*.

Characters	Tall type	Dwarf type
Plant height (m)	4.5	3.4
Internodes length (cm)	101.6	97.6
Leaf size (cm)	20x10	18x15
Lower leaf surface	Light green	Greenish white
Fruit yield (kg)	5.2	3.5
Fruit Size (cm)	2.07	2.26
Fruit weight (g)	0.478	0.544
Pulp (%)	81.5	60.3
Juice (%)	5.4	34.6
TSS (OB)	14	12.1
Acidity (%)	4.64	3.63

Source: Dhawan (1993).

Planting:

Tropical and sub-tropical condition planting can be done in the month of June-July With the onset of Monsoon While in sub-tropical it can also be done in the beginning of Spring season (Feb-March). Planting distance usually recommended 2.5-3.0 m both way.

Nutrition

Full grown plants should be given 10-15 kg of FYM soon after planting. Higher yield can be obtained by the application of N 100kg, P₂O₅ 40kg and K₂O 25kg per hectare respectively. The plant is very sensitive to iron deficiency. Therefore, spraying of Feso₄ (0.4%) will be beneficial to the plant.

Irrigation

The first irrigation is needed in the second or third week of February after the application of fertilizers. During the month

of March and April, irrigation after every 20 or 25 days seems to be beneficial. However, during May, irrigation after every 15 or 20 days is desirable.

Weeding

One or two ploughing after pruning of the plants is desirable to control the weed growth. If necessary one ploughing may be given after the irrigation to mix-up the fertilizers applied and check the weed growth.

Pruning

Annual pruning is therefore must to get new vigorous shoots to ensure regular and heavy fruiting. General practice is to cut back the plants at the ground level during the dormant period. The best time of pruning is when the plants have shed their leaves and it should be finished well before the start of new vegetative growth.

Harvesting

The fruit start ripening from the April. The period of harvesting continues up to the first week of June. It is therefore, essential to collect ripe fruits daily from each plant. Average yield of fruits per plant is 6-7 kg.

Table 2: Nutritional values of Phalsa (*Grewia asiatica* L.) fruit. (Yadav, 1999) [6].

Nutrients	Values/100 g g
Calories (Kcal)	90.5
Protein (g)	1.57
Total lipid (fat) (g)	<0.1
Carbohydrate (g)	21.1
Ash (g)	1.1
Fibre (g)	5.53
Calcium (mg)	136
Iron (mg)	1.08
Phosphorus (mg)	24.2
Potassium (mg)	372
Sodium (mg)	17.3
Vitamin A (g)	16.11
Vitamin B1 (mg)	0.02
Vitamin B2 (mg)	0.264
Vitamin B3 (mg)	0.825
Vitamin C (mg)	4.385

Source: Yadav, 1999 [6]

Insect pests

- Phalsa bug: *Gargara mixta* (Buckton)
- Mealybug: *Drosicha mangiferae* (Green)
- Bark eating caterpillar: *Indarbela tetraonis* Moore
- Hairy caterpillar: *Euproctis fraterna* (Moore)
- Brown beetle: *Anomala* sp.
- Phalsa caterpillar: *Giaura sceptica* Swinhoe
- Aphid: *Aphis craccivora* Koch

Diseases

- Leaf spot/ Brown spot: *Cercospora grewiae*
- Rust: *Dasturella grewiae*
- Phyllosticta* leaf spot: *Phyllosticta grewiae*

Medicinal Uses

Unripe fruits reported to alleviates inflammation and is administered in respiratory, cardiac, and blood disorders, as well as in fever reduction (Morton, 1987) [3]. Ripe fruits of Phalsa are consumed fresh, as desserts, or processed into refreshing fruit and soft drinks enjoyed in India during hot summer months as it has cooling tonic and aphrodisiac effects which overcomes thirst and sensation. The bark is used as a soap substitute in Burma. A mucilaginous extract of the bark is useful in clarifying sugar. An infusion of the bark is given as a demulcent, febrifuge, and treatment for diarrhoea. The leaves are believed to have antibiotic properties hence, applied on skin eruptions and they are known to have antibiotic action.

Food Uses

The fruits are eaten fresh as dessert, are made into sirup, and extensively employed in the manufacture of soft drinks. The juice ferments so readily that sodium benzoate must be added as a preservative.

Other Uses

The fresh leaves are valued as animal fodder. The bark is used as a soap substitute in Burma. A mucilaginous extract of the bark is useful in clarifying sugar. Fiber extracted from the

bark is made into rope. The wood is white-yellow, fine-grained, flexible and strong. It is used for archers' bows, spear handles, poles and shingles for carrying loads on the shoulders.

References

- Dhawan K, Malhotra S, Dhawan SS, Singh D, Dhindsa KD. Nutrient composition and electrophoretic pattern of protein in two distinct types of phalsa (*Grewia subinequalis* DC). Plant Food Hum. Nutr. 1993; 44:255-260.
- Kathrotia RK, Singh SP. Regeneration of roots in phalsa (*Grewia asiatica*) stem cuttings as influenced by maturity of wood and root promoters. Adv. Hort. For., 1995; 4:35-41.
- Morton JF. Phalsa. In: Fruits of warm climates. Julia Morton, Miami, FL, 1987, 276-277.
- Pujari S. Phalsa Cultivation in India – Production Area, Climate, Harvesting and Fruit Handling, 2012. <http://www.yourarticlelibrary.com/cultivation/phalsa-cultivation-in-india-production-area-climate-harvesting-and-fruit-handling/24703>.
- Shrivastava SR. Effect of IBA, sugur and captan on rooting of phalsa (*Grewia subinaequalis* DC). Recent Horticulture. 1996; 3(1):52-54.
- Yadav AK. Phalsa: A Potential New Small Fruit for Georgia. In Perspectives on New Crops and New Uses; Janick, J., Ed.; ASHS Press: Alexandria, USA, 1999, 348-352.