

ASHWAGANDHA (*Withania somnifera*): AN IMPORTANT MEDICINAL CROP OF INDIA

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Introduction

Scientific Name : *Withania somnifera* Dunal.

Chromosome Number : 2n=48

Family : Solanaceae

Common Name : Hiremaddinagida, Pannaeru, Ashwagandhi and Kiremallingida in Kannada; Punir and Asgandh in Hindi; and Winter cherry in English.

Withania somnifera is native of India and an important ancient plant, the roots of which have been employed in India traditional systems of medicine, Ayurveda and Unani. Aswagandha means "horse's smell - resembles that of sweaty horse. *Somifera* means "sleep inducing". It is mentioned as an important drug in ancient ayurvedic literature. Several types of alkaloids are found in this plant, out of which, withanine and somniferine are important and steroidal lactones, collectively called as withanolides. Major uses of ashwagandha are Immunity booster, Adaptogenic (Stress reliever), Health tonic for fitness, longevity, and vitality. Economic part of Ashwagandha is Roots, Bark, Leaves, Fruits, Seeds. The drug is mainly used in ayurvedic and unani preparations. Ashwagandha fruits and seeds are diuretic in nature. An infusion of the bark is given for asthma. The fruits and seeds are used in chest complaints. Other uses are cures bronchitis, rheumatism, inflammation.

Origin and Distribution

W. somnifera is found wild in Madhya Pradesh, Punjab, Himachal Pradesh and Western Uttar Pradesh in the Himalayas. Cultivated in an area of about 4000 hectares in India mainly in drier parts of

Madhya Pradesh, in Punjab, Sind, Rajasthan and South India. In Karnataka, its cultivation has been reported in Mysore District.

It is also found in wild state in the Mediterranean region in North Africa. Another species *W. congulans* Dunal, a rigid grey under-shrub of 60-120 cm high is found wild in Punjab, Sindh and neighbouring regions.

Botany

This is an erect herbaceous, evergreen, tomentose shrub, 30-75cm in height. The leaf is ovate, entire, thin, its base is cuneate and is densely hairy beneath. The flowers are bisexual, greenish or lurid yellow, axillary, in clusters of about 25 forming umbellate cymes. The fruit is a berry, red, globose, smooth, enclosed in an inflated, membranous, somewhat 5-angled, pubescent, persistent calyx. The fruits turn orange-red in colour when they mature. The seeds are yellow in colour and reniform in shape. The flowering season is from July to September and the ripe fruits are available in December. Roots are stout, fleshy, cylindrical, 1-2cm in diameter and whitish brown in colour.



Varieties

- **Nagori** is a local variety with starchy roots.
- **Jawahar Asgandh – 20** has been released from a single plant selection from Jawaharlal Nehru Krishivishwa Vidyalaya, Regional Agricultural Research Station, Mandsaur under Medicinal and Aromatic Plants project. The variety has recorded the highest dry root yield consistently over the others.
- **Asgandh – WS – 90 – 134** has been released from JNKVV, Mandsaur, the dry roots of this variety are reported to contain high levels of alkaloids (0.605%) and Withanine (20.38%).
- **Jawahar asgandh-134** is a hybrid developed by combining the desirable characters of Jawahar asgandh-20 and a wild type of ashwagandha.
- **Arka ashwagandha** is released from IIHR, Bangalore. High dry root yield of 11.95q/ ha. Total withanolide content 0.58%. Early vigour and good establishment. Field tolerant to bacterial wilt and late blight and pests such as mites and aphids.
- **Gujarat Anand Ashwagandha-1** is released in the year 2015. Suitable for kharif and under irrigated conditions. Root is white and thick. Average dry root yield is 6.5q/ha.
- Varieties released from CIMAP, Lucknow
- **CIM Poshita**- Released during the year 2001. The plants are medium tall (71.22 – 87.2 cm), the variety matures in 189 to 210 days and the dry root yield is 14 q/ha. The total alkaloid yield is 1.292 kg/ha. Major Constituents of Variety is Withaferin.

- **CIM Pratap-** Released during the year 2001. Major Constituents of Variety is Withaferin-A. High dry root yield (35 q/ha). High dry leaf yield (09 q/ha). Compounds in essential Oil is Withaferin, Withanolide (0.31%). Suitable for drought prone area.
- **CIM-Chetak-** Released during the year 2011. High dry root yield of 11.77 q/ha. High total withanolide content 0.4%. High withaferine content of 1.22%.
- **CIM- Pushti-** Released during the year 2019. Developed through interspecific hybridization between two major ecotypes Nagori and Kashmiri. Good root texture. Mature in 160-170 days.

Climate and soil

Tropical crop growing well under dry climate. The areas receiving 660-750 mm rainfall are suitable for its cultivation. In these conditions, 1-2 late winter rains are enough for its roots to develop fully. It grows successfully in sandy loam or light red soils with good amount of organic matter and drainage. A soil pH range of 7.5 to 8 is ideal.

Propagation

The crop can be grown by directly sowing the seeds into the field as well as by raising the seedlings and transplanting them. Late kharif crop and planting is done in August. A seed rate of 10-12 kg/ha is required for Broadcasting method of planting and for Transplanting 5 kg/ha.



When the seedlings are to be raised for transplanting, they should to be sown in well-prepared, raised nursery beds. About 5 kg of seeds are required to provide enough seedlings for transplanting one hectare. To avoid nursery diseases, the seeds are treated with Dithane M-45 at the rate of 3 g/kg of seeds before sowing. The seeds in the nursery beds are sown in lines spaced at 5 cm and covered with light soil. The germination commences within 6-7 days of sowing and in about 10 days after sowing it is complete. When the seedlings are 6 weeks old and sufficiently tall, they are transplanted in 60 cm-spaced rows, 60 cm apart in well-prepared land.

Season

It is planted late in the rainy season around August-September and harvested in the next May.

Manuring

The crop is mainly grown on residual fertility. Hence, no manure or fertilizers are recommended. Studies at the Indore research station have showed no effects of nitrogen and phosphorus on its root yield.

After cultivation

The directly sown crop is thinned at 25-30 days to maintain a plant population of 20,000 to 25,000/ha. Hand weeding is generally done at 30 days of sowing to control the weeds.

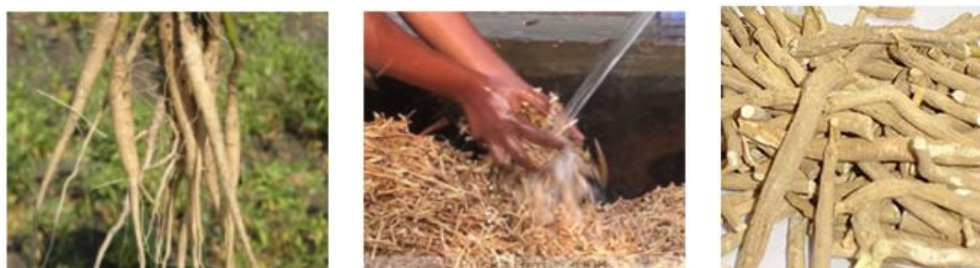
Harvesting

The maturity of the crop is judged by the drying of the leaves and berries turning red. Harvesting starts from January and continues till march that is 150-170 days after sowing. The entire plant is up rooted and the roots are separated from the aerial parts by cutting the stem 1-2 cm above the crown.

The berries are plucked from dried plants. Threshed to obtain the seeds. Yield is about 400- 500 kg of dry roots and 50-75 kg seeds per hectare.

Post harvest practices

They are then transversely cut into smaller pieces of 7-10 cm for drying. Occasionally the roots are dried as a whole. The berries are plucked from the dried plants and are threshed to obtain the seeds.



Grades of Ashwagandha roots

The dried roots are beaten with a wooden club to remove the attached soil and break off the thin, brittle lateral roots. The lateral branches, root crown, and remaining stem parts are then carefully removed using a knife. The cleaned root pieces are finally sorted into different grades based on their size and quality.

- Grade A- Root pieces 7cm long, 1-1.5cm diameter, brittle, solid cylindrical with smooth external surface and pure white from inside.
- Grade B- Root pieces 5cm long, 1cm diameter, brittle, solid and white from inside.
- Grade C- Solid root pieces 3-4cm long, less than 1cm diameter and solid.
- Lower grade- Root pieces smaller, hollow and yellowish from inside and < 1 cm in diameter.



Plant protection

Leaf blight and die back are common disease affecting ashwagandha. Their incidence can be minimized by spraying Dithane M-45 @ 3g/l. Damping off and seedling rot can be control by application of *Trichoderma viride* (2 kg/ha) and *Pseudomonas flurescens* (2kg/ha).

Conclusion

Ashwagandha is a commercially important medicinal crop with considerable significance in traditional systems of medicine and the herbal industry. Its adaptability to relatively dry climatic conditions, comparatively simple cultivation requirements and high demand for quality roots make it suitable for cultivation in several parts of India. Successful production depends on the use of suitable varieties, quality seed, appropriate soil and climatic conditions, optimum plant population and timely weed and crop management. Improved varieties developed by different research institutions offer opportunities for enhancing root yield and bioactive compound content. Harvesting at the appropriate stage, followed by proper uprooting, cleaning, cutting, drying and grading, is equally important for obtaining marketable raw material of good quality. Adoption of scientifically recommended production and post-harvest practices can therefore improve productivity, root quality and economic returns while supporting the sustainable cultivation and utilization of Ashwagandha as an important medicinal resource.

References

- Kaul, S.C. and Wadhwa, R. eds., 2017. *Science of Ashwagandha: Preventive and therapeutic potentials* (p. 508). Cham: Springer International Publishing.
- Khabiya, R., Choudhary, G.P., Jnanasha, A.C., Kumar, A. and Lal, R.K., 2024. An insight into the potential varieties of Ashwagandha (Indian ginseng) for better therapeutic efficacy. *Ecological Frontiers*, 44(3), pp.444-450.
- Singh, N., Bhalla, M., de Jager, P. and Gilca, M., 2011. An overview on ashwagandha: a Rasayana (rejuvenator) of Ayurveda. *African Journal of Traditional, Complementary, and Alternative Medicines*, 8(5 Suppl), p.208.

TNAU, https://agritech.tnau.ac.in/farm_enterprises/Farm%20enterprises_%20Ashwagantha.html