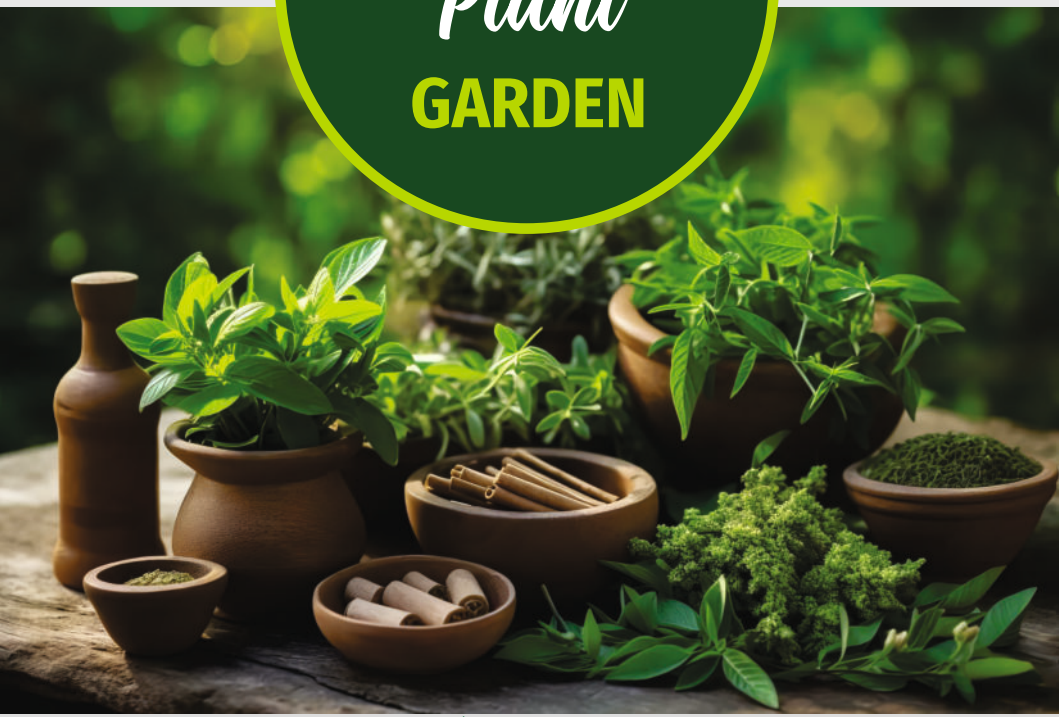
# Medicinal Plant GARDEN



**CENTRE FOR ENVIRONMENTAL STUDIES**
Forest, Environment & Climate Change Department
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# PREFACE

This booklet, Medicinal Plant Garden, is a comprehensive guide compiled by the Centre for Environmental Studies (CES), under the Forest, Environment & Climate Change Department, Government of Odisha, to promote the cultivation, conservation, and utilization of medicinal plants.

The use of medicinal plants is deeply embedded in our cultural heritage, with references dating back to ancient texts like the Rig Veda, Charaka Samhita, and Sushruta Samhita. It provides detailed information on the cultivation, propagation, and uses of various medicinal plants, along with their traditional and modern applications. Also emphasizes the importance of integrating herbal gardens into school curriculums, fostering biodiversity conservation among students. This resource owes a great debt to Dr. Sasanka Lenka, whose tireless efforts and expert insights have enriched its scientific content and made it an indispensable tool.

CES is committed to environmental education and sustainable practices. This guide is part of our efforts to promote biodiversity conservation and sustainable use of natural resources.

I would like to thank Ministry of Environment, Forest & Climate Change (MoEF&CC), Govt. of India for giving opportunity to compile this book under Environment Education Programme (EEP).

**(Dr. K. Murugesan)**

# CONTENT

# MEDICINAL PLANT GARDEN

## 1.0 Backdrop

The use of medicinal plants in India dates back to ancient times, with evidence of their use found in the Rig Veda. The use of medicinal plants in India is also described in Ayurvedic texts such as the Sushruta Samhita and the Charaka Samhita. The Rig Veda, written between 4500 and 1600 B.C., is the oldest known repository of human knowledge and describes the use of medicinal plants. The Sushruta Samhita and the Charaka Samhita, written around 1000 B.C., describe therapeutics and Materia medica. Hippocrates, 460-380 BC, known as the "Father of Medicine," classified herbs into their essential qualities of hot and cold, moist and dry, and developed a diagnosis and prognosis system using herbs. Among 7000

species of medicinal plants recognised worldwide, more than 900 types of precious medicinal plants are said to be found in India. The medicinal and aromatic plants of the Himalayan Mountains are invaluable biological resources, closely associated with health care, traditions, and culture. Since antiquity, mankind has been using plants for diseases and some of these traditional medicines are still included as part of the habitual treatment of various maladies. The number of effective medicinal plants he discussed was between 300 and 400 species. The term medicinal plant was first used in 1967 in the study of hallucinogenic plants. A medicinal plant is that species of the plant kingdom, whose parts (flowers, leaves, roots, stems, fruits, or seeds) are directly used or used in some preparation as a medicine to treat a condition or disease. Knowledge of the beneficial properties of medicinal plants to treat diseases represents a valuable resource to preserve the biological and cultural diversity of different ethnicities.

Indigenous physicians have used medicinal plants since pre-Hispanic times and are part of the traditional knowledge of humanity. The use of medicinal plants derives from having secondary metabolites with pharmacological properties, and some are an important source of components for antitumors, antivirals, antiepileptics, antibiotics, anti-inflammatories, and antinociceptives, among others. Growing plants around the house have multi-dimensional benefits as they have enormous potential in the prevention and treatment of various ailments.

The most current reports indicate that the planet is home to a diversity of 391,000 vascular plants, of which at least 35,000 species have a potential medicinal use. In addition, 25%

of the bioactive compounds used in various medicines come from plants; there are also reports indicating that at least 80% of the world's population depends on traditional herbal remedies.

The term medicinal plants include various types of plants used in herbalism and some of these plants have a medicinal activity. These medicinal plants are considered a rich resource of ingredients that can be used in drug development and synthesis. Besides that, these plants play a critical role in the development of human cultures around the world. Moreover, some plants are considered an important source of nutrition and as a result, these plants are recommended for their therapeutic values. These plants include ginger, green tea, walnuts and some other plants. Other plant derivatives are considered an important source of active ingredients which are used in aspirin and toothpaste.

## 2.0 Promoting Herbal Gardens in Schools

The "Promoting Herbal Gardens in Schools" has been a fun?filled learning activity for the children where they got the opportunity to learn about medicinal plants by actually planting the medicinal herbs and watching them grow in their gardens, and by exploring information about them from various sources. The task of making the garden itself has been enriching in terms of making children realize the importance of teamwork such as detailed planning, and allocation of tasks within a team. For the teachers, the herbal garden project has been useful in terms of the ease with which they could integrate the concept with other subject matter activities, such as writing essays, poems and stories, making posters, drawing and painting,

making herbariums, and even preparing food recipe using some of the culinary herb's students have planted in their gardens.

## 3.0 Objectives of Herbal Gardens in Schools

1. To encourage and promote the 'Herbal Garden in schools' concept to schools and provide them an opportunity to work closely with herbal plants.
2. To inculcate a sense of familiarity from childhood with surrounding biodiversity and its conservation, especially herbal plants.
3. To educate schoolchildren in identifying different types of herbs and their uses including growing them in a garden.
4. To encourage students to use herbs in food.
5. To popularize the usefulness of commonly available and frequently used herbal plants and to conserve the associated traditional knowledge for future generations, in a fun and practical way.

## 4.0 Methodology

The schools will be encouraged to set up herbal gardens within their school complexes. The networks maintained by EIACP will be used to reach out to the schools. Students led by the science teachers will be mobilized to design and decorate the gardens. Plant profiles for medicinal and culinary herbal plants will be prepared by the students. The students will be also encouraged to write poems and stories, posters and recipes out of herbs. For the continuity of the programme,

the school should integrate the concept into the school curriculum. In this way, the herbal garden concept can be spread within the school and across the state, various regions, and children, teachers, parents' families, homes, communities, and societies, across the region revitalizing the traditions associated with herbs and their uses. Considering that the schools may not have very large vacant land available, it is proposed to raise a herbal garden of about 1000 sqm (1/10 of a hectare) in each school.

These days the term "Alternative Medicine" has become very common in Western culture, it focuses on the idea of using plants for medicinal purposes. However, the current belief is that medicines that come in capsules or pills are the only medicines that we can trust and use. Even so, most of these pills and capsules we take and use during our daily lives come from plants. Medicinal plants are frequently used as raw materials for the extraction of active ingredients which used in the synthesis of different drugs. Like in the case of laxatives, blood thinners, antibiotics, and anti-malaria medications, contain ingredients from plants. Moreover, the active ingredients of Taxol, vincristine, and morphine were isolated from foxglove, periwinkle, yew, and opium poppy, respectively.

## 5.0 Future of Medicinal Plants

Medicinal plants have a promising future because there are about half a million plants around the world, and most of their medical activities have not been investigated yet, their medical activities could be decisive in the treatment of present or future studies.

## 6.0 Characteristics of Medicinal Plants

Medicinal plants have many characteristics when used as a treatment, as follows:

- Synergic medicine- The ingredients of plants all interact simultaneously, so their uses can complement or damage others or neutralize their possible negative effects.
- Support of official medicine- In the treatment of complex cases like cancer diseases the components of the plants proved to be very effective.
- Preventive medicine- It has been proven that the component of plants is also characterized by their ability to prevent the appearance of some diseases. This will help to reduce the use of the chemical remedies which will be used when the disease is already present i.e., reduce the side effect of synthetic treatment.

## 7.0 General Instruction

- The home remedies are generally safe but may give rise to side effects if not used properly. Therefore, the following instructions should be read carefully, understood, and followed by the user.
- Home remedies are meant for the prevention of diseases and management of simple and minor illnesses like the common cold, cough, loss of appetite, indigestion and to aid recovery from illnesses, etc.
- Sometimes, home remedies are also useful in chronic problems such as osteoarthritis.
- Home remedies cannot replace a standard treatment and can be used as an add-on only. The attending physician

should be always informed about the home remedies used by the patient.

- Home remedies should not be used in major diseases such as cancer, or serious or life-threatening conditions as a main course of treatment.
- Avoid any internal medication when a person is unconscious, not even through the nose. It may enter the airway and can cause sudden death.
- These home remedies should not be given to a child below 1 year of age unless advised by a qualified AYUSH physician.
- The medicines mentioned in this booklet are generally considered safe; however, in case of any discomfort, they should be stopped immediately and reported to a qualified physician.
- Use of the right ingredient will give the desired result and therefore ensure proper identification of the herb.
- The plants from the footpath, burial grounds, dump yards, drain- sides, industrial belt & other polluted areas should be avoided.
- The plant should be properly washed and dried in shade if required.

## 8.0 Training Packages

- Improving School Environment
- Promotion of Herbal Garden in schools
- Management and conservation of herbal plants

- Life skill Program
- Visioning
- Activity for Herbal Garden Construction
- Action Plan for Herbal Garden Construction
- Formation of Nature Club
- Nature Club Management & Sustainability
- Climate Learning Education

## 9.0 Activities of School Herbal Garden

Herbal gardens are a collection of medicinal plants that can be used for education, research, and conservation. They can also help to promote the use of medicinal plants and raise awareness of their benefits. Mainly the activities in a school herbal garden can include:

- **Learning about medicinal plants:** Students can learn about the properties and uses of medicinal plants.
- **Conserving plants:** Students can learn how to conserve rare and endangered medicinal plants.


- **Learning about gardening:** Students can learn about gardening skills like planting, harvesting, and composting.

- **Learning about nutrition:** Students can learn about the nutritional value of herbs.
- **Learning about botany:** Students can learn about the scientific principles behind gardening and botany.
- **Learning about farming:** Students can learn about modern farming skills.
- **Learning about traditional knowledge:** Students can learn about the traditional knowledge associated with medicinal plants.

## 10.0 Activities of School Herbal Garden

Medicinal plants can be propagated through vegetative propagation, which involves separating a part of the plant to create a new plant. This method is also known as asexual propagation.

### Vegetative propagation methods

- **Cuttings:** A part of the plant, such as a stem, root, or leaf, is grown under suitable conditions to create a new plant.
- **Layering:** A technique for propagating plants.
- **Grafting:** A technique for propagating plants.
- Tissue culture: A technique for propagating plants.

### Other methods of plant propagation

- **Seeds:** Contain dormant plant embryos that germinate under suitable conditions.
- **Sexual reproduction:** Involves the floral parts of a plant, where pollen and egg unite to create a new plant.

### Benefits of vegetative propagation

- The new plant has the same characteristics as the parent plant.
- Farmers and horticulturists use these methods to produce healthier crops.

## 11.0 Different Model of School Herbal Garden

To sensitize the students in various schools about the conservation of the rich biodiversity and in particular the role of medicinal plants in providing holistic health care for primary health hazards that can be cured through both traditional and modern systems of medicine. Different models are as follows:

## Amala (*Phyllanthus emblica L.*)

Indian Gooseberry (English)

**Habitat:** All over India

**Part used:** Fruit

### General Description

Amla is a medium-sized deciduous plant. It grows to a height of 8 -18 meters. It has a crooked trunk and spreading branches. Its flower is yellow-greenish in color. The fruit is spherical and pale yellow with six vertical furrows. It has gray bark and reddish wood. Its leaves are feathery, linear-oblong in shape, and have a peculiar smell. Its wood is hard in texture. It wraps and splits when exposed to the sun or in excessive heat.

## Mode of Propagation

A sapling can be planted at a distance of 6MX6M interval. The pit size should be .75 cm. Amla cultivation involves preparing the land, digging pits, filling them with manure, and planting the seedlings. Amla is a tropical plant that grows best in light to medium-heavy soils with moderate alkalinity.

1. It is propagated by seeds as well as by stem cuttings.
2. When the stem divisions are used as the planting material, the selected division should have 3-4 nodes. 100% sprouting will be seen in 7-10 days. Planting may be done in June.
3. Collect the fresh seeds during February-March. Sow them on nursery beds or directly in the fields. 60% of germination would be obtained within 10 days.

## Uses

1. Enhancing immunity: The fruit is useful in the form of juice, powder, food recipe, or as part of formulation in enhancing immunity against diseases.
2. Urinary problems: 10 to 20 ml of fresh juice of Amala with jaggery is beneficial in burning micturition.
3. Reproductive problems: Fresh juice of Amala or powder is useful in menorrhagia and leucorrhoea.
4. Diabetes/ Prediabetes: Powder of Amala and turmeric (2- 4gm each in equal quantity) with water will be an effective remedy.
5. Anemia: Juice of Amala is beneficial.
6. Acid peptic disorder: Amala powder (2gm-3gm) with warm water will help in hyperacidity.

7. Constipation: 5 to 10 gm of Amala powder taken with warm water during bedtime is useful in relieving constipation.
8. Cosmetics: Amla boiled with any oil is used traditionally for the treatment of dandruff and hair loss.

## Food Recipes

1. Amla Murabba: Boiled Amla pieces are soaked in sugar or jaggery syrup and flavoured with cardamom. This easy recipe is suitable for everyday use to boost immunity and manage the health issues mentioned above. This preparation is not recommended for diabetics due to the presence of sugar jaggery.
2. Amla chutney: Amla along with fennel seeds, chillies salt and other spices as per the choice are ground in coconut.
3. Amla pickle: Boil the Amla with salt and water till it becomes tender, drain the water. Heat some oil and add mustard seeds, asafoetida and chilli powder. Mix well and add Amla. Stir till mixed well and excess water gets fully evaporated.

## Precautions

Intake in excessive quantity may result in loose motion.

## Ayurvedic Formulations

Chyawanprash, Triphala Chuma, Amala Chuma.

## Ashwagandha (*Withania somnifera* L.)

**Local name:** Asgandh (Hindi)
Indian Ginseng, Winter Cherry (Eng.)
**Habitat:** All over India
**Part used:** Whole plant, mainly root

### General Description

Ashwagandha is native to drier parts of India. It is a perennial herb that is short, tender, growing 35-75 cm tall. Velvet-hairy branches extend radially from a central stem. Leaves are dull green, and elliptic, usually up to 10-12 cm long. The flowers are small, green, and bell-shaped. Orange fruits in persistent papery sepals follow the small greenish flowers.

### Mode of Propagation

Ashwagandha is a medicinal plant that can be grown in semi-arid and arid regions. It is a late rainy season crop that

can be grown in sandy loam, red, black, and loamy soils. Soak the seeds in cold water for 24 hours before sowing. Cover the seeds with light soil and transplant the seedlings when they are six weeks old and space the seedlings 60 cm apart. Seed is the best way to propagate Ashwagandha. It can be grown from seeds in the early spring or from greenwood cuttings in the later spring.

### Uses

1. Fatigue: Ashwagandha powder (2gm-6gm) with milk or ghee is useful in general weakness.
2. Insomnia: Ashwagandha powder (2gm-3gm) with sugar/ milk/ cow's ghee is useful in sleeplessness anxiety & depression.
3. Neurological/Degenerative Problems: Ashwagandha powder (2gm-6gm) boiled with milk is useful in neurological problems and degenerative arthritis.

### Food Recipes

Ashwagandha tea: Mix½ cup milk, ½ cup water, and 1 teaspoon Ashwagandha powder together and boil. Add the cardamom and honey and drink it twice a day. Milk can be added in place of water.

### Precautions

Overdose can cause diarrhoea, stomach upset, and vomiting.

### Ayurvedic Formulations

Ashwagandha Powder, Ashwagandha ristha.

## Bala (*Sida cordifolia* L.)

**Habitat:** Throughout the tropical and sub-tropical plains of India

**Part used:** Whole plant, especially root

### General Description

Bala is an erect perennial plant that reaches 50 to 200 cm tall. The stems are yellow-green, hairy, long, and slender. The yellow- green leaves are oblong-ovate, covered with hairs, and 3.5 to 7.5 cm (1.4 to 3.0 in) long and 2.5 to 6 cm (0.98 to 2.36 in) wide. The flowers are dark yellow, sometimes with a darker orange center, with a hairy 5-lobed calyx and 5-lobed corolla.

### Mode of Propagation

Bala is a perennial subshrub that can be cultivated by preparing the soil, sowing seeds, and transplanting seedlings. Sow seeds in a potting mix of soil, sand, and farmyard manure in a ratio of 1:1:1. After 7-14 days, transplant the seedlings

into the main field. The plant is propagated through seeds and root suckers. It prefers clay-damp soils under shade conditions.

1. Collect the mature seeds from well-grown plants. Dry them and soak in water for 24 hours. Sow the seeds in raised beds during the rainy season since water logging would be injurious to the seedlings. In other seasons you could sow the seeds in sunken beds. In 6-7 days,80-90% germination is obtained.
2. For vegetative propagation, plant the root suckers in small pits, cover them with loose soil and allow for sprouting. Transplant the seedlings when they have at least 4 leaves.

## Uses

1. Neurological/ degenerative problems: Decoction of Bala (whole plant) for internal use and oil for local application are recommended. Oil can be prepared by boiling the Bala paste in sesame oil. Use of this oil is indicated for massage, internal use and therapeutic enema.
2. Leucorrhea: Root powder (2gm-3gm) with milk is useful.

## Precautions

1. Dizziness, restlessness, irritability, insomnia, headache, lack of appetite, nausea, vomiting, flushing, tingling, difficulty in urinating and pounding heartbeat may happen if taken in access quantity.
2. Use of Bala with other stimulants such as caffeine is contraindicated. This might increase the chance of having side effects.

## Ayurvedic Formulations

Balarishtha, Dashamularistha, Bala Taila.

## Brahmi (*Bacopa monnieri* (L) Pennel)

**Local Name:** Brahmi
**Habitat:** All over India
**Part used:** Whole plant

### General Description

Brahmi is a perennial, creeping herb widely grown in wetlands and muddy shores. The leaves of this plant are succulent and relatively thick and are arranged oppositely on the stem. Small flowers are borne in leaf axils. Flowers are blue, purple, or white, 8-10 mm, obscurely 2-lipped. Seeds are yellow-brown, ellipsoid, truncated at one end, and longitudinally channelled. Flowering occurs during May-October.

## Mode of Propagation

Brahmi is a medicinal plant that can be cultivated by cutting and transplanting stem cuttings into wet soil. Plant the cuttings in wet soil at a spacing of 10-20 cm. The best time to plant is March-June or July-August.

- It is propagated mainly by stem cuttings but sometimes it can also be propagated by seeds.
- For vegetative propagation, cut the whole plant into small units with 4-6 nodes each.
- Dip the cuttings in cow dung slurry to ensure better rooting.
- Plant these stem cuttings directly in the field. Use marshy open fields for the cultivation of the plant.
- It grows faster in the high temperature (33- 42 Degree Celsius) and humidity (65 -80%). It prefers wet spots. It is grown in the pots in the house garden. It requires water from time to time as its roots are shallow.

## Uses

1. Memory enhancer - 8 to 10 crushed fresh leaves or 3 gm powder of Brahmi in water taken with sugar and milk improves learning skills and memory.

2. Mental fatigue - Juice of Brahmi leaves 1-2 spoons with ghee and honey taken twice daily controls mental stress and anxiety.
3. High blood pressure - One spoon of Brahmi juice taken twice daily helps in lowering high blood pressure.
4. Epilepsy - 20 ml Brahmi juice with milk or boiled with cow's ghee, taken twice daily is beneficial in epilepsy (in addition to regular meditation).

## Food Recipes

Brahmi chutney: Heat the oil, add black gram, Bengal gram, red chillies, curry leaves, and asafetida. Fry them till the grams turn golden brown in colour. Transfer roasted and cooled masala to a blender/mixer. Add salt, tamarind, grated coconut, Brahmi leaves, and grind to a smooth consistency by adding water.

## Precautions:

Consult the physician for long-term use or in case of specific health problems.

## Ayurvedic Formulations

Brahmi Rasayana, Brahmyadi Ghrita.

## Guduchi (*Tinospora cordifolia* (Thunb.) Miers)

**Local name:** Giloy (Hindi)
**Habitat:** All over India
**Part used:** Stem and leaves

### General Description

It is a large, deciduous, extensively- spreading, climbing shrub with several elongated twining branches. Leaves are simple, heart-shaped with long petioles. Fruits aggregate in clusters of one to three and are orange in colour.

### Mode of Propagation

Guduchi is a climber plant that can be grown from stem cuttings or seeds. It can be grown in pots at home or in the field. Soak seeds in cold water for 24 hours, then sow in polybags. Cut 6-10 long pieces from a mature vine, making sure each piece has 2-3 nodes.

The plant is propagated either through seeds or through cuttings but the best way is through cuttings. The plant is raised through stem cuttings having nodes/ seeds sown directly in the ground or a pot of adequate size. The plant requires support to grow, which can be provided by raising rope, sticks, etc. The Climber needs watering once in 2-3 days. Thereafter, occasional watering as per the requirement will help the plant to survive in adverse conditions.

## Uses

1. Fever- Decoction (30ml) of Guduchi stem is useful in all types of fever including prevention and treatment of dengue, malaria, and chikungunya flu-like symptoms.
2. Enhances immunity - Decoction of the stem (40ml) taken every day along with the standard treatment is good in immune deficiency conditions like AIDS, tuberculosis and even cancer. The decoction is used for the prevention of seasonal infections.
3. Diabetes- The stem of Tinospora cordifolia is widely used in the therapy of diabetes for regulating blood glucose.
4. Joint pain- Single or synergistic formulations of Tinospora cordifolia with ginger have been used in the treatment of all types of arthritis including the sequel of viral fever.

## Precautions

Overdose may cause palpitation and discomfort in the chest. Intake should be immediately stopped and a physician immediately.

## Ayurvedic Formulations

Amritarista, Guduchyadi Kwatha.

## Haladi (*Curcuma longa* L.)

**Turmeric (English)**

**Habitat:** Cultivated all over India

**Parts used:** Rhizome (underground stem)

### General Description

Haridra is a herb, it reaches up to 1 m tall. Highly branched, yellow to orange, cylindrical, aromatic rhizomes are found. The leaves are alternate and arranged in two rows. They are divided into leaf sheath, petiole, and leaf blade. The petiole is 50 to 115 cm long. The simple leaf blades are usually 76 to 115 cm long and rarely up to 230 cm. They have a width of 38 to 45cm and are oblong to elliptical, narrowing at the tip.

### Mode of Propagation

Turmeric is a spice that can be grown in tropical climates with warm and humid conditions. It can be grown in different types of soil, but it grows best in well-drained, sandy, or clay loam soils. The rhizome is the planting material used for turmeric. The rhizomes are spaced about 15-20 cm x 30-45 cm. Turmeric can be grown in well-drained sandy or clay loam soils with a pH range of 4.5-7.5. About 25-30 g weight rhizomes are to be dibbled at a depth of 4 cm.

Collect fresh seeds, and sow them directly in raised beds, pots, or polybags. May-June is the favourable season for sowing. In 7-8 days, the seeds germinate. They show 70-90% germination.

## Uses

1. Multiple benefits: hepato-protective, blood-purifier, antioxidant, antiallergic, and reduces high cholesterol.
2. Diabetes/Prediabetes: Powder of Amalaki and Haridra (2-4gm each in equal quantity) with water.
3. Seasonal allergy/ Influenza: 2 to 3 gm of powder with warm milk twice a day.
4. Skin diseases and wounds: Powder mixed with water or oil for external application on the affected area along with 2 to 3 gm of powder for internal use.

## Food Recipe

1. Turmeric is used daily in cooking as a spice.
2. Pieces of fresh rhizome may be added to the vegetables and pickle.
3. Pieces of fresh rhizome ground with coconut, chillies, tamarind, salt, and jaggery make a healthy and tasty recipe. The same may be boiled along with water to eat with rice or millet. Jaggery and lemon may be added according to the need.

## Precaution

Turmeric is hot and excessive use may be avoided during summer. If burning of feet, palm and urine is noticed, the intake should be restricted. If taken together with other medicines for diabetes, the blood sugar may drop drastically.

## Ayurvedic formulation

Haridra Khanda.

## Aloe Vera (*Aloe barbadensis Mill.*)

**Local name:** Aloe Vera (English)
**Habitat:** All over India
**Part Used:** Gel inside the leaves

### General Description

Aloe Vera is a stem-less or very short-stemmed plant growing to 60-100 cm tall, spreading by offsets. The leaves are thick and fleshy, green to grey-green, with some varieties showing white flecks on their upper and lower stem surfaces. The margin of the leaf is serrated and has small white teeth. The flowers are produced in summer on a spike up to 90 cm tall, each flower being pendulous, with a yellow tubular corolla 2-3 cm long.

### Mode of Propagation

Aloe vera grows well in well-drained, loamy, or laterite soils with a pH of 7.0-8.5. The plant can be grown in a variety of soils and climates with temperatures between 25-40°C. Aloe vera is propagated through suckers. Suckers are planted in pits that are about 15 cm deep and spaced 60-90 cm apart.

- Methods of propagation are sexual (with seeds), and vegetative (by pups obtained from the plants themselves or by the micro- propagation method).

- It is grown successfully in marginal to sub-marginal soils having low fertility. It is observed that its growth was faster under medium fertile heavier soil such as black cotton soils of central India.
- It is cultivated in pots outdoors or indoors, kept on a sunny window.

**Uses**

1 Burn and wounds: Due to its soothing, moisturizing, and cooling properties, Aloe vera gel is used externally to treat burns. Gel, mixed with turmeric powder and coconut oil aids early healing of wounds and ulcers including anal fissures and skin problems.

2 Digestive problem: 2 to 3 spoons of Aloe gel mixed with a glass of water should be taken for all types of digestive and liver problems.

3 Adjuvant therapy: Aloe vera gel may be taken with antibiotics, NSAIDs (Non-steroidal Anti-Inflammatory Drugs) and chemotherapy to eliminate drug-induced gastritis and other adverse effects, arthritis, eye disease, spleen and liver complaints.

**Precautions**

1. Contraindicated in cases of known allergy to plants. It may cause redness, burning, stinging sensation and rarely generalized dermatitis in sensitive individuals.
2. Oral intake of Aloe vera is not recommended during pregnancy as it may cause stimulation of uterine contractions.
3. It may sometimes cause gastrointestinal distress in the infant if given to breastfeeding mothers.

**Ayurvedic Formulations**

Kumari Asava, Rajahaparvartani Vati, Aloe Vera Juice, Pulp, Cream.

## Thalkudi (*Centella asiatica* (L.) Urb.)

**Habitat:** Native to India, found in tropical America, Africa, West Pakistan, China, Japan and the Pacific

**Part used:** Whole plant

### General Description

Perennial herb, with long slender horizontal stolons, characterised by long internodes. Leaves are green, fan-shaped or round-reniform, 1-4 cm by 1-7 cm with a crenate or dentate margin. Flowers are umbels with white or light purple-to-pink petals and bear small oval fruit.

### Mode of propagation

Brahmi is a medicinal plant that can be cultivated by cutting and transplanting stem cuttings into wet soil. Collect fresh shoot cuttings that are 5-10 cm long and have internodes and rootlets. Plant the cuttings in wet soil at a spacing of 10-20

cm. Water immediately after planting. The best time to plant is March-June or July-August.

Stolon cuttings with a minimum of one node are planted horizontally at a distance of 30 cm x 30 cm. Watering should be done just after transplantation and subsequently at an interval of 2 to 3 days. To begin with, weeding is done at an interval of 15-20 days thereafter, it is done as and when required. Similarly, it can be grown in the pots.

### Uses

1. Mandukaparni is considered a brain tonic used for improving memory and overcoming mental stress, and fatigue. 5 to 10 ml fresh juice or powder is given with milk for sleeplessness, anxiety, cognitive problems, headache or neurological problems.
2. It is useful in neurological problems such as convulsions along with standard therapy.

### Food Recipes

1. Mandukaparni chutney when ground with coconut, green chilli, tamarind and coconut.
2. Juice of leaves or whole plant can be used in lemon sharbat, herbal tea.

### Precautions

Excessive use every day may lead to giddiness or headache.

### Ayurvedic Formulations

Saraswataristha, Brahma Rasayana

## Nimba (*Azadiracta india A.Juss.*)

**Habitat:** Nimba is found in abundance in tropical and semitropical regions like India, Bangladesh, Pakistan and Nepal

**Part used:** Leaf, fruit, bark, seed and seed oil

### General Description:

Neem is an attractive broad-leaved, evergreen tree that can grow up to 30m tall and 2.5m in girth. Its trunk is usually straight and 30-80 cm in diameter. Its spreading branches form a rounded crown of deep-green leaves and honey-scented flowers as much as 20m across.

### Mode of Propagation

Neem is a small to medium-sized tree that can be grown from seeds, seedlings, or tissue culture. It's native to the Indian subcontinent and Indochina but has been introduced to many other tropical and subtropical regions. Neem is frequently self-sown in gardens and the areas under mature trees which are quickly colonized by a carpet of seedlings. It can establish itself under the protection of thorny bushes and to survive in dry poor soils, provided it is not subjected to frost. Although the main reproduction is by seed, root suckering does occur, for example when the roots are damaged.

The simplest way to propagate Neem trees is by seed, but root shoot and root cuttings may also be used.

## Uses

1. Dental plaque/ gingivitis: Gargling with warm decoction of Neem leaves twice daily and brushing with twigs of Neem.
2. Skin diseases: Intake of powder of Neem leaves and application of Neem oil.
3. Upset stomach: Decoction of Neem leaves helps in abdominal pain and worm infestation.
4. Insect repellent: Applying Neem oil to the skin to protect against mosquitoes.
5. Other important uses: Used as an antifungal agent, anti-parasitic, anti-oxidant, anti-inflammatory, neuro-protective, and liver protective, used in jaundice.

## Food Recipe

Neem flower chutney along with raw mango and green chilly or tender leaves fried in oil along with red chilli, asafoetida and ajwain seeds and ground with tamarind, salt and jaggery makes very healthy and savoury chutney.

## Precautions

1. It can cause nausea, and vomiting in some persons due to its bitter taste.
2. Some studies also indicated adverse effects of excess doses on sperm count, so may not be used in males planning for a family.
3. Should not be used in access during pregnancy and lactation and in children.

## Ayurvedic Formulations

Mahanarayan Oil, Nimba Chuma, Neem Oil, Tiktaka Ghrita.

## Begunia /Nirgundi (*Vitax negundo* L.)

**Habitat:** All over India

**Part used:** Leaves, bark

### General Description

It is a shrub up to 5 meters tall or sometimes a small, slender tree with thin, grey bark. The bark is reddish brown and has compound leaves in the form of a spread hand with five leaflets, or sometimes three. Flowers are bluish- purple, small and are in bunches in central India, flowering occurs between June and December and fruiting from September to February. The fruit is a succulent drupe, black when ripe, 5-6 mm in diameter. Mainly the Seeds are 5-6 mm in diameter.

### Mode of Propagation

It can be reproduced readily from shoot cuttings. It produces root suckers which can also be utilized as planting material. An easily grown plant, it prefers a light well-drained loamy soil in a warm sunny position sheltered from cold drying winds succeeds in poor dry soils.

The mature seeds sown in nursery beds normally germinate within 2-3 weeks. Seedlings 4-6 month-old are used for transplanting in the field. It can be reproduced readily from shoot cuttings. Nirgundi roots are strong, deep and produce root suckers which can also be utilized as planting material.

## Uses

1. **Backache:** 20 to 30 ml of decoction of Nirgundi leaves twice a day is beneficial for lower back ache. 5 to 10 ml of Erandtaila (castor oil) may be added to decoction, especially when there is constipation and bloating of the abdomen. The oil made up of Nirgundi leaves should be applied externally.
2. **Joint pain:** 20 to 30 ml decoction of Nirgundi roots (3 to 5 gm) or Nirgundi leaf powder in a dose of one 3-5 gm twice a day are beneficial in osteoarthritis. Oil prepared from leaves is applied or heated leaves are pressed and tied for joint pains and sprains.
3. **Headache:** Grind Nirgundi leaves with water and apply a warm paste on the forehead.
4. **Wound:** Washing with decoction or juice of leaves and application of oil made from Nirgundi leaves aids healing of wounds and chronic ulcers.

## Precautions

Internal use may be best avoided in pregnant women and along with hormonal pills. Nirgundi should be taken under medical supervision in case of heart problems.

## Ayurvedic Formulations

Dashamularishta, Sarasvatarishta, Mahayogaraja Guggulu, AnuTaila.

## Punarnava (*Boerhavia diffusa* L.)

**Habitat:** All over India

**Part used:** Whole plant, roots

### General Description

It is a herb grown as a weed in wastelands throughout the year but dries during the summer. Leaves are small with a whitish colour on the lower surface and green on the upper surface. Stems are purplish or pale green depending on the variety. It bears small reddish-pink flowers and fruits in winter.

### Mode of Propagation

Punarnava, is a medicinal plant that can be cultivated in well-drained soil in sunny locations. It can grow in a variety of soils, including sandy-loam, loam, stony, and gravelly. It grows widely in waste lands and does not require any special care. The plant is propagated through seeds and cuttings.

1. Collect fresh seeds, sow them directly in raised beds, pots or polybags. May-June is the favourable season for sowing. In 7-8 days, the seeds germinate. They show 70-90 % germination.
2. Vegetatively the plant can be propagated through cuttings. Separate the tillers arising from the base of a matured plant and plant them individually as mentioned above.

## Uses

This plant is useful in all types of swellings, urinary problems, anemia, liver disorders, heart diseases and piles. It can be used in the form of fresh juice, decoction, powder or added in the food preparations.

1. **Dysuria:** 50 to 100 ml of decoction made from 5 to 10 gm of the aerial portion of the plant administered twice daily is useful in urinary tract infection and burning or discomfort during urination. Intake of plenty of fluids is also advisable in this case.
2. **Anaemia:** 50 to 100 ml decoction of whole plant is given thrice daily in anaemia.
3. **Jaundice:** 50 to 100 ml decoction of whole plant is given thrice daily for liver problems.
4. **Swelling:** The warm paste of punarnava plant mixed with oil applied externally twice daily on affected areas will be useful in reducing swellings. Intake of the decoction of whole plant (50 to 100 ml) is also useful.
5. **Joint pain:** Intake of 2 to 5 gm of dry ginger with 50 to 100 ml decoction of Punarnava reduces swelling and joint pain.

## Food Recipes

1. Saute the tender leaves in little quantity of oil or ghee or butter along with green chilies and grind with coconut to make chatni. Cumin seeds, ginger, onion, garlic or asafetida can be used as per the taste of the individual. Lemon juice, tamarind or curd may be added.
2. Leaves can be used as a vegetable in dal or sambar.
3. It can be used in paratha as any other leafy vegetable.
4. Chopped leaves can be added to the dosa along with tomato and onion.
5. Leaves and stems may be sauteed and seasoned with chopped onion, garlic, chilli and salt as a food item. It can also be mixed with sprouts.

## Precautions

Intake in excessive quantity may have mild purgative effect.

## Ayurvedic Formulations

Punarnavadi Mandura, Punarnavasava, Punarnavasthaka Kwatha.

## Shatavari (*Asparagus racemosus Wiiid.*)

**Local name:** Shatavar(Hindi)

**Habitat:** All over India

**Part used:** Tuberous root

### General Description

The plant is a perennial, prickly climber of 1-2 meters, found wildly throughout India and also cultivated for medicinal & ornamental purposes. Shatavari has shiny green leaves like pine needles and branches that are thorny and pale. In July, it produces minute, white flowers on short, spiky stems, and in September it fruits, producing blackish-purple, globular berries. It has multiple tuberous roots that measure up to one meter in length, tapering at both ends.

### Mode of Propagation

Shatavari is a medicinal plant that can be cultivated in fields. It requires sandy loam soil with good drainage. The seeds are used for propagation in the nurseries however the vegetative method is more suitable to grow in households. The vegetative propagation is by division of rhizomatous disc present at the base of the aerial stem. The rhizomatous disc

develops several vegetative buds around the aerial shoots. The disc is divided in such a way that each piece possesses at least two buds along with 2-3 tuberous roots. These pieces are planted conversing the buds with 1 cm of soil followed by watering. The sprouting commences in 8-10 days after plantation.

## Uses

Shatavari is a good immunity booster. It is used to promote fertility and has a range of health benefits, particularly for the female reproductive system.

1. **To increase breast milk:** 3-5 gm of root powder or 2 spoons of Shatavari root juice taken with 1 glass of milk twice daily enhances milk in lactating mothers.
2. **As a tonic:** Shatavari root powder 1 to 3 gm is taken with milk twice daily to overcome fatigue. It is useful in age-related problems such as bone and neurodegeneration.
3. **Hyperacidity and peptic ulcer:** Intake of 2-4 spoonful of juice of Shatavari root or 1 to 3 gm of powder daily will be helpful to reduce hyperacidity and peptic ulcers.
4. **Reproductive health:** 1 to 3 gm of Shatavari powder one to two times a day is useful to prevent menopausal symptoms and osteoporosis. The powder is recommended for non-specific infertility.

## Precautions

- Shatavari is safe to be used within the recommended quantity in a normal person.
- Sensitivity may cause allergic reactions in some people such as skin rashes or breathing difficulty on intake of large doses. In case of any medical problem or other medications, please follow the advice of a qualified doctor.

## Ayurvedic Formulations

Shatavari Ghrita, Shatavari Kalpa, Shatavari Chuma.

## Sajana (*Moringa oleifera Lam.*)

**Habitat:** All over India

**Part used:** Leaves, bark, fruit, flower, seed

### General Description

Sajana, also known as moringa, drumstick tree, grows to a height between 20-40 feet. Its stem is brittle having fragile branches of whitish-grey bark. It has a solitary compound leaf with a row of leaflets arranged along each side of a common rachis. Leaflets are egg-shaped with the broader end at the base (ovate). Flowers are yellowish-white in colour and have a fragrant odour. The fruits are long and size can vary between 8-18 inches. They bear dark brown or white globular seeds. The seeds have three whitish papery wings.

### Mode of Propagation

Moringa, also known as the drumstick tree, is a fast-growing, drought-resistant tree that can be cultivated in a

variety of soils. It grows best in direct sunlight. Moringa can be propagated from seed or cuttings. Direct seeding is possible because the germination rate is high. Soak the seeds in water overnight and crack the shells before planting. Remove shells and plant kernels only. Moringa seeds can be germinated year-round in well- draining soil.

For vegetative propagation, use hardwood and not green wood. Cuttings should be 45cm to 1.5m long and 10cm thick. Cuttings can be planted directly or in sacks. Plant one-third of the length in the ground and do not overwater if the soil is too heavy or wet, the roots may rot.

**Uses**

1. **Anemia:** 10 to 20 ml juice or use of leaves or pods of Moringa in the form of vegetable.
2. **Asthma:** Consumption of about 100 ml of decoction of a fistful of drum stick leaves is beneficial in bronchitis and asthma.
3. **Swellings & wound:** The application of a warm paste made up of bark and leaves of moringa is useful in relieving pain and swelling in joints and abscesses. Its paste is also helpful in wound healing.
4. **Heart disease:** This has cholesterol-lowering action and stabilizes blood pressure. Therefore, the use of leaves, flowers and pods in any form is good for the heart.
5. **Other uses:** Moringa is helpful in various eye problems and improving vision. It is used in amenorrhea and dysmenorrhea and as a tonic to improve immunity against diseases.

## Food Recipes

1. Drum sticks pods & leaves are popularly added in sambar, daal and vegetables.
2. It can be used in paratha as any other leafy vegetable. Chopped leaves can be added to the dosa along with tomato and onion.
3. Tender drumstick pods or leaves may be sauteed and seasoned with chopped onion, garlic, chilli and salt.
4. The leaves can be used in zunka, a recipe popular in Maharashtra and its neighbouring parts of Karnataka. Heat oil/ ghee in a utensil and add mustard seeds, asafoetida, onions, curry leaves, drumstick leaves and other spices of your choice. Add gram flour, salt, turmeric powder and red chilli powder and mix well. Add water, little by little as per desired consistency and mix well. Cook on medium heat for four to five minutes while continuously stirring. This can be used with rice, roti, dosa etc.
5. Moringa powder with warm water.

## Precautions

There are no contra-indications for the use of any part of moringa, however, excessive intake may lead to an increase in body heat and Pitta in some people. Intake may be avoided during heavy menstrual bleeding.

## Ayurvedic Formulations

Shigru Guggulu.

## Shunthi (*Zinziber officinale Roscoe.*)

**Local name:** Adrak (fresh ginger) Sunthi (dry ginger)

**Habitat:** All over India

**Part used:** Root

### General Description

Ginger is a flowering plant whose rhizome is widely used as a spice and folk medicine. It is a herbaceous perennial plant that grows pseudo stems (false stems made of the rolled bases of leaves) about one-meter-tall bearing narrow leaf blades. The inflorescences bear pale yellow with purple flowers and arise directly from the rhizome on separate shoots.

### Mode of Propagation

Ginger is a spice crop that grows well in warm, humid climates. It can be grown in tropical and subtropical countries.

Ginger is always propagated by portions of the rhizomes, known as seed rhizomes. Carefully preserved seed rhizomes are cut into small pieces of 2.5 - 5 cm length weighing 20-25 gm, each having one or two good buds.

The seed rhizomes are treated and planted at a spacing of 20-25 cm along the rows and 20-25 cm between the rows.

## Uses

1. **Rheumatoid arthritis:** Decoction of Shunthi is useful in rheumatoid arthritis when taken along with 10 to 20 ml of castor oil.
2. **Indigestion:** Paste of Adarak with jaggery in equal quantity helps in indigestion in warm water.
3. **Cough:** Shunthi (dry ginger) powder with honey is beneficial for cough.
4. **Joint pain:** Shunthi churna 2 gm with ghee two times a day.

## Food Recipes

1. Fresh turmeric-ginger pickle: Combine sliced ginger and turmeric ¼ cup each, 2 tsp lemon juice, chilli powder and 1 tsp salt in a deep bowl. Mix well and serve immediately or store refrigerated for a week.
2. Ginger tea: Boil the water along with grated ginger. Add tea leaves and sugar to the boiling water and then let the tea leaves steep in the water for about 3-5 minutes. Add hot milk, mix well, strain and serve immediately.
3. Ginger and lemon drink: Add 2 tsp ginger juice, 1 tsp lemon juice and¾ tsp sugar syrup to a glass of water, stir and serve immediately.
4. Ginger chutney: Fresh ginger ground with coconut, chillies and tamarind make a healthy and tasty recipe.

## Precautions

Intake in excessive quantity may result in heartburn and stomach upset.

## Ayurvedic Formulations

Ardrak Paka, Nagaradi Kwatha, Trikatu Chuma.

## Tulasi (*Ocimum tenuiflorum* L.)

Holy basil (English)

**Habitat:** All over India

**Part used:** Leaves

### General Description

Tulasi is a branched sub- shrub having hair all over the parts. It attains a height of about 75 - 90 cm. It has round oval shaped leaves that are up to 5 cm long. The leaves are 2-4 cm in length. Its flowers are purple-creamish in colour. Tulasi with the green leaves is called the Shri Tulasi and one with the reddish leaves is called the Krishna Tulasi. Seeds are yellow to reddish. Leaves of Tulasi contain essential oils and therefore have a peculiar fragrance.

### Mode of Propagation

Tulsi, also known as holy basil, can be grown from seeds or cuttings. It's a perennial plant that requires well-drained soil and lots of sunlight.

This is propagated through seeds. For propagating through seeds, they are to be sown in the nursery beds. The nursery should be located preferably in partial shade with adequate irrigation facilities.

As the seeds are minute, the required quantity of seeds are mixed with sand in the ratio of 1:4 and sown in a nursery bed, 2 months in advance of the onset of monsoon. They germinate in 8-12 days and seedlings are ready for transplanting in about 6 weeks at the 4-5 leaf stage.

**Uses**

1. **Worms:** Juice of Tulasi leaves (10-20ml) is beneficial for deworming.
2. **Wound or any skin disease:** Local application of juice or paste of Tulasi leaves is good.
3. **Cough:** Juice of Tulasi leaves (5-l0ml) mixed with honey is good for cough.
4. **Urticaria:** Intake and local application of Tulasi juice is useful in urticaria.

**Food Recipes**

1. **Tulasi tea:** Boil Tulasi leaves in water, strain, add lemon juice and Tulasi tea is ready to sip.
2. **Tulasi juice:** The fresh leaves of Tulasi can be consumed as juice. This tasty and refreshing method of using Tulasi is profoundly rejuvenating for the immune system. Traditionally, the juice is mixed with honey to resolve cold, fever, and respiratory issues.

**Precautions**

Eating fresh leaves is not advisable as it causes damage to tooth enamel. Excessive intake of Tulsi might cause nausea, heartburn and diarrhoea.

**Ayurvedic formulations:** Tulsi Arka.

## Vasa (*Justicia adhatoda* L.)

**Habitat:** All over India

**Part used:** Leaves

### General Description

Vasa is a shrub with lance-shaped leaves 10 to 15 centimeters in length. They are oppositely arranged, smooth-edged, and borne on short petioles. The trunk has many long opposite ascending branches, where the bark is yellowish. Flowers are usually white and the inflorescence shows large, dense, axillary spikes. Fruits are pubescent and have club-shaped capsules.

### Mode of Propagation

Vasa, is a medicinal plant that can be cultivated by growing cuttings or seeds.

1. Stem cuttings of 15-20 cm long with 3-4 nodes are ideal for planting done in March-April.


2. Tender stem cuttings are planted in poly bags/pots filled with farmyard manure, topsoil and sand in theratiol:1:1.
3. Cuttings will root readily and will be ready to transplant to the main field after two months.

## Uses

1. **Cough:** Decoction of 5-10 Vasa leaves is beneficial in cough.
2. **Hemorrhagic disorders:** Juice of Vasa leaves (5-15 ml) with honey is useful in hemorrhagic epistaxis and haemoptysis.
3. **Scanty menstruation:** Decoction or juice of Vasa leaves is beneficial.

## Precautions

Intake in excessive quantity may result in diarrhoea, vomiting and excessive menstrual bleeding.

**Ayurvedic Formulations:** Vasavleha, Vasarishta.

## Ananas (*Ananas comosus* L.)

**Habitat:** All over India

**Part used:** Fruits

### General Description

The pineapple plant is a terrestrial herb 2 1/2 to 5 ft (.75-1.5 m) high with a spread of 3 to 4 ft (.9-1.2 m); a very short, stout stem and a rosette of waxy, strap-like leaves, long-pointed, 20 to 72 in (50-180cm) 1ong; usually needle tipped and general.

### Mode of Propagation

Pineapple cultivation involves preparing the land, planting, and harvesting the fruit. Pineapples grow best in tropical and subtropical climates with lots of sunlight and well-drained soil.

- Choose healthy suckers of uniform size
- Dry the suckers in a single layer in an open, shaded space for about a week

- Strip off a few old, dried leaves
- Dip the suckers in a 1% Bordeaux mixture
- Plant the suckers in double rows, with 70 cm between rows and 30 cm between plants

## Uses

- **Hair and Skin Health:** Benefits of Pineapple include protecting hair and skin from damage. Sufficient Vitamin C intake can help your body create and maintain collagen an essential protein found in hair and skin. Also, a high vitamin C content helps heal wounds and injuries in the body rapidly. One cup of pineapples has 131 percent of the vitamin C daily requirements.
- **Fights Infections:** Benefits of Pineapple also include fighting against infections.
- Fights Cough and Cold: Pineapples can help fight coughs and colds.
- **Improves Digestion:** Pineapple Health Benefits include improving digestive health. Pineapples are formidable sources of fibre.
- **Maintains Blood Pressure:** Pineapples can help maintain a healthy blood pressure. Pineapples have a great potassium-to-sodium ratio.
- **Improves Heart Health:** Pineapples can help improve the heart's health. Fibre, vitamin C, vitamin B6, and potassium have been known to improve heart health.
- **Improves Brain Health:** Pineapples may improve brain health.

## Dhaniya (*Coriandrum sativum* L.)

**English Name:** Coriander

**Habitat:** All over India

**Part used:** Fresh leaves

### General Description

An annual herb cultivated extensively in many parts of Odisha as a spice crop. Leaves and fruits of the plant have medicinal properties too. Fresh leaves and seeds have been integral parts of Indian dietetics. Chopped leaves and powdered coriander are used for garnishing various food items in Odisha/India. Primarily both of them have a significant effect on the digestive process. Coriander prevents flatulence and controls spasmodic pain as recommended by Ayurveda. Extract of coriander seeds has a marked antispasmodic activity.

### Mode of Propagation

Dhaniya, also known as coriander, can be grown in a variety of soils, including heavy soils with good water retention. It can be grown as an irrigated crop or a dryland crop.

- Soak the seeds in water for 12 hours

- Treat the seeds with a fungicide or other chemicals to control disease
- Sow the seeds in lines or broadcast them
- Space the seeds 2-5 cm apart
- Cover with straw mulch after sowing

**Uses**

- **Reduces Skin Inflammation:** Coriander contains both Cineole and linoleic acid. These elements pose antirheumatic and antiarthritic properties which help reduce skin inflammations.
- **Controls Blood Pressure:** Consuming coriander has been shown to reduce blood pressure in many patients suffering from hypertension positively. It helps reduce the chances of having a heart attack.
- **Rich Source of Calcium:** Coriander is a rich source of calcium, an important element for bone health. It helps with bone regrowth and increases bone durability.
- **Controls Diabetes:** Coriander benefits include controlling diabetes. It helps stimulate the endocrine glands increasing the secretion of insulin. This whole process helps in the proper breakdown of sugar in the body controlling diabetes.
- **Diuretic Properties:** Dhaniya is also diuretic in nature, which helps increase the volume and frequency of urination flushing out the toxins from the body.
- **Treats Wounds & Mouth Ulcers:** Dhaniya contains Citronellol which is a great antiseptic. It helps speed up the healing process of mouth ulcers and also prevents bad breaths.
- **Aids Digestion:** Coriander is rich in borneol and linalool which helps digestion. It is also useful in the prevention of diarrhea.

## Lashun (*Allium sativum*)

**English Name:** Garlic

**Habitat:** All over India

**Part used:** Bulb fresh, dried, or as an oil or extract

### General Description

Garlic contains a wealth of sulphur compounds; the most important for the taste is allicin (diallyl disulphide oxide), which is produced enzymatically from alliin if cells are damaged; its biological function is to repel herbivorous animals. This plant of the liliaceae family has a stem, which is more than a meter tall with leaves present in the bottom half of the stem. Flowers are replaced by bulblets, which are glaborous, whitish or with a reddish tinge. Flowering is from May to July. Garlic has a very long folk history of use in a wide range of ailments such as ringworm, candida and vaginitis where its fungicidal, antiseptic, tonic and parasiticidal properties have proved of benefit.

## Mode of Propagation

Garlic cultivation involves preparing the soil, planting the cloves, and caring for the crop until it's ready to harvest. Garlic grows best in well-drained, friable soil that's rich in organic matter and has a pH of 6-7. Plant cloves 6 inches (15 cm) apart, with 1 foot (30 cm) between rows. Plant cloves 1-2 inches (2.5-5 cm) deep in warm growing zones, and 3-4 inches (7.5-10 cm) in colder zones. Irrigate before and after planting, and then once every 3 days.

## Uses

1. **Treats Dysentery:** The plant produces inhibitory effects on gram-negative germs of the typhoid-paratyphoid-enteritis group; indeed, it possesses outstanding germicidal properties and can keep amoebic dysentery at bay. Garlic benefits also include anticancer activity.
2. **Controls Diabetes:** Benefits of Garlic include reducing glucose metabolism in diabetics, slows the development of arteriosclerosis and lowers the risk of further heart attacks in myocardial infarct patients. Externally, the expressed juice is an excellent antiseptic for treating wounds.
3. **Lowers Cholesterol:** There are two kinds of cholesterol. LDL cholesterol and HDL cholesterol. Garlic is rich in the Ellison compound which effectively prevents LDL cholesterol from oxidizing. All those who have high cholesterol levels should include this herb in their daily diet.
4. **Thrombosis:** Benefits of Garlic include fighting against thrombosis by reducing platelet aggregation for eye care. Garlic is rich in nutrients like selenium quercetin and vitamin C, all of which help treat infections and swelling.

5. **Treats Acne:** Half the people in the world suffer from mild to severe forms of acne. Uses of Garlic include treating acne. Garlic may be used, along with other ingredients like honey, cream and turmeric, to treat acne scars and prevent the initial development of acne garlic acts as a cleanser and an antibiotic substance for soothing skin rashes.

6. **Heart Health:** Garlic protects our heart against cardiovascular problems like heart attacks and atherosclerosis. This cardio-protective property can be attributed to various factors. With age, the arteries tend to lose their ability to stretch. Garlic helps reduce this and may also protect the heart from the damaging effects of free oxygen radicals.

7. **Respiratory Problems:** Daily use of garlic might reduce the frequency and number of colds. Its antibacterial properties, help in treating throat irritations. Garlic may also reduce the severity of up respiratory tract infections. Its benefits in disorders of the lungs like asthma, and difficulty breathing make it a priceless medicine.

8. **Weight Management:** Many researchers believe that obesity is a state of long-term low-grade inflammation. According to recent research, garlic may help to regulate the formation of fat cells in our body. This may help prevent weight gain.

## Precautions

Breath and body odour, heartburn, upset stomach, gas, diarrhoea, and allergic reactions.

## Pyaj (Allium cepa Linn)

**English Name:** Onion

**Habitat:** All over India

**Part used:** Leaves, Bulb fresh and dried

### General Description

An annual herb cultivated extensively for its bulb, which is used as a spice and condiment. Herb possesses various medicinal properties too as recommended by Indian Ayurveda.

### Mode of Propagation

The cultivation requirements of the onion are frequent shallow stirring of the soil and freedom from weeds. Ensure the soil pH is between 6.0 and 7.0. Sow seeds in lines, 5-7.5 cm apart, at a depth of 1 cm. Cover seeds with fine soil, vermicompost, or powdered FYM.

Onion cultivation involves preparing the soil, sowing seeds, watering, and harvesting. The yield depends on the variety and season. One hectare of transplanted crop can yield 15-25 tonnes of bulbs.

## Uses

1. **Body Detox:** Lack of exercise and bad eating habits builds up toxins in our body. It is very important to flush these toxins out of the body. One of the important onion benefits is that it contains amino acids which aid the digestive system to flush out these harmful toxins.
2. **Better Immunity:** A Healthy Immune system ensures we don't catch any diseases. Onions, also known as Allium Cepa consist of Vitamin C which helps build a better and stronger immunity.
3. **Aids Digestion:** Onions are rich in dietary fibers which ensure smooth bowel movements. Onions also contain saponins which help ease stomach cramps.
4. **Controls Diabetes:** The health benefits of onions also include reducing blood sugar levels as suggested in experimental studies. Hence consumption of raw onions can prove useful in controlling diabetes.
5. **Hair Growth:** Hair loss can be embarrassing and it is people's one of the worst nightmares. Onions are rich in sulphur which is one of the important elements for encouraging hair growth. It also helps prevent dandruff.
6. **Anti-Aging Process:** It has been proven that Onions are rich in antioxidants. Accumulation of harmful elements in

our skin causes Aging. The anti-Oxidant & Detoxifying properties of Onion help slow down the aging process.

### Precautions

Especially if you have certain health conditions like Allergies, Digestive issues, Surgery and Sleep

## 12.0 Conclusion

An herbal garden reflects the long-standing tradition of conserving and using plant products for health care and cooking. Some 80% of the world's people use herbs as the main form of medical plants from the Himalayas in the global herbal market. But while herbal plants are in demand, the traditions and culture associated with them are fading. Making an herbal garden is an opportunity to grow hers for use while spreading knowledge of their importance and traditional uses, and saving plants that are threatened. So why not make the school's little garden full of herbs from all over state. Also, home gardening based on herbs contributes to household food security by providing direct access to food and herbal medicine as well that can be harvested, prepared and fed to family members, and can be used for medicinal purposes. Even very poor, landless or near landless people practice herbal gardening on small patches of homestead land, vacant lots, roadsides or edges of a field, or in containers. Gardening may be done with virtually no economic resources, using locally available planting materials, green manures, "live" fencing and indigenous methods of pest control. Thus, gardening at some level is a production system that the poor can easily enter and also contributes to the food security.

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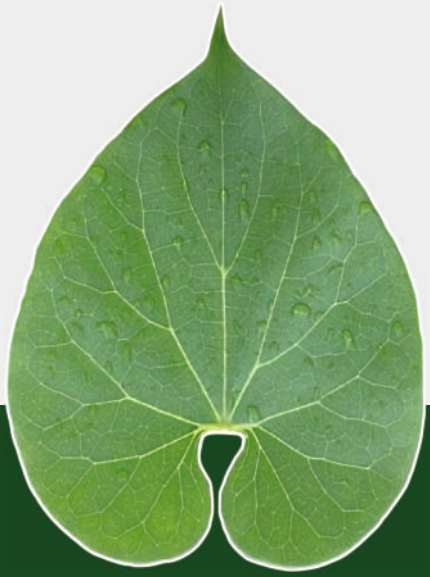

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