

Programme- Course - Aromatic Plants.	B.Sc (Agriculture) Production Technology of Spices, Medicinal and
Course Code- Semester -	BSCAG-313 Vth
Year-	2020-21
Unit-	1
Topic- and spices plants.	Importance and Scope of medicinal, aromatic
Sub-Topic-	Importance and Scope of medicinal Plants Importance and Scope Aromatic plants. Importance and Scope of spices Plants Definition of Spices and Condiments Classification of spices Importance of spices Industry in India
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Importance and scope of medicinal:

The term “**medicinal plant**” include various types of plants used in herbalism ("herbology" or "herbal medicine"). It is the use of plants for medicinal purposes, and the study of such uses.

The word “**herb**” has been derived from the Latin word, “herba” and an old French word “herbe”. Now a days, herb refers to any part of the plant like fruit, seed, stem, bark, flower, leaf, stigma or a root, as well as a non-woody plant. Earlier, the term “herb” was only applied to non-woody plants, including those that come from trees and shrubs. These medicinal plants are also used as food, flavonoid, medicine or perfume and also in certain spiritual activities.

Plants have been used for medicinal purposes long before prehistoric period. Ancient Unani manuscripts Egyptian papyrus and Chinese writings described the use of herbs. Evidence exist that Unani Hakims, Indian Vaidas and European and Mediterranean cultures were using herbs for over 4000 years as medicine. Indigenous cultures such as Rome, Egypt, Iran, Africa and America used herbs in their healing rituals, while other developed traditional medical systems such as Unani, Ayurveda and Chinese Medicine in which herbal therapies were used systematically.

Traditional systems of medicine continue to be widely practised on many accounts. Population rise, inadequate supply of drugs, prohibitive cost of treatments, side effects of several synthetic drugs and development of resistance to currently used drugs for infectious diseases have led to increased emphasis on the use of plant materials as a source of medicines for a wide variety of human ailments.

Among ancient civilisations, India has been known to be rich repository of medicinal plants. The forest in India is the principal repository of large number of medicinal and aromatic plants, which are largely collected as raw materials for manufacture of drugs and perfumery products. About 8,000 herbal remedies have been codified in AYUSH systems in INDIA. Ayurveda, Unani, Siddha and Folk (tribal) medicines are the major systems of indigenous medicines. Among these systems, Ayurveda and Unani Medicine are most developed and widely practised in India.

Recently, WHO (World Health Organization) estimated that 80 percent of people worldwide rely on herbal medicines for some aspect of their primary health care needs. According to WHO, around 21,000 plant species have the potential for being used as medicinal plants.

As per data available over three-quarters of the world population relies mainly on plants and plant extracts for their health care needs. More than 30% of the entire plant species, at one time or other were used for medicinal purposes. It has been estimated, that in developed countries such as United States, plant drugs constitute as much as 25% of the total drugs, while in fast developing countries such as India and China, the contribution is as much as 80%. Thus, the economic importance of medicinal plants is much more to countries such as India than to rest of the world. These countries provide two third of the plants used in modern system of medicine and the health care system of rural population depend on indigenous systems of medicine.

Treatment with medicinal plants is considered very safe as there is no or minimal side effects. These remedies are in sync with nature, which is the biggest advantage. The golden fact is that, use of herbal treatments is independent of any age groups and the sexes.

The ancient scholars only believed that herbs are only solutions to cure a number of health related problems and diseases. They conducted thorough study about the same, experimented to arrive at accurate conclusions about the efficacy of different herbs that have medicinal value. Most of the drugs, thus formulated, are free of side effects or reactions. This is the reason why herbal treatment is growing in popularity across the globe. These herbs that have medicinal quality provide rational means for the treatment of many internal diseases, which are otherwise considered difficult to cure.

Medicinal plants such as Aloe, Tulsi, Neem, Turmeric and Ginger cure several common ailments. These are considered as home remedies in many parts of the country. It is known fact that lots of consumers are using Basil (Tulsi) for making medicines, black tea, in pooja and other activities in their day to day life.

In several parts of the world many herbs are used to honor their kings showing it as a symbol of luck. Now, after finding the role of herbs in medicine, lots of consumers started the plantation of tulsi and other medicinal plants in their home gardens.

Medicinal plants are considered as rich resources of ingredients which can be used in drug development pharmacopoeial, non- pharmacopoeia or synthetic drugs. A part from that, these plants play a critical role in the development of human cultures around the whole world. Moreover, some plants are considered as important source of nutrition and as a result of that they are recommended for their therapeutic values. Some of these plants include ginger, green tea, walnuts, aloe, pepper and turmeric etc. Some plants and their derivatives are considered as important source for active ingredients which are used in aspirin and toothpaste etc.

Apart from the medicinal uses, herbs are also used in natural dye, pest control, food, perfume, tea and so on. In many countries different kinds of medicinal plants/ herbs are used to keep ants, flies, mice and flea away from homes and offices. Now a day's medicinal herbs are important sources for pharmaceutical manufacturing.

Recipes for the treatment of common ailments such as diarrhoea, constipation, hypertension, low sperm count, dysentery and weak penile erection, piles, coated tongue, menstrual disorders, bronchial asthma, leucorrhoea and fevers are given by the traditional medicine practitioners very effectively.

Over the past two decades, there has been a tremendous increase in the use of herbal medicine; however, there is still a significant lack of research data in this field. Therefore since 1999, WHO has published three volumes of the WHO monographs on selected medicinal plants.

Importance of some herbs with their medicinal values

- Herbs such as black pepper, cinnamon, myrrh, aloe, sandalwood, ginseng, red clover, burdock, bayberry, and safflower are used to heal wounds, sores and boils.
- Basil, Fennel, Chives, Cilantro, Apple Mint, Thyme, Golden Oregano, Variegated Lemon Balm, Rosemary, Variegated Sage are some important medicinal herbs and can be planted in kitchen garden. These herbs are easy to grow, look good, taste and smell amazing and many of them are magnets for bees and butterflies.

- Many herbs are used as blood purifiers to alter or change a long-standing condition by eliminating the metabolic toxins. These are also known as 'blood cleansers'. Certain herbs improve the immunity of the person, thereby reducing conditions such as fever.
- Some herbs are also having antibiotic properties. Turmeric is useful in inhibiting the growth of germs, harmful microbes and bacteria. Turmeric is widely used as a home remedy to heal cut and wounds.
- To reduce fever and the production of heat caused by the condition, certain antipyretic herbs such as Chirayta, black pepper, sandal wood and safflower are recommended by traditional Indian medicine practitioners.
- Sandalwood and Cinnamon are great astringents apart from being aromatic. Sandalwood is especially used in arresting the discharge of blood, mucus etc.
- Some herbs are used to neutralize the acid produced by the stomach. Herbs such as marshmallow root and leaf. They serve as antacids. The healthy gastric acid needed for proper digestion is retained by such herbs.
- Indian sages were known to have remedies from plants which act against poisons from animals and snake bites.
- Herbs like Cardamom and Coriander are renowned for their appetizing qualities. Other aromatic herbs such as peppermint, cloves and turmeric add a pleasant aroma to the food, thereby increasing the taste of the meal.
- Some herbs like aloe, sandalwood, turmeric, sheetroj hindi and khare khasak are commonly used as antiseptic and are very high in their medicinal values.
- Ginger and cloves are used in certain cough syrups. They are known for their expectorant property, which promotes the thinning and ejection of mucus from the lungs, trachea and bronchi. Eucalyptus, Cardamom, Wild cherry and cloves are also expectorants.
- Herbs such as Chamomile, Calamus, Ajwain, Basil, Cardamom, Chrysanthemum, Coriander, Fennel, Peppermint and Spearmint, Cinnamon, Ginger and Turmeric are helpful in promoting good blood circulation. Therefore, they are used as cardiac stimulants.
- Certain medicinal herbs have disinfectant property, which destroys disease causing germs. They also inhibit the growth of pathogenic microbes that cause communicable diseases.
- Herbal medicine practitioners recommend calmativ herbs, which provide a soothing effect to the body. They are often used as sedatives.
- Certain aromatic plants such as Aloe, Golden seal, Barberry and Chirayata are used as mild tonics. The bitter taste of such plants reduces toxins in blood. They are helpful in destroying infection as well.
- Certain herbs are used as stimulants to increase the activity of a system or an organ, for example herbs like Cayenne (Lal Mirch, Myrrh, Camphor and Guggul).
- A wide variety of herbs including Giloe, Golden seal, Aloe and Barberry are used as tonics. They can also be nutritive and rejuvenate a healthy as well as diseased individual.
- Honey, turmeric, marshmallow and liquorice can effectively treat a fresh cut and wound. They are termed as vulnerary herbs.
- Spices and herbs are defined as plant derived substances that add flavor to any dish. It is difficult to distinguish between the two. Spices can come from the following plant parts: roots, rhizomes, stems, leaves, bark, flowers, fruits, and seeds. Herbs are typically thought of as non-woody plants.
- It is not known when humans began to use the first herbs and spices as flavoring agents. Garlic and onions were documented as being used 4,500 years before present. Humans used spices to help preserve foods before refrigeration. Both were also used in religious ceremonies.
- Spices and herbs have historical importance and were once the source of great power and wealth. Arab traders established early spice trading routes. The Greeks expanded the trade routes to the Mediterranean. The Roman Empire had great control and power with the spice trade. Seafaring nations like Portugal, Spain, Holland, and Britain entered the lucrative spice trade and fought

many wars to retain power. As plantations of pepper, nutmeg, cinnamon, and other important spices were established on tropical islands, the spice monopolies were disbanded.

Supply Base of Medicinal Plants

About 80% of the raw drugs being used the Ayurvedic drug manufacturing units of India are obtained from the wild, of which supply from forest area account for 45% of the drug supply, non-forest area account for 15% and forest like area account for 20%. About 20% for the raw drug supply is through cultivation or through interstate trade.

Global Trade

Specific estimates of medicinal and aromatic plants for the global market are not available individually as well as collectively. An estimate, puts the global market for herbal products and around US \$ 120 billion//year, with the share of Ayurveda being almost 50%. U.S.A. and Europe are the largest markets of herbal products accounting for nearly two-thirds of the total demand. There are about 16 best in selling herbal drugs in US and Europe of which 8 are produced in India shown in Table-

Table 3: Best Selling Herbal Drugs in USA and Europe, Exported from India.

S. No.	Common Name	Scientific Name
1.	Isabgol	Plantago ovata
2.	St. john's wort	Hypercium perforatum
3.	Aloe	Aloe barbendensis
4.	Peppermint	Mentha piperita
5.	Mandukaparni	Centella asiatica
6.	Milk Thistle	Silybum marianum
7.	Valerian	Valeriana sp.
8.	Ginseng	Paxex pseudoginseng

In global trade, medicinal plants are traded in different forms, which are documented under various codes. Majority of the export are coded under two heads viz. (i) HS 1211, consisting of plants and plant parts including seeds and fruits and (ii) HS 1302-including vegetable saps, extracts, peptic substances, mucilage's and thickeners.

The world trade under HS 1211 has increased by more than 54% in the last decade. The major countries involved in the trade of medicinal plants under this code are China, Indi, U.S.A. Japan, France and Germany. Amongst the 20% of the marketing share, USA and Germany are the main re-exporters. As to imports U.S.A. is the largest importer contributing to 12% of the total import, followed by Germany, China, Japan and France.

The world trade under HS 1302 is witnessing an average growth rate of 2.15% per annum. India is the largest exporter in this form sharing 36% of the total world export.

Table 4: Major Herbal Extracts Exported from India

S. No.	Herbal Extract
1.	Aonla extract
2.	Hypericum extract
3.	Ashwagandha extract
4.	Boswelli extract
5.	Brahmi extract
6.	Guggul extract
7.	Basil extract
8.	Gurmar extract
9.	Neem extract
10.	Sap and extract of opium
11.	Gamboge extract
12.	Guduchi extract
13.	Centella extract
14.	Ginkgo extract

Utility sectors:

Singh et. Al. (2020) proposes the following medicinal plants based utility sectors:

1. Folklore medicines: It is estimated that about 5137 medicinal species are regularly utilized in folk medicine. Certain folk uses of medicinal plants are interlinked with the traditional customs and habits of rural communities. For instance, adorning hair with 10 auspicious herbs known as “**Dasapushpam**” nurtures a belief among Hindus that this practice is beneficial for attaining prosperity. Similarly, taking both in water boiled with bark of latex bearing trees. *Ficus religiosa*, *F. bengalensis*, *F. racimosa*, and *F. microcapa* is solid to effective against skin diseases. Also Triphala consisting of fruits of *Terminalia chebula*, *T. bellerica* and *Emblica officinalis* is widely popular as an ophthalmic and rejuvenating drug.

2. Ayurvedic system of medicine:

Over the centuries, Ayurveda has developed into a time tested science of life. This system has flourished in India on account of the floristic diversity present here. The general classes of uses medicinal species in Ayurvedic system of medicine may be.

Spices: It is well known fact that the fame of Indian Species is perhaps as older than the recorded history. Besides, India is also known the world over as the “**Home of Spices**”. Potentials for seed species export and trade are growing globally by leaps and bound. India avails the opportunity of being **largest producer, consumer and exporter of seed species.**

Definition of Spices and Condiments

Spices are those plants, the products of which are used as food adjuncts to add aroma and flavor. Condiments are also spices products, of which are used as food adjuncts to taste only. Both spices and condiments contain essential oils which provide aroma, flavor and taste. They are of little nutritive value. They are used whole, ground, paste or liquid from mainly, for flavorings taste and seasoning foods. Most spices increase the shelf-life of food; especially the dry varieties .some spices are added to improve texture and some to introduce a palatable colour or odour.

According to the International Organization for standardization (ISO), there are 73 spices grown in different parts of the world. There are 63 spices grown in India and almost all spices grown in India because of the varied climate-**tropical, sub-tropical** and **temperate** prevailing in India.

Classification of spices

Though spices can be classified in several ways based:

1. **Plant parts used:** Barks, leaves, fruits, flower, rhizome and seeds.
2. Botanical relationship to which it belongs.
3. Longevity of spices plants-annuals, biennials and perennials.
4. Morphology of aerial parts of spices plants herbs with aerial stems, herbs with pseudo stem, shrubs, climbers and trees.

None of the above mentioned classification is complete as each classification has got some lacuna or overlapping.

At present therefore a mixed combination of above mentioned classification is normally followed as below:

1. **Major spices:** Black pepper, cardamom, Ginger, turmeric.
2. **Seed spices** (Minor spices): Aniseed, Cumin, Celery, Coriander, Dill Fenugreek, Fennel, Mustard etc.
3. **Tree spices:** All spices, bay leaf, Curry leaf, Clove, Garcinia, Nutmeg, Tamarind.
4. **Herbal spices:** Basil, Horse radish, Marjoram, Mints-Japanese mint, Pepper mint, Spar mint, Bergamot mint, Oregano, Parsely, Rosemary, Sage, Savoy, Tarragon, Thyme.
5. **Other spices:** Asafoetid, Garlic, Paperika, Saffron, Vanilla.

Value Added Spices Products:

1. **Curry Powder and Spice Blends** (whole or ground): Curry powder is the product obtained by mixing and grinding, cleaned, dried and sound selected spices and condiments. The proportion of spices and condiments used in curry powder is not less than 85%. It may also contain no more than 5% (m/m) food grade sodium chloride. It may also contain farinaceous (Starchy) matter not exceeding 10%, the curry powder shall be free from any artificial colouring matter and any preservation other than common salt.
2. **Spice essential oil:** They are not volatile aromatic extracts prepared by steam distillation of ground spices.
3. **Spice oleoresins:** Comprise both volatile and non - volatile resins present in spices and prepared by solvent extraction of coarsely ground spices using suitable food solvents like hexane, ethylene - dichloride, etc.
4. **Other spices products:** Other spice products are spice concentrates, spray dried and encapsulated spices, green pepper in brine (canned, bottled or bulk packed in jerry can) frozen and freeze dried green pepper.
5. **Spice oils and spices oleoresins:** These accounts for more than 80 per cent of the total export earnings from the value added spices. These are now 15 active oil and oleoresin units in India with production of 150 tonnes. Oil and oleoresins of pepper are applied and exported from India followed by oil and oleoresins of ginger, oleoresins of chilli, turmeric and other seed spices. In the developed countries spice oils and oleoresins are mainly used in:
 - (a) **Food industries:** processed meat, sauces, soups, cheese and dairy products, confectionary and alcoholic and non - alcoholic beverages, and,
 - (b) **Non - food industries:** Cosmetics, Pharmaceuticals, hygiene products and perfumery industries. There is a huge demand for these spices oils and oleoresins in countries like, the

U.S.A. U.K. , Canada and Germany and other countries have been exporting every year increased quantity of these oils to the above mentioned countries.

Importance of spices Industry in India

Almost all the states grow one or more spices. Major states are Andhra Pradesh, Kerala, Gujrat, Rajasthan, Maharashtra, West Bengal, Karnataka, Tamil Nadu, Orissa and Madhya Pradesh. North eastern region and Andaman Nicobar Islands also been identified as potential areas for spices cultivation. Major spices growing states of India, while black pepper and small cardamom are mainly confined to South India, ginger, and turmeric are grown in many states. Large cardamom is mainly confined to Sikkim, Cumin, Fenugreek and Coriander is mainly confined to northern states. The area covered under spices in the country is estimated to be 25 lakh ha. with an annual production 444250 lakh tonnes valued at Rs. 4,43,550 lakh.

Among various species grown in our country, chillis are most widely grown with a share in the total production of 32%. The demand for chillis as spice and its oleoresins, as a natural colouring material is growing up in the domestic as well as international market. Andhra Pradesh is a leading state in the production of chilli with an overall share of 49% followed by Karnataka (12.9%), Orissa (7.6%), Maharashtra (6.3%), Rajasthan (6.2%), West Bengal (5.3%), and Tamil Nadu (2.8%).

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