

SPICES

Their Cultivation and Post - Harvest Management



S. N. DAS

SPICES

Their Cultivation, Processing and Uses

By
S.N. Das



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PREFACE

It is surprise, how little we know about the variety of spices and condiments which are grown in our country. The wide range of soil and climatic conditions of India makes it possible to grow a series of spices and condiments. Like before, the world still today looks upon India as "Home of spices".

Even today, spices and condiments play quite an important role in the national economics of several spices producing importing and exporting countries. India is one of the major spice producing and exporting countries of the world. Despite the tremendous importance of spices in India and abroad it is quite unfortunate that there is very few books which provide the latest information on cultivation, harvesting, processing and marketing of spices grown in India.

The heart-felt realization encourages me to come foreword to bringout a book on spices for the benefit of the interested students, growers and traders. Technological aspects on package and practices on cultivation, plant protection, post harvest management, storage, packaging and quality have been dealt with to make this book most valuable and informative.

During the course of preparation of the book, I have taken the help of a number of articles, reports, papers, pamphlets, reprints, books, magazines and journals and bulletins for which the author feels grateful to all concerned.

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Classification of Spices

Indian spices can be classified in different ways depending on the plant parts used, the economic importance, climatic requirements, origin and flavour, requirement of season and botanical description. But none of the classification is complete as each classification has got some lacuna or overlappings.

1. Based on plant parts used

Spices can be classified depending on the parts of the plant that are to be used. Different plant parts like leaf, root, bulb, fruit, seed, etc. are used as spice.

- a) **Seed:** Cumin, black cumin, fenugreek, coriander, fennel, ajowan, poppy, aniseed and mustard.
- b) **Bulb:** Onion, garlic, leek and shallot.
- c) **Bark:** Cinnamon and cassia
- d) **Fruit:** Chilli, cardamom, allspice and kokam
- e) **Leaf:** Mint, curryleaf, bayleaf, coriander, chive, rosemary and savory
- f) **Rhizome:** Turmeric, ginger, and galangal
- g) **Pod:** Vanilla and tamarind
- h) **Kernel:** Nutmeg
- i) **Floral part:** Saffron, savory, caper and marjoram
- j) **Bud:** Clove and caper
- k) **Latex:** Asfotida
- l) **Aril:** Mace
- m) **Berry:** Black pepper, juniper and allspice

2. Based on economic importance

On the basis of economic importance of the spices grown in India they can be grouped into two viz. major and minor spices.

A. Major spices

The spices which contribute major share in the spice trade industry of the world are called major spices. The spices come under this group are small cardamom, black pepper, chilli, turmeric and ginger. These spices contribute about 75-90% of the total foreign exchange earned through spices.

B. Minor spices

Excluding all these five major spices, all other are called minor spices. Minor spices are further divided into five sub groups. They are mentioned hereunder:

- i) **Seed spices:** Coriander, cumin, black cumin, fennel, aniseed, celery, mustard, poppy and caraway.
- ii) **Bulbous spices:** Garlic, onion, leek and shallot
- iii) **Aromatic spices:** Clove, cinnamon, allspice, aniseed and nutmeg
- iv) **Leafy spices:** Corriander, curryleaf, mint, rosemary, bayleaf, and parsley.
- v) **Acidulant tree spices:** Tamarind, kokam and anardana

3. Based on climate requirement of the crop

Depending on suitable climatic conditions like temperature, sunlight, humidity and air of a particular climatic zone, spices are grouped into three categories.

- i) **Tropical spices:** Spices of this category need high temperature, and abundant humidity. They are easily damaged by low temperature. Tropical spices are ginger,

turmeric, black pepper, cinnamon, kokam, galangal, small cardamom and clove.

ii) Subtropical spices: Sub-tropical climate is found where three distinct seasons like winter, summer and monsoon are found. Low temperature occurs in winter and high temperature during summer. Most of the spices require relatively low temperature during their vegetative or early growth stage and high temperature in reproductive stage. The examples of sub-tropical spices grown in winter are cumin, fennel, coriander, fenugreek, onion and garlic. Sub-tropical spices grown during summer are turmeric and ginger.

iii) Temperate spices: Spices of this type can withstand low temperature and frosty weather but are damaged easily in hot weather. Examples of temperate spices are thymes, saffron, savoy, caraway seed and asfoetida.

4. Based on origin and flavour

Depending on the origin and flavour content of the spices, they can be classified as follows:

- i) Aromatic spices:** Cardamon, aniseed, clery, cumin, coriander, fenugreek and cinnamon.
- ii) Pungent spices:** Ginger, chilli, black pepper and mustard
- iii) Phenolic spices:** Clove and allspice
- iv) Coloured spices:** Turmeric, saffron and paprika

5. Based on season of growth

According to the requirement of season of growth, spices are grouped into following three classes:

- i) Annual spices:** Spices which complete their life cycle in one growing season are called annuals. Example of this type of

spices are coriander, cumin, fennel, fenugreek, ajowan and blackcumin.

- ii) **Biennial spices:** It needs two growing seasons to complete the life cycle. Examples of biennial spices are onion and parsley.
- iii) **Perennial spices:** Perennial spices are those which live for more than two years. Black pepper, saffron, clove, nutmeg and cinnamon are example of perennial spices

6. Based on botanical description

Spices are further classified depending on botanical description of the plants. They are mentioned here under:

Table 1.1: botanical description of some spices

Name	Botanical name,	Family	Habit of growth	Parts used
Onion	<i>Allium cepa</i>	Alliaceae	Annual	Green leaves and bulbs
Garlic	<i>Allium sativum</i>	Alliaceae	Annual	Green leaves and bulbs
Cumin	<i>Cuminum cyminum</i>	Apiaceae	Annual	Fruit
Coriander	<i>Coriandrum sativum</i>	Apiaceae	Annual	Leaf and the seed
Aniseed	<i>Pimpinella anisum</i>	Apiaceae	Annual	Fruit
Black cumin	<i>Nigella sativa</i>	Apiaceae	Annual	Fruit
Fennel	<i>Foeniculum vulgare</i>	Apiaceae	Annual	Fruit
Mustard	<i>Brassica juncea</i> , <i>B. nigra</i>	Brassicaceae	Herb, Annual	Seed
Chilli	<i>Capsicum frutescens</i>	Solanaceae	Annual	Fruit
Cinnamon	<i>Cinna momum verum</i>	Lauraceae	Perennial Tree	Leaf and stem bark
Clove	<i>Eugenia caryophyllus</i>	Myrtaceae	Tree	Flower bud

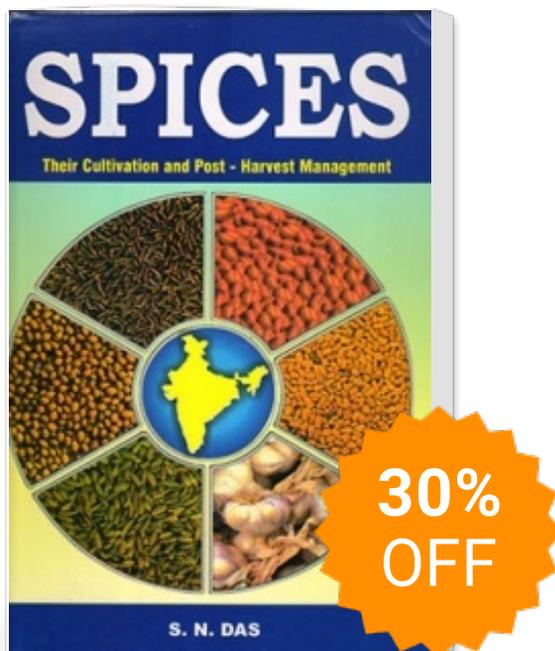
Name	Botanical name	Family	Habit of growth	Parts used
Black pepper	<i>Piper nigrum</i>	Piperaceae	Perennial climber	Fruit
Cardamom (small)	<i>Elettaria cardamomum</i>	Zingiberaceae	Perennial	Fruit
Cardamom (Large)	<i>Amomum subulatum</i>	Zingiberaceae	Perennial	Fruit
Turmeric	<i>Curcuma longa</i>	Zingiberaceae	Perennial herb	Rhizome
Ginger	<i>Zingiber officinale</i>	Zingiberaceae	Perennial herb	Rhizome
Curry leaf	<i>Murraya koenigi</i>	Rutaceae	Shrub	leaf

Table 1.2: Types of spices based on the useful part.

Whole fruit (Berries)	Juniper berry, allspice, black pepper, chilli, Zanthoxylum (Japanese pepper), seed spices like cumin, fennel, ajowan, etc.
Bark	Cinnamon, cassia
Aril	Mace of nutmeg
Buds	Clove
Bulbs	Garlic, onion, leek
Pistil	Saffron
Kernel (of seed)	Nutmeg
Leaves	Basil, bay leaf, marjoram, sage, curry leaf, rosemary, etc.
Rhizome	Ginger, turmeric, mango ginger, Aplinia, etc.
Exudate	Asafoetida
Root	Angelica, horse radish
Seeds/fruits	Aniseed, caraway, coriander, dill, fenugreek, mustard, etc.
Fruit pulp/rind	Tamarind* Garcinia

* Some of the seed spices are whole fruits.

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