

Chapter 18

Chili

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ABSTRACT

Chili is a unique and popular spice in the majority of the countries of the world and is well known for its hot, pungent flavor. Capsaicin is the bio-active compound that binds to pain receptors and causes an intense burning sensation. Capsanthin, a powerful antioxidant, is responsible for the red color of ripe fruits. Chili has its origin in Central America extending further south. This crop is of high commercial importance and huge genetic diversity exists. A systematic description of the crop with respect to its origin, distribution, botanical description, standard crop husbandry, and protection cum management of biotic stresses is given.

INTRODUCTION

Common hot chili (*Capsicum annum* L., Solanaceae, $2n=2x=24$) is one of the vegetables or spices known and used all over the world for its green fruits and pungency. Popularly called “capsicum”, it is actually a non-pungent sweet pepper or *Simla Mirch* with a blocky fruit shape. The word capsicum has been derived from the Greek word *Kapsimo* meaning ‘to burn’. Capsaicin ($C_{18}H_{27}NO_3$) is responsible for the pungency in chili, it is a condensation product of 3-hydroxy-4 methoxybenzylamine and decylenic acid. The red color of chili is due to the presence of Capsanthin, which is actually a mixture of esters of capsanthin, capsorubin, zeaxanthin, cryptoxanthin and other carotenoids (Sambamurty and Subrahmanyam, 1989). The chili fruit contains an essential oil Oleoresin that is used in pharmaceutical, food, and beverage industries for the preparation of value-added products.

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Vernacular Names Of Chili

Bengali & Oriya – Lanka/ Lanka morich, **Kannad**-Mensana Kaya, **Tamil**- Mirapakaya, **Punjabi & Hindi**- Lalmirch,**Gujarati**- Marcha, **Malayalam**- Mulaku**Portuguese: Pimento, Spanish: Chile dulce; pimiento; pimiento morron,Myanmar: Ngayok, Netherlands: SpaansePeper, Sweden: SpanskPeppar**

ORIGIN AND SPREAD

Chilies have been reported to be in use since the infancy of agriculture. It is one of the oldest domesticated crops in the Western Hemisphere. Long before the arrival of Columbus in Americas, the local people already used peppers as food, as war artifacts and in religious rituals (Chiouet al., 2014).

Paleo-archeological findings suggest the antiquity of different chili peppers is 7000BC from caves excavated in Mexico and ancient burial grounds in Peru. Chilies originated in Mesoamerica, spreading from Central America to further South, and this is accepted as the primary center of origin for chili. The cultivated species *C. annuum* had been domesticated in the Tehuacan valley of Mexico during 5000 BC (Ettenberg, 2019), and it is now stated that the secondary centre is Guatemala. The globular, pea-sized fruits of the Wild Chili pepper (*C. annuum* var. *glabriusculum*), also called the “Mother Chili” the ancestor of domesticated *C. annuum*, are consumed and dispersed by frugivorous birds. The species spreads by seed and it has been transported through human and animal consumption as well as economic trade for hundreds of years (Basu and De, 2003).

Christopher Columbus brought chilies to Europe in 1493. In India, it was introduced by the Portuguese in the seventeenth century. Major chili growing states in India are Andhra Pradesh, Karnataka, Maharashtra, Orissa, Tamil Nadu, Madhya Pradesh, West Bengal and Rajasthan which accounts for more than 80% of the total area and production of the country. The North-Eastern states are bio-diversity hotspots for myriad variants of this crop. Chilies from India are exported mainly to Sri Lanka, USA, UK, Canada, Saudi Arabia, Malaysia, Singapore and Germany.

Biosystematics and Floral Biology

- Domain: Eukaryota
- Kingdom: Plantae
- Phylum: Spermatophyta
- Subphylum: Angiospermae
- Clade: Eudicots
- Class: Dicotyledonae
- Order: Solanales
- Family: Solanaceae
- Genus: Capsicum
- Species: annuum

There have been debates among taxonomists about the classification and species of chili since a long time ago, but presently about twenty-five to thirty wild and five domesticated species are recognized and accepted (Normah et al, 2013, Dewitt and Bosland, 1996; Arimbooret al., 2014).

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