# *Tinospora sinensis* (Lour.) Merr.

Synonym: *T. cordifolia* (Willd.) Miers; *T. tomentosa* (Colebr.) Hook. f. & Thomson; *Meninspermum cordifolium* Willd.

Family: Menispermaceae

Ayurvedic Name: Amrita, Guduchi

Hindi Name: Giloe, Gurcha

Trade Name: Giloe

Habit: Glabrous twiner

Part Used: Stem, Root, Whole plant

Active Ingredient: Gilosterol, Gilenin

**Biological activity:** Antiaging, Antioxidant, Anti-inflammatory, Antoarthritic, Antispasmodic, Antistress, Analgesic, Antidiabetic

**Traditional and Therapeutic use:** Tonic, diuretic and aphrodisiac, febrifuge used in malarial and chronic fever. The plant is also used in general debility, loss of appetite, fevers, urinary disorders, diabetes, rheumatism and dyspepsia. Fresh plant is more efficacious than dried plant.

**Morphological and floral characteristics:** Gregarious and glabrous twiner. Older stems are up to 2 cm in diameter and have corky bark. Aerial roots arise from nodal scars of branches. Stem and branches are specked with white vertical lenticels. Bark is grey-brown or creamy white, warty, papery thin, and peels off easily. Leaves are 5–15 cm, ovate, and acute. They are membranous when young but become more or less leathery with age. Flowers are yellow, unisexual, minute, and less than 2 mm in size. Male flowers are grouped in axillary racemes, while female flowers are solitary. Fruit is an ovoid and succulent drupe, lustrous, red in colour, and of the size of a large pea, having a single seed. Seed is fleshy and curved. Flowering occurs in May–June, while fruiting is witnessed in September–October.

**Distribution:** The species is endemic to India and is common throughout tropical and subtropical zones upto an altitude of 600 m.

**Varieties:** At present, no certified varieties of Giloe are available.

**Climate and Soil:** The plant grows in subtropical and tropical climate. Light medium sandy loam soil rich in organic matter, and with adequate drainage, is suitable for its cultivation. It does not tolerate high rainfall or waterlogged conditions.

**Nursery technique**

***Raising Planting material*:** Stem cuttings are the best planting material for raising commercial crop. The cuttings can be obtained from mother plants in June–July. The plant can also be raised using seeds. Seeds take almost more than double the time to mature and yield the same quantity

of drug. The stem cuttings are sown directly in the field. Cuttings are obtained from older stems with nodes. Cuttings should be sown within 24 hours of their removal from the mother plant. Meanwhile, they should be half-dipped in water vertically. About 2500 cuttings are required for plantation in 1 hectare of land. No specific treatment is required before sowing.

**Main field plantation**

***Land preparation:*** The land is ploughed, harrowed, and made weed-free.

***Transplanting and optimum spacing:*** The stem cuttings with nodes are sown directly in the field. An optimum spacing of 3 m × 3 m is recommended for better yield. About 2500 cuttings are required for plantation in 1 hectare of land. The plant requires support to grow, which can be provided by raising wooden stakes or trellis. Already growing shrubs or trees can also support the plant.

***Fertilizers:*** A basal dose of FYM (farmyard manure) @ 10 tonnes per hectare and half dose of nitrogen (75 kg) are applied at the time of land preparation.

***Weed control:*** About two to three weeding's and hoeing's are required for good growth of twiner. The inter-row spaces between plants should be kept weed-free by frequent weeding and hoeing, as the plants may get suppressed by weeds, especially during early stages of growth.

***Irrigation:*** The crop is grown under rain-fed conditions. However, occasional irrigation during extremes of cold and hot weather may help the crop survive adverse conditions.

***Diseases and pest control:*** No serious insect pest infestation or disease has been reported in this crop.

***Crop maturity and harvesting:*** The stem is harvested during autumn when it develops to a diameter of more than 2.5 cm. Basal part is left for further growth.

**Post-harvest management:** The stem should be cut into small pieces and dried in shade. It can be stored in gunny bags, and kept in cool and airy storage godowns. Stem bark peels off even by touch, thus stem should be cut very cautiously as peeled stem decays very soon.

**Yield:** The plant yields about 1500 kg of fresh woody stem, reduced to 300 kg of dry weight per hectare in about two years.