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***Curcuma longa* Linn. Cultivation: The process for its Medicinal use and Conservation**

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Abstract

Curcuma longa Linn is well known for its multifold utility among local peoples over the world. It is used as a crude drug in many disorders among rural peoples. Due to its wide range of significance its market value is rich in India and also in the world. High exploitation and less cultivation will create an ecological problem for their existence in nature, leading to push it towards endangered category. Day by day the rate of demand of *Curcuma longa* Linn is increasing in market as well as pharmaceuticals.

Since the *Curcuma longa* Linn is being endangered its continuous cultivation in rural area and river belts of Bilaspur (C.G.) will be a better approach towards its conservation and increasing benefits to local villagers.

The current paper is aimed to assess the cultivation and conservation process of the *Curcuma longa* Linn in the localities of the Study.

Keywords: *Curcuma longa* Linn, Rhizome, Cultivation, Medicinal plant

1. Introduction

India is a rich center of Plant diversity among them Medicinal plants are remarkable components of plant community. All the medicinal plants which are distributed over the country are major segment of living natural resources. Medicinal plants are of efficient and potentially valuable for producing many chemical compounds. (Gangwar *et al.*, 2010) [4].

Medicinal plants are traditionally used for treatment of many disorders among the tribals/local peoples in local health care purpose (Shrestha and Dhillion, 2003) [10]. *Curcuma longa* Linn having potent capacity for many chemical constituents useful for wide range of human utility. Herbal medicine system is popular now a day due to their eco-friendly, Effectiveness, Potential to cure disease and fewer side effects. With increasing of human population the utilization of medicinal plants is also increased which leads the over exploitation of the plant population. From natural sites and finally it becomes reason for extinction of the specified species in their natural sites.

Unsustainable utilization, destruction of natural habitats, diseases, Pollution, overgrazing etc. are key reason of extinction of the valuable plant species. (Badoni and Badoni, 2001) [1]. There is around 18 species *Curcuma longa* Linn are found in India. *Curcuma longa* Linn is regularly cultivated among the local peoples. It is a rhizomatous plant distributed in the Indo Malaysian region. *Curcuma longa* Linn is a underground, rhizomatous plant belonging to the family Zingiberaceae. Leaves are green, lanceolate, and long and flowers are white- yellow in colour. Well water drainage is also required for cultivation followed by better weed, disease and nutrient management. Climate change on production of secondary chemicals in high altitude medicinal plants was recorded by Gairola *et al.* (2010) [4].

High market demand and continuous cultivation of *curcuma longa* Linn has maintained the presence of Curcuma in the area. Periodically surveys were made in the area where its cultivation is going on followed by discussion to the cultivars peoples to gain information about the Cultivation and utilization aspects of the *curcuma longa* Linn.

2. The Study Area

The study area was the belts near of the Arpa River and villages nearby Bilaspur at central part of the Chhattisgarh state. The area is situated between 21°47' and 23°8' north latitudes and 81°14' and 83°15' east latitudes. It has an average elevation of 264 m (866 ft) near the banks of the rain-fed Arpa River with black-sandy soil. The climate of the area is tropical. It is hot and humid, because of its proximity to the Tropic of Cancer and depending on the monsoons for rains. There are medium rains in the monsoon season. Its summer is hot with temperature range 30 – 47 °C and between 5 - 25 °C in winter.

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3. *Curcuma longa* Linn. Botanical Description

It is a perennial herbaceous plant, mostly cultivated in the tropical parts of the India is a native of the Indo-Malayan region; It is vegetatively propagated by the mode of their rhizomes. The plant height is around 55 -85 cm. with a short

stem. It has large leaves approx. 1 meter long. Leaves are petiolate, oblong, lanceolate, with blade up to 52 cm long and 8.5 cm wide. Flowers originate during June – Nov. on a spike (12-15 cm long) are yellow white in colour at the middle tufts of the leaf.



Images of *Curcuma longa* Linn.

4. *Curcuma longa* Linn Cultivation

Following steps are required for the cultivation of the *Curcuma longa* Linn.

- **Field preparation** - Selected land should be well ploughed and weeds should be removed.
- **Plant/Plant parts preparation** – Rhizomes are initiated new buds in bulk. After than plantlets are used for further cultivation.
- **Cultivation** – Warm and humid climate is better for the cultivation of the *Curcuma longa* Linn. The plant is grown in September to October. It Light black, black clay, and sandy soils are suitable for the plant. The small rhizomes with one or two buds are planted 4 - 8 cm deep in soil by making distance from plant to plant and bed to bed also. The distance between two beds should be around 55 - 60 cm and plant to plant distance 20 - 25 cm.
- **Crop Management**
- **Water** – Water is prime need for its cultivation and should be supplied as per requirement of the plant and excess water should be removed from the field to control the damage from water logging.
- **Weed** – Before and after the process of the cultivation weeds removal is important aspects. Study related to the Weed control for *Colocasia esculenta* Linn cultivation field was made by Plucknett (1982) [9]. Justina *et al.* (2010) [7]. Studied Weed Flora of *Curcuma longa* Fields of District Kasur, Pakistan.
- **Nutrient** – As per requirements of the nutrients fertilizers should be provided. Effect of Nitrogen on growth and yield of a underground crop (*Colocasia esculenta* Linn) was studied by PE, R. S. de la and Plucknett (1972) [8].
- **Disease** – Shoot boring, Leaf spot and Yellow spot etc. are major pests and diseases of the plant. Study on Tropical vegetables crops diseases are done by Burton (1970) [2].
- **Plant Protection** – Protection against biological and environmental factors are required for better health and production of the plant.
- **Harvesting of Rhizomes**– The lower leaves turn yellow and dry at the end stage of their life. Which indicating that the plant is ready for harvesting (commonly 8-9 months after cultivation). At the time of harvesting the field required a minimum level of moisture contents. Mature

rhizomes should be completely removed from the field by carefully digging. Bulk rhizomes are collected and stored.

- **Storing of Rhizomes** – After harvesting of the rhizomes are dried in sunlight and stored in dry places to avoid bud initiation.
- **Chemical constituents** - The rhizomes contain curcuminoids, curcumin, cyclocurcumin, bis-demethoxycurcumin etc.
- **Medicinal values:** It is used for cough and cold, inflammation and wound healing, swelling, insect stings, Headache, wounds, internal injuries, Pain killer, pimples, skin problem, Anti –bacterial, Digestive, Anti-cancerous property etc.
- **Other uses:** This plant is also used as flavor, dye and cosmetics etc.
- **Cultural value:** It is widely used in the Hindu religious ceremonies. Rhizome is considered as purity.

5. Results and Discussion

Focusing on the above reasons which lead to endangerment of the plant species. Continuous cultivation in small or large scale plays remarkable and effective steps towards its conservation. For proper circulation of knowledge related to medicinal plants including *Curcuma longa* Linn among the local peoples regular training and extinction programmers are helpful among local cultivars. To promote the cultivation of medicinal plants among farmers proper agro-technique followed by sustainable plant species selection, Harvesting, Collection and marketing is also necessary. Better product with less use of chemical fertilizers means of that organic formed medicinal plants products are much referred by pharmaceutical companies. Cultivation technique is mostly similar as surveyed to different sites. To save the *Curcuma longa* Linn mass propagation/multiplication and large scale cultivation is basic requirements. Genetic diversity on *Curcuma longa* Linn was recorded by Hikmat *et al.*, (2011) [5]. Many Endo and exo factors affect the Productivity of the *Curcuma longa* Linn. Endo-factor meant for their genetic makeup whereas exo-factor referred as environmental factors like Temperature, Water, Light, Soil etc. Anti-inflammatory Properties of Curcumin was studied by Julie S. Jurenka, MT (2009) [6].

6. Conclusion

Finally it is concluded that the plant *Curcuma longa* Linn is an important for its multifold utility over the world. It is also a

source of economic growth of rural peoples. Market demands, Environment for cultivation etc. are factors playing remarkable role in its cultivation in rural areas. Continuous cultivation supports its conservation for future.

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