

## CLEOME VISCOSA – BOON OR BANE

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**Abstracts:** Advent of modern agriculture system, growing energy demands, area development projects, increasing population and many more related activities has led to rapid decline in many plant resources and ultimately erosion of biodiversity from its unique ecosystem. Thus, the biodiversity conservation bodies and legal strategies framed by them are making every effort to conserve plants for the very survival and existence of life on the earth. Tremendous awareness in the field of biodiversity conservation has unravelled the untapped potential of certain unpopular plants like weeds. These undesired plants, if utilized carefully and judiciously, can prove fruitful in decelerating the pressure on the precious plant resources which we are losing due to increasing demands for their products.

**Keywords:** Agriculture, *Cleome viscosa*, Cleomaceae

### INTRODUCTION

The aim of present paper is to provide insights and stimulate a discussion on one of the unrecognized weed species. Belonging to family Cleomaceae, *Cleome viscosa* L. is widely distributed throughout the tropical and sub-tropical regions of the world including India (Bremer *et al.*, 2009). It is entitled with the status of a weed due to its luxuriant growth in different sites of diverse nature such as woodlands, fallow lands, roadsides, disturbed sites and agricultural land areas. This is on account of its quick blooming nature coupled with high fruit and seed sets (Anonymous, 1950). By virtue of this property, the species has become a major agricultural problem in crop fields of maize, brinjal, soyabean, green and black grams (Singh *et al.*, 1991; Reddy *et al.*, 2000; Reddy *et al.*, 2007; Olorunmaiye and Olorunmaiye, 2008; Murugan and Kathiresan., 2010) and is also creating nuisance along residential areas. Notwithstanding this, the advantages of this species outweigh the disadvantages. Some of these are enumerated below

1. The species has high reproductive potential in terms of fruits and seeds that are set during the short tenure of its annual life cycle. This feature ensures survival and boosts which helps in easy proliferation and invasion of the species to newer sites. This strategy can be exploited in greening and restoration of disturbed areas without putting much effort. The persistent seed bank further helps in replenishment of this plant for many years (Saroop, 2011; Saroop and Kaul, 2011). They also provide excellent material for control of soil erosion.

2. The blooming period appeals wide variety of pollinator fauna (bees belonging to family Apidae, Halictidae, Lepidoptera and Diptera) and insect (species of Lygus, Eusarcocoris and Thysanuras) which actively feed on the flowers for pollen as their food or for completing their life cycle or part of it (per. Obs.). Plant pollinator interaction of this type can play important role in maintaining and conserving pollinator community. The sister species, *C. lutea* and *C. serrulata* are visited by a diverse

array of pollinator fauna including bees, butterflies and wasps during the blooming period. Dense populations of both the species have been raised which proved fruitful in sustaining the native pollinator populations (Cane, 2008).

3. As an Ayurvedic medicine, the species is known to possess antihelminthic, analgesic, antipyretic, anti-diarrhoeal, anticonvulsant, hepatoprotective, insecticidal, allelopathic, nematicidal and antimicrobial properties (Chatterjee and Pakrashi, 1991; Devi *et al.*, 2002, 2003 a,b; Mishra *et al.*, 2010; Sengottuvelu *et al.*, 2007; Gupta and Dixit, 2009; Williams *et al.*, 2003; Jyothi and Rao, 2010; Jana and Biswas, 2011). These innumerable phytochemical benefits are conferred by the wide variety of chemical compounds which the species harbours in its different parts. Bioactive compounds like glucosinolates, glucocappin and glucocleomin (Gupta and Dixit, 2009), kaempferide 3-glucuronide are found in roots (Chauhan *et al.*, 1979), while coumarinolignoids, cleomiscosins A, B and C (Bawankule *et al.*, 2008), lactam nonanoic acid (Jana and Biswas, 2011), and amino acids in seeds (Lavate *et al.*, 2010) of these plants. The extraction of these phytochemicals on a wider scale can boost the pharmaceutical sector. This will also reduce the pressure on the medicinal plants which are facing severe threats to their survival.

Commercial exploitation of bio-active compounds can also be utilized to regulate plant growth, insect and weed control.

4. Nanotechnology and bio-diesel production are the recent additions to the crown of this plant species. The seed oil (26%) is rich in linoleic, unsaturated and free fatty acids and. The fatty acid profile of the oil is 10.6% palmitic, 4.9 %, stearic, 14.4% oleic and 68.6% linoleic (Anonymous, 1950). Along with physio-chemical characteristics similar to that of non-edible biodiesel crops like *Jatropha* and *Pongamia* makes this plant a potent source of biodiesel production (Kumari, 2012).

The leaf extract of this species is used for green synthesis of silver phytonanoparticles which is

ecofriendly and cost effective than chemically commercialized method.

5. Seeds are used as a substitute for cumin (*Cuminum cyminum*) and used in pickles. Oil extracted from the seeds is used for cooking vegetables, curries and pulses (Manandhar, 2002). Defatted seeds serve as sources of fodder and for production of biogas. Increasing consumption of its seeds has led to the commercialization of this species in Garhwal Himalaya providing economic benefits to the local farmers (Maikhuri *et al.*, 2000). Fresh leaves of *Cleome viscosa* contain: water 80.4 g, protein 5.6g, calcium 880mg, P 73mg, Fe 24 mg, ascorbic acid 204 mg per 100 gm (Anonymous, 1950) and are used as vegetable.

In the light of above, should we still consider *C. viscosa* as a weed or an unrecognised super plant.

The positive entities of this plant species put together are likely to yield huge benefits in the biodiversity conservation, sustainable development, human welfare and economic growth.

Therefore, there is an immediate need to bring this plant species under mass cultivation in a controlled manner for harnessing its full potential in various agro and socio-economic sectors.

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