

Correspondance

SURVIVAL STRATEGIES AMONG SPECIES IN NATURE. I: ONE INVASIVE REPLACES ANOTHER INVASIVE SPECIES

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ABSTRACT

Field work during past few years has indicated that various populations of the notorious weed *Lantana camara* are being replaced by another weed *Hyptis suaveolens*; a weed which is rich in essential oil of medicinal importance. Suggestion is floated to utilize medicinal potential of *Hyptis suaveolens*

साराँश

पिछले कुछ वर्षों के मैदानी अध्ययन से स्पष्ट होता है कि कुख्यात लेन्टांना कैमारा दूसरे जंगली पादप हिप्टिस स्वाविओलेन्स, जो कि औषधीय आवश्यक तेलों से समृद्ध है, के द्वारा प्रतिस्थापित हो रहा है। हिप्टिस स्वाविओलेन्स के औषधीय उपयोग की संभावना का सुझाव दिया गया है।

Invasive species; Distribution of Hyptis suaveolens; Natural replacement of Lantana weed

There are hundreds of plant species which grow as “uncalled for” in a particular area/vegetation or plant communities” thereby hampering or preventing luxurious growth of other native species. Biologically, a species can be a weed when it becomes too aggressive in reproduction and survival rate exceeding the usual prevalence in a particular area or a niche. Needless to mention, prolific growth in population size of one or more such species in otherwise a

balanced ecosystem (be a forest; grassland, aquatic, or a desert/xeric ecosystem) influences biomass production and biological utility of the particular land mass as a whole. Thus an alien invasive species (AIS) is defined as “a species introduced into a habitat and whose establishment and spreading (due to prolific reproduction) threatens the ecosystem, habitat or species with economic or environmental harm. Obviously, an invasive species is one among various threats to the biodiversity (Meiners et al 2001) of an area be a forest, a grassland or even an aquatic ecosystem/ wetland etc.



Fig.1 . Mixed occurrence of dried plants of *Lantana camara* and mature green plants of *Hyptis suaveolens* on the road side area of a village



Fig.2. Spreading population of mature and young plants of *Hyptis suaveolens* in an area around road side of a village. Only a few dried plants of *Lantana* are seen along with other herbs.

While continuing field work and searching for different rare medicinal plants (Goswami 2009) threatened species as well as pteridophytes inhabiting different areas we have often noticed the most common and popular weed *Lantana camara* L during past three decades or more. Not only in India but basically, *Lantana camara* L is a pantropical weed also affecting pastures and native forests in over 60 countries (Day et al, 2003). The genus has multicoloured flowers and has also been grown in various forms such as ornamental plant, a good protective hedge on account of thorny stem; many rural folk in Indian villages also use it as minor fuel-wood. Wherever it grew, the shrub used to grow prolifically occupying open area by the margins of a forest, open land mass in a village as well as in outer side of the shallow lake. Lately we have been closely watching and have found most of these pockets of *Lantana* being occupied by *Hyptis suaveolens* Poit (Family: Lamiaceae) replacing *Lantana* plants to minority (Fig. 1).

Similar studies have already been published by Sharma et al (2009) and on the basis of their detailed observations they designate *Hyptis suaveolens* as an emerging invader of Vindhyan plateau. One of us (HKG) has been conducting watchful surveys during July–November every year since 2012 and have noticed such a situation where *Hyptis* is becoming dominant at all such places where we had found *Lantana* plants in abundance.

Hyptis suaveolens is a prolific seed producer with high percentage of germination under variable conditions of temperature (Sharma et al, 2009). In addition to *Hyptis*, we have carefully noted the excessive growth of *Calotropis gigantea* and have further counted at 20 localities in and

around Bhopal, adjoining forests and villages (up to 200 Kms away from Bhopal on road sides East-South) area as well as towards Hoshangabad extending up to Pachmarhi plains. Our observations indicate a possible emerging allelopathic affiliation in between *Calotropis gigantea* and *Hyptis* habitation in certain areas which will need deeper attempts to understand this mechanism. Such a situation may also be a chance. The most intriguing biological situation is that *Hyptis* is an annual herb-weed while both *Lantana* and *Calotropis* are perennial weeds, nevertheless, we have observed very high setting of seeds exhibiting almost frequent germination of seeds in *Hyptis*. Frequent presence of younger plants of *Hyptis* (Fig 2) even when the older plants have not yet dried out in the nearby area indicates that species is in biological command in invading other invasive species.

This may also be mentioned that while *Lantana* is known for overrunning the existing weeds of an area the *Hyptis* population increasing can offer increased chances of utilizing this weed for medicinal purposes. *Hyptis* possesses multiple medicinal properties (Musa et al, 2009; Noudogbessi, Jean-Pierre al 2013) being very rich in essential oil contents with many organic compounds like sabinene, eucalyptol, terpinolene etc. Predominance of sabinene is of particular interest as this compound offers support in adapting to hardy situations of a plant. In traditional medicinal practices (Nantitanon, et al, 2007) the essential oil of *Hyptis* has been used as a wound healer and a vital source for treatment of various infections and ailments as it possesses antimicrobial and antioxidant properties. Increasing populations of *Hyptis* are now under detailed studies more particularly because certain plants attain 2 meters in height

(maximum height reported earlier is 1.5 m: Sharma et al, 2009). Nevertheless, this is an ecological truth that *Lantana camara* is being defeated by *Hyptis suaveolens* in inhabiting different areas.

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