

Early Seedling Growth Status of Threatened Medicinal Tree Species *Couroupita guianensis* Aubl. in District Meerut, (U.P.) India

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ABSTRACT: *Couroupita guianensis* is a highly valued species for the humans, soils management, environment and forestry. The tree is found some parts of India but now it is threatened species many areas of the country. Hence, there is an urgent need for conservation of this tree species. The present study was carried out in District Meerut for the period March 2014 to June 2014. The matured, seeds of *C. guianensis* were collected from Acharya Jagadish Chandra Bose Indian Botanic Garden Shibpur, Howrah Kolkata, West Bengal. A total 50 seeds were sown in 5 pots containing soil, manure 3:1 ratio. The germination starts seven days after sowing in the month of March. Complete germination within 18 days during the end of March 2014. The total germination percentages were observed 95%. Germination, seedling growth, number of leaves parameters were recorded at March to June (2014). The results indicate that the status of germination, saplings growth and development of *C. guianensis* is fairly rapid. I had recorded three months growth of *C. guianensis* tree species Mean 22.7 cm. after germination period in soil of Meerut district. It is concluded that the aim of the present study is to spread awareness towards the conservation and established of the threatened unique tree *C. guianensis* in Meerut district. The study benefited to environment and forest management in those areas, where the plant is now not found. The present study of the scope in the future various fields such as conservation of threatened tree species, adaptation tree species, pharmacology and environment management.

KEYWORDS: *C. guianensis*, Threatened, Germination, Conservation, Meerut.

INTRODUCTION

The widespread loss and degradation of native forests is now recognised as a global environmental crisis. From 2000-2005, global forest area declined by around 20 million ha/yr (Hansen *et al.*, 2010), with undisturbed primary forest declining by an estimated 4.2 million hectares (or 0.4%) annually (FAO, 2010). The loss and degradation of forest ecosystems resulting from human activity are major causes of global biodiversity loss (UNEP, 2009; Vie *et al.*, 2009). Clearance of forest for agriculture, mining, urban and industrial development all contribute to the loss of forests and tree species in the wild. Management activities within forests, including burning, logging and overgrazing also impact on forest structure, functions and processes and can additionally contribute to the loss of tree species. *Couroupita guianensis*, is a large tropical tree species belongs to the family Lecythidaceae is common name cannon ball tree. The leaves are upto 20 cm long and are simple with serrated margins. Its flower raceme is cauliflorous with beautiful reddish and pink flowers, 7 to 15 cm long, which are stunningly fragrant. The tree bears, large globes woody fruits directly on the trunk and main branches, which are 15 to 25 cm in length and look like big rusted cannon balls. The tree play a fundamental role in maintaining the basic ecosystem functions and the quality of life on earth. The tree is indispensable to human and animals for his life. *C. guianensis* is a medicinal tree which is endowed with curative properties including anti-fungal, anti-biotic, anti-septic, anti-malaria. The leaves and flowers of *Couroupita guianensis* showed anti-oxidant activity. (Stalin G *et al.*, 2012). The trees are used to cure colds and stomach aches. Juice made from the leaves is used to cure skin diseases, and shamans of South America have even used tree parts for treating malaria. The inside of the fruit can disinfect wounds and young leaves ease toothache. The leaves of *Couroupita guianensis* possess the herbal hand wash formulation (Minakashi G Joshi *et al.*, 2008). In Ayurveda, it's used extensively as an anti-inflammatory medicine. The volatile oils from the flowers show anti-bacterial and anti-fungal

properties. It is one of the ingredients in the many preparations which cure gastritis, scabies, bleeding piles, dysentery, scorpion poison and many more. Leaves are used as fodder for cattle & deer. The tree very important role for various fields such as Backyard planting; Boundary marker; stabilization; Commercial planting; Erosion control: Large roadside tree; environment management; Shade tree; Specimen tree; urban greening; Wild grafting (Orwa *et al.*, 2009). One-fourth of the plant species listed by the U.S. Endangered Species Act include reintroduction as a component of their recovery plan (Kramer *et al.*, 2011.) *C. guianensis* tree species not found in Meerut district. However, Meerut's soil is more fertile and has a warm subtropical climate and becomes very cold and dries in winters from December to mid February while it is dry and hot in summers from April to June. During extreme winters, the maximum temperature is around 12^o and minimum 3^o to 4^o Celsius. Summers can be quite hot with temperatures rising up to 42^o to 44^o Celsius range. *C. guianensis* is perceived as very important tree species for local populations, forestry, biodiversity and environment management. *C. guianensis* is easily germination from seed, the rate of growth is fairly rapid at April to June 2014 in Meerut. The tree is found some parts of India but it is not found many parts of country. Hence, there is an urgent need for conservation threatened tree species which is required in Meerut and many other adjacent districts. The present research work consisted in defining conservation and early growth status of tree species *C. guianensis*. This tree species should be carried out, in order to ensure that future generations can benefit from it. which can be used for the welfare of the mankind.

MATERIAL AND METHODS

The present study was carried out at B – 16, Jwala Nagar, Ambedkar Chowk in District Meerut for the period March to June 2014 in pots. The matured and healthy seeds were collected from **Acharya Jagadish Chandra Bose Indian Botanic Garden** Shibpur, Howrah Kolkata West Bengal during the first week of March 2014. The total 50 seeds were sown in 5 pots containing soil: manure ratio 3:1. Germination commenced seven days after sowing and total 95% germination was observed within 18 days in the end of March from date of sowing. Saplings growth parameters such as seedlings growth, number of leaves were recorded at April, May, June 2014.

RESULTS

The result shows that the total seeds germinated 95 % at the end of March 2014 within 18 days. Seedlings height Mean was recorded at April to June 2014. Seedlings height Mean 8.9 cm., 15.93 cm., 22.7 cm., at April, May, June 2014. The plant height and number of leaves was recorded at April to June 2014. Respectively growth of all stages of *C. guianensis* is fairly rapid in Meerut District. All results clear in the table 1. 2. and figures 1-7. The plants were growing 22.7 cm. at April to June 2014 after germination period. Ramakirshnan 1972, Gomez - Pompa & Vezques-Yanes 1974, Harper & White 1974 reported that the germination and seedling establishment are two very critical phase in the life history of tree species Composition of Trees Grown Surrounding Water Springs at Two Areas in Purwosari Pasuruan, East Java (Soejono., 2012). Status and Cultivation of Sandalwood in India USDA Forest service (Shobha N. Ral .,1990). For those of us associated with arboreta and botanical gardens, we are in a position to address the challenge of saving the world's threatened tree species. We need to do more than just include them in the plant collections of our gardens. Effective tree conservation may require a finessed combination of different kinds of ex situ and in situ actions, ecological restoration and plant reintroduction, and socio-economic and regulatory considerations to truly secure them from threat (Sara Oldfield and Adrian C. Newton 2013). According to the Red list of Threatened Plants (UNEP, 1995), 19 species are already extinct and 1236 species are threatened. Of these, threatened 41 taxa are possibly extinct in the wild, 152 are endangered, 102 are vulnerable, 251 are rare, and 690 are indeterminate (D Ramprasad *et al.*, 2012). As a consequence, many tree species are threatened and disappear more and more from their natural ecosystems. The present study focuses on the threatened tree species *C. guianensis* established in Meerut district.

Table – 1
SEED GERMINATION PERCENTAGE OF *couroupita guianensis*

	MARCH					
Days	3	6	9	12	15	18
Germination (%)	—	-	30	45	80	95

Table 2.
The plant height, AND number of leaves at three months after germination period

Months	Plant Height Mean (cm.)	No. Of leaves (three plants)
April	8.9±0.15	5, 4, 3
May	15.93±0.05	18, 15, 14
June	22.7±0.26	33, 31, 28



Fig. 1. Flower of *C. guianensis*



Fig. 2. Fruits bearing on *C. guianensis*



Fig. 3. Seeds collected by Yashwant Rai from Kolkata



Fig. 4. View of germinate seedling in Meerut

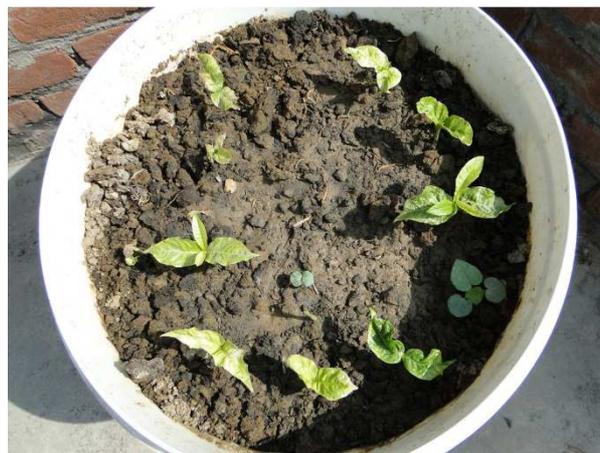


Fig. 5. Growth status of *C. guianensis* seedlings at April 2014 in Meerut



Fig. 6. Growth status of *C. guianensis* seedlings at April, May 2014 in Meerut



Fig. 7. Growth status of *C. guianensis* seedlings at April, May, June (90 days) 2014, in Meerut

CONCLUSION

It is concluded that the aim of the present study is to spread awareness towards establishment and conservation of threatened tree *C. guianensis* in those areas where the plant is now rarely found. This research work will also prove to be of immense usefulness for the conservation of threatened tree species in the forest. Since this plant is beneficial for humans in many ways, therefore it is required that wide propagation and conservation of this plant should be carried out, in order to ensure that future generations can benefit from it.

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