Growth and Development of Medicinal and Soil Improver Rare Tree Species *Sesbania grandiflora* Linn. in District Meerut, (U.P.) India

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**Abstract:** *Sesbania grandiflora* is important agro forestry species. These plant species threatened due to habitat destruction, urbanization, forest fire, environment changing and biotic factors. So now it is listed amongst threatened species in many states in the country. Hence, there is an urgent need for conservation of this species. The present study was carried out in Jwala Nagar district Meerut for the period March 2016 to June 2016. A total 100 seeds were sown in 5 cemented pots containing soil, manure 3: 1 ratio. The germination starts 5 days after sowing in the month of March. The total germination percentage were observed 100 % within 21 days during the of 15 March 2016 from date of sowing. Germination percentage, early growth status and root nodule formation period were recorded at March to June 2016. Three months, (March to May 2016) old saplings were planted into the rural and urban areas of Meerut district. Final reading on plant growth status was recorded at 30 June 2016 in field areas of Meerut district. The results indicate that the status of germination, seedling growth and development root nodule period of all stages fairly rapid. I had recorded March 2016 to June 2016 length and girth size status of *S. grandiflora* Mean 149.78 cm., 6.96 cm in Meerut areas. It is concluded that the aim of the present study is to spread awareness towards the conservation and established of the threatened tree species *Sesbania grandiflora* in Meerut district. The study will be benefited to soil improvement, forest management, farmers and mankind in those areas, where the plant is not found.

**Key Words:** *Sesbania grandiflora*, Threatened, Germination, Root nodule 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; Vié *et al.*, 2009). Clearance of forest for agriculture, mining, urban and industrial development all contributes 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. There is an urgent need to conserve plant species. Around 7,800 plant species are currently recorded as threatened with extinction at the global scale (Oldfield *et al.*, 1998; Newton and Oldfield, 2008). However, information is lacking on the status and distribution of many suspected rare species of trees, and the true figure is likely to be much higher. Plants are of exceptional ecological importance, providing habitat flora wide range of other organisms. Many of these trees also benefit people, and are associated with social, economic or cultural values. Consequently, their continued decline or loss can have a major impact on human wellbeing. *Sesbania grandiflora* is important agro forestry tree species. **Description:** *Sesbania grandiflora* is a tree that can grow to 20 feet in height. The compound leaves are about 30 cm long with 12 to 20 pairs of rounded, narrow, oblong leaflets, 3–4 cm by 1 cm. Flowers are 6–10 cm, in pale pink, red, purple or white. The pods are 30–45 cm, slender, and cylindrical with about 30-50 brown seeds. It belong the family Leguminosae and therefore they have the ability to improve soil through the nitrogen fixation of atmospheric nitrogen. *S. grandiflora* native to many Asian countries, these tree legumes are widespread throughout South-East Asia, where they have a number of uses, including green manuring. species nodulate profusely, and are probably active...
RESULTS AND DISCUSSION

The result showed that the total seeds germinate 100% at the third week of March 2016 within 21 days from date of sowing. Saplings height was recorded at March to June 2016, the plant height Mean 3.22 cm at March - April; 44.96 cm. April - May; 149.78 cm. May - June. Two months, old saplings (44.96 cm.) were planted into the urban and rural areas of Meerut. The final reading growth status of plant, height, girth size and root nodule development period was recorded at March to June 2016 in Meerut district, plant height Mean 149.78 cm., girth size Mean 6.96 cm. Respectively growth of all stages of S. grandiflora is fairly rapid in Meerut District. The plants were growing 149.96 cm. at March 2016 to June 2016 after germination period. All results clear in the table 1, 2, 3 and figures 1 - 8. Correlation research work, germination and seedling establishment are two very critical phase in the life history of tree species ( Ramakrishnan 1972, Gomez - Pumpa & Vezques-Yanes 1974, Harper &White 1974). Composition of Trees Grown Surrounding Water Springs at Two Areas in Purwosari Pasuruan, East Java (Soejono., 2012). Growth and Development of Medicinal Endangered Tree Species Aphananxis polystachya (Wall.) Parker in District Meerut (Rai Y., 2014). Germination and Early Growth Status of Threatened Valuable Tree species Terminalia catappa Linn. in Meerut UP- India(Rai Y., 2014). Germination and Growth Status of Endangered Medicinal Plant Caesalpinia bonduc (Linn.) Roxb. in Meerut (U.P.) India(Rai Y., 2014). Growth Development of Rare Tree Species Sterculia foetida Linn. in District Meerut, (U.P.) India (Rai Y., 2014). Growth and Development of an Endangered Medicinal Tree Adenanthera pavonina Linn. In District Meerut (U.P.).India (Rai Y., 2014). Growth and Development Status of Medicinal Threatened Tree Species Gardenia uliginosa Retz. In District Meerut, (U.P.) India (Rai Y., 2014). Growth and Development of Valuable Threatened climber species Calamus tenuis Roxb. in District Meerut, (U.P.) India Rai Y & Shakla A K (2015). 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 ecosystem. The study of the focus in the future various fields such as conservation of threatened tree species, adaptation tree species, pharmacology, forest and soil improvement.

| TABLE – 1  |
|:-----------:|:-------------:|:---------------:|:-----------:|:-----------:|:-----------:|:----------:|:----------:|:----------:|:----------:|
|            | MARCH        |               |            |            |            |            |            |            |            |
| Days       | 3 6 9 12 15 18 21 | Germination% (%) | – 25 40 50 65 75 100 |            |            |            |            |            |            |

| TABLE -2.  |
|:------------|:------------------:|:------------------:|:------------------:|
|            | SESBANIA GRANDIFLORA GROWTH STATUS AT MARCH 2016 TO JUNE 2016 |
| MONTHS     | Plant Height Mean (cm.) | Girth Size (cm.) |
| March-April 2016 | 3.22 ± 0.19               | -               |
| April-May 2016 | 44.96 ± 0.23               | 4.96 ± 0.25 |
| May-June 2016 | 149.78 ± 0.86               | 6.96 ± 0.11 |

| TABLE -3  |
|:----------:|:--------------------------------|
|            | SESBANIA GRANDIFLORA NODULE FORMATION PERIOD |
| Ten days saplings | 15 days saplings |
| No root nodule formation | Start root nodule development |
Fig. 1. View of seeds and pods *S. grandiflora*.

Fig. 2. View of seedling *S. grandiflora*.

Fig. 3. View of two months saplings *S. grandiflora*.

Fig. 4. View root nodule of *S. grandiflora* root.
Fig. 5. View of growth status *S. grandiflora* at March to June months in rural field area Meerut.

Fig. 6. View of girth status *S. grandiflora* at March to June months.

Fig. 7. View of flowers bearing branch *S. grandiflora*

Fig. 8. View of decorated flowers *S. grandiflora* used to vegetable.
CONCLUSION

It is concluded that the aim of the present study is to spread awareness towards establishment and conservation of endangered tree species *S. grandiflora* 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 rare 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.

REFERENCES

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