GENE FLOW STUDY WITHIN A CLONAL SEED ORCHARD OF *Tectona grandis* L.f IN THE TELENGANA STATE OF INDIA

Authors, affiliations and address

1. S. Pattanaik (Corresponding author)

Scientist E

Institute of Forest Biodiversity (ICFRE), Dulapally, Hyderabad 500100, India

eMail-swapnen@yahoo.com, pattanaiks@icfre.org

2. K. Shiva

Junior Research Fellow

Institute of Forest Biodiversity (ICFRE), Dulapally, Hyderabad 500100, India

eMail-shiva.kamtekar99@gmail.com

3. K. Rajesh

Junior Research Fellow

Institute of Forest Biodiversity (ICFRE), Dulapally, Hyderabad 500100, India

eMail-rajeshkottakota2@gmail.com

4. G.R.S. Reddy

Director

Institute of Forest Biodiversity (ICFRE), Dulapally, Hyderabad 500100, India

eMail-grsreddy@icfre.org

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Abstract:

Paternity analysis using microsatellite markers was used to gain insight into the mating system and pollen dispersal in a clonal seed orchard of *Tectona grandis*. Pollen donors of 105 progenies, belonging to five known seed bearers located in different parts of the orchard, were determined by maximum likelihood approach. Of the 105 progenies, 61 could be assigned paternity with 95% confidence. The mating system was dominated by cross fertilization (93.4%). The rate of selfing was very low (6.6%). The average pollen movement distance to the five focal seed bearers varied from 84.0 ± 59.8 m to 153.4 ±52.9 m. This study provides direct evidence of high levels of long-distance (>50 m) pollination in this insect pollinated species. Of the thirty clones planted in the orchard, 23 participated in the breeding process. The number of pollen donors per seed tree varied from 10 to 14. There was variation in reproductive success of pollen parents with Clone 8 being the most successful pollinator. The implications of these findings for the management of the clonal seed orchard are discussed in the paper.