

RNRRS PROJECT COMPLETION SUMMARY SHEET **Sheet Completed: 28/2/99**

TITLE OF PROJECT: Study of the reproductive biology and population differentiation of *Bombacopsis quinata*: a threatened dry zone tree with potential for semi-arid zones

DFID Project Reference Number: R6168/ZF0017

RNRRS PROGRAMME: FRP

PROGRAMME MANAGER (INSTITUTION): Dr M. Sandiford/Dr D. Boshier, OFI

RNRRS PROGRAMME PURPOSE:

purpose 1 'the use of trees within farming systems, including community and farm woodlots, optimised' purpose 2 'sustainable utilisation and conservation of natural woodlands enhanced'. (n.b. project started before introduction of logical frame works)

RNRRS PRODUCTION SYSTEM: Semi-arid

COMMODITY BASE: timber, fencing, seed

BENEFICIARIES: a) tree improvement, reforestation and conservation projects, b) researchers studying population genetics and reproductive biology of tropical trees.

TARGET INSTITUTIONS: CATIE, CONSEFORH, CONIF, DANIDA

GEOGRAPHIC FOCUS: Central America, Colombia, Venezuela

	Planned	Actual
START DATE:	01.10.94	01.11.94
FINISH DATE:	31.08.97	31.03.98
TOTAL COST:	£38,900	£37,819

1. Project Purpose:

The overall objective of this project was to gain an understanding of the reproductive biology of *Bombacopsis quinata* to enable sound decision making with respect to tree improvement, seed production and collection, the *in* and *ex situ* conservation of the species

2. Outputs:

The following aspects were studied: a) phenological patterns at individual tree & population levels in seed orchards; b) the sexual system via controlled pollinations and cytological techniques; c) the mating system in fencelines & seed orchards using allozyme markers; d) the behaviour of bat pollinators and of insect visitors. Allozyme studies showed *B. quinata* to be highly outcrossed in seed orchards and even in clonal fencelines, despite a reduced number of genotypes. Particular problems of seed collection from fencelines were identified. High outcrossing rates were found to result from self-incompatibility and the selective abortion of genotypes. Furthermore, phenological, controlled pollination and pollinator data indicated that the floral architecture, asynchronous flowering, maternal effects and behaviour of bat pollinators encouraged non-random mating. Serious limitations to seed production were caused by the insect pests. Conclusions were drawn with respect to the project results and their implications for the sustainable use and conservation of *B. quinata* considered. In addition, methodologies employed in this study were evaluated and their utility considered for studies of other tropical tree species.

3. Contribution of Outputs to Project Goal:

The primary objective of the project was fully met. A secondary objective of the project; to detail the genetic variation between and within populations of *B. quinata* in Central and South America, was not completed by the end of the project and is reported on in R6516.

4. Publications:

scientific papers still in preparation

5. Internal Reports:

In addition to quarterly, annual and final reports to FRP, the following reports (in both English and Spanish) were also written for the collaborating institution, CONSEFORH;

Sandiford, M. 1995. General report on the status of CONSEFORH seed and clone collections of *Bombacopsis quinata* with reference to current trials at La Soledad, Comayagua. Unpublished *OFI/FRP report* to CONSEFORH. 19pp.

Sandiford, M. 1996. Collection/exploration report of 40 unrelated clones of *Bombacopsis quinata* for inclusion into a CONSEFORH clonal seed orchard. Unpublished *OFI/FRP report* to CONSEFORH. 28pp.

Sandiford, M. 1996. Explanatory notes on the potential risks associated with the introduction of exotic species and the movement of species within their natural range. Unpublished *OFI/FRP report* to CONSEFORH.. 4pp.

Sandiford, M. 1996. Seed orchard design with specific reference to CONSEFORH seed orchards of *Bombacopsis quinata*. Unpublished *OFI/FRP report* to CONSEFORH.. 5pp.

6. Other Dissemination of Results:

During the project results were disseminated continuously through formal and informal seminars with collaborating institutions throughout Central America. Large scale exploration, collection and the establishment of a clonal seed orchard of *B. quinata* from the highly threatened southern Honduran population was carried out for the collaborating, DFID supported, CONSEFORH project, along with a formal assessment of the status of their established collections of *B. quinata*. Application of the project findings is helped through publication of the project final technical report in Spanish.

7. Follow-up indicated/planned:

Results more widely disseminated through inclusion in chapters 3,4, 5, 6 & 11 of a monograph, production and publication in Spanish funded by FRP (R7170/Z0082), for dissemination in Central and South America.

8. Name and signature of author of this report

D.H. Boshier