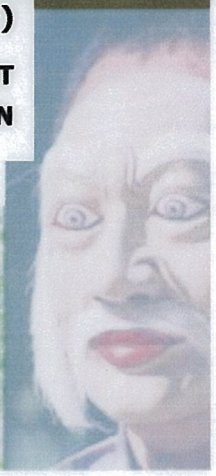
ITTO PD 386/05 Rev.1 (F)

TECHNOLOGICAL DEVELOPMENT FOR THE PRODUCTION OF PLANTING MATERIALS TO SUPPORT SUSTAINABLE PLANTATION OF BALI INDIGENOUS SPECIES THROUGH COMMUNITY PARTICIPATION



REPORTING ACTIVITY 6.3 ESTABLISHMENT OF DEMONSTRATION PLOTS OF 2 SPECIES, 20 Ha

PREPARED BY:
PROJECT EXECUTING TEAM

BALI PROVINCIAL FORESTRY SERVICE
REGIONAL TREE SEED CENTER FOR BALI AND NUSA TENGGARA
INTERNATIONAL TROPICAL TIMBER ORGANIZATION

2009

Reporting
Activity 6.3. Establishment of demonstration plot of 2 species (*Planchonia valida* and *Dysoxylum densiflorum*), 20 Ha

Project Executing Team ITTO PD 386/05 Rev.1(F)

Bali Provincial Forestry Service and
Regional Tree Seed Center for Bali and Nusa Tenggara and
International Tropical Timber Organization
2009

CONTENTS

LIST OF FIGURE

SUMMARY

The demonstration plot of *Planchonia valida* and *Dysoxylum densiflorum*, 20 Ha have been established in Tegal Bunder, RPH Sumber Klampok, Village of Pejarakan, District of Buleleng.

The growth percentage of the species was low due to insufficient maintenance, especially for watering, limitation of site-species matching, especially for *D. densiflorum,* and interference by monkey, deer, and wild boar.

1. INTRODUCTION

Up to 2005, some activities have been done periodically in demonstration plot of 4 species i.e *Fagara rhetsa, Manilkara kauki, Alstonia scholaris*, and *Wrightia pubescens* that were established in 2004, such as maintenance, monitoring, evaluation and measurement. In 2006, under **ITTO project PD 386/05 Rev. 1 (F) "Technological Development for the Production of Planting Materials to Support Sustainable Plantation of Bali Indigenous Species through Community Participation"**, that activities will be continued, that is establishment of demontration plot of 2 species (*Planchonia valida* and *Dysoxylum densiflorum*) in order to add the demonstration plot of indigenous species to be six species.

The objective of this activity is to establish and maintenance the demonstration plot of 2 species i.e *Planchonia valida* and *Dysosylum densiflorum* in order to introduce the indigenous species to communities.

To suport the activity of establishment and maintenance of demonstration plot of 2 species (*Planchonia valida* and *Dysoxylum densiflorum*), the following report was prepared as technical report on establishment and maintenance of the activity mentioned above during 2007-2009.

2. MAIN TEXT

2.1. Establishment of demonstration plot

As part of activity 6.3, establishment of demonstration plot of 2 species (*Planchonia valida* and *Dysoxylum densiflorum*), 20 Ha has been established in year 2007 under ITTO Project PD 386/05 Rev.1 (F). The demonstration plot location as follows:

- Tegal Bunder
- RTK : 19
- RPH : Sumber Kelampok
- Village : Pajarakan
- Sub-District : Gerokgak
- District : Buleleng
- Province : Bali

Site is located near to Taman Nasional Bali Barat (West Bali National Park), with the demarcation of:

- Seed production area of *Manilkara kauki*,
- Seed orchard of *Dysoxylum densiflorum* and *Alstonia scholaris*

Beside good accessibility, other considerations to select this location are good soil fertility (as shown by the growth of trees in seed production of *Manilkara kauki*), available size area, acceptable topography (flat) and compactness.

Selected site for establishing demonstration plot is covered by very dense vegetations (Figure 1).

Figure 1. Condition of selected site for the demonstration plot covering very dense vegetations

Based on conditions mentioned above, the land preparation could be done using complete land clearing. Land preparation is practiced mechanically or combining with *tumpang sari* as practiced previously in other demonstration plot. However, due to time limitation, land preparation and planting practiced using *tumpangsari* (agroforstry) 3 ha, clearing near hole to plant the seedlings (*larikan*), 7 ha and the other 10 ha using *cemplongan* with line-direction. During planting, dig holes and base fertilizer prepared and applied in enough size, quantity and dozes.

Considering land preparation condition mentioned above, planting phase covering line arrangement, spacing, sticking, and planting has been done carefully.

The activities that prepared before planting as show in figures below:

Figure 2. Activity of land clearing

Figure 3. Activity of preparing stick-pole

Figure 4. Activity of preparing line arrangement

Figure 5. Activities of monitoring and discussing before planting

Demonstration plot of *P. valida* 10 Ha and *D. densiflorum* 10 Ha has been established in collaboration with Kelompok Tani (farmer group) Sumber Makmur. The trees planted with 4 x 2 m in spacing. Total amount of 20,306 seedlings of *D. densiflorum* and 33,145 seedlings of *P. valida* had been planted involving 50 local farmers who live surrounding in that area. The total seedlings included seedlings to replace the death trees.

Figure 6. The planting activity in collaboration with local farmers

Figure 7. Demonstration plot of *Planchonia valida* and *Dysoxylum densiflorum*

2.2. Maintenance

Maintenance of this demonstration plot has been carried out comprising shrub cleaning and replaces the death trees with new seedlings. The activity of shrub cleaning just conducted in the area surrounding trees where planted. Those maintenance activities of demonstration plot have been conducted every year.

Figure 8. Maintenance activity of demonstration plot

Monitoring in the first year age of the trees (February 2008) show that the trees growth well with the growth percentage of the species was 97.5% and then decreased to be 25.12% for *P. valida* and 4.75% for *D. densiflorum* on July 2009.

The trees who planted in agroforestry system growth better than the others. This is cause in agroforestry system, the trees planted together with the crops such as peanut and chili and the farmers maintain well the area with giving fertilizer and conducting shrub cleaning.

Figure 9. *Planchonia valida* that planted among chili in agroforestry system growth well

Figure 10. *Dysoxylum densiflorum* that growing well among chilies

Figure 11. Condition of *Planchonia valida* that planted in line-direction system

Some possibilities caused of the high mortality are identified as follows:

- Insufficient land preparation. Land preparation and planting was practiced using agroforestry model (3 ha), line direction (7 ha), and *cemplongan* with line direction (10 Ha).

- Insufficient maintenance, especially for watering.
- Limitation of site-species matching, especially for *D. densiflorum*
- Interference by monkey, deer, and wild boar.

(a) (b)

Figure 12. Stem of *Planchonia valida* bite by wild boar (a) and deer eat leaf of *Planchonia valida* (b)

Due to the growth percentage of *D. densiflorum* was very low, according to agreement reached of EA meeting, the demonstration plot of *D. densiflorum* reduced from 10 Ha to be 2 Ha, the other way demonstration plot of *P. valida* increase from 10 Ha to be 18 Ha. Furthermore, the maintenance of the demonstration plot would be handled by Bali Provincial Forestry Service and Regional Tree Seed Centre for Bali and Nusa Tenggara. In forthcoming rainy season on December 2009, they would be replaced the death trees both *P. valida* and *D. densiflorum* with new seedlings. The new seedlings are growing in nursery.

3. CLOSING

Demonstration plot of *Planchonia valida* and *Dysoxylum densiflorum*, 20 Ha have been established in Tegal Bunder RPH Sumber Klampok, Village of Pejarakan, District of Buleleng.

The growth percentage of the species was 97.5% on February 2008 and then decreased to be 25.12% for *P. valida* and 4.75% for *D. densiflorum* on July 2009. Furthermore, the maintenance of the demonstration plot would be handled by Bali Provincial Forestry Service and Regional Tree Seed Centre for Bali and Nusa Tenggara. In forthcoming rainy season on December 2009, they would be replaced the death trees both *P. valida* and *D. densiflorum* with new seedlings.