

Quick Planting of Denuded Bamboo-Forests for Their Improvement

Chôsuke TAMARI

I. Introduction

The denuded bamboo-forests, consisting of *Pleioblastus Simoni* Nakai ("Medake") and other species, are widely found in southern Kyushu. It is considered, as reported by Nishida,¹⁾ that the forest is an association on the course of the plant succession in this region which has altered from the waste land produced in consequence of the careless destruction of canopied broad-leaved forests. As this wild bamboo-forest is invaded very slowly by shade-giving young trees, it is destined to return to a former broad-leaved forest after the lapse of long time as many as 50 years.

The bamboo-forest is a menance not only to the forestry but also to the agriculture, the powerful rhizomes spreading so widely that adjacent fields and forests are shaded and deprived of fertilizers. The only method to prevent such invasion into them is the digging of a ditch around them. Until now, as the method of improvement of the forest, the following planting which requires much labour and expense has been performed: The bamboo-forest is cut over and burned in summer when both the soil and the rhizomes are dry, repeatedly for two or three years, and when rhizomes become weakened, Japanese black pines (*Pinus Thunbergi* Parl.) are planted, which are good for making land dry, and afterwards one or two weedings are given every year. Thus after a period of about 20 years has elapsed, a black pine forest is completed. The author, however, in only two years, succeeded in the control of the denuded bamboo-forest and in the improvement of the soil as well, by planting Green Wattle (*Acacia mollissima* Willd.) which usually serves various arboricultural plantings. This account is given of the author's experiment just mentioned.

II. Experiment

A. Experimental land (Habitat). a) Locality: Toso Tagamichô, Kagoshima City (the owner: Mr. K. Kuroda). b) Area: About 30 m². c) Topography: About 30 m in altitude. Open eastward; north and westward enclosed by miscellaneous trees, which help to protect the place from cold wind, but the east wind is free to come without any obstruction, and pine trees in the south serve as wind breaks. A slope faced east with an angle of 20 degrees. The place is cultivated into terraced dry fields. d) Soils: Humus volcanic ash soils covering over "Shirasu" plateau. Water level in the soil is very low; especially the top of the land is dry. pH=6. Humus is 10 cm deep on an average. e) Climate: Annual mean temperature is 16°C (−3° in minimum and

1) Nishida, M. Über die Vegetation und Aufforstung am Lehrforst Takakuma. Bull. Kagoshima Imp. Coll. Agr. & For. (Dedicated to the 25th Anniversary) II. pp. 323-346, 1934 (in Japanese).

34°C in maximum). The morning sunshine is perfect, but as it is enclosed north and west, the sunshine is not perfect all day. Precipitation is much from March to June, decreases in July and August and increases again in September and October. f) Vegetation: *Pleioblastus* which is 1 m on an average in height (1.5–0.3 m) is grown at intervals of about 30 cm.

B. Experimental work. On October 6th, 1949, the broken forest of *Pleioblastus* just mentioned was cut over, leaving the rhizomes untouched, and then a potted one-year-old Green Wattle was planted in each square meter; pigsty manure of about 1.9 kg per plant was applied as a basic manure. There is no trouble to burn rhizomes or to dig them out so as to destroy bamboo, and the cut bamboo is utilized for various materials.

C. Results. When the rainy season (June) in the next year passed, the sprouts of *Pleioblastus* were cut and laid at the base of Green Wattle in order to utilize them as fertilizer after their decomposition. In autumn when Green Wattle ceased to grow, they reached over 2 m in height. *Pleioblastus* which sprouted in the shadow of Green Wattle from their rhizome and grew ill seemed barely alive. In the next autumn (1951) Green Wattle was 6 meters in height on the average, its branches and leaves extending all over 3.5 meters, and *Pleioblastus* was made to grow with difficulty. Sprouted *Pleioblastus* was cut up once more to be utilized, and cleaning was given to the forest. After that no planting method was used at all.

III. Expense until Green Wattle forest becomes canopied and "Medake" weakened

Art	Expense	Remark
Expense of seedling	60 Yen	Planted area, 30 m ²
" fertilizer material	100 "	Including costs of transportation and manuring
" weeding	150 "	
Total	310 "	

IV. Conclusion

As related above, the denuded bamboo-forest is, in such a short time as one year and a half, displaced by the canopied Green Wattle forest, where *Pleioblastus* weakened merely sprouts as ill as grass bush. Moreover, the soil becomes much fertile by the root-nodules on the roots of Green Wattle. The forest established like this manner is one of the forests of evergreen broad-leaved trees, which is reached without passing through such a middle phase of plant succession as Japanese black pine forest in southern Kyushu. From the standpoint of economic forestry, it is not necessary for us to stick so firmly to the durability of the forest as aesthetic or protecting forest. Therefore, the author believes that it is of importance to destroy denuded bamboo-forests and improve the areas into good forests by promoting a large-scale farm-forestry, lately called the arboricultural planting.