

## Native Environment and Growth Characteristics of *Dendropanax morbifera* Lev. In Korea

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### ABSTRACT

This study was carried out to obtain basic environmental information of the native area and growth characteristics at different age of *Dendropanax morbifera* LEV. in the southern Korea. The *Dendropanax morbifera* LEV. was grown naturally at Wando, Cheju(Mt. Halla), Yecheon(Kermoon island), Sinan(Hong island), Jindo(Mt. Chermchill) and Haenam(Mt. Taeroon), all between 30 to 450 m above the sea level. The soil characteristics of the native area had a pH of 5.3 to 5.4 with 8.4 to 9.8% content of organic matter and 18.2 to 21.3% soil moisture. Flowering starting in the middle of July begun when the trees were 6 years old. Six year old trees are 129 cm in stem height, 34 mm in stem diameter, 15.4 in number of leaves with petioles 12.9 cm long. Xylem sap can be obtained from over 10 year old trees that grew well and have over 10 cm stems in diameter.

**Key words:** *Dendropanax morbifera*, native environment, growth characteristics

### INTRODUCTION

*Dendropanax morbifera* LEV. is distributed in southern parts of Korea from the warm temperature zone of Japan, and the subtropical zone and Taiwan. Parts of *Dendropanax morbifera* can be used for medicinal purpose, but mainly the milky liquid is used as resin paint and varnish on a traditional yellow lacquer handicraft. Therefore, this study was carried out to obtain basic environmental information of the native area and growth characteristics at different age of *Dendropanax morbifera* LEV. in southern part of Korea.

### MATERIALS AND METHODS

Cultivation experiment of *Dendropanax morbifera* was carried out at Wando subtropical experiment station in Chonnam from 1990 to 1995 and native area of *Dendropanax*

*morbifera* investigated at a hillock of Taeyari near the Wando experiment station, Bogildo and Haenam in southern part of Korea. We studied altitude, slope, aspect, topography, soil color and moisture, and light using a Quadrat by phytosociological method. The weather situation of native area was investigated at Wando and soil of 10cm under soil surface was analyzed at Taeyari, Bogildo, and Haenam. To investigate growth characteristics in different tree age, seed was sown in a pot at April every year from 1990 to 1995.

### RESULTS AND DISCUSSION

*Dendropanax morbifera* LEV. was grown naturally at Wando Cheju(Mt.Halla), Yecheon(Kermoon island), Sinan(Hong island), Jindo(Mt. Chermchill) and Haenam(Mt. Taedoon) in Korea. The native of *Dendropanax morbifera* was distributed 30 to 280m above sea level at Taeyari, 150 to 200m at Bogildo. But *Dendropanax morbifera* was

Table 1. General description of the native area of *Dendropanax morbifera*.

Native Area	Altitude (m)	Sloping degree	Aspect <sup>1)</sup>	Topography	Soil		Light
					Color <sup>2)</sup>	Moisture <sup>3)</sup>	
Exp.Field	5~10	0	SW	Flatland	YB	OM	SSP
Taeyari	30~200	10~15	SE	Slant	G	OM	SP
Bogildo	150~280	5~10	SE	Slant	G	OM	SP
Haenam	100~200	5~20	SE	Valley	G	OM	SSP

1) : SW(South West), SE(South east)

2) : YB(Yellowish Brown), G(gray)

3) : OM(Optimum Moisture)

4) : SSP(Semi-sun Plant), SP(Shade Plant)

cultivated very well at the field of Wando subtropical experiment station with 5 to 10m above sea level. The soil sloping degree of native area was 5 to 15 degree at Wando, but 5 to 20 degree at Haenam. The topography of native area was a slant toward southeast.

The soil of native area was gray color with optimum moisture. The growth of *Dendropanax morbifera* was not effected by light as a semi-sun plant. The annual mean temperature of native area was 13 to 14℃ and amount of rainfall was 1,200~1,300 mm. Therefore, Wando was good for culturing *Dendropanax morbifera*

The pH of soil in native area was 5.2 to 5.4 and organic matter was very high up to 10.8%. P205 content of soil in native area was 35.7 to 41.7 mg/L, C.E.S was 13.2 to 14.3 me/100g, and moisture rate was 18.2 to 21.3%

The results according to different tree age of *Dendropanax*

*morbifera* was shown as table 4.

The flowering of *Dendropanax morbifera* began from 6 years old tree. The flowering date was in the middle of July at Wando. The tree height was 7.6 cm at 1 year old tree, 130 cm at 6 years old tree and 549 cm at 10 years old tree. The stem diameter was 2.5 mm at 1 year old tree, 34.1 mm at 6 year old tree and 101 mm at 10 years old tree.

The sap of *Dendropanax morbifera* generally could collect at more than 10 years old tree with good growth more than 10cm stem diameter.

The number of leaf was 4 to 8 at 1 to 2 years old tree, and 10 to 16 at more than 3 years old tree. The petioles length less than 5.0cm at 3 years old tree but 12.9cm at 6 years old tree. The 6 years old tree could not treat as a adult tree because only more than 8 years old tree

Table 2. Meteorological characteristics of native area of *Dendropanax morbifera* (1990~1994).

Districts	Temp.(℃)			Amount of Rainfall (mm)
	Mean	Max	Min	
Exp. Field	13.9	19.0	12.0	1,200
Bogildo	14.1	19.2	12.4	1,280

Table 3. The soil characteristics of native area of *Dendropanax morbifera*.

Districts	PH (1:5)	OM (%)	P <sub>2</sub> O <sub>5</sub> (mg/l)	C.E.C. (me/100g)	Moisture rate (%)
Taeyari	5.2	9.8	35.7	13.2	18.2
Bogildo	5.2	8.4	41.7	14.3	21.3
Haenam	5.2	10.8	39.5	14.0	20.4

Table 4. Variation of growth traits according to different tree age of *Dendropanax morbifera*.

Tree Age	Flowering date	Tree height (cm)	Stem diameter	No. of leaf (ea)	Petiole length (cm)
One Year	-	7.6	2.5d <sup>1)</sup>	4.9c	2.3c
Two Year	-	16.8	3.4d	7.5b	3.7c
Three Year	-	41.7	9.4d	8.9b	4.6c
Four Year	-	55.7	16.5b	12.7a	7.1b
Five Year	-	110.4	20.5b	13.7a	10.7a
Six Year	Jul. 20	129.8	34.1a	15.4a	12.9a
Ten Year <sup>2)</sup>	Jul. 16	548.8	100.8	-	-

1) : Same alphabetical letters indicate nonsignificant difference at 0.05 probability level of DMRT.

2) : *Dendropanax morbifera* of native area(Wando)

could collect sap. Therefore, we require further examination for accelerating the growth and improving variety with high ability to produce sap of *Dendropanax morbifera*.

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