

# Evaluating Introduction and Productivity of Vietnam *Acacia* Hybrid in South China

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## Introduction

Some arbor species of *Acacia* were introduced to South China since 1970s. These species were used in plantations for lumber, fire forest belt and ecological production because of the fast-growing and Resistant to barren sites. Vietnam *Acacia* hybrid was selected by *A. mangium* across *A. auriculiformis*. *Acacia* hybrid has a better stem straightness and a smaller crown than its parents. Five clones was introduced from Vietnam by exchange forest seeds.

## Material and Methods

Five clones was introduced from Vietnam by exchange forest seeds. Four test plantation was built in South China including Jiangmen(JM), Hepu(HP), Zhangzhou(ZZ) and Chuxiong(CX). Each site was random block setting and repeated 4 times. *A. mangium* was as the trial control(CK). Seedlings were planted as 3m×3m square and planting spacing was 2.5m×3.0m(Table 1).

Table 1 Description of the calibration and validation study sites.

Location	Site	Lat.(N)	Alt.(E)	Mean annual	Mean annual	Stocking at planting(trees ha <sup>-1</sup> )	Soil type	Soil thickness(m)	Soil pH
Guangdong Province	Jiangmen (JM)	22.7	112.9	22.6	1700	1333	Latosol	1.5	5.0
Guangxi Province	Hepu (HP)	21.6	109.2	22.4	1800	1111	Latosolic Red Soil	2.0	5.0
Fujian Province	Zhangzhou (ZZ)	24.3	117.6	21.5	1563	1333	Latosol	1.5	6.0
Yunnan Province	Chuxiong (CX)	24.3	101.6	15.0	927	1333	Latosolic Red Soil	1.0	6.0

## Results and Discussion

Table 2 Mean of growth value of *Acacia* hybrid on 4 sites(2 years old)

Variety	Mean of tree height(m)				Mean of sites(m)
	JM	ZZ	HP	CX	
CK	2.8	4.1	3.1	0.6	2.7
10	3.8	4.2	3.2	1.8	3.3
16	4.1	4.8	3.4	2.0	3.6
71	4.4	4.9	3.2	1.0	3.4
73	4.2	5.2	3.2	1.3	3.5
75	3.7	4.6	3.2	1.8	3.3

Variety	Mean of tree DBH(cm)				Mean of sites(cm)
	JM	ZZ	HP	CX	
CK	2.8	3.7	3.8	0.3	2.7
10	3.8	3.4	4.7	0.7	3.2
16	3.8	3.7	4.2	1.0	3.2
71	4.2	3.9	4.1	0.4	3.2
73	3.8	4.2	5	0.6	3.4
75	3.7	3.6	3.6	0.7	2.9

Variety	Mean of tree canopy(m)				Mean of sites(m)
	JM	ZZ	HP	CX	
CK	1.54	2.13	3.07	0.45	1.8
10	2.55	3.06	3.21	1.26	2.5
16	2.33	2.67	3.36	1.3	2.4
71	2.47	3.05	3.15	1.09	2.4
73	2.37	3.38	3.24	0.85	2.5
75	2.51	3.21	3.22	1.22	2.5

## Results and Discussion

*Acacia* hybrid could grow, flower and fruit at the four sites and productivity were all higher than CK after two years. Five hybrid *Acacia* clones were all higher than CK on high growth character, and were ranked as ZZ>JM>HP>CX. The height of clone No. 73 was 5.2m and more 24% than CK. There were significant difference on diameter of breast height(DBH) between clones and CK at the four sites. Clones DBH were all bigger than CK and ranked as HP>ZZ=JM>CX. The DBH of clone No. 73 was 5.0cm and more 35% than CK. The individual volume of clone No. 73 was 0.0042m<sup>3</sup> at HP site. The wind-fall rate of *Acacia* hybrid clones were 35% , CK was 67% after typhoon Rammasun 2014 at HP site. The wind folding resistance of each clone of typhoon Rammasun was in order No.73= No.75>No.10>No.71 >No.16>CK. It was short-term snowed at CX site December 2013. The cold resistance which was evaluated by survival rate were No. 10>No. 73>No. 16= No. 75>CK>No. 71.

## Conclusion

According to the comprehensive evaluation of different weight of volume(60%), stem sharp(20%), survival rate(10%) and the stress resistance(10%), clone No.73 was the best one, followed by No.71 and No.16.

## Acknowledgments



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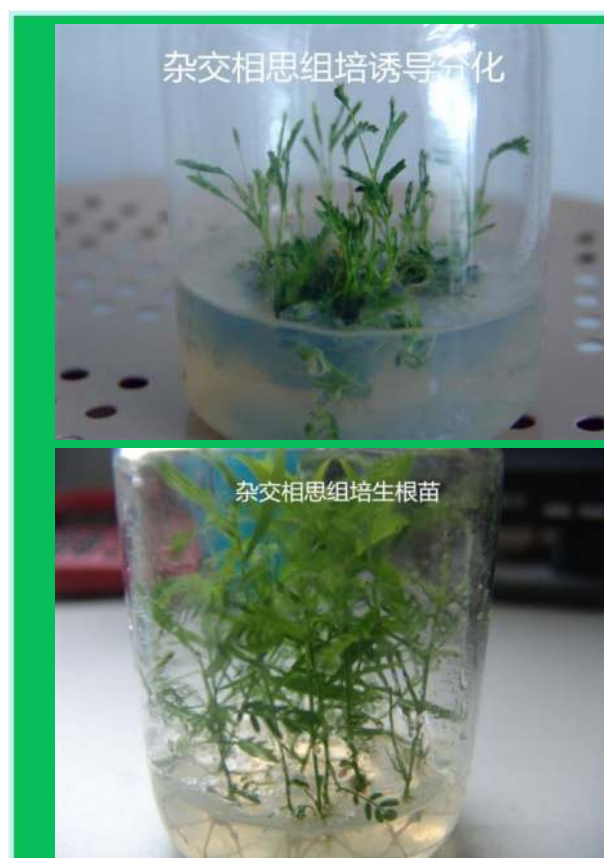


Figure1: Tissue culture of *Acacia* hybrid



Figure2: Pilot plantation of *Acacia* hybrid(3 years old, Jiangmen, China)



Figure3: Individual of *Acacia* hybrid(up) ,cross section of the 4 a *Acacia* hybrid and CK(down)



Figure4: Certificate of improved forestry varieties by SFGA 2018