

Rattan cultivation for edible shoot production in Southern China

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1. Introduction

- **Rattan as a NTFP**
 - Second only to timber in some Asian countries in economic importance
 - The global trade worth US\$ 2 billion and domestic US\$ 2.5 million (INBAR, 2007)
 - Half a million people employed in rattan industry

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1. Introduction

- **Rattan industry in China – cane subsector**
 - Wild resources almost exhausted and no high quality rattans exist
 - Earnings from selling canes collected from the wild not enough to pay for the labour hired
 - Small processing and manufacturing workshops still active, but the biggest rattan manufacturer went broke in 2006

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1. Introduction

- **Rattan industry in China – shoot subsector**
 - Traditionally consumed by local people in Yunnan, Hainan and Guangxi
 - Inspired to try cultivating rattan as edible shoots, from Lao and Thai experience: 1 shoot = 1 kilo of rice in Thailand; 1 kilo of dried shoots = US\$5 locally in Vientiane of Lao, and US\$50 or more sold to USA

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1. Introduction

- **Rattan industry in China – shoot subsector**
 - People in Southern China like to try something new, especially the Cantonese
 - ITTO's funding made us possible to try cultivating rattan as a kind of vegetables.

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2. Field trials

- **Test species**
 - *Daemonorops margaritae*, a clustering species, shoot or tip edible, produced 56.8 stems per clump of 11-year old
- **Study site**
 - Jiuwantan Forest Farm of Huadu District, Guangzhou City

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2. Field trials

- **Test species**

Daemonorops margaritae, a clustering rattan species native to China was selected, produces 56.8 stems per clump at 11 years old



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2. Field trials

- **Study site**
 - Sandy loam soil, pH 5.7-6.2, planted with longan, wampee, papaya and some vegetables before trials begun
 - Complete soil cultivation (to a depth of 25 cm)
 - Building of planting beds

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2. Field trials

- **Study site**



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2. Field trials

- **Trials conducted**
 - Initially three trials planned: spacing, fertilization and irrigation
 - Irrigation trial terminated 1.5 months later as seedlings in the non-irrigation plots tended to die from non-watering
 - Only spacing and fertilization trials reported

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2. Field trials

- **Study design**
 - Spacings: 0.5 x 0.5 (S1), 0.5 x 1.0 (S2) and 1.0 x 1.0 m (S3)
 - Fertilizers: bio-fermented manure (fermented fowl dung, ~45% organic matter) (F1), NPK compound fertilizer (15-15-15) (F2) and a mixture N, P & K fertilizer (F3): 1000 g F1, 100 g F2 and 50 g F3 per plant

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2. Field trials

- **Study design**
 - Two trials were established in randomized block design with four replicates

Picture shows the planting site, 10 days after planting



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2. Field trials

- **Measurement**
 - 3 month intervals for the first year after planting, and than 6 months
 - Survival, height, length of stem, number of leaves recorded, 20 seedlings per sub-plot
 - Sample harvest taken 20 months after planting

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2. Field trials

- **Measurement**

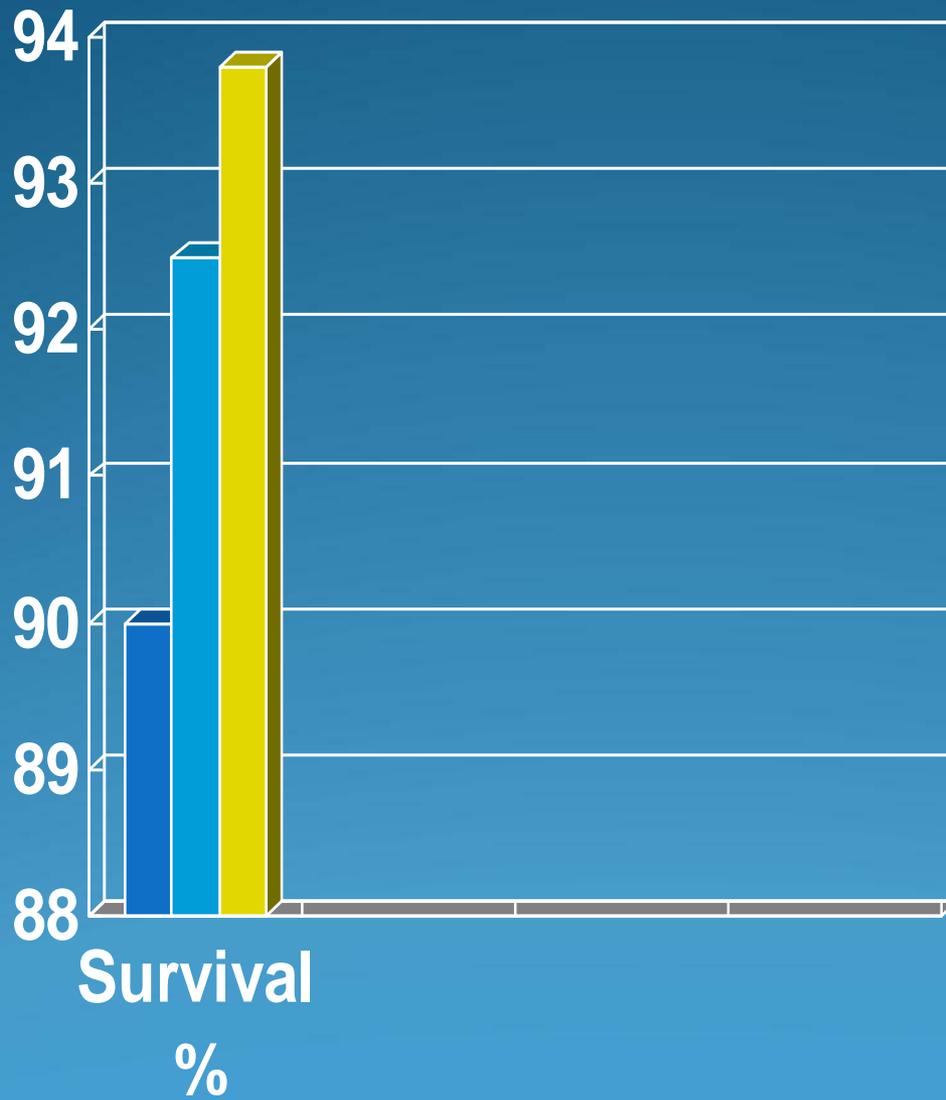
Length of stem - from the ground to the base of the highest expanded leaf

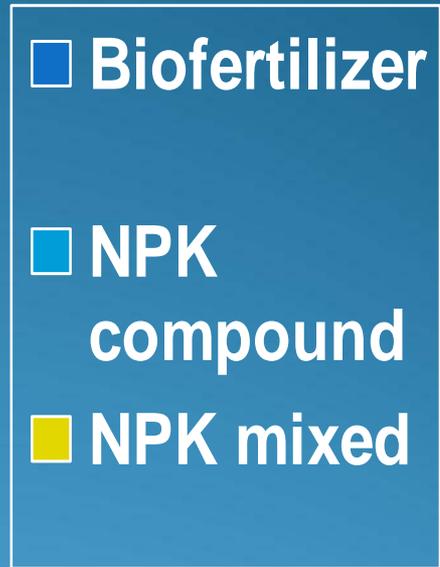
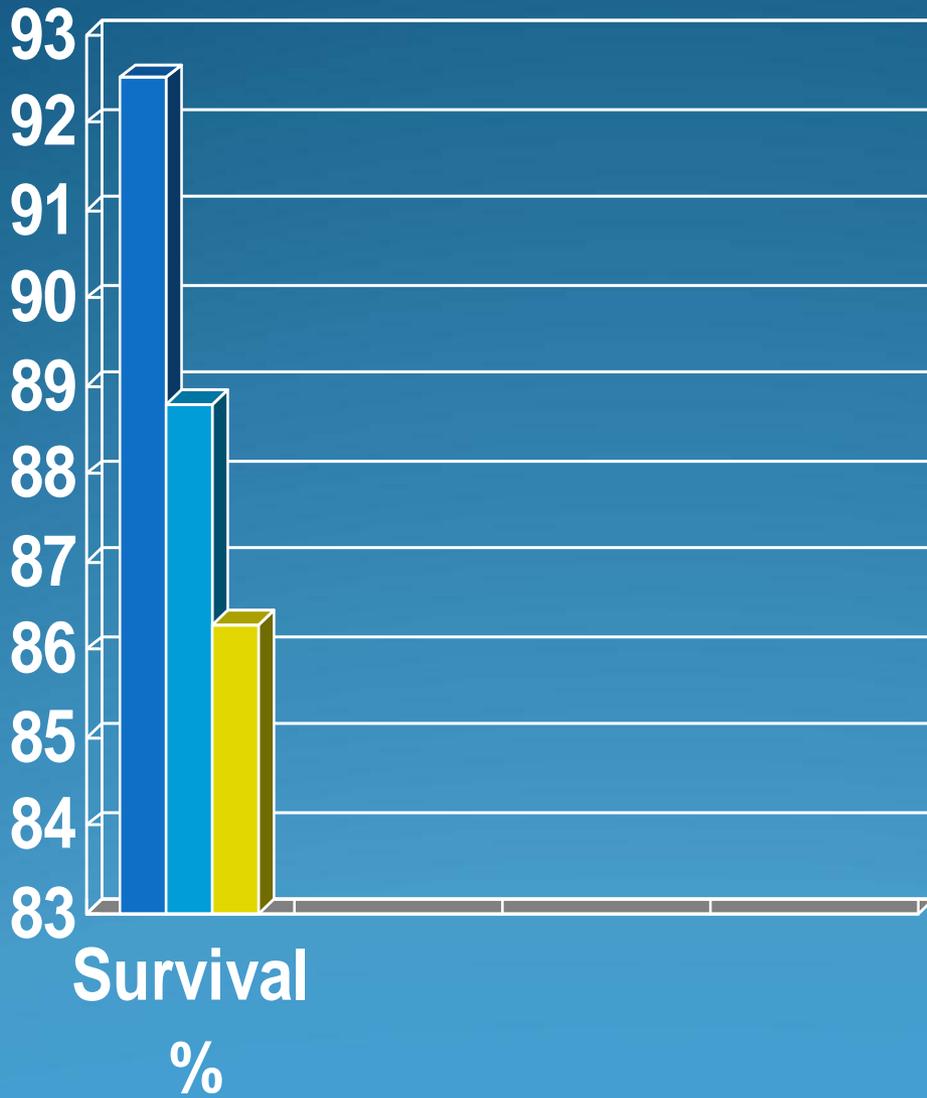


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3. Results and discussion

- **Survival - 30 months after planting**
 - Recorded 100% of survival percentage at 9 months after planting under full sunlight and irrigation
 - 86-93% a year after planting due to damages by larvae and mice
 - No compression in survival done as uncertain reasons

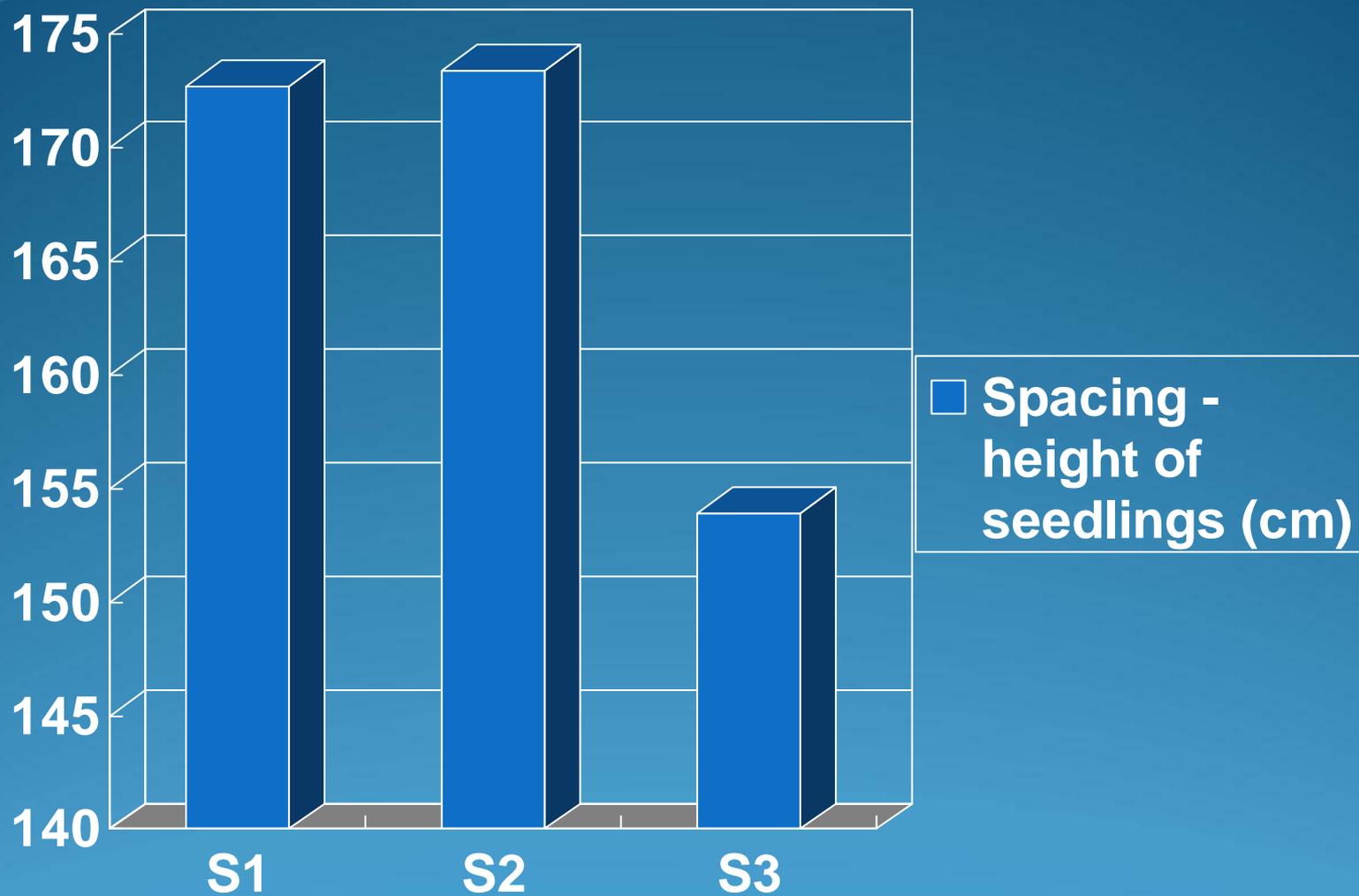


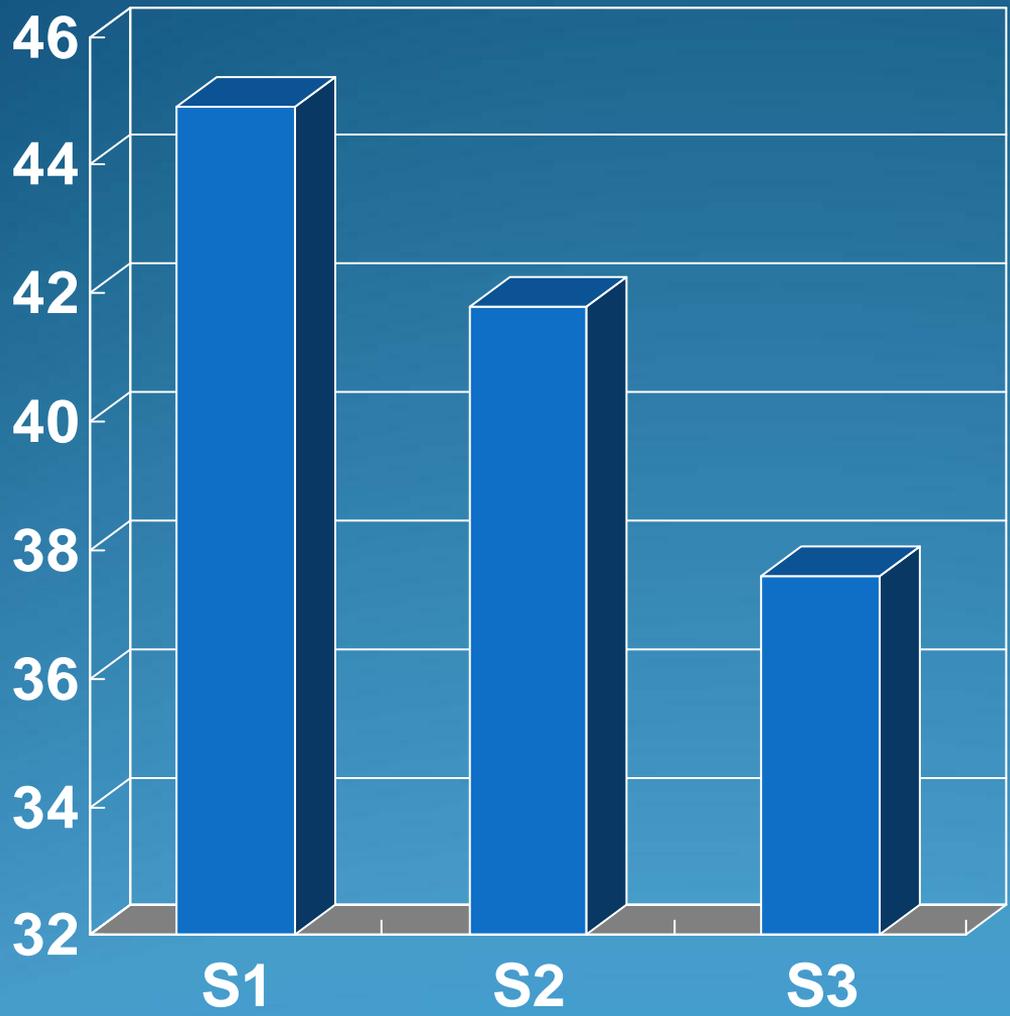


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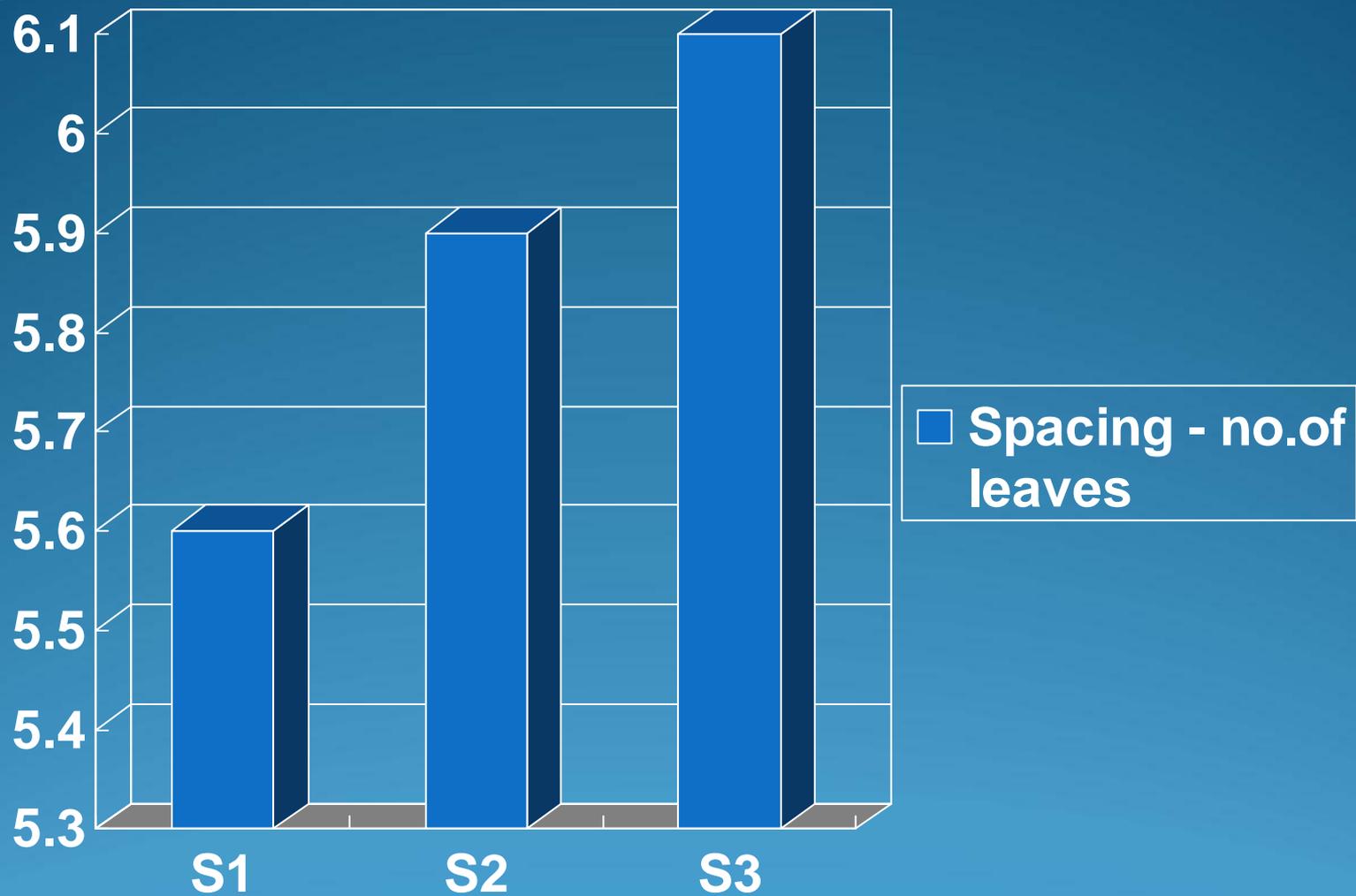
3. Results and discussion

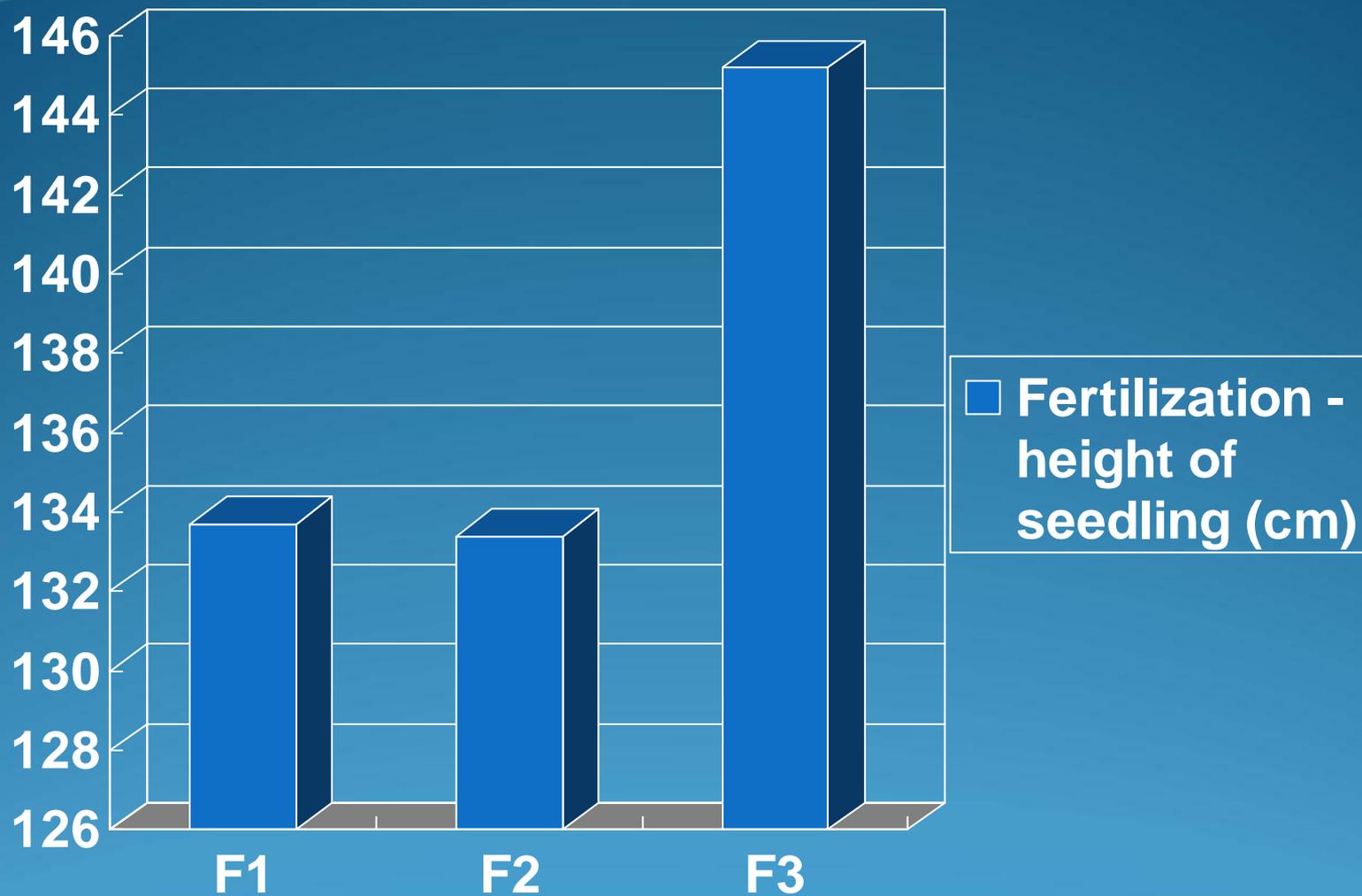
- **Height, length of stem and number of leaves/seedling - 30 months after planting**
 - Statistically significant differences in spacing trial, closer spacings produced greater height, length of stem and less leaves
 - No significant difference in the fertilization trial, probably because of irrigation?

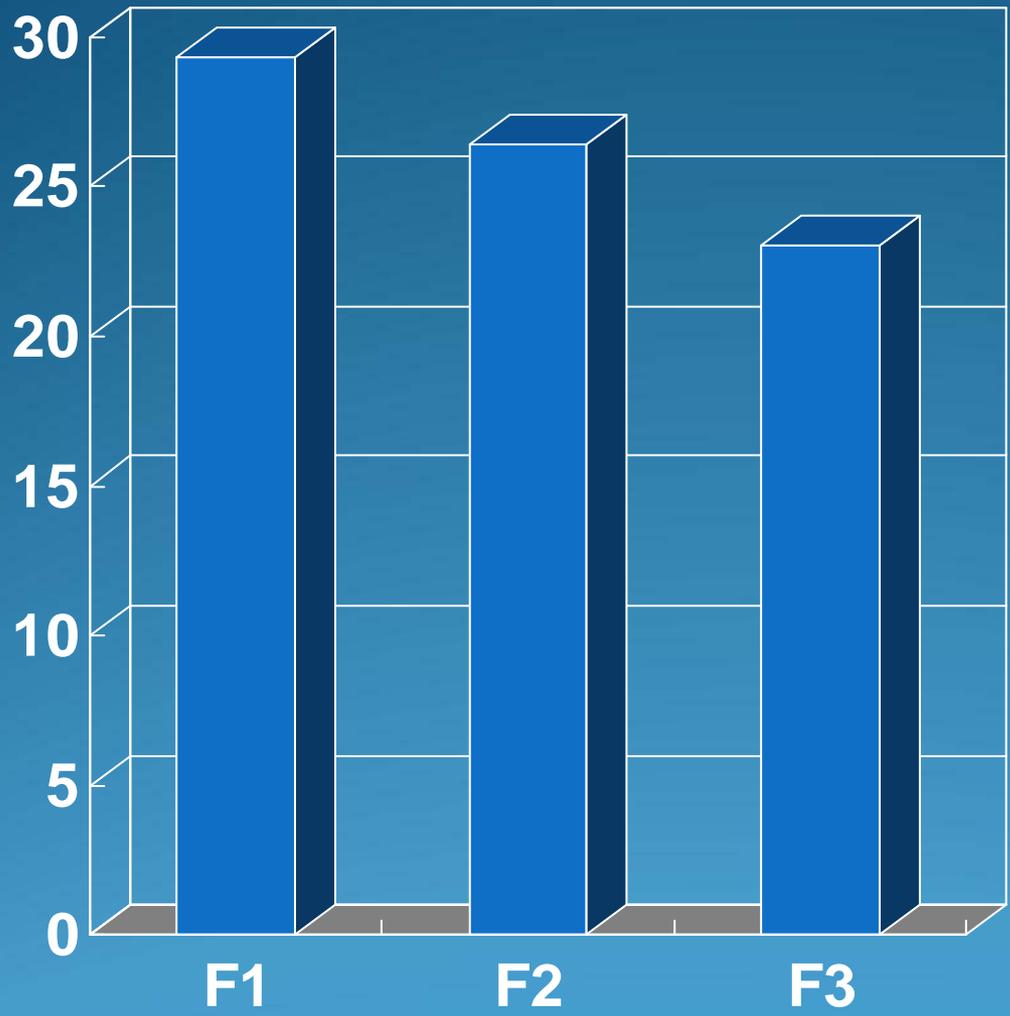




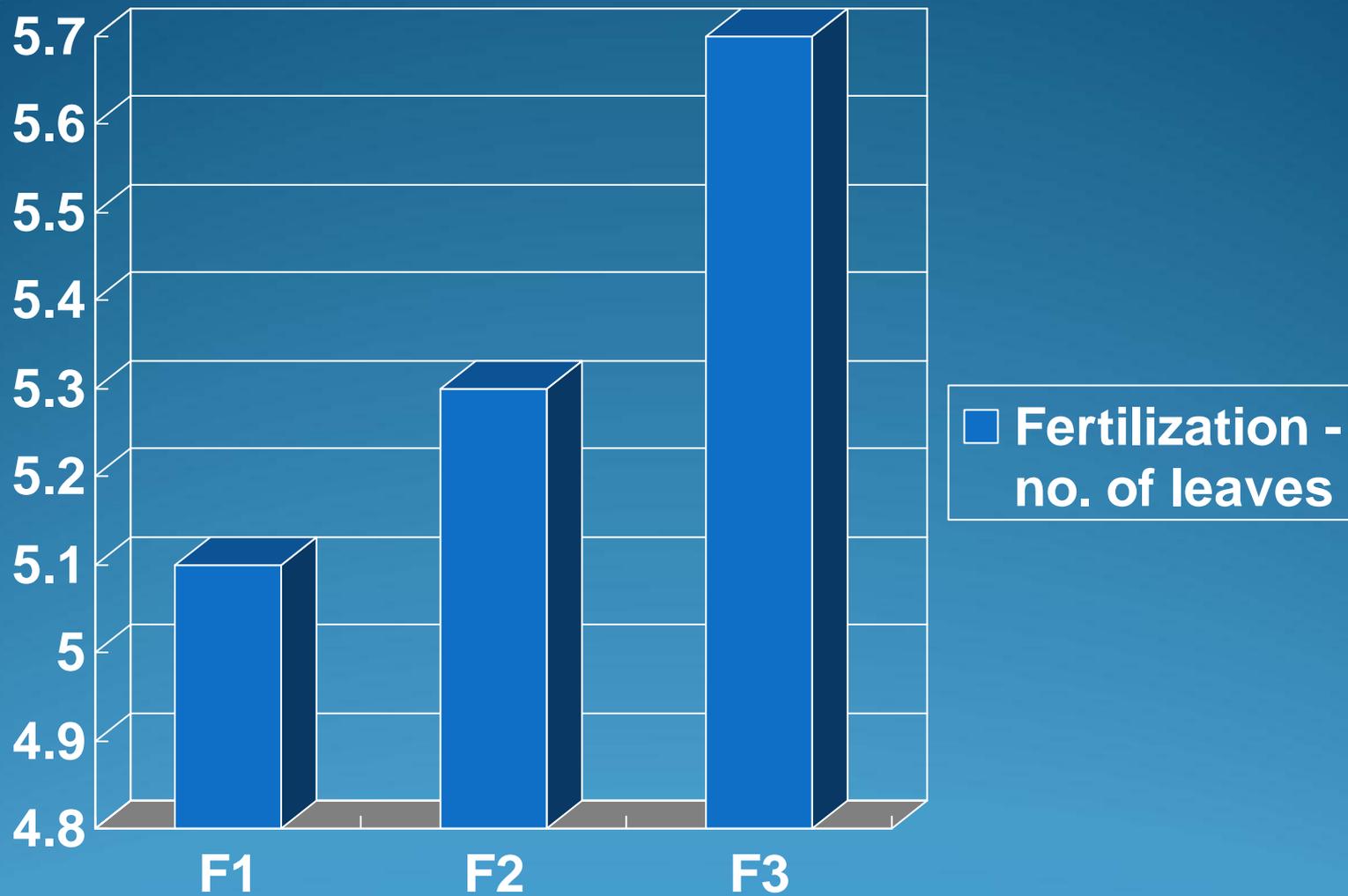
■ Spacing -
length of stem
(cm)







■ Fertilization -
length of stem
(cm)



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3. Results and discussion

- **Shoot production**
 - 100 seedlings harvested 20 months after planting
 - 41.5% (18.8/45.3 cm) of the stem edible in terms of length
 - 8.2% (14.9/182.2 g) of the stem edible in terms of weight
 - Low productivity in the first harvest

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3. Results and discussion

- **Shoot production**



Rattan cultivation for edible shoot production in Southern China

3. Results and discussion



Cultivation



Harvesting



Processing



Utilization

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4. Conclusions

- **Rattan shoots are edible**
 - A kind of high protein and low fat of forest vegetables, compared with bamboo shoots
- **More research needed**
 - First attempt to cultivate edible rattan in China
- **Market uncertain**
 - Taste good, market potential uncertain

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4. Conclusions

- **Good news**
 - Very high bio-active components, 50 times the common vegetables, good for anti-aging
 - Extraction of “Dragon blood” under way

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5. Acknowledgements

- **ITTO, Chinese government, especially Guangzhou Municipal Forestry Bureau**
- **The NTFP Conference organizers' invitation**

Thank you for attention!