

Socio-economic benefit of rattan: a case study in Nanchang village, Baoting county, Hainan province, P. R. China

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Abstract—Rattans are climbing spiny plants that are regarded as an important kind of commercial non-timber forest products. A case study of the socio-economic benefit on the role of rattan in life was carried out in Nanchang village, Baoting county, Hainan province, P. R. China, to generate basic information and to provide some references for the program of anti-poverty. The 40 households with a total population of 217 all depend on agriculture. Each household owns forestland, varying in area from 0.67 to 2.67 ha. Forestland provides monetary income from rattan canes and fruits. The yield of rattan products fluctuates between years and households. On average, the income from rattan sales contributed about 66% to the total income in the village and provided more than 50% income for nearly all households during the three years of the study. It is believed that the development of rattan planting and improvement on management technique, together with the conditional access to the collection of rattan canes will not only increase the income of households but also help to alleviate the poverty in Nanchang village.

Key words: Socio-economic benefit; rattan; Nanchang village.

INTRODUCTION

Rattans are climbing palms under the subfamily Calamoideae of the family Palmae [1]. As a kind of multipurpose plant found in the forests in tropical and south subtropical regions, rattans are of great economic value and become an important forest product only second to wood and bamboo [2]. Humans have used rattans for livelihood and subsistence for many centuries throughout the documented history of mankind [3]. So far, the great importance of rattan and its products to the thriving domestic and international trade has been widely discussed [2–5], and the considerable contribution of the harvesting of rattan resource to rural area and cottage industry has also been expounded [6–9]. In contrast, few efforts have been focused on

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quantitative estimates of the true economics/social value of rattan [3], let alone detailed description of socio-economic benefit of rattan at village level. Therefore, it is important to study the contribution of rattan to household income and village economy. Nanchang village is a small village in Baoting County, Hainan province, P. R. China. Although the average income in the village was low due to the mountainous area and poor education, as well as undeveloped industry, villagers possessed rich experience in protecting the ecological habitat and collecting rattan products, and managed to increase their income and maintain their livelihood by exploitation of cane and fruits of rattan. In 2002, the provincial government initiated a program of development of bamboo and rattan resources and established a rattan demonstration base in Nanchang village in an attempt to support the poor and to increase the income of villagers based on discussion and consultation with relevant experts [2, 10]. With the purpose of generating information on the socio-economic benefit of rattan to household income and providing references for the program of development of bamboo and rattan resources, a case study was carried out in Nanchang village in 2002.

STUDY AREA

Nanchang village is situated at $18^{\circ}36'$ North latitude and $109^{\circ}30'$ East longitude, belonging to Baoting County, Hainan province, P. R. China (Fig. 1). The topography is undulating terrain with some patches of low land where people grow rice. The elevation ranges from 550 m to 780 m. The area enjoys a tropical monsoon climate, characterized by long sunshine period, plentiful heat, abundant rainfall and obvious monsoon change. The frost-free period is 361 days with a sunshine duration of 1920 hours. The mean annual temperature is 24.5°C with the highest temperature

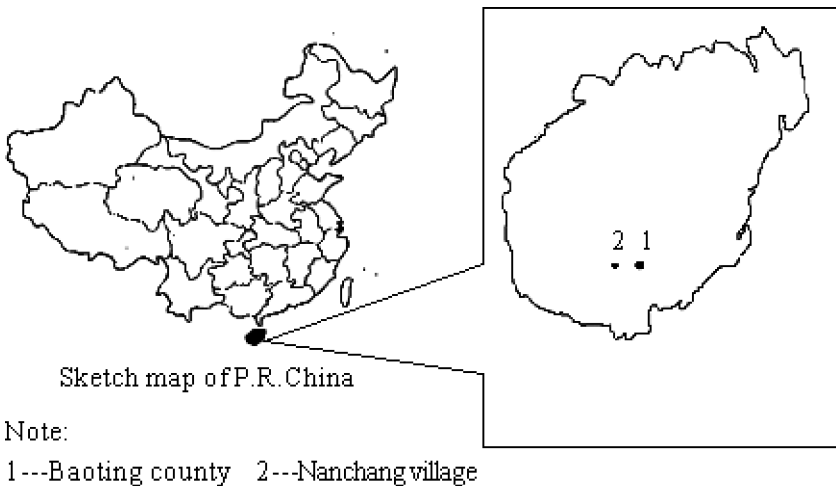


Figure 1. Sketch map of P. R. China with Baoting county and Nanchang village.

of 28.1°C in June and the lowest of 19.4°C in January, the mean annual precipitation is 1760 mm, occurring mostly from April to October.

All of the villagers are of Miao nationality. They are all farmers and dependent on agriculture. The villagers used to live in the remote mountains where they set up their houses thatched with rattan foliage and supported with bamboo. Aided by the provincial government in 1964, they moved into new brick houses and resettled in what is now Nanchang village. Tap water has been installed in 2000 aided by the township government. All households have been furnished with line and electricity. There are no public toilet facilities but only some simple private toilets, which together with excreta of livestock beside the house create a sanitation problem in the village. A town-level road in front of the village, linking with Baoting County, provides some convenience for the villagers. There is no health sub-centre, post office or primary school in the village, but these infrastructural facilities are available at Maogan township, 1 kilometre away from the village. There are daily and weekly markets in the town.

METHODS

In December 2002, a face-to-face questionnaire survey was conducted with the help of the director of Baoting County's forestry bureau, two officers of Maogan township and the head of Nanchang village. Prior to the questionnaire survey, a structured questionnaire was compiled, covering a wide array of subjects related to the number and age of people in the family, the area forestland, the source and amount of the income etc. (in 1999, 2001 and 2002). In order to make a smooth interview, the purpose of the survey was well explained and the full anonymity of respondents was guaranteed. During the process, all households were surveyed and heads of the household were interviewed with the help of the head of Nanchang village who served as an interpreter to overcome the barrier of communication when necessary. All the observations and points raised by interviewees were noted. Extensive interviews were also conducted and informal discussions were held with older farmers to ascertain the past utilization history of rattan utilization. In addition, the yield of canes and rattan fruits in 1999, 2001 and 2002 were surveyed together with the price of these products.

RESULTS

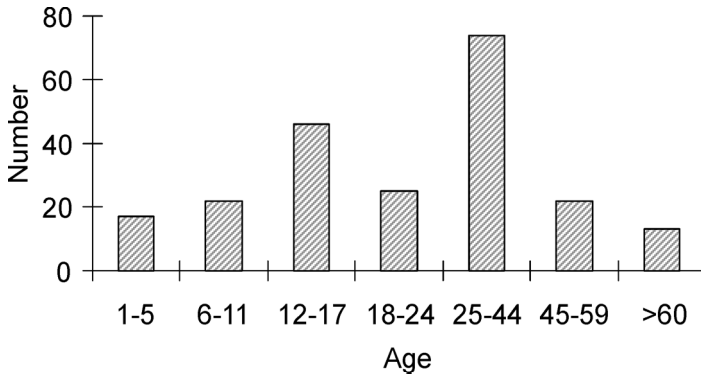
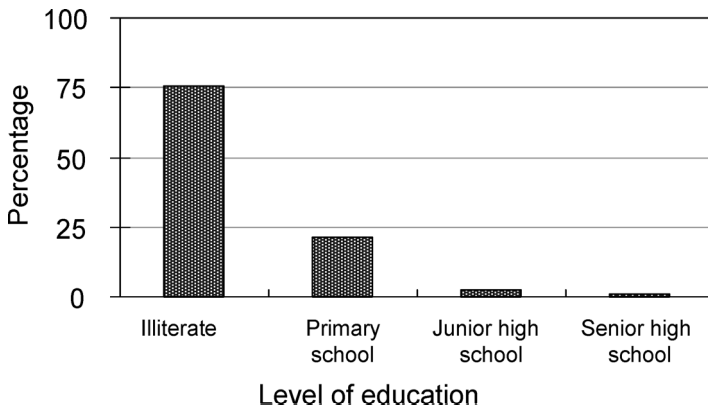
Demography characteristics

In 2002 Nanchang village had 40 households and a total population of 217. The male female sex ratio was 122:95. The number of people per household ranged from 4 to 7, with most households having 5 to 6 people (Table 1). Distribution of population in 2002 is shown in Fig. 2 according to age. Most people were 12–44

Table 1.

Composition of the households in 2002

Number of person per family	4	5	6	7
Number of families	6	16	13	5

**Figure 2.** Distribution of population according to age in study area in 2002.**Figure 3.** Educational status of villagers in study area in 2002.

years old and the number of these people is about 2/3 of the total while the number of the rest, including those younger than 11 and older than 60, only accounted for about 1/3 of all people. According to the local saying that person not younger than 18 can be regarded as a labourer, more than 60% of the total population were to agricultural labourers, so the work of collecting rattan canes and fruits can be done without employing outside labour. However, unlike the labour forces, the level of education level in the study area was quite low (Fig. 3). Most of villagers were illiterate and only a few villagers were educated. It was remarkable that almost all of those educated villagers were children.

Table 2.

The area of different forestlands per household in Nanchang village

Collective land		Private land	
Area (ha)	Number of families	Area (ha)	Number of families
0.40	2	0.67	12
0.67	13	0.80	3
0.80	15	1.00	9
1.00	6	1.33	13
1.20	2	2.00	1
2.40	1	2.33	1
4.00	1	2.67	1

The type and area of forestland

There are two types of forestland in the village, one is collective and the other is private. In 1994 the central provincial government announced an unprecedented 'National Natural Forest Protection Program' in an attempt to protect the environment [11, 12]. This ambitious program essentially bans any logging in natural forest. The collective forest belongs to natural forest, so any logging of woody plants is forbidden since. However, the owner is still allowed to manage and collect non-timber forest products such as rattans and medicine plants in collective forest land in order to provide a source of income. In contrast, the owner of private forestland gains full access to any forest products freely, including logging wood.

The area of private forestland was 43.7 ha, a bit higher than that of collective land (36.3 ha). Each household owned two types of forestland, but most families had an area of two types less than 1.5 ha both. The area of collective land per household ranged from 0.4 to 4 ha, while that of private varied from 0.67 to 2.67 ha (Table 2). The income level of each family was largely dependent on the size of forestland holding, that is to say, the more land he owned, the higher income he gained. Land was quite important to them because most of their income came from forestland.

The socio-economic benefit of rattan

According to the questionnaire survey, rattan has been used for various purposes in Nanchang village. Rattan leaf is often used to cover the ceiling of shed; the tender shoot of rattan is edible, being served as good vegetable in the season when cane collection is done; the cane is an excellent material for chair-making, binding and weaving; fruit was sometimes used for medical purpose. Therefore, rattan was closely linked with their daily life.

The income generated from rattan could be divided into two parts, one from cane and the other from rattan fruit. We were trying to collect the yield of both cane and fruit in each household, but failed to do so because most families remembered the income better than the yield of these products. Fortunately, the data of the total yield of these products in the village in different years are available from the

Table 3.
Yield of rattan products in different years

Rattan product	Year		
	1999	2001	2002
Rattan fruit (kg)	4000	24 000	5000
Rattan cane (pole)*	61 000	—	—

*The length of each pole is 3.6 m.

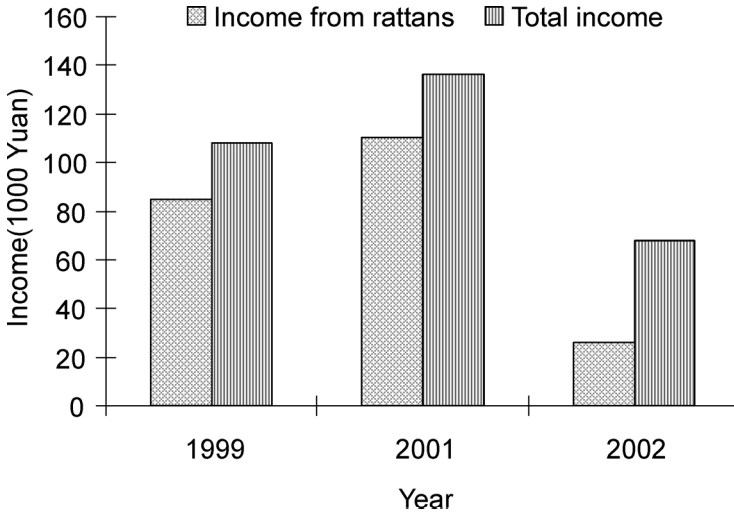


Figure 4. The income from rattan and its contribution to the total income.

forestry bureau of Baoting County (Table 3). The yield of rattan fruits and canes was discontinuous and wavy. In 1999 and 2002 the yield of rattan fruits was only 4000 kg and 5000 kg, respectively. The highest production of rattan fruits was recorded in 2001. Canes were only available in 1999. This fluctuation of production of cane and rattan fruits can be explained from two aspects. On the one hand, in 2000 villagers were not allowed to collect rattan fruits and canes by provincial government because the government was worried about the sustainable utilization of rattan products; since then, cane harvest has been banned but collection of rattan fruits has been allowed. On the other hand, typhoons struck the village twice, in 1999 and 2002, respectively, which caused a dramatic decrease of the production of rattan fruits.

Based on the yield of rattan products, the income sourced from rattans in different years was calculated. It is shown in Fig. 4 that the income from rattans varied from year to year. The income in 2001 was highest followed by in 1999 and in 2002.

Though there were some other sources of income besides rattan, the income from it made great contribution to the total income (Fig. 4). The percentage of income from rattan in the total income was at least 35%, even under the circumstance of

Table 4.

Mean percentage of rattan income in the total income per household in 3 years

Percentage (%)	31–40	41–50	51–60	61–70	71–80	81–90
Number of households	2	3	6	11	13	5

typhoon attack, and it could reach up to 80% in normal years. On average, rattan products contributed more than 60% to the total income of the village economy in 3 years, which indicates the great importance of rattan to the village.

At the household level, rattan also played an important role in family income (Table 4). All households got benefit from rattan to varied extent. Generally, for most households, more than half of the family income came from rattan.

CONCLUSIONS AND RECOMMENDATIONS

All households in Nanchang village had two types of forestland more or less, which in return provided them with major source of income for sustenance. Although other land use patterns were identified for a specific need, such as rice fields, the direct income was almost completely from forestland. The income from rattan was influenced by the forestland area to a large extent, indicating the real importance of forestland to the local villagers.

The income from rattan fluctuated from household to household and also varied in different years, closely correlated with the yield of rattan products. As a whole, most of villagers got more than half of their income from rattan that provided mean value of about 66% of income share to total income in the village in 3 years, despite the strike of a typhoon and the collection banning of rattan products, hence revealing the obvious and prominent socio-economic benefit of rattan to the studied village.

Although rattan did contribute much to the village economy, the mean value of rattan income per household was still low, thus leaving much to be improved. So far the income from rattan was confined to only one species, *Daemonorops Margaritae*. In fact, there are some excellent species, such as *Calamus simplicifolius* [13], left unexploited due to low species richness. Therefore, it is advisable to expand the planting of excellent species like *C. simplicifolius* by breeding. On the other hand, it is recommended that local government should make efforts to enhance the education level in the village and to enrich villagers' indigenous knowledge to improve the management technique [14] by organizing some training courses for them after the rattan demonstration base has been established. Finally, the provincial government had better give the villagers conditional access to collect the mature canes to improve their income.

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