Received: 21 Feb. 2025 | Revised: 24 Feb. 2025 | Accepted: 24 Feb. 2025 | Published online: 25 Feb. 2025
RESEARCH ARTICLE

Journal of Global Humanities and Social Sciences
2025,Vol. 6(2)64-69
DOI: 10.61360/BoniGHSS252017800205

Influence of Different Land Conditions on Yield and Quality of Dendrocalamus latiflorus Bamboo Shoots in Liuzhou City

Meihua Liang[1,*] & Jianhua Lan[1]
[1] *Guangxi Eco-Engineering Vocational And Technical College, China*

Abstract: Comparison and analysis of the differences in bamboo shoot size, edible rate and nutritional quality of bamboo shoots under different terrain conditions were carried out to provide a reference for the cultivation of highly efficient bamboo shoots of Moso bamboo. In the experiment, bamboo shoots were collected from three different slopes, namely upslope, mid-slope and downslope, and from four different slopes, namely north, north-east, south and north-west, to investigate and measure the indicators of bamboo shoot specification, palatability and nutritive quality of bamboo shoots. The results showed that different land conditions have certain effects on the size, edible rate and nutritional quality of bamboo shoots. The average weight, diameter and length of individual bamboo shoots in different slopes were the best in the upslope, but the edible rate was the highest in the downslope. The south slope favoured the growth of shoot weight, basal diameter and length, but had the lowest edible rate; the north slope had the highest edible rate although the shoots had the smallest individual morphological indexes, and the north-east and north-west slopes were in between. Fat was highest on the central slope. Ash, protein, crude fibre, tannin, oxalic acid and moisture were all upslope > middle slope > downslope, while soluble sugar was downslope > upslope > middle slope and fat was middle slope > downslope > upslope. The highest in fat, tannin, oxalic acid and moisture content were found in dendrocalamus latiflorus bamboo shoots from the south slope, while the highest in protein and crude fibre were found in the north slope, and the highest in ash and soluble sugar were found in the north-west slope.
Keywords: dendrocalamus latiflorus bamboo shoots; site conditions; shoot size; edible rate; nutritional quality

Introduction

China is the origin of bamboo shoots, with more than 500 species of bamboo shoots and more than 200 species of edible bamboo shoots (Huang & Lu, 2008). Dendrocalamus latiflorus, also known as Datou Bamboo and Sweet Bamboo, is a large bamboo species of the genus Bambusoideae (Bamboo subfamily) of the family Geamineae, and it is an important bamboo species of excellent bamboo shoots of great exploitation value in South China and Southwest China (Huang, 2011; Yi et al., 2008) . Bamboo shoots can be freshly eaten, and also can be made into dried bamboo shoots, canned bamboo shoots, sour bamboo shoots, because of its sweet bamboo shoots, bamboo shoot products are quite popular, and even exported to Japan, Europe and the United States and other countries (Cui & Zhao, 1997; Yu, 2004; Li, 2001).

Bamboo shoots contain rich nutrients, a large amount of crude fibre and a variety of amino acids and essential trace elements (Bhatt et al., 2003; Bhatt et al., 2005). Bamboo shoots due to nutrient-rich, sweet bamboo shoots, bamboo shoot products are quite popular, with a large market demand. In recent years, Guangxi, Guangdong, Sichuan, Fujian and other provinces on the development and utilisation of jatropha bamboo by leaps and bounds, the rapid expansion of the cultivation area, the scale of cultivation by the original decentralized management to the development of large-scale planting. Bamboo shoots are bamboo species adapted to a wide range of climatic and soil conditions, in the tropics, subtropics and warm temperate zones although there are bamboo shoots grow, but in different soil and climatic conditions, its growth and development, the amount of bamboo shoots and bamboo shoots are different in terms of the quality of the merits and demerits (Zheng et al., 2019). In recent years, with the development of snail powder industry, the cultivation area of bamboo in Liuzhou City has been expanding, but in the process of operation, due to blind seed introduction, lack of understanding of the characteristics of the bamboo species, poor

Corresponding Author: Meihua Liang
Guangxi Eco-Engineering Vocational And Technical College, China
Email: 66563839@qq.com

management, so that the nutritional growth of bamboo forests is poor, the yield varies greatly, and the quality of bamboo shoots is uneven. This study investigates the growth environment of bamboo in Liuzhou City, analyses the impact of different terrain conditions on the yield and quality of bamboo shoots, and aims to provide reference for the scientific cultivation of bamboo shoots.

1. Materials and Methods

1.1. Overview of the study area

The experimental site was set up in Liucheng County, Liuzhou City, Guangxi Zhuang Autonomous Region, which is located at 24°34′N, 109°25′E, with typical subtropical monsoon climate, hot summer and cold winter, four distinct seasons, and abundant sunshine, with an average annual precipitation of about 1330mm, an average annual temperature of 20.3℃, an extreme maximum temperature of 39.5℃ in July, and an extreme minimum temperature of 9.8℃ in January, with the lowest temperature of 9.8℃. The average annual frost-free period is 332 d. The terrain is mainly low hills, with an altitude of about 400-600 m. It is a suitable area for the growth of moso bamboo.

1.2. Experimental materials

In early March 2023, in Baiya Village, Shibeiping Town, Liucheng County, we selected five sample plots of hemp bamboo forests of 4-5 years old with basically the same management measures and different ground conditions, each with an area of 20 m×20 m. According to the purchase standard of bamboo shoots in Liucheng County, Guangxi Province, bamboo shoots with an emergence height of about 60 cm were collected randomly in the morning of 25th July 2023 (the peak of the bamboo shoots) from the various sampling points of the experimental forests. On the morning of July 25, 2023 (at the peak of shoot emergence), 30 healthy bamboo shoots were collected from each sampling point of the experimental forest, and the bamboo shoots that had no obvious holes, deformities, or dryness were not shrunk. The bamboo shoots were dug up by the roots and removed from the soil, keeping the shoots intact and preventing mechanical damages, and the weight (g), length (cm), and basal diameter (cm) of the individual bamboo shoots were measured individually, and the bamboo shoots were removed from the shells, and the soil on the surfaces of the shoots were removed, weighed, and the edible rate of the bamboo shoots were calculated (%). In addition, three bamboo shoots were taken from different types of jatropha experimental forests, harvested within 1 h, and brought back to the experimental room in an ice box, and the shells of the bamboo shoots were peeled off. Water content, ash content, protein content, soluble sugar content, crude fibre content, crude fat content and other quality indexes were determined.

1.3. Determination of nutritional indicators

The samples were weighed before and after drying in the oven to calculate the moisture content, the ash content was determined with reference to the high temperature burning method in the national standard of food, the protein content was determined with reference to the Kjeldahl nitrogen determination method in the national standard of food, the fat content was determined with reference to the Soxhlet extraction method in the national standard of food, the soluble sugar content was determined with reference to the copper-reduced iodine method in the vegetables, the fibre content was determined with reference to the determination of the fibre content in the rice hulls by Xiong Su-min et al (Xiong et al., 2005), and the tannins were measured by the Folin Denis method. The tannin content was determined by Folin Denis method, and oxalic acid was determined by high performance liquid chromatography.

2. Results and Analyses

2.1. The effect of different slopes on the size and edible rate of bamboo shoots

The results of the measurement of bamboo shoot specification and edible rate in different slopes (Table 1) showed that: the average weight of bamboo shoots in different slopes of upslope, middle slope and downslope was in the order of upslope＞middle slope ＞ downslope, and the average weight of bamboo shoots in upslope was 3.6% heavier than that in upslope, and 10.2% heavier than that in downslope; the basal diameters of bamboo shoots were in the order of upslope, middle slope, and downslope; bamboo shoots' length was the largest in upslope; the edible rate of bamboo shoots was the largest in downslope, followed by middle slope, and the smallest in upslope; the edible rate in downslope was 7.73% higher than that in upslope, and that in downslope was 7.73% higher than that in upslope. The edible rate of bamboo shoots was the largest on the downslope, the second largest on the middle slope, and the smallest on the upslope; the edible rate of bamboo shoots on the downslope was 7.73% higher than that on the upslope, and that of bamboo shoots on the downslope was 4.56% higher than that of bamboo shoots on the middle slope; the analysis of the data indicated that the slope of the cultivation site influenced the specifications of the shoots of the bamboo shoots and the edible rate of the bamboo shoots, and that the upslope had the better performance in terms of the specifications of the shoots; and that the downslope had the better performance than that of the upper and middle slopes and the upslope had a lower edible rate of the bamboo shoots. This indicates that different slope directions have an effect on the specifications of bamboo shoots and the edible rate. Comprehensive analyses showed that the average weight, basal diameter and length of individual bamboo shoots at different slopes were best on the upslope, but the edible rate was highest on the downslope.

Table 1 Specification and edible rate of Dendrocalamus latiflorus shoots in different slope position

slope position	Bamboo individual weight kilograms per shoot	Base stem cm	Length cm	Edible rate %
upslope	3.67	13.38	69.7	59.59
middle slope	3.54	12.80	68.5	61.41
downslope	3.33	12.13	63.6	64.2

2.2. The effect of different slope directions on the specification and edible rate of bamboo shoots

The results of the measurement of body specifications and edible rates of bamboo shoots on different slopes (Table 2) showed that the average weight of individual bamboo shoots on the south slope was the largest, while the average weight of individual bamboo shoots on the north slope was the smallest. The order of average weight of individual bamboo shoots from large to small was south > northeast > northwest > north, and the average weights of individual bamboo shoots were 3.84kg, 3.69kg, 3.57kg and 3.37kg respectively. The basal diameters of bamboo shoots of different slopes were South, Northeast, Northwest and North in the order of large to small, and the basal diameters of bamboo shoots were 13.80cm, 13.13cm, 12.54cm, 12.18cm, the basal diameters of bamboo shoots were the largest in the South Slope and the smallest in the North Slope, and the basal diameters of bamboo shoots of the South Slope were larger than those of the Northeast Slope by 5.10%, and the basal diameters of bamboo shoots of the South Slope were larger than those of the Northeast Slope by 10.04%, and those of the North Slope were larger than those of the Northeast Slope by 13.30%. The length of bamboo shoots was 70.15cm, 68.62cm, 67.59cm and 64.47cm in the order of South, Northwest, Northeast and North in descending order; the edible rate of bamboo shoots was the largest in North Slope (66.30%), followed by Northeast Slope (64.29%), then Northwest Slope (61.12%), and the smallest in South Slope was the smallest in upslope (59.14%). The experimental data showed that the specification and edible rate of bamboo shoots were affected by the slope direction of the cultivation site, and in terms of the specification of bamboo shoots, the south slope performed better than the north slope, while the north slope performed worse; in terms of the edible rate, the north slope performed better than the other three slope directions. It can be seen that the slope direction affected the specifications and edible rate of bamboo shoots, with the south slope favouring the growth of shoot weight, basal diameter and length, but with the lowest edible rate, and the north slope having the highest edible rate, although the shoots had the smallest morphological indexes. The north-eastern and north-western slopes were in between.

Table 2 Specification and edible rate of Dendrocalamus latiflorus shoots in different aspects

Aspects	Bamboo individual weight kilograms pershoot	Base stem cm	Length cm	Edible rate %
north	3.37	12.18	64.47	66.30
northeast	3.69	13.13	67.69	64.29
south	3.84	13.80	70.15	59.41
northwest	3.57	12.54	68.62	61.12

2.3. The effect of different slopes on the nutritional quality of bamboo shoots

The results of the determination of the nutritional quality of bamboo shoots at different slope positions (Table 3) show that the ash content of bamboo shoots at different slope positions is upslope>middle slope>downslope, and the ash content of upslope, middle slope, and downslope is 8.33mg·g-1, 8.22mg·g-1, and 8.03mg·g-1, respectively. The ash content of upslope is 1.33% higher than that of middle slope, and the ash content of upslope is 3.75% higher than that of downslope. The difference in ash content of bamboo shoots at different slope positions is small. The protein content of bamboo shoots at different slope positions is upslope>middle slope>downslope, and the protein content of upslope, middle slope, and downslope is 4.29mg·g-1, 4.01mg·g-1, and 2.05mg·g-1, respectively. The protein content of bamboo shoots at upslope is 6.98% higher than that at middle slope, and the protein content of bamboo shoots at upslope is 40.65% higher than that at downslope. The soluble sugar content in the downslope is > upslope > middle slope. The soluble sugar contents in the downslope, upslope and middle slope are 100.56g·100g-1, 96.44g·100g-1 and 86.5g·100g-1 respectively. The soluble sugar content in the downslope is 4.27% higher than that in the upslope, and 16.25% higher than that in the middle slope. The fat content was from large to small in the order of middle slope > downslope > upslope. The fat contents in the middle slope, downslope and upslope are 2.46g·100g-1, 2.24g·100g-1 and 1.53 g·100g-1 respectively. The fat content in the middle slope is 9.82% higher than that in the downslope, and 60.78% higher than that in the upslope. The crude fiber content is from high to low in the order of upslope>middle slope>downslope, and the crude fiber content of upslope, middle slope, and downslope is 6.07g·100g-1, 5.73g·100g-1, and 5.69g·100g-1, respectively. The crude fiber content of upslope is 5.9% higher than that of middle slope, and the crude fiber content of upslope is 5.9% higher than that of middle slope, and 6.68% higher than that of middle slope. The tannin content is from high to low in the order of upslope>middle slope>downslope, and the tannin content of upslope, middle slope, and downslope is 9.03mg·100g-1, 8.39mg·100g-1, and 7.79mg·100g-1, respectively. The tannin content of upslope is 7.62% higher than that of middle slope, and the tannin content of upslope is 16.69% higher than that of downslope. The oxalic acid content is from high to low in the order of upslope>middle slope>downslope. The oxalic acid content of upslope, middle slope and downslope is 14.31mg·100g-1, 13.56mg·100g-1 and 8.80mg·100g-1 respectively. The oxalic acid content of upslope is 5.53% higher than that of middle slope and 62.61% higher than that of downslope. The oxalic acid content of upslope is significantly higher than that of downslope. The moisture content of bamboo shoots is from high to low in the order of upslope>middle slope>downslope. The moisture content of bamboo shoots of upslope, middle slope and downslope is 91.94%, 91.72% and 90.58 respectively. The moisture content of bamboo shoots of upslope is 0.23% higher than that of middle slope and 1.5% higher than that of downslope. The experimental results show that environmental factors at different slopes affect the accumulation of nutrients in bamboo shoots, and fat is the highest in the middle slope. Ash, protein, crude fiber, tannin, oxalic acid and water content are all in the order of upslope > middle slope > downslope, while soluble sugar is in the order of downslope > upslope > middle slope, and fat is in the order of middle slope > downslope > upslope.

Table 3 Nutritional quality of Dendrocalamus latiflorus shoots grown in different slope position

slope position	Ash /mg·g-1	Protein /mg·g-1	Soluble sugar /mg·g-1	Fat /g·g-1	crude fibe /g·100g-1	tannin /mg·100 g-1	oxalic acid /mg·100g-1	Moisture %
upslope	8.33	4.29	96.44	1.53	6.07	9.03	14.31	91.94
middle slope	8.22	4.01	86.5	2.46	5.73	8.39	13.56	91.72
downslope	8.03	3.05	100.56	2.24	5.69	7.79	8.80	90.58

2.4. Effect of different slope directions on the nutritional quality of bamboo shoots

The determination results of nutritional quality of bamboo shoots on different slopes (Table 4) showed that the ash content of bamboo shoots on different slopes was northwest > northeast > north > south. The ash contents of the northwest slope, northeast slope, north slope and south slope were 9.05 mg·g-1, 8.81 mg·g-1, 8.27 mg·g-1 and 8.22 mg·g-1 respectively. The ash content of the northwest slope was 2.72% higher than that of the northeast slope, 9.43% higher than that of the north slope, and 11.00% higher than that of the south slope. The protein content of bamboo shoots on different slopes is north > northeast > south > northwest. The protein contents of bamboo shoots on the north slope, northeast slope, south slope and northwest slope are 3.21mg·g-1, 2.63mg·g-1, 2.05mg·g-1 and 1.90mg·g-1 respectively. The protein content on the north slope is 22.05% higher than that on the northeast slope, 56.58% higher than that on the south slope, and 68.95% higher than that on the south slope. The protein content of bamboo shoots on the north slope is much greater than that on the northwest slope. The soluble sugar content of northwest slope > north slope > northeast slope > south slope, northwest slope, north slope, northeast slope and south slope are 98.50g·100g-1, 91.94g·100g-1, 88.00g·100g-1 and 86.5g·100g-1 respectively. The soluble sugar content of northwest slope is 7.1% higher than that of north slope, 11.93% higher than that of northeast slope, and 13.87% higher than that of south slope. The fat content from high to low is south slope > northeast slope > northwest slope > north slope. The fat content of south slope, northeast slope, northwest slope and north slope are 2.46g·100g-1, 2.43g·100g-1, 2.34g·100g-1 and 1.88g·100g-1 respectively. The fat content on south slope is 1.23% higher than that on northeast slope, 5.13% higher than that on northwest slope, and 30.85% higher than that on north slope. The crude fiber content from high to low is north slope > south slope > northwest slope > northeast slope. The crude fiber contents of the north slope, south slope, northwest slope and northeast slope are 6.16g·100g-1, 5.68g·100g-1, 5.92g·100g-1 and 5.54g·100g-1 respectively. The crude fiber content of the north slope is 8.45% higher than that of the south slope, 4.05% higher than that of the northwest slope, and 11.19% higher than that of the northeast slope. The tannin content in the order from high to low is south slope > northwest slope > northeast slope > north slope. The tannin contents in the south slope, northwest slope, northeast slope and north slope are 9.39mg·100g-1, 8.88mg·100g-1, 8.46mg·100g-1 and 8.13mg·100g-1 respectively. The tannin content in the south slope is 5.74% higher than that in the northwest slope, 10.99% higher than that in the northeast slope, and 15.50% higher than that in the north slope. The oxalic acid content in the south slope is 13.56mg·100g-1, 12.20mg·100g-1, 11.07mg·100g-1, and 7.82mg·100g-1, respectively. The oxalic acid content in the south slope is 11.15% higher than that in the northwest slope, 22.49% higher than that in the northeast slope, and 73.40% higher than that in the north slope. The moisture content of bamboo shoots from high to low is south slope > northwest slope > north slope > northeast slope. The moisture content of bamboo shoots on the south slope, northwest slope, north slope, and northeast slope is 92.36%, 92.19%, 91.86%, and 91.80% respectively. The moisture content of bamboo shoots on the south slope is 1.8% higher than that on the northwest slope, 5.44% higher than that on the north slope, and 6.10% higher than that on the northeast slope. According to the comprehensive experimental results, the fat, tannin, oxalic acid and moisture content of bamboo shoots on the south slope are the highest, while the protein and crude fiber content on the north slope are the highest, and the ash and soluble sugar content on the northwest slope are the highest.

Table 4 Nutritional quality of Dendrocalamus latiflorus shoots grown in different aspects

aspects	Ash /mg·g-1	Protein /mg·g-1	Soluble sugar /mg·g-1	Fat /g·g-1	crude fibe /g·100g-1	**tannin** /mg·100 g-1	**oxalic acid** /mg·100g-1	Moisture %
north	8.27	3.21	91.94	1.88	6.16	8.13	7.32	91.86
northeast	8.81	2.63	88.00	2.43	5.54	8.46	12.20	91.80
south	8.22	2.05	86.5	2.46	5.68	9.39	13.56	92.36
northwest	9.05	1.90	98.50	2.34	5.92	8.88	11.07	92.19

3. Conclusion and Discussion

3.1. Slope position affects both the specification and the edible rate of measles bamboo shoot individuals

The average weight, basal diameter and length of individual bamboo shoots at different slopes were the best on the upslope, but the edible rate was the highest on the downslope. Basal diameter and length were related to the weight of individual shoots, with large basal diameter, long length of shoots and larger weight of individual shoots. Jatropha is light-loving, and sufficient sunlight helps its growth and bamboo shoot formation.

3.2. Bamboo shoot size and palatability are affected by the slope direction of the cultivation site.

In terms of shoot size, the south slope generally performed better than the north slope, while the north slope performed worse than the other three slopes; in terms of edible rate, the north slope generally performed better than the other three slopes. The southern slope favoured the growth of shoot weight, basal diameter and length, but had the lowest edible rate; the northern slope had the highest edible rate, although the shoots had the smallest individual morphological indexes. Northeast and northwest slopes were in between. Slope orientation affects environmental factors such as light, temperature and humidity of the forest floor, which in turn affects the growth indexes and edible rate of bamboo shoots.

3.3. Environmental factors of different slopes affect the accumulation of nutrients in bamboo shoots.

Environmental factors at different slopes affected the accumulation of nutrients in bamboo shoots, with fat being the highest on the middle slope. Ash, protein, crude fibre, tannin, oxalic acid and moisture were all higher on the upslope > middle slope > downslope, while soluble sugar was downslope > upslope > middle slope and fat was middle slope > downslope > upslope.

For ash content, the higher upslope may be due to the higher mineral content of the soil, and the soil on the upslope may be more weathered, releasing more minerals. Soluble sugars were highest on the downslopes, probably because the downslopes had sufficient water and nutrients, and the plants were able to photosynthesise more and convert the photosynthesis products into soluble sugars for storage. Soluble sugars, on the other hand, were lowest on the middle slopes, probably because light or temperature conditions were not as favourable as on the downslopes, or because of different nutrient partitioning. Fat content is highest on the middle slopes, which are neither as stressed as the upslopes nor as over-resourced as the downslopes, and plants may store energy as fat. Fat synthesis usually requires more energy and may be more efficient with moderate resources. The greater crude fibre content on the upslopes may be related to poorer water conditions.

3.4. Environmental factors affecting nutrient accumulation in dendrocalamus latiflorus bamboo shoots on different slope orientations

Hemp bamboo shoots on the south slope had the highest fat, tannin, oxalic acid, and moisture contents, while the north slope had the highest protein and crude fibre levels, and the north-west slope had the highest ash and soluble sugar contents. Slope orientation affects factors like light, temperature, water, and soil, which influence the physiological processes and accumulation of substances in bamboo shoots.

Protein content was highest on the north slope, likely due to weaker light and lower temperatures, which may require plants to synthesize more proteins for metabolic activities. Soluble sugar content was highest on the north-west slope, possibly due to significant day-night temperature differences, promoting strong daytime photosynthesis and less sugar consumption at night. The south slope, with strong light and high temperatures, likely had lower soluble sugar content due to increased respiration. Fat content was highest on the south slope, where sufficient light and temperature supported photosynthesis and fat synthesis. The north slope had the lowest fat content, possibly due to limited fat synthesis in cooler conditions. Crude fibre content was highest on the north slope, possibly because of the low light and temperature, requiring stronger cell walls for mechanical support. Tannin and oxalic acid levels were highest on the south slope, likely due to oxidative stress caused by strong light and high temperatures, leading to increased synthesis of these protective compounds.

Conflict of Interest

The authors declare that they have no conflicts of interest to this work.

Acknowledgement

The research was funded by:
Project for Enhancing the Basic Reaserach Ability of Young and Middle-aged Teachers in Guangxi Universities and Colleges（2021KY1221）

References

Bhatt, B. P., Singha, L. B., Singh, K., et al. (2003). Some commercial edible bamboo species of North East India: Production, indigenous uses, cost-benefit and management strategies. *Journal of the American Bamboo Society, 17*(1), 4–20.

Bhatt, B. P., Singh, K., & Singh, A. (2005). Nutritional values of some commercial edible bamboo species of the North Eastern Himalayan region, India. *Journal of Bamboo and Rattan, 4*(2), 111–124.

Cui, G., & Zhao, L. (1997). Identification of species and morphology of edible bamboo shoots in China. *Culinary Journal of Yangzhou University, 1997*(4), 19–25.

Huang, W., & Lu, B. (2008). Current status and trend of deep processing and utilisation of bamboo shoots. *Forestry Science, 44*(8), 118–123.

Huang, Y., Huang, D., et al. (2011). *Practical technology of hemp bamboo cultivation*. Guangxi Forestry Science Press.

Li, Y. (2001). Bamboo shoots are ideal green health food. *China Food and Nutrition, 6*(4), 54.

Yu, X. (2004). Standardise bamboo shoot processing production and improve the international competitiveness of bamboo shoot products. In *Proceedings of the First Bamboo Conference of the Society of Forestry of China* (pp. 4). Hangzhou: Bamboo Branch of the Society of Forestry of China.

Yi, T., Shi, J., Ma, L., et al. (2008). *Atlas of bamboo in China*. Science Press.

Xiong, S., Zuo, X., & Zhu, Y. (2005). Determination of cellulose, hemicellulose and lignin in rice husk. *Grain and Feed Industry, 2005*(8), 40–41.

Zheng, R., Yang, J., Wu, C. W., et al. (2019). Effects of different soil types on nutrient composition of green bamboo shoots. *Fujian Forestry Science and Technology, 46*(3), 62–66.

How to Cite: Liang, M., & Lan, J. (2025). Influence of Different Land Conditions on Yield and Quality of Dendrocalamus latiflorus Bamboo Shoots in Liuzhou City. *Journal of Global Humanities and Social Sciences*, *6*(2), 64-69.
https://doi.org/10.61360/BoniGHSS252017800205