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# Effects of Specialized Curing on the Income and Behavior of Tobacco Growers

—A Case of Wulong County, Chongqing, China

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**Abstract** Qingshuitang Village near the Qingmuchi Village, Chongqing, China is taken as the control region, which has similar status of social economy and flue-cured tobacco cultivation and has not implemented specialized curing. Permanent residents above the age of 18 in the two villages are investigated. Due to the dispersibility and randomness of samples, questionnaires are sent out randomly considering the differences in age, sex, education level, economic income and planting area. Excel is used to conduct statistics and analysis of survey data. Result shows that specialized curing has significant higher incentive effect on economic income of tobacco growers than the non-specialized curing. Tobacco growers in specialized curing area have apparently different attentive focus of future development, compared with the growers in non-specialized curing area. Specialized curing area focuses more on the improvement of technology, management and supporting industries; while growers in non-specialized curing area think that working outside is the main way to improve the current situation. However, there are certain problems in specialized curing which need to be improved, such as operation mechanism, internal management, extension and application. Finally, it is pointed out that we should correctly handle the relationship between the income increase from specialized curing and the economic development, and between subject clarification and support enhancement, so as to ensure the sustainable development of specialized curing and to improve the economic income of tobacco growers effectively.

**Key words** Specialized curing; Economic income; Questionnaire survey; Tobacco growers; Flue-cured tobacco; China

At present, pilot work on modern tobacco agriculture has developed in China in an all-round way<sup>[1-2]</sup>. Under this situation, historical leap from traditional curing to specialized development becomes an inevitable trend of curing work in China during transition period<sup>[3-4]</sup>. Since the year 2008, tobacco companies in Wulong County have actively explored the specialized curing mode. And great results are achieved. Taking specialized curing in Qingmuchi Village, Wulong County, China as an example, results and problems in practical operation of specialized curing are analyzed based on the field investigation on tobacco growers, so as to make effective policies, to guide the voluntarily participation of tobacco growers, to increase the output and income of flue-cured tobacco, and to realize the sustainable development of tobacco leaf during the extension of specialized curing.

## 1 General situation of research region

Modern Tobacco Demonstration Garden of Wulong County is located in Qingmuchi Village, Heshun Town, Chongqing, China. It has an altitude of 1 000 - 1 200 meters with abundant sunshine and rainfall, suitable climate, loose soil texture, and rich organic matter content, which are suitable for the cultivation of flue-cured tobacco. In the year 2008, under the guidance of Wulong Tobacco Company, Qingmuchi Village takes

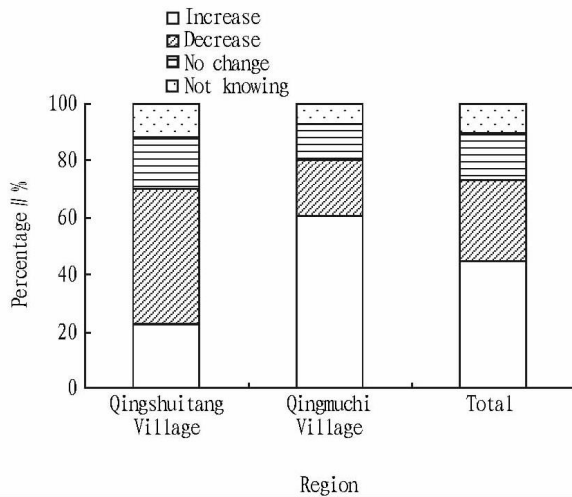
the initiative to apply the specialized curing mode. After one year's test operation, efficiency is enhanced under this specialized curing. In order to better reflect the operation of specialized curing, Qingshuitang Village near the Qingmuchi Village is taken as the control region, which has similar status of social economy and flue-cured tobacco cultivation and has not implemented specialized curing. Comparison between the two villages is conducted to discuss the related issues of specialized curing, so as to maximize the advantages of bulk curing barn group, and to improve production efficiency and management efficiency of tobacco.

## 2 Research objects and methods

Research objects are the permanent residents above 18 years old in both Qingmuchi Village having implemented specialized curing and Qingshuitang Village having not implemented specialized curing. Randomness and dispersibility of samples are fully considered during investigation, including age, gender, educational level, tobacco planting area, economic income and other factors. Therefore, questionnaires are sent out randomly. Content of questionnaire includes the effects of specialized curing on economic income of tobacco growers and the self-analysis on future development of tobacco grower in specialized curing promotion. Investigation is carried out in the form of face to face household interview. Data collection is completed in the period from May to June, 2009. A total of 50 households of tobacco growers are investigated and 42 valid questionnaires are retrieved with the valid questionnaire rate of 84%. Investigation data are analyzed by Excel.

### 3 Result and analysis

**3.1 Effects of specialized curing on economic income of tobacco growers** According to the investigation result, a total of 61% tobacco growers participating in specialized curing believe that their household income is increased due to specialized curing. 19% growers believe that the household income is reduced. And 13% and 7% tobacco growers think that household income is not affected and the impact is not clear, respectively (Fig. 1). In the non-specialized curing village, there are 32% tobacco growers think that the household income is increased in the year 2008, most of whom have grasped the technology of tobacco production and have a large area of cultivated area. And 47% tobacco growers think that the household income is reduced in non-specialized curing village (Fig. 1). According to the comparison result between the two villages, specialized curing has significantly enhanced the household income of tobacco growers.



**Fig. 1 Effects of specialized curing on economic income of tobacco growers**

Considering the randomness and uncertainty of questionnaire on economic income of tobacco growers, integral data analysis on the overall income of tobacco growers and the tobacco leaves acquisition of tobacco company in the years 2007 – 2008 are conducted in the two villages in order to more objectively reflect the economic benefits changes in the two areas. Result shows that Qingmuchi Village shows particularly outstanding income growth. And income growth rate of migrant worker, income growth rate of tobacco production and per capita income growth rate are 41.8%, 32.4% and 33.5%, respectively, which are all significantly higher than those of Qingshuitang Village. There are several causations for the differences. Firstly, through tobacco grower's participating in specialized curing, large-scale management of land is realized. Extension of planting machinery and bulk curing barn has greatly reduced the production cost and labor intensity and has greatly improved economic benefit. Secondly, specialized curing has boosted production efficiency. Thus, tobacco growers have more time to engage in other business activities and their household income is significantly increased. Thirdly, funding support of tobacco companies has made certain contribution to

the income increase of tobacco growers who participate in the specialized curing. At the same time, government has actively guided the overall adjustment of industrial structure in Qingmuchi Village, so that skills, enthusiasm and labor efficiency of tobacco growers are enhanced. Therefore, incentive effect of specialized curing on economic growth of tobacco growers is extreme evident.

**Table 1 Income growth of tobacco growers after participating in specialized curing from 2007 and 2008** %

Index	Qingmuchi Village	Qingshuitang Village
Income growth rate of migrant worker	41.8	12.7
Income growth rate of tobacco production	32.4	16.9
Total income growth rate	36.7	15.3
Per capita income growth rate	33.5	14.1

### 3.2 Tobacco growers' view on improving the current situation

During the investigation on two villages, tobacco growers in specialized curing area have apparently different attentive focus of future development, compared with the growers in non-specialized curing area. Specialized curing area focuses more on the improvement of technology, management and supporting industries. Table 2 indicates that a total of 80.8% tobacco growers think that the most important thing is the implementation of policy. And there are 73.1%, 59.6% and 46.2% tobacco growers who focus on supporting industries, technical training and management training, respectively, showing a relatively positive thinking and enthusiasm of getting rich. In non-specialized curing area, 57.5% tobacco growers think that working outside is the main way to improve the current situation. Besides, there are 30.0% tobacco growers have no concrete ideas, neither knowing how to improve the current situation nor having enough confidence in future development. However, investigation also shows that 37.5% tobacco growers hope to improve their current production and living conditions through establishing specialized curing, indicating that specialized curing has already been accepted by some of the tobacco growers.

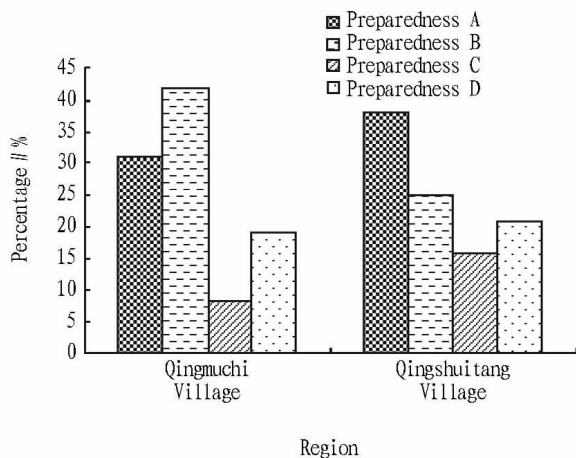
**Table 2 Views of tobacco growers on the ways to improve current situations**

No.	Views	Qingmuchi Village // %
1	Management training	46.2
2	Technical training	59.6
3	Policy implementation	80.8
4	Supporting industry	73.1
No.	Views	Qingshuitang Village // %
1	Establishing specialized curing	37.5
2	Working outside	57.5
3	Technical training	45.0
4	Not knowing	30.0

Through comprehensive comparison and analysis, it is obtained that there are two causations for the differences in the two villages. Firstly, since specialized curing area is near the

non-specialized curing area, improvement of production and living conditions has significant incentive impact. Some of the tobacco growers in non-specialized curing area have already realized that changing the productive organization of tobacco leaves can significantly enhance their economic income. Thus, they are willing to join in the specialized curing. Secondly, through the self-participation, tobacco growers in specialized curing area have relatively a clear objective in learning the production technology. They have a certain degree of understanding of the internal management and operation mechanism of specialized curing, believing that only by improving management and supporting industries, can we promote the sustainable development of specialized curing and realize the real economic benefits. However, in non-specialized curing area, tobacco growers have relatively low productive enthusiasm due to the backward technology, dispersed production, and declining comparative benefit of tobacco leaf.

**3.3 Expected analysis of tobacco growers** Based on the investigation on tobacco growers, four preparedness results are put forward: the single-win type, indicating that some of the people are benefited; the win-win type, meaning that benefits of all items have realized the average expectation and the mutual benefit is achieved; the blind type, which has neither participation capacity nor expectation for the future; and the die-out type, which will be eventually abolished for not achieving sustainability. In order to avoid the selection bias of tobacco growers, their real thoughts are obtained during investigation and their overall view on specialized curing is reorganized based on the four preparedness results.



**Fig.2 Response of tobacco growers on the future development preparedness of specialized curing**

Fig.2 illustrates that tobacco growers in two villages have different selections during the response to future development preparedness of specialized curing. Tobacco growers in Qingmuchi Village select expected results in future in the perspective of the participants, and the supporting order for preparedness result is BADC. However, tobacco growers in Qingshuitang Village are in the perspective of bystanders, and their supporting order is ABDC. Thus, it can be seen that there are certain differences in expected results of the two villages. Although specialized curing has made great contribution to the economic income of tobacco growers, investigation on both participants and bystanders shows that there are only 42% and

25% of them think that specialized curing has achieved win-win result, respectively. Since the proportions are lower than 50%, we can conclude that some problems exist in the implementation of specialized curing. Result of investigation on Qingshuitang Village also shows that there are more deficiencies in the operating mechanism of specialized curing, because more than a half of the tobacco growers believe that specialized curing belongs to single-win type and will eventually die out. Therefore, operation mechanism and internal management of specialized curing should be discussed in order to realize the sustainability and win-win result of specialized curing.

## 4 Countermeasures and suggestions

As a unique economic subject, tobacco grower takes profit maximization as their behavioral objective. According to the principle of profit maximization, tobacco growers make their decisions. When deciding to participate in specialized curing, tobacco growers first consider the economic benefits of specialized curing and the sustainability of benefits. Therefore, according to the result of investigation and analyses mentioned above, two pairs of relationships should be handled correctly in order to ensure the sustainable development of specialized curing and to effectively improve the economic benefits of tobacco growers.

**4.1 Relationship between economic development and income increase of specialized curing** From the aspect of economics, tobacco growers participating in specialized curing can be regarded as the choice of opportunity cost. At present, specialized curing has two obvious interest driving factors. One is reducing the work of tobacco growers; the other is the high expectation of tobacco growers towards specialized curing. Tobacco growers want to get economic returns through the collective production, as well as to avoid the influences of low-level production technology on economic benefits. However, these two factors can hardly ensure the sustainability of specialized curing. Firstly, some tobacco growers having high level of production technology may be frustrated due to the decrease of income. Thus, cooperative production has less advantage. Secondly, supporting industries adapted to the local economy have developed slowly. And tobacco growers have not enjoyed the economic benefits brought by cooperative industrialization. Therefore, it is necessary to develop the supporting industries of specialized curing, to absorb surplus labor force, and to realize the local economic development.

**4.2 Relationship between subject clarification and support enhancement** During the implementation of specialized curing, both policy support of government and funding support of tobacco companies have created favorable external conditions and corresponding development environment. However, the dominant position of tobacco growers can not be ignored. Government and tobacco company should closely cooperate with each other and promote the development of specialized curing. In particular, government should offer policy support, consolidate the supervision and management of specialized curing, and strengthen the self-discipline of organization and management layers. While the tobacco company should offer support from the aspects of information, funds, technical training and management training, improve the production technology

and management level of tobacco growers, enhance the sense of trust of tobacco growers on specialized curing, and actively participate in the production of specialized curing.

## 5 Conclusion

Specialized curing is a typical production organization and management mode of tobacco leaves. The full exertion of sustainable implementation and economic benefits needs the wide participation of tobacco growers. Based on this, willingness of tobacco growers participating in specialized curing is analyzed by a practical method with operational meaning. Participatory assessment can not only accurately reflect the tobacco growers' overall perception on the improvement of tobacco production caused by specialized curing, but also can find out the problems and their causations during the operation of this mode by expected analysis, so as to provide basis for the decision-making of management departments at all levels. According to the analysis result of tobacco growers, specialized curing has significantly improved economic income and life satisfaction of tobacco growers. But there are still problems in improving internal management, enhancing technical input, and adjusting the interests relationship between tobacco companies and tobacco growers. Therefore, government and tobacco companies should further improve the management level of specialized curing, reduce the risks of decision-making caused by management deficiencies, enhance extension services of tobacco production technology, improve the agricultural knowledge and level of tobacco growers, actively introduce relevant policies and measures, advance the participation willingness of tobacco growers, and realize the sustainable development of specialized curing.

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## 专业化烘烤对烟农经济收入及行为影响分析——以重庆市武隆县为例

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**摘要** 研究选取了距离青木池村较近, 烤烟种植情况和社会经济状况基本相似, 且未试行专业化烘烤的自然村——清水塘村作为对照区, 以组织专业化烘烤和未组织专业化烘烤的 2 个相邻地区内年龄大于 18 周岁的永久性居民为研究对象, 由于样本的分散性和随机性, 考虑到不同的性别、文化程度、年龄、植烟面积以及经济收入等因素, 采取随机调查的方式发放问卷, 采用 Excel 对调查数据进行了统计与分析。结果表明, 参与专业化烘烤对于烟农经济收入的激励效应明显高于非专业化烘烤; 专业化烘烤地区的烟农在参与专业化烘烤生产后对其未来发展问题的关注焦点明显有别于非专业化烘烤地区, 专业化烘烤地区更侧重于技术、管理和配套产业的改善, 非专业化烘烤地区认为外出打工才是改善目前状况的主要途径; 专业化烘烤的运行机制和内部管理及推广应用中存在一定的问题, 需要进一步完善。最后, 提出要正确处理专业化烘烤增收与经济发展、明确主体与强化扶持的关系, 以确保专业化烘烤的可持续发展, 有效提高烟农的经济收益。

**关键词** 专业化烘烤; 经济收入; 问卷调查; 烟农; 烤烟