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Differentiation of Rural Households′ Consciousness in Land Use Activities: A Case from Bailin Village, Shapingba District of Chongqing Municipality, China

WANG Cheng[1], WANG Liping[2], JIANG Fuxia[1], LU Zhangwei[3]

(1. *School of Geography Sciences*, *Southwest University*, *Chongqing* 400715, *China*; 2. *School of Public Affairs*, *Zhejiang University*, *Hangzhou* 310029, *China*; 3. *College of Environmental and Resource Sciences*, *Zhejiang Agriculture and Forestry University*, *Lin'an* 311300, *China*)

Abstract: What rural households think and what kind of strategies they take, the basic driving force in land use activities, contribute greatly to the increase of their own revenues, the development of agricultural yields, and even the prosperity of rural areas. Differentiation in rural household behaviors and their consciousness in land use activities is widespread in rural China nowadays. It is important to understand the changing characteristics and laws of land use behaviors of rural households driven by their consciousness, so as to regulate their land use activities. In most empirical studies of land use change at rural household level, the land use consciousness, which acts directly on land use behaviors, is often neglected. In our research, the changes of land use behaviors of rural households are analyzed, through identifying how the land use consciousness affect the land use objectives, land management scales and land inputs of all the rural households in Bailin Village of Chongqing Municipality in the western mountainous China. Also, how the land use consciousness of different rural households comes into being under external stimuli is examined and the self-adjustment process of their consciousness according to their own conditions is also discussed. Finally, broad policy instruments are suggested to promote the rationalization of rural households′ land use consciousness and the standardization of their land use behaviors.

Keywords: land use behavior; land use consciousness; driving force; rural households; Bailin Village; China

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1 Introduction

In China, 9×10^8 rural households mainly rely on the land to carry out production and living activities for survival (Ortega *et al.*, 2014). Such land use activities of rural households not only show the results of their selection and decision-making in land utilization, but also reflect their thinking of how they make the afore-mentioned choices and decisions under certain socio-economic conditions. Specifically, rural households tend to utilize the land in a way that most satisfies their needs, based on a full understanding of the value and function of land, and a weighing of the pros and cons of the possible land uses. This complex mental activity can be described as the land use consciousness of rural households (Wang Cheng *et al.*, 2012). The land use consciousness of rural households has changed as their desires for production and services from the land have diversified owning to socio-economic development and policy and institutional changes in rural China. The traditional idea that land is the basis for survival is deeply rooted in rural household consciousness, but with the

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Corresponding author: WANG Liping. E-mail: wangxiaohua86@zju.edu.cn

implementation of reforms and opening-up policies, the traditional psychological structure of rural households has been broken and commodity consciousness been awoken, as rural households′ desires for land can be met and the products from land can be used for exchange other than subsistence. Since the integration of urban-rural development, especially the coordination of urban-rural land utilization, rural households′ dependence on the land has been broken, as they get more chances in non-agricultural industries. Those have led to a brand new land use consciousness that the land is the basis for rural households′ development, but not something to which they are tied (Wang Cheng *et al.*, 2012).

External stimuli have promoted the self-regulation and self-adjustment of the land use consciousness of rural household (Dolisca *et al.*, 2009). At the same time, the change in their land use consciousness has brought about land use changes in rural areas, since it is this consciousness that determines the choice of land utilization practices employed by rural households (Adhikari *et al.*, 2004). So it is of great importance to understand the changes of land use behavior through analyzing the development history of rural households′ land use consciousness. Additionally, rural households′ land use consciousness differs greatly in recognition of the value of land and in the thinking about land utilization on the basis of economic conditions, social status and personal experiences (Pfeifera *et al*., 2009). Specifically, under the strong external stimulus of rural economic system reform, the coordination of rural-urban development, new rural construction, *etc*., the inner thoughts of rural households have diversified because of the different understanding and response to outside changes, such as whether to inherit or give up traditional land utilization ways, or to compete or cooperate with other rural households, and so on. On the whole, the land use consciousness presents new features of complexity and diversification between different rural households (Wang Cheng et *al.*, 2012). To identify the features of rural households′ land use consciousness and understand the process of how such consciousness comes into being and changes, is the key step to the rational regulation and standardization of their behaviors in land use activities, so as to ensure the continual increase of rural household′ income and promote sustainable development in rural areas. Otherwise, the afore-mentioned expectations cannot be achieved because of the imbalance between the unpredictable outside force of policy guidance and the endogenous force from rural households′ self-motivation. Such phenomena have been paid high attention by experts, government officials, and other stakeholders (Lambin and Meyfroidt *et al.*, 2010; Greiner and Gregg, 2011).

The land use consciousness of rural households derives from land consciousness, but they are different from each other to some extent. The earliest studies on land consciousness consider the ′survival ethic′ and ′economic rationality′ from a purely economic standpoint. Chayanov (1986) and Scott (2001) held the idea that the economic behavior of rural households, including land use, is based on morality, not rationality, through which they pursue lower risk and higher life-support, rather than revenue maximization. Popkin (1979) believed that rural households try to make the rational choice after balancing the marginal cost benefits, the benefits and the risks when doing production. Fei (2001) demonstrated that, from the social standpoint, rural household behavior depends on both the ′survival ethic′ and ′economic rationality′ through empirical analysis in the southern Jiangsu Province in China. Although theoretically appropriate in these studies, solely economic factors do lose their effectiveness when it comes to analyzing rural households′ actions in increasingly complicated surroundings. Research on land consciousness in special contexts, such as the process of urbanization and social transformation, the development of tourism and the development of multi-ethnic regions (Chen and Lu, 2006; Mei, 2007), have jointly considered sociological and institutional factors, which set references for the study of rural household land use consciousness. But apart from the overall emotions and feelings of land in land consciousness studies, research on land use consciousness pays more attention to the individual decision-making process at the small scale. Studies from psychology demonstrate that motivational and structural features together have a major influence on rural household preferences in land utilization (Poppenborg and Koellner, 2013). The motivational factors (Morris and Potter, 1995; Willock *et al*., 1999) and structural variables involved in a variety of attitudes and values intrinsic to every individual decision-maker, include household characteristics, household asset endowment, rural household imitation, and household responses to policy initiatives (Burton, 2004; Schmit and Rounsevell, 2006; Edwards-Jones, 2007). Until now, most of the studies

have been from the exogenous perspective to analyze rural households′ behaviors (Evans *et al.*, 2001; Barbieri *et al.*, 2005); the inner analysis of rural household attitudes in decision-making is still limited, especially when facing the stimuli of frequent policy incentives, deepening marketization, and fierce competition between households in rural China nowadays. Identifying how rural households think and which actions they are going to take, is an urgent need for China.

The change of land use consciousness is reflected in the change of land use objectives, land management scales, and land input. Therefore, through field survey and rural household interview, this study aims to establish a conceptual framework to demonstrate, broadly, where land use consciousness comes, and then undertake a case analysis on the changing process in terms of actual land use objectives, land management scales, and land input, in order to objectively identify the driving mechanisms and changing characteristics of land use consciousness.

2 Materials and Methods

2.1 Study area and data sources

Our research is based on a household survey conducted in June 2010 in Bailin Village located in the eastern part of Shapingba District, the urban-rural ecotone of Chongqing Municipality, in the western mountainous China (Fig. 1). Bailin Village administrates eight cooperatives, covering a land area of 408 ha. There are 477 households with a total population of 1506, and the per capita net income was 4280 yuan (RMB) in 2010 (Chongqing Statistics Bureau, 2011). One aspect of household here needs clarification before classification: a household includes all the persons whose main residence is the housing unit; permanent residents who are

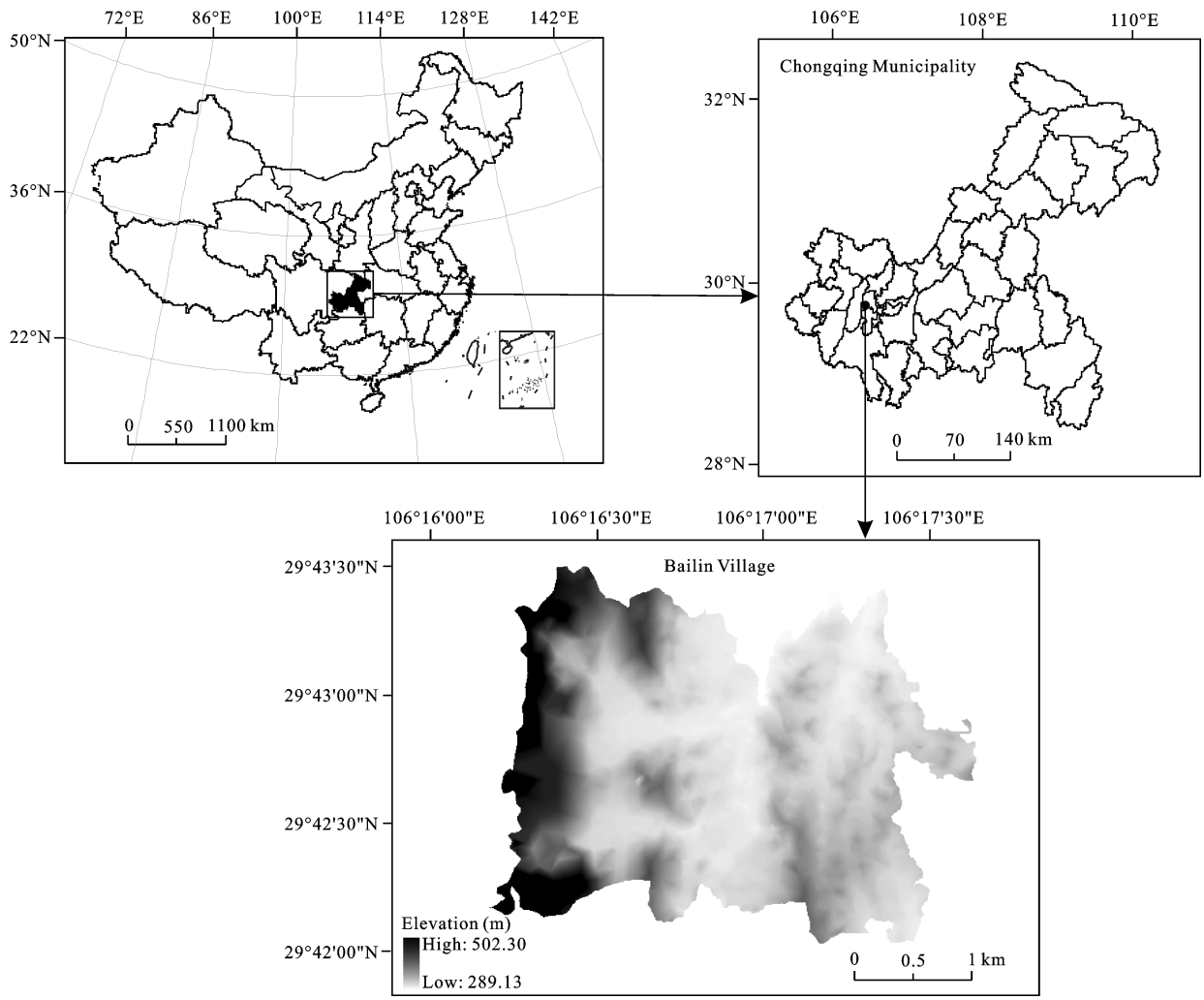

Fig. 1 Location of study area

temporarily away but still share their income with the household are also included in the survey. The overall topography of the study area is high in the west with a slope more than 25°, where a subtropical evergreen broad-leaved forest, the Jinyun Mountain Forest, has formed. The overall topography in the east is relatively low, where village-and-town enterprises predominate in the hinterland of the area′s major city. Here, there is mainly cropland, orchards and ponds, due to the suitable soil and water conditions (from the Second National Land Survey of China). The agricultural subsistence activities of rural households here focus on rice, corn and other grain crops, along with pear, peach, and loquat planting, poultry cultivation, and aquaculture. More than half of the households work in local township enterprises and in the central city of Chongqing; some of them even engage in deliveries, running restaurants, shops, and other non-agricultural activities.

2.2 Classification of rural households

Through field survey and household interview in June 2010, a series of data about rural households′ livelihood were provided, including their current livelihood ways, current income sources, current situation of livelihood assets, future plans in livelihoods, and so on. The total of 471 out of the 477 investigation questionnaires were considered to be valid. For one thing, a self-administered questionnaire survey was applied here and the interviewers were trained in advance to acquire effective information, for another thing, a house to house interview was conducted with the help of the head of Bailin Village and only 6 families had not been done because none of the family members were found at home.

According to the survey, the livelihood activities of rural households have started to expand, both within and outside of the agricultural sector, and this trend is going to become more significant along with the rapid extension of urban culture to rural areas. As rural households get more opportunities in non-agricultural employment, family incomes from diversified livelihoods increase more than those from purely agricultural production (Landry and Chirwa, 2011). Stimulated by the diversification of livelihood and increase of income sources, rural households are becoming more and more independent and creative in livelihood selection and land management. That is to say, not only the behavior but also the consciousness of rural households in land utilization has been differentiated during the rural households′ pursuance for rational livelihood needs. In order to discern the similarities and differences of the land use behavior and consciousness of rural households, the classification of rural household types should be done firstly.

Current classifications have mainly been made according to livelihoods of family members, income sources of the whole family, or a combination of the two (Zhou *et al.*, 2010). Most of the classifications are based on information at a fixed point in time. However, the livelihood strategies of rural households vary with the rapid changes of socio-economic conditions in China′s rural areas. Hence, it is irrational to fix the rural households at a specific point in time, and it is necessary to take their changes into consideration in such a rapidly changing period (Wang Liping *et al.*, 2012). Moreover, the differences of rural households, due to both objective circumstances and subjective attitudes, have to be taken into account. Therefore, this study has preliminarily divided the rural households in the sample village into five types, based on current livelihoods and income sources. These five types are pure agricultural type, agriculture-dominating type, part-time type, non-agricultural dominating type, and pure non-agricultural type, respectively (Table 1).

Given that the rural households tend to choose the most suitable and profitable livelihood ways according to their current livelihood assets, this study has re-appraised and re-inspected the preliminary classification of rural household. By combining the livelihood assets of rural households and their opinions about future living and production, the rural households in sample village are subsequently divided into five types according to their livelihood development trends in the near future. The final five types are agricultural specialization type; agricultural diversification type; part-time development type; non-agricultural diversification type and non-agricultural specialization type, respectively (Table 2).

2.3 Description of land use consciousness differentiation

′Land use consciousness′, the mental activities of rural households during the process of land use and management, is hard to quantify as it is invisible and untouchable. Only through the manifestation of their land use behavior, land use objectives, land management scales

Table 1 Classification of rural households at a fixed point in Bailin Village

Type	Income from non-agriculture minus that from agriculture	Percentage of non-agricultural working days (%)	Current livelihood	Sample rural households	Percentage of sample rural households (%)
Pure agricultural type	–	0–10	Planting and breeding	62	13
Agriculture-dominating type	–	10–20	Mainly planting and breeding, partially part-time job	113	24
Part-time type	+	20–40	Planting, breeding and working	146	31
Non-agricultural dominating type	+	40–70	Mainly working, partially planting and breeding	108	23
Pure non-agricultural type	+	70–100	Working	42	9

Table 2 Classification of rural households based on livelihood development trends in Bailin Village

Type	Livelihood assets allocation	Current livelihood way	Livelihood development trend	Sample rural households	Percentage of sample rural households (%)
Agricultural specialization type	High natural, financial and social assets	Agricultural production	Large scale and intensive cultivating and breeding	38	8
Agricultural diversification type	Comparative higher natural assets, but low in other assets	Agricultural production	Small-scale cultivating and breeding	75	16
Part-time development type	Comparative lower in all assets	Both agricultural and non-agricultural production	Balancing on-farm and off-farm working	108	23
Non-agricultural diversification type	Higher financial and social assets	Mainly non-agricultural production	Mature in off-farm working	147	31
Non-agricultural specialization type	Highest financial and social assets	Non-agricultural production	Specialization in off-farm working	103	22

and land inputs can rural household land use consciousness be distinguished clearly. The formation and adjustment of rural household consciousness can be described as the rural household responses to external stimuli according to their own conditions roughly. But how land use consciousness forms and changes and then what land use practices will be taken, under the combination of external and internal conditions, are still unclear. Therefore, a second household survey, with the questionnaire survey supplemented by a semi-structured interview, was carried out in July 2010, to collect the information about their current situation of land management scale and land input, their attitudes toward scale management, their willingness in transferring-in or transferring-out land, and so on. The questionnaires were mainly used to analyze the characteristics of land use behaviors of different rural household types, whilst the interviews were used to investigate the inner attitudes of rural households, i.e., their thoughts, opinions and so on (Lizarralde, 2011; Chen *et al.*, 2013).

Rural households in the study area are dedicated to satisfying survival needs and to pursuing economic profits as a whole through land utilization, in line with their cognition on the function and value of land under the stimuli of natural and socio-economic conditions, and the limit of their own ability and qualifications (Liu *et al.*, 2008). In order to study the differences in land use objectives, those objectives are here categorized into four groups: satisfying self-sufficiency; pursuing the economic value of land outputs; valuing the security function of land; and independent of land. Land transfer has been taking place among rural households in light of their land needs since the implementation of *Land Circulation Policy* instituted in the 17th Central Committee of the Communist Party of China in 2007. Accordingly, per household capita cultivated land here differs greatly, with the average 0.20 ha contracted land varying between 0 and 3.80 ha. Therefore, to identify the difference of land management scale in use, rather than the household contracted land, 0.10 ha, 0.25 ha, and 0.60 ha have been selected as the break points to investigate the difference scales in rural households′ land management.

2.4 Calculation of land inputs

The intensity of land inputs of rural households, in the form of labor, capital, and other elements, directly re-

flect their land use consciousness. Since the population of each rural household is variable, it is meaningless to compare the quantity of labor input of different rural household types. However, the average labor quality index of different groups can be used to analyze their behavioral differences in land utilization activities. Meanwhile, the capital investment of different types also directly reflects their behavioral differences. So, by applying the labor quality input model and capital investment model, the study will analyze the level of labor and capital input in different industries so as to discern the difference in land inputs (Viaggi *et al.*, 2011; Kasem and Thaba, 2011). The capital investment is the value of the material input per unit area of agricultural production, including pesticides, fertilizers, seeds, plastic sheeting, agricultural machinery, and so on. The level of capital investment can be calculated by using the total amounts of funds put into the land from rural households. The model of capital investment is as follows:

$$CI = \sum_{i=1}^{n} CI_i \ (i = 1, 2, \cdots, n) \tag{1}$$

where CI is the level of capital investment (yuan/ha), and the CI_i is the amount of funds per unit area of land in terms of the ith investment which include pesticides, fertilizers, seeds, plastic sheeting, and agricultural machinery. A labor quality index is established to examine the quality of labor inputs on land from rural households. Such an index can be used to reflect the intensive level of labor inputs in different industries and then investigate the difference of labor inputs among different industries from rural households. The model of labor quality input is as follows:

$$LQI = \sum_{i=1}^{n} N_i C_i \Big/ \sum_{i=1}^{n} N_i \ (i = 1, 2, ..., n) \tag{2}$$

where LQI is the labor quality index in one industry, the larger the index, the higher the quality of the labor input in the industry. The N_i and the C_i are the number of different labor groups classified according to the labor quality and the classification coefficient of labor quality in industry i. There are two steps in determining the classification coefficient of labor quality: assign a group-wise value according, respectively, to the effects of schooling, age and gender (Table 3), and then get the classification coefficient of labor quality through the combination of the former obtained group-wise value (Table 4). To simplify the model, the index value of normal labor quality, the average capacity of all labors, is fixed as 1.00. By taking expert advice and the practical situation of laborers in both on- and off-farm work in Bailin Village into consideration, the laborers are divided into two groups, and their capacity differentiated according to the difference in schooling, age, and gender. In detail, the working capacity of junior middle school and below is half of that of high school and above, that of the old is half of that of the young and the middle aged, that of the female is two-thirds that of the male.

3 Results

3.1 Establishment of conceptual framework

As the mobility between urban and rural areas, including land, labor, funds, and so on, has become increasingly clear, the development of rural areas has under-

Table 3 Group-wise value for labor forces in Bailin Village

Group	Schooling	Assigned value (S_i)	Group	Age	Assigned value (A_i)	Group	Gender	Assigned value (G_i)
1	High school and above	1.20	1	Young and middle aged (between 16 and 60)	1.33	1	Male	1.20
2	Junior middle school and below	0.80	2	Old (aged 60 and over)	0.67	2	Female	0.80

Table 4 Classification coefficients for labor quality in Bailin Village

	Combination of group-wise value					
	1	2	3	4	5	6
Code	$S_1 A_1 G_1$	$S_2 A_1 G_1$	$S_1 A_1 G_2$	$S_2 A_2 G_1$	$S_2 A_1 G_2$	$S_2 A_2 G_2$
Coefficients (C_i)	1.1952	1.2768	0.9648	0.8512	0.6432	0.4288

gone a transformation, from traditional endogenous accumulation to exogenous expansion. Accordingly, rural households have become economic agents whose thoughts and strategies in land use activities do not entirely follow the standard economic principles, but are affected by the interaction of the internal and external factors. On the one hand, they are restricted by rural household livelihood conditions (Bryceson, 2002); on the other hand, they are influenced by the market, policy, and other stakeholders (Zhu *et al.*, 2007; Démurger *et al.*, 2010). Taken the internal and external factors together, rural households tend to reposition their view of the function of land and then adjust their land use practices accordingly. Such change can be reflected in the way that rural households can change traditional land use strategies and can compete amongst themselves, as well as illustrating the extent to which they perceive and accept policy measures. But the roles of these factors differ greatly between different rural household types (Fig. 2).

Referring to the stage segmentation of land use consciousness by Wang Cheng *et al*. (2012), some rural household consciousness is still in the formative stage due to the restrictions of their own economic and geographical situations. Rural households at such stage tend to inherit traditional ways by cultivating their own contracted land to meet their needs for self-sufficiency. Specifically, various planting and nurturing have been carried out by this type of rural households just for their family consumption; no extra money except routine input has been spent on improving the output of land; agricultural cultivation ways, with low production but small risk, has been chosen and conducted by this type of rural households in a relatively closed state of life.

Most rural households′ consciousness of land use is at the stage when traditional and modern production ways conflict with each other. Rural households at such a stage tend to adjust their land management strategy according to market demands and other households′ behaviors. Mutual imitation becomes the major driving force for the formation of land use consciousness at this stage. The primary level of imitation involves land utilization, from extensive land use to intensive cultivation, and crop varieties, from field crops to cash crops, while the higher level of imitation lies in the improvement of production technology, the applying of mechanized cultivation. This group of rural households breaks with traditional small-scale farming to make an attempt at the specialization, scale, intensive agricultural production, and management practices, and tries to transfer in land and enhance the land input. In this way, a heavy dependence on land gradually disappears, and more attention is paid to the economic value of products and services obtained from the land.

The land use consciousness of some rural households has step into the symbiotic stage, in which rural households get much closer with each other as they convert the original competition brought by mutual imitation into cooperation through resources and information sharing. Meanwhile under the stimulation of established policies like Farmland Protection, New Rural Construction, and Land Remediation, institutions and rural households are pushed to reconsider the value and function of land utilization, especially the roles in food security, ecological balance, and social stability, and then re-select land use patterns to satisfy these demands at a regional or even national level. Also, inspired by the possibility of greater comparative profits from secondary and tertiary industries, some rural households try to get rid of the shackles of on-farm production, and begin to search for a shortcut to making a fortune through off-farm working, which leads to frequent land transfer between rural households.

3.2 Results of case study

3.2.1 Differences in land use objectives

Generally, the life and economic support functions are still the main objectives of land use, although some rural households have begun to recognize other functions of land, such as social-security insurance and old-age insurance, which are closely related to their land use consciousness (Table 5). To have a self-sufficient life is the main land use objective of the agricultural diversification group; about 84% (63 out of 75) of this group holds this view. The main land use objective of the agricultural specialization group is the pursuit of economic value of land output; 27 out of 38 rural households of this type pay great attention on the economic output of land. For the part-time development group, 36 out of 108 (around 33%) hope to meet their own survival consumption through land utilization and about half of this group (53 out of 108) begin to realize the security function of land. The non-agricultural diversification group put more value on the security function of land, taking land as the last protection against failure in non-agricul-

Table 5 Proportion of different land use objectives of rural household categories in Bailin Village (%)

Type of rural households	Satisfying self-sufficiency life (%)	Pursuing the economic value of land outputs (%)	Valuing the security function of land (%)	Independent of land (%)
Agricultural diversification type	84	11	5	0
Agricultural specialization type	11	71	18	0
Part-time development type	33	18	49	0
Non-agricultural diversification type	8	16	54	22
Non-agricultural specialization type	2	5	34	59

tural production. Among the 103 rural households of non-agricultural specialization type, more than half of them (61 out of 103) have abandoned land completely and tried to making livings independent of land while 35 rural households (about 34%) still attach great importance to the security function of land. The multiple purposes of land utilization reflect the complexity and diversity of rural household land use consciousness.

3.2.2 Differences in land management scales

Table 6 shows the differences in rural households′ requirements and preferences for land management scales in line with their own land use objectives. Overall, some rural households, just hoping to meet self-sufficiency through grain crops cultivation, tend to keep their management scale between 0.10 and 0.35 ha; those, expecting economic profits from cash crops planting, have a strong tendency to expand their management scale by transferring in land; others, not relying on land for livelihood, are likely gradually to transfer out land. Rural households of the agricultural diversification type keep their land management on a rational scale, with around three-quarters maintaining their management scale between 0.10 and 0.35 ha, mainly doing traditional production on their own contracted land. The total of 12 rural households of this type (16%) reduce their land management scale to less than 0.10 ha because of the decline in the labor force caused by old age and disease, while about 9% of them slightly expand their management scale. Among the 38 members of agricultural specialization group, 92% have expanded their scale through transferring in land, and 63% have managed more than 0.80 ha. Most of the land, given by their neighborhoods and relatives, is concentrated and contiguous, mainly growing fruit, tea, and other cash crops. In the part-time development group, the land management scale of 67 rural households (about 62%) reduces to less than 0.10 ha, and another 28% do not change. Most of rural households of this group tend to maintain a certain size of land management scale of about 0.05–0.10 ha in order to spare some time to engage in seasonal working. The land management scale of non-agricultural diversification group is generally smaller than the former three types. The 112 rural households of this group (about 76%) have less than 0.10 ha of land. In the non-agricultural specialization group, more than half have completely abandoned the land.

3.2.3 Differences in land inputs

Table 7 shows the discrepancies in land input of different rural household types. The general trend can be described as: the larger the land management scale, the greater the input, both labor input and capital investment. The inputs from the agricultural diversification group are not high, specifically, the labor quality index is less than 1 and the capital investment is lower than 1000 yuan (RMB) per year and 195 out of a population of 252 spend, approximately, more than 10 hours per day on in-farm work during the busy farming season and 8 hours per day in the slack season. The inputs from the agricultural specialization group are the highest of all types of rural households. For cash crops, the labor

Table 6 Proportions of different land management scales of rural household categories in Bailin Village (%)

Type of rural households	Less than 0.10 ha (%)	From 0.10 ha to 0.35 ha (%)	From 0.35 ha to 0.80 ha (%)	More than 0.80 ha (%)
Agricultural diversification type	16	75	9	0
Agricultural specialization type	0	8	29	63
Part-time development type	62	28	8	2
Non-agricultural diversification type	76	19	5	0
Non-agricultural specialization type	92	8	0	0

Table 7 Current land input situations for different rural households in Bailin Village

Type of rural households	Population	Food crops			Cash crops			Poultry			Non-agricultural industries		
		A	B	C	A	B	C	A	B	C	A	B	C
Agricultural diversification type	250	171	0.75	672	28	0.94	1025	51	0.49	747	0	0	0
Agricultural specialization type	128	15	1.16	926	84	2.25	1843	29	2.02	1510	0	0	0
Part-time development type	307	83	0.62	531	75	1.03	740	20	0.46	488	129	1.32	1633
Non-agricultural diversification type	391	68	0.76	718	50	1.56	858	53	0.77	1339	220	1.98	1984
Non-agricultural specialization type	365	24	0.92	735	49	1.48	826	36	0.85	1144	256	2.45	2352

Notes: A, labor inputs (persons); B, labor quality index; C, capital investments (yuan/yr)

quality index of this group is as high as 2.25, whilst the capital investment is about twice as much as the other four groups. Rural households of part-time development group have decreased their labor quality index to less than 1.00, and their capital investment in food crops to 531 yuan (RMB) per year, as they want to free some of their labor force from on-farm work and put them into non-agricultural industries. The other two types mainly put their efforts into non-agricultural industries. The overall inputs of the non-agricultural specialization group are higher than those of the non-agricultural diversification group. In total, it is increasingly clear that the higher the level of specialized production, the more the inputs into the land.

4 Discussion

4.1 Formation of land use objective differentiation

Under the joint stimulation of the external environment and internal condition, all types of rural households have formed their own land use objectives. For the agricultural diversification type, they have to rely on land for survival as they have no other means of livelihood with insufficient education or financial assets for anything other than traditional cultivation and propagation techniques. Accordingly, the products from traditional production techniques, such as rice, corn, soybeans, and so on, can only be used to satisfy the family′s own consumption. Overall, they have no other choice but to meet their self-sufficient requirements through land utilization. It is quite different for the agricultural specialization type, although rural households of this type still rely on land for economic profits. The total of 11 rural households of this type are firstly free them from complex and heavy multi-planting-and-breeding, and are able to specialize in planting cash crops such as pears, peaches, loquats, and tea, stimulated by economic profit from product trading and government subsides according to *Agricultural Ecology Tourism Developing Measures* in Shapingba District. A further 16 rural households have also started specializing in cash crops by imitating the initial 11, prompted by the profit available. The part-time development type also depends on land for self-sufficient, but it is essentially different from that of the agricultural diversification group, as they hope to stabilize food production to meet the needs for survival firstly, and then put further labor into non-agricultural work. Hence, some of them are allowed to work at nearby township enterprises in the day and do food production after work, whilst others are allowed to engage in seasonal working. The majority of two non-agricultural types have begun to make livings not depending on land as they have done well in non-agricultural activities due to their own skills and experiences, but the risk of off-farm working, such as in the 2008 economic crisis, makes it impossible for them to totally abandon the land.

4.2 Reasons of land management scale differentiation

Clear analysis of the land use objectives among different rural household groups lays a foundation for the accurate investigation of their management scale choices and land input decisions. Stimulated by high profit, rural households of both the two agricultural development types tend to expand their production scale and adjust their planting structure to improve production efficiency, especially with the deepening of marketization and the promotion of ′Sight-seeing Agriculture′ in Shapingba District of Chongqing Municipality. But their requirements for the quality of land are quite different. The agricultural diversification type hopes to transfer in land with high productivity and fertility due to cultivation technical limitations while the agricultural specialization

type just needs land with relatively low quality but continuous and concentrated, so as to do scale production. Most of the two non-agricultural development types have transferred out land to concentrate on the production in secondary and tertiary industries, and they want to continue transferring out land in exchange for employment, social security, housing, education insurance, and medical insurance as the manifestation of property value of land. But for the majority of rural households in the sample village, it is impossible for them to totally abandon land for land is their final protection when development in non-agricultural industries is blocked.

4.3 Factors leading to land inputs differentiation

By comparing the labor quality index and capital investment of different rural household groups, it can be found that all rural households have made reasonable choices in land investment in light of their land management scales. For the agricultural diversification group, these rural households have no choice but to use traditional farming methods, with low profit and small risk. In such conditions, they have to spend more time on the land and increase their labor intensity in order to satisfy their family′s needs. But rural households of agricultural specialization group are more willing to choose crop types with higher yields, adopt new technologies, improve communication and irrigation conditions and even hire other laborers instead of engaging themselves to work all day long. Most of them have increased their economic output through high input by applying dry farming, using grafting techniques, special fertilizers, pesticides and building roads, irrigation channels, and drainage ditches. For the two non-agricultural development types, only through high-quality investment of labor and capital can their agricultural production needs be met, so the labor forces have been liberated from heavy on-farm work. The land inputs of part-time development type are relatively complicated when compared with other types of rural households. The inputs to agriculture of this group are lower than those from both the agricultural diversification and specialization groups, and the inputs in non-agriculture are also lower than those of both the non-agricultural diversification and specialization groups. It is estimated that rural households of this type are struggling to balance agricultural and non-agricultural production at the turning point of livelihood transition.

4.4 Outcomes caused by differentiation

The differentiation of land use consciousness of rural households in the sample village has not only led to a change of land use objectives, land management scales, and land inputs at the rural household level, but also brought about land use change and land use rights transfer at the village level. During the field survey and rural household interviews, it was found that conversion of land use types is a frequent occurrence, such as from unused land to farmland, from farmland to garden land, woodland, construction land, and so no. Through a preliminary over-laying analysis of two land use maps from 1998 and 2009, respectively, about 17 ha of unused land have been developed and approximately 98 ha of farmland have been redeployed in the past ten years: 34 ha of farmland have been used for construction land, 19 ha have returned to woodland, and 45 ha have become garden land. Also, a great deal of changes in land contract and management rights have occurred, with the land mainly shifted from part-time development, non-agricultural diversification and specialization types to the agricultural specialization type after the formal establishment of a land transfer policy. Since the implementation of the *Land Circulation Policy*, 31 rural households of the non-agricultural specialization type have automatically abandoned their land and returned it to the collective organization for redistribution. It is obvious that the differentiation of land use consciousness has indeed caused changes, both in land use patterns and in land contracted rights, but how the former acts on the latter two aspects is still unclear, especially when land use consciousness changes frequently under the stimulus of external factors. Therefore, making clear how rural household land use consciousness results in land use changes in villages, so as to standardize their behavior in land utilization, is the main point of our future research.

5 Conclusions and Suggestions

This study was dedicated to analyzing the differences in land use consciousness of rural households, and especially to investigating the dynamic mechanism by which the land use consciousness comes into being and changes. In this study, the external characteristics of different rural households, including land use objectives, land management scales, and land inputs, were chosen

to reflect their inner land use consciousness. The driving forces, including both internal and external factors, were taken into consideration when analyzing how the land use consciousness of rural households forms and changes. The internal factors arise from the nature of the livelihood demands, and the external factors include traditional inheritance, mutual imitation, and policy apprehension. After the satisfaction of internal needs, the perception and reaction to external factors becomes the main influence on land use consciousness. Part of the household consciousness remains in an embryonic state, showing as a persistent attachment to land, and an inclination towards the traditional style of subsistence cultivation, insensitive to the outside environment. Some rural households break with traditional production methods under the stimulation of modern developments and policy-oriented responses, and attempt intensive production and larger-scale management, at the same time increasing their land input intensity, paying more attention to the economic value of the land. Other rural households begin to get involved in non-agricultural production, stimulated by the comparatively higher profits from non-agricultural industries. Among these households, some completely abandon the land for economic compensation, while some tend to keep land for fear of emergency.

The differentiation in rural households′ land use consciousness and the resulting differentiation in their land use objectives, land management scales, and land inputs have brought about divergent measures such as ′Land Transfer′ and ′Household Registration System Reform′, and so on. Instead of cooperation, rural households would harbor antipathy and resistance if such policy measures were implemented in a ′one size fits all′ way, in which case, the policy measures would be unlikely to attain the results expected. In order to protect rural households′ interests and to promote the implementation of policy measures, the following policy enhancements have been identified.

First, different types of rural households can be provided with different technical training and quality education. Specifically, targeted agricultural training, particularly new technologies for breeding, plague prevention, engineering specification, and so on, should be provided for the agricultural development groups, especially the agricultural specialization group. For the non-agricultural development type, non-agricultural vocational skills training, especially training towards the industries with low entrance thresholds, such as simple mechanical operation, catering service should be afforded so as to improve their non-agricultural development capability.

Second, flexible land transfer policies should be created to encourage the transfer of land contractual management rights between different rural households to better meet their needs for land. An economic compensation scheme should be created to encourage part-time development households and non-agricultural development households, who are not quite independent of land, to transfer out their land. In order to promote land transactions for agricultural diversification-type households who are more dependent on land, the government should help them find a job on the farms run by agricultural specialization households, and not just provide financial compensation and social security.

In addition, ′Comprehensive Agricultural Development′, ′Agricultural Production Infrastructure Construction′, ′Land Consolidation′, and some other measures need to be taken into consideration to enhance concentrated and scale management of land. Moreover, the government should promote agricultural industrialization through developing the specialization of local agricultural industry and readjusting the agricultural structure. Meanwhile, non-agricultural-type households should be encouraged in a lawful and voluntary way to waive rural land rights for economic compensation and social security. However, taking the limitation of rural households into account, before they waive their land rights, a non-agricultural development capability assessment should be made to find out whether they are qualified for a secure job with a steady income and whether they can afford a good life in the city. Under the above conditions, the different needs of all kinds of rural households can be met, and many would thus be more willingly to transfer or even waive their land rights.

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