Article

Resource Endowment, Rural Governance, and the "New Agriculture" in China

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Abstract

China's "new agriculture," characterized by a "capital-labor dual intensifying" pattern of production, is an effective way of linking small peasants with modern agriculture. Based on a field survey of several neighboring villages in Nijingzhen, Hebei, this article describes and compares each village's level of agricultural development, and how the new agriculture differs within them. The analysis reveals that both soil texture and land layout affect the ability of villages to adopt new agricultural technologies that characterize the new agriculture. The current land layout is determined by the land division rules that are collectively made by villagers under village self-governance and deeply influenced by the effectiveness of rural governance. "Capable rural people," family surname and clan structures, and the structure of peasant households, in addition to the choice to remain in the villages, interact with each other and affect the effectiveness of village governing authorities. In turn, the development of the new agriculture impacts the inflow and outflow of the rural labor force, and whether villagers remain in the village, which in turn affects rural governance and social stratification.

Keywords

the new agriculture, resource endowment, rural governance, small peasant, land fragmentation

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China's basic rural condition of "lots of people and little land" determines that long-term rural land management will remain small-scale and that, consequently, agricultural modernization can only be achieved based on small family farms. In 2019, the General Office of the Central Committee of the Communist Party of China and the General Office of the State Council of the People's Republic of China issued "Opinions on Promoting the Organic Connection between Small Peasants and the Development of Modern Agriculture," calling for the support of small peasants to help them take advantage of intensive cultivation, resulting in higher outputs. In areas with suitable resource endowments, peasants can increase the output value per unit of land by cultivating high-value cash crops. Unlike traditional crop production where labor can be saved through capital investment in machinery, fertilizers, improved seeds, pesticides, and so on, these high-value crops often require greater capital and more labor input. In other words, they are both "capital and labor intensive." This is so different from traditional grain and oil production that Philip Huang has labeled this production system China's "new agriculture" (Huang Zongzhi, 2010; Huang and Gao, 2013; Huang, 2016). The scale of production and operation in the new agriculture is generally below 20 mu. This scale is not only suitable for farm household production and operation, but also makes possible dramatic increases in the output value per unit of land. Additionally, it encourages the labor force to stay in the countryside, and alleviates the problems of a decline of rural organizations, loss of social capital, and weakened grassroots governance caused by large-scale labor outflow. The new agriculture can thus be an effective way of creating a connection between small peasants and modern agriculture.

In September 2014, the first author, in order to select a research theme for her doctoral dissertation, conducted a preliminary investigation in Houjiaying 侯家营, one of the North China villages surveyed by the Japanese South Manchuria Railway (known as the Mantetsu surveys) in the 1940s. The preliminary investigation revealed that the level of agricultural development in Houjiaying and two neighboring villages, Jingerzhuang 井而庄 and Xinjinpu 新金铺, varied substantially. Jingerzhuang and Xinjinpu had embraced the concept of the new agriculture and had already started to transform their production system by shifting from cultivating traditional crops to high-value-added vegetables. Houjiaying, however, had not yet moved in that direction. Jingerzhuang had also continued to promote the development of the new agriculture by adopting new technologies, but Xinjinpu stalled at an early stage. Based on this observation, the first author selected agricultural development and changes in the villages in North China since the Mantetsu Surveys as the subject of her doctoral dissertation (Cheng Yaoyao, 2017).

Three further field investigations in Nijingzhen 泥井镇, the township where the villages are located, were conducted later. During the field research, open and structured interviews with the head of Nijingzhen, the head of each village, and some villagers were conducted. In addition, local historical archives (1950–1991), local gazetteers, Changli 昌黎 county soil data and water conservancy data, and other relevant statistical data from Changli county and Nijingzhen (1949–2015) were gathered. This article, based on the field survey and the above empirical materials, seeks to explain the development process in each village, exploring the main factors, mechanisms, and interactions which have influenced the connection between small peasants and the development of the new agriculture, and analyzing the connection between small peasants and modern agriculture from the perspective of the development of the new agriculture.

The Rise and Development of the New Agriculture in Nijingzhen

The village of Jingerzhuang, and the neighboring villages of Xinjinpu I, Xinjinpu II, and Xinjinpu III (collectively referred to as Xinjinpu), are all located in Nijingzhen, Changli county, Hebei.[1] They are all situated next to provincial roads and close to the Nijingzhen township seat (See Figures 1 and 2).

The villages of Xinjinpu were initially one large village but, during the reconstruction of China's township and village system in 1984, they were designated as three separate administrative villages.[2] Open-air vegetable farming and small plastic-tent vegetable farming are the main industries in Xinjinpu. Most of the farming is done by middle-aged and elderly villagers, while younger people of Xinjinpu either run small businesses or work outside the village. The major industry in Jingerzhuang is vegetable farming in large plastic tents and greenhouses. Aside from school-age children and college students, all the young people of Jingerzhuang raise vegetables. With nearly no outflow of labor, Jingerzhuang is quite different from the villages of Xinjinpu, and indeed from most other villages in North China.

The Initial Stage of Reform and Opening-up: The "Capable People" Effect, Soil Texture, and the Rise of the New Agriculture

In the initial stage of China's process of "reform and opening-up," profound changes occurred in rural China with the implementation of new agricultural

Figure 1. Location of Nijingzhen.

policies. Collective ownership gave way to "production contracted to each household," which later was superseded by the "household contract responsibility system." The household responsibility system policy completely replaced the collective system, devolving agricultural production decisions back to the peasant household. The policy stipulates that, "except for some grain paid as land tax and collective management fees, all the rest is to go to the peasants themselves" 交够了国家的、留足了集体的、剩下全是自己 (Wu Jinglian, 2015). Thus, peasants, taking market demand into account, can choose what to cultivate. Looking to improve their income, some peasants began to cultivate cash crops, showing that there had been a significant crowding-out effect in food crops. Measures such as leveling the land, constructing irrigation canals, and building wells during the collectivization era

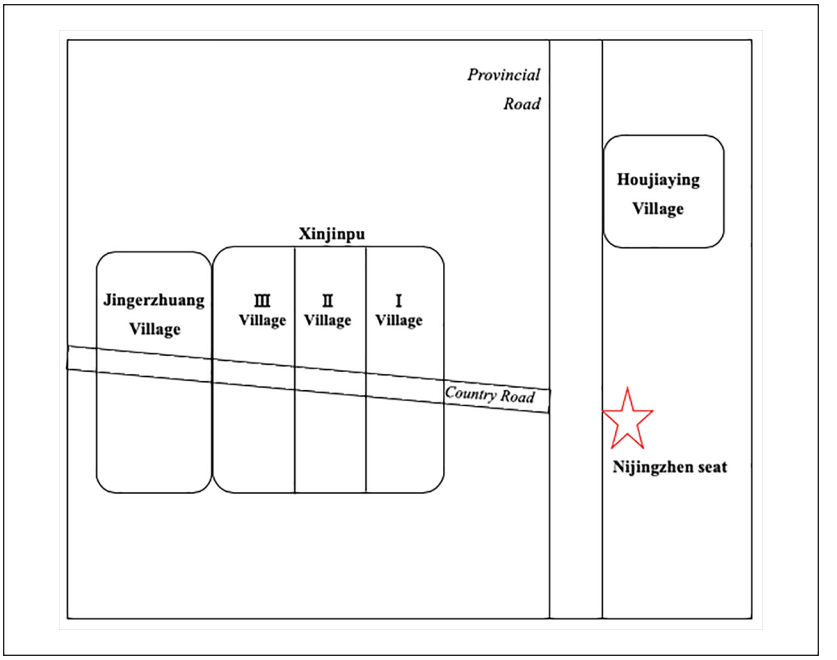

Figure 2. Sketch map of the location of the villages.

had greatly improved conditions for agricultural production and significantly increased the output per unit of land. Objectively, it has been possible since the 1980s to plant food crops on less land and still ensure food security. Therefore, where the conditions were suitable, peasants turned to growing high-water-consuming cash crops such as vegetables, and gradually diversified the crops they raised. This then led to the emergence of the prototypical new agriculture.

With the development of the rural economy, changes in agrarian society, and the rise of stratification among peasants since the 1980s, rural China has seen the emergence of a new group, known as either "economically capable people" 经济能人 or "rural capable people" 乡村能人 (Lu Fuying, 2011). These people not only play an important role in promoting institutional change in rural China, but also generate a strong demonstration effect on other villagers (Liu Huisun, Li Hanling, and Xin Wang, 2003; Li Jun and Chen Changyao, 2013). In Nijingzhen, as in many other places, vegetable farming originated from the demonstration effect of "capable people." In the late 1970s, Liu Zhixing 刘志兴, a "capable person" from Jingerzhuang,

began growing and selling vegetables, mainly cabbages, and by the 1980s had become a *wanyuanhu* 万元户, a household with an annual income of ten thousand yuan or more (the average annual income in rural China was about 400 yuan in 1985) (Interviews with Liu Zhixing, Sept. 2014 and May 2015; National Bureau of Statistics, 1999).[3] The high income contrasted sharply with the meager income from grain cultivation, attracting also his friends to vegetable farming (Interview 1).

In a short time, vegetable farming became the main industry in Jingerzhuang, and drew the attention of villagers from Xinjinpu. Since the 1980s, all the villagers in Jingerzhuang and Xinjinpu have begun to cultivate vegetables, starting with cabbage. They have shared information with each other on planting, watering, fertilizing, and ventilating. In the early 1990s, the introduction of plastic tents extended the vegetable growing season, increasing the number of vegetable harvests and the output value per unit of land. With the advancement of technology, plastic-tented vegetable farming soon replaced open-air farming. Vegetable sales have mainly relied on village brokers with good connections with vegetable distributors. Brokers have used village broadcasts to inform villagers of the variety and quantity of vegetables they need, and then take a fixed commission (usually 4 fen per kilogram). In each village, there are three to six brokers, who both compete and cooperate with each other (Interviews 1–4).

Despite its geographical advantages, the availability of technical support, and marketing channels in neighboring villages, Houjiaying has not been able to develop vegetable planting as its main source of production. The reason is simply that the soil in Houjiaying is unsuitable for raising vegetables. Unlike the soil in Xinjinpu and Jingerzhuang, which is called *mengjindi* 蒙金地 ("covered with gold," meaning rich and fertile), the soil in Houjiaying is sandy loam, with poor fertility and water retention (Soil and Fertilizer Station, 1985). Moreover, since the soil does not provide enough nutrients to raise maize annually, in the 1980s villagers changed the rotation pattern to maize–winter wheat in one year and then peanuts–winter wheat in the next. During the 1990s, agriculture became mechanized, and in North China there was a widespread adoption of combine harvesters, thus locking in the pattern of crop rotation. This, together with the rising costs of labor resulting from competition with nonagricultural work and Houjiaying's sandy loam soil, has restricted its transformation from the "old farming" to the "new agriculture." It has also led to a rapid decline of crop farming and the development of a risky livestock industry (Cheng Yaoyao, 2016). Obviously, soil texture has had a restrictive effect on planting in Nijingzhen. The sand content and the ability of the soil to retain moisture determine the soil's fertility as well as

which crops can be grown. Therefore, although Houjiaying enjoys a relatively advantageous geography, it has been unable to transform its local planting structure.

The Second Round of Rural Land Contracting: A Fork in the Development of the New Agriculture

After the implementation of the household contract responsibility system, farmland was divided into fragmented plots. The land allotted to each household consisted of separate, scattered plots, most of which were small. As the population continued to increase, the land was further subdivided during the second round of rural land contract implementation in 1998, and the fragmentation became even more severe. There have been many studies of this issue, mainly focusing on the impact of land fragmentation on food production and concluding that land fragmentation restricts the use of agricultural machinery and the improvement of planting efficiency (Burton and King, 1982; Fleisher and Liu, 1992; Wan and Cheng, 2001; Rahman and Rahman, 2008; Wang Xingwen and Zhong Funing, 2008; Zhang Haixin and Yang Gangqiao, 2012). The results of our investigation of the several villages in Nijingzhen reveal that land fragmentation also plays a role in restricting the development of the new agriculture.

Vegetable planting in North China has generally gone through several stages with the improvement of technology. Peasants originally planted vegetables in the open air, but in the early 1990s they began using small tents made with a bamboo frame and covered with plastic sheeting, generally about 1 meter high and of varying lengths and widths depending on the size of the plot. The tents were highly transparent and resistant to wind, rain, and snow, but did not retain heat well. Then, in the late 1990s, peasants began planting vegetables inside large plastic tents—usually 2.5 meters high, 10–12 meters wide, and 60–80 meters long—also made of bamboo and covered with plastic sheeting, but with better heat retention. Since the turn of the new century, peasants have been planting vegetables in plastic greenhouses (known locally as "large warm tents" 大暖棚), usually 2–4 meters high, 6–12 meters wide, and 60–100 meters long, and constructed of soil and brick-and-steel frames, and covered with plastic sheeting and thermal insulation roller blinds (Zhang Zhenhe, 2009). These greenhouses provide excellent heat retention, enabling the cultivation of a greater variety of vegetables.

During the period when vegetables were planted under small plastic tents, the impact of land fragmentation and land orientation on production was not readily apparent. However, with the move from small plastic tents to large plastic tents and plastic greenhouses, the restricting influence of

land fragmentation and orientation became obvious. In North China, a large plastic tent or greenhouse usually requires around 600–800 square meters of land. To maximize exposure to sunlight and to ensure a temperature conducive to vegetable production, the tent or greenhouse should be built lengthwise in an east-west orientation, thus facing south (Zhao Jianjun and Yang Xiaoni, 2016). Generally speaking, if the land is oriented in a north–south, rather than east–west, direction, although the optimum light levels cannot be obtained, it is still possible to construct a large plastic tent or greenhouse. Since Nijingzhen is high in the west and low in the east, orienting fields north to south is not conducive to drainage. Therefore, the orientation of the field ridges in Nijingzhen has always been east–west, in contrast to the situation in most areas of North China (Zhang Si, 2010).[4] Such an orientation is perfect for large plastic tents and plastic greenhouses, but if the farmland is severely fragmented, there would simply not be enough space for either structure. During the second round of rural land contracting, peasants in Jingerzhuang and Xinjinpu adopted different land division rules, resulting in significant differences in the degree of land fragmentation. This affected the development paths and the status of the new agriculture differently in these villages.

Jingerzhuang Village: From Small Plastic-Tents to Plastic Greenhouses. In implementing the second round of land contracting in 1998, the villagers of Jingerzhuang adopted a land redistribution strategy of keeping the area and range of the cultivated land of each production team (the basic accounting and farm production unit in China from 1958 to 1984) unchanged, and of redistributing and recontracting the land among group members in response to population changes.[5] There are four village groups in Jingerzhuang, and all of them adopted the method of dividing land according to its quality.[6] First, through discussion, the group members unanimously agreed to categorize the land into five grades—A, B, C, D, and E—and worked out a conversion ratio between each grade (1 mu of grade A land = 1.2 mu of grade B land = 1.3 mu of grade C land = 1.5 mu of grade D land = 2 mu of grade E land). Second, the group committee recalculated the total and average area of grade-A-equivalent land according to the conversion ratio. Third, based on these calculations, the land was divided into several plots and each was numbered. Fourth, the plots were distributed among the peasants by drawing lots. Fifth, the group committee demarcated the precise boundaries according to the land's grade and the number of people in each household (Interview 1, May 2015). Although the actual amount of land allotted to each peasant varied, the "converted area of land" calculated according to the conversion ratio between grades was the same—that is, the land that each household obtained was

roughly equal in output.[7] This method increased the cost of managing the registration of land contracts, but it achieved fairness while maintaining the relative integrity of the plots and avoiding land fragmentation.

After the second round of rural land contracting, the land of almost every peasant in Jingerzhuang consisted of a continuous field with an east–west orientation, a good foundation for the construction of large plastic tents and the plastic greenhouses that were to follow. By the start of the twenty-first century, the villagers of Jingerzhuang had accumulated more than ten years of experience cultivating vegetables. They built large plastic tents to replace the small plastic tents and no longer grew cabbages alone, but expanded the vegetable varieties to include potatoes and carrots. After the introduction of large plastic tents, vegetables could be marketed earlier in the season and therefore could command a higher price. The substantial increase in vegetable prices and the expansion of vegetable varieties significantly increased the peasants' income. A few years later, peasants constructed greenhouses, which provide better heat retention and thus paved the way for the further expansion of vegetable varieties. By studying planting techniques, the peasants quickly introduced celery, strawberries, tomatoes, cucumbers, and other varieties with higher returns to replace the original varieties. As a result, the average value of output per mu increased from 20,000 yuan to 40,000 or 50,000 yuan (Interview 1 and interviews with several villages, December 2015).

Because vegetable cultivation is labor intensive and can bring good returns, there has been almost no outflow of labor from Jingerzhuang. Thus Jingerzhuang has been spared the rural "hollowing-out" 空心化 phenomenon, that is the massive outflow of the rural population to urban areas and the consequent loss of the vitality of rural society since the reform and opening-up (Liu Yansui and Liu Yu, 2010; Liu Jie, 2014). In Jingerzhuang, however, only one household works off-farm; all the other 328 households have remained in farming (Interview 1, December 2015).[8] By cultivating vegetables, the villagers of Jingerzhuang enjoy an average income that is generally higher than that of the residents of other villages. As a result, women in this village usually prefer to marry men in the village who are good at farming vegetables rather than marrying outside the village. In this way, more young people stay in the village. It is precisely these young people who have been the main force behind the expansion and upgrading of vegetable varieties and the introduction of better technologies. A few households with relatively more young people even have surplus labor. These households raise pigs as well as cultivate vegetables, thereby increasing their income and also obtaining higher vegetable yields, since the pig manure can improve soil fertility. In this way, a complementary cycle of planting and breeding has emerged.

For example, Liu Xinjian, the director of women's affairs in Jingerzhuang, and her husband, Wang Changqiang, a villager of Jingerzhuang, have two plastic greenhouses and four large plastic tents. They raise celery, zucchinis, tomatoes, and cucumbers in the greenhouses, and potatoes, carrots, and cabbages in the large plastic tents. They also have raised eighty pigs in their yard. The couple and their parents are all engaged in vegetable cultivating and pig raising. They have to work in the greenhouse and large tents more than three hundred days a year, and need to hire workers from surrounding villages when harvesting potatoes and cabbages. The income from a single large plastic tent is more than 25,000 yuan, and from a plastic greenhouse, more than 50,000 yuan. The net profit is about 50 percent. Combined with the money they made from raising pigs, Liu Xinjian's family netted over 200,000 yuan in 2015 (Interview 5). In particular, when we interviewed Liu and Wang in one of their plastic greenhouses in December 2015, we saw them bundling celery with a tool made by Wang Changqiang, which had made their work more efficient.

Jingerzhuang still maintains a traditional form of governance over the local society. The community-level self-governance system and the traditional rural governance mechanisms complement each other. Liu Zhixing serves as both the village head and the village party secretary of Jingerzhuang, and he enjoys a high level of prestige.

On the one hand, Liu is a capable and fair person, and has brought practical benefits to the villagers. He was the first person to cultivate and sell vegetables in the 1980s, and he later taught vegetable cultivation techniques to other villagers and brought them together to develop vegetable farming. After becoming the head of the village in 2003, he voluntarily gave up being a vegetable broker. Moreover, he won government funding for various projects by contacting friends who worked in the local finance bureau. For example, in 2009 Jingerzhuang received government support for a land consolidation project. This project, which involved laying underground irrigation pipes and building new wells, reduced the villagers' irrigation costs by half.[9] In the subsequent operation and maintenance of these irrigation facilities, the village committee has been responsible for contacting the relevant technical personnel. Government funding covers all the costs; villagers pay no fees and are required to do no more than provide labor when it is needed.

On the other hand, the family surname and clan structures and the relationships between different clans are relatively simple in Jingerzhuang. Eighty percent of the villagers share the surname Liu 刘, while 15 percent are surnamed Wang 王. Most villagers are more or less closely related.[10] When there are conflicts and disputes among the villagers, as long as Liu Zhixing intervenes on behalf of the village committee, the issue will

generally be appropriately resolved. This clan structure greatly reduces the difficulty of negotiating, as well as the costs of village governance. For example, one peasant had contracted land with a width of less than 50 meters, which prevented him from building a greenhouse to grow more profitable vegetables. On behalf of the village committee, Liu Zhixing consulted with neighboring villagers and they quickly reached a land adjustment agreement that met this individual's need for space to build a greenhouse. Liu believes that the arrangement by which he serves concurrently as village party secretary and village head is conducive to good governance and the smooth and healthy development of the village, since he has no room to shirk his responsibilities (Interview 1).

Xinjinpu: Stagnation in Small Plastic-Tented Vegetable Farming. The three villages of Xinjinpu, adjacent to Jingerzhuang, have sought to keep pace with Jingerzhuang in the development of vegetable planting, and each of the three villages has several capable individuals acting as vegetable brokers. However, unlike Jingerzhuang's development path from open-air planting to small plastic-tented farming to planting in large plastic tents to planting in plastic greenhouses, vegetable cultivation in Xinjinpu has stagnated at the stage of small plastic-tented farming, and the vegetable varieties planted are still limited to potatoes, carrots, and cabbages—there has been no movement toward more profitable of varieties of vegetable and no advance in technology since the 1990s (Interviews 2, 3, and 4). Our field investigation revealed that the contrast between the two villages was extremely sharp. Xinjinpu's fields are covered with scattered small plastic tents, while Jingerzhuang's are lined with neatly arranged greenhouses.

Although soil texture is a key aspect of land resource endowment, the soil texture in Xinjinpu is similar to that in Jingerzhuang, and thus this is not a factor that can account for the significant difference between the villages. Instead, the key to the problem is that the land layout—another essential aspect of land resource endowment—of Xinjinpu is quite different from that of Jingerzhuang: the land in Xinjinpu is highly fragmented. This is a result of the land division rules that were applied in Xinjinpu. In the second round of rural land contracting in 1998, the villagers of Xinjinpu adopted a land allocation method that prioritized absolute fairness. They broke up the land boundaries of each village group and distributed all the village plots evenly to everyone, regardless of the quality of the land. Every peasant household thus has five or six plots of land (Interviews 2, 3, and 4). Although this method has achieved absolute fairness, it has caused severe land fragmentation. The paths of the rural roads that criss-cross the cultivated land of Xinjinpu are like a bowl of noodles, running every which way—indicative of

the fact that the land is divided up helter-skelter into small plots. Most of the land plots are long in the north–south direction and short in the east–west direction (the longest in the east–west direction is only 30–40 meters), and thus they fail to meet the basic requirements for building a large plastic tent or a plastic greenhouse. This land layout is not conducive to the long-term development of Xinjinpu's vegetable farming industry.

Therefore, a key question is why Xinjinpu did not adopt a distribution method like that of Jingerzhuang. The answers are connected with the surname and clan relations structures, which differ between the two villages. Almost all the villages in Nijingzhen were built by early immigrants from Shanxi and Shandong during the Ming dynasty (1368–1644) (Changli County Local Gazetteer Compilation Committee, 1992). Unlike the single-surname villages formed by clan immigrants (where most villagers share the same surname, such as most villagers in Jingerzhuang sharing the surname Liu), the three villages of Xinjinpu are mixed-surname villages composed of many immigrant families with different surnames. As noted earlier, the villages of Xinjinpu were initially one large village with a large population. During the reconstruction of China's township and village system in 1984, Xinjinpu was divided into three separate administrative villages according to the main surnames in Xinjinpu—Zhu 朱, Zheng 郑, and Zhao 赵—and were designated as Xinjinpu I, Xinjinpu II, and Xinjinpu III, respectively. However, in each of these villages, villagers with the "main surname" account for no more than half the population—a significantly different situation than in single-surname villages. Today, villagers with different surnames in the three villages of Xinjinpu still maintain different folk customs.[11] "Special trust" based on kinship and fictive kinship is the fundamental impetus behind cooperation among Chinese peasants (Zhao Quanmin and Li Yi, 2007). Although there are also some wealthy and capable people in Xinjinpu, the fact is that complicated clan relationships lead to a lower level of trust between villagers than in single-surname villages, making it difficult for these villagers to agree on a leader who can act as a "backbone" and carry the weight in local governance. Besides, low levels of trust increase the possibility of disagreements and resistance during villagers' deliberations.

In such a low-trust rural society, the authority of the village committee has also significantly declined. Objectively, institutional changes such as the rural tax and fee reform in 2001 and the abolition of agricultural taxes in 2006 have loosened the relationship between grassroots state power and ordinary villagers, have led to the rural government gradually becoming alienated from peasants, have changed governance from an extractive model to a "suspended in thin air" model (Zhou Feizhou, 2006), and have step-by-step weakened the power of village cadres over villagers. As the

government's support for rural areas has increased, village cadres' salaries have come to be paid by the central government, and the countryside has received more and more investment in the form of farmland management and rural development projects, some capable rural people or powerful members of clans in Xinjinpu came to consider the position of village cadre as a cash cow to be milked for personal gain. Against the background of the gradual weakening of township government's control over village cadres (Wang Lisheng, 2006), village self-governance and village elections have become a stage on which representatives of various clan forces compete for gains while shirking the responsibility for providing village public services to others.[12] The failure of rural governance has drastically reduced villagers' trust in village cadres. In addition, the massive outflow of labor has indirectly broken the rural governance order and eroded the moral foundation of traditional governance and rural public order.

As a result, the system of community-level self-governance is comparatively less effective in the three villages of Xinjinpu, and the level of trust between villagers and village cadres, and among villagers, is low. In this context, in the second round of land contracting in 1998, Xinjinpu adopted a land allocation method that prioritized absolute fairness to individuals rather than the long-term development of the village. Following the allocation of all the land such that everyone received equal shares, each peasant household has several scattered plots, restricting the ability of Xinjinpu's vegetable farming industry to move from small plastic-tented farming to farming in temperature-controlled large plastic tents and plastic greenhouses.

Since Xinjinpu's vegetable farming industry has stagnated, the villagers only cultivate vegetables from April to November, and have four months slack time every year (Interviews 2, 3, and 4). Xinjinpu cannot absorb as much labor as Jingerzhuang, and a large number of young and middle-aged people thus have become a potential surplus labor force in the village. Leaving for urban work was their best choice: many young people in Xinjinpu—about 90 percent of villagers under the age of 35—work off-farm (Interviews 2, 3, and 4). These villagers reached adulthood and were able to go out to work between the years of 2000 and 2005, which also happens to be the critical stage at which Jingerzhuang's vegetable planting industry moved from small plastic-tented farming to farming in large plastic tents and plastic greenhouses. At that time, the successful transformation of the vegetable planting industry in Jingerzhuang increased the output per mu and the demand for labor, which led to young villagers staying to farm. In Xinjinpu, the outflow of a large proportion of the young labor force aggravated the hollowing-out problem. The aging villagers who remained behind were more likely to be rigid in their thinking and to lack creativity and a pioneering spirit; they

were more often content with the current situation and may have lacked the drive needed to rearrange the farmland and promote innovation in vegetable farming. At the same time, the outflow of young villagers has resulted in the emergence of left-behind children and left-behind elderly people in rural areas and other social problems, restricting the economic and social development of the village. These problems, in turn, have strengthened the old village governance structure. In Xinjinpu, the development of the new agriculture and of the village more broadly seems to be caught in a vicious circle.

Resource Endowment, Rural Governance, and the Development of the New Agriculture

The gap in the development of vegetable farming between Jingerzhuang and Xinjinpu is readily apparent. The peasants of Jingerzhuang cultivate high-yield and high-value leafy vegetables and fruits instead of root vegetables in large temperature-controlled plastic tents and plastic greenhouses. This has led to a doubling of the average income per mu since 2000. The villagers of Xinjinpu, on the other hand, still cultivate root vegetables using simple, small plastic tents, just as they did in the 1990s. A comparison of the development processes and development status of the new agriculture in Jingerzhuang and Xinjinpu (see Table 1) reveals the mechanisms of interaction and influence among land resource endowment, rural governance, and the development of the new agriculture (summarized in Figure 3).

Land Resource Endowment and the Development of the New Agriculture

Although land resource endowment as an external natural condition changes much more slowly in relation to social and economic development than do economic policies and markets, it still has an impact on agricultural development that cannot be ignored. However, the restrictive effect of land resource endowment on the development of the new agriculture has received little attention. On the one hand, the rise of the new agriculture has not attracted a great deal of attention from scholars, although it has been quietly developing for many years and has made a significant impact, such that it can be called a "hidden agricultural revolution" (Huang Zongzhi and Peng Yusheng, 2007; Huang Zongzhi, 2010; Huang, 2016). On the other hand, because of the vast improvement of rural water conservancy conditions during the collectivization period, in the literature that does exist, natural constraints are often

Table 1. Resource Endowment, Rural Governance, and the Development of the New Agriculture in Jingerzhuang and Xinjinpu.

			Jingerzhuang village	The three villages of Xinjinpu
Land resource endowment	Soil texture		Loam	Loam
	Land layout	Lot size	Not fragmented: each household has one large plot	Fragmented: each household has five to six small plots
		Land orientation	Long in the east–west direction, short in the north–south direction	Long in the north–south direction, short in the east–west direction
Rural governance	Family surname and clan structure		More than 80% of villages share the surname Liu	Mixed surnames: each village has a different main surname
	Structure of village cadres		One capable person serves as both the village head and the village party secretary	The posts of village head and village party secretary are not held by one person; competition more than cooperation among village cadres
	Authority of village leaders		Strong	Weak
	Trust between villagers and village cadres, and among villagers		High	Low
	Villagers remain in the village		No outflow of the young labor force; positive and open to new technologies	A high degree of "hollowing-out"; mainly middle-aged, satisfied with small plastic-tented vegetable farming
Land division rule in the second round of rural land contracting	Value goal		Village development	Fairness
	Division method		Area and range of cultivated land of each village group kept unchanged; conversion ratio of different land grades worked out; weighted by land grade: peasants who drew lots for good land received smaller areas, and vice versa	Land boundaries of each village group broken; village land plots distributed evenly to everyone
Development of the new agriculture	Planting facilities		Plastic greenhouses; some large plastic tents	Small plastic tents
	Vegetable varieties		Celery, tomato, cucumber, strawberry, etc.	Potato, carrot, and cabbage
	Average annual income per mu		40,000 to 50,000 yuan	About 20,000 yuan
	Village stratification		Narrow income disparities; no social stratification	Unstable stratification due to off-farm income

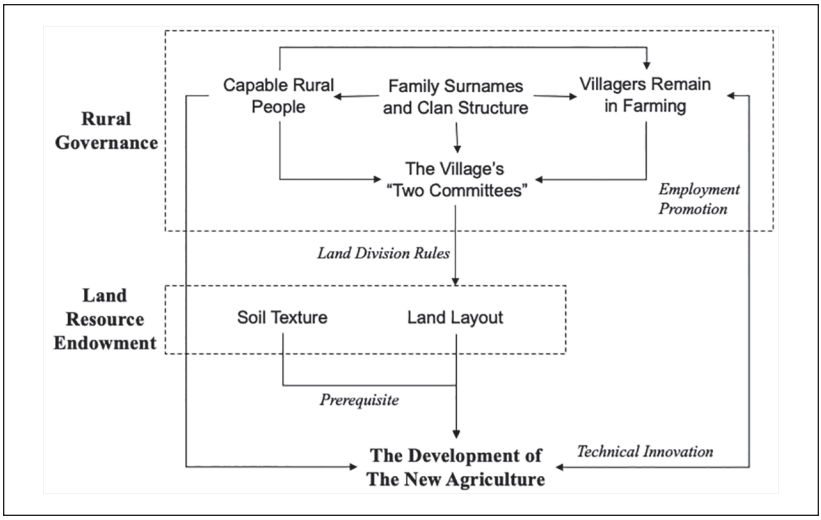

Figure 3. The mechanisms of interaction and influence among land resource endowment, rural governance, and the development of the new agriculture.

regarded as factors that have been overcome and only appear in research and analysis as a background constant. The cases discussed in this article, however, fully reflect the restrictive effect of soil texture on the development of the new agriculture.

The land resource endowment factors discussed in this article include soil texture and land layout. First of all, soil texture determines whether a village can develop new-agriculture vegetable cultivation. Looking at the cases of Houjiaying, Jingerzhuang, and Xinjinpu, the multiple irrigation needs of vegetables and the soil texture conditions severely reduced the possibility of Houjiaying engaging in vegetable farming, but these were not constraints for Jingerzhuang and Xinjinpu. This illustrates the prerequisite effect of soil texture on agricultural development. Second, land layout, the other important component of land resource endowment, is the key to the development and transformation of the new agriculture. Taking advantage of the reform and opening-up policy, the villagers of Jingerzhuang developed the village's vegetable farming industry. Grasping the opportunity of the second round of rural land contracting, they collectively worked out a method of weighted land division depending on land quality and formed a land layout pattern that avoided the problem of land fragmentation, maintained the east–west orientation of the land, and facilitated technological advances and the improvement

of vegetable farming. Agriculture in Jingerzhuang was thus internally transformed and improved. In Xinjinpu, by contrast, the land plots were equally divided between everyone, resulting in a land layout in which most of the land is fragmented, long in the north–south direction, and short in the east–west direction, rendering the improvement of planting facilities virtually impossible.

Rural Governance and the Development of the New Agriculture

The effectiveness of rural governance and the quality of rural decision-making are determined by the structure of rural governance. This plays a critical role in guiding and promoting the development of the new agriculture. The cases of Jingerzhuang and Xinjinpu reveal that the interactions among the factors involved in rural governance—such as capable rural people, family surname and clan structures, the demographic structure wherein of villagers remain in farming, and the village self-governance system—led to their different decisions and resulted in their different developmental status.

First, capable rural people connect local agrarian society with modern village self-governance and hold positions of authority in rural governance. Capable rural people are mainly those who are "economically capable," forward-thinking and knowledgeable, and skillful in management and coordination. They usually enjoy traditional local governing authority by virtue of their ability and good moral character. Naturally, in village elections they are elected by villagers as the core leadership of the village's "two committees" and thereby gain legal authority. The acquisition of this dual authority expands capable rural people's influence in village governance, which can promote the village's internal integration, reconcile interests, and enhance the organizational authority and the effectiveness of the governance of the "two committees." In Jingerzhuang, Liu Zhixing, who doubles as the village head and the village party secretary, led villagers to jointly work out sound land division rules in the second round of rural land contracting, thus creating favorable conditions for the long-term development of the new agriculture. When one person bears the burden of both village head and village party secretary, the village self-governance system can operate effectively in local rural society and the quality of decision-making in rural governance can be enhanced.[13]

Second, family surname and clan structures affect the basis of the authority of capable rural people and the village self-governance system. The cases of Xinjinpu and Jingerzhuang show that family surname and clan structures directly affect the level of social trust in village society. In a rural community, the simpler the surname and clan structure, the higher the level of trust within

the village and the more influential the voice and influence of capable people. In contrast, the more complicated the family surname and clan structure, the lower the level of social trust in the village and the weaker capable people's influence and voice in rural governance. Moreover, it is more difficult for such people to establish substantial authority in the village. If the foundation of village cadres' authority is unstable—demonstrated, for example, through vicious competition among cadres and interest contention—this will weaken the legal authority of self-governance and hinder village development and the effectiveness of governance. In the case of Xinjinpu, the complicated surname and clan structure significantly increased stratification within the village and made it difficult for a stable and effective leadership core to emerge. Elections of the village's "two committees" and decision-making in village public affairs have become an ugly drama full of factional rivalries and competing interests, making it difficult to reach effective decisions. Even though some peasants have called for a change in the land fragmentation situation, their plea has encountered much resistance and has been met with no positive response (Interview 4). This has significantly weakened the authority of village cadres, and even undermined the authority of the village's "two committees" and of the village-level self-governance system. As a result, the legal authority of capable rural people and village cadres has been weakened, or has even disintegrated. This failure of rural governance will only bring about the stagnation of agriculture development and the village's decline.

Third, the villagers who have remained in farming are the main body and fundamental force for village self-governance and the development of the new agriculture. Judging from the cases of Jingerzhuang and Xinjinpu, villagers who have lived in their village for a long time and are still engaged in agriculture have played a substantial role in rural governance and the development of the new agriculture. These villagers' identification with those in authority as capable people and village cadres affects their enthusiasm for participating in the governance of village public affairs and their capacity for innovative thinking and concrete action in promoting technological innovation. At the same time, the status of agricultural development, in turn, affects the demographic composition of the group of villagers who remain in farming.

In the case of Jingerzhuang, young people farm vegetables under their parents' guidance. Taking advantage of both what they learn about the technical aspects of vegetable farming and their contacts outside the family, they have introduced more profitable vegetable varieties, improved planting techniques, upgraded planting facilities, and promoted the development of the new agriculture. Furthermore, the successful transformation of vegetable farming in Jingerzhuang has increased the economic incentive for young

people to remain in the village and has also increased the local demand for labor. As a result, there has been no outflow of labor from Jingerzhuang. The accumulation of talent within the village has powered its further development and provided a basis for the coordinated and sustainable new agriculture.

Xinjinpu, by contrast, is constrained by its land layout. Its villagers were unable to adopt these technological upgrades, making it impossible to provide sufficient work for the new adult labor force and hence the village suffered from a surplus of labor. Most young villagers left the countryside, leaving the farming to the middle-aged. The outflow of labor and the hollowing-out of the village due to the stagnation of the new agriculture have weakened the foundation of village self-governance. This has opened space for disruptive and even criminal elements to operate, aggravating the potential for chaos in village governance (He Xuefeng, 2011), undercutting the social foundations of the village, and exacerbating social and economic disparities within the village.

Only when villages are able to retain their people, especially young people, can village governance have a solid foundation and development be vigorous.

Conclusion

The history of vegetable farming in Jingerzhuang and Xinjinpu shows that the new agriculture is highly adaptable to the constraints of China's population-to-land resource endowment, and is effective in connecting small peasants with modern agriculture. In particular, the higher-value new agriculture is "capital and labor dual intensifying," since it requires several times as much labor input per mu as traditional crop farming. It has promoted a "hidden agricultural revolution" (Huang Zongzhi, 2010) in terms of output value. Based on field investigations, this article has argued that land layout—an essential aspect of land resource endowment—has been the decisive factor in these two villages' entirely different development status. During the second round of rural land contracting in 1998, the land distribution rules that villagers adopted directly determined the layout of the village's farmland. The rural governance structure thus plays a fundamental role in influencing land distribution rules. In short, the development of the new agriculture is a complex, multifactor interactive system.

There are still many villages like Xinjinpu in North China. How can negative factors be turned into positive factors to free such villages from the "low-level trap" of development, to allow them to enter a virtuous circle rather than remained trapped in a vicious circle, to effectively involve small peasants in modern agriculture, and to promote China's rural revitalization? The key to

this significant problem is the human factor. That is, through the revitalization of agriculture under local conditions, labor and capable rural people can be attracted to return; essential elements such as labor, knowledge, and technology can be injected into rural development; and the community-level self-governance system and its foundations can be consolidated and improved.

Interviews

1. Liu Zhixing, head and village party secretary of Jingerzhuang village, September 2014 and May 2015.
2. Zhu Weidong, cadre in Xinjinpu I village, May 2015.
3. Chen Guiqiang, head of Xinjinpu II village, December 2015.
4. Xing Yuzhu, head of Xinjinpu III village, December 2015.
5. Liu Xinjian and Wang Changqiang, residents of Jingerzhuang, December 2015.

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Notes

1. There are 329 households, 862 villagers, and 3,345 mu of cultivated land in Jingerzhuang; 272 households, 704 villagers, and 2,226 mu of cultivated land in Xinjinpu I village; 324 households, 831 villagers, and 2,773 mu of cultivated land in Xinjinpu II village; and 284 households, 709 villagers, and 1,999 mu of cultivated land in Xinjinpu III village (Annual Statistical Report of Nijingzhen, 2015).
2. There are two types of villages in China: natural villages and administrative villages. The former are spontaneously formed settlements. Administrative villages are community-level self-governing organizations established in accordance with Chinese law. An administrative village usually contains several natural villages, but a large natural village may be divided into several administrative villages (as is the case with Xinjinpu). In an administrative village,

the village committee and village party branch committee (the village's "two committees") are responsible for managing village affairs, and its subordinate natural villages often constitute the production teams under the governance of the two committees.

3. Liu Zhixing was the accountant of Jingerzhuang in the 1970s and 1980s, the head of Jingerzhuang from 2003 to 2007, and both the village head and the village party secretary of Jingerzhuang since 2007 (Interview 1).
4. During the collectivization period, in line with the "Learn from Dazhai in agriculture" campaign, the local government at one point organized a great deal of labor to change the direction of the field ridges that ran east–west to a north–south orientation in order maximize the sunlight falling on the crops. However, the reorientation caused waterlogging and a decline in output, and the direction of the field ridges was changed back to the former east–west orientation a year later (Zhang Si, 2010).
5. The natural villages within an administrative village are often considered "production teams," which are governed by the two committees (see Note 2 above).
6. One village group in Jingerzhuang redistributed all its plots evenly to each group member. This turned out to be a problem because the large plastic sheds that were about to be introduced required a relatively large plot. The villagers themselves later privately readjusted the area and location of their contracted land. This made the group's land redistribution pattern similar to that of the other three village groups (Interview 1, May 2015).
7. Peasants who got high-quality plots were given a smaller area of land, while those who drew low-quality land were given more. For example, assuming that each group member would get 2 mu of grade-A-equivalent land after the calculation, and assuming that each household has five people, a household that drew lots for grade-A land got 10 mu of such land and one that drew lots for grade-C land got 15 mu of grade-C land.
8. The villager who has been a migrant worker since 2015 lost a great deal of money through large-scale breeding of foxes and raccoons in 2014.
9. Before this, villagers had used diesel engines to pump water for irrigation and had had to pay for the diesel fuel. The cost of irrigation was about 10 yuan per mu. The government-funded project replaced the diesel engines with electric motors and installed underground irrigation pipes. This reduced the cost of irrigation to about 5–6 yuan per mu (Interview 1, December 2015).
10. Although there are few ancestral halls and annual rituals or ceremonies in rural North China, people with the same surname often believe that "five hundred years ago, they belonged to the same family," and so usually strongly identify with each other. This surname identification might have sprung from the several large-scale migrations in North China during the Ming and Qing dynasties (Telephone interviews with Liu Zhixing in September 2020).
11. For example, the Zhu clan in Xinjinpu I gathers every year on the twenty-eighth day of the third lunar month. In the past, people gathered for a ritual prayer for rain. Now that this prayer for rain is no longer considered necessary,

the custom of gathering has been retained but praying together has given way to eating dinner together. Other villagers in this village do not follow this custom (Interview 2).

12. In 2015, the six production teams in Xinjinpu I were divided into 21 production teams in a move to increase the number of village representatives (Interview 2).
13. The advantage of one person serving as both the village head and village party secretary in promoting village self-governance has been recognized in government policy. In September 2018, the Strategic Plan for Rural Revitalization (2018–2022) issued by the Central Committee of the Communist Party and the State Council stated that the use of this model should gradually be increased from 30 percent in 2016 to 50 percent in 2022 (http://www.gov.cn/gongbao/content/2018/content_5331958.htm).

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