Book review

The Logic of Grain Planting: A Framework of Farmland Property Rights, Resource Allocation, and Division of Labor
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Why are Chinese small farmers planting more grain crops? – Review of the *Logic of Grain Planting* (2018)

In *Who Will Feed China?* Brown (1994, 1995), expressed great concern about whether China can maintain grain self-sufficiency due to its large and rapidly increasing population, and how the country might affect the global market with increasing demand. This apparent food security problem has caused concern around the world. Between 1982 and 2017, China's grain output was volatile during some periods and once appeared to be a periodic "non-grain cultivating" phenomenon, but overall grain production increased from 354 to 618m tons, far more than the 34 percent population growth during the same period. This success in agricultural production far exceeded 1990s predictions. Moreover, there was an unprecedented continuous annual increase in China's grain output from 2003 to 2015. Although the Chinese Government began supply-side structural reform of agriculture by adjusting the agricultural planting structure to encourage more cash crops in 2016, total grain output still reached 616m tons, the second-highest annual yield in history.

This prompts a question: what factors have driven the sustained growth of grain production in China? How can we explain the significant transition from "non-grain-oriented" to "grain-oriented" production?

A grain supply pressure does exist in China and will persist for a long time, but Luo *et al.* (2018) show that the problem is not as serious as Brown thought. Their book shows that adverse factors listed in the literature such as non-agricultural transfer of agricultural labor, farmland transfers and agricultural scale operation do not hinder China's food security, but instead increase grain growing behavior. The organizational and mobilization potential of China's small farmers are the basic guarantee of China's food security.

The small-scale decentralized agricultural operation pattern determined by the household contract system was long regarded as inefficient and a serious potential risk to China's food security. However, despite the trend toward "non-grain" growing during structural adjustment from 1978 to 2003, and the continuous increase in grain production after 2003, the basic agricultural management structure pattern has not changed significantly, and independent small farmers are still the main agricultural operating entities. Given that the proportion of agricultural income to the total income of farmers and the proportion of agricultural labor are decreasing, why are farmers actively and increasingly planting grain? To date little attention has been paid to the mechanism behind "grain-oriented" planting behavior.

This book provides the following explanations. First, cash crops are more labor intensive than grain crops. Given the rigid constraints of the agricultural labor force, farmers will be more inclined to grow grain crops. Second, the rigid constraints and increasing opportunity

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costs of the agricultural labor force will inevitably induce capital to replace labor. Grain planting is more suitable for mechanical operation than cash crops. In addition, once agriculture is involved in the economies of specialization and division of labor economy, the development of the agricultural production service market and the outsourcing of production will increase the comparative advantages of grain crops and will thus promote a "grain-oriented" planting structure.

Based on the above observations, the book argues that the "non-grain-oriented" planting structure usually exists when non-agricultural transfer of agricultural labor is insufficient. In other words, in an economic environment with restrictions in the flow of production and a lack of agricultural socialization services, farmers tend to expand cash crop planting to use the abundant agricultural labor force efficiently. Thus, when non-agricultural labor migration or farmland transfers exceed a certain level, cash crop planting decreases. This could indicate that planting structure adjustment in China is periodic and contextual, and changes in factor constraints will further transform planting structures. As a result, elements flow and structural adjustment do not necessarily cause "non-grain-production" problems. On the contrary, smallholders have a grain preference incentive in the processes of factor flow and the integration of the division of labor. The basic logic is as follows.

First, the increased non-agricultural transfer of agricultural labor increases opportunity costs. In these circumstances, grain crops that require less labor or involve machinery have comparative advantages. At the same time, cash crops that are labor intensive or are unsuitable for machinery are less likely to be planted. The book calls this the "logic of resource allocation."

Second, with the extension of the contracted period of farmland to the "confirmation of farmland rights with all sides clarified," the property rights of lands have been enhanced. With the increased certainty over land rights, more laborers migrate to cities and households can freely allocate their labor supply between the agricultural and the non-agricultural sectors. Thus, field crops such as grain are more likely to be chosen because they have lower market risks and benefit more from the division of labor. This book calls this "the logic of property right."

Third, once farmers are involved in the economy of specialization, service outsourcing of agricultural production chains and the development of agricultural production service markets will strengthen the "grain-oriented" planting structure. Here agricultural mechanization has a dual effect. The mechanical replacement of labor and outsourcing services can further release the demographic dividend of the surplus labor force. It also assists with farmland circulation and thus optimizes resource distribution structures, promotes the continuous planting of crops, and further facilitates the vertical division of agricultural labor during the market capacity upgrade process. This book calls it the "the logic of division of labor."

With the non-agricultural transfer of agricultural labor and the continuous increase of agricultural labor costs, the substitution of capital for labor will be an inevitable trend. As a result, grain crops that require less labor or are easier to replace with machinery will have a comparative advantage in planting structure adjustment. Cash crops tend to be labor intensive and involve associated labor management costs. Grain crop labor forces are mainly involved in soil preparation, sowing and harvesting, and can be replaced with machinery for these tasks, thus reducing labor supervision costs. This provides a comparative advantage for grain crop production in the division of agriculture. In particular, once farmers participate in the division of labor economy, service outsourcing of agricultural production chains and the development of the agricultural production service market will further promote the "grain-oriented" planting structure.

The author argues that the following three factors encourage small farmers to plant grain crops. First, with the enforcement of farmland property rights, grain crops have

relatively lower costs for early stage fixed asset investment and technique searching. Thus, farmers achieve high investment conversion flexibility and can adjust the use of land as prices change. Second, agricultural production requires the complementary input of land and labor, and cash crops require more labor input than grain crops. Increasing agricultural labor migration to cities weakens the agricultural production workforce because relatively older people and females stay in villages, and more land is transferred. Because they have low labor requirements, grain crops are thus preferred. The production chain for grain crops can be separated through outsourcing to social service companies, which relieves the rigid constraint of the agricultural labor force and increases the efficiency of production.

This book makes an important contribution to the literature in showing that the agriculture sector can realize the economy of specialization. Farmers can find market opportunities and allocate factors efficiently through indirect investment and outsourcing of productive services to take advantage of the economy of specialization. They can also adjust planting structures, expand the scale of grain planting and use agricultural machinery to replace labor.

This book rebuilds our recognition of the role of Chinese small farmers, who can adapt to the new planting operation mode. Agricultural household management is not an obstacle to China's food security. On the contrary, small farmers have sufficient economic rationality and self-executing ability to respond to the flow of elements and price elasticities in the market. The authors believe that both concern about labor placement and food security require that the fundamental status of family management in agriculture is continued, and that its stability and long-term nature are preserved.

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