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China: Advance Land Utilization and Grain Output through Land Transfer

Introduction

The grain production stays one of the most essential factors which determines the stability and security of a state nowadays.

The previous decades witnessed the rapid growth of economies in China. By the end of 2014, the GDP (Gross Domestic Product) has already exceeded 9,240,000 million dollars, rising at a high speed continually as well, which demonstrates that China has become the second-largest economy second only to the US. However, the current situation of Chinese agriculture reveals not so optimistic. In accordance with the files reported by FAO (Food and Agriculture Organization), the agricultural acreages are becoming rather fewer every five years, at an average speed of 0.6% from 1997 to 2012. Meanwhile, despite the birth control policy exercised by Chinese authorities, the total population is increasing apace on account of the enormous population base. Namely it is beyond doubt that the adequate supply of crops remains one of the most urgent problems which threatens Chinese agriculture, and even the stability of the state.

As an agricultural country, agricultural acreages is an indispensable criterion which determines the standard of production degree. On the basis of relevant survey, up to the year-end of 2009, there have been approximately 1,350,000 square kilometers cultivated lands. Yet with 45,000 square kilometers on the slope whose angle surpasses 25 degrees while 84.74 million ares situated in the forest zone or near the flood control line of northeast and northwest China. After subtraction, the proportion of national basic farmland remains merely 1,040,000 square kilometers, accounting for 77.04% of gross agricultural acreage. Furthermore, the per capita arable land is simply less than 50% as much as the global average level.

What is the feasible approach of enhancing the productivity of grains is also a significant issue which perplexes China. Though China has achieved continuous output increase of grains for eleven years, reaching 607.099 million tons in 2014, but under such restrictions as the water resources, the abuse of pesticides and natural hazards -- drought, hail, insects' calamity, flood, El Nino phenomenon for instance, whether the enhancement of productivity will continue seems unpredictable. What's more, considering the factors mentioned above, the quality of the land in China is declining in regular intervals.

Moreover, urbanization would likewise influences the agricultural development to some extent. Based on correlational studies, as of 2012, the rate of urbanization has attained 52%, which means cities have replaced villages as the principal constituent parts of China. However, this also causes the diminution of the agricultural acreages and the outflow of labor forces. Numerous rural civilians swarm into the urban areas, deserting the arable lands. Consequently, the amount of cereal import grows much more massive. It is considered unquestionable that if imported crops occupied excessive portion of gross food quantity, the food security and social stability would be threatened. Additionally, the matter of "Hallowed Village" also restricts the agricultural development. The hallowed village refers to the villages where the lagging of village planning

and traditional conception of homesteads caused the decrease of permanent resident population and the increase of idle lands. The existence of hallowed village, generating the enormous waste of farmlands and conflicts of land-ownership, hindered the development of agricultural economies.

Most of the cultivated lands are divided into small parts in China and are managed by families in rural regions. This sort of system dates back to the 1970s, which is out of tune with the modernized agriculture. China's central government has issued its first policy document in 2013, addressing the future sector of the country's agricultural. According to the document, the authorities raised the conception of Family Farms for the first time, aimed at commercializing the grain, deminishing defects of small-scaled peasant economy and shrinking the urban-rural gap. Still, since the Chinese farmers do not have a clear understanding of family farms and lack infrastructures, the policy is still in the popularizing period. Simultaneously, the available farmland of every household is far less compared with the minimum acreages of family farms. The advancing of the agricultural technology cannot keep pace with the tempo of epoch development, and there is still a long way to go to land utilization. Therefore it seems impossible to enhance the grain output and quality in a minor area of cultivated land and generalize the method to the public in a short time.

Defining A Typical Family in Rural Area

Located in Xingtang County, Hebei Province, Li Aijun's family can be accurately cited as a typical sample of traditional northern Chinese household located in the area of foothills. The whole family consists of two parents and two children, subsisting by crop farming and migrant working in slack seasons. Li's family owns a field of 6700 square meters or so, planting wheat, corn and sweet potatoes as main source of income, harvesting crops twice a year. In order to satisfy the everyday eating habits and balance the nutrition, Li constantly grows seasonal vegetables for own consumption. As for migrant working, Li and his wife alternately go to the adjacent town or cities for short-term part-time jobs, and the other will just stay at home looking after the kids. The Lis have a net income of about 10,000 to 20,000 RMB in total per year, the surplus of income will be deposited into the rural credit cooperatives or agricultural banks nearby. Because of the positive policy the authorities have carried out recently, the Lis have already joined in the NCMS (new rural cooperative medical system). Yet by the lack of the risk awareness, the Lis have not bought any personal or agricultural insurances. The elder sister of the family is studying at a private middle school, while the brother is receiving education at a public primary school, which reflects the positive renewal of awareness about education in rural region. However, the infrastructure's construction still needs to be bettered, including the transportation and water conservancy. Communal facilities in the village are less-developed: The community hospital can merely cure minor diseases like cold or fever; the agricultural produces cooperative has just been set up a few months ago, which could barely tackle the fundamental problem such as seeding and irrigating. The land transfer has not been a frequent phenomenon occurring in the village, only when the input-output ratio is comparatively high, they will transfer the field briefly to the neighbors or relatives and take a certain number of money or cereals in accordance with the time the land has been transferred.

From the typical household introduction above, certain problems can be analyzed as following:

1. Deficiency of rural infrastructure construction's investment, including water conservancy and highway instruction. As for water conservancy, owing to the lack of irrigation system, the irrigation cost is rather high, leading to the sluggish growth of crops production. For highway instruction, though the highways connecting towns and counties have been completely built, the constructions of roads between villages still need breakthrough. The insufficient investment remains the principal barrier of the process.

2. Serious water shortage in north China. Populous condition and extensive acreages of farmlands determines the massive consumption of water resources. Furthermore, as the result of the excessive exploitation of groundwater in Haihe River valley, the depletion of groundwater, land subsidence and seawater encroachment are occurring one after another, resulting in the 41,000 square kilometers shallow funnel area near Beijing-Tianjin-Hebei region and 56,000 square kilometers of deep funnel area.

3. The unsatisfactory economic benefits and grain output with onefold breeds of crops constraints the sustainable development of agriculture. Besides, the high cost of land maintaining induces the reducing of farmers' income, in other words, the enthusiasm of growing will be dampened.

Similar to numerous rural families in China, Li's family has several universal troubles as other households do:

1. The excessive use of pesticides. According to correlative researches, less than 20% of the farmers in Hebei Province received specific training about the pesticides' poisonousness, and also 20% of them admitted there were misuses of the chemicals. If this condition goes uncontrolled, chemicals may harm the food security and make soil malnutrition escalate.

2. The near-total reliance on natural resources. There are no efficient measures to deal with natural disasters. Farmers rarely purchases technical tools for cultivating and land maintaining. The undulating topography in rural regions generates the sandy soils, causing the immense consumption of water resources.

3. The rapid development of urbanization, triggers the loss of the labor force. Substantial number of country people leave their residences to get extra pay from the secondary and tertiary industries, resulting in a large number of empty nesters and left-behind children, and more severely, leaving lans deserted. With regard to China, the maximal consumer of grains, the reduction of crops output will cause great danger.

4. The extensive use of fertilizers. In order to attain higher yield, farmers are not stint on utilizing massive dose of chemical fertilizers. If things continue this way, the organic matter in the soil will be dramatically reduced, inducing the great dependence of the plants on the fertilizers. The need for higher-quality soil is increasing year by year..

5. The fifth issue remains also the most essential one, which is the low index of the land utilization rate. Apparently, the development of agriculture does not go with the progress of science and technology. Methods of sowing and harvesting in the area which is not flatland are generally man-powered or animal-powered instead of large-scale mechanical operation. Therefore how to raise the production in unit area of farmland, and how to maintain the stability of primary industry through technology means and thus ensure the provisionment, remain an imminent problem to be solved immediately.

Practical Solutions

To solve the problem mentioned above, with adequate analysis, the land transfer turns out to be an efficient approach. The further explanation and strategies will be offered as following:

The land transfer refers to that farmers who have the right of land contracting could conditionally offer the managing right to the professional large families or agricultural cooperative society through approaches of subtracting, cooperating, leasing or investing in shares. Undoubtedly, the transferred field must only be employed for cultivating. Luo Biliang, dean of economics and management school in South China Agricultural University, considers the land transfer an important way to increase land utilization. He also

mentioned that the circulation of farmland may decrease the requisite labor force when producing the same amount of crops. Practically, the transfer could also prevent the land wastage, preserve or even augment the cultivated land quantity. In addition, land transfer plays a vital part in weakening the structure of city-countryside dualization and impelling the advance of urban-rural integration, in other words, it signifies to narrow down the gap between urban and rural regions.

Detailed proposals are listed as follows:

1. Based on the *Measures for the Administration of Circulation of Rural Land Contracted Management Right* issued by department of agriculture on March 1st, 2015, unceasingly amend and perfect the regulations in the light of the national conditions. Reconcile the contradictions when transferring and facilitate the steady development of primary industry.
2. Establish a trading platform in the coming years on which timely land transfer information will be disclosed. Enhance the links of gathering and summarizing of circulation information. Also, provide numerous farmers with services of land register, contract concluding, dispute elimination and legal aids.
3. Improve the subsidy system of land transfer, encouraging banks to furnish contractors with low-interest loans. Enhance both sides' enthusiasms of trading and stabilize the capital chain of circulation, and build modern financial system of rural areas.

However, certain barriers need to be tackled when implementing the policy. For instance, the social security system hasn't been popularized in rural areas. Farmers consider the land as the most crucial financial sources and are not likely to transfer the farmland, even though the financial grants are given. Also, the lack of trading market's standardization brings about series of problems. The land may only be transferred in small-scale areas with oral contracts, which both sides' interests are out of legal protection. Besides, certain grass-roots governments regard land circulations as mandatory index, so blind transfers are certainly detrimental to the agricultural production.

In the process of land transfer, there are ways that can ensure its implement.

I. Agricultural mechanization and informatization have beneficial effects on grain production. By contrast, the developmental patterns of the United States of America have some points that China may use for reference: By 2010, demographics data illustrates that the population of America is 310 million, with 6 million farmers, which only account for 3% of the population. But America is the country that has the most acreages of cultivated lands, roughly approaching 920 million acres. Agricultural modernization facilitates immensely to the American agriculture. Statistically, over 5 million farm tractors, 1.5 million combine harvesters are being employed in 2005, numerous specialized equipment have also been widely utilized. As for agricultural informatization, according to the report of NASS (National Agricultural Statistics Service), 58% of farmers have been using computers by 2005, while 30% of them have been trading through networks. In 2001, the usage of digital soil maps and GPS (global positioning system)'s have respectively attained 25% and 6.9%. By count, an American agricultural labor force can cultivate 450 acres of lands and feed 100 American civilians approximately. Distinctly, the achievement of mechanization and informatization will benefit Chinese Agriculture greatly.

Further suggestions concerning the agricultural mechanization and informatization will be offered afterwards:

1. Actively propel the market-oriented agricultural industrialization. Change the traditional agricultural technologies, and gradually realize the specialized and large-scale productions, socialized services and enterprise managements. Accelerate the development of agriculture via the market predominance.
2. Provide special funds to the research and development of high-tech products of mechanization and informatization. Change the face that low-end equipment constitutes large proportion of agricultural machines. Enhance the innovative ability, thereby, lower the dependence degree on foreign core components and shorten the R&D period.
3. Establish the agricultural information monitoring and reporting system consisted of GIS (geo-information system), GPS (global positioning system) and RS (remote sensing system). Expand the range and simplify the procedures of the system, therefore benefiting farmers.

The main obstacle of the solution is the current situation that overmuch farmers possess tiny quantity of cultivated lands, the popularizing of land transfer and family farms is hence imperative.

II. Agricultural education including the majority of farmers and would-be husbandmen will facilitate the procedure of land transfer. Education is the base of the country, which is also essential to agriculture. Enlarge the proportions of educational investment of the agricultural budgets, and make advantageous efforts to the training of agricultural reserve forces to enable farmers have sufficient professional knowledge to cope with problems such as natural disasters, soil fertility overdrafts, water loss and soil erosion.

1. Broaden the coverage areas of agricultural produces cooperatives, carrying on technical education to husbandmen through broadcast, television and internet. Based on the agricultural produces cooperatives, set up the public service institutions for extending agricultural technology, preventing and controlling vegeto-animal diseases, and providing quality oversight of agricultural products in rural townships, towns and regions.
2. Foster technical and scientific talents. Increase the support for the agricultural universities, raise the directional student recruitment of rural areas especially poverty-stricken regions. Encourage and guide the graduates of high-class universities to work in countryside. Those students who tally with the related requirements, will be given tuition reimbursement and have their student loans forgiven.
3. Improve the knowledge of village cadres and leading officials of agricultural cooperative society. Provide free agricultural training for rural students who do not receive higher education after their junior or senior high school.

Currently, because most of the labor force are earning their living from primary or secondary industry, the aging agriculture remains a significant issue which besets the agricultural education or even the production efficiency. However, if the “selective two-child policy ” can be effectively implemented, the age structure of Chinese farmers will be ameliorated.

The solutions mentioned above will play a vital role in changing the approaching circumstance. With the development of the society and the modernization of the agriculture, there is a high possibility that the issue of

land Utilization and food security will be gradually tackled. Still, the feasibility of the solutions should be examined by the domestic conditions and the development of agriculture

After synthesizing the general suggestions above, Li's family may enhance their standard of living and producing through some specific approaches as well:

1. Join in the agricultural cooperative society and receive specialized professional training. Select the mode of cultivating which adapts to the local environmental condition.
2. In accordance with the local conditions, increase the cultivation of drought-resistant crops and cash crops as peppers, peanuts and sweet potatoes, hence improve the household's living standard.
3. Purchase or hire mechanized equipment to advance productivity.
4. Buy agricultural insurances which offer economic guarantees to confront accidental risks.
5. Make efficient use of land transfer and family farms to raise the rate of land utilization

Obligations of Government

Apparently, the policies of authorities have great influence on implementation of the land transfer. Points which are proposed subsequently are the suggestions the government should keep focusing on.

1. Legislation construction. With the rapid economic and social progress China has achieved, the condition of Chinese agriculture is frequently altering. In the respects of legal protection for rural property and natural resources exploitation, the contradictions becomes increasingly acute. Partial laws cannot adapt to the national condition, while some new laws should be soon issued. The legislation will be a crucial factor which impresses the promotion of deepening the agricultural reform and the progress of primary industry.
2. The role of supervision. During the process of land circulation and Agricultural commercialization, the issue of improper transfer and agricultural products' quality will easily occur. Effective supervision from government may minimize the possible damages.
3. Stabilize the food price, which mainly refers to the grain procurement price from government. Reasonable macroeconomic control could raise the enthusiasm of farmers to grow crops and eliminate the phenomenon of high output with low procurement.
4. Infrastructure construction. The drinking water facilities, upgrading of power grids and highway construction still remain the problems puzzling the rural civilians. Necessary financial budgets is propitious to the improvement of rural individuals' living standard.

CAAS (Chinese Academy of Agricultural Sciences)

As the forefront of the agricultural researches, it is considered as the largest all-around national agricultural and scientific research institution. CAAS plays a crucial role in promoting agricultural innovations, serving local economy, cultivate high-level scientific research personnel and facilitating global communication. Furthermore, CAAS will become the dominant force during the process of land transfer and Chinese agricultural modernization.

1. Promote the scientific research of drought-resistant crops and modern cultivation techniques to raise production in arid regions.
2. Improve the land leveling technology, ameliorate the soil quality and balance the nutrient substance of soil.
3. Breed genetically modified grains and advance its safety. Study the influence of GMOs to environment and human beings. Perfect the monitoring system of GMOs.

Conclusion

After analyzing the issue of problem, defining typical household and proposing practical suggestions, there is no doubt that the matter of land utilization and grain output stay one of the most indispensable problem for China that cannot be ignored. However, with the actualization of the land transfer, a new agricultural revolution is in progress, changing and modernizing the old agricultural production pattern through the efforts of Chinese government and every individual. I believe through the proper solution and active measures, the issue of Land Utilization and Grain Output will be ultimately tackled in the foreseeable future.

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