SYSTEM DYNAMICS RESEARCH ON THE REGIONAL DEVELOPMENT OF FAMILY FARMS

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ABSTRACT

Research development of mechanisms to promote sustainable family farm family farm is of great significance to the healthy development. Using system dynamics analysis on causal relationship of regional farm development system, to build system dynamics models, and a prefecture-level city in China the family farm as an example for system simulation. Simulation results show that land operation, total power of agricultural machinery, agricultural technicians, agricultural infrastructure, government support, market supply and demand and other factors on the city had different effects on our family farm production, especially land scale yield and government support for family farms. According to the simulation results, to develop regional family farms, should guide the transfer of land to family farms, improve the quality of operators of family farms, family farm mechanization, intensive family farm infrastructure, issues such as settling family farms.

Keywords: Family farms, Area, Development, System Dynamics

INTRODUCTION

In recent years, family farm is a fast-growing trend in China, in Nanjing, Jiangsu, Shanghai, and other economically more developed regions began to actively develop the family farm, cultivated land area in Northeast China, with its big advantage has made some progress in promoting construction and development in family farm, but on the family farm has had some problems in the process of exploration. In contrast, Family farm development has matured in developed countries is mainly because of its flexibility when adjusting production capacity [1] And based on the modern enterprise theory to moral hazard and balanced relationship between the professional benefits [2], while and has generation inter participation, favorable conditions [3], formed in the United States, and Canada as representatives of the large family farms, the Netherlands, and Japan on behalf of small farms and between France and other European countries typical of middle-sized family farm model. Oszmianska to the family farm in Ethiopia found that a fair and competitive environment has an important impact on the development of family farms [4], while Fernandes and Woodhouse thought credit has a positive effect on the

development of family farms [5], Zimmermann and other scholars think family farm's impact factor is the environment and the economy, but the family farm agriculture environment and agriculture policy determines the reaction of family farms the size of size, specialization and intensification [6]. Family farm policies and measures should take full account of family farm management scale, specialization and intensification [7]. Dogliotti [8]found family farm through the model prevailing low labour productivity, deteriorating soil quality and other problems, which has resulted in increased farmer income and farm work load. Lawton [9] and other scholars through the study of literature describes the key factors influencing the sustainable development of family farms, including farm size, capital investment and education level of farmers, and puts the family farm succession planning. Bohak [10]and other scholars think that the family farm succession is vital to family farms survive, parents with knowledge, skills, management and the transfer of full ownership to the next generation, this is a complex process, under the influence of many factors. Family farms faced with advanced production technology of impact pressure and market competitive power of agricultural products, in this case, farmers need to constantly adjust their production mode and change their disadvantage in the market and actively choose to cooperate with enterprises or the formation of agricultural enterprises [11]. Cornish investigation visited farmers, combined with the multiple correspondence analysis and fast clustering analysis, research results show that multiple family farms within the study area of the partnership to form an intensive agricultural systems, this model is suitable for family farms within the study area development [12], Therefore, the study of family farms in the region has become one of the key research.

In China, Qu thought that family farm is different from the other advantages of agricultural management organization in China. Development of family farms is a necessary thing [13].Gao think family farms, such as the need to improve the institutional environment [14]. Xu [15] focusing on land rights, land, labor force quality, specific organizational forms and mechanisms introduced Germany development and characteristics of family farms, proposed laws and regulations, policy and funding support, farmers cultivate the inspiration. Chen [16], the family farm in Zhejiang Province as an example, the empirical analysis of the development of family farms in Zhejiang Province the status quo and the main factors affecting family farms, and related countermeasures are presented from a sustainable development perspective. Liu and Zhao demonstrated the moderate scale management of family farms formed the basis of farmers' cooperatives, The "family farm + cooperatives" model in solving agricultural problems and social issues have a greater advantage [17], Yang in Anhui area "small big" case study concluded that small family farms is more suitable for the current situation of China's agricultural development, "little big" is a model of Chinese family farm [18]. Chinese scholars and foreign family farm development, or a combination of family farms in China to explore, for the development of family farms in China provide a great deal of experience and references. In

China, the current research focused on family farms in the family farm into introduction, classic cases and countermeasures of, in terms of specific study of a single family farm, Wang Jianhua and Li discussed the mechanism of sustainable development of family farm-related measures [19], Li empirical research on the development mechanism of farmers ' professional cooperatives [20], Research on regional level is still relatively small, Rui analyzes the Chengcheng County, Shaanxi Province agricultural regional development mechanisms to build system dynamics models, simulations and comparative analysis of development situation of agricultural area [21]. But research on family farms in the region lack systematic study particularly inadequate. Therefore, the research and exploration of the regional development of family farms is very important.

2. Regional Family Farm Development Dynamic Elements and Structure Analysis

2.1. Regional Farm Development System Components

Family farm development elements including the government, land, equipment, labor, technology and information, market and financial [22],but do not take into account falling outside the boundary of environmental factors, such as topography, climate and so on; do not consider the effects of different farm types and that environmental pollution in the self-purification capacity of agricultural production or controllable range.

2.2. System Structure Analysis of Development of Family Farms

Family farms within the cause-effect development system is mainly reflected in: A loop is the development of family farms and the national economy, family farms the development of farmers employment, income, and enhance the cultural quality of farmers, further promoting the growth of the agricultural economy, economic development has increased market demand for farm produce, farm produce supply shall govern the further development of the economy. Second, economic development strongly influenced the development of family farms, government related to the development of policies on the family farm system, including funds and environmental support, strengthening family investment in farm infrastructure, improving the supply of family farms, promote the improvement of farm productivity, produce more agricultural products, so that the family farm incomes and promoting national economic growth. In addition, along with the increase in farmers ' income, will further increase funding for family farms making it capable of self-development under certain conditions. This is the reinforcement of the family farm improvement loop, is the self-development mechanism of family farms. Based on the above analysis, causal loop diagrams can get family farm development system, as shown in Figure 1.

Figure1. Causal Loop Diagram of Family Farms Development System

Family farms to develop causal loop diagram to describe the structure of the system functions and mechanism, but it does not reflect the quantitative relationships between different variables in the simulation model and the difference between .Therefore, in order to make quantitative analysis and computer simulation, and variable in a causal loop diagrams need to be refined, based on the analysis of key variables, variable in a causal loop diagrams can be divided into levels of variable speed variable. Through the main index number and introduced some instrumental variables, System Dynamics model is based on the dynamic simulation research on the development mechanism.

3.Development of Family Farming System Dynamics Model

On the family farm in the development of complex systems, System Dynamics for the development of farmers ' income increase, system promoting the development of Government policy and financial support, and system guarantee for the development of the healthy development of the market. Therefore, the development of our family farm system consists of three subsystems: farm economic system, government support system and a market-driven

subsystems. Now, a prefecture-level city of family farms in China as an example to study.

3.1. Farm Economic Subsystem

Farm Economic Analysis of Subsystems and Stock flow chart: The family farm economic impact factor is the scale of land management, agricultural machinery, agricultural technology and agricultural infrastructure construction. The farm land scale is an important factor. Advantages of current family farms in the city there are two points: one is to have some agricultural production technology, but the overall quality of farmers and farm mechanization level is not high. Second, most of the farms have a certain capacity, has a strong willingness to expand the scale of production, but faces peer competition between cultural quality, market competition, operators, business decisions are not accurate and sales channels are not complete and insuring the defect leads to exit the business. Therefore, the farm subsystem key economic variables are mainly land scale, agricultural machinery, agricultural technicians and agricultural infrastructure.

According to the family farm system of causality, in order to make quantitative analysis and computer simulation, and variable in a causal loop diagrams need to be refined, based on the analysis of key variables, reduce the number of indicators and variable in a causal loop diagrams can be divided into levels of variables and variable rate, and introduce some instrumental variable to ensure the operability of the system model. Draw a farm economic subsystem is shown in figure 2 flow chart of the stock.
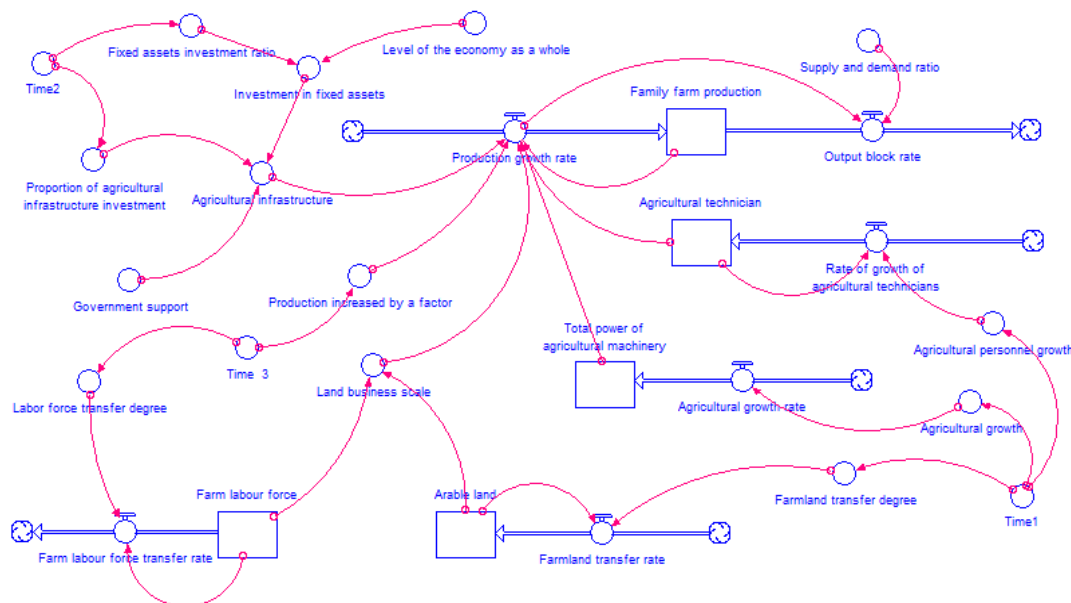

Figure 2. Farm Stock of Economic System Flow Chart

Farm economic subsystem parameters and equations: Research shows that family farms in the city has two advantages: First, family farmers engaged in agricultural production for decades, has some agricultural production technology. Farmers through constant practice and mutual learning between peers, have a certain amount of production technology, but the overall quality of farmers and farm mechanization level is not high. Second, most of the farms have certain management ability, expand the production scale of the strong desire, gradually improving of the whole production level of a family farm at the same time, able to withstand the test of the market competition and continue to grow the scale of the farm. But faces peer competition between operators, market competition, low quality, inaccurate, incomplete sales channels, as well as of management decision having birth defect leading to exit business [23].Therefore, the farm subsystem key variables include land scale, agricultural machinery, agricultural technicians and agricultural infrastructure. Object location undertake land family farms have become a major force, with the adjustment of agricultural industry structure in the city, the original family farm operation scale constantly expanded.

This research data from the municipal Bureau of agricultural, Municipal Bureau of land and resources And Annual statistics of the province in 2005-2014.

Based on these data, using Matlab to family farm output, the total power of agricultural machinery and land management scale, agricultural infrastructure, fertilizer Multivariate regression analysis, agricultural technicians, The following linear regression equation:

①Production growth rate= (0.2215× Family farm production+0.0643× Total power of agricultural machinery + 1062.04 × Land business scale + 9.3422 × Agricultural infrastructure +14.7709×Agricultural technician)×Production increased by a factor, Work unit: Million tonnes;

②Output block rate=IF THEN ELSE(Supply and demand ratio>1, Supply and demand ratio-1, 0)×Production growth rate, Work unit: The dimensionless;

③Family farm production= INTEG (Production growth rate-Output block rate, 177.446)Unit: Million tonnes;

④Investment in fixed assets=Level of the economy as a whole × Fixed assets investment rati, Unit; Billion;

⑤Agricultural infrastructure = Investment in fixed assets× Proportion of agricultural infrastructure investment + Government support, Unit: Billion;

⑥Land business scale = Cultivated land area / Number of rural labor force, Unit: HA/person;

⑦Agricultural growth rate=Total power of agricultural machinery ×Agricultural growth, Kilowatt;

⑧Total power of agricultural machinery= INTEG Agricultural growth rate182.524),Unit: Kilowatt;

Of the rural labour force, land, agricultural technicians equations similar to the equation with

the total power of agricultural machinery, not to repeat.

3.2. Government Support Subsystem

Analysis of Government Support Subsystems and Stock Flow Chart: Family farm, while the accumulation of a certain amount of money, but farmers invest in infrastructure capacity is weak, on the family farm in need of government policies to support the early development. At all levels and relevant government departments are unfamiliar with family farms, not fully understanding the needs of family farms, not for family farms to develop specific policies. Therefore, at this stage, most family farms are lack of the government's policy support. Governments cannot directly support farmers, support for family farms by the Government was mainly reflected in the family farm infrastructure construction. Family farm yield is a critical indicator of economic factors affecting government support of family farms . The city's agricultural infrastructure investment to some extent is based on agricultural services, pest control, information technology and other aspects of social services system to develop, this family-friendly farm infrastructure construction. Therefore, in our view, government support subsystem memory should diagram the following figure (Figure 3) shows.
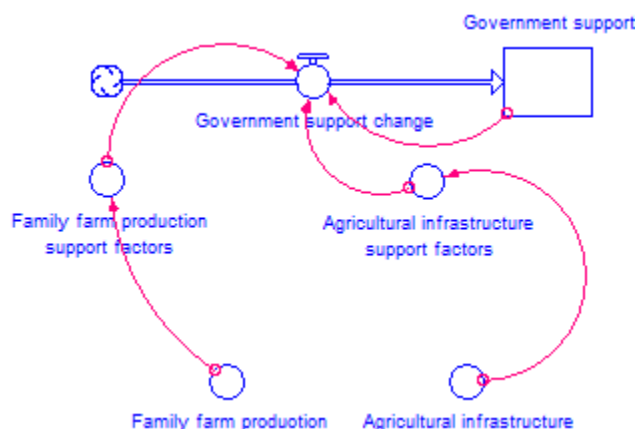

Figure 3. Stock of Government Support System Flow Chart

Government support subsystem parameter equation: Based on empirical data, we set the following Government-supported system equations:

①Government support= INTEG (Government support change, 1), Unit: million;

②Government support change= Government support×(Family farm production support factors+ Agricultural infrastructure enabling factors), Unit: million;

Family farm production support factors and agricultural infrastructure enabling factor of the equation functional form for the table:

Table 1. Family Farm Production Support Factor Table Function

320	300	290	280	270	260	240	220	200	Family farm production/Million tonnes
0.3	0.25	0.2	0.18	0.15	0.1	0.08	0.05	0	Family farm production support factors

Table 2. Agricultural Infrastructure Enabling Factor Table Function

15	14	13	12	11	10	8	5	3	Investment in agricultural infrastructure/Billion
0.001	0.005	0.001	0.015	0.02	0.025	0.03	0.04	0.05	Agricultural infrastructure enabling factors

3.3. Market-driven Subsystems

Analysis of Market-driven Subsystems and Stock Flow Chart: Market impact for the development of family farms, primarily through price changes in supply and demand and to adjust, this subsystem, there is a close link with the farm economy. Due to the family farm, there are many kinds of agricultural products, flow variables cannot be used of a single crop prices and production as the object of study. When the target changes in market demand, farmers reduce crop cultivation with low profits, affect the production of family farms. Management quality farmers cannot grasp market changes in a timely manner so that making agricultural products into market risk. While family farms of agricultural products of poor sales led to timely circulation of agricultural products to the market, this will affect the supply of family farms, so family farm marketing and distribution needs to be perfect. Supply capacity is mainly influenced by family farms and family farms yield control. Market-driven subsystems family farms are the key variables of the supply market needs and family farms. Accordingly, we believe that the stock market-driven system flow diagram the following figure (Figure 4) shows.

Figure 4. Stock Market-Driven Subsystems Flow Chart
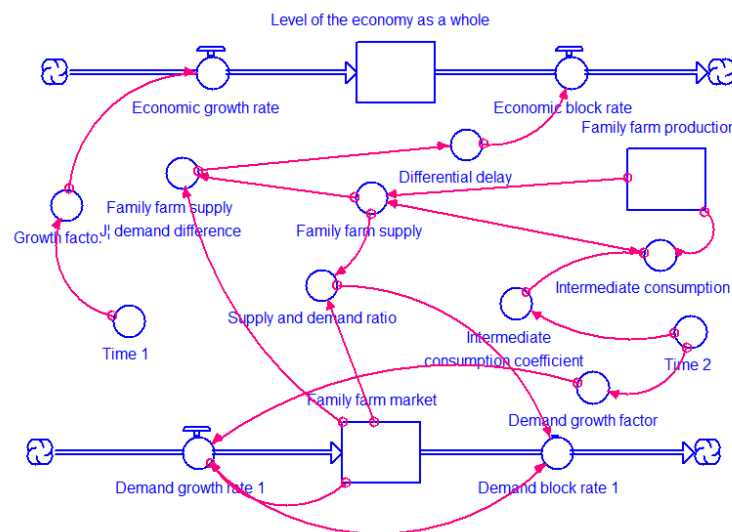
Market-driven Subsystems Parametric Equations: Similarly, according to experience, setting the following parametric equations:

①Demand hinder speed=IF THEN ELSE(Supply and demand ratio<1, 1-Supply and demand ratio, 0) ×Demand growth rate, Unit: dimensionless

②Demand growth rate=Family farm market× Demand growth rate，Unit: dimensionless

③Family farm market= INTEG (Demand growth rate-Demand hinder speed, 123.857), Unit: million tons

④Family farm supply=Family farm production-Intermediate consumption, Unit: million tons

⑤Intermediate consumption= Family farm production×Intermediate consumption coefficient, Unit: dimensionless

⑥Family farm supply-demand difference=ABS((Family farm supply- Family farm market)/ Family farm market), Unit: dimensionless

⑦Supply and demand ratio= Family farm supply/ Family farm market, Unit: dimensionless

⑧Differential delay=DELAY1I(Family farm supply-demand difference, 1, 0), Unit: dimensionless

3 Model Test and Analysis of Simulation Results

3.1 Model Test

Model year units, initial time of 2004,end time in 2025,the simulation step size is set to 1, family farm production compared to the actual data in the city over the same period, verify the model of error, As shown in table 3.

Table 3. The City Family Farm Production Data and The Result

Relative error(%)	Simulation data (Million tonnes)	The actual data (Million tonnes)	Vintage
0.000	177.446	177.446	2004
0.263	174.81	174.335	2005
-0.318	187.907	188.44	2006
-0.226	185.404	185.676	2007
-0.212	204.001	204.105	2008
0.083	218.964	218.475	2009
0.030	217.677	217.302	2010
0.100	221.729	221.177	2011
-0.018	215.88	215.651	2012
-0.147	212.847	212.925	2013

We can be seen from table 3: simulated data and real data error is less than 0.9%. Other similar data, error of no more than 0.9%. Therefore, model has a strong possibility.

3.2 Analysis of Simulation Results

Family farm agricultural production are one of the key factors in the development of family farms. From the simulation results, the scale of land management, agricultural infrastructure investment, total power of agricultural machinery, agricultural technicians. Government support on family farms the increase in agricultural output has different levels of contribution. Following a detailed analysis of each factor.
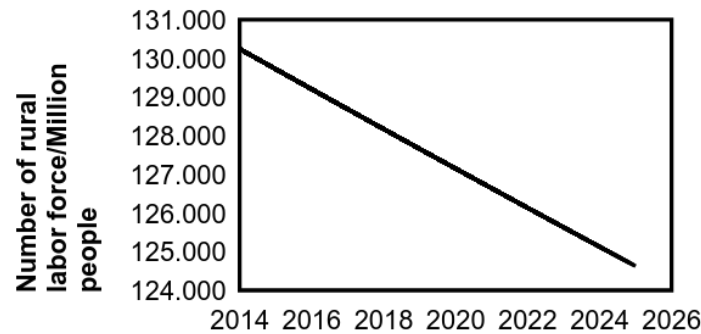
Figure 5. Rural Labor Force Simulation Results

Simulation Results Analysis of Land Business Scale: From the simulation results. From the simulation results, along with the social and economic development, the rural labor force shift, showed a significant downward trend in the number of rural laborers. As shown in Figure 5, In 2014 the city rural labor force of 1,302,420 people by 2025, rural labor force of about 1,246,250 people. But the number of rural labor force transfer in the small yearly. In 2015, the transfer of rural labor force going out 5,190 people, 2025 transfer 4,990.
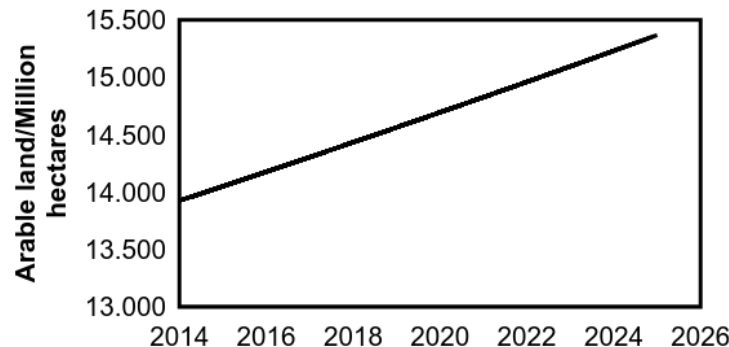
Figure 6. Latitude: Simulation Results

As can be seen from Figure 6, with the development family farms, family farm land under cultivation increased in the city, in 2014 the city family farm 139,250 hectares of arable land by 2025, increased to 163,670 hectares in 2015, additional 1250 hectares over the previous year in 2025 and added 1370 hectares over the previous year.
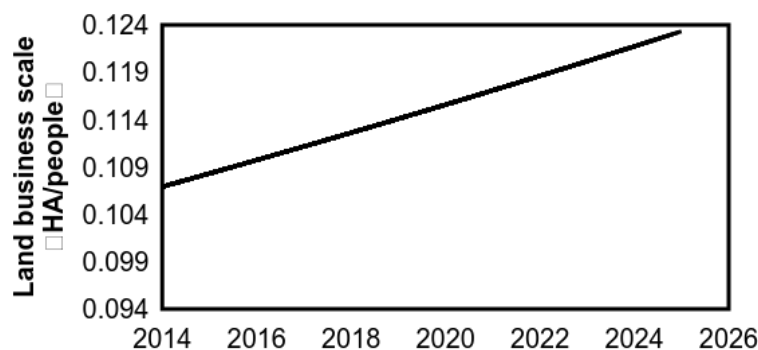
Figure 7. Land Scale Simulation Results

Figure 7 shows that the family farm land management scale will increase rapidly, in 2014 the city family farm land business scale 0.107 hectares per person, is projected 2025 0.123 hectares per person.
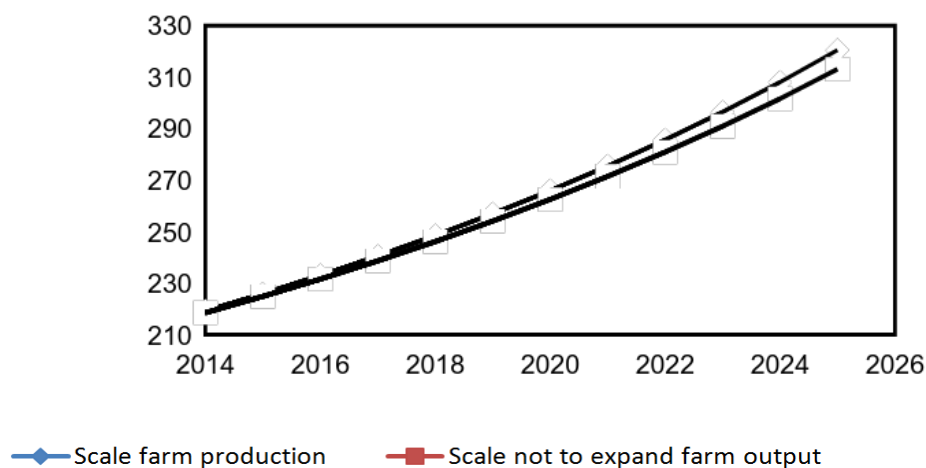

Figure8. Size of Land Scale Simulation Analysis on Yield Effect of Family Farms

Simulation results are family farms can get the minimum amount of land business scale, if unable to expand the scale of land management on the farm to produce very huge impacts on agricultural production, as shown in Figure 8.In the case of family farm land scale-invariant, in 2014, the family farm in the city's output of 2,185,170 tons; in the case of land scale family farms, in 2014 the city produced 2,192,130 tons of family farms, a difference of 6960 tons. But by 2025, the family farm land scale-invariant situations, produced 3,131,140 tons, family farms expand the scale of land management circumstances, production was 3,205,150 tons, a difference of 74,010 tons. While on the farm land scale invariant or changes in very small cases, farm produce can still be increased, but growth in agricultural output from the simulation results is smaller than the scale of agricultural products produced on the farm, and the difference increases.

Therefore, reducing land transfer resistance, guides the transfer of land to the family farm to family farms development is of great significance. Simulation results analysis, countermeasures are: improve the farmland system and take effective measures to promote farmers to expand scale of operation.

Simulation Analysis of the Agricultural Machinery: System Dynamics models can simulate the different policy models represent real behavior patterns on the system, these changes in policy variables will have a different impact on system behavior. Now farm machinery increased by a factor of policy variables, three programme is designed, namely growth coefficient ratio of agricultural mechanization and 2.7%, and 15%, under different policy scenarios, impact on family farm agricultural production of agricultural machinery, as shown in table 4.

Table 4. Family Farm Production Under Different Policy Simulations

Increased by a factor of 15%	Increased by a factor of 10%	Increased by a factor of 2.7%	Vintage
219.213	219.213	219.213	2014
225.977	225.958	225.931	2015
233.180	233.120	233.036	2016
240.861	240.731	240.555	2017
249.063	248.827	248.520	2018
257.835	257.449	256.968	2019
267.233	266.644	265.941	2020
277.318	276.464	275.483	2021
288.189	286.990	285.664	2022
299.953	298.270	296.486	2023
312.673	310.381	308.051	2024
326.565	323.502	320.515	2025

We can be seen from table 4, increasing total power of agricultural machinery in 2014 to 2025, when farm machinery increased by a factor of 15%, the family farm agricultural production of agricultural machinery increased by a factor of 10%, slightly larger than the output. In 2015, yield a difference of 190 tons, and by 2025, the yield difference of 30,630 tons, output gap is increasing. Farm machinery increased by a factor of 2.7% agricultural machinery increased by a factor of 10%, and can also come to that conclusion. Shows that, under current conditions, contributing little to the family farm agricultural production of agricultural machinery, early in the development of family farms, farmers do not have to rush to invest a lot of money to purchase agricultural machinery, but also to appropriately increase the input to agricultural machinery.

Simulation Analysis of Agricultural Technicians : Similarly, Figure 9 shows that, along with agricultural and technical personnel the growth factor and 2.9%, and 25% increases, yield curves move up family farms, domestic farm production increased with the increasing agricultural personnel increased by a factor of. Therefore, train agricultural technicians for family farm agricultural production increased significantly. Compare simulation results of agricultural machinery, description should be a farmer on the family farm, technology development and promotion at the same time, we should improve the quality of its professional technical and management.
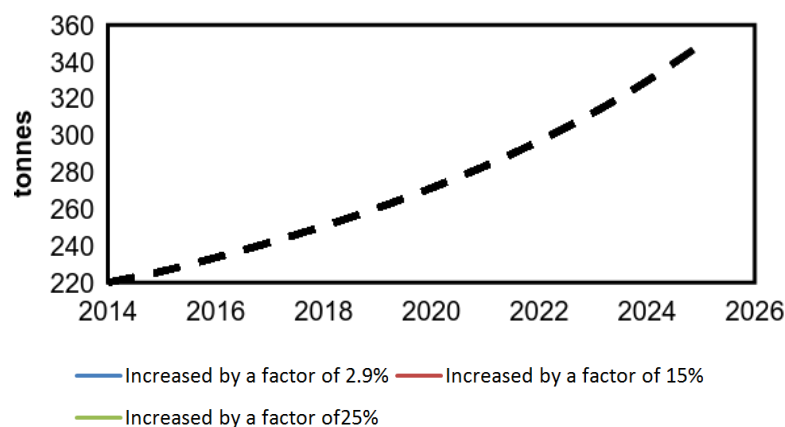

Figure 9.   Family Farm Production Under Different Policy Simulation Analysis

Although farmers have some agricultural production technology, but the quality of farmers and farm mechanization is not high, and there are many farms in some conditions. These problems early in the farm are not obvious, but as the family farm continues to develop,agricultural machines and agricultural technicians to influence family farm agricultural production will be highlighted by 2020. Therefore, in table 5.2 and figure 5.5 simulation results analysis, countermeasures are: promoting the development of mechanized family farms and raising the quality of operators of family farms.

Simulation Analysis of Government Support : Because family farms had not been government policy and financial support，Therefore, simulation model of government support with an initial value of 0,agricultural infrastructure enabling factors=0×State Government support for change×(Government support + Family farm production support factors)，get family farm development without government support. Comparison is supported and not supported by case, family farm output, as shown in Figure 10.Under without government support, family farm between 2013 and 2025 agricultural output less than Government-backed family farm production, and there are no variances in enabling and supporting agricultural production increases. As far as 2014, in the absence of support cases, family farms produced 2,170,870 tons

of agricultural products, support cases, family farms produced 2,192,130 tons of agricultural products, difference of 21,260 tons in 2025, in the absence of support cases, family farms produced 3,088,540 tons of agricultural products, support cases, family farms produced 3,205,150 tons of agricultural products, output gap 116,610 tons.
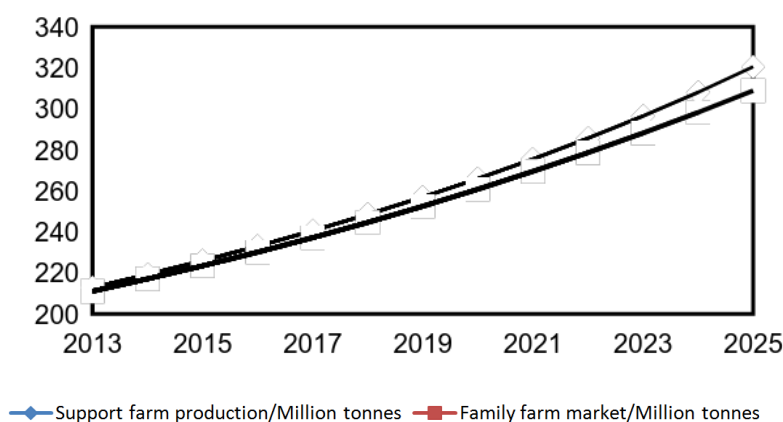

Figure 10. Simulation Analysis of Yield of Government Support for Family Farms

Due to the enabling role of government mainly reflected on funds to support the construction of infrastructure, Since the family farm infrastructure improvements, farmers can get matching facilities, which will have an important role in agricultural production. While farmers do not have to invest to farm infrastructure, you can devote more funds to agricultural production. Therefore, Obtained from simulation results are:

①Basic conditions for the development of family farms is the agricultural infrastructure, we must improve agricultural production infrastructure. Family farm early development needs the government sector provides ongoing support for family farms.In this way, family farm, the accumulation of funds in order to constantly improve the family farm has sufficient funds to expand agricultural production.

②The development of family farms restricted by the shortage of funds. Therefore, to increase the government's support of family farms, and expand financing channels for farm, taking advantage of preferential loans, subsidies and other ways to meet increasing capital requirements in the development of family farms.
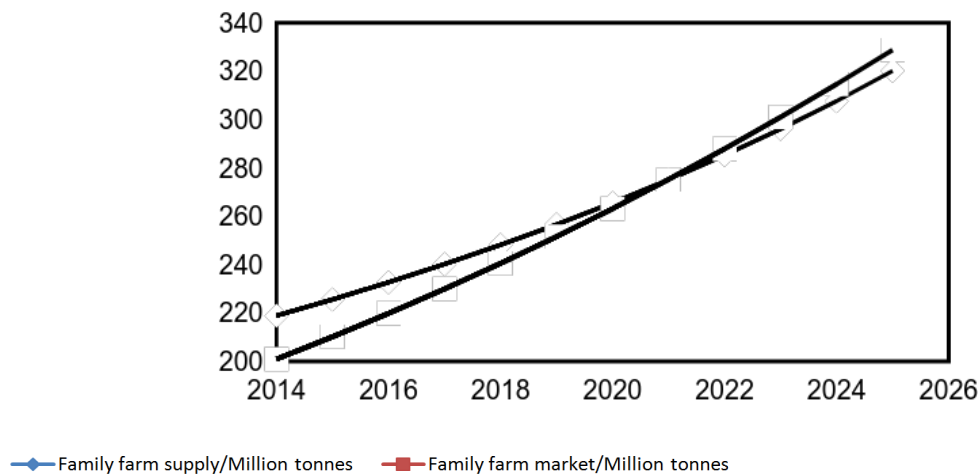
Figure 11. Domestic Supply and Demand of Farm Simulation Results

Family Farm Supply and Demand Analysis of Simulation Results: According to family farms of demand and supply capacity simulation results show, family farms continued growth in both supply and demand, from 2014 to 2021, family farm supply is greater than demand, supply and demand ratio is greater than 1.But with the economic development and population growth will increase demand for family farm agriculture, family farms will gradually reduce the difference between demand and supply, agricultural commodity rate will continue to rise, demand until 2021 to family farms, there have been in short supply, the supply and demand ratio is less than 1.
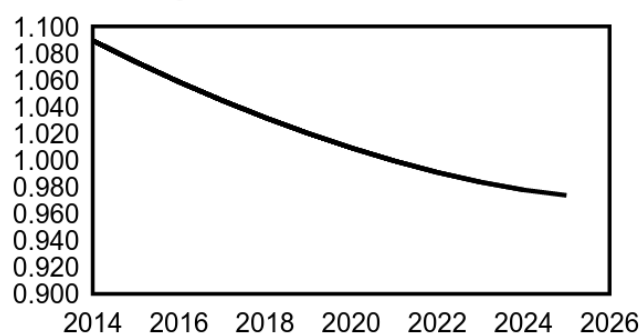

Figure 12. Supply and Demand Than The Simulation Results

Supply and demand ratio is 1.089 in 2014, 2020 to 1.009, supply and demand by 2021 compared to about 0.When the family farm supply is greater than demand, the supply and demand ratio greater than 1, will make farmers expand their scale of operation and changes in

crop and so on, to some extent hinder the increase of family farms and family farms supplying capacity will be less than the market demand, the supply and demand ratio is less than 1, markets will reduce the need for family farm agriculture. Therefore, t Obtained by the simulation of related measures is : improve the infrastructure, establishing information platform of agricultural products, so that farmers can keep abreast of the market demand for agricultural products information.

4 Suggestions and Prospects

4.1 Guide the Transfer of Land to the Family Farm

Transfer of family farm land is an important factor of development and concentration, farmers can achieve large-scale operations. To achieve an important condition for land transfer is the right certification gives farmers the clarity and integrity of land property rights; in order to give land to provide fair and equitable trading platform, we should improve land markets, strengthen land construction, in resolving land disputes and contradictions that occur in a timely manner; in order to guide the transfer of land give priority to family farms, we should establish family farms finds mechanism, establish and improve the farm registration systems, the economic status of the family farm and land objects, as well as the land policy of priority to the transfer of family farms.

4.2 Improving the Quality of Operators of Family Farms

Operators of family farms is a professional farmer, require them to have a certain amount of expertise, knowledge of business management skills and be familiar with relevant laws and regulations. But in China, many local farmer's quality is not high, government must change farmers status low of status, guide people change thought concept, encourages and support young, and literacy high of people engaged in agricultural production work, attention foster agricultural practitioners, constantly perfect government on farmers foster of policy support and funds support, pay attention to cultivate the agricultural workers, and constantly improve the government's policy support and financial support to farmers to cultivate, also should play the role of various training resources, rapidly improve the family farmers and members of the cultural quality, technical quality and the management level, development of new agricultural operators for family farms.

4.3 Promoting Farm Mechanization Development

Mechanized production of family farms is a major advantage. Popularization of agricultural technology is directly related to the long-term development of family farms. Current levels of government shall establish and perfect the machinery purchase subsidy of agricultural policies, promote the popularization of science and technology on the family farm and supporting role, support conditions of the family farm as the agricultural scientific and technological demonstration households, participation in and implementation of agricultural technology

extension projects; in order to ensure the healthy and rapid development of family farms, basic-level agro-technical popularization setups should be the family farm as an important service, introduction of efficient provision of agricultural extension, seed, agricultural supply and other services.

4.4 Strengthening the Family Farm Infrastructure

By model simulations found that relying solely on farmers themselves are unable to cope with and avoid the farms exist in the process of production and management issues and business risks, must rely on a sound infrastructure, to solve these problems and risks through social services. System solutions is to strengthen family farms development social service system, the establishment of information platform of agricultural products, improve the agricultural insurance.

①Socialized service system for strengthening the development of family farms, for family farms to provide prenatal, delivery and postnatal services. Encouraging joint and collaborative family farm, build a comprehensive regional agricultural socialized service platform for family farms provide seeds, plant protection and integrated services such as processing, storage and marketing of agricultural products.

②Establishment of agricultural information platform, formation and the development of family farms socialized service system of matching mechanisms, enabling farmers to understand market information through a variety of channels, the farm operation to make timely decisions, reducing losses due to agricultural information disclosure is not timely.

③Agricultural insurance. Family farm is still in the exploratory stage, there is a very big risk, a family farm risk dispersed mechanism is particularly important. So insurance companies can innovate insurance types, different insurance policies for every farm, reduce family farmers face risks as far as possible.

4.5 Family Farm Funding Shortfall

Because of the financial and other related departments are unfamiliar with family farms, farmers lack collateral assets circulation of rural contracted land cannot be used as collateral for loans, farm operators are cash-strapped, so we need long-term on the financial and technical support from the government. If there is no government financial support, farm to maintain production and business activities. Therefore, The government will increase its financial support for and all levels of government should set up a development fund for family farms; as for large scale, business efficiency, social responsibility, strong family farms to prioritize subsidies. Innovation in rural financial services, encourage financial institutions to the basic condition of family farms expand the effective scope of collateral, the development of innovative family farm loan guarantees, simplified security procedures.

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