

Adoption of Appropriate Agricultural Model for Food Security in Guiping Town, Renshou County, China

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Abstract: Agriculture is an important foundation for a country's economic and social development and stability, and we must firmly give agricultural development a prominent position of priority. Guiping Town is a typical agricultural town in hilly area. The roads, water conservancy facilities and other agricultural production conditions are relatively insufficient, which restricts the development of characteristic and large-scale agriculture. In recent years, the national policy requires all localities to focus on the overall requirements of achieving self-sufficiency in domestic resources and ensuring food security, and must work hard in promoting farmland protection and control, sustainable agricultural development, and strengthening agricultural production support, so as to continuously consolidate and improve the level of agricultural scientific development. Based on the actual situation of Guiping, this paper, through a large number of interviews and surveys, literature review and scientific analysis methods, deeply explores the economic and environmental sustainability, adequate farmer income, future-oriented production capacity, improved food security and social sustainability, and finds a way out in agricultural innovation and development. Gradually explored a good agricultural development situation that basically realized the use of good land and grain and should be planted.

Keywords: Food Security; Agricultural Sustainable; Development.

1. Introduction

Government planners in the 1980s emphasized increased use of fertilizer, improved irrigation, mechanization of agriculture, and extension of improved seed varieties as leading features of the agricultural modernization program.

Agricultural policy includes measures that are specifically designed for and applied to the agricultural sector, which create a direct incentive for investment in agriculture and innovation, including technological adoption and structural change. Some agricultural policies are specifically targeted to improving environmental performance at the farm level. This chapter first reviews agricultural policy objectives in the People's Republic of China (hereafter "China"), then domestic agricultural policy and agricultural trade policy. The structure of agricultural policy is assessed using OECD indicators of support. The section concludes with a summary of findings regarding extent to which agricultural policies in China are oriented towards innovation for improving productivity growth and sustainability.

Evolution of agricultural policy objectives in China

Since the foundation of the People's Republic of China in 1949, China exploited the agricultural sector to promote industrial development, through such policies as agricultural tax and maintaining low prices of agricultural products relative to industrial ones. Through over 30 years of reform and opening-up, China has adjusted the goals of its agricultural policies to the different stages of economic development. Since the 1990s, China's agricultural policies shifted fundamentally, from exploiting agriculture to promoting and subsidising the sector. The development of agricultural policies since reform and opening-up in the late 1970s can be divided into three stages, based on the changes of their priorities and goals.

The first stage was between the beginning of reform and opening-up in the late 1970s and the mid- to late 1990s. The

primary policy goal in this period was to increase food production and ensure food security. The policy was designed to ensure a steady supply of grain and other agricultural products and to stabilize food prices. At the beginning of reform and opening-up in 1978, China's central policy documents emphasized increasing food production to feed its population of nine hundred million, and clarified that it must depend on domestic resources to do so (CCCPC, 1979, 1983). China began the negotiation on its accession into WTO before 1990, with a major policy goal of increasing the competitiveness of its agriculture (OECD, 2005).

The second stage was from the late 1990s up to the first decade of this century. At this stage, while food self-sufficiency remained the policy focus, increasing farmers' income was included as the most important policy goal among topics included in the No. 1 Documents of 2004, 2008, 2009 and some other years. The No. 1 Documents in many years began to emphasize other policy goals, such as ensuring the quality of agricultural products and food safety, enhancing agricultural competitiveness, and protecting the agricultural ecosystem.

The third stage started in 2010, when achieving sustainable agricultural development became a primary policy objective. In particular, the 2014 No. 1 Document emphasized food quality and safety in addition to quantity, placing greater importance on sustainable agricultural development in the long term (while ensuring sufficient food supply). Ensuring food security and increasing farmers' income remain top policy priorities.

In this stage, non-agricultural sectors support agriculture and an institutional framework and a policy system are being built to support agriculture (Cheng, 2011). This is reflected in policies such as the minimum purchase price; temporary purchasing and storage; the target price and direct food subsidies; subsidies for agricultural materials, superior crop varieties and for the agricultural insurance premium; and the

abolition of the agricultural tax.

(1) The No. 1 Central Document is the most important policy document in China jointly issued by the Central Committee of the Communist Party (CCCPC) and the State Council. This document determines the most important issues and focus of the year. The issues related to agriculture, farmers and rural area (the Three Nongs) have been selected as the topic of this document consecutively since 2004.

Food security has long been a central objective of China's agricultural policy. A number of policy documents issued during the past years set the basic goal of increasing food production and achieving food self-sufficiency with domestic resources. The goal is to ensure basic supply of grain and other major agricultural products, and access to food by urban and rural residents. The white paper of The Grain Issue in China in 1996 put forward the goal of raising food self-sufficiency level to 95%.

The Chinese government has long stressed the significance for China's economic and social development of realising self-sufficiency of grains with domestic resources and of ensuring food security. This involved ensuring food production, protecting basic farmland, determining permanent farmland, improving productivity, and achieving self-sufficiency of grain (State Council, 2014). However, in recognition of the economic and environmental cost of maintaining self-sufficiency policy, China announced a new food security strategy in 2014, aiming to ensure food security by making use of both domestic and international resources, and promoting sustainable agricultural development. This is an important step in changing the nature of food security policy in China.

New Food Security Strategy in China

China has introduced a series of policies and measures to ensure food security, including a system of protecting basic farmland, strengthening the capacity of food production, and establishing systems of price support and direct payment, food storage, and food regulation. Rapid industrialisation and urbanisation caused structural problems in satisfying domestic food demand with available domestic agricultural resources, increasing environmental pressure. In 2014, China introduced a new food security strategy to ensure food production with available domestic resources, importing moderately and utilising science and technology (State Council, 2014).

The new strategy emphasises the importance of basing food supply on domestic resources, which is determined by the nature of food and China's domestic circumstances. China's large population makes it the world's largest food producer and consumer. Due to concerns regarding risks arising from over-reliance on imports, food self-sufficiency is still seen as central to China's ability to maintain its food security and control its economic and social development.

However, policy makers recognise that China is not fully capable of maintaining self-sufficiency of all agri-food products, and that the economic and environmental costs of maintaining self-sufficiency is high. The new food security strategy requires proper allocation and conservation of domestic resources to meet the basic demand for grain, supported by "moderate import" to ensure food security. China has been importing international agricultural resources to complement domestic agricultural production and balance seasonal fluctuation of production in different areas. China's economic growth proves that moderately importing agricultural products and properly utilising agricultural

resources overseas can, to a certain extent, complement the shortage of domestic agricultural resources and contribute to realising grain self-sufficiency, thereby ensuring food security. The new food security strategy calls for more efforts to use international markets of agricultural products and agricultural resources, and to effectively adjust and supplement domestic food supply as a strategic choice.

Finally, the new strategy gives more weight to sustainable agricultural development, recognising that increasing domestic production cannot be achieved without paying the price of a degraded environment. For a long time, China has given excessive weight to the increase of total food production. For example, the National Medium- and Long-Term Outline Plan for Food Security (2008-2020) sets clear binding requirements for domestic food production, i.e. "the self-sufficiency level for food should be over 95%, and that for cereal should reach 100%". This policy emphasis on self-sufficiency neglects economic, social and environmental costs: for example, farmland is overused, the use of pesticide and fertiliser exceeds safety standards, and farmland and water resources suffer serious pollution and degradation. Such circumstances and practices cause potential problems for food security and sustainable agricultural development in the medium- and long term. The new food security strategy focuses on not only food quantity and current food supply, but food quality and safety and sustainable agricultural development. Based on the need to ensure sustainable agricultural development and long-term food security, and on concerns about the negative externality of increasing the quantity of food production. China has decided to transform its food production strategy from yield growth to sound and sustainable development (Cheng, 2015).

During the late 1990s, China's rural economy experienced structural problems such as falling prices of agricultural products, declining profit of township enterprises, lower income growth for farmers, and widening income disparity between urban and rural residents.¹ The 2004 No. 1 Document gave priority to increasing farmers' income as the goal of its agricultural policy for the first time, calling for comprehensive policies to accelerate the rapid growth of farmers' income and to reverse the trend of widening income disparity (State Council, 2004). In 2012, China set the goal of building a moderately prosperous society, doubling its gross domestic product (GDP) and per capita income of urban and rural residents compared with 2010 levels, and alleviating poverty for all rural residents based on the current poverty line by 2020. The 2016 No. 1 Document pointed out that a moderately prosperous society cannot be built unless farmers attain a moderately high standard of living (State Council, 2016).

Since WTO accession in 2001, China has opened up its agricultural market, thereby increasing the challenges arising from international competition. China considers competitiveness of its agricultural sector as an important policy objective, together with developing multiple roles of agriculture and promoting integrated growth of rural and urban areas; these objectives have been included in China's No. 1 Documents since 2004.

By increasing its grain output for 12 consecutive years since 2004, China has increased the pressure on natural resources and the environment, including extensive use of agricultural resources, severe pollution of farmland and its functional degradation, waste of water resources, water pollution, groundwater over-exploitation, grassland and

wetland degradation and deterioration of the ecological environment (Cheng, 2013). The 2014 No. 1 Document was the first to propose establishing a long-term framework of sustainable agricultural development: to develop eco-friendly agriculture, to implement pilot projects of temporary retirement of agricultural resources, and to strengthen ecological protection (State Council, 2014).

In 2015, the State Council authorised the Ministry of Agriculture (MOA) and other government agencies to issue the Agricultural Sustainable Development Plan (2015-2030), which sets the goals and paths of sustainable agricultural development (MOA, et.al. 2015). This plan requires that China accelerates its development of resource-saving, environment-friendly and ecosystem-protecting agriculture, and that it takes effective measures to change the mode of agricultural development from extensive management — which consumes resources and damages environment — to intensive farming focusing on quality and efficiency. Considering factors such as capacity of agricultural production resources, environmental capacity and ecological types, the plan divides China into optimised, moderate and protected development areas. Based on a principle of adjusting measures to local conditions, different priorities for achieving sustainable agricultural development were set in different areas.² The strategy of differentiating policy priorities regionally and locally would support the locational adjustment of agricultural production to reflect resource availability.

Zero-Growth Action Plan for Chemical Fertilizers and Pesticides

In 2015, China announced the Zero-Growth Action Plan for Chemical Fertilizers and Pesticides. This initiative is designed to realise zero growth of the usage of fertilisers and pesticides by 2020. The goal of the action plan is to restrict the annual growth of chemical fertiliser use to below 1% during 2015-2019 and to achieve zero-growth by 2020 for major agricultural crops, relative to the annual growth rate of nitrogen and phosphorus uses at 3.9% and 2.5% during 2000-2013, respectively. The target on pesticides limits the average use per unit of land falls below that of the last three years.

In the Action Plan for chemical fertilisers, issues related to current practices are highlighted: excess application of fertiliser of 21.9 kg/mu (328.5 kg/ha) as compared the worldwide average of 8 kg/mu (120 kg/ha); uneven fertiliser use across regions and products, with excessive use observed in eastern China, the lower Yangtze River area, as well as for cash and horticulture products; low utilisation rate of organic fertilisers at around 40% of overall fertiliser use; and the unbalanced structure of fertiliser uses.

The Action Plan proposes soil testing to encourage farmers to use organic fertiliser and support the development of effective fertiliser. However, implementation details will vary across Chinese regions due to uneven regional practices in fertiliser application. For instance, in regions where fertilisers are currently used excessively, such as Northeast China, the North China Plain, and the mid- and lower Yangtze River area, nitrogen and phosphorus inputs will be regulated whereas the use of potassium will be capped. In Southwestern China, nitrogen use will be capped, use of phosphorus fertilisers will be adjusted, and potassium use will be increased; in Northwest China, the focus is to match the use of fertilisers and water resources, while capping the use of both nitrogen and phosphorus.

The initial steps of the Zero-Growth Action Plans include

several pilot projects. In 2014, the central government started to support the demonstration project of more efficient slow-release fertilisation on maize production in five provinces. Another pilot project that started in 2011 provides subsidies to lower farmers' costs of applying low-toxicity biological pesticides. In 2014, this project was expanded to 42 major vegetable, fruits and tea production counties in 17 provinces. A third project is the government support for soil testing and formula fertilisation.

Domestic agricultural Policy

Domestic agricultural and associated trade measures affect farmers' investment decisions and the choice of production practices. Several dimensions of agricultural policies are important: 1) the extent to which market-distorting instruments are used to support producers; 2) the extent to which policies facilitate structural adjustment; 3) the extent to which policies provide targeted support to promote the adoption of innovation and sustainable production practice at the farm level.

Level of support for agricultural producers

OECD indicators of producer support allow a quantitative evaluation of support to agriculture, including such measures as: 1) the share of farm revenue which can attributed to the government support, including both price support and budgetary transfer to individual producers (%PSE); 2) the extent to which the producer support is provided through most market-distorting measures such as Market Price Support (MPS) and input subsidies; and 3) the extent to which agriculture is supported through general service to the sector (General Service Support Estimate, GSSE) or support to individual producers (Producer Support Estimate, PSE). OECD classifies GSSE and PSE measures according to their purpose and implementation criteria, respectively. This information provides a comparison of producer support in China with OECD countries and major emerging economies in a consistent method since 1995. It also helps identify whether existing policy measures boost agricultural innovation, agricultural productivity and sustainability performance.

China's Producer Support Estimate (PSE) shows a drastic evolution of producer support policy in the last two decades (Figure 5.1). Between 1996 and 1999, the MPS was negative, and the budgetary payments were dominated by input payments such as fertiliser subsidy. MPS became positive in 2000-01 but the payments based on agricultural inputs still dominated the producer support. Since 2002, MPS has increased at a faster pace than budgetary payment and has become the main instrument for supporting agricultural producers. In 2008, domestic prices in China remained stable in spite of a price spike of agricultural products in international markets, leading to negative market price support.

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China's agricultural aid, trade and investments around the world are increasing. This trend is well documented, yet its nature and significance is hotly debated. Media reports cast China as a leader in the 'global land grab' and Chinese engagements with Africa have drawn particular, but often inaccurate, media criticism. This policy brief puts some of the 'myths' into perspective, considers the implications of Chinese agricultural engagements for OECD-style development work (especially work on food security), and argues that better understanding could help both Chinese and other development actors support more environmentally

sustainable and equitable development outcomes; and help national governments develop their own policies for Chinese involvement in agricultural development and food security.

Climate and Agriculture, John Asafu-Jaye, 2021

Agricultural modernization offers a crucial path to industrialization and economic transformation. However, agricultural transformation is threatened by the increasingly devastating impacts of climate change, with many countries already experiencing droughts, floods, and variable rainfall. To help farmers raise productivity, climate-smart agriculture can help build resilience. By applying technological innovations across the agricultural value chain, countries can turn climate risks into opportunities and boost their export competitiveness and economic diversification.

Our advocacy work aims to amplify the collective African voice for climate action, in pursuit of common goals of increased climate funding, strengthened carbon markets, and climate reparations. Our work on agriculture builds on the research and findings from the 2017 African Transformation Report – Agriculture Powering Africa’s Economic Transformation – which emphasized the need for agriculture to be a key driver of transformation, and the 2021 African Transformation Report Integrating to Transform, which identified climate-smart agriculture as a key area for collective action to manage climate risks.

China’s economic reform began with agricultural liberalisation. Between 1978 and 1983, agricultural reforms successfully transformed collectives to household-based farming and produced record-breaking growth in grain and meat output, overcoming endemic food shortages experienced since the 1950s.

What major change in China led to improvements in agriculture by the early 1980s?

Government planners in the 1980s emphasized increased use of fertilizer, improved irrigation, mechanization of agriculture, and extension of improved seed varieties as leading features of the agricultural modernization program.

Reform of the agricultural economy in China

In the late 1980s, China remained a predominantly agricultural country. As of 1985 about 63% [percent] of the population lived in rural areas, and nearly 63 percent of the national labor force was engaged in [agriculture](#) (see [Migration in China](#)). Modern technology had spread slowly in the vast farm areas, and the availability of modern supplies was less than adequate, causing growth in agricultural output to lag behind production increases in the rest of the economy. The proportion of GNP produced by agriculture declined from over 43 percent in the early 1950s to about 29 percent in 1985. The low agricultural growth rate as compared with other sectors of the economy reflected the fact that the average farmer had far less [machinery](#) and [electric power](#) and fewer other modern production aids to work with than the average worker in industry. Under the [responsibility system](#), farm households and collective organizations purchased large amounts of new machinery, particularly small tractors and trucks. The power of agricultural machinery per farmer increased by almost 30 percent between 1979 and 1985 but still came to less than 1 horsepower (0.75 kW) per person.

Before the early 1980s, most of the agricultural sector was organized according to the three-tier [commune](#) system. There were over 50,000 [people's communes](#), most containing around 30,000 members. Each commune was made up of about sixteen [production brigades](#), and each production

brigade was composed of around seven production teams. The production teams were the basic agricultural collective units. They corresponded to small villages and typically included about 30 households and 100 to 250 members. The communes, brigades, and teams owned all major rural productive assets and provided nearly all administrative, social, and commercial services in the countryside. The largest part of farm family incomes consisted of shares of net team income, distributed to members according to the amount of work each had contributed to the collective effort. Farm families also worked small private plots and were free to sell or consume their products.

By the end of 1984, approximately 98 percent of the old production teams had adopted the [contract responsibility system](#), and all but 249 communes had been dissolved, their governmental functions passed on to 91,000 township and town governments. Production team organizations were replaced by 940,000 village committees. Under this system, public ownership of land and some of the [means of production](#) was maintained, but production was made the responsibility of households.^[15] Households still had to contribute to state quotas but could make their own decisions about what to plant on contracted land and could sell via a multi-tier price system that included the lowest price for payment to the state up until the quota, a higher rate for above-quota sales to the state, and market price for crops allowed to be sold at fairs.^[15] This system had the effect of both incentivizing production, while stabilizing prices to protect households from the drop in market prices caused by the boom in agricultural production

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Agriculture plays a key role in food security and economic development. However, most of the world’s population in rural areas depends directly or indirectly on agriculture for their livelihoods. Yet as the world’s population increases and migration to towns and cities intensifies, so the proportion of people not producing food will grow.

Agricultural development is a multi-sectional activity that support and promote positive change in the rural and urban areas. However, the main objectives of agricultural development are the improvement of material and social welfare of the people.

Therefore, agricultural development is seen as synonymous with rural development, the two terms are different but intrinsically related. Agricultural development is a part of rural development; rural areas cannot develop without its agriculture being developed because about 90% of the rural dwellers are engaged in agricultural practices as their major source of income.

Nigeria as a country seeks to become a leading economy in Africa and a major player in the world’s economic and political affairs of which their 20-20-20 plan is their guideline.

To become a developed nation, Nigeria needs to speed up its economic growth by focusing on vital economic sectors like education, energy, agriculture and manufacturing. At this point in Nigeria’s development, the best approach is to focus on the agricultural sector. By focusing on agricultural development, Nigeria can speed up its economic growth in the coming decade.

Agricultural development can also address gender disparities. In Sub-Saharan Africa and South Asia, women are vital contributors to farm work, but because they have less access to improved seeds, better techniques and technologies, and markets, yields on their plots are typically 20 to 40 percent lower than on plots farmed by men. Addressing this gap can help households become more productive and reduce malnutrition within poor families. Economic growth is seen as a long term rises in the capacity to supply increasingly diverse economic goods to its population.

It also entails a sustainable rise in national output with a manifestation of economic growth. Therefore, the role of agriculture in transforming both the social and economic framework of an economy cannot be over-emphasized. It has been the source of gainful employment from which the nation can feed its teeming population, providing the nation's industries with local raw materials and as a reliable source of government revenue.

A full developed economy, especially in agricultural sector, means an increase in the production of export crops with an improvement in the quantity and grades of such export crops. However, for a country to industrialize, agricultural output will be said to have acquired growth if agriculture can supply enough materials to agro-allied industries.

In the light of this, Reynolds in Research opined that agricultural development can promote economic development of underdeveloped countries in four different ways:

- i. By increasing the supply of food available for domestic consumption and release labour needed for industrial employment.
- ii. By enlarging the size of the domestic market for the manufacturing sector.
- iii. By increasing the supply of domestic saving.
- iv. By providing foreign exchange earned by the agricultural exports.

Therefore, creating a sustainable agricultural development path means improving the quality of life in rural areas, ensuring enough food for present and future generations and generating sufficient income for farmers.

Supporting sustainable agricultural development also involves ensuring and maintaining productive capacity for the future and increasing productivity without damaging the environment or jeopardizing natural resources.

In addition, it requires respect for and recognition of local knowledge and local management of natural resources, and efforts to promote the capabilities of current generations without compromising the prospects of future ones.

Consequently, economic and environmental sustainability, adequate farmer's income, productive capacity for the future, improved food security and social sustainability are important elements of developing countries agricultural development.

Thus, when farmers grow more food and earn more income, they are able to feed their families, send their children to school, provide for their family's health, and invest in their farms and this makes their communities economically stronger and more stable for agricultural development.

The main aim of agricultural development is the improvement of material and social welfare of the people.

Therefore, it is often seen as integrated approach to improving the environment and wellbeing of the people of the community.

The first step in the process of agricultural development is to abandon the view of agriculture in pre-modern or

traditional societies as essential static.

However, the problem of agricultural development is not that of transforming a static agricultural sector into a modern dynamic sector, but of accelerating the rate of growth of agricultural output and productivity consistent with the growth of other sectors of a modernizing economy.

Agricultural development is a multi-sectional activity that support and promote positive change in the rural and urban areas. However, the main objectives of agricultural development are the improvement of material and social welfare of the people.

Agriculture plays a key role in food security and economic development. However, most of the world's population in rural areas depends directly or indirectly on agriculture for their livelihoods. Yet as the world's population increases and migration to towns and cities intensifies, so the proportion of people not producing food will grow.

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Nigeria as a country seeks to become a leading economy in Africa and a major player in the world's economic and political affairs of which their 20-20-20 plan is their guideline.

To become a developed nation, Nigeria needs to speed up its economic growth by focusing on vital economic sectors like education, energy, agriculture and manufacturing. At this point in Nigeria's development, the best approach is to focus on the agricultural sector. By focusing on agricultural development, Nigeria can speed up its economic growth in the coming decade.

Agricultural development can also address gender disparities. In Sub-Saharan Africa and South Asia, women are vital contributors to farm work, but because they have less access to improved seeds, better techniques and technologies, and markets, yields on their plots are typically 20 to 40 percent lower than on plots farmed by men. Addressing this gap can help households become more productive and reduce malnutrition within poor families. Economic growth is seen as a long term rises in the capacity to supply increasingly diverse economic goods to its population.

It also entails a sustainable rise in national output with a manifestation of economic growth. Therefore, the role of agriculture in transforming both the social and economic framework of an economy cannot be over-emphasized. It has been the source of gainful employment from which the nation can feed its teeming population, providing the nation's industries with local raw materials and as a reliable source of government revenue.

A full developed economy, especially in agricultural sector, means an increase in the production of export crops with an improvement in the quantity and grades of such export crops. However, for a country to industrialize, agricultural output will be said to have acquired growth if agriculture can supply enough materials to agro-allied industries.

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However, the problem of agricultural development is not that of transforming a static agricultural sector into a modern dynamic sector, but of accelerating the rate of growth of agricultural output and productivity consistent with the growth of other sectors of a modernizing economy.

Therefore, any attempt to embrace a meaningful perspective on the process of agricultural development must abandon the view of agriculture in pre-modern or traditional society as essential static.

Hence, a theory of agricultural development should provide insights into the dynamics of agricultural growth, either into the changing sources of growth, in economies ranging from those in which output is growing at a rate of 1.0% or less to those in which agricultural output is growing at an annual rate of 4.0% or more.

2. Statement of the Problem

This study assessed the adoption of appropriate agricultural model for food security in Guiping town, Renshou County, China. Specifically it will answer the following:

(1)What is the socio economic status of respondents in terms of the following:

- 1)education,
- 2)type of job, and
- 3)Income?

(2)What is the assessment of respondents on the agricultural development in terms of the following:

- 1)conservation model,
- 2)urban-industrial impact model,
- 3)diffusion model,
- 4)high-pay off input model, and
- 5)frontier model?

(3)Is there significant difference in the assessment of respondents on the agricultural development when their profile is taken as test factor?

(4)Based on the results of the study what inputs for adaption of agricultural development model can be proposed?

3. Hypothesis of the Study

There is no significant difference in the assessment of respondents on the agricultural development when their profile is taken as test factor.

4. Scope and Delimitation of the Study

This study was conducted at the Guiping town, Renshou County, China. There are two groups of respondents employed in this study, namely: farmers and the local officials engaged in the agricultural development. They assessed the adoption of appropriate agricultural model for food security in Guiping town, Renshou County, China in terms of the conservation model; urban-industrial impact model; diffusion model; The high-pay off input model; and The frontier model.

5. Research Design

The researcher utilized the evaluation survey research design. Creswell, John W. and J. David, Creswell. 2018, explain that evaluation research study is a "process used to determine and identify the purpose of the survey research and accordingly, the primary purpose is to answer questions about variables of interest to the researcher. Since the main objective of the study is the assessment by the two groups of respondents on the adoption of appropriate agricultural model for food security in Guiping town, Renshou County, China in terms of conservation model, urban-industrial impact model, diffusion model, high-pay off input model, and frontier model. It also included the socio economic status of respondents in terms of the education, type of job, and Income, and determined the significant difference in the assessment of the respondents when their profile is taken as test factor.

A survey method is the preferred type of approach for this study. In this case, it can be beneficial to acknowledge the advantages of survey designs, through the use of the assessments of the different stakeholders who have direct knowledge about the assessment of the two groups of respondents on the adoption of appropriate agricultural model for food security in Guiping town, Renshou County, China in terms of conservation model, urban-industrial impact model, diffusion model, high-pay off input model, and frontier model. It also included the socio economic status of respondents in terms of the education, type of job, and Income, and it determined the significant difference in the assessment of the respondents when their socio economic profile is taken as test factor

So, in this study, the researcher employed farmers and local officials engaged in the agricultural development.

Likewise, this study is generally quantitative. Quantitative descriptive research design provides a description of an event or define a set of attitudes, opinions, or behaviours that are observed or measured at a given time and environment (Creswell, John W. and J. David, Creswell, 2018). It typically involved large samples. This design employed and gathered information from the assessment of the two groups of respondents on the adoption of appropriate agricultural model for food security in Guiping town, Renshou County, China in terms of conservation model, urban-industrial impact model, diffusion model, high-pay off input model, and frontier model. It also included the socio economic status of respondents in terms of the education, type of job, and Income, and it determined the significant difference in the assessment of the respondents when their socio economic profile is taken as test facto.

6. Results

(1)On the socio economic status of respondents in terms of the following:

1)education,
2)type of job, and

3)Income?

Table 1. Frequency and Percentage Distribution of the demographic profile of respondents in terms of education

Education	Farmers		Local Officials		Total	
	F	%	F	%	F	%
High school and below	45	64.29	0	0	45	37.50
Technical/vocational	15	21.43	8	16	23	19.17
College level	8	11.43	5	10	13	10.83
College graduate	2	2.85	23	46	25	20.83
Post graduate	0	0	14	28	14	11.67
Overall	70	100%	50	100%	120	100%

Table 1 shows that majority of the respondents are high school and below, with frequency of 45 or 37.50%; followed by those who are college graduate, 25 or 20.83%; and the least are those who have obtained post graduate degree with frequency of 14 or 11.67%.

This relates to the discussion as cited: The most common degree for farmers is bachelor's degree, with 40% of farmers earning that degree. The second and third most common degree levels are high school diploma degree at 28% and high school diploma degree at 17%.

Table 2. Frequency and Percentage Distribution of the demographic profile of respondents in terms of Type of Job

Type of Job	Farmers		Local Officials		Total	
	F	%	F	%	F	%
Public employment	12	17.14	30	60	42	35
Private Employment	15	21.43	12	24	27	22.50
Self-Employed	43	61.43	8	16	51	42.50
Overall	70	100	50	100	120	100%

Table 2 shows that self-employed respondents dominated the total respondents with frequency of 51 or 42.50%; those in public employment comprised the 35% or 42 of the total

respondents; and the least are those who are in private employment with frequency of 27 or 22.50%.

Table 3. Frequency and Percentage Distribution of the demographic profile of respondents in terms of Income

Income	Farmers		Local Officials		Total	
	F	%	F	%	F	%
Low income	15	21.43	10	20	25	20.83
Middle income	35	50.00	15	30	50	41.67
High income	20	28.57	25	50	45	37.50
Overall	70	100%	50	100%	120	100%

Table shows that majority of the respondents belong to the middle income, 50 or 41.67%; while there are 45 respondents who are high income earners which is 37.50% and the least percentage are those with low income with frequency of 25 or 20.83%.

(2)On the assessment of respondents on the adoption of appropriate agricultural model for food security in terms of the following:

- 1)conservation model,
- 2)urban-industrial impact model,
- 3)diffusion model,
- 4)high-pay off input model, and
- 5)frontier model?

The two groups of respondents assessed the adoption of appropriate agricultural model for food security in terms of conservation model as fully adopted based on the overall mean score of 3.52 [FR,[WM=3.60 and LOR=3.44], both with verbal interpretation of Strongly Agree (SA).

Indicator, The conservation model of agricultural

development emphasized the evolution of a sequence of increasingly complex land- and labor-intensive cropping systems was rated with the highest mean score of 3.86 strongly agree [FR,[WM=3.83 and LOR=3.88], both with verbal interpretation of Strongly Agree (SA).

While indicator, The conservation model of agricultural development evolved from the advances on the concept of soil exhaustion was rated with the lowest mean score of 3.17 agree[FR,[WM=3.23 and LOR=3.11], both interpreted as agree.

The researcher infers the two groups of respondents are in strong agreement that the adoption of appropriate agricultural model for food security in terms of conservation model as it emphasized the evolution of a sequence of increasingly complex land- and labor-intensive cropping systems, preserves the land for continuous productivity, and diminishes returns on labor and capital.

Table 4. Mean and Verbal interpretation in the Assessment of Respondents on the adoption of appropriate agricultural model for food security in terms of Conservation Model

Conservation Model	Farmers		Government Officials		Overall	
	Mean	VI	Mean	VI	Mean	VI
The conservation model of agricultural development evolved from the advances in crop and livestock husbandry	3.50	SA	3.40	SA	3.45	SA
The conservation model of agricultural development preserves the land for continuous productivity	3.68	SA	3.52	SA	3.60	SA
The conservation model of agricultural development was reinforced by the concept of classical school of economics of diminishing returns to labor	3.58	SA	3.55	SA	3.57	SA
The conservation model of agricultural development emphasized the evolution of a sequence of increasingly complex land- and labor-intensive cropping systems	3.83	SA	3.88	SA	3.86	SA
The conservation model of agricultural development was reinforced by the concept of classical school of economics of diminishing returns to capital applied to land	3.75	SA	3.20	SA	3.48	SA
The conservation model of agricultural development evolved from the advances on the concept of soil exhaustion	3.23	A	3.11	A	3.17	A
Overall	3.60	SA	3.44	SA	3.52	SA

Legend: 3.51 - 4.00 – Strongly Agree (SA)/Fully Adopted (FA); 2.51 - 3.50 - Agree(A)/Good (G)/Adopted (A); 1.51 - 2.50 – Disagree(D)/Less Adopted (LA); and 1.00 - 1.50 – Strongly Disagree (SD)/Not Adopted (NA)

The above findings relate to the discussion in the study of Udemzue and Osegbue (2018), to wit: The conservation model of agricultural development evolved from the advances in crop and livestock husbandry associated with the English agricultural revolution and the concepts of soil exhaustion suggested by the early German chemists and soil scientists. The conservation model emphasized the evolution of a sequence of increasingly complex land and labor-intensive cropping system, the production and use of organic manures and labor-intensive capital formation in the form of physical facilities to more effectively use land and water resources. This model was the only approaches to intensification of agricultural production that was available to most of the world's farmers. Agricultural development within the ambit of the conservation model, clearly was capable in many areas of the world of sustaining rate of growth in agricultural production around 1.0% per year over relatively long periods of time. This rate is not compatible with modern rates of growth in the demand for agricultural output which typically fall between 3-5% in the developing countries.

7. Conclusion

Majority of the respondents were high school graduates, who are self-employed and in the bracket of middle income.

The two groups of respondents assessed the agricultural models for food security in terms of conservation model, urban-industrial model, diffusion model, high pay-off model and frontier model as fully adopted.

Agricultural development is a multi-sectional activity that support and promote positive change in the rural and urban areas. However, the main objectives of agricultural development are the improvement of material and social welfare of the people. Agriculture plays a key role in food security and economic development.

Socio-economic profile of the two groups of respondents does not relate to their assessment of the agricultural models

for food security.

8. Recommendations

(1)The development of government policies that promote social protection for small-scale agricul-ture through regulation of land tenure, credit, state purchasing, and other factors that influence the success of smallholder farming.

(2) Protect cultivated land and control urban sprawl; develop agricultural infrastructure, especially to develop irrigation;

(3) develop production of agricultural materials;

(4) increase investment in agriculture from financial institutions and banks;

(5) implement the “seed programme” provide good seeds to farmers;

(6) strengthen skill training of farmers;

(7) develop grass husbandry, and to develop aquaculture in marine and fresh waters.

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