Research on Green Development of County Agriculture from Perspective of Ecological Remediation based on the Analysis of Forestry in Jinzhai County, Lu'an City

Yalin Hu 1, *, Mei Zhou 2, Ming Zhong 1

1 School of Economics and Management, West Anhui University, Anhui, China
2 School of Foreign Languages, West Anhui University, Anhui, China
* hiyalin@126.com

Abstract. At present, green development has become the essential way to realize ecological remediation in China. Based on the analysis of forestry in Jinzhai county, Lu'an city, this paper puts forward relevant countermeasures for county agriculture to implement the concept of green development, accelerate green development and protect ecological environment to realize ecological remediation. It includes improving green industrial structure, constructing green safety system of agricultural product, innovating green marketing mode, cultivating green culture, creating famous green brand products and optimizing green logistics. As a response to the national strategy of rural revitalization, this paper aims to promote green development of county agriculture and protect county environment so as to realize ecological remediation, and at the same time hopes to contribute to targeted poverty alleviation in old revolutionary base areas and coordinated overall development of the region.

Keywords: green development, green culture, green marketing mode, green industrial structure, protect ecological environment.

1. Introduction

Nowadays, Chinese characteristics socialism has entered a new era, but problems of agriculture, rural areas and farmers still remain serious.[1] In terms of the employment proportion of agricultural labor force, the ratio has dropped sharply and reached 27.7% in 2016 since the reform and opening up. [2] However, according to the research of Lagagakos & Waugh(2013), the proportion of agricultural labor in the world's most developed top 10% countries is about 3% on average, including 1.6% in the United States in 2011. [3] Therefore, although China's agricultural modernization has made great progress since the reform and opening up, it still lags behind urbanization and industrialization, and the development of agriculture and rural areas lags behind the process of national modernization. [2] In addition, there are three prominent problems facing the rural ecological environment in China. Resource constraints are becoming increasingly tight, environmental pollution is becoming increasingly serious and the mechanism of resource and environment management is not sound.[4] Therefore, rural ecological remediation should be led with green development.[5]

As a top priority in the Party's work, the three rural issues have always been paid much attention by the Party and the government. The report of the 19th National Congress of the Communist Party of China stated that the issue of agriculture and rural farmers is fundamental related to the national development and people's livelihood. Priority should be given to the development of agriculture and rural areas and the strategy of revitalizing the countryside should be implemented, in which industrial prosperity is the key. Meanwhile, it pointed out that development is the basis and key to solving all the problems in China, and the concept of green development should be unswervingly implemented.[6] General Secretary Xi Jinping then further pointed out that the implementation of the rural revitalization strategy is a big article. It is important to promote the revitalization of rural industries, talents, culture, ecology and organizations, so ecological remediation requires green development.[7] The No. 1 document issued by the central government in 2019 clearly stated that we should adhere to the general policy of giving priority to the development of agriculture and rural areas, focus on the implementation of the rural revitalization strategy, strengthen the orientation of high-quality green development, promote green development in agriculture and rural areas, which can do a good job in
agriculture, rural areas and farmers. [8] These important judgments and state policies indicate the direction for implementation of rural ecological remediation through green development.

Located in Lu'an city, deep in Dabie mountain area of western Anhui province, Jinzhai county is one of the key areas that the state pays close attention to and supports, and also a key part for the targeted poverty alleviation campaign. With abundant natural and cultural resources, it is not difficult to achieve industrial prosperity and ecological livability through scientific planning and green development, so as to get rich and shake off poverty and revitalize the region. Based on the analysis of forestry in Jinzhai county, this paper analyzes and studies the existing problems in the county's agricultural green development. It is hoped that it can help accelerate green development of county agricultural industry, promote ecological remediation of county, and realize rural ecological revitalization. Meanwhile, it is also hoped that it can help the targeted poverty alleviation in old revolutionary base areas and the coordinated overall development of the region.

2. Review of the Concept of Green Development

2.1. Connotation of Green Development

Green development usually refers to the intensive development plan that is conducive to environmental protection and resource conservation and actively changes the extensive development mode at the cost of environment in the past. To be specific, green development aims at high efficiency, harmony and sustainability, and strives to achieve green production, green manufacturing and green sales. Basically, the concept of green development will be implemented in all aspects of production development. In the end, while reaping benefits, it will also actively undertake social responsibilities, protect the ecological environment and establish the concept of ecological civilization development.[9]

2.2. Historical Stages of the Concept of Green Development

The concept of green development developed from the idea of sustainable development and has gone through the following six historical stages, as shown in Table 1.

<table>
<thead>
<tr>
<th>Stage</th>
<th>Time</th>
<th>Main idea</th>
</tr>
</thead>
<tbody>
<tr>
<td>Circular economy</td>
<td>At the beginning of 1970</td>
<td>The club of Rome, founded by Italian and British scholars, put forward the concept of circular economy model and advocated the combination of ecology and national economic development. There are four models of circular economy in the world: Dupont model in the United States, McAllenburg industrial park model in Denmark, recycling system in Germany, and recycling development model in Japan.</td>
</tr>
<tr>
<td>Sustainable development</td>
<td>In 1987</td>
<td>The concept of sustainable development was first proposed by the world commission on environment and development in Our Common Future. China took the lead in Launching Agenda 21 in 1994 to support this concept.</td>
</tr>
<tr>
<td>Green economy</td>
<td>In 1989</td>
<td>British environmental experts first put forward the concept of green economy, which is regarded as an inevitable trend of world development in the 21st century.</td>
</tr>
<tr>
<td>Low-carbon economy</td>
<td>In the 1990s</td>
<td>United Nations framework convention on climate change and Kyoto protocol put forward the idea of low-carbon economy, and sustainable development has become the mainstream idea.</td>
</tr>
<tr>
<td>Ecological civilization</td>
<td>In 1995</td>
<td>American Roy Morrison put forward the concept of ecological civilization. Our country formulates the development strategy that guides the construction of ecological civilization and science.</td>
</tr>
<tr>
<td>Green development</td>
<td>In 2002</td>
<td>The UNDP China human development report 2002: making green development an option first proposed that green development is the continuation of the thought of sustainable development, and that development should focus on low carbon, low consumption and ecological protection. In his 2013 speech at Boao Forum in China, Xi put forward the concept of green development and proposed green economic development in Asia.</td>
</tr>
</tbody>
</table>
3. Current Situation of Forestry Development in Jinzhai County, Lu'an City

3.1. General Situation of Regional Development

Jinzhai county is located in the hinterland of Dabie mountain, where Hubei, Henan and Anhui provinces meet. Dabie mountain runs through the whole country from southwest to northeast. Within the undulating mountains, rivers, a wide variety of rich and colorful natural resources, it needs to be developed urgently. It is a state-level poverty-stricken county, which has become a key area for poverty alleviation. It is a subject worth studying how to develop the ecological green industry with the characteristics of mountainous areas in a diversified and green way in Jinzhai county, so as to protect county environment and realize ecological remediation.

In recent years, Jinzhai county focuses on the development of secondary and tertiary industries, while the primary industry (agriculture) develops slowly. In 2017, the added value of the completed industry reached 196,403.7 million yuan, up only 3.4% year, among which the added value of the forestry industry reached 28,472 million yuan, up only 2.1% year, as shown in Table 2.

Table 2. Economic development of Jinzhai county in 2015-2017

<table>
<thead>
<tr>
<th>Index</th>
<th>2015</th>
<th>Growth(%)</th>
<th>2016</th>
<th>Growth(%)</th>
<th>2017</th>
<th>Growth(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross regional product</td>
<td>888131.4</td>
<td>7.7</td>
<td>969542.9</td>
<td>8.1</td>
<td>1079356.1</td>
<td>8.7</td>
</tr>
<tr>
<td>Added value of the primary industry (agriculture)</td>
<td>182636</td>
<td>4.1</td>
<td>196227</td>
<td>3.2</td>
<td>196403.7</td>
<td>3.4</td>
</tr>
<tr>
<td>Crop farming</td>
<td>95571</td>
<td>3.5</td>
<td>101446</td>
<td>3.3</td>
<td>101762</td>
<td>3.1</td>
</tr>
<tr>
<td>Forestry</td>
<td>23813</td>
<td>7.2</td>
<td>27900</td>
<td>2.9</td>
<td>28472</td>
<td>2.1</td>
</tr>
<tr>
<td>Animal Husbandry</td>
<td>55653</td>
<td>4.2</td>
<td>58089</td>
<td>2.4</td>
<td>57128</td>
<td>-1.7</td>
</tr>
<tr>
<td>Fishery</td>
<td>7599</td>
<td>2.5</td>
<td>8792</td>
<td>8.3</td>
<td>9042</td>
<td>2.8</td>
</tr>
<tr>
<td>Added value of the secondary industry</td>
<td>346114.7</td>
<td>1.3</td>
<td>376128</td>
<td>10.5</td>
<td>438836.5</td>
<td>11.9</td>
</tr>
<tr>
<td>Added value of the tertiary industry</td>
<td>359380.7</td>
<td>9.9</td>
<td>397187.9</td>
<td>8.3</td>
<td>444115.9</td>
<td>8.1</td>
</tr>
</tbody>
</table>

(Data source: http://www.ahjinzhai.gov.cn, Jinzhai county people's government website).

3.2. Current Situation of Forestry Development

Forestry resource endowment in Jinzhai county is very rich with green water and green hills, and there are numerous orchards and tea fields. There are 4.4 million mu of woodland, forest coverage rate as high as 75%. Jinzhai county is rich in various kinds of chestnut and is one of the concentrated distribution areas of chestnut varieties in the Yangtze river basin. Now it has formed more than 10 excellent chestnut varieties of early, middle and late ripening. Jinzhai county is also one of the first 20 pollution-free tea production bases in China, and main origin of Lu'an Guapian tea, one of the key tea producing counties and designated producing county for office tea of the state council. Jinzhai Cuimei tea is one of the five famous tea of Lu'an. The county has 142,000 mu of tea plantation, with an annual output of 4,200 tons of dry tea and output value of 115 million yuan. In addition, there is a timber forest of 1.96 million mu, and a bamboo forest area of 300,000 mu, including 200,000 mu of moso bamboo, which can produce 5 million moso bamboo annually. It can be seen that forestry resources in Jinzhai county are very rich and various, so the agricultural industry has a great potential for development and a great space for growth.[10]
3.3. Problems of Forestry Development

In recent years, with the improvement of people's living quality and level, the market demand for fruits and tea in Jinzhai county is very huge, the market competition is increasingly fierce, the market information is more and more sufficient, and the demand drives the production, so the number of newly established forestry enterprises is increasing day by day. In 2016, Jinzhai county developed more than 50,000 mu of cloning tea garden, kiwi fruit and other characteristic industrial bases, 100,000 mu of newly certified tea green agricultural products base, and established 5 industrial complexes such as Guapian tea in Xiang Hongdian, 383 cooperatives and 558 family farms, and added 13 provincial and municipal leading enterprises.[10]

However, in such a gratifying situation of environmental change, the development of forestry in Jinzhai county has also exposed the following problems:

Safety of tea and fruits has worried consumers, mainly due to the problems of out-of-season planting, transgenic crops and excessive pesticide.

The industrial development structure is not scientific, the strategic goal is not clear, the cost is high, the output is low, the development mode is old and backward, basically its model is still the small-scale peasant economy.

Poor sales but satisfied with the status quo, they do not know how to combine with the current popular business model, and their awareness of "Internet + innovation" is weak.

Their concept of enterprise brand is not strong, and their awareness of using cultural resources is weak, basically no well-known agricultural products brand such as "Huiliu tea", "Bama tea".

Located in mountainous areas, it has inconvenient transportation, limited channel development, low level of logistics network facilities with small scale and single function.

Internal and external relations between enterprises and local farmers are not close, and the sense of cooperation is weak. Among them, there are 10 provincial leading enterprises, 68 municipal enterprises, more than 2,700 cooperatives and more than 2,300 family farms in Jinzhai county. However, entity enterprises with a wide range of influence, especially a type of processing and industrial chain integrity are less, so their ability of helping and driving is limited. [11]

The government's policy support system is not perfect. Recently the government in Jinzhai county has published a series of policy measures to encourage operators to participate in helping poor, but there are still problems such as unclear policy continuity, imperfect safeguard mechanism. And problems of land use, financing and insurance have not been fundamentally solved, which are not attractive to business entities, so the support needs to be further strengthened.

4. Countermeasures and Suggestions for Promoting Green Development of County Agriculture - on the Analysis of Forestry in Jinzhai County

4.1. Establishing a Green Safety System for Agricultural Products

In recent years, the safety of agricultural products has been paid more and more attention by Chinese people, and the national supervision has become more and more strict, because it is directly related to people's life and health. The common safety problems of agricultural products mainly include pesticide poisoning and excessive heavy metals. Therefore, it is urgent to build a green product safety system and ensure its green safety, and it is also the cornerstone to accelerate green development.


Government regulation should bear the brunt of efforts to build a green safety system for agricultural products. First of all, the relevant departments of the county government should issue local normative documents on the safety of agricultural products to play a supervisory role for the relevant business entities. Secondly, the production management department of the county government should do well in publicity, and strive to make the county operators have the
consciousness of green safety. Thirdly, the county government should actively guide relevant business entities to introduce advanced cultivation technology at home and abroad, promote physical and harmless technology to prevent and control pests, strictly control the use of pesticides and fertilizers, and make agricultural products green and harmless. In addition, relevant departments of the county government should introduce college graduates with attractive policies, promote school-enterprise cooperation with colleges and universities inside and outside the province, establish internship bases for innovation and entrepreneurship, form cooperation of talents and technologies from colleges and universities and policy resources from the government, promote integration of industry, education and research, and promote the development of local agriculture.[12]

4.1.2. Enterprises-- Responsible for the Construction of the Green Safety System.

Enterprises should take greatest responsibility for the construction of the green safety system. Enterprises should first implement information disclosure system of the production and operation, so that consumers could understand and trust enterprises and products. For example, enterprises can monitor the video in the production base and upload it to the Internet for potential consumers to watch, so as to make them truly feel the harmless production process of green agricultural products and build their confidence. Secondly, the supervision of agricultural products must be implemented. The work of relevant supervision departments should be in place. Enterprises should actively cooperate with relevant departments to establish and improve the monitoring system of agricultural products. In this way, the green and good products brought by the cooperation between enterprises and the government will surely benefit the vast number of consumers.[13]

4.2. Optimizing the Industrial Structure for Agricultural Green Development [14]

4.2.1. Adjustment of Technical Structure.

Agricultural business entity should first adjust the technical structure, strive to innovate and develop the high-efficient green technology, and realize the two requirements of maximization of resource utilization and green and sustainable development in the county. At the same time, green technology innovation will not only increase the output but also promote the green transformation and development of enterprises. Therefore, enterprises should pay attention to the construction of talent team, establish talent incentive mechanism, encourage technological innovation, and support patent protection, which escort for enterprises to improve technical level. Secondly, farmers should constantly improve their products quality, take the initiative to learn new skills, adopt modern agricultural operations, and promote the improvement of agricultural productivity.

4.2.2. Adjustment of Supply Structure.

The structure of agricultural supply should also be optimized and adjusted. As far as Jinzhai county is concerned, due to the complex climatic conditions, in addition to the research on cultivation techniques, the forestry operators should also establish a meteorological monitoring team to ensure the scientific and healthy cultivation of trees. In times of frequent extreme disastrous weather in mountainous areas, enterprises and farmers should make timely preparations for disaster prevention and resistance, and local governments should provide real-time help to protect forest security. The supply of sales of agricultural products should not be ignored. The county government should issue relevant policies and measures to provide sales channels. It can establish a unified agricultural trade market and form a cluster effect, which can not only meet consumers’ demand for green agricultural products, but also accelerate the survival of the fittest in the agricultural products market.

4.2.3. Adjustment of Product Structure.

The further optimization of agricultural industrial structure also depends on whether its product structure is scientific. The forestry of Jinzhai county is transforming from single product structure to multiple product structure. The county government can organize the development of new forest areas along both sides of the river to further optimize the structure of agricultural products. For farmers, a variety of agricultural products will increase costs, and farmers can cooperate with each other to grow
and sell complementary products, which can form a cluster effect and promote the increase of individual farmers' income.

4.2.4. Transformation of Development Mode.

Agricultural enterprises should change their development mode and realize the optimal allocation of resources. In recent years, forestry enterprises in Jinzhai county expand sales channels, and jointly organize agricultural culture festival with the government, and provide services for paid picking, which not only expand the market, also let visitors experience the life of labor, and stimulate the development of the local tourism industry. In this way, they also make very good publicity for local culture, and realize a win-win situation for agriculture and tourism. So the forestry resources are transformed into tourism resources, which promotes the economic level of the county.

4.3. Innovating Green Marketing Mode and Combining Entity Sales with Network Sales

At present, there are some problems in the marketing mode of forestry entities in Jinzhai county. There is a certain degree of unsalable agricultural products. Production initiative suffers accordingly. Thus, agricultural business entities can take the following targeted measures:

4.3.1. Optimizing Entity Sales Model, Improving Products Freshness.

At present, local forestry enterprises and farmers in Jinzhai county focus on offline sales that are crucial to the freshness of fruit products. But this needs to establish an integrated product refrigeration chain, as the market competition tends to be fierce, so they should reduce costs and can increase competitiveness. Therefore, the entity sales model should be innovated, and the agency system can be implemented. Pilot implementation was implemented in the whole county. Leading enterprises constructed in forestry industrialization are implemented to establish and recruit agent distributors for agricultural products in all towns and villages of the county with unified management of outlets and cooperative marketing. In addition, agents are recruited in and outside the province to set up sales outlets and establish a larger storage base. Resources are shared among all outlets to achieve a wider range of sales. [15]

4.3.2. Using the Internet Sales Platform to Realize the Combination of Offline and Online Sales Model.

Agricultural business entities should give full play to the functions of Internet platforms and realize the mode of combining offline sales with online sales. [16] First of all, infrastructure construction should be improved, and the government should support the construction of "rural taobao" and other platforms. Enterprises should utilize these offline service network at the county and village levels covered by these platforms, make full use of the advantages of the Internet, break through the barriers of information channels, and promote "agricultural products entering cities". Secondly, online sales should break through the virtual barriers, that is, to achieve products quality and services, adhere to the integrity management, do not resort to fraud. In addition to the effective packaging of agricultural products, on the one hand it can ensure the safety of freight, on the other hand exquisite special packaging can attract consumers to buy.

4.4. Developing a Green Agricultural Culture and Creating a Famous Brand of "Green, Organic and Pollution-Free" Agricultural Products

In the report of the 19th CPC national congress, General Secretary Xi Jinping stressed the need to vigorously develop cultural soft power and build cultural confidence. In order to achieve green and sustainable development of forestry in Jinzhai county, it is necessary to internalize and externalize the culture construction, adhere to the development of concept culture and cultivation of image culture. [17]

4.4.1. Development of Concept Culture.

In terms of concept culture, forestry enterprises and farmers should first position themselves accurately, adhere to the concept of fully meeting consumers' demand for high-quality life, take health and original ecology as the development goal, and provide green, organic and pollution-free good
products to consumers. Furthermore, enterprises and farmers should vigorously publicize the concept of green development, establish and improve the green culture system, so that employees and farmers can understand and stick to it, and work in accordance with the requirements of green and sustainable development.

4.4.2. Cultivation of Image Culture.

Enterprises should first put the interests of consumers in the first place, and then establish and publicize the enterprise image of adhering to green planting, green production and green sales. Moreover, through the close cooperation between forestry enterprises and farmers, we should actively strive for the honorary titles of "green food labeling enterprises", "green food production means certification enterprises", "geographical indications", "well-known trademarks", "time-honored brands" and so on, and strive to enhance consumers' sense of trust.

4.5. Improving Auxiliary Facilities and Optimizing the Green Logistics Service Industry

4.5.1. Establishing and Improving Supporting Measures for Logistics Services.

Transportation is the lifeline to open up sales and promote trade, and the establishment and improvement of supporting facilities for logistics services are the necessary conditions for the green development of agricultural enterprises. However, there are only a few logistics parks in Jinzhai county, and their service scope is small, basically limited to the county, and they are not closely related to each other, and there is no cluster effect. Specific measures can be taken to improve it as follows: [18]

1) The government department encourages and supports the centralized development of a large logistics park focusing on agricultural products trading in the local area, actively introduces logistics enterprises, and provides convenient transportation for agricultural products enterprises. On the other hand, logistics industry can also become a new growth point of the local economy.

2) The government should increase investment, improve transportation infrastructure, and provide enterprises and farmers with faster transport services for agricultural products. Jinzhai county has a relatively developed water system and good water conservancy construction. If the transportation mileage is short and the fruit preservation time is long, waterway transportation with lower transportation cost is also a choice.

3) The enterprise itself should seek a long-term cooperation with logistics enterprises, and regularly distribute products for the enterprise. In this way, the logistics cost can be reduced and a stable distribution team can be guaranteed, so that the goods can be delivered to customers in a timely and safe manner.

4.5.2. Improving the Fresh-Keeping Level of Agricultural Products in Logistics and Transportation.

Agricultural enterprises in the logistics should also consider the issue of preservation. Agricultural products have strong timeliness, so the cold chain logistics in the market emerges at the moment. But cold chain logistics requires high technology and high purchase cost. Therefore, forestry enterprises can seek cooperation with enterprises that also need refrigeration and transportation, such as vegetables and aquatic products, to establish a cold-chain logistics system, share equipment and facilities, and promote green and low-carbon development. [19]

4.6. Supporting Industrialization Management for Peasant Households and Promoting Farmers to Increase Income

Although peasant households are self-employed, but their rural practice experience is rich, which is the indispensable foundation force with agricultural green development. Peasant households should actively seek cooperative development so as to fundamentally solve the problems of agricultural and rural farmers. [20]
4.6.1. "Leading Enterprises + Peasant Households " Type.

This type is based on the purchase and sales contracts between enterprises and peasant households, in which enterprises provide technical guidance, financial support and means of production to peasant households, while peasant households enjoy the services of leading enterprises and provide them with raw materials to share benefits, risks and mutually beneficial cooperation.

4.6.2. "Leading Industry + Peasant Households" Type.

This type is adapted to the characteristics of this region of the county and was introduced. Take Jinzhai county for example, the forest resources are extremely rich, hundreds of varieties. Therefore, local resources should be utilized to learn from each other and encourage the development of "one village, one product, one township and one industry". At the same time, industrial linkage can be realized between villages through interactive communication and industrial cultural activities, so as to increase scale efficiency.

5. Conclusion

This paper can draw the following conclusions:

Based on the analysis of forestry in Jinzhai county and national policy of supporting agricultural green development, countermeasures and suggestions are put forward from six aspects to accelerate the green development of county agriculture and realize rural ecological remediation, hoping to be beneficial to targeted poverty alleviation in old revolutionary base areas and overall coordinated development of the region.

More importantly, green agriculture depends on resources and the environment. County agricultural enterprises should actively attract capital, technology and talents through investment attraction and school-enterprise cooperation, and then use their own land and resources to strengthen cooperation with farmers, so as to develop the agricultural industry as soon as possible and make it a new growth point of county.

The most important thing is that agriculture must follow the fundamental principle of green development, which General secretary Xi Jinping has said that we want both golden, silver hill and clean water, green mountains as well. Through innovating green technology, relying on beautiful and rich rural land, green agricultural products, which are the most original, organic and pollution-free could be produced and sold. As one of the old revolutionary base areas and state-level poverty-stricken counties, the government departments of Jinzhai county, especially in a highly social sense of responsibility and mission, vigorously support and developed green agricultural products. Business entities of forestry in Jinzhai county should adhere to innovation to drive green development, continuously produce the high safety of green agricultural products which meet consumers demand.

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