

Hanwen Zhang
Shijiazhuang Foreign Language School
Shijiazhuang, Hebei, China
China, Sustainable Agriculture

Legitimate Utilization of Rural Land in Taihang Mountain Area——Taking Yanguokou Village, Ceyu Town, Jingxing County as an Example

Abstract:

Yanguokou Village, Ceyu Town, southern Shijiazhuang City, Hebei Province, China is located in the Taihang Mountain Area, with great land development restrictions, and it was once a deep poverty village. After the optimization of land use, the village improved the environment and led the villagers out of poverty. This paper adopts the mode of 'land status-use mode-achievement' to analyze the legitimate use of land in the village, aiming to provide reference for the areas with difficulties in development due to land restrictions.

Key Words: Land utilization ; Taihang Mountain ; Agricultural production

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Chapter 1. Researching Background

1.1 Geographical Environment of Yanguokou Village, Ceyu Town, Jingxing County

Jingxing County, Shijiazhuang City, Hebei Province, is located at 114°N, 38°E. Ceyu Town in the southeast of Jingxing County, Shijiazhuang City, Hebei Province, is located in the Taihang Mountains. It borders Yuanshi County and Zanhuan County (see Fig. 1), and its terrain is the highest in the county, with overall south high north low mountain terrain Its altitude is mostly between 450 and 1100 meters, and the villages and towns are mostly distributed in alluvial fans (see Fig. 2). Ceyu Town gets a warm temperate semi-humid continental monsoon climate. Precipitation mainly originates from the southeast monsoon. Each year, with the arrival of the monsoon, the amount of precipitation shows inter-annual and seasonal precipitation changes, while the temperature is annually stable. There lies Gantao River throughout Ceyu Town. The total area of the village is 2220 acres, and the forest area is 1650 acres (including 830 acres of national public welfare forest, 90 acres of natural ecological forest, 165 acres of artificial economic forest) and the remaining villages, river beds, grain fields, roads and vegetable fields are about 165 acres. ¹



Fig.1 Jingxing County District Map



Fig.2 Satellite map of Yanguokou village

1.2 Land Constraints for Development

Yanguokou Village is located at the junction of the southeast section of Ceyu Town and Yuanshi County. Some of the soil layers are shallow and thin, with many stones, and the terrain gap is large, lacking a considerable area of flat land. The local soil is mainly leached cinnamon soil with moderate texture. The precipitation is small but too concentrated. At the same time, it is located in the Taihang Mountains and the mountains are rugged, which leads to severe land erosion problems.

¹All data given in this paper is provided by staff of Yanguokou Village.

1.3 Land Utilization Background

There are more than 140 acres of vacant land in Yanguokou Village, including nearly 120 acres of arable land and a small part of water. The water resources of Ceyu Town are abundant, and water conservancy construction is continuous. There are numerous types of projects throughout the town. Zhanghewan Reservoir and Yugou Reservoir provide ample water for the water supply from the Leaping Canal, one of the four main canals in the county. Some land in Yanguokou Village was also utilized as reservoirs. Owing to the limitation of topography and soil layer, the land was once mainly small slope terraces for farming, and the crops were mainly cold-resistant vegetables, wheat and other common crops in North China Plain. Some farmers worked by cattle farming. Due to the inconvenient transportation, small production scale and low efficiency, agricultural products can only meet the survival needs of local villagers, instead of bringing economic benefits.

Chapter 2. Land Use Pattern and Its Innovative Points

2.1 Planting Industry

2.1.1 Walnut Planting

Considering of the characteristic of local soil, the village developed the walnut planting industry. With the efforts of farmers and the support of government, the walnut planting industry has already obtained some achievements. Walnut is a deciduous tree of the walnut genus, and has both high economic and nutritional value. It is known as 'Iron crops'. Also, walnut is an important economic forest tree species with very fast developing speed in the northern area of the Taihang Mountains. Yanguokou Village can provide a deep, loose, fertile, moist soil and a cool climate ecological environment for walnut. Local villagers mainly planted walnuts as a family in relatively flat areas on the hillside. Due to the proper selection, attentive fertilization of farmers and the high quality as well as considerable yield of the local walnut, the walnut planting has brought initial economic profits to the villagers. The unit price reached 30 yuan / kg in 2016, accounting for 80% of the total income of the village. Since then, walnut planting in Taihang Mountains has been encouraged.

2.1.2 Wild Forsythia Planting

Forsythia is a deciduous shrub of Forsythia in Meliloideae with economic, ornamental and medicinal values.(see Fig. 3) Its seeds can produce oil with various uses, and its extract can be used as a natural preservative. It also has an antibacterial effect in vitro. The market demand for Forsythia is large while its yield is low.



Fig.3 Forsythia



Fig.4 Dry forsythia (medicinal)

The geographical environment of Yanguokou Village provides the growth of wild Forsythia suspense with ample sunlight, deep, fertile and moist site conditions, so that the quality of local forsythia is higher than that of adjacent areas. Moreover, the indigenous population is mostly left-behind elderly and children, and there are few high-quality young and middle-aged laborers. The simple process of forsythia planting has little resistance to regional development. At present, forsythia planting and sale have brought considerable economic benefits to Yanguokou village residents. The local price of forsythia is stable and still rising. Unit price of wet forsythia is 12 yuan / kg, and the price of dry forsythia will be higher (see Fig. 4). As forsythia is mainly grown in a relatively steep place, forsythia picking can also bring 200-300 yuan / day per person ' s income to native capable villagers, and help the local poverty alleviation. In addition, the root system of forsythia was developed, and its main root, lateral root and fibrous root can be densely integrated in the soil layer, with strong absorption and water retention capacity. Its side root is thick and long, and its fibrous root is many and dense, which can pull and fixate the soil and prevents the soil block from slipping. With strong germination ability and high increase rate of canopy coverage, the forsythia can effectively prevent raindrops from splashing on the ground and reduce erosion. It has a good effect on soil and water conservation and can also bring environmental benefits to the local area.

2.2 Breeding Industry

The village built a chicken farm on land that is not suitable for cultivation, which not only made innovative use of the land, but also brought economic income. Some parts of the soil in Yanguokou village are relatively closed and its slope is suitable. The village secretary decided to develop this land for mountain chicken breeding. (See Fig.5) Chickens often run in the mountains, so that their egg production quality is higher than that of mechanized breeding chickens. Combined with the poverty alleviation policy, the corresponding poverty alleviation units are buying and helping to promote local rural eggs, which are expanding sales of local rural eggs in Yanguokou village.



Fig 5 Yanguokou Village Hen Farm

The specific economic costs and profits of chicken farms are as follows :

	Expenditure			
	Chicken seedling costs (Yuan / chicken)	Fodder costs (Yuan/chicken per day)	Labour costs (Yuan/chicken per day)	Total investment in seedling period (Yuan)
Seedling period (first eight months)	8	0.1	0.1	4820
Egg production period	\	0.2		\
	Income			Total profit (yuan / day)
	eggs number (egg / day)	Selling price(Yuan/egg)*		
Seedling period (first eight months)	300	1.2		180
Egg production period	300	1.2		180

*According to the average number of 23.6 eggs/kg

Excluding some other costs, the actual monthly profit of the chicken farm is about 4000 yuan - in less than two months, the early investment can be fully covered by income. The area that is not suitable for the development of planting industry due to terrain, soil and other constraints is developed as a chicken farm, which not only improves the land utilization rate, but also improves the efficiency of product output, and provides jobs and brings economic income to the villagers.

2.3 Tourism

2.3.1 Riding Path and Courier Stations

The village has developed a challenging cycling road by taking advantage of the special local terrain—mountainous terrain. At the same time, it has innovatively used the land in combination with the construction of supporting service facilities. Yanguokou Village is located in hilly, mountainous terrain with tortuous mountain roads. The mountain road at the junction of the southeast section and Yuanshi County passing through the leveling and laying of Yanguokou Village has become a famous cycling road "Biker Ridge". (See Fig. 6 and 7) The northern section of Biker Ridge is Sanjie Mountain (1100 meters above sea level), which was once employed as a lookout post during the Anti-Japanese War and has a stone wall. And the mountain land is relatively smooth. On sunny days, we can have a beautiful view of Panlong Lake and Shijiazhuang City. To attract more cyclists and tourists, Yanguokou decided to build a Courier station, offering small-scale dining services.



Fig.6 Biker Ridge-1



Fig.7 Biker Ridge-2

2.3.2 Rural Comprehensive Tourism Development

The village uses part of the land for tourism development, so that the originally idle land has also been used rationally. Yanguokou village has an economic forest farm located in the valley with low elevation, flat terrain as well as beautiful scenery. Because of the closed terrain and winding mountain roads, it is difficult to transport out the lumber. Therefore, the economic forest farm has been idle. At present, it has been contracted to Qiaohuashan Tourism Company for development at the price of 8000/ year, and is prepared to develop rural tourism with rural characteristics in the form of farmhouse entertainment. At the same time, the village has become a certain scale of forsythia design and color is golden yellow, attracted many admiring photography fans, and family watch flowers into the village, the village in the family since the farm uses the continuation of thousands of years of ancient water way, has a unique appeal, this synthesis for subsequent rural tourism development and the development of the third industry in our village provides good foundation conditions.

2.4 Others

The Taihang Mountains pay attention to returning farmland to forests to conserve water and soil. Due to steep terrain, heavy rainfall, multiple natural disasters such as landslides and debris flow, serious soil erosion in Taihang Mountain area, the local government thoroughly implements the sustainable development concept of "clear water and green mountains are golden hills and silver mountains" and chooses to return farmland to forest. Now there are 5000 mu of national public welfare forest, 545 mu of natural ecological forest and 1000 mu of artificial economic forest in the village.

The Taihang Mountains are mostly made of rocks, which makes it difficult to grow plants. The government facilitates the development of photovoltaic power generation projects on the top of the mountain, laying solar panels, and rationally using this land. Some of the peaks of Taihang Mountain have shallow soil layers. In response to the national call, many counties in Taihang Mountain have cooperated with relevant enterprises to develop photovoltaic power generation projects, which

provide the local power supply guarantee and the villagers can also get corresponding subsidies.(See Fig. 8)



Fig.8 Forest farm and solar panels

Chapter 3. Summary

3.1 Achievements

Significant results have been achieved in land use rationalization in Yanguokou village. Field investigations revealed that most of the abandoned land in the village has been well-used: the low-lying terrain is where villages and small families grow their own fields; the original terraces have been leveled and rearranged, and walnut and forsythia intercropping are planted; mountains The vegetation coverage rate has been greatly increased, making Yanguokou Village have fresh air and beautiful scenery; the winding mountain road has been repaired into a riding trail, which has improved the village's openness to a certain extent. The rational use of the land has also brought economic benefits. The per capita annual income has increased from 2,200 yuan to 4,000 yuan, embarking on a well-off road, achieving the unity of economic, social and ecological benefits.

3.2 Development Experience

Adapting measures to local conditions: The development method should be selected according to local land types, climate characteristics, natural resources, labor level and other conditions, and special attention should be paid to the development and utilization of local wild plant resources.

Pay attention to sustainable development and adhere to the people-oriented principle: when planning land, in addition to considering economic benefits, we should also consider environmental protection, pursue harmonious coexistence between man and nature, rationally develop and utilize natural resources, and maintain sound and sustainable economic development. At the same time, when choosing a development method, it should also be able to provide jobs for the local unemployed population as an essential condition. In this way, we can enhance the happiness and sense of gain of local residents, stimulate their enthusiasm, ensure the stability and unity of social order, and promote the further development of the local area.

3.3 Suggestions on Further Measures

Strengthen education and improve labor level: Although Yanguokou Village has achieved preliminary results through the development of industries with lower labor quality requirements, in the longer term, technical content and production efficiency will become serious constraints on the development of the village in the future. Science and technology are the primary productive forces. In rural areas, we should also focus on the promotion of basic education and vocational skills training, so as to improve the quality of labor and improve the quality of development. At the same time, we should also formulate policies to attract talents, and use more scientific methods to make more rational use of land through the use of high-tech methods such as mulch film, high-efficiency environmentally friendly pesticides, and drip irrigation. Especially, youths who have left Yanguokou Village to pursue agriculture-related education are more than welcomed to come back home in order to help promote the development of the village.

Set up special development institutions and strengthen management: The Communist Party of China has always made overcoming absolute poverty one of its priorities. Under the leadership of the party, governments at all levels have set up poverty alleviation offices to implement targeted poverty alleviation policies to provide funds for the development of poor areas. However, to a certain extent, these institutions are not professional, and there are few staff with scientific knowledge related to agriculture and land use. Therefore, establishing more professional and scientific institutions and introducing more agricultural talents to manage land and agriculture, which can ensure the long-term stability of land development and utilization, which is more conducive to long-term progress, are suggested.

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