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Study of Basic Farmland Protection in Huainan City

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Abstract Farmland is the primary resource for food production, related to food security and people's livelihood. The basic farmland is the essence of farmland, and it is necessary to improve the quality of farmland and strengthen the basic farmland protection in order to enhance comprehensive agricultural production capacity. Currently, the contradiction between urban development and farmland protection has been inevitable, and Huainan City is now in the period of rapid development of urbanization. How to better solve the contradiction between urbanization and farmland protection to promote sound and rapid economic development, is an important issue currently facing Huainan City.

Key words Huainan City, Basic farmland, Food security

1 Introduction

Cherishing and rationally using land and effectively protecting farmland is a long-term basic national policy that we have to adhere to. Land is the basis of social and material production and humans depend on it to survive. It is also a non-renewable resource. Although China has 9.6 million square kilometers of land area, there is not much farmland. With a mushrooming population, China's farmland is ceaselessly dwindling, and the area of farmland per capita is even small, having a direct impact on per capita share of grain. In recent years, there is an increasingly prominent contradiction among farmland, population and food, and since land resources are the most important non-renewable natural resources, it is particularly important to seek a equilibrium point of farmland, population, resources and environment to achieve sustainable development. The basic farmland is the essence of farmland, so strengthening the basic farmland protection plays an important role in promoting stable development of agriculture and ensure national food security.

2 Current farmland use in Huainan City

2.1 Current land use Huainan is a prefecture-level city in central Anhui Province, People's Republic of China. It borders

the provincial capital of Hefei to the south, Lu'an to the southwest, Fuyang to the west, Bozhou to the northwest, Bengbu to the northeast and Chuzhou to the east. The prefecture-level city of Huainan administers six county-level divisions, including five districts and one county (Tianjia'an District, Panji District, Xiejiaji District, Datong District, Bagongshan District, Fengtai County). It also has a comprehensive experimental zone of social development (Maoji Experimental Zone), a development zone (Economic and Technological Development Zone) and a technology and culture zone being built (Shannan District). According to the land change survey data in Huainan City (Table 1), the city's total area of land was 258395.46 ha in 2014, including 179628.77 ha of agricultural land, 52664.04 ha of construction land and 26102.64 ha of unused land. As can be seen from Fig. 1, the proportion of agricultural land is high in Panji District and Fengtai County, and the proportion is highest in Fengtai (72.80%); the proportion of construction land is high in Tianjia'an District and Bagongshan District, and the proportion is highest in Bagongshan (36.57%) and lowest in Fengtai (17.43%); the proportion of unused land is highest in Xiejiaji District (18.19%) and lowest in Tianjia'an District (2.82%).

Table 1 The land use statistics in Huainan City in 2014

Unit: ha

District (county)	Total area	Agricultural land		Construction land		Unused land	
		Area	Percentage	Area	Percentage	Area	Percentage
Huainan City	258395.46	179628.7747	69.52%	52664.0401	20.38%	26102.6352	10.1%
Datong District	30625.71	20818.5926	67.98%	6376.055	20.82%	3431.0624	11.20%
Tianjia'an District	24999.03	15267.5124	61.07%	9026.1135	36.11%	755.4041	2.82%
Xiejiaji District	27059.81	17148.9873	63.37%	4988.9727	18.44%	4921.85	18.19%
Bagongshan District	6714.55	3441.86	51.26%	2455.75	36.57%	816.94	12.17%
Panji District	59833.37	43485.1793	72.68%	10783.9009	18.02%	5564.2998	9.3%
Fengtai County	109162.99	79466.6431	72.80%	19033.2580	17.43%	10663.0889	9.77%

2.2 Land use structure changes From the change in the pro-

portion of various types of land in Huainan City in the past six years (Table 2 and Fig. 2), there was a slight fluctuation in the proportion of agricultural land from 2009, but overall it showed a steady downward trend; the proportion of construction land showed

a slow upward trend from 2009, rising from 18.31% in 2009 to 20.38% in 2014; the proportion of unused land showed a slow upward trend from 10.77% in 2009 to 10.11% in 2014.

2.3 Current land use characteristics (i) The agricultural land has a large share, and the rate of land use and reclamation is high. In 2014, the city's land utilization rate was up to 89.90%, the agricultural land occupied 69.52% of the city's total land area, and land reclamation rate was 55.83%, higher than the provincial average. (ii) The construction land area increases year by year, and the proportion of rural residential land is large. The area of construction land increased from 47304.11 ha in 2009 to 52664.04 ha in 2014, with an average annual increase of 1071.99 ha. In 2014, the city's rural residential land area was 22542.51

ha, accounting for 43.39% of the city's construction land area, and the consolidation potential of rural residential land was high. (iii) The mining subsidence area is constantly increased and widely distributed. In 2013, the mining subsidence area was 22000 ha in Huainan City, accounting for 8.51% of the total land area. Compared with the mining subsidence area in 2005 (9858.00 ha), it greatly increased, with an average annual increase of 1517.75 ha. It is mainly distributed in Bagongshan, Xiejiaji, Panji and Fengtai. (iv) The farmland reserve resources are short. In 2014, the city's unused land area was 26102.64 ha, accounting for 10.1% of the total area, and waters accounted for 95% of unused land. There are less farmland reserve resources that can be exploited.

Table 2 The changes in the area and proportion of various types of land in Huainan City during 2009 – 2014

Unit: ha

Year	Total	Agricultural land		Construction land		Unused land	
		Area	Proportion	Area	Proportion	Area	Proportion
2009	258395.46	183274.78	70.93%	47304.11	18.31%	27816.57	10.77%
2010	258395.46	181579.03	70.27%	49347.69	19.10%	27468.74	10.63%
2011	258395.46	180753.18	69.95%	50637.56	19.60%	27004.72	10.45%
2012	258395.46	180947.52	70.03%	51326.28	19.86%	26121.66	10.11%
2013	258395.46	180331.13	69.79%	51955.60	20.11%	26108.72	10.10%
2014	258395.46	179628.77	69.52%	52664.04	20.38%	26102.64	10.1%

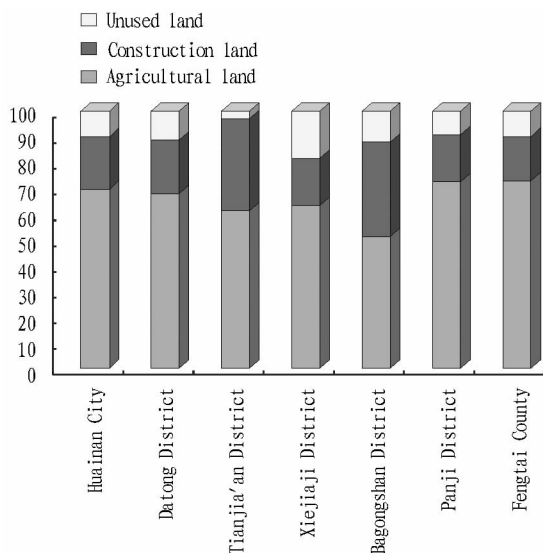


Fig. 1 The land use structure of Huainan City in 2014

2.4 Current farmland use (i) The urban construction is accelerated and the conflict between construction land supply and demand is increasingly prominent. Currently, Huainan City is in an important transition period to achieve leapfrog development, and the urban construction has an increasing demand for land, so the farmland occupation is inevitable. In the long run, the farmland protection will face increasing difficulties and pressures. (ii) There are less land reserve resources that can be exploited and they are unevenly distributed. (iii) Due to the coal resource-based city characteristics of Huainan, the land subsidence caused by coal mining and ecological problems are also inevitable, mak-

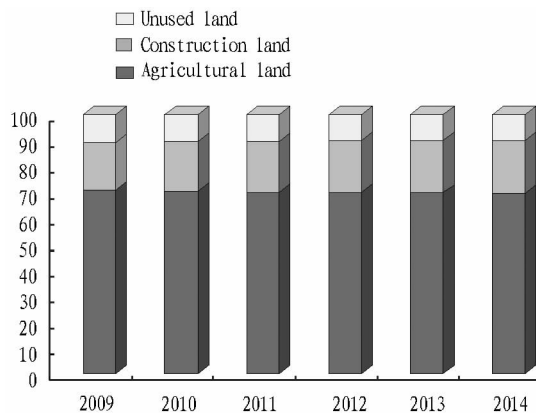


Fig. 2 The land use structure changes in Huainan City during 2009 – 2014

ing the quality of farmland decrease. (iv) The farmland use is relatively extensive and irrational and the waste is serious.

3 The current situation and problems concerning basic farmland protection in Huainan City

3.1 Current situation To protect farmland and ensure the sustainable development of agricultural production, Huainan City developed *Measures for Basic Farmland Protection in Huainan City* in 1991, to divide the basic farmland into three levels and make provisions on the payment of basic farmland protection funds for three levels of protection zones. In recent years, the basic farmland protection work in Huainan City has achieved some success. The farmland quality level results about five districts and one county in Huainan City pass the acceptance check, and 2.209

million mu of farmland in Huainan City has "quality grade identity". It works out the maps and statistical forms related to basic farmland protection, strengthens the quantity, quality grade and responsibility information, and establishes the basic farmland database. The permanent basic farmland designation in Huainan City is now fully completed. It has developed *Permanent Basic Farmland Demarcation Results Report* and related maps and databases, initially forming a set of permanent basic farmland delineation systems in line with the actual situation of Huainan City. It has also developed a series of norms such as *Plan for the Implementation of Permanent Basic Farmland Designation in Huainan City*, *Liability Statement on Permanent Basic Farmland Protection and Municipal Early Inspection Program for Permanent Basic Farmland Designation Results*, which are of strong guiding significance.

3.2 Problems

3.2.1 The lack of flexibility in the planning and management for farmland protection. Currently, the land administration departments often use overall land use planning and special plan for basic farmland protection to set the basic farmland protection zone, but there are some unexpected problems in the formulation of overall land use planning. Once these problems actually occur, the existing basic farmland protection system becomes insufficient. Due to the destruction of farmland caused by natural disasters, the farmland is obviously insufficient in the basic farmland protection area, and it can not be restored in the short term and can not be supplemented in the long term. In addition, part of the high-quality farmland stemming from the development of land reserve resources can not be effectively protected, because it is not included in the basic farmland protection zone. Conspicuously, we can not timely adjust the basic farmland layout if there is no flexible planning and management measures for basic farmland protection.

3.2.2 Unsound management mechanism for basic farmland protection. There are still many flaws in the current basic farmland protection mechanism. Although the country attaches great importance to the protection of basic farmland, there is an inevitable need to occupy basic farmland in some construction projects. The frequent land use and cumbersome approval procedures increase the workload and difficulties in the implementation. A series of problems lead to the illegal occupation of basic farmland, and even make some industry projects with good prospects abandoned. In addition, there is the mistaken idea of emphasizing quantity but ignoring quality in the basic farmland protection in Huainan City. According to statistics, the rate of basic farmland protection in Huainan City is higher than the minimum rate of basic farmland protection, but there are still some drawbacks in the rate of basic farmland protection. Currently, it lacks the survey and analysis of surrounding environment of basic farmland protection zones in Huainan City, and some contaminated farmland with serious soil erosion in the coal mining subsidence area is classified within the protected area, which is not conducive to the effective management of basic farmland.

3.2.3 Imperfect laws and regulations concerning basic farmland

protection. So far, China has not yet enacted a special law for the basic farmland protection. In the long run, with the continuous changes in economic and social development and ecological environment, the basic farmland protection also poses higher requirements and covers a wide range, and rigid rules and regulations have been unable to meet the dynamic needs of basic farmland protection. Additionally, the scientific and feasible operational procedural norms have not yet been fully applied to the adjustment and improvement of basic farmland protection planning. It lacks complete and detailed norms on regular testing of basic farmland quality, inspection of dynamic basic farmland adjustment and acceptance, and also lacks system of accountability for the loose approval behavior, so that there are loopholes to exploit for the illegal land occupation.

3.2.4 Declining enthusiasm for protecting basic farmland. As far as farmers are concerned, after the delimitation of basic farmland, they can be only engaged in the production of agricultural products, which to a certain extent restricts their land operation and income. The opportunity cost can not be reasonably allocated in society but the external benefits are often shared by the whole society. For a long time, the income of farmers from growing grain is relatively low, while the benefits from planting flowers, seedlings or digging ponds to breed fish are higher, so some farmers change the use of basic farmland to increase income. In addition, most young adults choose to work in cities to raise income, thus leading to a lack of labor and a large area of abandoned farmland.

4 Conclusions and recommendations

4.1 Conclusions Farmland is the basis of agriculture, and also a valuable and irreplaceable resource. Effectively protecting farmland and adhering to the "red line" of 1.8 billion mu of farmland is China's basic national policy. The basic farmland is the best farmland most suitable for food production, so the protection of basic farmland is of great importance to economic and social development and national food security. The economic, social and policy environment for basic farmland protection is changed constantly, so the methods and measures for the basic farmland protection should also be timely adjusted and improved.

4.2 Recommendations

4.2.1 Focusing on the quality management of basic farmland. First, it is necessary to improve the farmland quality which determines the level of land productivity, give full play to the value of even, fertile and high-yielding farmland, improve the infrastructure construction, and strengthen the dynamic regulation to steadily enhance the overall grain production capacity. Secondly, it is necessary to classify the basic farmland, determine the amount and spatial distribution of basic farmland, and build a quality management system for basic farmland to reasonably reflect the quality of farmland, to effectively master the dynamic changes in the quantity and quality of basic farmland, and timely update the basic farmland information. Finally, in order to successfully carry out the basic farmland consolidation and expand agricultural operation

