

Analysis on the Evolution Characteristics and Influencing Factors of Cropland Resources in Yulin City

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Abstract

It is of great significance to clarify the law of cropland resources change and its influencing factors for land resource protection in Yulin City. Based on land cover monitoring data from 1980, 1990, 2000, 2010 and 2018, this paper analyzed the change trend of cropland area in Yulin City, and explored the influencing factors of cropland area change law in combination with national policies and social development. The results show that the change of cropland area in Yulin city is affected by both natural and human factors, among which the natural factors determine the spatial distribution of cropland, and the human factors determine the change trend of cropland area in Yulin city.

Keywords

Yulin City; Cropland Resources; Influencing Factors; National Policy.

1. Introduction

Land resources are one of the most important resources for human development, and the study of the laws of land use/cover change and its influencing factors has always been a hot issue for scholars [1]. Among them, cropland is the essence of land resources, which is directly related to human survival and life [2]. Since the reform and opening up, my country's industrialization has accelerated, and a large number of cropland has been replaced by factories, especially in Northwest China. At the end of the last century, the ecological system of returning farmland to forests and grasses The implementation of the project has further reduced the area of cropland and the area of cropland in my country has continued to decrease. Therefore, exploring the evolution of cropland resources in the semi-arid regions of Northwest China can provide a scientific basis for the protection of cropland in my country.

Yulin City is one of the most severe areas of wind erosion and sandification and soil erosion in my country, with typical climate characteristics of the semi-arid area in the northwest. In recent years, the rapid development of ecological projects such as returning farmland to forests and grasses and the process of urbanization have caused great changes in the area of cropland in Yulin City. Therefore, this study takes Yulin City as the research area and uses the remote sensing monitoring data from 1980, 1990, 2000, 2010 and 2018 to explore the evolutionary laws and influencing factors of the

cropland area in Yulin City, aiming to improve the protection of cropland in the study area. Provide theoretical support for sustainable development.

2. Study area and data processing

2.1 Study area

Yulin City is located in the northernmost part of Shaanxi Province, on the west bank of the middle and upper reaches of the Yellow River. The northwest part of it belongs to the Mu Us sandy grassland area, accounting for about 42% of the area of Yulin City. The southeast part belongs to the loess hilly and gully area, accounting for 58% of the total area [3,4]. The terrain of Yulin City is high in the northwest and low in the southeast. The average annual precipitation in the study area is about 400mm, mostly concentrated in the hot summer, with an average annual temperature of 7-13 °C, and four distinct seasons.

2.2 Data source and preprocessing

This paper uses the China Land Use/Cover Remote Sensing Monitoring Database, which is provided by the Resource and Environmental Science Data Center of the Chinese Academy of Sciences (<http://www.resdc.cn>) [5]. This study selects the five periods of 1980, 1990, 2000, 2010 and 2018 data to study the evolution of cropland resources, and performs cutting, projection conversion, format conversion and other processing on land use/cover data. Extract the spatial distribution data of cropland resources in Yulin City in 1980, 1990, 2000, 2010 and 2018.

3. Result analysis

3.1 Spatial distribution of cropland resources in Yulin City

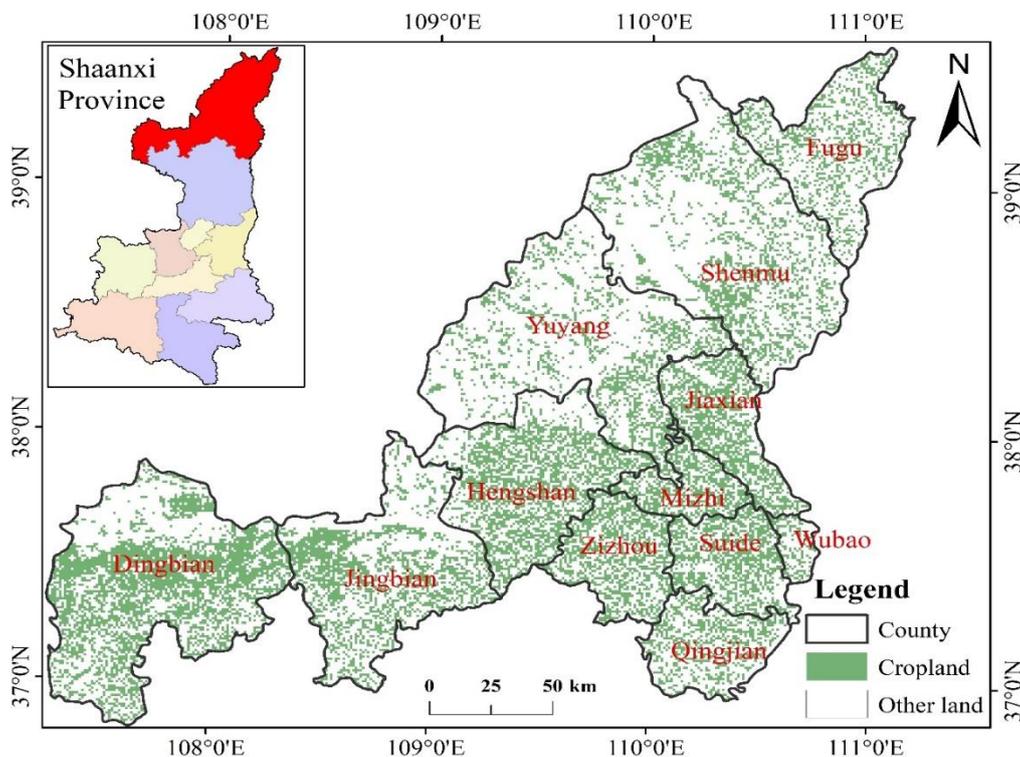


Fig. 1 The spatial distribution of cropland resources in Yulin City in 2018

Fig.1 shows the spatial distribution of cropland resources in Yulin City in 2018. From the figure, it can be seen that cropland is one of the most important land use types in Yulin City in 2018. The area of arable land in Yulin City is generally less in the northwest and more in the southeast. The main reason is related to the climate of Yulin City. The northwestern part of Yulin City is a sandy grassland

area, with sparse rainfall and insufficient soil moisture, making it difficult to develop agriculture well; the southeast is loess In hilly and gully areas, there are many rivers passing through the area, and there are sufficient water sources for agricultural production. It shows that the development of agriculture is closely related to climate and topography.

3.2 Evolutionary law of cropland resources in Yulin City

Table 1. Correlation between evaporation and various meteorological factors in Yulin City

Cropland	Area/km ²	Proportion/%
1980	16 551	38.87
1990	16 557	38.87
2000	16 632	39.06
2010	16 268	38.21
2018	15 569	36.56

Table 1 shows the area and proportion of cropland in Yulin City in 1980, 1990, 2000, 2010 and 2018. It can be seen from the table that the cropland area change rule of Yulin City from 1980 to 2018 is divided into two stages. From 1980 to 2000, the cropland area of Yulin City showed an upward trend, increasing from 16,551 km² to 16,632 km², an increase of 81 km² in 20 years; 2000-2018, the area of cropland in Yulin City showed a downward trend, from 16,632 km² to 15,569 km², a decrease of 1,063 km² in 18 years, of which 364 km² was decreased from 2000 to 2010, and 699 km² was decreased from 2010 to 2018. On the whole, the area of cropland in Yulin City increased first and then decreased. Analysis of the reasons found that the population of Yulin City increased significantly from 1980 to 2000. The state implemented the policy of contracting production to households, which mobilized farmers' emotions in opening up wasteland. Increased the area of cropland; in 1998, the state implemented the ecological project of returning farmland to forest and grassland. Yulin City Government's response to the policy accelerated the change of arable land area. In addition, the rapid development of urbanization after 2010 has taken up part of the arable land. As a result, the area of cropland in Yulin City decreased significantly from 2000 to 2018. In summary, human activities such as national policies and the process of urbanization have a greater impact on the area of cropland in Yulin City.

4. Conclusion

Based on remote sensing monitoring data of land use/cover, the spatial distribution and evolution of cropland resources in Yulin City were analyzed, and the influencing factors of cropland area changes in Yulin City were clarified. The spatial distribution of arable land in Yulin City is generally less in the northwest and more in the southeast, which is related to topography and climate. From 1980 to 2018, the area of cropland in Yulin City showed a phenomenon of first increasing and then decreasing, and its change pattern is related to the implementation of national policies and the process of urbanization Match. The change of cropland area in Yulin City is affected by both natural and human factors. Natural factors determine the spatial distribution of cropland, and human factors determine the change trend of cropland area in Yulin City.

Acknowledgments

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