

Study on the relationship between human activities. natural environment of food production in Xinjiang

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Maintaining the food production force is a basic condition for ensuring the food security in Xinjiang Uygur Autonomous Region. In this study, We have carried out the factors analysis from both sides of the natural and social factors on food production in Xinjiang, using the unit area production volume as the main indicator of food production. In order to understand the temporal change of the unit area production volume in Xinjiang at first, We extracted the unit area production volume data from the Statistical yearbook in Xinjiang, and analyzed the secular change of food production in Xinjiang. The result shows that the unit area production volume had been growing steadily over the 1990-2003, but shows an unstable state since 2004, and has been reduced in 2008; In order to understand the spatial variation of the unit area production volume, We have created a difference image using GIS technique, between 2008 when the unit area production volume reduced, and 2003 when the unit area production volume had been continued growth to analysis the regional changes of food production. It shows that the regions which the unit area production volume decreased are distributed more in the area of the north and east of Xinjiang in 2008 comparison to 2003.

In order to understand the change factor of food production, the analysis has been done on the causes of changes in food production in Xinjiang, by extracting the data of the chemical fertilizer that was used for the food production, irrigation area, agricultural machinery and the rural electricity from the statistical yearbook, The result shows that the effective irrigation rate in Xinjiang after 2005 was reduced by the loss of irrigation facilities and equipments, and it is confirmed that these area are substantially matches to the region in which the unit area production volume decreasing. The data of the agricultural production material price, commodity retail price, agricultural products purchase price are also used for the same analysis, It was estimated that the rise of agricultural production material prices, has become a factor in reduction of food production indirectly through reduced production cost in 2008 that unit area production volume was reduced.

On its outer, using the TRMMB343 precipitation data and CRU TS3.21 temperature data, analyzed the natural factors of food production change. It shows that the trend of precipitation in decline, and the reduction position matches well with the area of unit area production volume are decreased. However, it is suspected that both of human activities and natural factors have been the impact jointly to the changes in food production in Xinjiang.

Keywords: Xinjiang Uygur Autonomous Region, Food production, Human activities, Natural environmen, GIS