

Variety of Grain Yield of Henan Province (PRC)

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Henan province is the most populated agricultural province in China whose stably growing of grain yield has great influence on the nation. Since the foundation of the People's Republic of China, the total grain yield of Henan province has exceeded 30 billion kilograms, even 40 billion kilograms, and the province has been one net grain exported province since 1980. But the non-linear growths of yearly grain yield, especially the great varieties of specific years have directly affected the continuously developing of Henan province's economy.

1. The characteristics of grain yield

The total yearly grain yield of Henan province has developed from 7.14 billion kilograms in 1949 to 40.09 billion kilograms in 1998. During this period, there are 27 years where the yearly grain yield rose, 15 years where the yearly grain yield dropped, and 7 years where the yearly grain yield rested at that of last year or the grain yield difference ratio was smaller than 2%. After being treated by smooth shift, the yearly grain yield during these years reveals one italic shape of "N" that there is dramatic slope-down in 1958, bottom in 1961 and a slow liner growth since 1962. After being treated by the method of cyclical growth rate, the yearly grain yield has also proceeded through 10 full wave periods, and now, it is sited at the wave crest stage of 11th wave period. The conclusions can be summarized as the follows: 1. The stability of total yearly grass yield is weak. The wave tape can be treated as one classical wave tape. 2. The wave cycle is short and the frequency is quick. 3. The 1st of 5- year-development and the years around 1980 belong to small variety periods. 4. Since the reforming and opening, the growth ratio of yearly grain yield reveals slow developing, and the consistence is rising during the expanding period.

2. The influencing factors of yearly grain yield's variety

2.1 The structural factors

The structural factors, that affect the yearly grain yield directly, consist of planting areas and yield of unit area. The planting area takes in almost the same wave phases as those of total grain yield, but the wave swings are tremendously different, on the other hand, the grain yield of unit area takes in same phase and with same wave swing as that of total grain yield, while their wave crests and troughs occur at the same time position. From the correlative relationship,

it can also be seen that the correlative coefficient between the cyclical growth rate of total grain yield and that of planting area is just 0.38. While the correlative coefficient between the cyclical growth rate of total grain yield and that of grain yield per area is 0.96, and this value has the growing tendency. For example, this value is up to 0.98. This indicates that variety of total yearly grain yield of Henan province is mostly influenced by the variety grain yield per area.

2.2 The natural factors

Natural disaster is one of the most important factors that induce to the variety of total yearly grain yield, for Henan province is one of provinces where natural disasters frequently occur. They are the floods and droughts among the agricultural disasters that mostly influence the total yearly grain yield. Since 1982, floods and droughts per year in Henan province hit 5.7 million hectares accounting for 45 percent of total planting areas. 4 million hectares, which accounts for 33 percent of total planting areas, are severely hit. Furthermore, the wave troughs of grass growth ratio correspond with wave crests of areas affected by floods and droughts.

2.3 The economic factors

Policy: agricultural policy has been the major factor that affects the yearly grass yield's variety from the many researches and analyses.

Input: since the reforming and opening, the correlative coefficient between the cyclical growth rate of labor force and absolute value of grass yield is 0.94, while the correlative coefficient between the growth ratio of labor force and absolute value of grass yield is -0.36 . So it indicates that certain labor input remains the fundamental guarantee for grass yield, but on the other hand, it also shows that variety of labor input has little influence on the growth of grass yield. From the correlative relationship between grass output and several materials inputs, they are effective watering areas, power amount of agricultural machinery and especially the fertilizer using that mostly influence the growth of grass yield for the correlative coefficient between the growth of grass yield and these material inputs are all over 0.7.

Price: in the modern market, the price of grass should have distinct influence on the grass yield. The amount of next year's grass will go up with high price this year, and increasing of grass yield also induces to the low price of grass. However, with low planting ground per capita in the province, self-sufficiency autarky is the fundamental characteristic of Henan province's agriculture, so the price variety of grass has not so great influence on grass amount.