Studies on the Change Trend of Time Series of Main Characters for Cotton Varieties in the Yellow River Valley Region

WANG Zhi-zhong[1], LIU Xiu-ju[2], LI Wei-ming[1], LIN Yong-zeng[1]

(1. *Cotton Research Institute, Hebei Academy of Agricultural and Forestry Sciences, Shijiazhuang* 050051, *China*; 2. *Shijiazhuang Vocational Technology Institute, Shijiazhuang* 050081, *China*)

Abstract: Besed on main characters of the cotton varieties that joined the Yellow River Valley Regional Variety Test, according to the technique of linear regression, harmonic analysis and cross spectrum analysis, the linear trend, periodic change and correlated relation of time series of each character for cotton varieties were studied. The results of linear regression showed that there were increasing trend of boll weight, lint percentage and the percentage of seed cotton harvested before frost, the decreasing trend occurred for growing period and *Fusarium* wilt. However, there are not linear relation between lint yield, boll number per plant, *Verticillium* wilt and time, respectively. The results of harmonic analysis and cross spectrum analysis showed that there were significantly periodic change of time series for each character, and take 14 years as the the main period for lint yield, boll weight, lint percentage, growing period and the percentage of seed cotton harvested before frost, take 5.6 years as the main period for boll number per plant, take 28 years as the main period for *Fusarium* and *Verticillium* wilt; and there were best correlativity of bolls, lint percentage, the percentage of seed cotton harvested before frost with lint yield in 2～3 years, respectively, there were best correlativity of boll weight, *Fusarium* wilt, *Verticillium* wilt with lint yield in 7 year period, respectively, there were best correlativity of growing period with lint yield in 9.3 years. These results provided bases for reversion of beeding objective, improvement of beeding standard and long term forecasing of main characters of cotton varieties.

Key words: the Yollow River Valley; cotton variety; time series; trend; study