

生态农业科学

河北省中南部棉纤维品质与气象因子相关性研究

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摘要:

为明确气象因子对河北省中南部棉纤维品质影响, 2007—2008年在南宫、辛集、保定三个生态点设置田间实验, 供试品种为鲁棉研27号, 研究表明: 不同生态点、开花期间棉纤维比强度、2.5%跨长、马克隆值差异呈显著水平 ($p < 0.05$); 不同开花期棉铃纤维伸长率差异呈显著水平; 同比强度相关性呈显著水平的气象因子共5项, 分别为日均温、日温差、日最低气温、日最高气温和平均相对湿度; 2.5%跨长同日照时数呈显著正相关; 同伸长率相关性呈显著水平的气象因子为日照时数和平均相对湿度; 马克隆值同平均相对湿度和日温差呈显著负相关, 与日最高气温呈正相关。棉纤维各项指标与影响其最大气象因子多项式拟合表明, 当棉铃发育期日均温为25—26℃纤维比强度较好, 日照时数为6.5—7.0小时, 棉纤维伸长率最大, 马克隆值适宜的日最高气温27—28℃或30—31℃。同时, 建立了气象因子与纤维品质动态回归模型。研究结果将为棉纤维品质生态区划和品质生态模型定量化提供依据

关键词: 棉花 纤维品质 气象因子

A Research on Correlation of Cotton Fiber Quality with Meteorological Factors in the Middle and Southern Area of HeBei Province

Abstract:

In order to assess the effects of meteorological factors on cotton fiber quality in the middle and southern area of HeBei Province, a field experiment with Lumianyan27hao was conducted in Nangong, Xinji and Baoding. The result showed that the difference of fiber strength, 2.5% fiber length and micronaire value reached significant level ($p < 0.05$) in different ecological areas and different flower stage. There was significant difference in elongation rate between cotton bolls of different flower stage. There were significant correlation between meteorological factors of daily mean temperature, daily temperature difference, daily minimum temperature, daily maximum temperature and relative humidity and fiber strength and between elongation rate and average sunshine hours and the mean relative humidity. Micronaire value was negatively correlated with the daily range of temperature and the mean relative humidity, whereas daily maximum temperatures exhibit a positive correlation with micronaire value. With polynomial fit method, the experimental relationships between cotton fiber qualities with the most influential meteorological factors were obtained. It indicated that, when the daily mean temperature during boll maturation period was in the range of 25℃ to 26℃, the fiber strength were better, when average sunshine time was in the range of 6.5 to 7 hours, the value of cotton fiber elongation rate was bigger, the optimal daily mean maximum temperature affecting micronaire value was 27-28℃ or 30-31℃. Meanwhile, the dynamic regression model between meteorological factors and fiber quality traits was built. These results would provide the references for ecological division and ecological model of fiber quality.

Keywords: Cotton Fiber Quality Meteorological Factor

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