



不同棉花群体冠层数字图像颜色变化特征研究

李亚兵, 毛树春, 韩迎春, 冯 璐, 王国平, 范正义, 孙恩虹

中国农业科学院棉花研究所/棉花生物学国家重点实验室, 河南 安阳 455000

Study on the Color Characteristics Variation of Cotton Canopy Digital Images

LI Ya-bing, MAO Shu-chun, HAN Ying-chun, FENG Lu, WANG Guo-ping, FAN Zheng-yi, SUN En-hong*

Cotton Research Institute, Chinese Academy of Agriculture Sciences / National Key Laboratory of Cotton Biology, Anyang, Henan 455000, China

摘要

参考文献

相关文章

Download: PDF (763KB) HTML 1KB Export: BibTeX or EndNote (RIS) Supporting Info

摘要 为了探索利用数字图像监测棉花长势的方法, 研究了不同群体的冠层数字图像颜色变化特征。结果表明, RGB模型中, R 分量在全生育期呈现开口向上的二次曲线变化趋势; G 分量变化为开口向下的二次曲线; 不同密度 B 分量差异较大, 变化曲线形状介于 R 和 G 之间。RGB组合性状中, $R/(G+B)$ 、 R/G 、 R 、 R/B 类似, B 、 $B/(G+R)$ 、 B/G 类似, G 、 $G/(R+B)$ 类似, 其中 R/G 、 $G/(R+B)$ 、 $R/(G+B)$ 的二次曲线特征更明显。HIS模型中, H 分量变化趋势为开口向上的二次曲线; I 分量变化基本符合二次曲线; S 分量变化无二次曲线特征。 R 、 G 、 R/G 、 $G/(R+B)$ 、 $R/(G+B)$ 以及 H 分量在整个生育期变化具有一定的规律可循, 可能是反映作物长势的潜在指标, 这将对数字图像监测作物长势具有重要意义。

关键词: 棉花冠层 数字图像 RGB HIS 生育期

Abstract: In order to explore the method of crop growth condition monitoring based on digital image analysis, the color characteristics variation over the growth period of cotton canopy digital images was studied. The results show that: RGB model, R component presents a parabola form variation trend over the whole cotton growth period, and G component presents a downward parabola form variation trend. B component shows quite different between the six plant densities, the variation trend shows the medial curve forms between R and G . R , G , B vary significantly different over the growth period among the different plant densities. For the RGB combination components, $R/(G+B)$, R/G , R , R/B are similar, B , $B/(G+R)$, B/G are similar; G , $G/(R+B)$ are similar, but R/G , $G/(R+B)$, $R/(G+B)$ variation trend show more obvious parabola form, in the HIS model, H component presents a upward parabola form variation trend over the whole cotton growth period; I also shows a upward parabola form. S component has not a upward parabola form variation trend. R , G , R/G , $G/(R+B)$, $R/(G+B)$ and the H components variation trend have certain rules to follow over the cotton growth period. Such parameters probably can be used as the indicator indices for crop growth condition monitoring which would be valuable for monitoring crop growth condition based on digital images analysis.

Keywords: cotton canopy digital image RGB HIS growth period

Received 2011-12-23;

Fund:

国家自然科学基金 (31071368); 农业部公益性行业科研专项 (201203057-01)

About author: 李亚兵 (1972-), 男, 副研究员, 博士, criliyabing@163.com

Service

- ▶ 把本文推荐给朋友
- ▶ 加入我的书架
- ▶ 加入引用管理器
- ▶ Email Alert
- ▶ RSS

作者相关文章

- ▶ 李亚兵
- ▶ 毛树春
- ▶ 韩迎春
- ▶ 冯 璐
- ▶ 王国平
- ▶ 范正义
- ▶ 孙恩虹