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## 基于近红外光谱的烤烟烟叶自动分组方法

### Auto-grouping method of flue-cured tobacco leaves based on near infrared spectra technology

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英文关键词: [near-infrared spectral](#) [flue-cured tobacco leaf](#) [grouping](#) [discriminant analysis](#)

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中文摘要:

为了探索烤烟烟叶收购质量的无损检测技术, 提出了一种基于近红外光谱技术快速鉴别烟叶分组(部位、颜色)的方法。分析了近红外光谱技术应用于完整烤烟烟叶质量评价的可行性, 用不同波段范围、不同光谱预处理方法(多元散射校正MSC、标准正态变量变换SNV、微分光谱)和不同主成分因子数分别对烟叶部位和颜色分类结果的影响进行了对比分析, 分别建立了烟叶部位和颜色的定性判别模型。结果表明: 用判别分析(discrimant analysis, DA)方法在17101~27395nm范围结合原始光谱建立的DA判别模型最优, 该方法对烟叶部位、烟叶颜色的校正集分类正确率均达100%, 预测集分类正确率分别达到98.57%和97.14%。说明所提出的方法具有很好的分组作用, 近红外光谱技术为烤烟烟叶收购质量等级评价提供了一种新方法。

英文摘要:

In order to explore the nondestructive testing technology of flue-cured tobacco leaf on purchasing quality, the new method of fast classify tobacco leaf's group (parts, color) was proposed based on near infrared spectral technology. The feasibility of applying near infrared spectral technology to evaluate the complete flue-cured tobacco leaves quality was analyzed. The prediction performances of different band range, different principal component numbers and different preprocessing methods of the spectra (multiplicative signal correction, standard normal variation, and derivative spectra) together with discriminant analysis (DA) were also investigated, and the calibration model was respectively established to classify the different parts and color of the flue-cured tobacco leaves. The research results for the tobacco leaf classification showed that DA calibration model using the parameters of band range between 17101 and 27395 nm combined with original spectra was optimal, which the correct percentage of classification on part and color of tobacco leaf was 100% for calibration sets, and it was 98.6% and 97.1% respectively for validation set. It is proved that the new method proposed in this study is capable to discriminate the parts and color of tobacco leaves with high accuracy. In addition, it might provide a new method to discriminate tobacco leaves group.

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