

## 基于烤烟品质确定烟田的养分管理分区

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## Identifying management zones in tobacco-planted fields based on tobacco quality

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摘要

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**摘要** 探明影响烤烟品质的关键土壤养分因子, 为划分不同管理分区进行精准管理提供科学依据。在平顶山地区以20 m间隔的“网格法”取耕层(0—20 cm)土样111个, 测定了8种土壤养分含量; 进行逐步回归分析和模糊聚类分析。结果表明, 研究区内有机质、总氮、碱解氮和速效磷含量偏低, 速效钾含量偏高, 且各种养分的差异性均较大; 所有养分均可用球状模型进行较好拟合。逐步回归显示, 土壤有机质、速效磷、速效钾和阳离子交换量对烟叶品质有较大的影响; 应用模糊聚类分析将研究区域划分为4个管理区, 验证表明分区结果是可行的。说明土壤有机质、速效钾、速效磷和阳离子交换量是制约烟叶品质的关键土壤养分因子; 利用这4种因子可以科学合理地将研究区域划分为4个分区进行烟田养分的精准管理。

**关键词:** 烤烟品质 土壤养分 管理分区 空间变异性 模糊聚类

**Abstract:** The objective of this study was to explore the key quality-limiting factors of tobacco, and to provide a solid foundation for scientifically formulated management zone (MZ). One hundred and eleven soil samples were collected from top 20cm soil layers based on an approximately 20m grid of the study area, and eight soil properties were analyzed for stepwise multiple regression analysis and fuzzy clustering algorithm. The results show that the contents of soil organic matter (OM), total nitrogen (TN), alkalytic nitrogen (AN) and available phosphorous (AP) are low, while the content of available potassium (AK) is high in this study area. All of the soil nutrients are best simulated by using spherical models, and they have the considerable spatial variabilities. The results of stepwise multiple regression analysis show that OM, AK, AP, and CEC are the key tobacco quality-limiting factors. The four factors are taken as the variables for delineating MZs, and the study area is classified into four MZs. The soil OM, AP, AK, and CEC are the key quality-limiting factors of tobacco in the study area. The study area is clearly defined into four MZs based on the four key soil nutrients, it is concluded that tobacco-planted fields could be managed in a site-specific way.

**Keywords:** tobacco quality soil nutrient management zone spatial variability fuzzy c-means clustering

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