3种喷头雾滴输运沉积参数的试验与分析　Experiment and Analysis on Droplets Motion and　Deposition Parameters of 3 Nozzles

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关键词：　荷电雾滴 图像处理 沉积面积 雾滴覆盖率 沉积密度 雾滴分布均匀性

摘　要：　为了研究在感应荷电状态下高电压对雾滴输运沉积参数的影响，选用3种德国Lechler公司生产的不同流量的TR80-01c、TR80-02c、TR80-03c型喷头，在相同的喷雾压力和液体介质条件下进行试验。利用显微图像结合数字图像处理技术对荷电雾滴输运沉积面积、覆盖率、沉积密度、分布均匀性等状态参数进行取样和分析。试验结果表明：随着输运距离的增加，3种喷头的雾滴覆盖率δ先上升后下降，最高峰值分别达到52.04%、54.89%和57.31%；而雾滴沉积密度ρ先下降后上升，最低值分别为241、268、283个/mm　2。随着静电电压的增大，3种喷头的雾滴沉积区域面积随之增大，最大值分别达到4462、7170、8280 cm　2；而雾滴分布均匀性有所下降，最低值分别为33.23%、31.91%和30.47%。根据具体喷雾施药场合，调节适当的电压，是增加药液沉积和分布均匀的重要措施。　To study the effect of high voltage on the parameters of droplets motion and deposition in the state of induction charge, charged droplet’s move-motional and depositional process of 3 nozzles were tested under the same condition of spray pressure and liquid medium. By using micrograph combining with digital image processing technology, the parameters of spraying deposition were calculated and analyzed. The results showed that with the increasing distance, droplet spraying coverage rises firstly and then declines, but the droplets density is of the opposite trend; with the increasing voltage, area of deposition increases obviously, but spraying uniformity declines. The appropriate voltage depends on the practical occasions of electrostatic spraying application, and adjusting charged voltage is an important measure for adding droplet deposition and spray uniformity.

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