

玉米丸粒化种子的薄层干燥试验及其干燥模型

Experiment on thin layer drying of pelleted corn seed and its drying model

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英文关键词: pelleted corn seed; thin layer drying; drying model; drying technology

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中文摘要:

玉米丸粒化种子刚制成后其含水率比较大, 必须及时干燥。其干燥工艺的合理选择对提高干燥效率, 减少能耗, 保证质量非常重要。采用正交试验的方法, 对玉米丸粒化种子进行了3因素3水平的干燥试验, 得出其干燥曲线为指数曲线, 并分析各试验因素对干燥特性的影响。同时对不同风温下的干燥曲线进行了模型比较, 采用多元线性回归分析程序, 经拟合得出适合于玉米丸粒化种子的数学模型为Page模型。玉米丸粒化种子干燥特性不同于非丸粒化种子, 丸粒化种子有其特定的薄层干燥方程。该模型能较好地预测各干燥阶段的干燥速率及含湿量, 确定合理的干燥工艺以便调控干燥环境, 达到高效低耗的目的。

英文摘要:

It is necessary to dry it in time because of high moisture content after corn seed is pelleted. The selection of reasonable drying technology has great effect on raising drying efficiency, reducing energy consumption and improving quality. Drying experiment of pelleted corn seed was conducted through three-factor and three-level orthogonal experimental design, its drying characteristic curve was obtained as an index curve, and the effects of various experimental factors on drying property were analyzed. Model comparisons of drying curves at different air temperatures were made. Multiple element linear regression analysis program was employed to simulate the model. It is obtained that the mathematical model suitable for pelleted corn seed is Page model. The drying property of pelleted corn seed is quite different from that of non-pellet corn seed. The former has its own thin layer drying equation. This model can better estimate drying speed and moisture content at different drying stages, determine reasonable drying technology so that it can adjust and control the drying environment, and achieve higher efficiency and lower energy consumption.

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