

稻谷干燥风量与谷物质量比的优化研究

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摘要: 研究了风量与谷物质量比对干燥速率的影响。当风量与谷物质量比增大时,干燥速率大幅度上升;但是当风量与谷物质量比增大到一定程度,干燥速率增大率明显减小。干燥初期稻谷的含水率较大时,加大风量可以大大提高干燥速率,而干燥后期风量对干燥速率的影响不明显。以风量与谷物质量比为基准,研究了饱和相对湿度线的移行规律,给出了不同热风温度和稻谷含水率下合理的风量与谷物质量比以及拟合方程。Parameters of airflow in deep bed were obtained by using thermocouples and temperature-humidity sensors. It was concluded that the air flux directly affected the drying rate of grain. The drying rate ascended rapidly when the ratio of air flux to grain mass ratio increased in initial period. But when the ratio of air flux to grain mass increased to a certain degree and continued, the accretion of drying rate would decrease in evidence. It was also shown that a large air flux could greatly improve drying rate during the initial period of drying, but its effect was not obvious in the later stage. The movement rule of saturation relative humidity line in deep bed was studied on the basis of air flux and grain mass ratio. The relationship among optimal air flux and grain mass ratio, air temperature and initial moisture content was correlated to an equation. The parameters of the equation were given. The results provide foundations for auto-control of rough rice drying.

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