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Advances in Mathematical Modeling of Heat and Mass Transfer during Throughflow-Air Drying of Cereal Grain

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This paper discusses recent advances in cereal drying. It focuses on mathematical modeling of convective heat and mass transfer using air as the drying medium. The mathematical modeling of air distribution follows conservation of momentum and a constituent equation relating the velocity of air to its static pressure. The paper presents data obtained from a series of detailed wheat drying experiments. It is shown that the existing simulation models can be improved once the thin layer drying equation is updated spatially and temporally within the bulk grain. The use of variable properties in calculating transient moisture contents and temperatures also improves the accuracy of mathematical simulations.

Keywords: [cereal drying](#), [heat](#), [mass](#), [momentum transfer](#), [modeling](#), [simulation](#), [experimental drying](#), [airflow](#), [bulk grain drying](#), [throughflow drying](#)

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