Thesis Title	Effect of Tempering on Quality of Corn after Fluidized Bed Drying	
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Abstract

The objective of this work is to investigate the influence of tempering period on the corn quality. Drying process was divided into two stages. Corn with initial moisture content of 27 and 30% wet basis was dried initially with a batch fluidized bed dryer using 150^{o}C inlet air temperature and then followed with tempering period. At the final stage, corn was dried again with the ambient air.

The drying process including the tempering period between stages provides the moisture reduction remarkably faster than that with no tempering whereas the deterioration of corn quality due to stress crack is insignificantly improved. The corn colour is relatively darker with longer tempering time. The suitable velocity of ambient air for final drying stage varies between 0.075 and 0.375 m/s, depending on the bed depth. The ambient air ventilation does not affect the corn qualities, both stress crack and colour.

The theoretical diffusion model for sphere has been used to quantify qualitatively the appropriate tempering period. The model can predict satisfactorily the evolution of moisture content throughout. Both the experimental results and the simulation indicate consistently that the appropriate tempering period for corn, together with the acceptable corn, quality, is approximately 40 minutes.

Keywords: Tempering / Ambient air ventilation / Drying / Quality / Diffusion model / Fluidized bed / Grain