Abstract

The research study was carried out with the aim of developing a simulation model to control moisture content and temperature ina grain drying chamber. Through the use of mathematical models of deep bed grain drying, consisting of three sets of equations- mass balance equation, drying rate equation and energy balance equation an algorithm was coded througha visual basic computer program to simulate the grain drying. Data simulated by the program was compared with actual results. From the simulated results it was observed that there was a strong correlation between moisture content and drying time for both simulated and experimental data (R=0.929 and 0.894 respectively for simulated and actual data). In addition there was a strong linear correlation between simulated and experimental moisture content (R=0.989). The decrease in moisture content with time was exponential. Besides, temperature and moisture content were reducing with time while air humidity was increasing for both simulated and experimental data. The developed simulation model can be used to predict drying in the automated grain dryer. With the automation of the drying system, controlling of the drying environment is possible, and this minimizes losses and improves storage of the grains.