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Data Article

Drying kinetic of industrial cassava flour: Experimental data in view

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ABSTRACT

In this data article, laboratory experimental investigation results on drying kinetic properties: the drying temperature (T), drying air velocity (V) and dewatering time (Te), each of the factors has five levels, and the experiment was replicated three times and the output: drying rate and drying time obtained, were observed. The experiment was conducted at National Centre for Agricultural Mechanization (NCAM) for a period of eight months, in 2014. Analysis of variance was carried out using randomized complete block design with factorial experiment on each of the outputs: drying rate and drying times of the industrial cassava flour. A clear picture on each of these outputs was provided separately using tables and figures.

It was observed that all the main factors as well as two and three ways interactions are significant at 5% level for both drying time and rate. This also implies that the rate of drying grated unfermented cassava mash, to produce industrial cassava flour, depend on the dewatering time (the initial moisture content), temperature of drying, velocity of drying air as well as the combinations of these factors altogether. It was also discovered that all the levels of each of these factors are significantly difference from one another. In summary, the time of drying is a function of the dewatering time which was responsible for the initial moisture content. The higher the initial moisture content the longer the time of drying, and the lower the initial moisture content, the

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lower the time of drying. Also, the higher the temperature of drying the shorter the time of drying and vice versa. Also, the air velocity effect on the drying process was significant. As velocity increases, rate of drying also increases and vice versa. Finally, it can be deduced that the drying kinetics are influenced by these processing factors.

Specification Table

Subject area	Engineering and Bio-system
More specific subject area	Post harvest, Food process
Type of data	Tables and figures
How data was acquired	Unprocessed secondary data
Data format	Laboratory experimental investigation results on temperature, drying air velocity, dewatering (initial moisture content), and the outputs (drying rate and drying time of industrial cassava flour)
Experimental factors	Temperature, drying air velocity, dewatering (initial moisture content)
Experimental features	Computational analysis: Analysis of variance (ANOVA), Randomized complete block design with factorial experiment (5^3), Histogram
Data source location	National Centre for Agricultural Mechanization (NCAM), Idofian, Ilorin, Nigeria.
Data accessibility	All the data are in this data article as a Supplementary data file
Software	SPSS Statistical program and Microsoft Excel

Value of the data

- The data on drying rate of industrial cassava flour will be useful for the industries that are planning to embark on large production of cassava flour.
- The data on drying time of industrial cassava flour will be useful also for the industries to know the time needed for the cassava flour to dry at different levels of temperature and velocity.
- The data can be useful for the quality assurance of any cassava flour processing company.
- The data will be useful in food processing, post harvest and bio-system engineering studies.
- The data can be useful for educational purposes and nutrition assessment studies.
- The data is useful in the study of drying kinetic of food processing into powdered particle.
- Several known statistics, for example, root mean squared error (RMSE), linear regression, and complete randomized design (CRD) can be applied which provides alternatives to analysis with randomized complete block design (RCBD) with factorial experiment used in this paper.

1. Data

The data describes the kinetic properties of industrial cassava flour. The raw data which consist of 375 rows, with each row having five columns: dewatering, temperature, velocity, and two outputs (drying time and drying rate) can be assessed as Supplementary data.