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"Resilience of agricultural systems against crises"

Innovative Development of a Cassava Processing Machine

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Abstract

Climate change has affected weather patterns. The global weather system is threatening to spin out of control; seasons are becoming unpredictable, global warming is affecting agricultural systems. Food production systems are all being undermined, the impact is being felt by the world's poorest people. Africa's most important food crop used to be maize, however, production of maize in Africa became risky due to unpredictable rainfall, and it is not financially feasible to depend on irrigation. For this reason, cassava (*Manihot esculenta*, Crantz) became the most important food crop in Africa. The crop could play vital roles in the world food security because of its capacity to yield under marginal soil conditions and its tolerance to drought. The processing stages in cassava to flour include peeling, washing, grating, dewatering, pulverising, sieving/sifting and drying. Dewatering of cassava mash is the second after peeling and second to drying in rate determining factor. It is the most difficult operation when producing high quality cassava flour (HQCF). This HQCF can replace maize or wheat flour. A study was conducted and cassava dewatering parameters was evaluated. TMS 4(2) 1425 variety of cassava at three levels of maturity (9, 12 and 15 months) was used in the study. Dewatering pressure was obtained from hydraulic jack. Evaluated parameters were pressure drop, face area of the filter medium and cassava mash resistance. The cassava mash resistance varied with the tuber harvesting age. Grated cassava mash had a porosity of 0.0181. The result presented the distribution and values of parameters used in developing a combined processing machine for conveying, dewatering, pulverising and sifting process. The machine was evaluated with cassava mash at 68 % moisture content wet basis. Feed screw speeds at 20 rpm interval from 20 rpm to 100 rpm; dewatering pressure was created by the use of spring at 100 N, 200 N and 300 N. The machine at 40–50 rpm produced a mash with an average moisture content of 47–52 % wet basis good enough for HQCF production.

Keywords: Global warming, HQCF, innovative machine, cassava

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