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### Rice Conditioning & Processing ---- Advances in new EMC- based in-bin drying and storage with use of “cabling” technology

Recently-introduced Equilibrium Moisture Content (EMC) Controlled drying technology, also known as “cabling technology”, for use in on-farm, in-bin drying systems offers a means to utilize the advantages of low-temperature, natural air in-bin drying of grain and reduce incidences of mycotoxin contamination. With the new “cabling technology”, drying fan operation is controlled depending on the EMC conditions of the drying air and the moisture content (MC) of the grain. Drying fans are operated only under set conditions of drying air temperature and relative humidity to avoid over-drying or re-wetting of the grain. Modern on-farm drying bins equipped with the new technology comprises in-bin sensors to measure ambient air conditions, and monitor the MC and temperature of the grain throughout the bin; the MC history of the grain during drying can be accessed anytime via the internet, which makes monitoring of the grain MC very effective. From an electronic monitor and fan control standpoint, the new “cabling technology” appears very promising for managing grain after harvest. However, the ultimate success hinges on (1) accurate EMC data to establish optimal airflow rates and fan run time, (2) understanding the kinetics of grain quality degradation and that of mycotoxin-producing mold proliferation, particularly in the upper layers where the grain stay at high MC for prolonged durations, and (3) provision of efficient supplemental heating systems to speed up grain drying in the event that the prevailing weather conditions do not allow complete and timely drying. This presentation will discuss grain quality and safety issues related to grains when using these new drying and storage systems.

### Biography

Dr. Griffiths G. Atungulu is an Assistant Professor of Grain Process Engineering in the Food Science Department at the University Of Arkansas Division Of Agriculture. Griffiths' education has been in agricultural engineering with research specialization in grains process engineering. He holds Bachelors of Science degree in Agricultural Engineering from Jomo Kenyatta University of Agriculture and Technology, Kenya and MS and Ph.D. degrees in Agricultural Engineering from Iwate University, Japan. At present, his program is focused on engineering effective strategies to maintain grain quality and prevent mycotoxin development.

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