MAKERERE UNIVERSITY

63rd GRADUATION BOOKLET

The Principal, College of Veterinary Medicine, Animal Resources and Biosecurity to present the following for the Conferment of the Degree of Doctor of Philosophy (Veterinary Medicine)

ADEMUN Rose Okurut (Ms)

"Effect of foot and mouth disease (FMD) in cattle on household income in selected agropastoral and pastoral areas of Uganda

Dr. Ademun focused on justifying the control of FMD and determining the effect of FMD on household incomes, cattle and crop production, delivery of social amenities, and cattle market revenues in four districts: Katakwi, Kumi, Bukedea and Kiruhura. This study found a high economic cost of FMD of between USD90 to USD400 per household in eastern districts of which over 50% was due to losses in draught power, FMD affected 40% of social amenities delivery in these agropastoral districts, but only 0.01% in Kiruhura district due to continued cattle sales during quarantine. The agropastoral districts lost 66% to 88% of cattle market revenues during FMD quarantine. FMD vaccinations cost USD2.64 per head of cattle but would save agropastoral households about 2 times the cattle enterprise profitability and 3.9 times in Kiruhura. The effect of FMD was much felt in agropastoral areas. Uganda needs an appropriate **Conferment of the Degree of Doctor of Philosophy (Veterinary Medicine)**

OKUNI Julius Boniface

'Molecular and Pathologic diagnosis of paratuberculosis in cattle from selected districts of central Uganda'

Dr. Okuni focused on improving the diagnosis of bovine paratuberculosis, an economically important disease of livestock. The highlights of this study included: the determination of the prevalence of this disease at farm level as well as among slaughtered cattle, the characterisation of the pathogen and its specific effects on affected cattle; and the development of an immuno-histo-chemical method based on recombinant Heat shock protein 70kd, used for the first time ever in the diagnosis of this disease. The study found that the level of the disease is unexpectedly high for a country with limited documentation of its occurrence, moreover high strain diversity of the agent of paratuberculosis, including novel ones imply that this disease might have a complex epidemiology in the country. The supervisors were Professors Ojok Lonzy (MAK), Reinacher Manfreid (Justus-Liebig, Giessen) and Dr. Loukopoulos Panayiotis (A.U.Th), with support from Carnegie, SGS-MAK and Aristotle University of Thessaloniki.

Conferment of the Degree of Doctor of Philosophy (Veterinary Medicine)

SSEMWANGA Deogratius

"Multiple HIV-1 Subtype Infection and Transmitted Drug Resistance; Prevalence in HIV-1 Infected Ugandans and Association to Disease Stage and Progression"

Mr. Ssemwanga investigated how often HIV-1 positive individuals get re-infected with other HIV-1 types and how this affects their disease progression to AIDS and death. The study also investigated how often people get infected with drug resistant HIV-1. HIV-1 positive patients that were re-infected with more HIV-1 types were 14% and 9 % of newly infected patients had drug resistant HIV-1. Patients that were infected with more than one HIV-1 type were found to progress faster to AIDS and death. HIV-1 positive patients should therefore avoid getting re-infected with more/other HIV-1 types using recommended prevention strategies to avoid complications like increased disease progression leading to AIDS and death. Infection with drug resistant HIV-1 limits treatment options for patients thereby complicating patient care. The study was supervised by Prof. Williamson Carolyn, Prof. Lubega George William and Prof. Kaleebu Pontiano with financial support from the British Medical Research Council.

The Principal, College of Veterinary Medicine, Animal Resources and Biosecurity to present the following for the

Conferment of the Degree of Doctor of Philosophy (Ecosystems)

AGABA Hilary

"Plant Available Water and Tree Seedling Survival in Hydrogel Amended Soils Under Induced Drought Conditions"

Mr. Agaba's research focused on finding solutions to the problem of moisture stress in different soils that limits tree seedling survival and growth. It involved applying Superabsorbent Polyacrylate (SAP) hydrogels i.e. substances that absorb water many times their weight, retaining and releasing it slowly to plant roots. The findings show that hydrogels significantly increased plant available water and prolonged tree seedling survival with reduced evapotranspiration compared to soils without hydrogels. Hydrogels saved water and labor by reducing irrigation frequency, yet producing more plant biomass. These findings imply that hydrogels can be applied to plant trees in sandy soils and drought prone environments leading to provision of the much needed tree products and services, thereby contributing to mitigating climate change effects and improving peoples' livelihoods. The study was supervised by Prof. Joseph Obua, Prof. John David Kabasa and Prof. Dr. Huttermann (R.I.P). Funding was provided by the KAAD, Germany, The BASF Chemical Company, Germany and the National Agricultural Research Organization (NARO).

Conferment of the Degree of Doctor of Philosophy (Ecosystems)

ORIKIRIZA Lawrence Justus Baguma

"Enhancing Tree Performance in Degraded Dryland Soils using Super Absorbent Polyacrylate Hydrogels"

Mr. Orikiriza carried out research on Super Absorbent Polyacrylate (SAP) Hydrogels. These chemical substances absorb and store water several times their weight and such water may be slowly extracted when needed. The study focused on assessing strategies for improving the productivity of degraded dry land forest ecosystems using hydrogels to enhance tree performance under natural field and controlled conditions, with and without water stress. The research was motivated by the desire to increase the resilience of important tree species to water stress under

the changing climate. He investigated the effects of SAP Hydrogels on tree species performance. The results show that the Hydrogels increased tree survival, growth performance and biomass production in drought prone environments hence tree planting in these environments can be achieved with the use of hydrogels. The study is valuable to stakeholders engaged in tree planting for restoration, land rehabilitation, pasture improvement, as well as optimal utilization of land and production in drought prone environments ultimately contributing to the ecosystem health and rural livelihoods.