

Christine Kyalimpa successfully defends her PhD Thesis

At a PhD Defense held on the 21st November 2017 in the Botany/Zoology Lecture Theatre, Christine Kyalimpa successfully defended her PhD thesis for the award of a degree of a Doctor of Philosophy in Chemistry of Makerere University. The title of her thesis is: '**Evaluation of Insecticidal Potency of the Essential Oil and Structure Elucidation of the Bioactive Compounds from *Tagetes Minuta***'.

In summary, her study was intended to determine whether essential oils from *Tagetes minuta* can be used as an insecticide against mosquitoes carrying malaria causing parasites. Malaria is one of the leading causes of mortality and morbidity due to resistance of the parasite to the available drugs. Its control is a major public health concern due to increasing cases, deaths, parasite and vector resistance to synthetic drugs and insecticides. In the search for alternatives, several plants have been identified as possible natural insecticides; one of them is *Tagetes minuta*. In this study, the essential oil from *Tagetes minuta* was obtained by hydro distillation and bio-assayed to determine the larvicidal activity and antioxidant potential. Phytochemical investigation on the solvent extracts yielded several pure compounds mainly belonging to the terpenoids, flavonoids, phenolic compounds and thiophenes thereby accounting for the vast traditional use of *T. minuta* for pesticidal purposes. The pure compounds were studied further for their anti-cancer and anti-plasmodial properties and have proved effective.

The results of the study have already been published in international peer reviewed journals i.e. 1. Christine Mugumya Kyarimpa, Stefan Bohmdorfer, John Wasswa, Benard T. Kiremire, Isaiah Omolo Ndiege, John David Kabasa in 2014. Essential oil and composition of *Tagetes minuta* from Uganda, Larvicidal activity on *Anopheles gambiae*. *Industrial Crops and Products*. 62, pages 400-404. ; 2. Kyarimpa Christine, Isaiah Ndiege Omolo, John David Kabasa , Christine Betty Nagawa, John Wasswa and Cliff Richard Kikawa in 2015. Evaluation of anti-oxidant properties in essential oil and solvent extracts from *Tagetes minuta*. *African Journal of Pure and Applied Chemistry* 9(5), pages 98-104.

Christine was supervised by Prof. Isaiah O. Ndiege, Dr. John Wasswa and Prof. Bernard T. Kiremire (RIP) and the discussant of her results at the PhD Defense was Dr. Gerald Saul (analytical chemist and environment specialist) who was the former Deputy Executive Director of the National Environment Management Organisation (NEMA).

Recommendations out the presentation and discussions include: government should consider review of policy to support cultivation of *Tagetes minuta* as a source of insecticide; provision of information to the population so the plant is widely cultivated; encourage the commercial growing of the plant in various areas of the country and marketing it as an income generation initiative. Currently the plant is wildly growing in forests and mainly in the Albertine Graben (western and west Nile

regions of Uganda) where oil and gas exploration is active. It is possible that the environmental changes in the Albertine Graben during oil and gas exploration may will the growth of *Tagetes minuta*.