

FAO/IAEA International Symposium on Plant Mutation Breeding and Biotechnology



Contribution ID: 236

Type: Poster

MUTATION INDUCTION IN DIOSCOREA ESCULENTA (LOUR) BURK FOR IMPROVED NUTRITIONAL AND FUNCTIONAL QUALITY

Gamma irradiation was used to improve agronomic characteristics and postharvest shelf life extension of *Dioscorea esculenta*, a genetically threatened yam species. The lethal dose (LD50) was determined as 100 Gy. At this lethal dose, plant height, vine number and sprouting were reduced by 72.5%, 46.7% and 40% respectively, at 60 days after planting (DAP). However, much reduction in plant height and the number of vines was observed at 160 and 200 Gy. Reduction in total tuber weight, tuber length and width at all doses was not significantly different from each other and the control. However, the edible weight and the number of edible tubers reduced significantly at 200 Gy (41.20% and 30.04% respectively) resulting in marginal increase in tuber size. Furthermore, postharvest shelf life extension of tubers was extended from 2 weeks to 14 weeks after irradiation at 80 to 120 Gy. Sprouting was significantly delayed in tubers irradiated at 80, 100 and 120 Gy until 8th, 11th and 14th week of storage respectively while rotting was sparingly observed. The effect of irradiation on tuber size, edible weight as well as nutritional qualities at M1V2 will be evaluated after harvesting in March 2018. The results presented here show the potential of gamma irradiation in the improvement of agronomic characteristics of *Dioscorea esculenta*.

Country or International Organization

Ghana Atomic Energy Commission

Author: Dr APPIAH, Andrew Sarkodie (Biotechnology and Nuclear Agriculture Research Institute-Ghana Atomic Energy Commission)

Co-authors: Dr OCLLOO, Fidelis (Biotechnology and Nuclear Agriculture Research Institute-Ghana Atomic Energy Commission); Mrs AGYEI-AMPONSAH, Joyce (Biotechnology and Nuclear Agriculture Research Institute-Ghana Atomic Energy Commission); Prof. DANSO, Kenneth (Ghana Atomic Energy Commission); Dr BANSO, Kwamina (Biotechnology and Nuclear Agriculture Research Institute-Ghana Atomic Energy Commission); Mrs OWUREKU-ASARE, Mavis (Biotechnology and Nuclear Agriculture Research Institute-Ghana Atomic Energy Commission); Mr AGBEMAVOR, Wisdom (Biotechnology and Nuclear Agriculture Research Institute-Ghana Atomic Energy Commission)

Presenter: Dr APPIAH, Andrew Sarkodie (Biotechnology and Nuclear Agriculture Research Institute-Ghana Atomic Energy Commission)

Track Classification: Mutation breeding for adaptation to climate change in seed propagated crops