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Crop improvement and tolerant to yam virus yam (YVY) through agrobacteruim mediated gene transfer to bring positivity result in specific gene mutation of yam (dioscorea rotundata) for crop adaptability

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Genetic transformation of yams asexually propagated has been widely used as a tool for yams improvement and as a vital part of the development of functional genomics resources, there has been no report of any existing Agrobacterium-mediated transformation of yam (Dioscorea spp.) with evidence of stable integration of YVY. Dioscorea is an important crop in the tropics and subtropics providing food security and income to million people. However, yam production remains constrained by increasing levels of field and storage pests and diseases. A major constraint to the development of biotechnological approaches for yam improvement has been the lack of an efficient and robust transformation and regeneration system. In this study, we developed an Agrobacterium-mediated transformation of Dioscorea rotundata using lateral buds as explants. Two cultivars of D. rotundata were transformed using Agrobacterium tumefaciens harboring the binary vectors containing selectable marker and reporter genes. After selection with appropriate concentrations of antibiotic, shoots were developed on shoot induction and elongation medium. The elongated antibioticresistant shoots were subsequently rooted on medium supplemented with selection agent. Successful transformation was confirmed by polymerase chain reaction, Southern blot analysis, and reporter genes assay. Expression of YVY gene in transgenic plants was also verified by reverse transcription polymerase chain reaction analysis. Transformation efficiency varied from 7.4 to 17.3% depending on the cultivars, selectable marker genes, and the Agrobacterium strain used for transformation. It took 4-6 months from Agro-infection to regeneration of complete transgenic plant. Here we report an efficient, fast and reproducible protocol for Agrobacterium-mediated transformation of D. rotundata using lateral buds as explants, which provides a useful platform for future genetic engineering studies in this economically yam resistance to virus.

- What will audience learn from your presentation?
- How gene YVY express itself by reverse transcriptions
- How ag bacteria harbors binary vector by selectable marker
- How this method is effective in yam improvement and adaptability

Biography

Mr Mathenge currently a PhD student working on Erysiphe pisi on garden pea. He joined research group under Cgiar group and kirk trust fund 7years ago. He has 15 publications on plant science. He emerges best in Africa award in several presentations on molecular plant pathology under Global conferences on crop improvement. Under the grants he has supported 16 young scientists through research funding and trainings.

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