Plan Overview

A Data Management Plan created using DMPTool

DMP ID: https://doi.org/10.48321/D1HK5C

Title: Maize production systems, farmers' perception and current status of Maize Lethal Necrosis in selected counties in Kenya

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Template: Digital Curation Centre

Project abstract:

Maize Lethal Necrosis (MLN) is a complex disease with multiple reservoirs and transmission pathways. Therefore, the current study was conducted in a comprehensive way to understand the status of MLN in selected counties and farmers' maize production practices and their understanding of MLN. In this regard, a survey of 406 randomly selected farmers' was conducted in 5 counties in Kenya including Bomet, Narok, Kirinyaga, Embu, and Nakuru. In addition, symptomatic and asymptomatic maize leaves samples were collected from 18 fields in Narok, Bomet, and Kirinyaga and tested for MCMV and SCMV by RT-PCR and Sanger sequencing. Symptoms varied in maize ranging from the most common mosaic and streak to severe leaf mottling and necrosis as well as stunting and premature plant death. Yield losses of up to 100 % were reported due to MLN. MCMV and SCMV were detected in all the maize growing regions at varying levels of incidence, and severity. Sequence analysis of the coat protein genes of randomly selected positive samples of the two viruses showed little variability within the studied isolates and those retrieved from the Gene Bank. The results indicated that MLN is still prevalent in Kenya. In addition, the breeding process to release MLN tolerant varieties should not focus on the conventional breeding methods but also on alternative ways such as the use of biotechnology to fasten the breeding process.

Start date: 01-01-2021

End date: 12-31-2021

Last modified: 01-17-2024

Maize production systems, farmers' perception and current status of Maize Lethal Necrosis in selected counties in Kenya

Quantitative and qualitative data to be input in excel

Molecular biology data

A participatory rural appraisal will be used where a set of questions will be set and asked, the inputs will be uploaded in an online data repositoty (https://kf.kobotoolbox.org)

For the molecular work, leaf samples will be collected, analysed by PCR, cDNA synthesis and sanger sequencing

The questionnaire data will be stored in the Kobo toolbox under a defined username and password, the data will be uploaded in excel and frequency analysis, averages done. ANOVA analysis to test the variance in the data will be done in R, correlation test will also be done in R

The total nucleic acid will be extracted from the leaf samples for molecular analysis, using primers specific for the gene being target, PCR and cDNA synthesis will be done and results confirmed by agarose gel electrophoresis which will be saved as an image

positive samples will be sent for sanger sequencing, and the results analyzed by Finchtv and Bioedit, sequence analysis will be done by BLASTN and phylogenetic tree constructed in MegaX

The participants of the questionnaire will be anonymized,

Ethical clearance has been sought from the NACOSTI-Kenya, allowing for the conduct of the research in Kenya and also Sokoine University postgraduate board has given authorization for the conduction of this study

The data belongs to faith njeru, any reuse of the data, permissions have to be sought from Faith

Data will be downloaded and stored in laptops, backup data is in the online repository of Kobo Collect

To access the data in the Kobo Collect app, one will need to login with a username and password

The sequencing data will be stored for future comparisons with other sequences

to be determined

The data will be shared through a manuscript write up

no

faith njeru will be responsible for data management

none

Planned Research Outputs

Dataset - "Excel output of the questionnaire"

Raw data from the questionnaire and the analysis carried out

Planned research output details

Title	Type	Anticipated release date	Initial access level	Intended repository(ies)	Anticipated file size	License	Metadata standard(s)	May contain sensitive data?	May contain PII?
Excel output of the questionnaire	Dataset	2021-11-09	Open	Edmond	1 MB	Creative Commons Attribution Non Commercial 4.0 International	None specified	No	No