Tackling Emerging Issues: Maize Lethal Necrosis -The Zambian Perspective

1. Introduction

1. Maize lethal necrosis (MLN) is caused by the co-infection of Maize chlorotic mottle virus (MCMV) and Sugarcane mosaic virus (SCMV), or sometimes another cereal virus of the Potyviridae group. MLN is a threat to maize production and loses are estimated to be between 50-90%.
2. The Zambia Agriculture Research Institute (ZARI) through the Plant Quarantine and Phytosanitary Service (PQPS), the National Plant Protection Organization (NPPO) of Zambia has been conducting activities aimed at creating awareness and the determination the MLN status in the country. The activities were made possible by the Agricultural Productivity Program for Southern Africa (APPSA)**,** International Maize and Wheat Improvement Center (CIMMYT) and the Africa Australia Plant Biosecurity Partnership (AAPBP).

2. The Situation

1. Agriculture in Zambia is the key priority sector in the growth of the economy and poverty reduction agenda. It provides employment for 85 per cent of the labor force and serves as the main source of income and livelihood for the rural population. Maize is the most popular food crop as it is the country’s staple food. MLN is a threat to maize production in the country and if introduced may have significant negative impact on the country’s food security and economy. MLN is present in Tanzania and the Democratic Republic of Congo (DRC) the two neighbors of Zambia on the northern side. MLN has however not been detected in Zambia. The transboundary nature and rapid spread of the disease has placed Zambia at a very high risk.

3. Strides Made

1. The NPPO has done the following:

3.1 Surveillance

1. This was the main activity conducted by the NPPO. The survey targeted areas bordering Tanzania and DRC. A total of 463 fields were surveyed in 7 of the 10 provinces. The map in figure 1 shows the surveyed areas in the country



Figure 1: Map showing areas surveyed.

3.2 Training

1. PQPStrained all the 33 Plant Health Inspectors (PHIs) under the NPPO, 220 extension staff from the Department of Agriculture (DoA) and 659 farmers.

**3.3 Awareness creation**

1. Awareness was created through print and electronic media in 7 districts of the 10 provinces of the country. The awareness materials developed and distributed included; brochures; leaflets; posters; pop ups and T-shirts. MLN programs were also aired on radio the districts surveyed.

3.4 Enhanced Collaboration

1. There was excellent collaboration from identified partners. These included: Seed companies, CIMMYT, AAPBP and DoA. These assisted in provision of MLN test kits, funds to conduct surveys and officers for training.

3.5 Development of Statutory Instrument (SI)

1. A statutory instrument (SI) was drafted to regulate maize imports in the country. The draft SI is yet to be effected.

3.6 Revision of Maize Phytosanitary import conditions

1. The Maize Phytosanitary import conditions for Zambia were revised for both seed and grain due to the seriousness of MLN. The revision facilitated the inclusion of MLN viruses on the plant import permit.

3.7 Stakeholder consultations

1. Consultations on strategies to prevent the introduction of MLN were done with various stakeholders. The stakeholders included: Academia. Seed companies, Government departments and Agriculture associations.

3.8 Participation in International Conferences.

1. ZARI through PQPS has been represented at the International Phytosanitary Conference (IPC) in Nairobi Kenya since inception in 2017. Two (2) conference papers on MLN were successfully presented at the IPC hosted by Kenya in 2017 and 2018 respectively.

3.9 Development of Emergency response plan

1. The MLN emergency response plan was developed in collaboration with the AAPBP who funded consultative meetings. The plan outlines pre and post-confirmation actions and appropriate interventions in case of an incursion.

4. Challenges

* Porous borders- long stretches of unmanned borders in most parts of the country. Only 10 borders manned by NPPO staff out of a total of 26 border posts. Zambia has a total of 5 664 km of land boundaries, and it borders: Angola for 1,110 km, [Democratic Republic of the Congo](https://en.wikipedia.org/wiki/Democratic_Republic_of_the_Congo) for 1,930 km, [Malawi](https://en.wikipedia.org/wiki/Malawi) for 837 km, [Mozambique](https://en.wikipedia.org/wiki/Mozambique) for 419 km, [Namibia](https://en.wikipedia.org/wiki/Namibia) for 233 km, [Tanzania](https://en.wikipedia.org/wiki/Tanzania) for 338 km, [Zimbabwe](https://en.wikipedia.org/wiki/Zimbabwe) for 797 km, and [Botswana](https://en.wikipedia.org/wiki/Botswana), less than 1 km
* Limited manpower -The NPPO has only a total of 33 PHIs manning the entire country.
* Limited financial resources - Limited funding of NPPO activities by Government.
* Seed imports- Illegal imports of seed maize from infected countries.
* Limited equipment/materials for MLN diagnosis. Currently only using field test kits to test for MLN viruses.

5. Conclusions

1. MLN is an emerging challenge facing the Zambian agriculture sector as it has the ability to affect the country’s food security. The activities conducted have greatly increased awareness and strengthened Zambia’s preparedness in case of an MLN emergence. The threats from MLN are however still very high and real, hence there is need for more consented effort from all stakeholders if MLN is to be kept at bay.