

Maize Lethal Necrosis (MLN):

A Technical Manual for Disease Management



Editor
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In collaboration with international and national research
and development partners

Chapter 9

MLN Early Warning and Emergency Preparedness Plans

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1. Introduction

According to Article IV of the FAO-International Plant Protection Convention (IPPC), the NPPOs are responsible for conducting surveillance of cultivated and wild plants to determine the status of pathogens/pests in the country (IPPC 2015-2016 Procedure Manual) including reporting of the outbreak (ISPM 17) occurrence, and spread of such pathogens/pests and their control. Article VIII of the IPPC describes the importance of the obligation to notify pathogen/pest occurrences and the status of such pathogens/pests to trading partners. However, it is upon the country-specific NPPOs and regional plant health authorities in collaboration with other partners to monitor for any new occurrence of a pathogen/pest, effectively control the threat, and inform the country authorities and regional neighbors on its occurrence.

2. MLN Early Warning System

An early warning and rapid alert system on the emergence of MLN or other transboundary plant health threats is of utmost importance. This includes guidelines for effective and rapid response after detection of a new pathogen/pest, proper identification, and mitigation using an emergency preparedness plan (EPP). A strong understanding of proper diagnosis and management of a devastating transboundary threat, such as MLN, is critical for the NPPOs and regional plant health authorities for preventing further incursion. In case an incursion of MLN could not be prevented in a presently MLN-free country for any reason, putting together comprehensive rapid response measures to prevent the establishment and further spread of the disease is important to protect the food security, income, and livelihoods of maize-dependent smallholder farmers.

3. Emergency Preparedness Plan (EPP) against MLN

An EPP against MLN should include the following elements:

1. Steps for quickly monitoring the location(s) of outbreak of MLN, if an incursion happens in a presently MLN-free country or a specific area within a country, along with appropriate mitigation measures
2. Identification of emergency response actions, and institutions responsible for implementation of these measures, if MCMV/MLN is detected in a new area.
3. Outlining a concrete MLN surveillance system, including “delimiting surveys”.
4. Description of requirements for quarantining the pathogen(s) to contain the disease to a specific area, and to prevent the pathogen(s) from spreading to other areas.
5. Designing an MLN mitigation program in consultation with relevant agencies.
6. Advocacy for sound legislative measures to enforce emergency response, including containment and eradication actions.
7. Strengthening institutional arrangements to provide funding to execute the MLN early warning system and mitigation plan.

4. Plant Health Decision Framework

A well-formulated decision-making process is vital for timely implementation of activities in an emergency preparedness plan. The following may be considered for the plant health decision framework:

- Prevention, preparedness, response, and recovery are broad terms within a framework of an emergency, such as MLN outbreak.
- Plant health emergencies typically unfold in a series of steps, beginning with the initial detection, and ending with eradication, if possible.

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- Parallel tracks may also be established with necessary operational aspects. These could include scientific, technical support, and regulatory development. Others are enforcement, data collection, and communication with relevant stakeholders, including partner agencies.
- Effective communication and cooperation with the industry and the public is paramount for transboundary pest/disease management.

5. MLN Surveillance and Detection Procedures

Prevention is always better than cure! NPPOs and other plant health authorities in the presently MLN-free but high-risk countries in sub-Saharan Africa are advised to proactively implement MLN surveillance (based on the protocols described in **Chapter 4**) on a routine basis during the major maize crop seasons. MLN survey procedures are designed to assist with the detection, delimitation and monitoring of disease incidence. These protocols need to go hand-in-hand with diagnostics (especially using immunostrips or ELISA, as described in **Chapter 5**), so as to ensure that even non-symptomatic plants do not have MLN-causing viruses.

Various entities may make the first identification or diagnosis, if MLN incidence is suspected. These include NPPO staff or MLN experts from relevant research institutions. State departments, university, or private/regional laboratories can also be engaged, if already trained on MLN diagnostics and surveillance protocols. If required, an overseas laboratory may also be utilized for proper preliminary diagnosis, especially if the local diagnostics capacity is inadequate. Final confirmation by internationally recognized entities could be helpful.

A delimiting survey should be used to establish the magnitude of pathogen incidence in a specific area ([ISPM No.6, Updated 2018](#)). The results from the delimiting survey could be used to determine the type and extent of control measures to apply. The response may be immediate or may require further deliberation and consultation within the NPPO and with necessary Government agencies.

6. Emergency Action Notification

Emergency Action Notification can be issued pending positive identification or further instruction from the Ministry of Agriculture or the official NPPO in that country. This is based on the information from plant health officers from the affected areas. If necessary, the NPPO Administrator will issue a letter directing the field offices to initiate a specific emergency action under the Plant Protection Act of the country. This will then facilitate Emergency Quarantine Action.

7. Initiating an Emergency Quarantine Action and Response Program

The Program consists of detection and delimitation, and may be followed by programs in regulation containment, eradication, and control. It may be advisable to form a country or regional New Pest Advisory Team to evaluate the outbreak of a new pathogen/pest, assess the risk to country's/regional plant health, and the potential economic impact. The team may also consult relevant experts and regulatory personnel and make recommendations to the regional plant health authorities and NPPO management for a specific course of action.

The multi-disciplinary response program for a transboundary threat like MLN may include various activities, such as:

- Undertaking rapid detection and delimiting surveys
- Formation of a technical working group
- Strengthening capacity for diagnosis and management of MLN-causing viruses, especially MCMV
- Emergency funding for the response program
- Emergency response coordination
- Mobilization of relevant institutions, including public and private sectors.

8. MLN Monitoring and Evaluation

- Use monitoring surveys to gather relevant information that assists in planning and implementing a strategy for MLN containment, management and eradication.
- Monitoring surveys are also used to evaluate the effectiveness of actions taken to contain/manage/eradicate MLN.
- Continue management and eradication measures for as long as considered necessary.
- After the termination of suppression or eradication measures, keep monitoring the success of the program with periodic (half-yearly) reports on MLN incidence status.