National Agricultural Research Institute

Information on Ways to Control Potato Late Blight Disease

NARI TOKTOK
TAM 01

Updated September 2004

THE INSTITUTE

The National Agricultural Research Institute (NARI) was established by an act of the National Parliament of Papua New Guinea in July 1996 as a publicly funded, statutory research organization to conduct applied and development oriented research on food crops alternative food and cash crops livestock and resource management issues. Besides applied and adaptive research NARI is responsible for providing authoritative technical and analytical and diagnostic services and up-to-date information to the entire agriculture sector in PNG. The major targets are the smallholder semi-commercial farmers in the country.

The mission of NARI is to contribute through applied research and technical service to the development of the agriculture sector and realization of the national goals by identifying adapting and transferring agricultural technologies and information, so as to:

- Enhance the productivity, efficiency and sustainability of the smallholder agriculture and
- Improve farmer income, food security and welfare of Papua New Guineans and the Nation.

This toktok was prepared by the High Altitude Highlands Research Team. The information presented in this toktok is based on best information available in October 2003 and may be revised as new information becomes available.

Copies of this leaflet and more information on Potato Late Blight Disease can be obtained from:

The Information Centre
National Agricultural Research Institute
High Altitude Highlands Programme
P O Box 120
MT. HAGEN
Western Highlands Province
Papua New Guinea

Telephone: (675) 542 3443
Facsimile: (675) 542 2779
Email: hahp@global.net.pg

Introduction

Potato Late Blight (PLB) is a new disease in PNG, which causes severe damage to potato crops. This leaflet provides information on ways to control PLB and reduce damage to potato crops.

There are two important control methods used to control the potato late blight disease. These are use of **Fungicides (chemicals)** and **Tolerant varieties**. PLB has destroyed the main potato variety grown in PNG called Sequoia. NARI has tested fungicides and new potato varieties against PLB.

What does the disease look like?

The disease can attack all parts of the plant. Infections on leaves are more obvious and appear at any stage of the growth. Infections first appear as irregular dead areas surrounded by water soaked tissue. These spots rapidly enlarge to affect circular areas of dead tissue surrounded by light green to yellow areas of leaf tissue. Under humid conditions, the lesions will be surrounded by white fluffy mycelium on the underside of the leaf. Infected leaf tissue eventually turns black and can often be confused with frost damage.

PLB can also cause damage to stems and tubers.

Fig 1. Potato leaves showing symptoms of late blight disease

How does the disease spread?

The disease is mostly spread in water droplets by wind and may also spread through transportation of infected parts of the potato plant, such as seed tubers.

What types of fungicides are available in PNG?

There are four fungicides now available in major agricultural stores in PNG. These include Copper Nordox, Kocide, Barrack, Banis. These fungicides were tested and have shown good results in PNG.

What kind of spray equipment should I use?

Knapsack sprayers (CP3 & CP15) can be used with Hollow Cone nozzles (yellow colour). The sprayer must be set at high pressure by shifting the knob inside the sprayer.

What other fungicides are available?

There are many fungicides used for controlling PLB available in other parts of the world. These fungicides will be tested in PNG before recommending to farmers. NARI is taking the lead in testing different fungicides.

Resistant varieties

There is no potato variety that is totally resistant to PLB. However there are varieties with some level of tolerance against PLB. Trials have been conducted on nine different varieties. The results showed that four out of the nine varieties had good level of tolerance against PLB. At this stage Sebago looks a promising variety and Fresh Produce Development Company (FPDC) is multiplying seed.

in the morning. There should be no rain for at least four hours after spraying is done. The spray must be repeated after every seven days in the dry season and if there is a wet/ rainy period spray must be repeated after five days. Weekly sprays should continue for at least 10 weeks from the first spray.

How do I apply the fungicide?

When spraying make sure that every part of the plant is covered with the fungicide. If parts are not covered well the disease can settle on them and start infecting the plant.

What are important safety measures to take when using fungicides?

Like any other chemicals, the fungicides used to control PLB can harm human beings. It is advisable that farmers must protect themselves well with proper safety clothes, like overalls, mouth mask, rubber or plastic hand gloves and gumboots before using fungicides.

Fig 2. A healthy potato plant covered well with Copper Nordox

Fungicide Recommendations

Copper Nordox

- In 20 litres of water mix 60 grams Copper Nordox (4 Match Boxes full). Add wetting agent
- In 15 litres of water mix 45 grams Copper Nordox (3 match boxes full). Add wetting agent

Apply Copper Nordox after every 5-7 days. Make sure that every part of the plant is thoroughly covered.

Kocide

- In 20 litres of water mix 40 grams Kocide (6 match boxes full). Add wetting

agent

- In 15 litres of water mix 30 grams Kocide (4 match boxes full). Add wetting agent

Apply Kocide after every 5-7 days and ensure that every part of the plant is thoroughly covered.

Barrack

In 20 litres of water mix 80mls of Barrack (6 coke lids full). At wetting agent.

In 15 litres of water mix 60 mls of Barrack (4 coke lids full). Add wetting agent.

Fig 3. The fungicide trial site near Kagamuga

Unsprayed plot *Sprayed plots*

Apply Barrack every after 7-10 days and ensure the every part of the plant is thorouhly covered.

Banis

In 20 litres of water mix 60 mls of Banis (4 coke lid full). Add wetting agent.

In 15 litres of water mix 45 mls of Banis (3 coke leads full). Add wetting agent.

Apply Banis after every 7-10 days and ensure that every part of the plant is thoroughly covered.

Use fungicide with wetting agents

When mixing fungicides it is important to include wetting agents. It helps fungicides to work effectively. When buying fungicides always try to ask for advice over the sales counter or carefully read labels written on the containers of wetting agents. There are many different wetting agents available and have different mixing rates depending on their strengths.

When do I apply the fungicide?

Sprays must start when the shoots of potato begin to show from the soil and the first leaves are expanded. This will prevent disease infection to new shoots. Spraying is best done