



# MAURITIUS SUGAR INDUSTRY RESEARCH INSTITUTE

## Recommendation Sheet

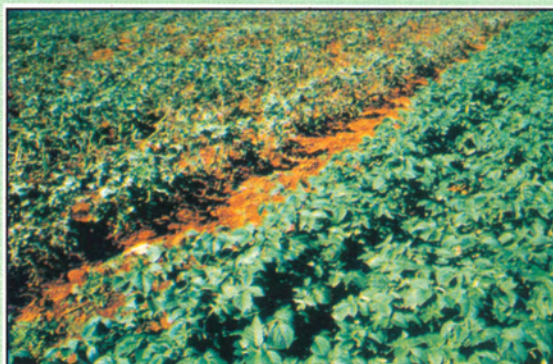
March 2005, No. 148\*

### MANAGEMENT OF LATE BLIGHT DISEASE IN POTATO

*A severe outbreak of late blight disease, caused by the fungus *Phytophthora infestans*, occurred in 2004.*

*Infection was particularly severe in 1<sup>st</sup> season and symptoms were still present in 2<sup>nd</sup> season despite warmer and drier conditions that were less favourable to the disease.*

*Variety Spunta, so far considered as tolerant to late blight, showed high susceptibility.*



*Crop infected with late blight (top left corner)*

**For an effective management of late blight, growers should be fully aware of the following aspects**

#### *Choice and location of fields*

- Fields with good water infiltration and adequate drainage characteristics that have not been planted with potato or tomato for at least 3 years should be selected.
- Only fields or parts of a field that can be sprayed with fungicides should be planted.
- Disease sources such as volunteer potato and tomato plants should be eliminated.

#### *Choice of seeds*

- Only certified seed should be planted.

#### *Timing of plantation*

- Planters in the same vicinity should plant at the same time, within the recommended planting dates, i.e., **May to June** (1<sup>st</sup> season) and **July to August** (2<sup>nd</sup> season), and apply appropriate fungicide treatments.

#### *Late blight symptoms*

- Late blight symptoms should be recognized:
  - They first appear on the leaflets as pale to dark green irregular spots surrounded by a greenish yellow halo.
  - The spots develop rapidly, becoming brown or black and spreading to the petioles and stem.
  - Often a white mildew is visible on the lower surface of the leaflets.

**Late blight symptoms** →



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### *Susceptibility of varieties*

- Varieties *Delaware*, *Mondial*, *Spunta* and *Belle Mare* are considered susceptible to late blight. *Stirling*, *Belle Vue* and *Belle Isle* are tolerant varieties.

### *Fertilization*

- The rate of fertilizers applied at planting should be adequate. Extra nitrogen should **not** be provided as top-dressing as it will stimulate vegetative growth resulting in a dense canopy. Such humid microenvironment will favour late blight and reduce the efficiency of pesticide spraying.

### *Earthing-up*

- High hills should be formed to reduce exposure of tubers to late blight spores that may be transmitted from infected plants.

### *Monitoring of fields*

- Regular field inspections for late blight symptoms should be effected as from plant emergence, with special attention to plants in low-lying areas, field edges and shaded parts of the field. Fields directly downwind from those infected with late blight are at higher risks because of wind-borne spores. As soon as the disease is observed in small patches, infected plants should be destroyed to prevent further dissemination.

### *Chemical treatment*

- Treat **before** the appearance of the disease. Start preventive applications 15 days after emergence, or earlier if symptoms are present.
- Be flexible and conscious of the prevailing weather. If the climate is cool and wet, conditions are conducive to late blight development. On the other hand, if the weather is dry and warm do not use systemic fungicides excessively.
- Use the same systemic fungicides in successive applications (block treatments). However, do not exceed four applications of the same systemic fungicide to avoid development of resistant strains of the pathogen.
- Use **genuine fungicide products**.
- Take care to spray **all** plants. **Repeat** treatment as soon as possible in case of rain following an application.
- Spraying with a mist blower is much more effective than with knapsack sprayers for complete coverage of the plant canopy.
- If late blight is present in the field or vicinity, continue treatment with a contact fungicide until plants have dried.
- At harvest, collect and destroy all plant debris as the pathogen will survive on green plant tissue and tubers left in the field.

### *Fungicide application programmes*

The fungicide application programmes take into account the agro-climatic zone and the likelihood that the variety planted is susceptible to late blight.

### Types of fungicide

| Types of fungicide and colour code |    | Fungicides                      | Active ingredients         | Characteristics  |
|------------------------------------|----|---------------------------------|----------------------------|--|
| Contact                            | C  | Bravo Weatherstik               | chlorothalonil             | Protects the surface of the plant with a coating of fungicide. |
|                                    |    | Dithane M 45<br>Penncozeb 75 DG | mancozeb                   |  |
| Systemic                           | S  | Melody-Duo                      | iprovalicarb + propineb    | Penetrates and moves into the plant. Should not be overused.   |
|                                    |    | Ridomil Gold MZ 68              | metalaxyl + mancozeb       |  |
| Local systemic                     | LS | Curzate-PRO                     | cymoxanil + mancozeb       | Has limited movement in the plant.                             |
|                                    |    | Tattoo                          | propamocarb HCl + mancozeb |  |

### Dosage of application

The recommended dosages are based on an application rate for full canopy. When plants are smaller, the dosage should be adjusted for the volume of water used.

| Types of fungicide and colour code |    | Fungicides                           | Dosage / hectare  | Dosage / arpent     | Pre-harvest interval (days) |
|------------------------------------|----|--------------------------------------|-------------------|---------------------|-----------------------------|
| Contact                            | C  | Bravo Weatherstik                    | 2 L               | 0.85 L              | 7                           |
|                                    |    | Dithane M 45                         | 3 kg              | 1.25 kg             | 7                           |
|                                    |    | Penncozeb 75 DG                      | 3 kg              | 1.25 kg             | 7                           |
| Systemic / Systemic + contact      | S  | Melody-Duo                           | 3 kg              | 1.25 kg             | 3                           |
|                                    |    | Ridomil Gold MZ 68 + Penncozeb 75 DG | 1.875 kg + 1.5 kg | 0.780 kg + 0.625 kg | 15                          |
| Local systemic                     | LS | Curzate-PRO                          | 3 kg              | 1.25 kg             | 14                          |
|                                    |    | Tattoo                               | 4 L               | 1.6 L               | 7                           |

### Spraying schedule

The following schedules are proposed following the severe outbreak in 2004. In case weather conditions and disease pressure are less severe, the spraying interval can be increased and the number of applications of systemic fungicides reduced.

**Super-humid areas: start spraying 15 days after emergence, with application every 5 days.**

| Application       | 1 <sup>st</sup> | 2 <sup>nd</sup> | 3 <sup>rd</sup> | 4 <sup>th</sup> | 5 <sup>th</sup> | 6 <sup>th</sup> | 7 <sup>th</sup> | 8 <sup>th</sup> | 9 <sup>th</sup> | 10 <sup>th</sup> | 11 <sup>th</sup> | 12 <sup>th</sup> |
|-------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|------------------|------------------|------------------|
| Type of fungicide | C               | S               | S               | S               | C               | LS              | S               | S               | S               | LS               | C**              | C**              |

\*\* Applied at a 10-day interval

**Humid areas: start spraying 15 days after emergence, with application every 7 days.**

| Application       | 1 <sup>st</sup> | 2 <sup>nd</sup> | 3 <sup>rd</sup> | 4 <sup>th</sup> | 5 <sup>th</sup> | 6 <sup>th</sup> | 7 <sup>th</sup> | 8 <sup>th</sup> | 9 <sup>th</sup> | 10 <sup>th</sup> |
|-------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|------------------|
| Type of fungicide | C               | S               | S               | S               | C               | LS              | S               | S               | C**             | C**              |

\*\* Applied at a 10-day interval

**Sub-humid areas: start spraying 15 days after emergence, with application every 9 days.**

| Application       | 1 <sup>st</sup> | 2 <sup>nd</sup> | 3 <sup>rd</sup> | 4 <sup>th</sup> | 5 <sup>th</sup> | 6 <sup>th</sup> | 7 <sup>th</sup> | 8 <sup>th</sup> |
|-------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| Type of fungicide | C               | S               | S               | S               | C               | LS              | C**             | C**             |

\*\* Applied at a 10-day interval

\* This Recommendation Sheet replaces No. 112 of November 1999.