PPO – SPECIAL REPORT NO 16 – 2014, 199-200

Alternaria control, What method to decide the sprays?

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Context: I am not any more in research or experimentations, but when I am with growers or technicians, as consultant, I have a lot of questions about the early blight : Is it necessary to control this one? In what fields? When it is useful to spray? Is there a method to decide?

Objective: To build a simple method to decide the sprays, particularly the first one

SOME DATA

Some epidemiological models and DSS are proposed: Physiologycal Days (P Days), **Growing Degree Day** (D Days) based on the growth of the potato with temperatures maxi and mini, **Tomcast** based on the epidemic(Severy values: mean day temperature and hours of leaf wetness), **early blight DSS of Dacom**. The research stations in **Belgium** are working on new models.
But, it seems that the results are different according to the area. Probably the physiology of the plant is more important for the early blight than for the late blight epidemic.

The disease threshold values as tool for effective control tested by J. Leiminger and H. Hausladen shows that the first treatment is around 50% of the disease incidence on the lower leaf level of the potato. It is probably difficult for a grower to observe this one.

The age and the stresses of the crop are predominant: The first symptoms of early blight seem to appear when the foliage is stabilised, around the begining of the flowering time. C. Ducatillon in Belgium, and other technicians in France as Denis Jung, has shown that a low dose of nitrogen is favorable for Alternaria, the carences of magnesium, manganese, sulphur are also favorable. Other conditions are also favorable: bad soil structure, water deficiency.

There are big differences in the cultivar susceptibility: markies, amyla, gourmandine, daisy, maestro, sarpo mira, desibelle, marabel are very susceptible. Brice Dupuis (Libramont 2006) has given four classes of susceptibility.

The primary inoculum should act upon the first contaminations: Proximity of contaminated field the earlier year.

The decrease of using dithiocarbamate increases the development of early blight.

WHY NOT A SCALE OF RISK

Is it necesary to protect this field against early blight? (specific fungicides)

→ Proposition of a scale to evaluate risk of early blight attack:

Note of susceptibility of the cultivar	0: « not susceptible »	1 :light	2:medium	3: very susceptible
Soil type, water stock if no irrigation	0: correct	1:medium	2: light	
Soil structure or planting conditions	0: correct	1:bad	2: very bad	
Dose of N	0: correct or excess	1: low dose	2:deficiency	
Deficiencies (mg, mang, s)	0: no	1: some symptoms	2: high symptoms	
Phytotoxicity	0: no	1: some symptoms	2: high symptoms	
Dryness stress with early flowering if no irrigation	0: no	1: limited effect	2: high effect	
Near field contaminated the earlier year			2 : juxtaposed fields	
Number of dithicarbamate (1500g/ha) before flower	0: 3 sprays	1: one spray	2: no dithiocarbamate	
Alternating periods of warm days (T>26°C) and rains at flowering time			2	

The rule could be: note: 0 to 6: no risk, 7 to 10: moderate risk >10: high risk

Date of the first specific spray:

- **Now:**
  - a common advice (phytosanitory companies,advisers…) is the begining of flowering time
  - or symptoms at the lower level of the plant, or highier on the plant in the part of field with « bad soil »
  - or first symptoms in the region
- **Very soon:** epidemiological modeles, and DSS adapted at each region (temperature, rain…….)

CONCLUSIONS AND CAUTION

This approach is a reflection, not a result of experimentation. Nevertheless it could be evaluated.