



## Protocol for testing effectiveness to control early blight

Adapted protocol for the evaluation of the efficacy of fungicides to control early blight

The Protocol for testing effectiveness to control early blight was prepared by Bert Evenhuis, Jürgen Leiminger, Bent Nielsen, Hans Hausladen, Jan Spoelder, Jozefa Kapsa, Pieter Vanhaverbeke, Dani Shtienberg and Huub Schepers and is published below.

At the EuroBlight meeting in York an adapted protocol was discussed and accepted.

### Purpose/aim of trials

To compare the “Effectiveness to early blight” by measuring the protection of leaves against infection by early blight resulting from the application of a fungicide according to this requirements. This spray schedule is not necessarily related to the label recommendations. This protection originates from the protectant and/or curative properties of the active ingredients.

EPPO guideline PP 1/2 (3) (revised in 1996) describes the standard requirements of the field trial.

Specific additional requirements:

- A susceptible local ware or starch potato variety. The growth habit of the cultivar should be recorded i.e. determinate or indeterminate growth.
- Potato late blight is controlled in a weekly scheme using fungicides with no efficacy to control early blight. For instance, start with mandipropamid and end the spray schedule using cyazofamid.
- Preferably the experiment is carried out with natural infection. However, if conditions are less suitable inoculation may be carried out with *A. solani* infested grain kernels on the soil within the plot. The artificial inoculation is carried out 3-days before the first spray until 7-days after the first spray. When the inoculation is not successful it will be repeated.
- Misting is permissible, when conditions are exceptionally dry.
- Each treatment consists of applications of the fungicide to be tested regardless of the limited application numbers on the label.
- First spray depends on local conditions but needs to be applied before the start of the epidemic and should be timed approximately at 7-8 weeks after crop emergence.
- Crop growth stage should be recorded on the days that the trial is sprayed. The BBCH key should be used.
- Untreated plots are part of the field experiment. In 2017 the untreated control was accepted as a reference which also applied to the earlier experiments.
- A reference treatment (two variants) is part of the field experiment i.e. 1500 g a.i. mancozeb. Sprayed in a 14-day interval and in a 7-day interval. From 2017, onwards the mancozeb references are not necessarily part of the experiments, an untreated control is mandatory.
- Spray frequency is every 7-days (+/- 1 day) or every 14-days (+/- 1 day), to be chosen by the participants. In York it was decided that a spray strategy with more than 1 fungicide is no longer allowed, even if this means that 1 fungicide is sprayed in a 7-day interval and the other in a 14-day interval. The time frame of the spray applications should be the same for all treatments.
- The efficacy of the Early blight fungicide(s) was to be compared to one of the two reference treatments accordingly. However, from 2017 onwards the efficacy is compared to the untreated control, allowing also spray strategies to be included in the trials.
- The number of sprays depend on the early blight epidemic and the spray interval chosen.
- Dose rate is highest dose registered in Europe
- Assessment: every week (or more frequently when necessary) in plots by rating the % infected leaf area. To assess early blight, we recommend using the assessment key in the EPPO-guideline PP 1/263 (1).
- The last assessment will be carried out 3 to 4 weeks after the last spray application. Further assessments are encouraged but not considered for an EuroBlight rating.



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- Desiccation: timing and method according to GAP.