Appendix 1. Protocol for testing "Effectiveness: leaf late blight" of biologicals (*Phytophthora infestans)*

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Purpose/aim of trials

To compare the "Effectiveness to leaf late blight" by measuring the protection of leaves against infection by late blight caused by application of a biological crop protection product (BCPP) in a spray schedule (this standard spray schedule is not necessarily related to the label recommendations). This protection originates from the protectant and/or curative properties of the active ingredients and in the rapid growth phase of the crop also protection of new growth can contribute to the effectiveness of the BCPP for leaf blight control.

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

Specific additional requirements:

- A moderately susceptible local ware potato variety. The growth habit of the cultivar should be recorded i.e. determinate or indeterminate growth.
- In order to obtain a long-lasting but low infection pressure, one or more measures can be chosen according to local conditions.
    - o Surrounding the trial with maize
    - o Misting is allowed but not encouraged and only under conditions that are exceptionally dry and disease is not progressing
- Spreader rows can be present in the set-up in order to ensure uniformity of disease pressure The cultivar used in the spreader row should not be very susceptible to avoid a quick built-up of inoculum and high disease pressure onto the plots.
- In general no artificial inoculation will be carried out. However, if the natural infection is very patchy then bulk up the natural *P. infestans* from the trial and inoculate the trial evenly in one or two of the gross rows to provide a more equal challenge to all plots. Do not inoculate the net plots"
- An untreated plot is present in each replicate
- Each treatment consists of applications of the BCPP to be tested throughout the season, regardless of the limited application numbers on the label
- First spray depends on local conditions, but needs to be applied before the first attack (preventive).
- Crop cover provides information on how much of the BCPP spray was intercepted by the crop. Crop cover is defined as the percentage of the soil surface obscured by foliage when viewed from above. A grid divided into 20 equal squares allows cover to be assessed to the nearest 5%. Assess by holding the grid at a fixed height above the crop and estimate what percentage of the grid area is filled by leaf material. Assessments should be made at each BCPP application until crop cover reaches 100%. They can also be made if cover declines from 100% towards the end of the growing season.
- Crop growth stage should be recorded on the days that the trial is sprayed. The BBCH key should be used.
- Spray frequency is preferably according to a Decision Support System with a spray interval minimum of **5 to 7 days** until desiccation
- Spray application according to the specifications of the manufacturer.
- Dose rate is highest preventative dose registered in Europe
- Assessment: every week (or more frequently when necessary) in plots by rating the % infected leaf area. To assess blight we recommend using the assessment key in the EPPO-guideline combined with the key published in Trans. Brit. Mycol. Soc. 31 (1947): 140-141 (is attached).
- Desiccation: timing and method according to GAP.
- It is not strictly necessary to harvest the trial. To assess tuber blight a specific protocol is made.
- A method for determining the rating for the "EuroBlight BCPP Table" will be proposed when 6 successful trials (2 seasons x 3 trials) have been carried out by independent research institutes in at least 3 different growing regions/countries in Europe. The proposed methodology will be agreed by independent researchers and the BCPP manufacturers and where possible will be used to analyse data from registration trials. It is recommended to include a relevant standard product in the trial, this could be mancozeb 1500 g a.i./ha. In this way a robust dataset will form the basis of the rating given for the "Effectiveness of BCPP against leaf blight".

N.B. A successful trial is one that is strictly carried out according to this protocol and late blight is observed in the plots (>10% foliar infection in the worst BCPP treatment). The rating is set by determination and comparison of the StAUDPC's of the 6 successful trials. **A validation of this method will have to be carried out with existing trial data to find out whether a linear, a logarithmic or another transformation has to be carried out on the data.** It will be investigated whether it is possible to determine a rating for "Effectiveness to control leaf blight"