

## “Development of collaborative and innovative alert and decision systems promoting integrated protection against fungal potato diseases”

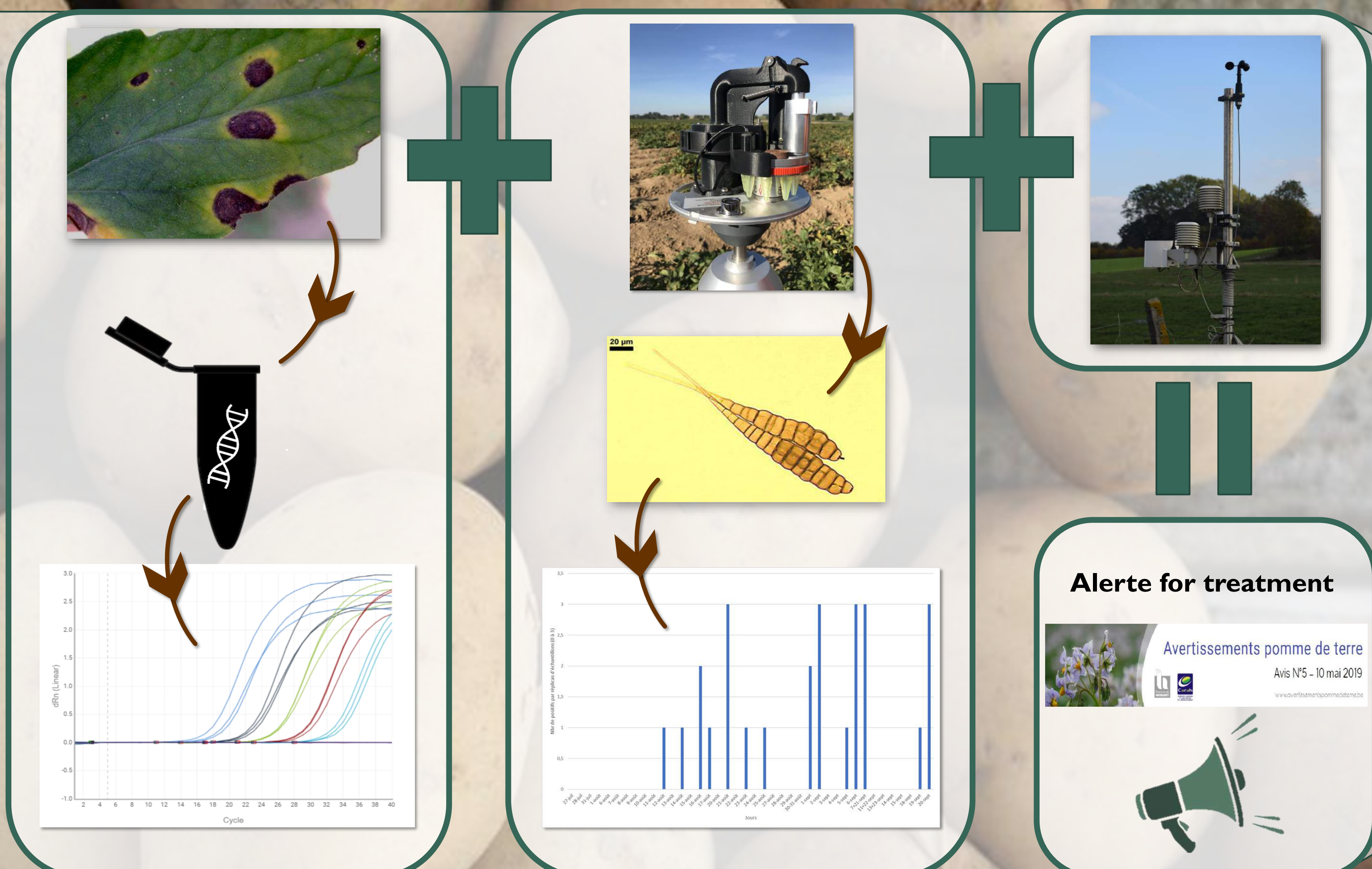
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### Abstract

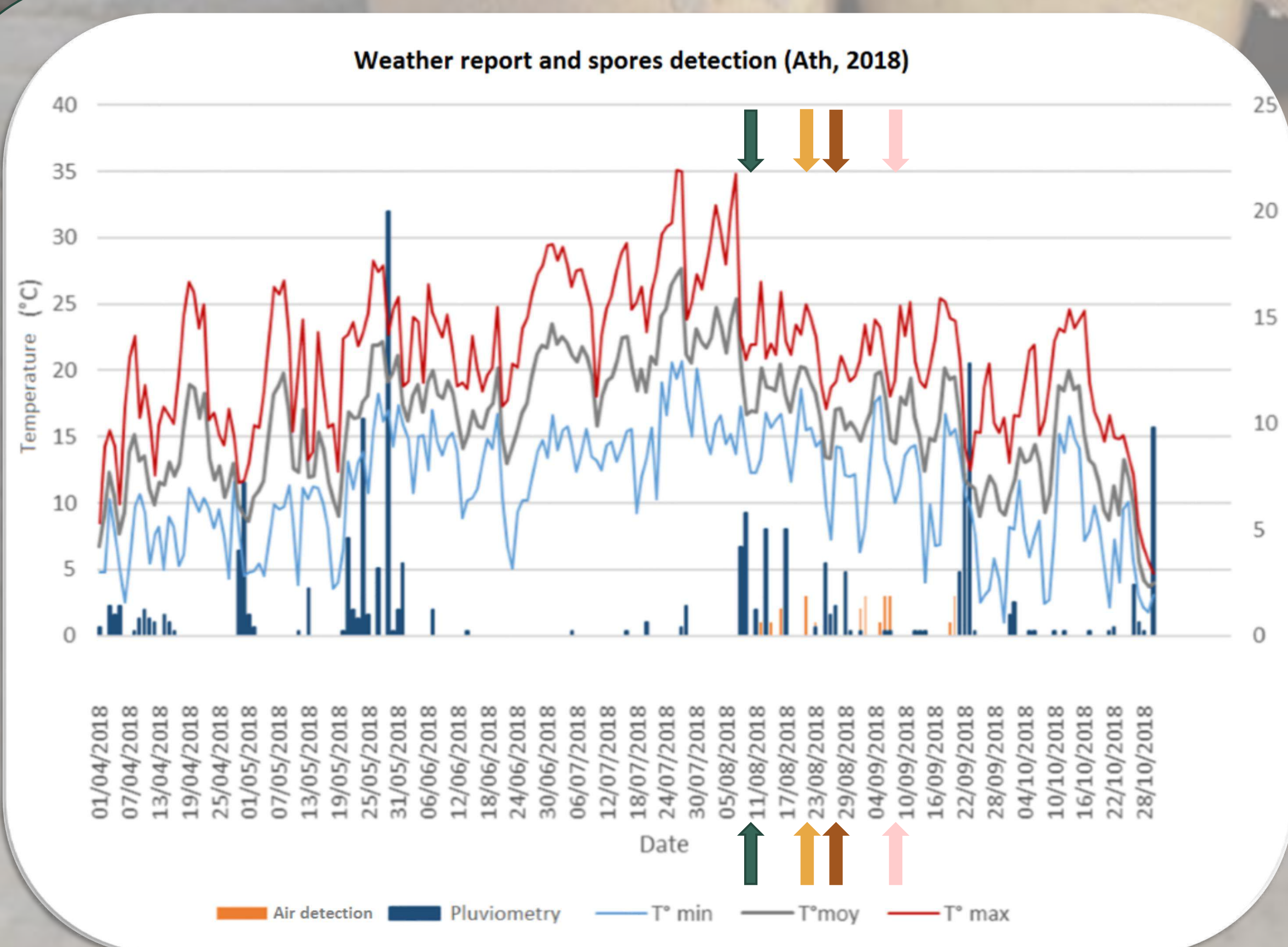
Potatoes are economically important crop in Belgium and France. Fungal potato pathogens cause many damages in crops. The most important fungal pathogens are *Phytophthora infestans* and *Alternaria solani*, responsible of late blight and early blight, respectively. SYTRANSPOM, a collaborative cross-border research project, was set up in order to develop and/or improve alert and decision support systems for potato crop. For that, air and leaf samples are analyzed to detect and quantify the early presence of the disease (importance of treating before the symptoms onset). Analyses are also carried out to identify the species of *Alternaria* (*A. solani* or *A. alternaria*), which causes the symptoms on the leaves, since they are hardly recognizable visually. These analyses, in addition to meteorological data, enable the improvement of the decision support system and also help to assess the optimal date for treatment.

### Material and methods

A field trial (9 modalities in 4 replicates) has been set up for the 2018 campaign. In order to optimize the decision support system, air-trap spores sampling were performed daily and leaf samples were weekly sampled (10 leaflets per modality and per repetition). DNA extractions were performed with a commercial kit on the air and leaf samples (for which the extraction is preceded by grinding in liquid nitrogen). The detection / quantification is performed with a quantitative real-time PCR using SYBR Green method.



### Results and discussion



The results analysis for the 2018 campaign highlighted the dates of the pathogen emergence. *Alternaria solani* was detected on the 21/08 in the air (↑), 28/08 on potatoes' foliage (↑) and the first visual symptoms appeared on 07/09 (↑). The biological cycle of *A. solani* being between 5 to 7 days, the dates of emergence of the fungus (in its different forms) overlap exactly with the theory. However, the OAD starts on 10/08 (↑) with spraying advices emitted the same day. Given the date of apparition of the first spores in the air (21/08), the date of 10/08 for advice comes a little too early. The OAD has yet to be refined.



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