

# Release and viability of spores of potato late blight (*P. infestans*) under field conditions



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# Objectives and perspectives of Nordic projects

- To evaluate and quantify epidemiological parameters of the new population of *Phytophthora infestans*.
- Influence of weather conditions on sporangia production, release, viability and infection
- Obtained results will be implemented in existing and new forecasting - and decision support systems for late blight control.



# Is survival a bottleneck ?

Wet leaves  
(dew from night –  
early morning)



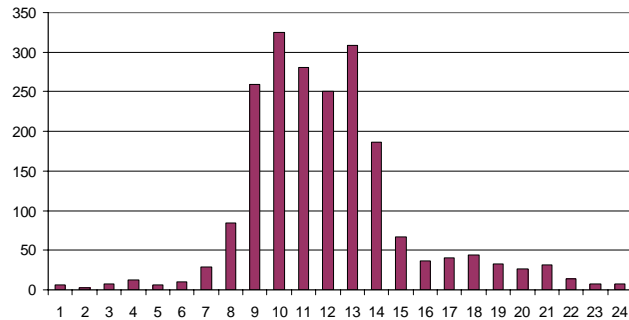
**Infection**

**Survival to next  
dew period  
(evening)**

**?**

Dry leaves

Spore dispersal in  
morning hours



# Spore trap



Burkard spore trap

Air volume pr.  
day:  $14,4 \text{ m}^3$

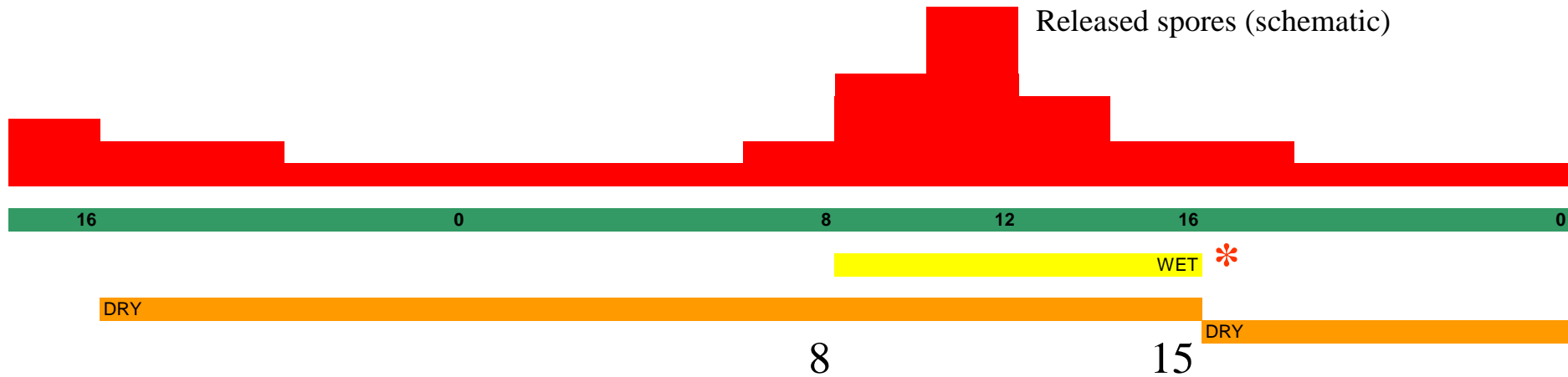
Counting of  
spores/ $\text{m}^3$  pr. hour

Denmark: Bintje and Oleva plots

Norway: Variety mixture

Trap plants close to  
spore trap in  
resistant varieties

# Exposure of trap plants (Bintje)



WET: 4 trap plants exposed 8-15. Wet incubation (\*)

DRY: 4 trap plants exposed 15 – 15 next day. Dry incubation.

Trap plants incubated 7 days in growth cabins at 18C

Assessment of attack of late blight

# Exposure of trap plants, Denmark



- From 26 June to 20 August

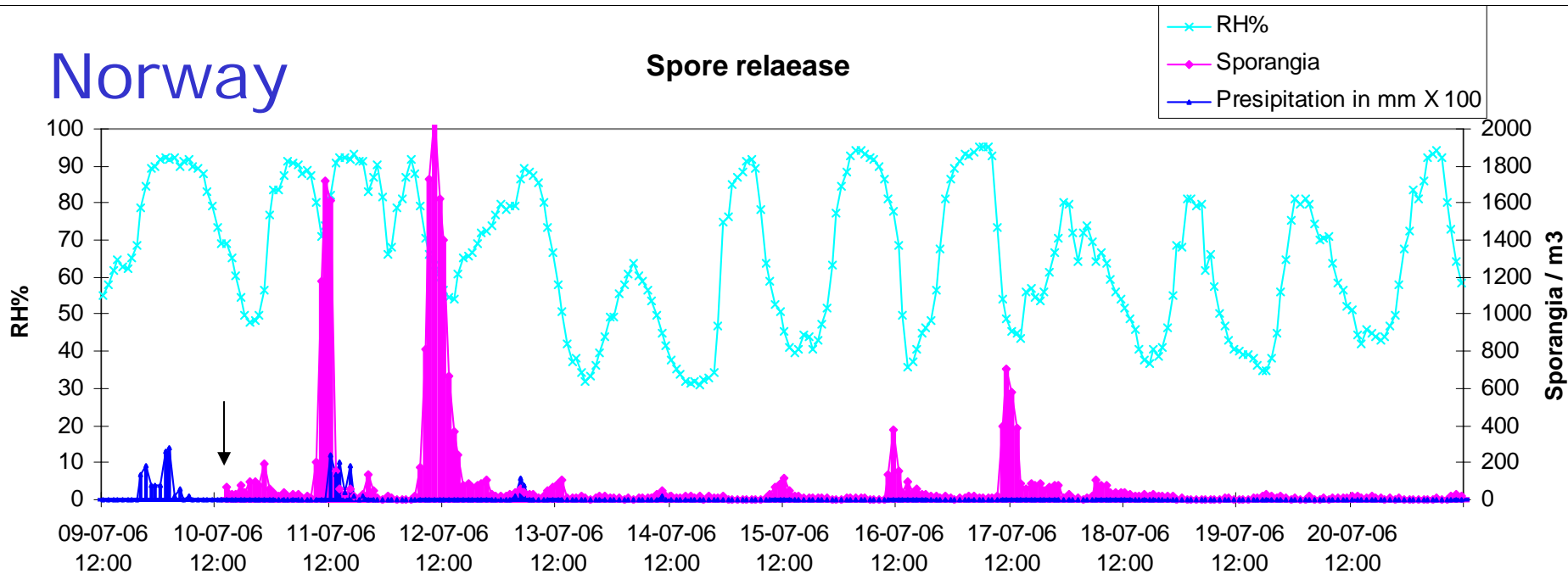
# Exposure of trap plants, Norway



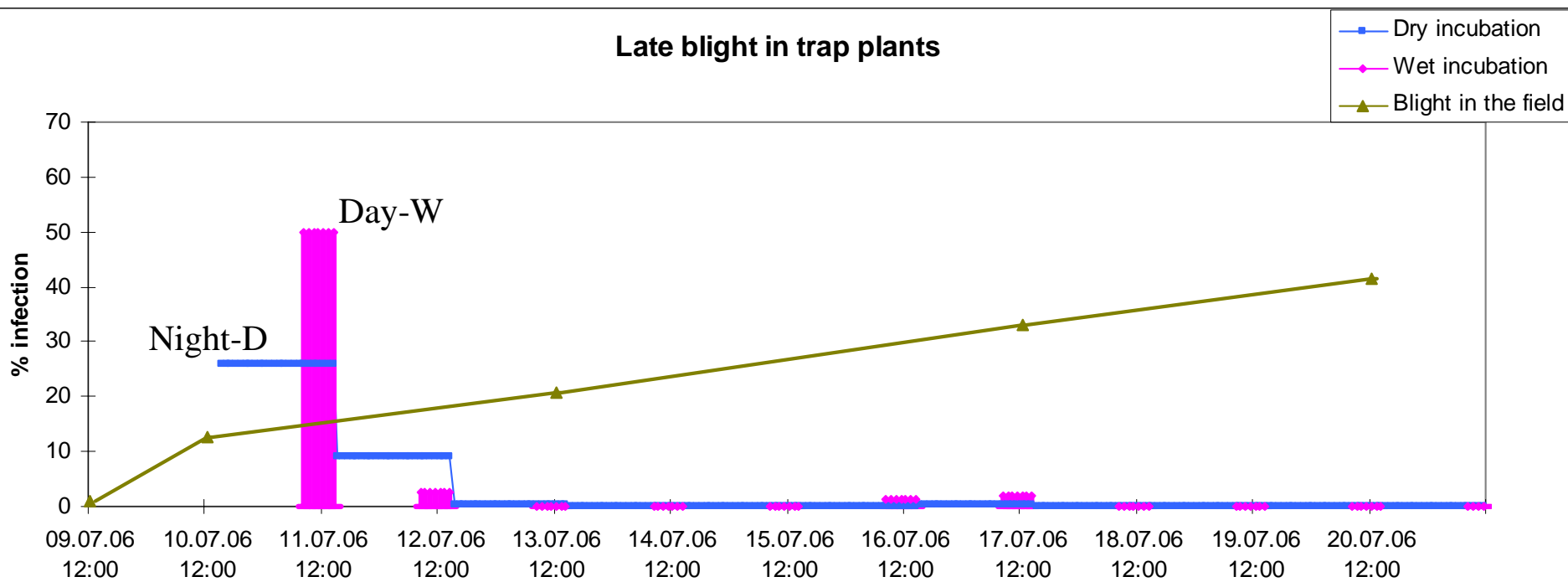
- From 10 to 31 July

# Norway

## Spore release

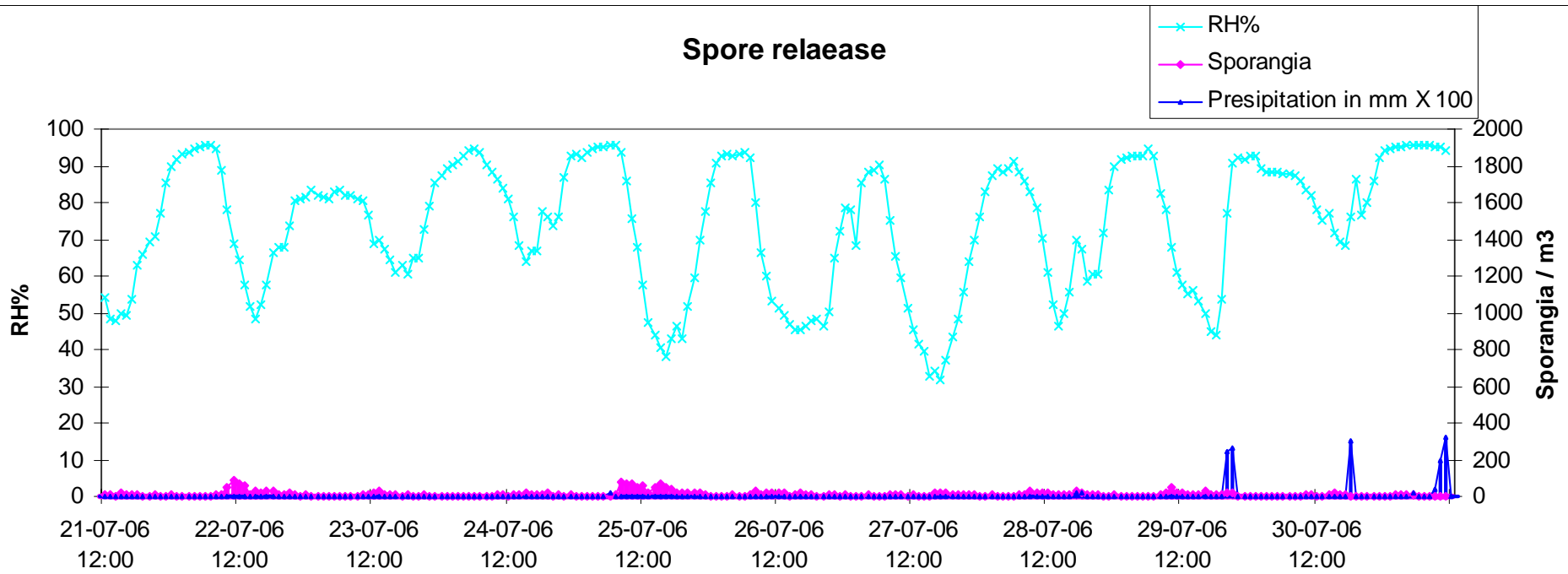


## Late blight in trap plants

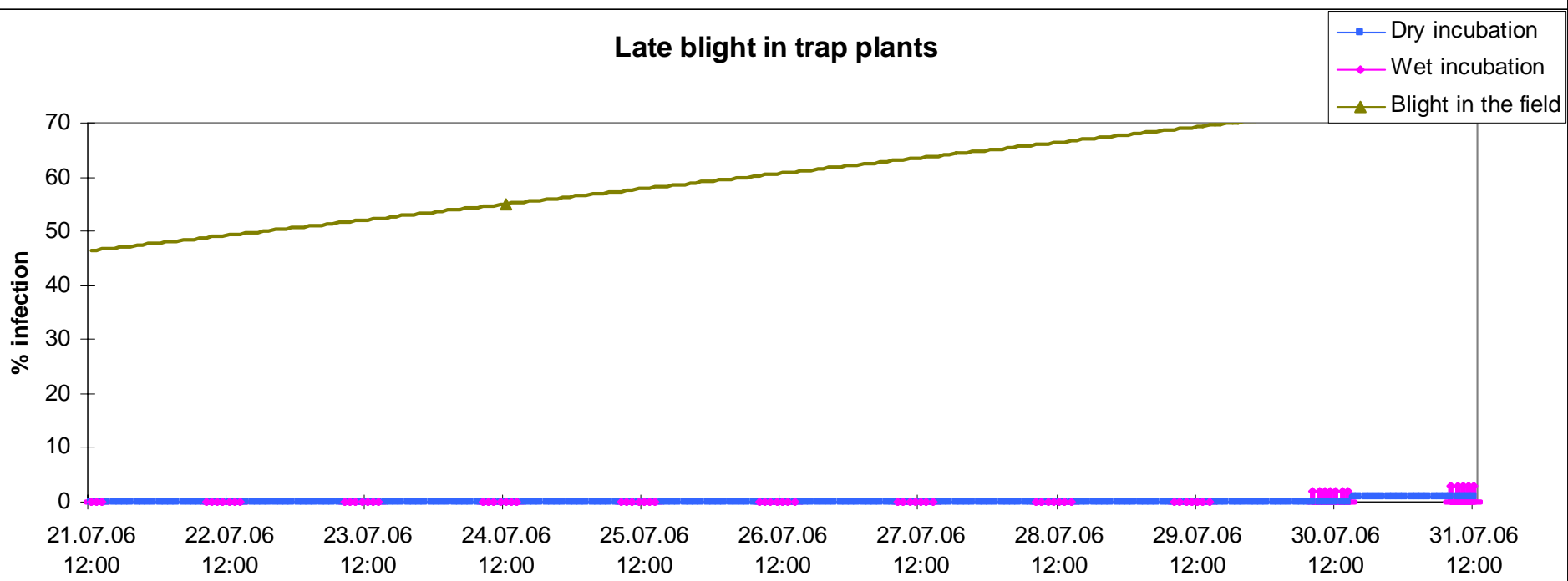




### Spore release

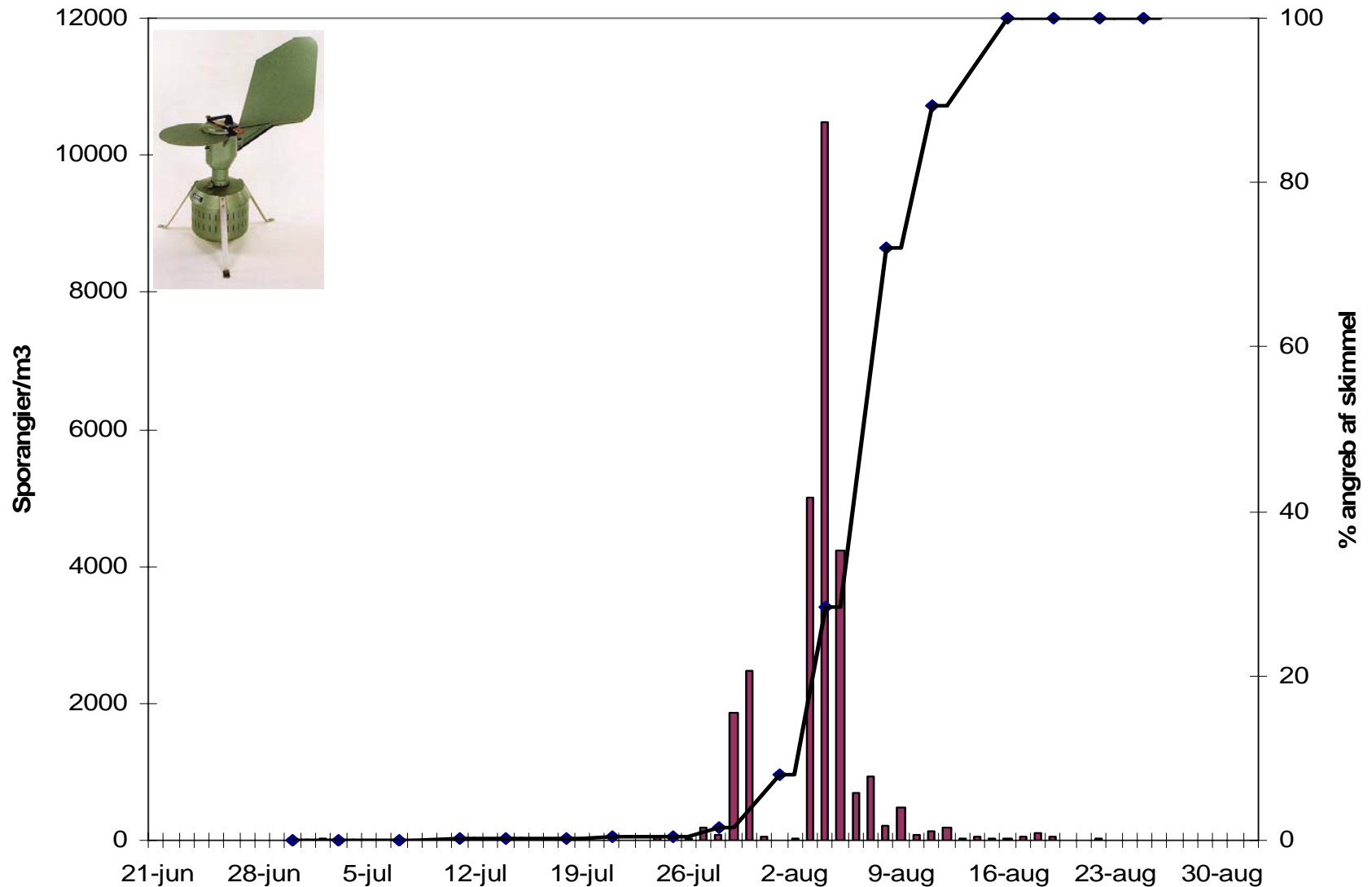


### Late blight in trap plants

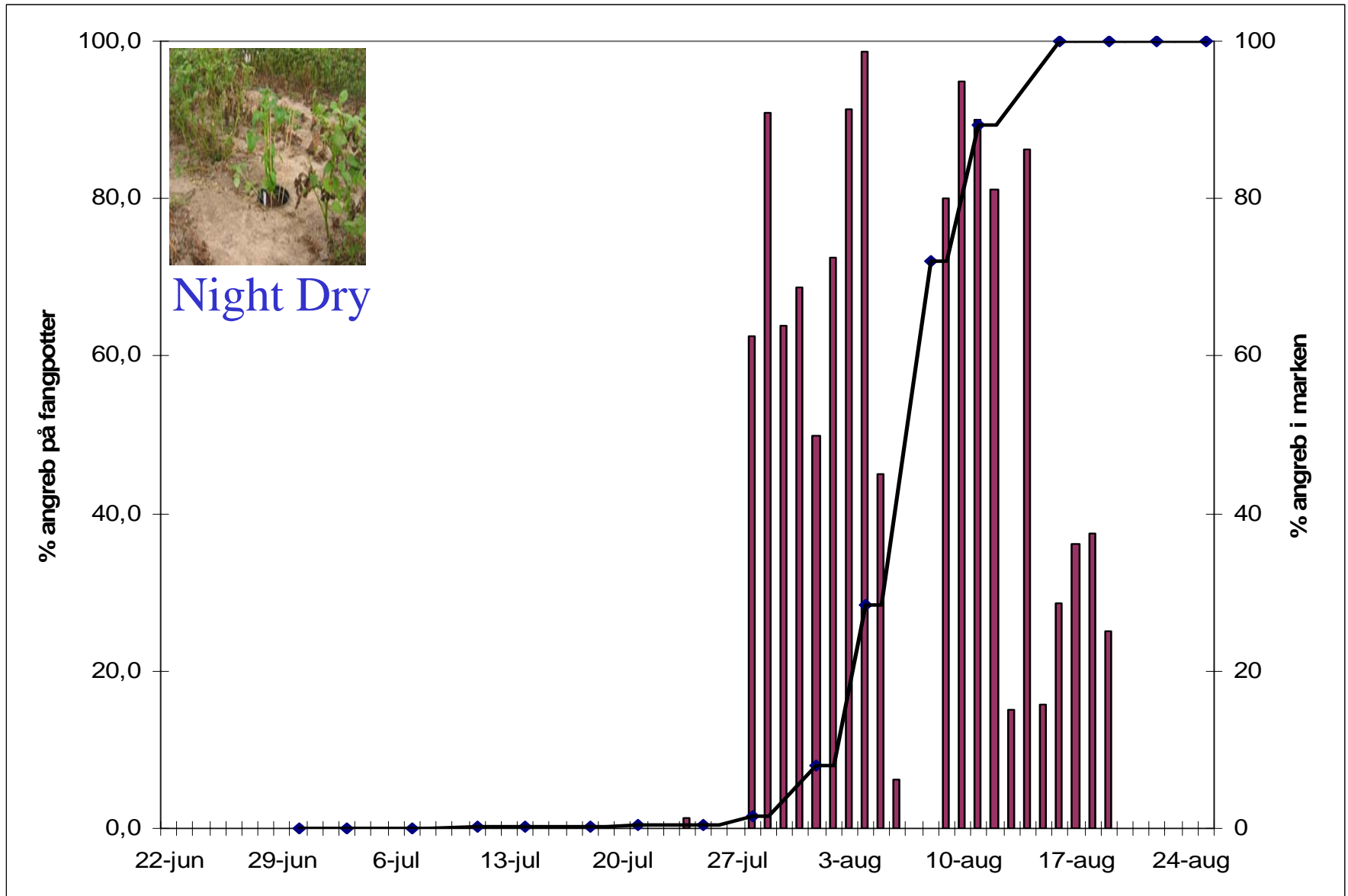


# Denmark

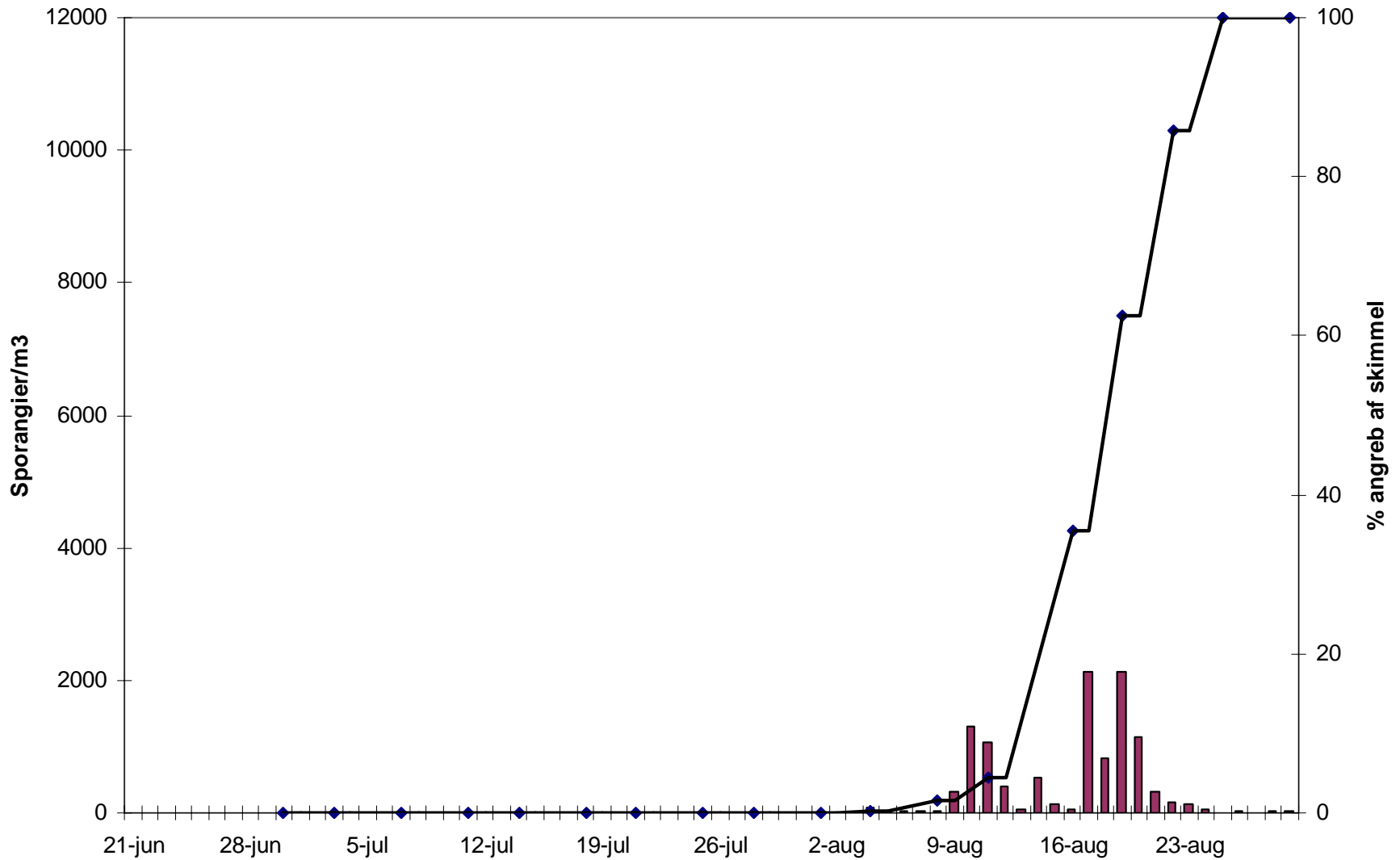
## Spread of sporangia from Bintje 2006



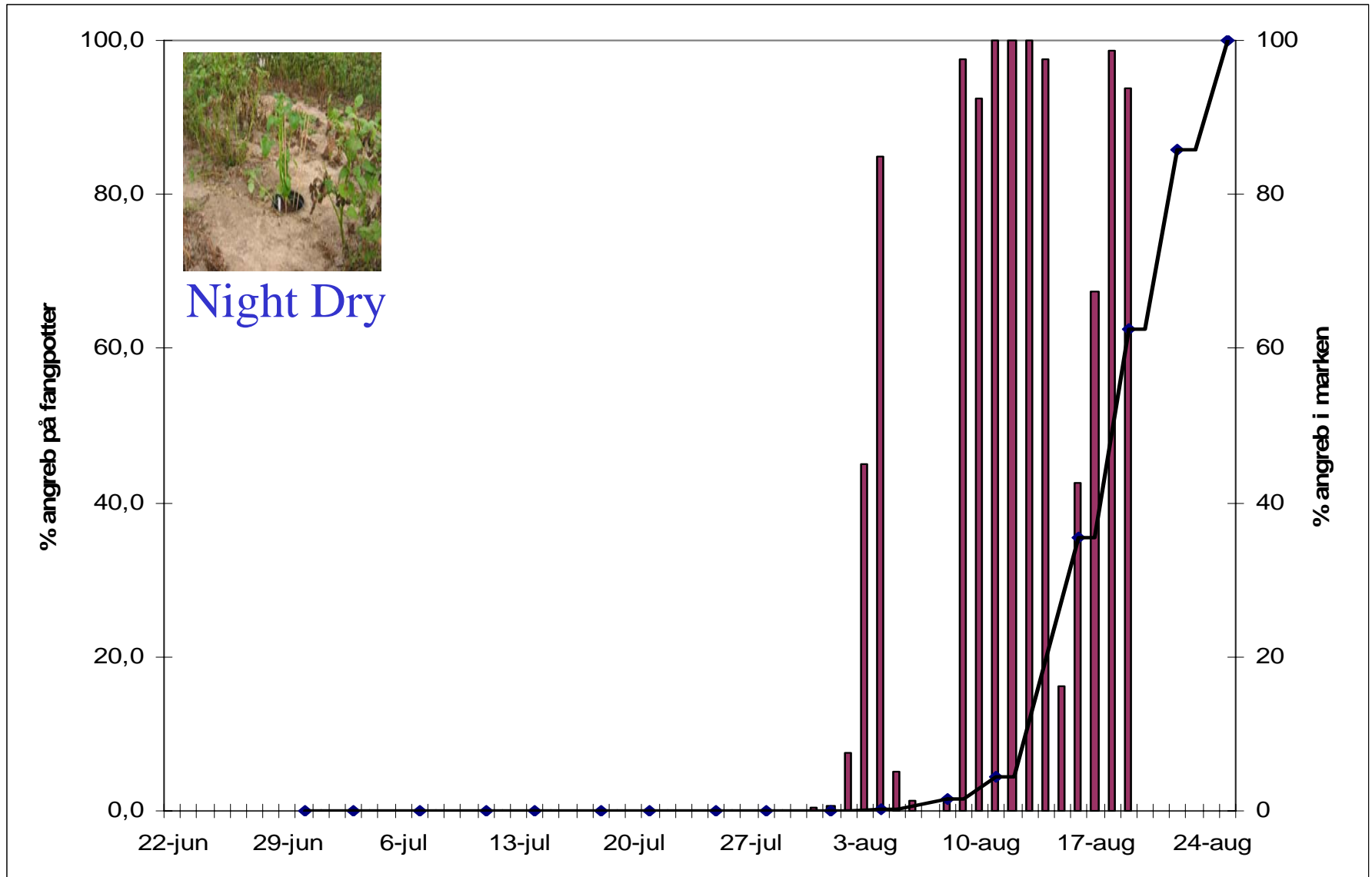
# Infections on trap plants, Bintje 2006



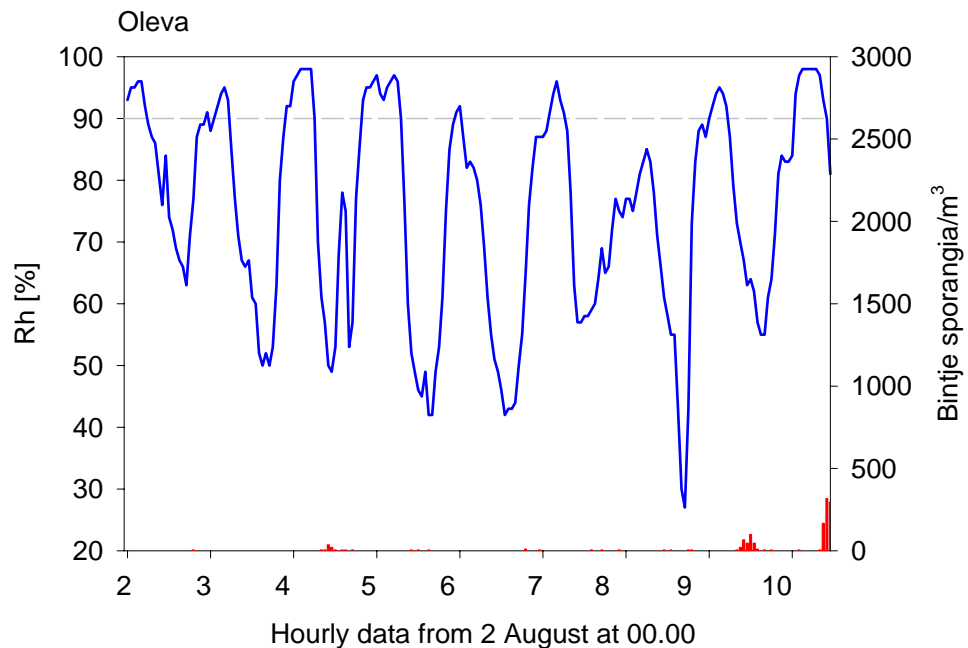
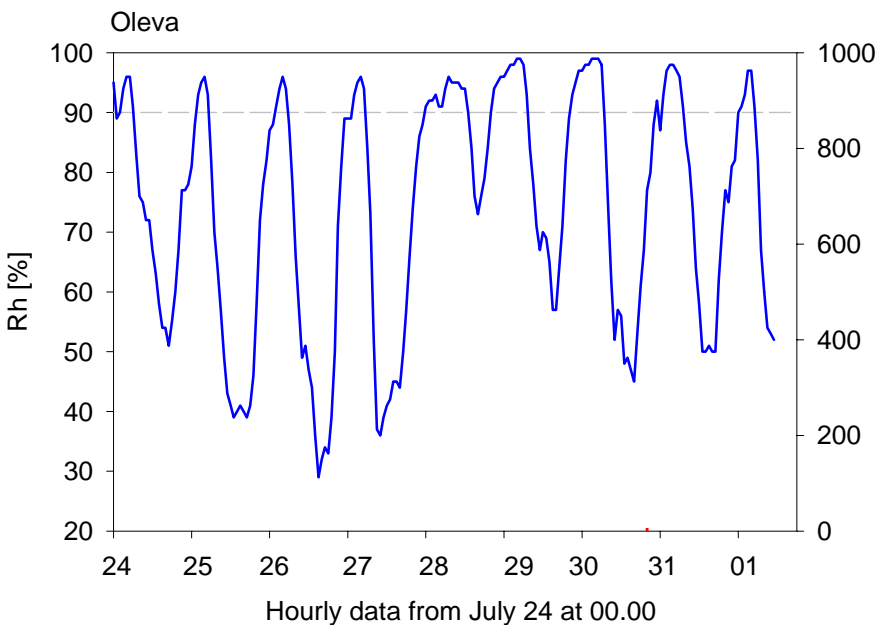
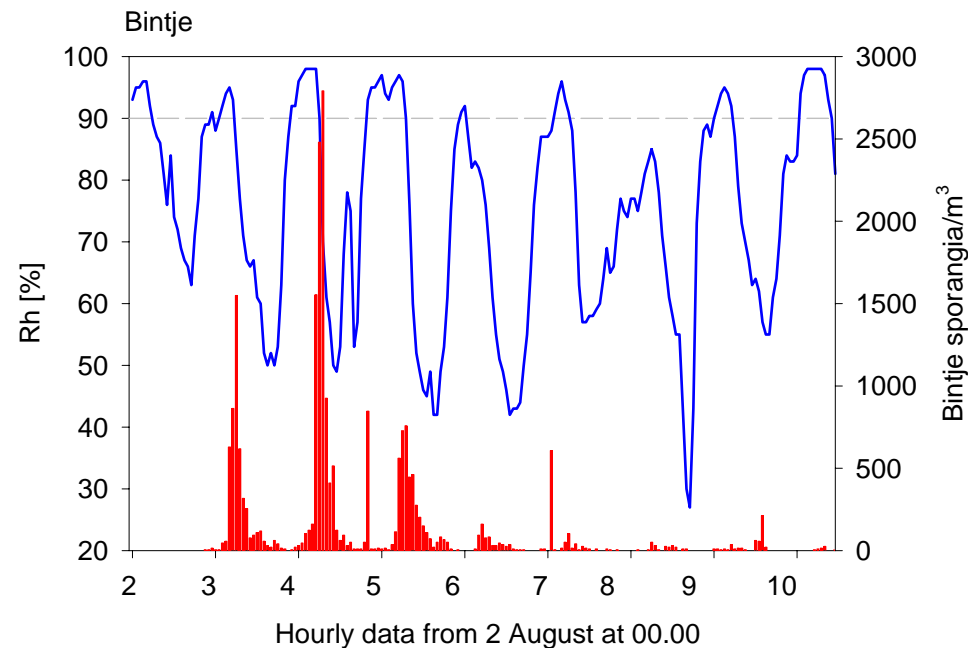
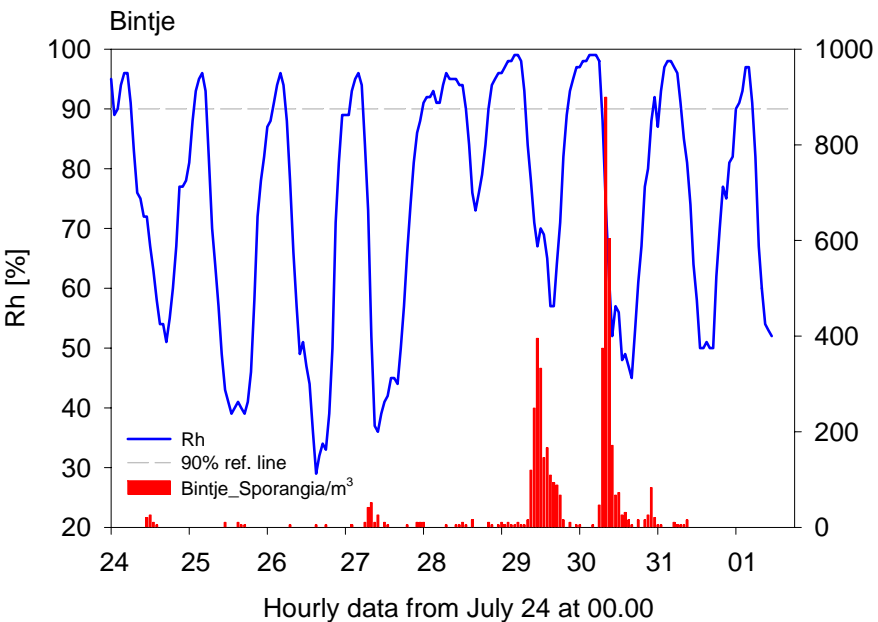
# Spread of sporangia from Oleva 2006



# Infections on trap plants, Oleva 2006

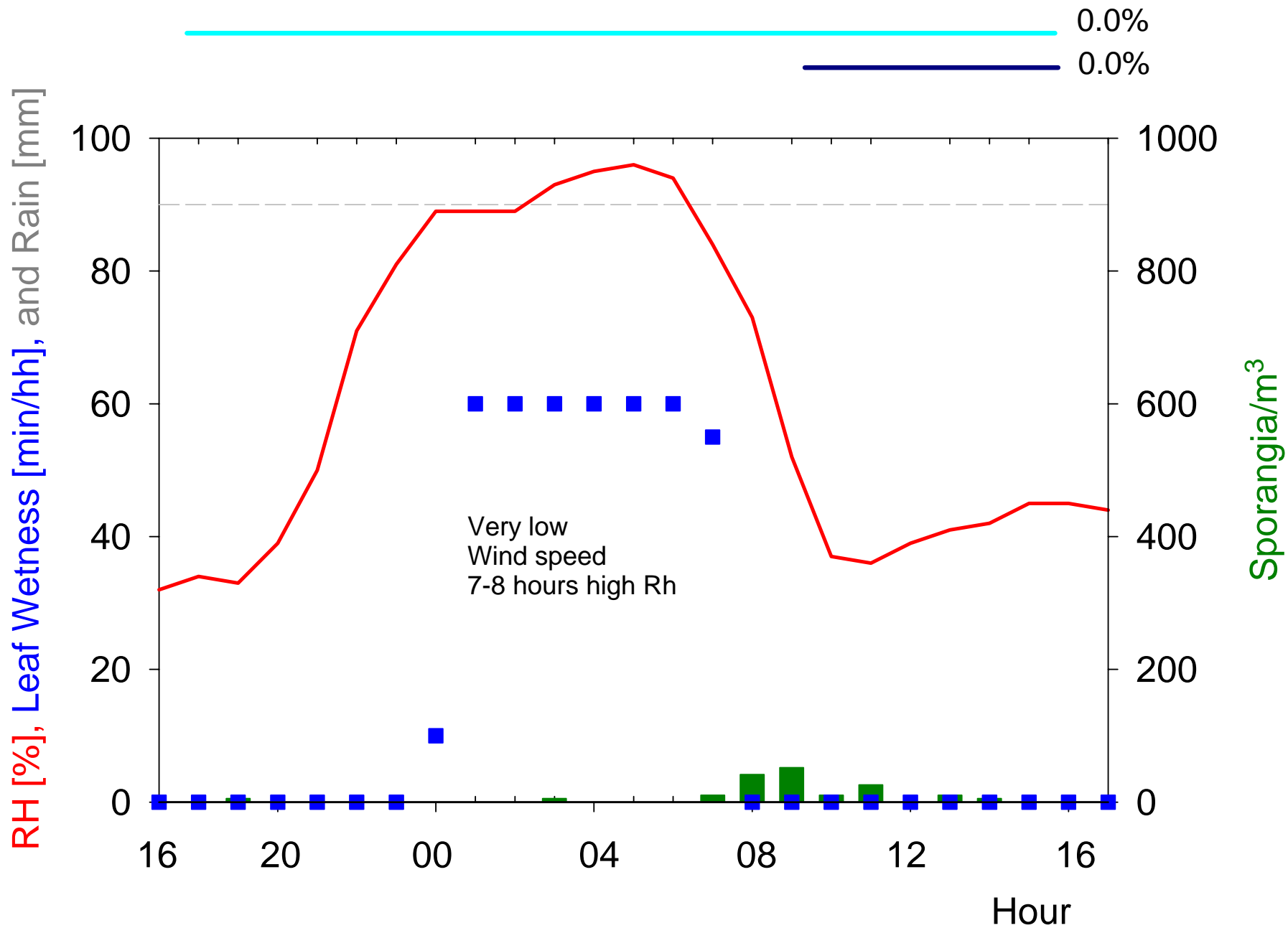


# Denmark



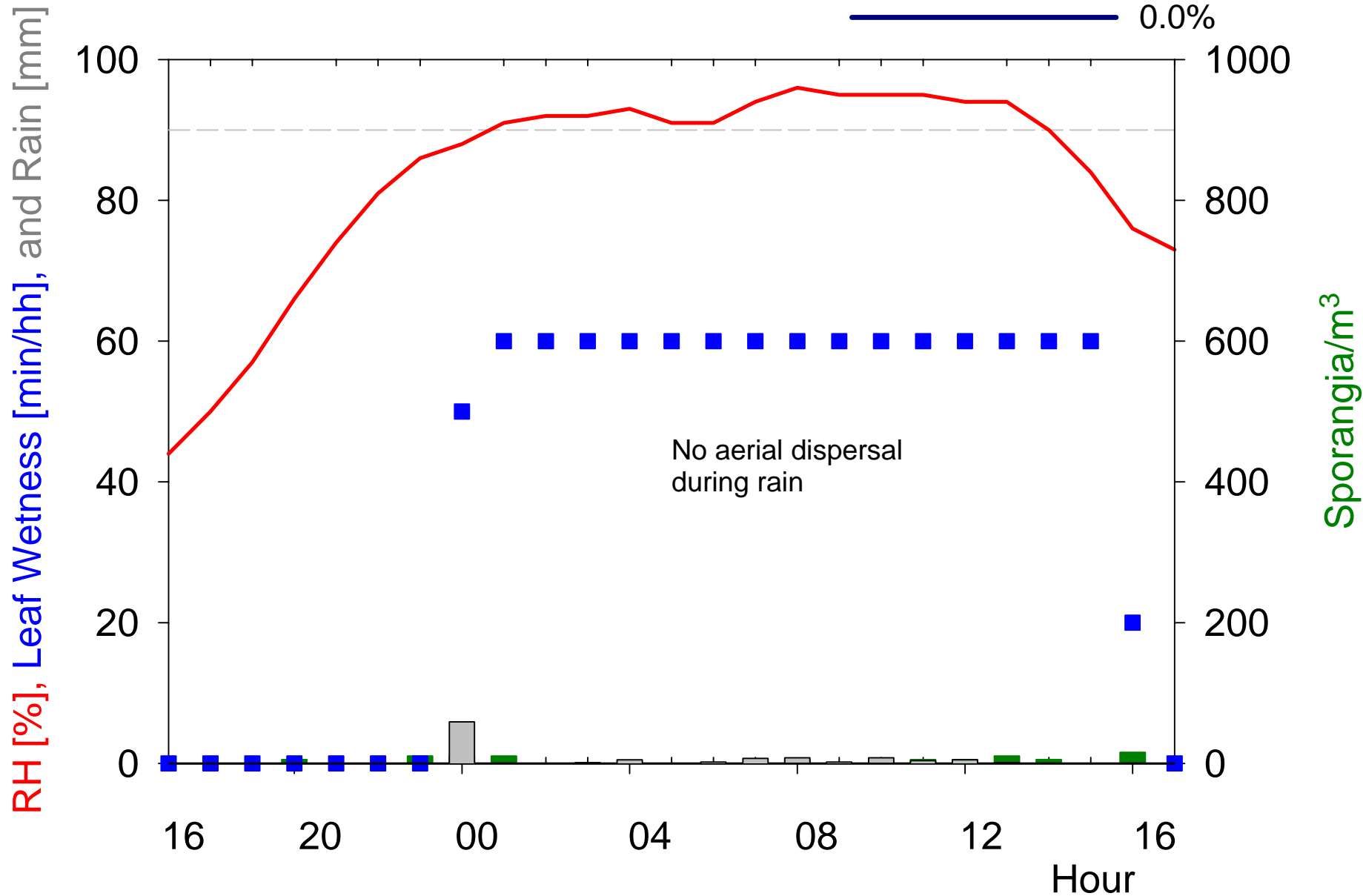
26 July 16:00 to 27 July 16:00 HSPO=0 (same with Metos=0)

Trap plants exposure



27 July 16:00 to 28 July 16:00 HSPO=14 (same with Meteos=15)

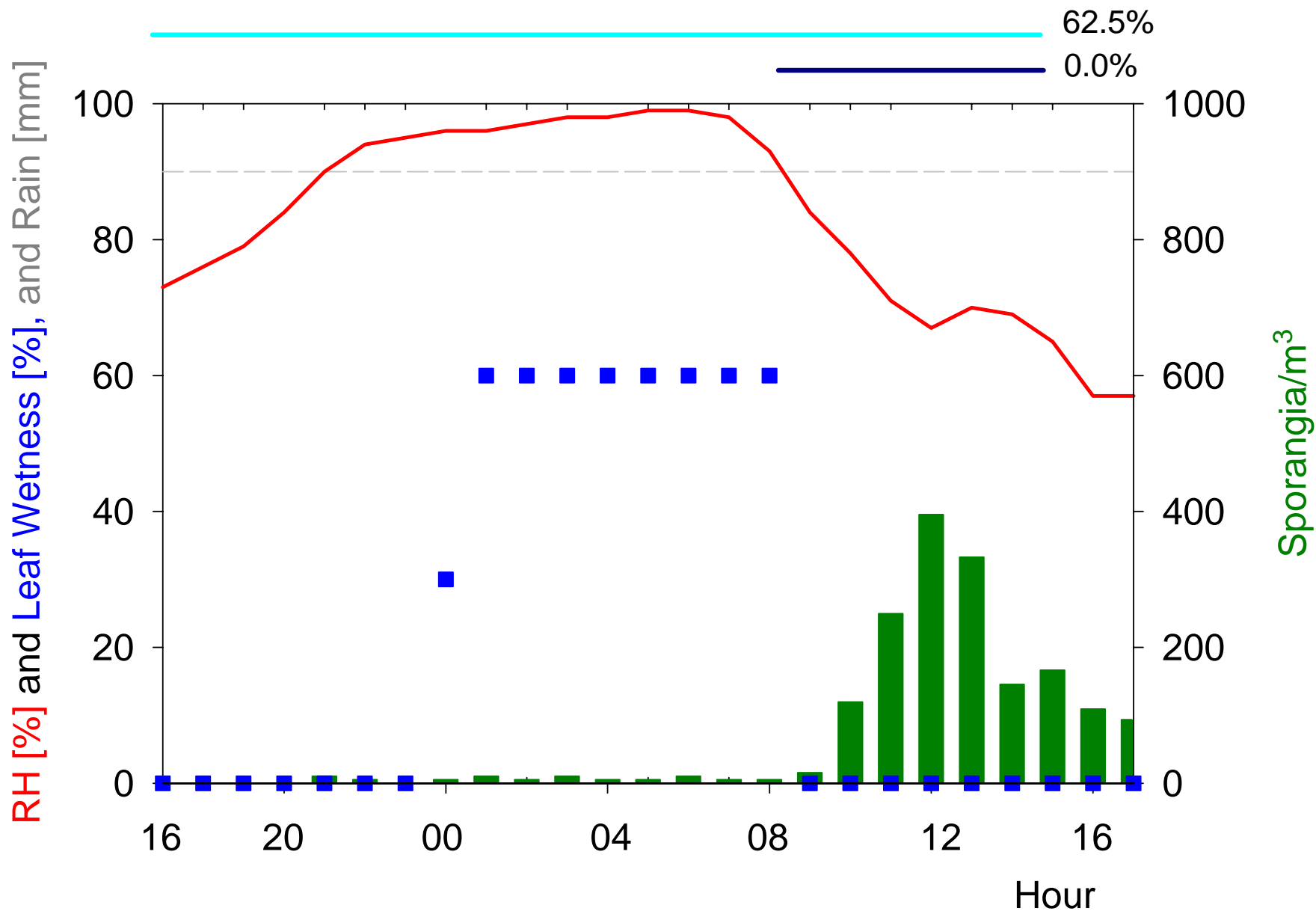
Trap plants exposure





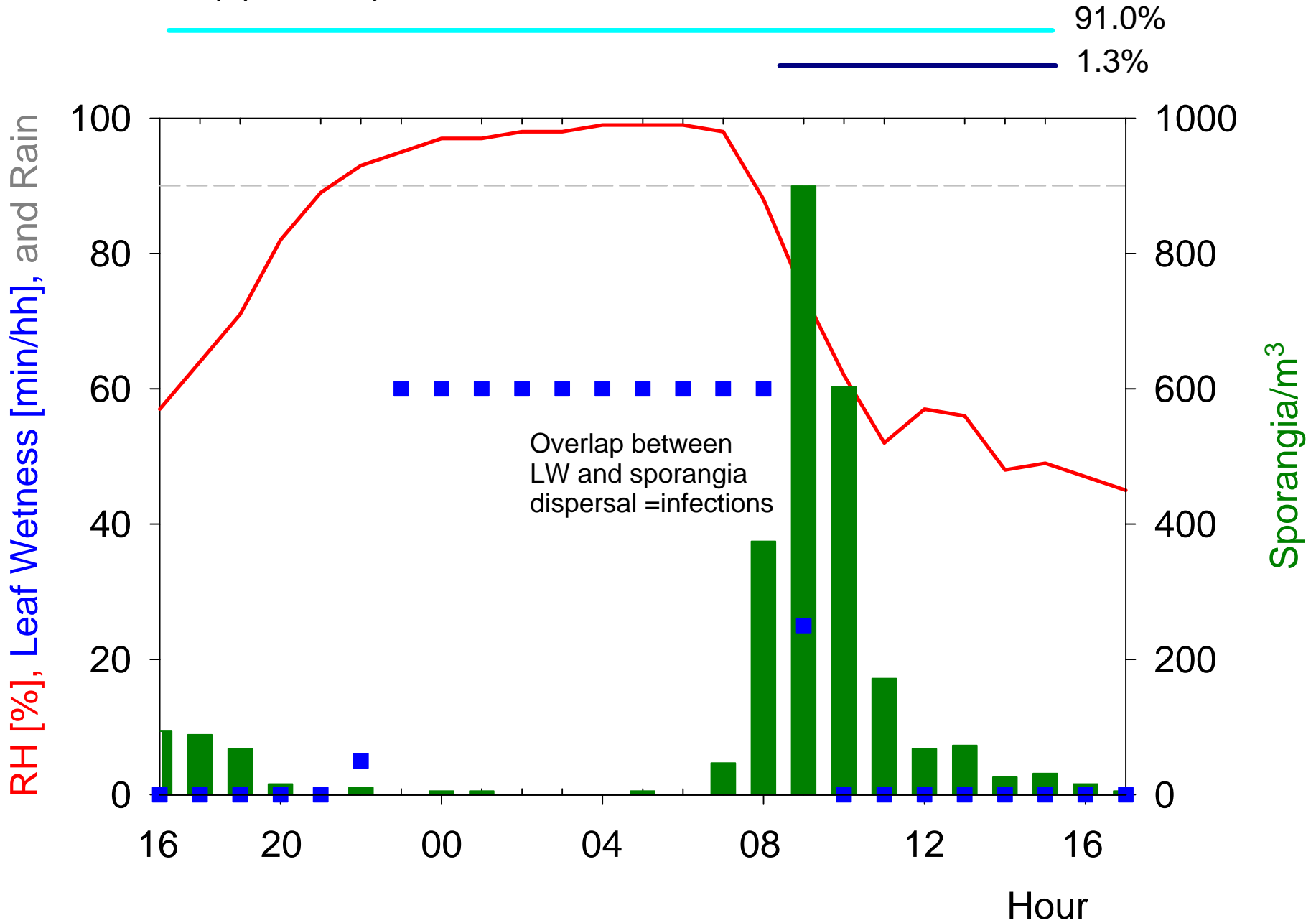
28 July 16:00 to 29 July 16:00 HSPO=13 (same with Metos=12)

Trap plants exposure



29 July 16:00 to 30 July 16:00 HSPO=11 (same with Metos=12)

Trap plants exposure



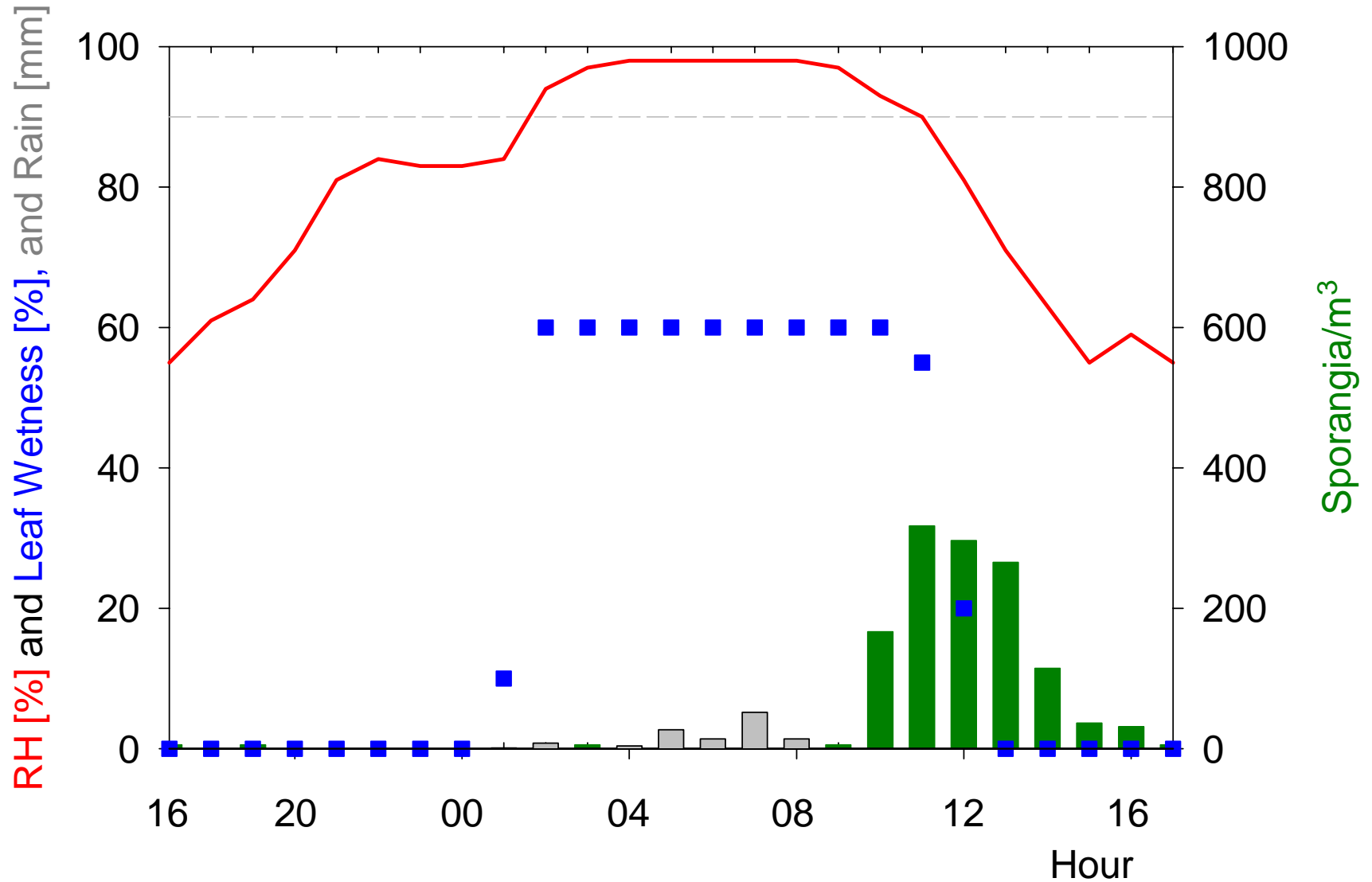
9 August 16:00 to 10 August 16:00 HSPO=0 (10)

Trap plants exposure

Infection

97.5

62.5%



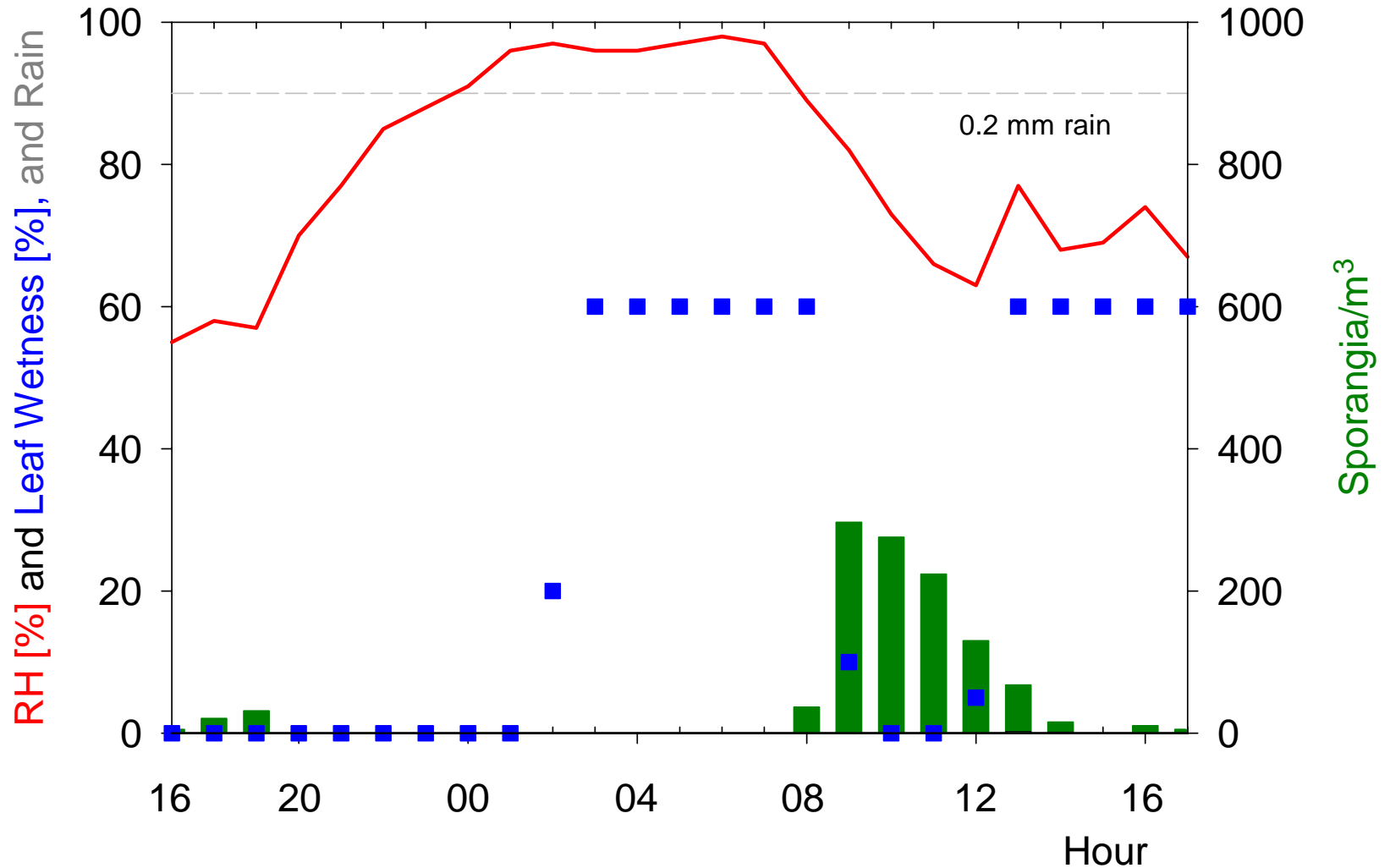
10 August 16:00 to 11 August 16:00 HSPO=0

Trap plants exposure

Infection

100%

77.5%



# Conclusions

- Drop in humidity gives spore dispersal
- Local new infections occurs during morning hours where you still have wet leaves
- Survival of spores is a bottle neck: On many days spores do not survive until afternoon