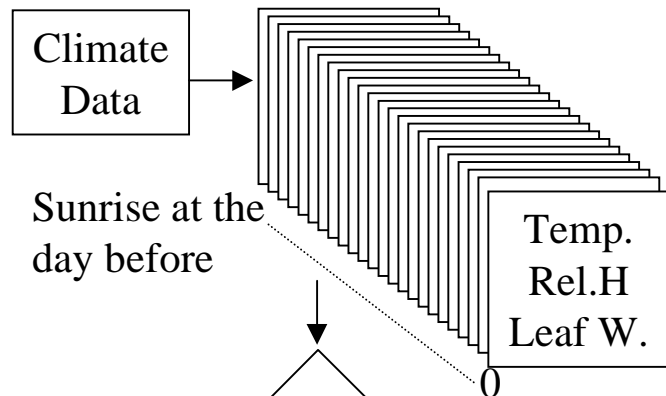


# DownCast Following Hildebrand and Sutton



N(hours with  $T > 24^{\circ}\text{C}$  from sunrise to sundown at the day before) = 0

Y

N(Consecutive Minutes of relative Humidity  $\geq 95\%$  without daylight and leaf wetness) = 240

Y

**Sporulation possible**

N(Consecutive Minutes of leaf wetness) = 150

Y

**Infection possible**

... Model assesses the possibility of sporulation and infection on:

- Hourly Temperature during the day before
- Hourly temperature during the night
- Consecutive Minutes of relative Humidity  $\geq 95\%$  without daylight and leaf wetness
- Number of minutes with leaf wetness when spores are present

Results:

- Flag for sporulation
- Flag for Infection

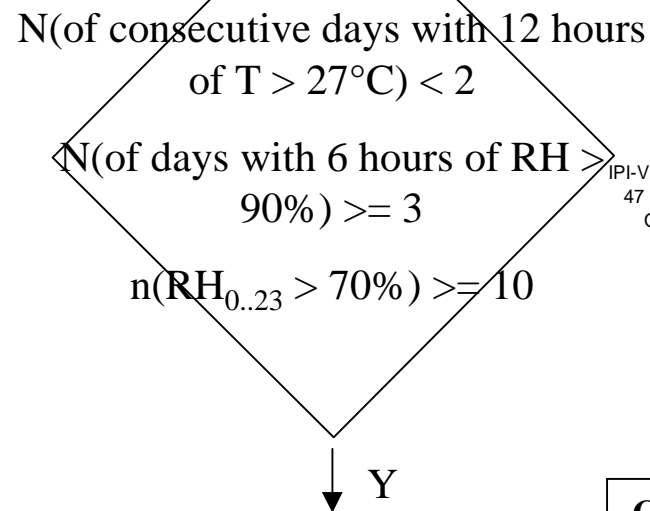
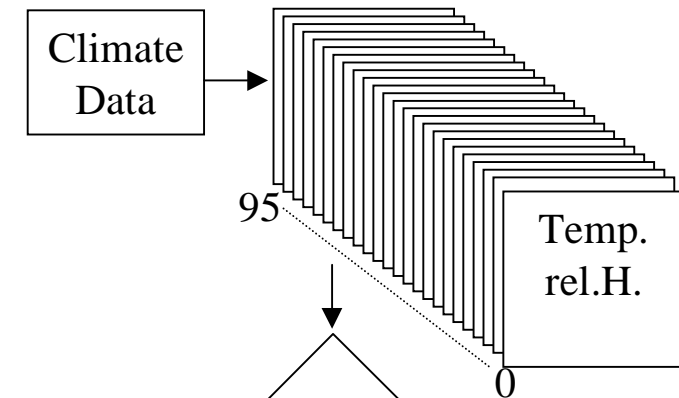
# Forecasting Sporulation of *Botrytis Squamosa* (IPI)

... Model assesses the possibility of sporulation on:

- Hourly Temperature during a 4 day period
- Hourly Relative Humidity during a 4 day period

Results:

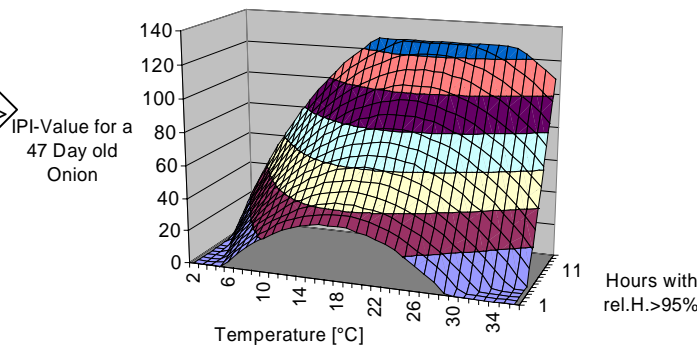
- Sporulation Index (IPI) for 47 day old onions
- Age of onions with high probability for sporulation



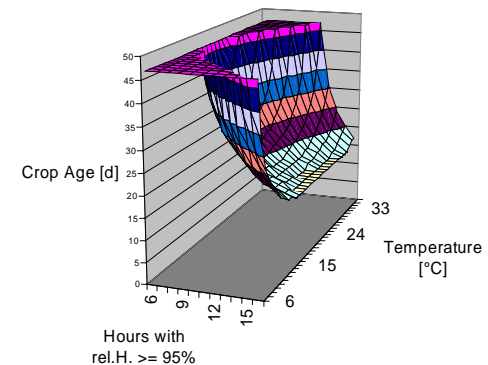
Sporulation possible

Calculate IPI for 47 day old crop  
Calculate age of crop with IPI = 7

Relation of Daily Average Temperature, Hours with rel. Humidity  $\geq 95\%$  and IPI-Values for a 47 Day old Onion



Relation between Temperature, Hours with relative Humidity  $\geq 95\%$  and Age of Onions affected by *Botrytis squamosa* Sporulation



# DownCast Following Hildebrand and Sutton and Forecasting Sporulation of *Botrytis* *Squamosa* (IPI), Data Presentation:

## Hourly Values:

$\mu$ METOS and  $\mu$ LINK shows the hourly values of possible sporulation and infection of Onion Downy Mildew (*Peronospora Destructor*) as boolean values in form of asterix and quality lines. *Botrytis squamosa* Sporulation possibility on a 47 days old crops is shown as value between 0 and 14. Affected Crop age is shown as value between 15 and 47 [crop age in days].

## Daily Values:

Maximum values of every day are shown.

Onions Downy M. (DM) a. B. squamosa (BS)  
DM Spors (S), Inf (I); BS Spors47 (BS), BS Affected Crop Age (CA)

M-DD HH SI BS CA

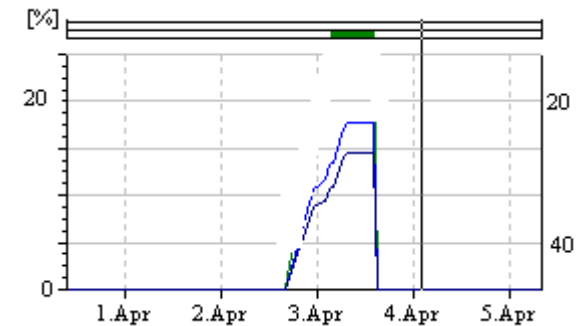
Label

5-12 07 *	7	47
5-12 08 **	12	23
M-DD HH SI BS CA		
M-DD HH SI BS CA		

1th Screen

5-12 MX *	7	47
5-12 MX **	12	23
M-DD MX SI BS CA		
M-DD MX SI BS CA		

2nd Screen



# DownCast Following Hildebrand and Sutton and Forecasting Sporulation of *Botrytis* *Squamosa* (IPI), Practical Use:

## DownCast :

The model is indicating sporulation of *Peronospora destructor*. The presence of spores enables the pathogen to infect onions if there is free moisture. This is indicated by the infection flag. Periods where spores are present should be covered by preventative fungicide. If we have had infections which are not covered by preventative fungicide disease damages will take place or a curative fungicide has to be used.

## *Botrytis squamosa* (IPI):

The model indicates sporulation of the pathogen. Sporulation severity is indicated for a 47 day old crop. If the sporulation value (IPI) is higher than 7 it indicates a serious danger for the crop. The second value shows the crop age which will be affected by the disease in the certain period. Disease presence in field is effected by climate and crop age. As older the crop is as higher is the probability of *Botrytis squamosa* infected leaves as higher the inoculum production.

Affected crop age indicates if your crop is in danger of getting affected by the pathogen if it is old enough.