

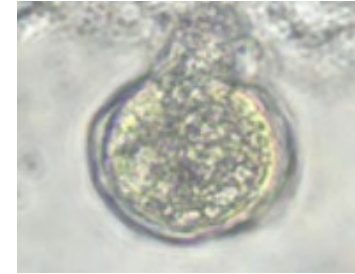
# A GIS-BASED MODEL FOR ESTIMATING THE RISK OF OOSPORE-INITIATED OUTBREAKS IN POTATOES

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# OOSPORES – SOILBORNE INFECTIONS

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- There are indications that oospores cause early outbreaks in the field (Hannukkala et al., 2007)
- Oospores are considered a source of primary inoculum (Cooke et al., 2011)
- How can we determine the risk of early late blight outbreaks initiated by oospores in the field?



# A GIS-BASED OOSPORE MODEL

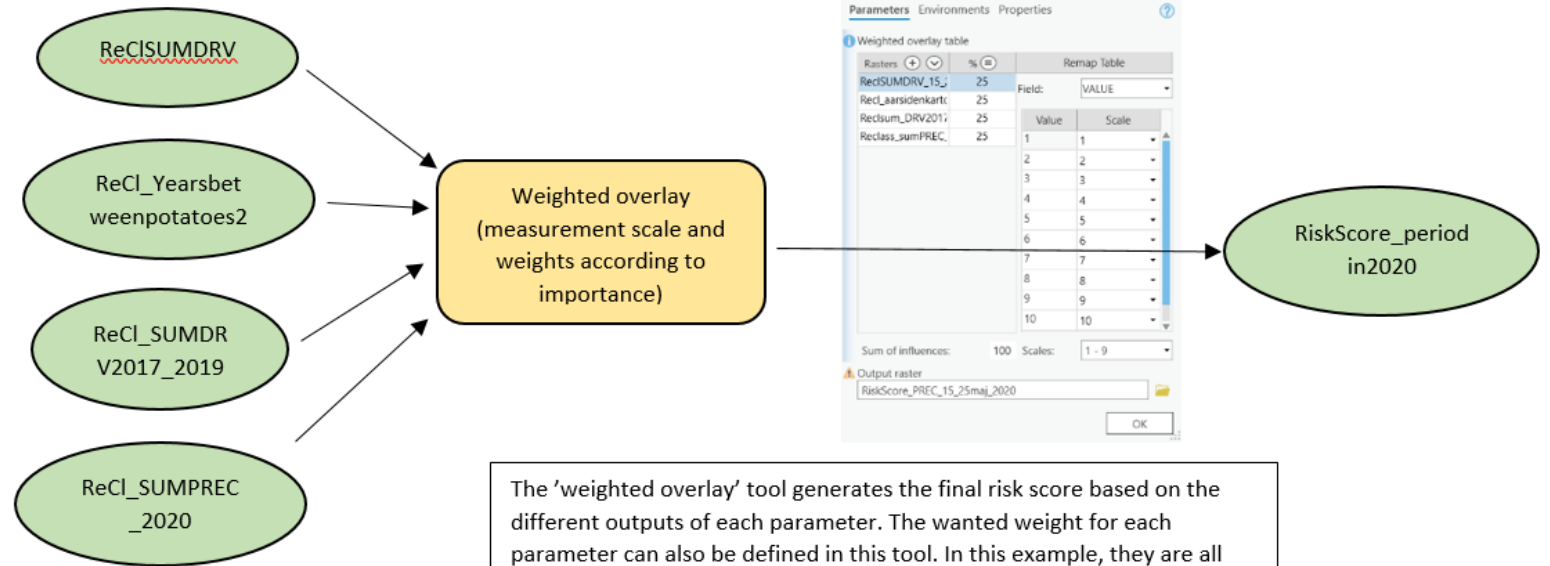
1) Infection pressure at crop emergence period

2) Years between potato seasons

3) Infection pressure at previous potato seasons (e.g. 2017, 2018, 2019)

4) Precipitation during the crop emergence period

Overlay several rasters in a weighted overlay using measurement scale and weights each according to its importance:



The 'weighted overlay' tool generates the final risk score based on the different outputs of each parameter. The wanted weight for each parameter can also be defined in this tool. In this example, they are all weighted equally at 25%. The output is the final risk score from 1-10, the estimated risk of having an oospore-initiated outbreak in the field.

# RISK SCORE

## Infection pressure

Start	End	New value
0	15	1
15	30	2
30	40	3
40	50	4
50	60	5
60	70	6
70	80	7
80	90	8
90	100	9
100	1000	10

## Infection pressure in the latter part of the previous potato season

Start	End	New value
0	50	1
50	100	2
100	150	3
150	200	4
200	250	5
250	300	6
300	350	7
350	400	8
400	450	9
450	1100	10
NO DATA	NO DATA	1

## Precipitation during crop emergence period

Start	End	New value
0	3	1
3	6	2
6	9	3
9	12	4
12	16	5
16	20	6
20	25	7
25	40	8
40	60	9
60	1000	10

The crop rotation parameter reclassify years between potato seasons into new values (max 5 years);

**0 year = 0**

**1 year = 10**

**2 years = 9**

**3 years = 7**

**4 years = 5**

**5 years = 3**

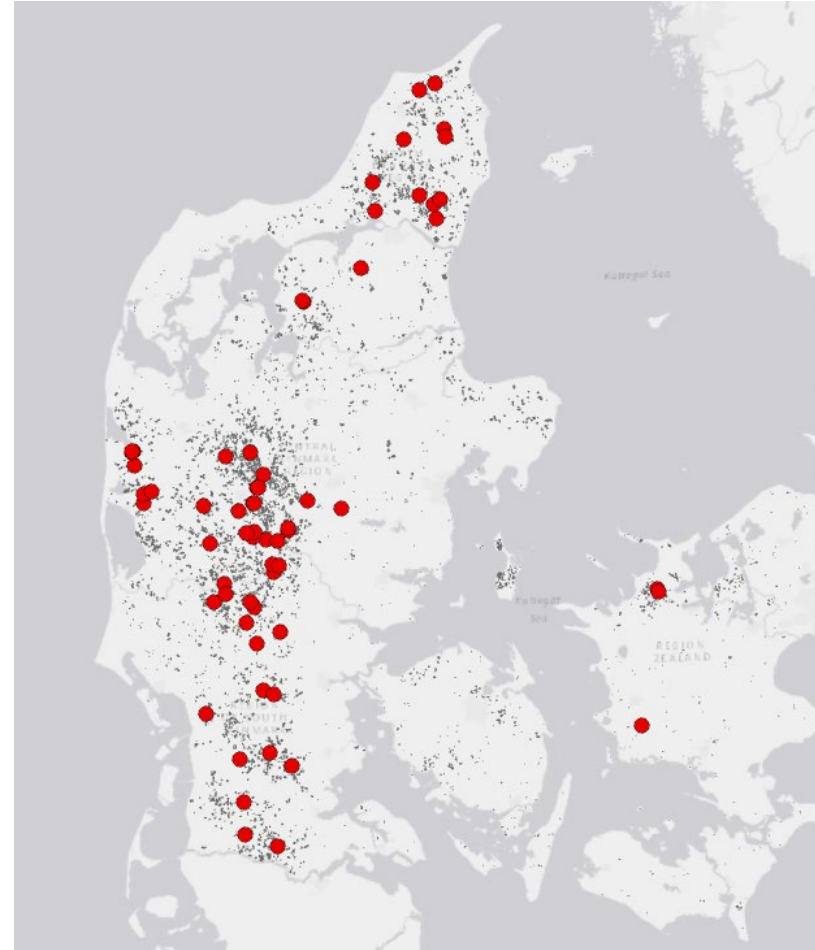
# SUSPECTED OOSPORE FIELDS

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- Validation of model: run simulations and compare with registrations:

What defines suspected oospore fields?

- Early attacks (from crop emergence to BBCH 39)
- Genotyping
  - 'Others'
- Comments from growers (visible symptoms)





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