

EuroBlight

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Discussion points

- Update of the Table
- EuroBlight on control strategies related to F2F
- International collaboration

- Come back to discussions raised yesterday
- BioBlight protocol

Integrated crop management <-> F2F

■ Control potato late blight

- Take out primary inoculum sources
- Grow robust cultivars
- DSS
- Biological Control
- Chemical control

- Environmental impact
- Speed of innovation



F2F

- Contact processors for acceptance of resistant varieties
- Communicate to farmers about technical possibilities (toolbox) and get feed back on possibilities for implementation
- Local DSS
 - Targeting biologicals MOA
 - Interaction with cultivars
- Breeders stacking contact on resistance management
 - Transparency on R genes used
- Support new genetic techniques

F2F

■ DSS to ICM DSS

- Varieties
- MoA elicitor
- MoA micro-organism
- MoA other biologicals
- Quality of DSS is determined with source information
- Output knowledge based
- Programming is not the problem

Biologicals

- Combine EuroBlight and BioBlight
- Biologicals
 - Availability
 - Knowledge on best application
- Comparison could be complicated
- Better focus on incorporation in crop protection strategies (biologicals and chemicals).
- Optimize growing potatoes with ICM tools

EuroBlight table

- None decimal code for crop protection should be removed (York)
- Ratings on product t oin EU 27
 - Remove from table
 - Have 2 tables selection tool
 - Keep it as it is
 - Companies can request removal
 - How does it affect on farm level
 - EU active list on the actual status
- Who uses the table and what information on the table is useful
- Prepare document on EuroBlight table publication

Control strategy 7 presentations

- Karen Sullam: Alternatives to copper
- Mout de Vrieze: Two step approach for selecting effective micro-organism
- Simon Schiwiek: Identification of biocompounds in *Solanum* spp
- Isaac Abuley: Use of blight manager in Denmark
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Program 2022-05-11

- Potato late blight
 - Foliar blight; 3 products added
 - Tuber blight; 2 products added
- Early blight; new set-up of the table
- BioBlight; first experiments no table
- Discussion

<https://agro.au.dk/forskning/internationale-platforme/euroblight/control-strategies/late-blight-fungicide-table>

7 presentations

- Tjaart Hofman: sensitivity of *P. infestans* to bentiavalicarb
- Martin Teichman: New Alternaria fungicide
- Bert Evenhuis: Update on the EuroBlight table

P. infestans



Leaf blight update



<https://agro.au.dk/forskning/internationale-platforme/euroblight/control-strategies/late-blight-fungicide-table/>

Product (Dose rate [litre or kg/ha])	Leaf blight
copper	
dithiocarbamates (2.0) ¹	2.0
chlorothalonil	
cyazofamid (0.5)	3.8
fluazinam (0.4)	2.9
zoxamide + mancozeb (1.8)	2.8
amisulbrom + mancozeb (0.5+2.0)	4.5
ametotradin + mancozeb (2.5)	3.7
fluazinam + azoxystrobin (0.5)	3.6
famoxadone + cymoxanil	
(zoxamide + mancozeb) + cymoxanil (1.8+0.2)	3.4
mandipropamid (0.6)	4.0
mandipropamid + difenoconazole (0.6)	4.0
benthiavalcarb (0.5)	4.2
benthiavalcarb + mancozeb (2.0)	3.7
cymoxanil + metiram	
cymoxanil + copper	
cymoxanil + mancozeb	
dimethomorph + mancozeb (2.4)	3.0
dimethomorph + fluazinam (1.0)	3.7
fenamidone + mancozeb (1.5)	2.6
(zoxamide + cymoxanil) + fluazinam (0.45+0.4)	4.0
(zoxamide + dimethomorph) + fluazinam (1.0+0.4)	4.2
mandipropamid + cymoxanil (0.6)	4.4
(pyraclostrobin + dimethomorph) + adjuvant (2.5+1.0)	4.0 ⁷
benalaxyl-M + mancozeb ²	3.0
metalaxyl-M + mancozeb ²	
metalaxyl-M + fluazinam ²	
propamocarb + cymoxanil + cyazofamid ((2.0)+0.5)	
propamocarb + cymoxanil (2.0)	
propamocarb-HCl + fenamidone (2.0)	2.5
propamocarb-HCl + fluopicolide (1.6)	3.8
oxathiapiprolin (0.15)	
oxathiapiprolin + famoxadone (0.5)	4.9
oxathiapiprolin + amisulbrom (0.15+0.3)	4.9



Alternative for mancozeb as a reference

- Could the UTC be an alternative?
 - Is in all trials
 - Rating for UTC would be 0
 - Could be a scaling problem
- Carry on with mancozeb as long as possible was suggested. Is this feasible?
- Preferably the new reference is a contact fungicide and it best be one with an efficacy comparable to mancozeb or less
- Also it would be preferred when already in trials
- We had a questionnaire in which almost all products were mentioned

Trials 2021

- A multisite was chosen as an additional reference
- Three experiments were carried out in 2021
- The performance was less than mancozeb
- We have no information on the stability of the performance
- One performance was close to mancozeb
- At two sites it was much less

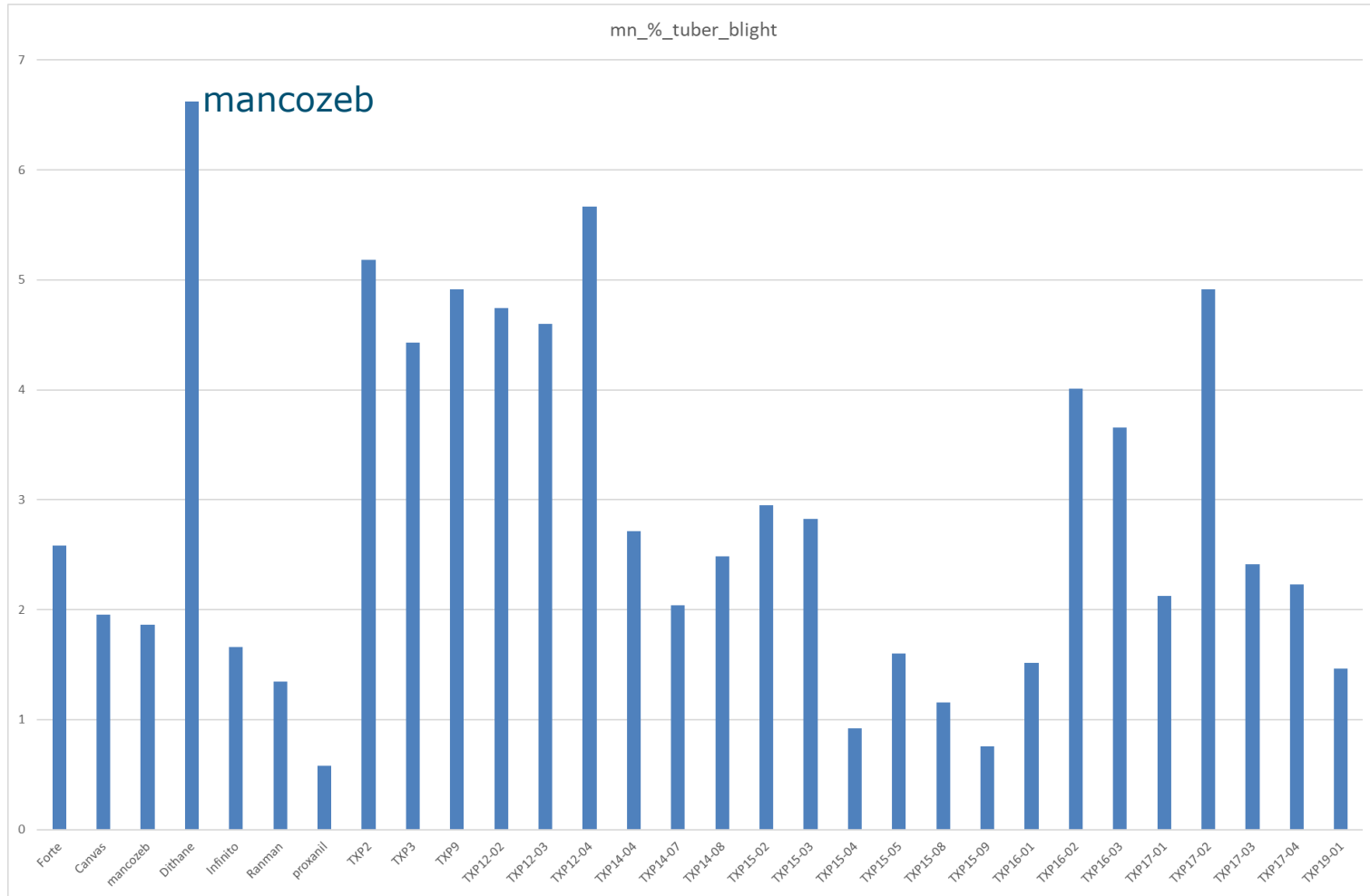
2021

- Three experiments was not enough to get a reliable comparison of the multisite to mancozeb
- The fungicide chosen gave a scaling problem based on these 3 experiments
- From a scientific point of view keeping mancozeb as a reference would be the best choice. That allows the best comparison between fungicides tested in various experiments
- In conclusion in 2022 mancozeb will be the reference for the foliar EuroBlight experiment

Tuber blight

- The reference was mancozeb rating 0.0
- UTC is not a suitable reference
- We have looked at other products which already have been tested in the trials
- It should be a product with almost no tuber blight control

Tuber blight incidence



Tuber blight

- Since there was no tuber blight experiment in 2021, a potential reference was not tested
- In 2022 3 TB experiments are planned with mancozeb as a reference
- Question which fungicide to include as a potential new reference?
- Or do we choose for the scientific approach?

Alternaria

EU Table last update 4
December 2020



Table based on experiments

Plant Protection Product	Efficacy rating ^{1,2}	
	14 day interval	7 day interval
Products specific for early blight control		
Spray interval 14 days		
(fluopyram + prothioconazole) 0.5	4.5	
(difenoconazole + mandipropamid) 0.6	3.3	
difenoconazole 0.5	3.3	3.9
Products with side efficacy against early blight³		
Spray interval 7 days		
mancozeb 2.0	2.3	3.2
(zoxamide + mancozeb) 1.8		3.5
(fenamidone ³ + propamocarb) 2.0		3.0
(fluazinam + azoxystrobin ³) 0.5		3.6
(dimethomorph + mancozeb) 2.0		3.5

<https://agro.au.dk/forskning/internationale-platforme/euroblight/alternaria/early-blight-fungicide-table/early-blight-fungicide-table/>



Characteristics

- Reference: the untreated control rated 0
- Voluntary reference: mancozeb
- NEW: last assessment 3-4 weeks after last application
- A successful trial need $>10\%$ foliar infection in the worst treatment
 - 1 trial not valid
- Inoculation permitted with kernels
- Misting permitted
- Control strategies removed from the table

Early blight table

- Last update
 - Efficacy of fungicides for the control of early blight caused by *Alternaria solani* and *Alternaria alternata*. Updated 4 December 2020: Bert Evenhuis (WUR), Peter Hartvig (AU), Hans Hausladen (TUM)
- Possible updates in 2021 expected
- In 2021 three trials D, Dk and NL
- In 2022 two trials with 1 accession Dk & NL

Organic or BioBlight



Integrated crop management

■ Control potato late blight

- Take out primary inoculum sources
- Grow robust cultivars
- DSS
- Biological Control
- Chemical control



Characteristics organic or BioBlight

- Reference: untreated control rated 0 of maximum 5
- First experiment in 2019 NL
- No table yet
 - What would a table look like?
- UTC allotted to the trial
- First idea was to look at the ability of the biocontrol agents to postpone the onset of the PLB epidemic rather than the StAUDPC
 - However this proved to be difficult therefore StAUDPC is probably better

Characteristics organic or BioBlight

- Choose a more robust cultivar, but not resistant
- No artificial inoculation but natural influx
- Sprinklers and spreader rows optional
- 2019-2020 weekly spray
 - Major disadvantage concerning m.o.a.
 - Not targeted at infection risks
- Propose: spray based on infection risk & m.o.a. to ensure the best possible result
- NL in 2021 high disease pressure meant about a weekly spray
- Until now no coordinated experiments in various countries

In 2021 start workgroup on Bio(Euro)Blight ?

- How to lay-out trials
- Mode of actions
- Timing / DSS
- Number of applications
- Growth stage
- How to interpret the results?
- How to publish the results for farmers and advisors to use?

Control

In the future



Future

- If we take into account the availability of ai's on the EU27 market, in next few years we will go from 36 entries in the table to 16.
 - The table is European
- Mancozeb and famoxadone have disappeared in the EU27 others are about to do so.
- Is that something we should take into account in the table? (eg a selection tool allowing selection of registered ai's eg in Europe)
 - Or do we refer to legislation in the various countries

Future

- What is the effect of significantly changing Pi populations on the efficacy of the fungicides to control potato late blight?
 - Fixed ratings
- Is it harder now to get a good rating than in the past?
 - Should be (partly) accounted for by the reference mancozeb
- We have already been discussing the life span of the ratings, can we come to an advice for an updated protocol?

Discussion

Thank you for your
attention

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