




European Food Safety Authority

Management practices in protected crop systems

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Pesticide Emissions from Protected Crop Systems (PROTEA),
17-19 November, Parma



outline

- Context
- Where does emission happen and how?
- What can be managed?
- Practices to reduce emission
 - Through air
 - Through water
- Conclusion

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context

- Yesterday: greenhouse structures (Pardossi)
- Yesterday/today: emission routes (van der Linden)
- Today: properties of the active substances (Magrans)

➤ Present topic: which factors can be managed to reduce emissions and how?

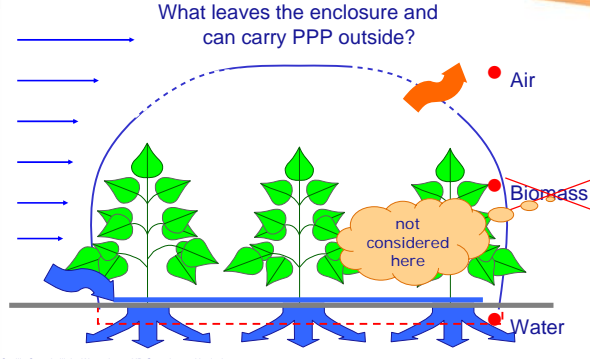
and how do we account for the properties of the active substance?

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Where does emission happen?

What leaves the enclosure and can carry PPP outside?




● Air

● Biomass

● Water

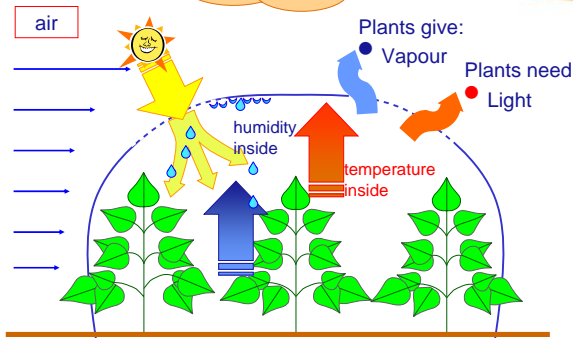
not considered here

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How?

aren't protected cultivation systems "closed"?



air

Plants give: Vapour

Plants need: Light

humidity inside

temperature inside

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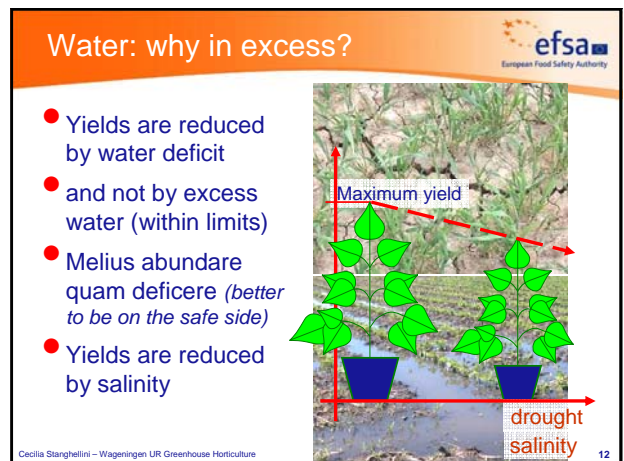
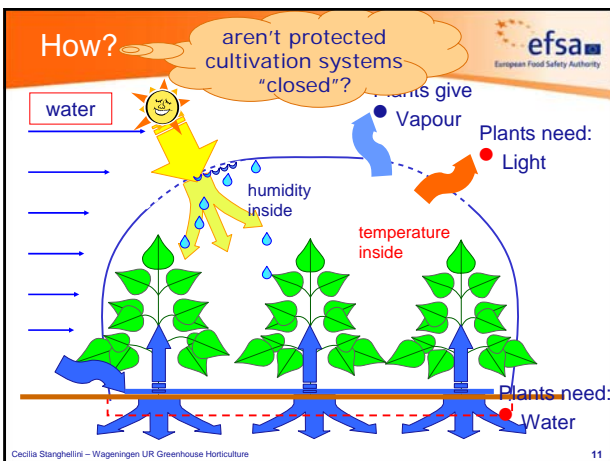
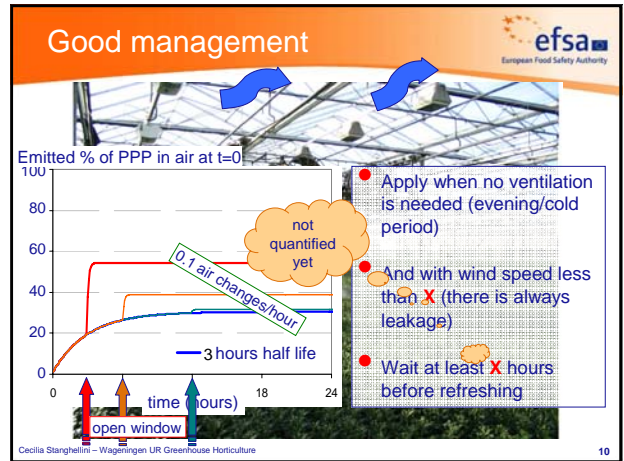
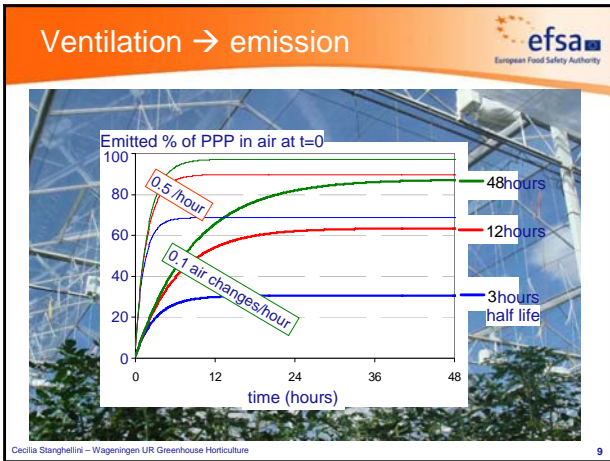
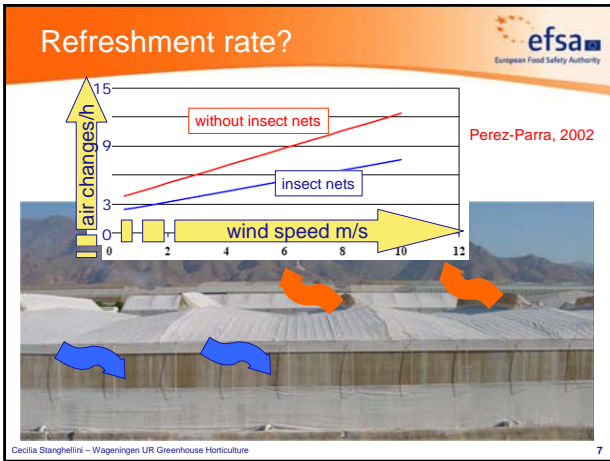


Ventilation requirement



temperature

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Need to wash out salts...

any PPP present is washed out as well

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What about closed systems?

Minerals

Drain

...also in "closed" systems

some 70% of irrigation

any PPP present is washed out as well

refill

Transpiration

Irrigation

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Need for excess water → emission

concentration in root zone

salty water

better water

even better water

flushing

time (days)

any PPP present is washed out as well

crop water uptake

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Good management


- Separate irrigation and application of PPP
- Reduce excess irrigation
 - Irrigation technique (drip)
 - Irrigation strategy (crop water requirement)
 - Collect and re-use drain water
- Reduce **need** for excess irrigation
 - Irrigation water of good quality
- When this is impossible apply a PPP **well in advance** of expected flushing event
- This holds as well for spray/fumigants that may deposit on the soil/root zone

Depends on the "half life" of the PPP

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Provocative statements 

- “Persistent” substances will eventually get out of any greenhouse
- There is scope for good management for “short half life” substances
- We haven’t quantified yet what is “short” enough in this context
- Any chance of limiting air-carried emissions rests on the presence of regulated openings
- Closed substrate systems fed with good-quality irrigation water have the smallest chance of water-carried emissions

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Thanks !

