Current best practices to minimize the use of pesticides and residues risk on fruits in Northern Germany

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1. Basic tools to reduce pesticide residues

Good Agricultural Practice: avoiding unintentional pesticide residues

- avoid misapplications
- drift reduction
- avoid carryover

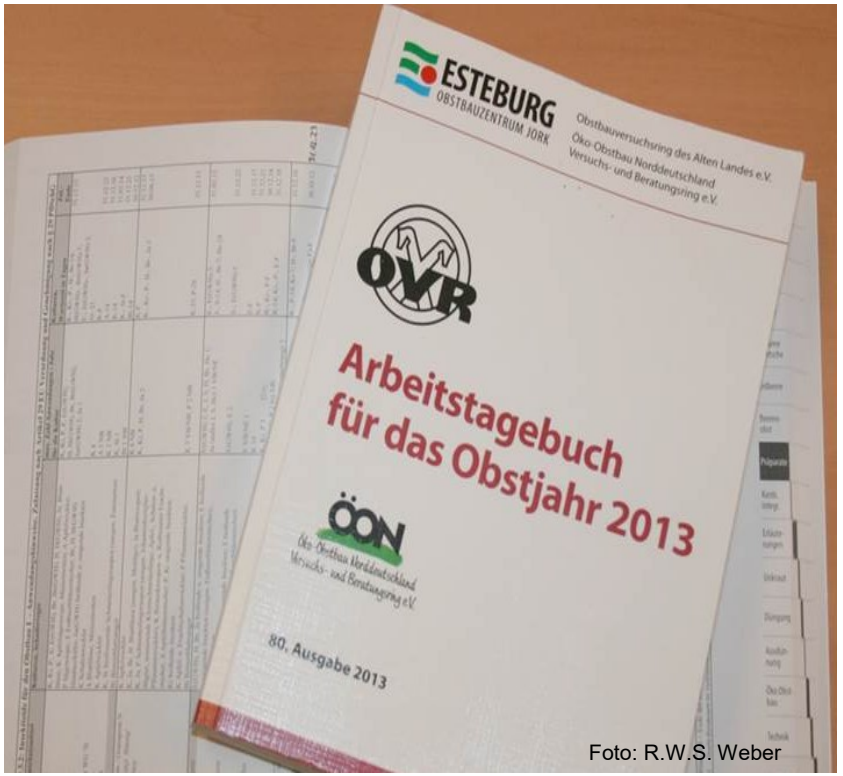
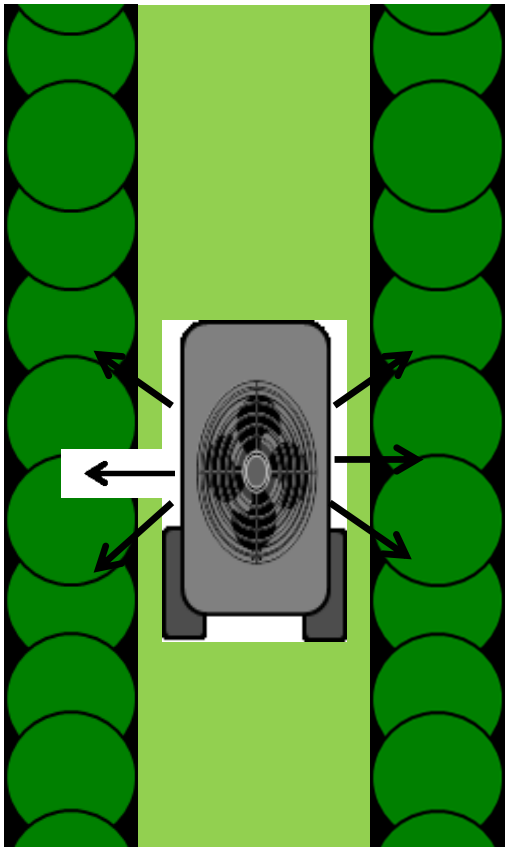


Foto: R.W.S. Weber

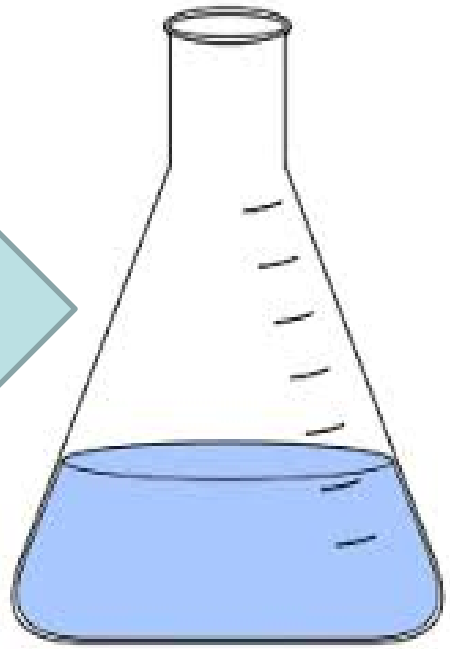

photo: J.-P. Ralfs, 2015

2. Pesticide residues reduction in the orchard - targeted application

Avoiding pesticide residues due to waiting time



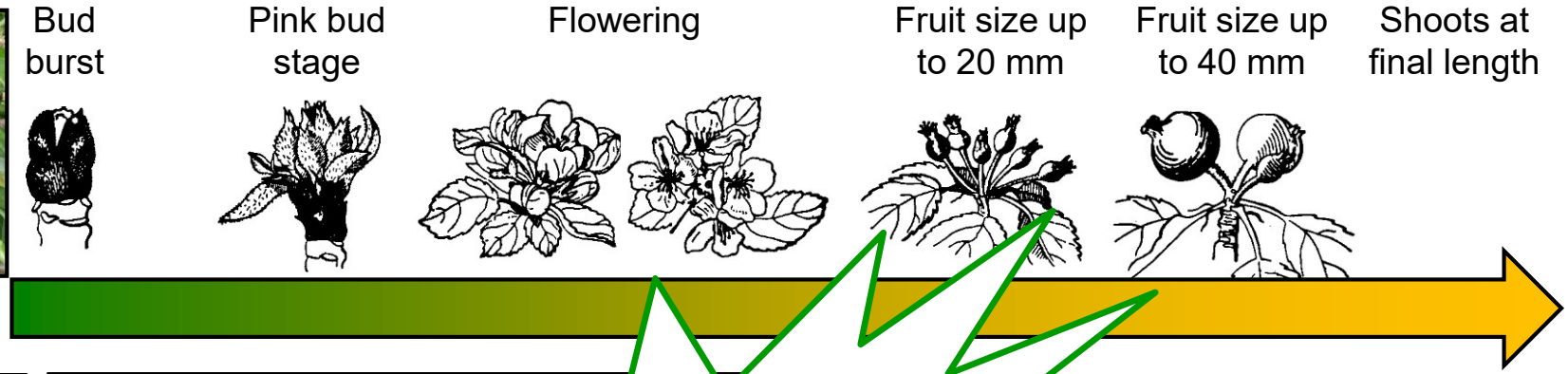
7707 records
(apples & pears)



Application date

Residue level [mg kg^{-1}]

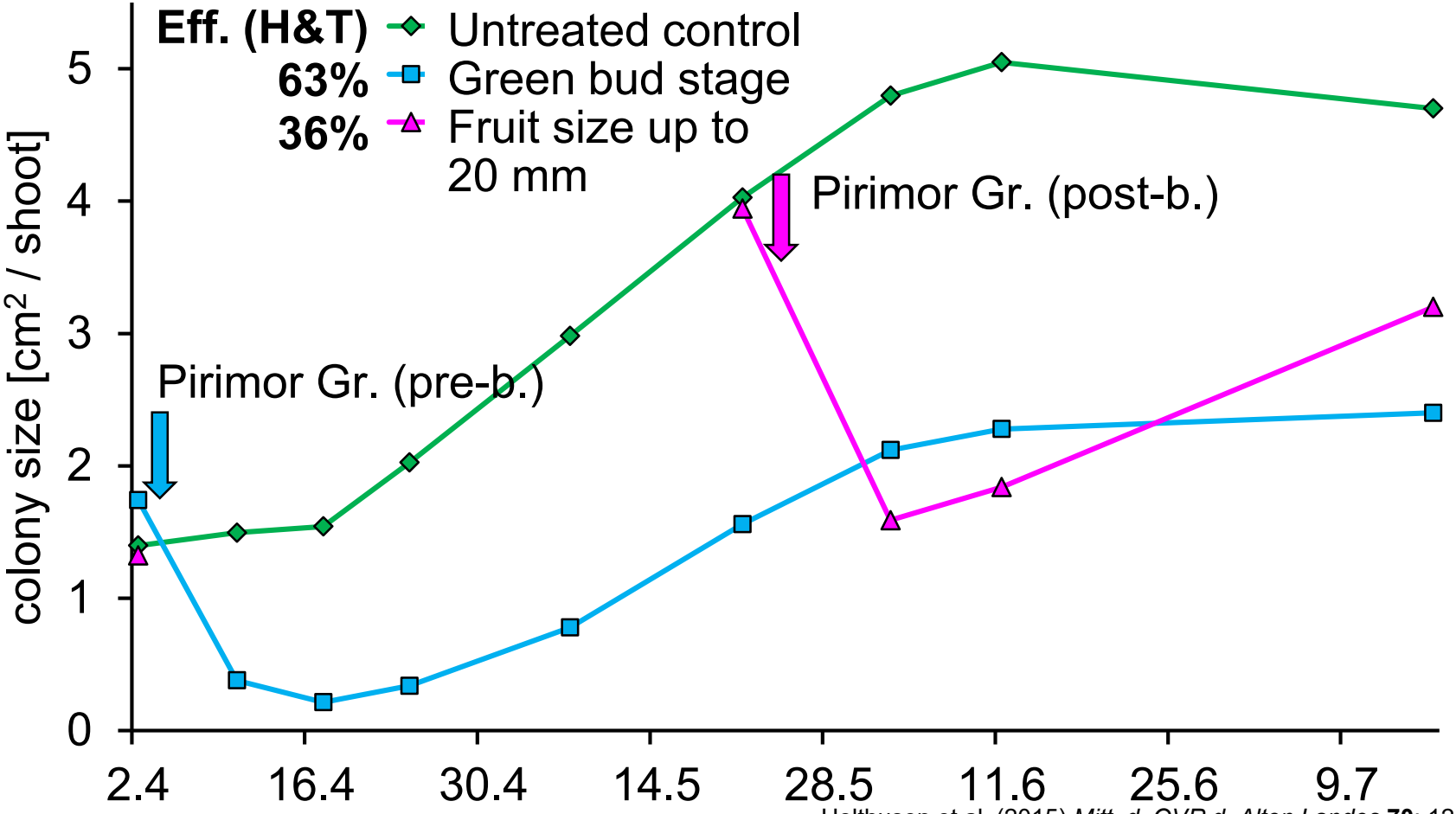
Example: residue-free powdery mildew control



Pruning	Large area and repeated				
Sulphur	1-2x (>12°C)				2-4x (at 18°C)
Systhane 20 EW		1x		max.3x (WP: 85 d)	
Luna Experience		1x		P: 85 d)	
Consist Plus					
Topas					max. 3x (WP: 45 d)

residue free

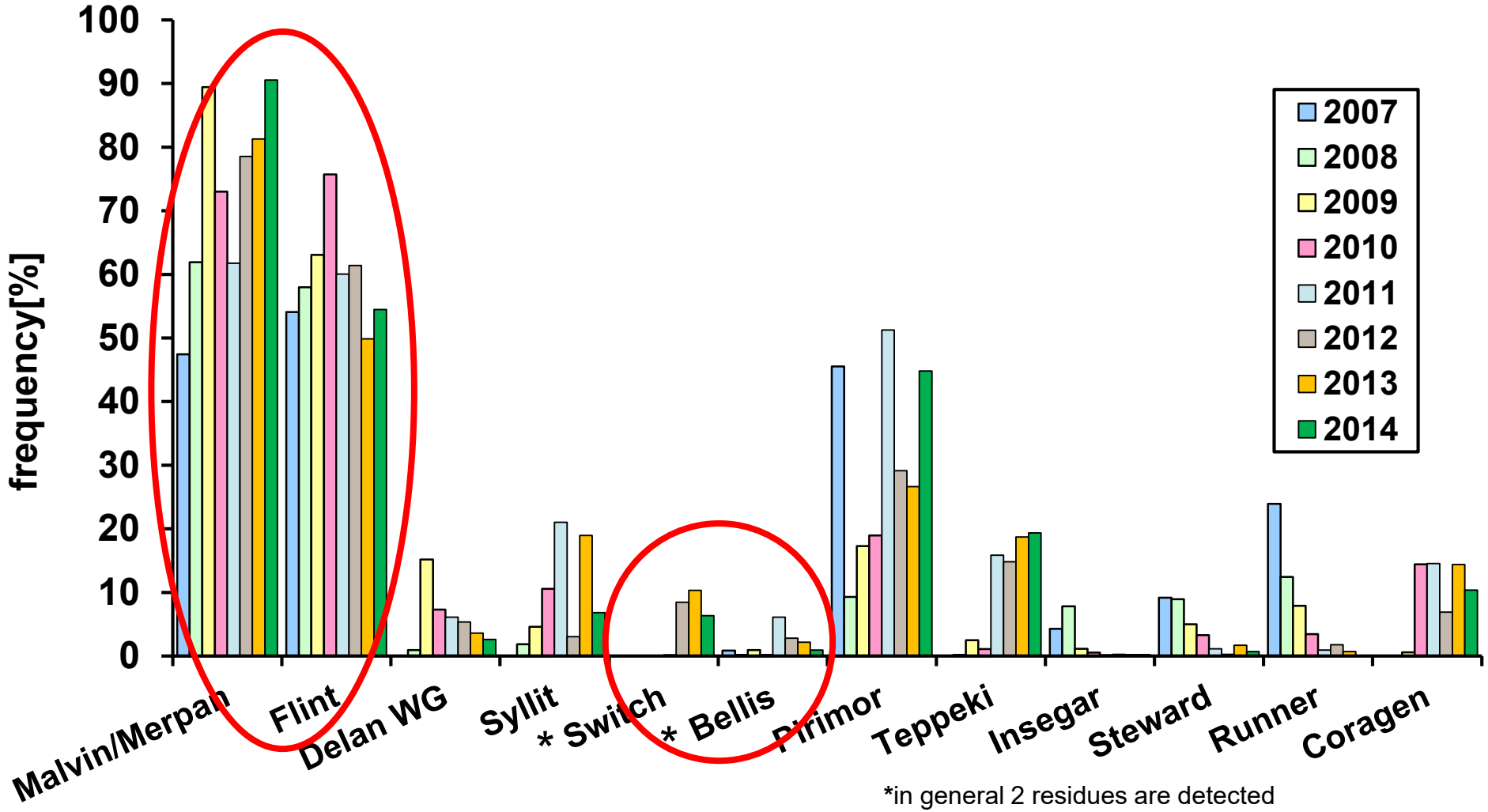
Wooly apple aphid control with Pirimor Gr. – pre-blossom vs. post-blossom treatment



Holthusen et al. (2015) *Mitt. d. OVR d. Alten Landes* **70**: 124-131

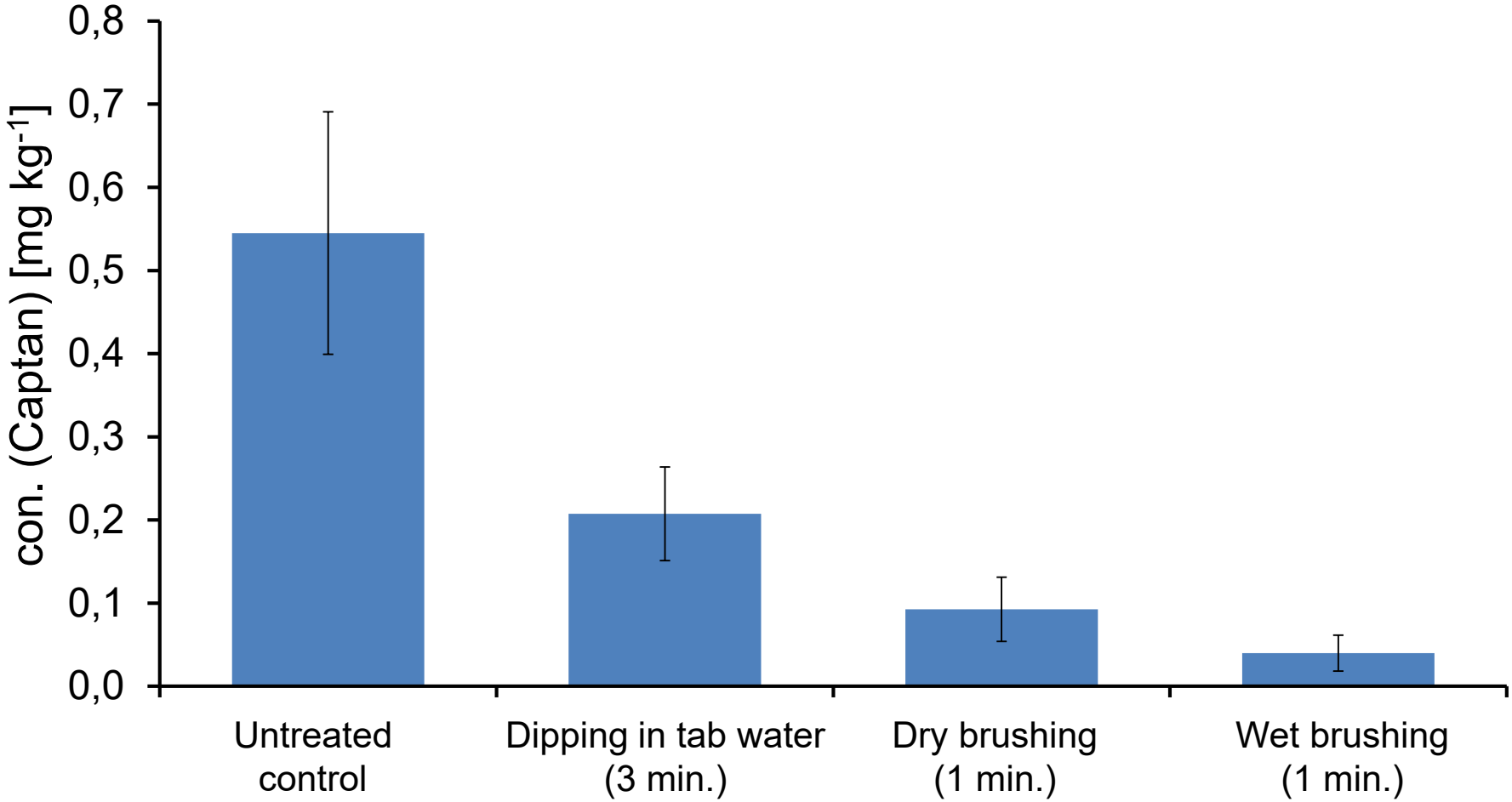
3. Reducing pesticide residues post-harvest

Storage rot control is responsible for most PPP residues



*in general 2 residues are detected

Removal of captan from apples after 2 months of cold storage

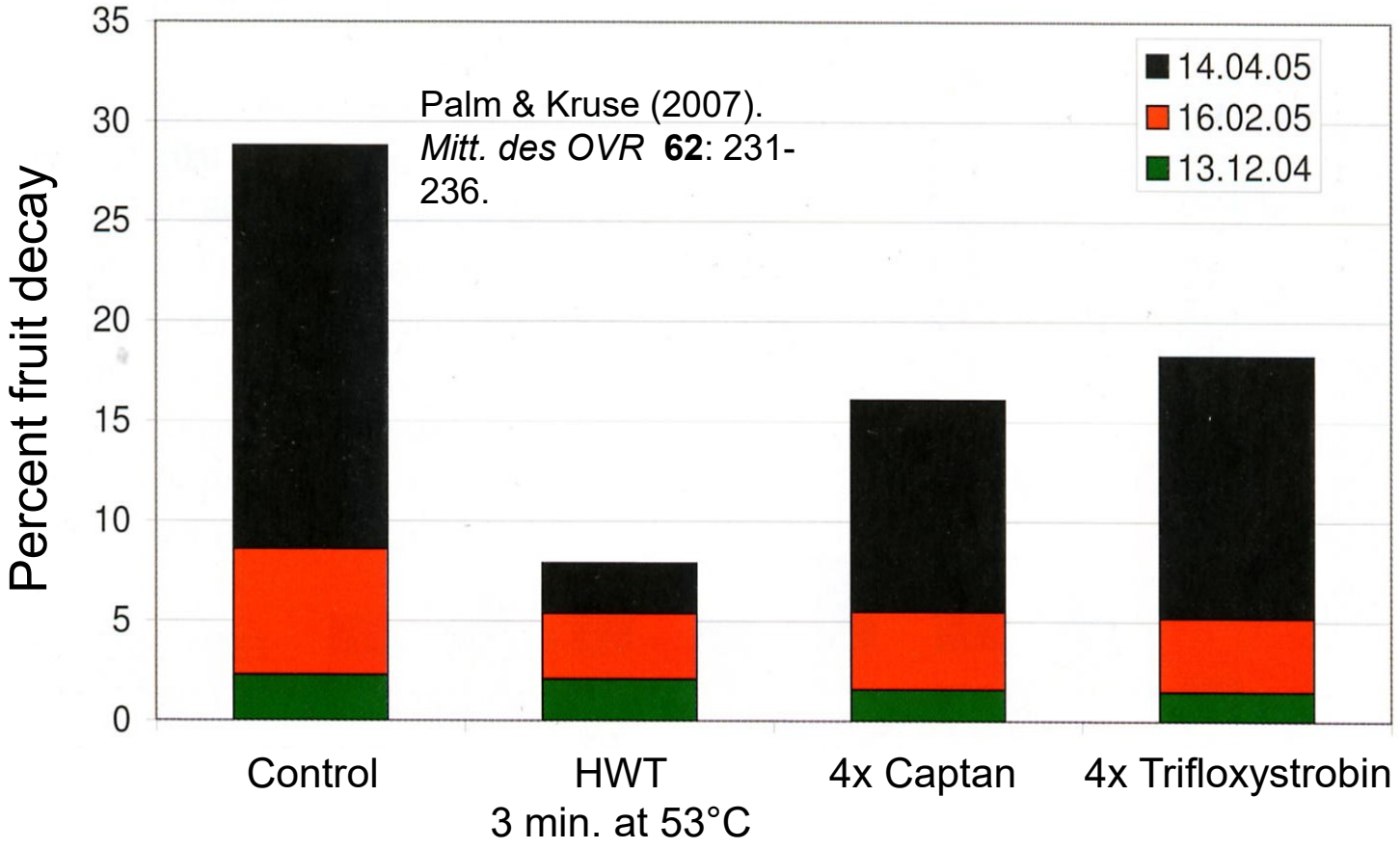


Holthusen (2014) *Mitt. d. OVR d. Alten Landes* **69**: 121-130 (modified)

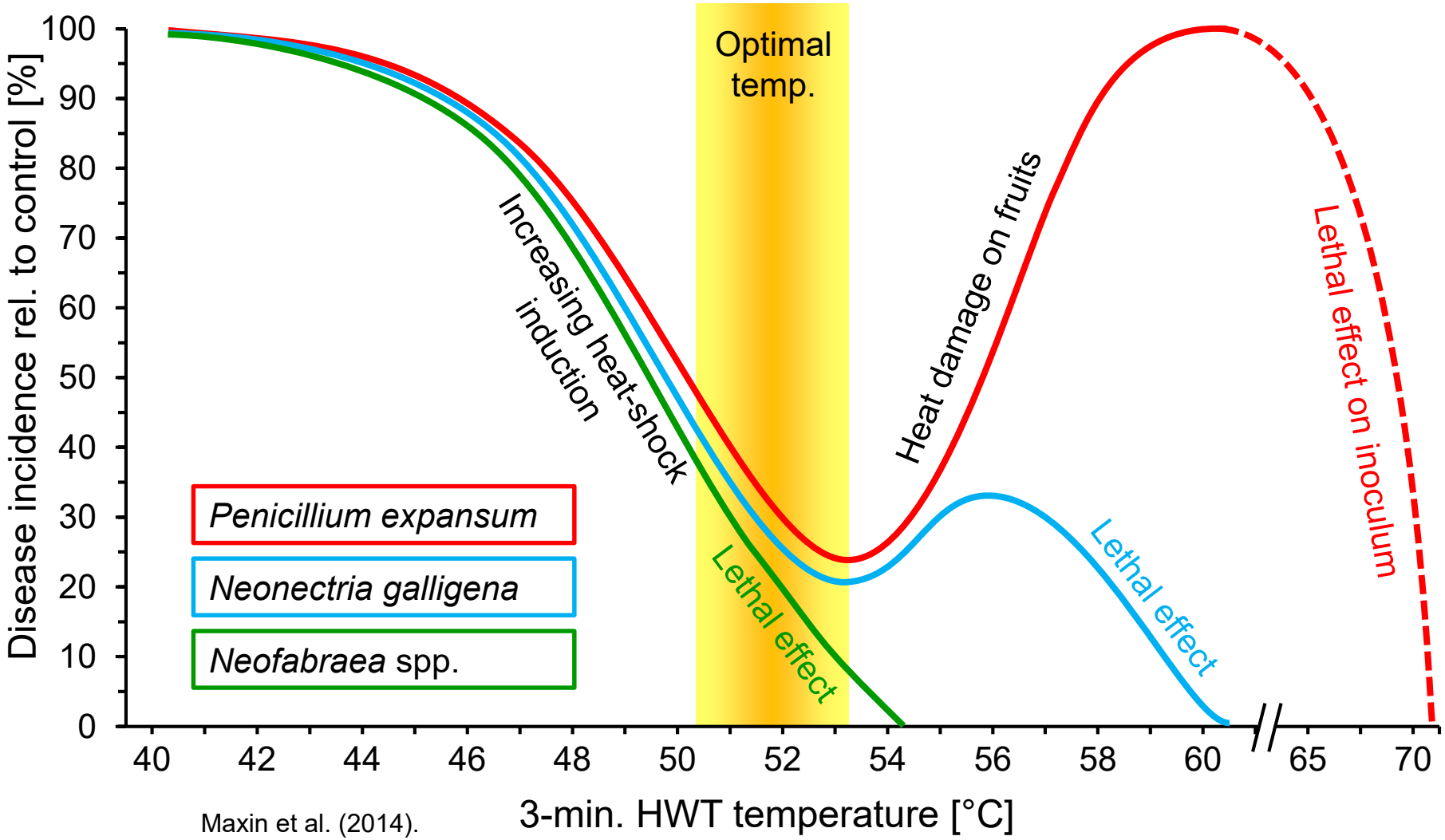
4. Future: less pesticide residues by using hot water treatment

A brief history of HWT

- Burchill (1964): 10 min. at 40 °C against *Neofabraea* spp.
- Current: 1-3 min. at 49-53 °C against *Neofabraea* spp.



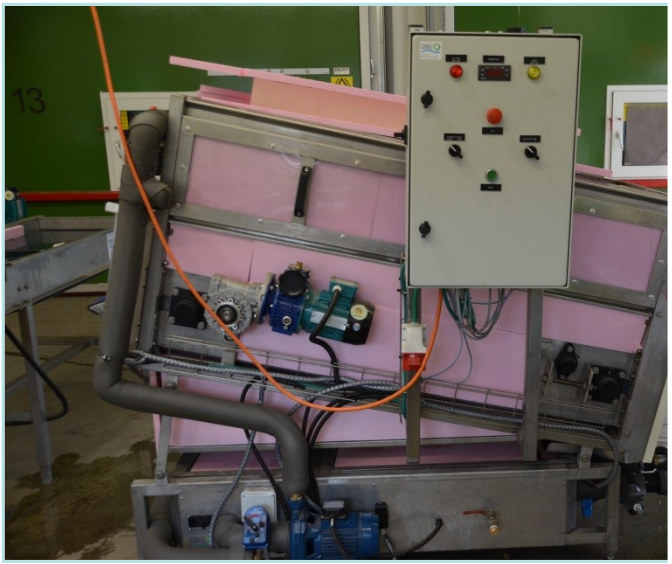
Effects of hot-water treatment (HWT) against different storage-rot fungi



Maxin et al. (2014).
Erw.-Obstb. **56**: 25-34

New approach: Short-HWT

Short-HWT machine is used in Israel for HWRB (hot-water rinsing and brushing) of citrus fruit

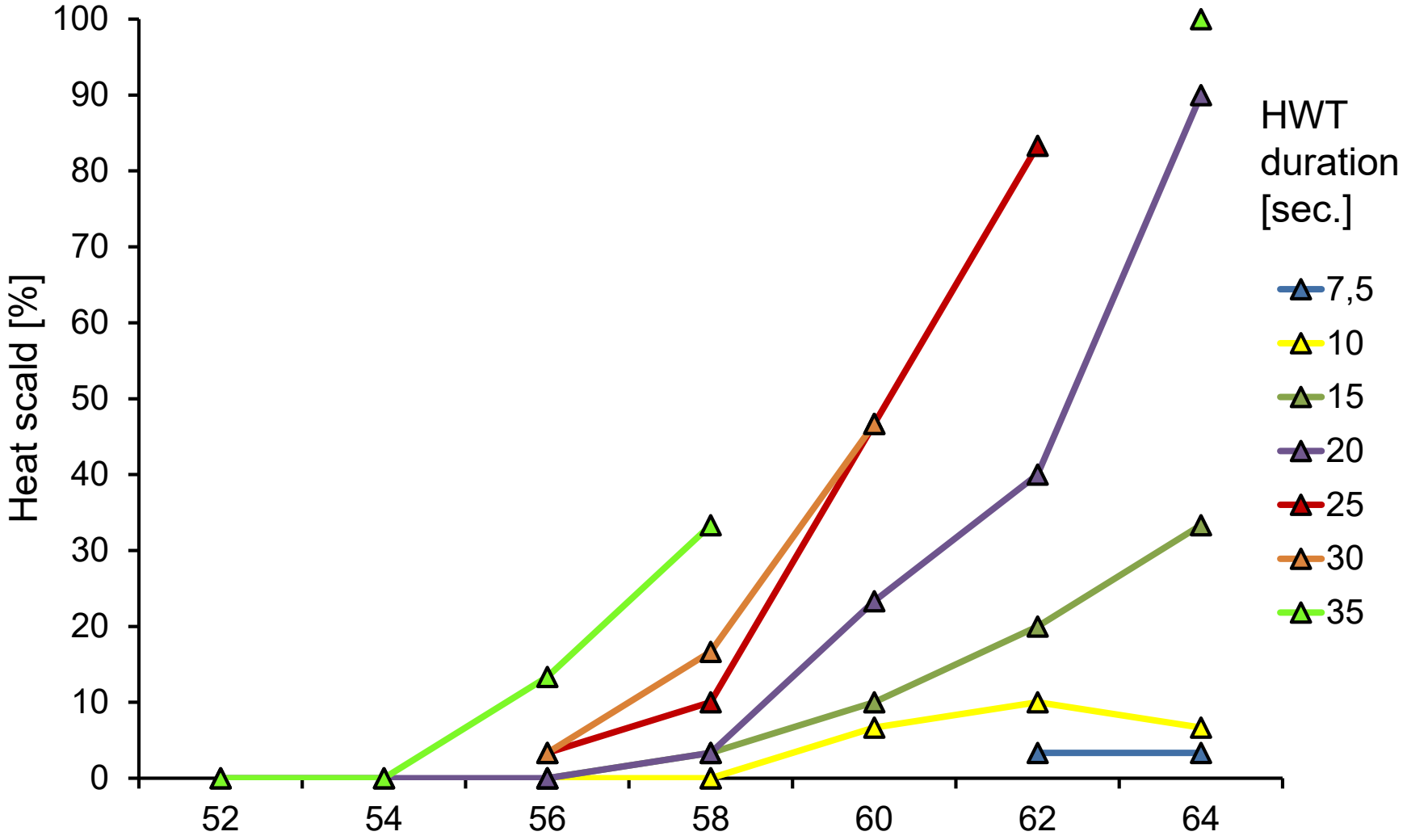


Short-HWT machine

Heat storage and heat exchangers

Oil heater

Heat scald in ‘Golden Delicious’



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