

Sea buckthorn Fruit Fly (*Rhagoletis batava* Her.) – Monitoring data for determination of control measures with PPP

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Important questions

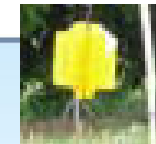
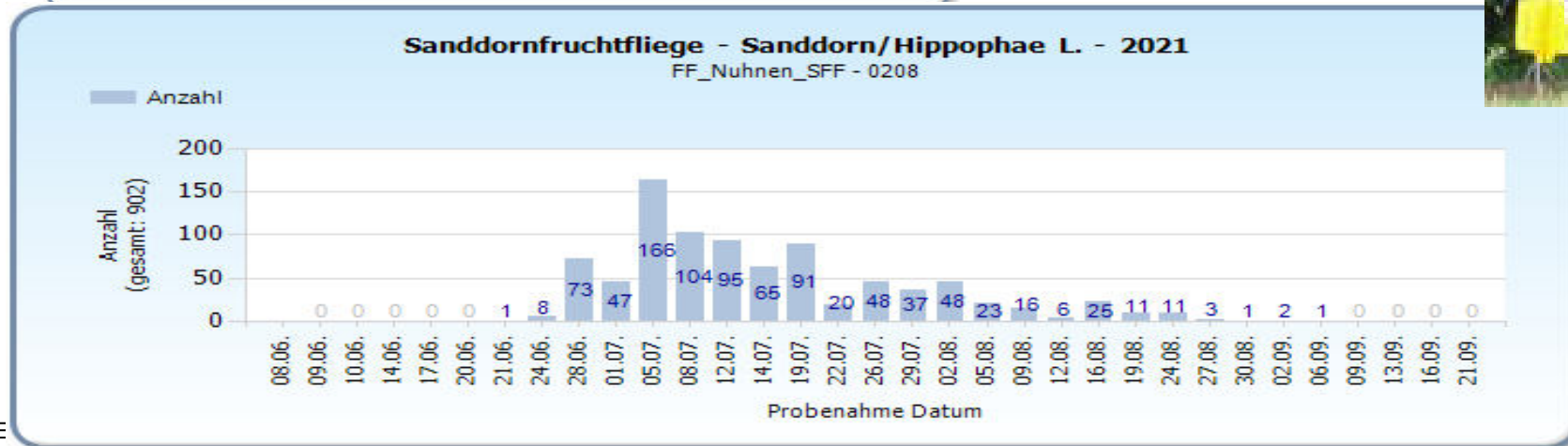
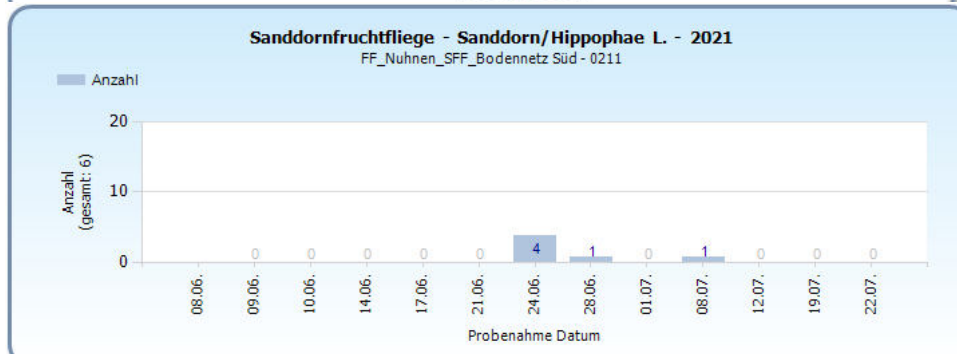
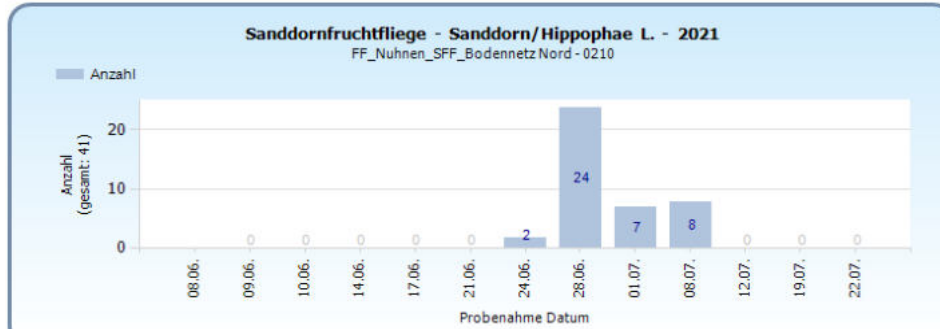
- When does oviposition start?
- How long does the main oviposition continue?
- How long does oviposition continue?
- What is the influence of fruit development?
- Differences on varieties?
- What is an acceptable value of infestation for the farmers (economic threshold)?
- On which part of shrubs do we have to determine this value (whole (bottom, centre, top), only on the part for harvest)?
- When setting control measures with plant protection products (PPP)?

Monitoring of hatching time with ground nets and traps



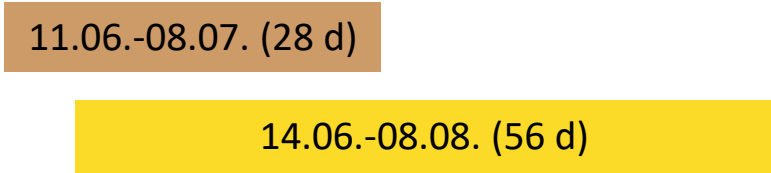
Ground nets vs. trap catches

Frankfurt (Oder)-Nuhnen

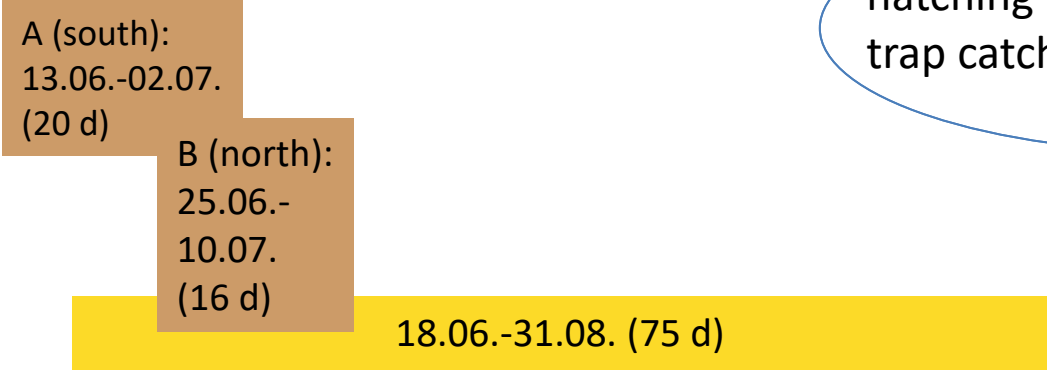


Hatching time vs. trap catching time Frankfurt (Oder)-Nuhnen

2019



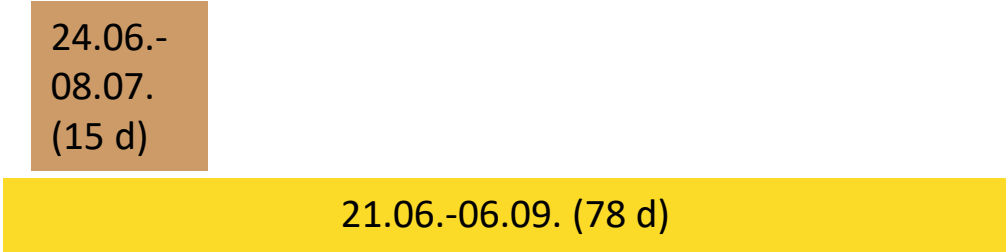
2020



hatching period: 2-4 weeks

 trap catching period: 8-11 weeks

2021



Juni	Juli	August	September
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Influencing factors on catching results

topographical conditions
(soil covered/ uncovered)

level of fly population
(level of infestation in
last year, fitness/
mortality of puppae,
parasitoids)

weather conditions
(sunshine, temperature,
wind, rain)



control measures against
adults

attractivity of traps
(position, colour, lure)

plants per ha, amount of
fruits, colour/ vigour of
fruits

Trial with exclusion netting 2020

Frankfurt (Oder)-Nuhnen, ‚Leikora‘ + ‚Habego‘,
2 branches weekly into nets (02.07.-13.08.2020)



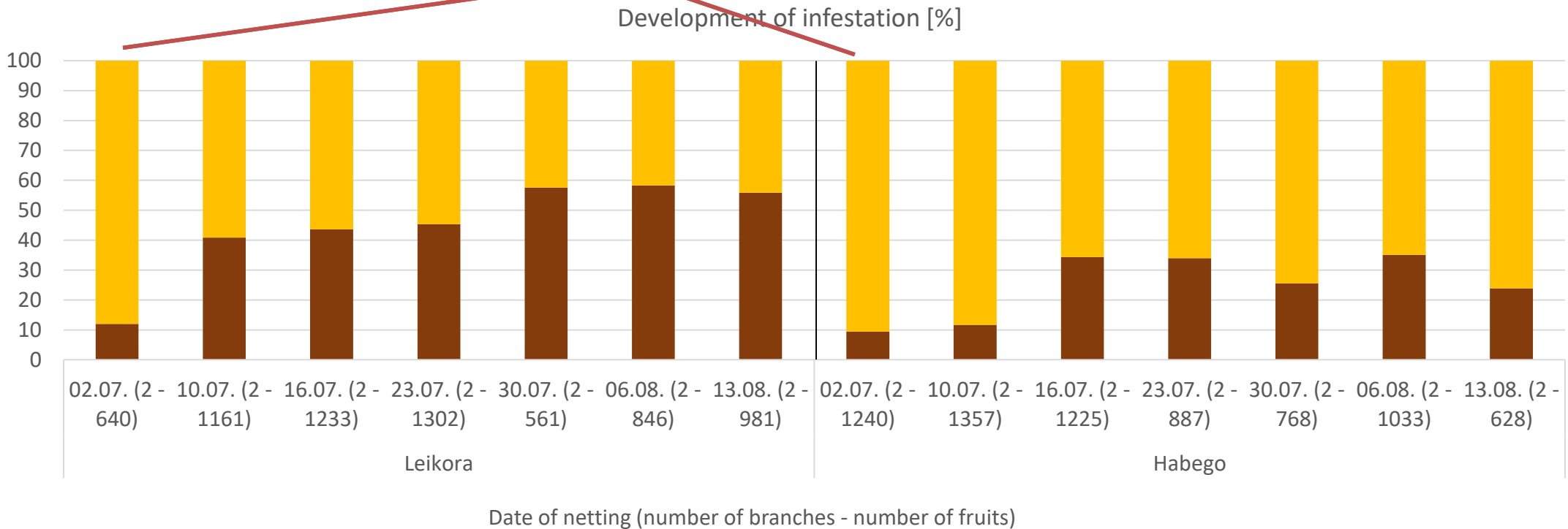
Trial with exclusion netting 2020

Frankfurt (Oder)-Nuhnen, ‚Habego‘ - results



Trial with exclusion netting 2020

Frankfurt (Oder)-Nuhnen, ‚Leikora‘ + ‚Habego‘ - results



Trial with exclusion netting 2021

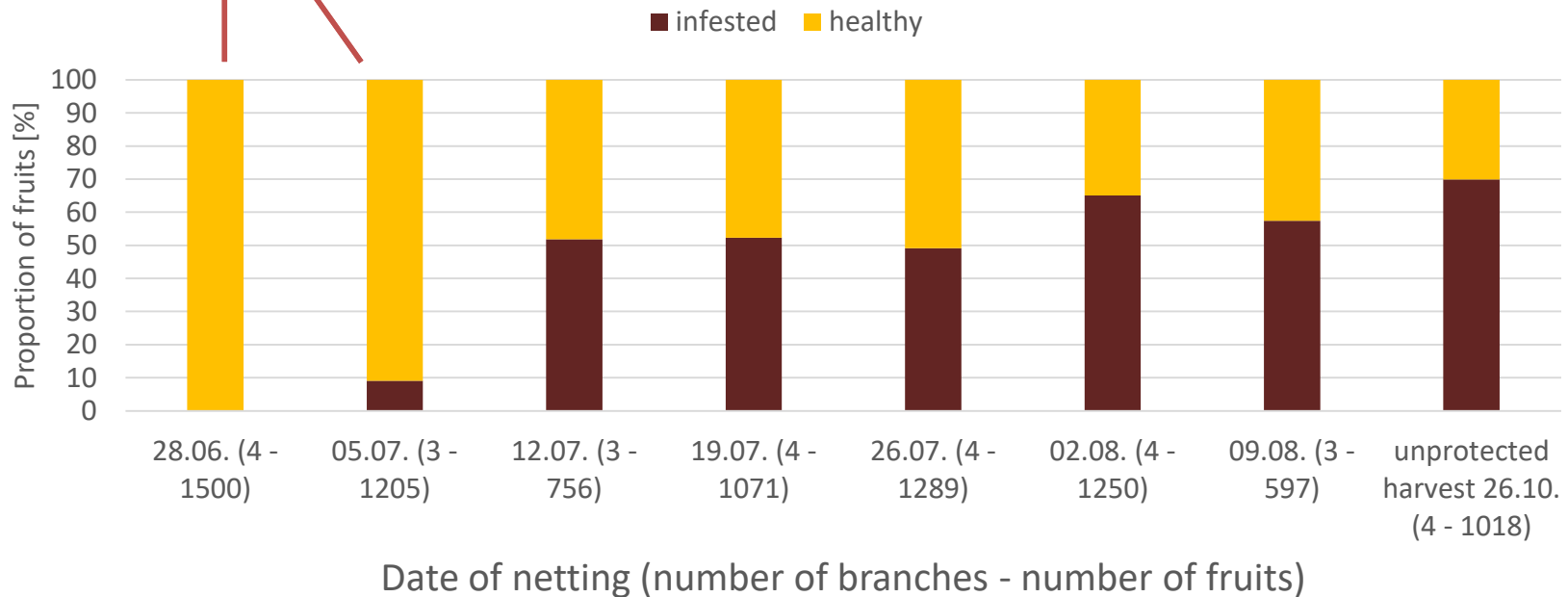
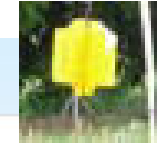
Frankfurt (Oder)-Nuhnen, different varieties, untreated



weekly from 28.06.-09.08.2021 branches with fruits into nets

Trial with exclusion netting 2021

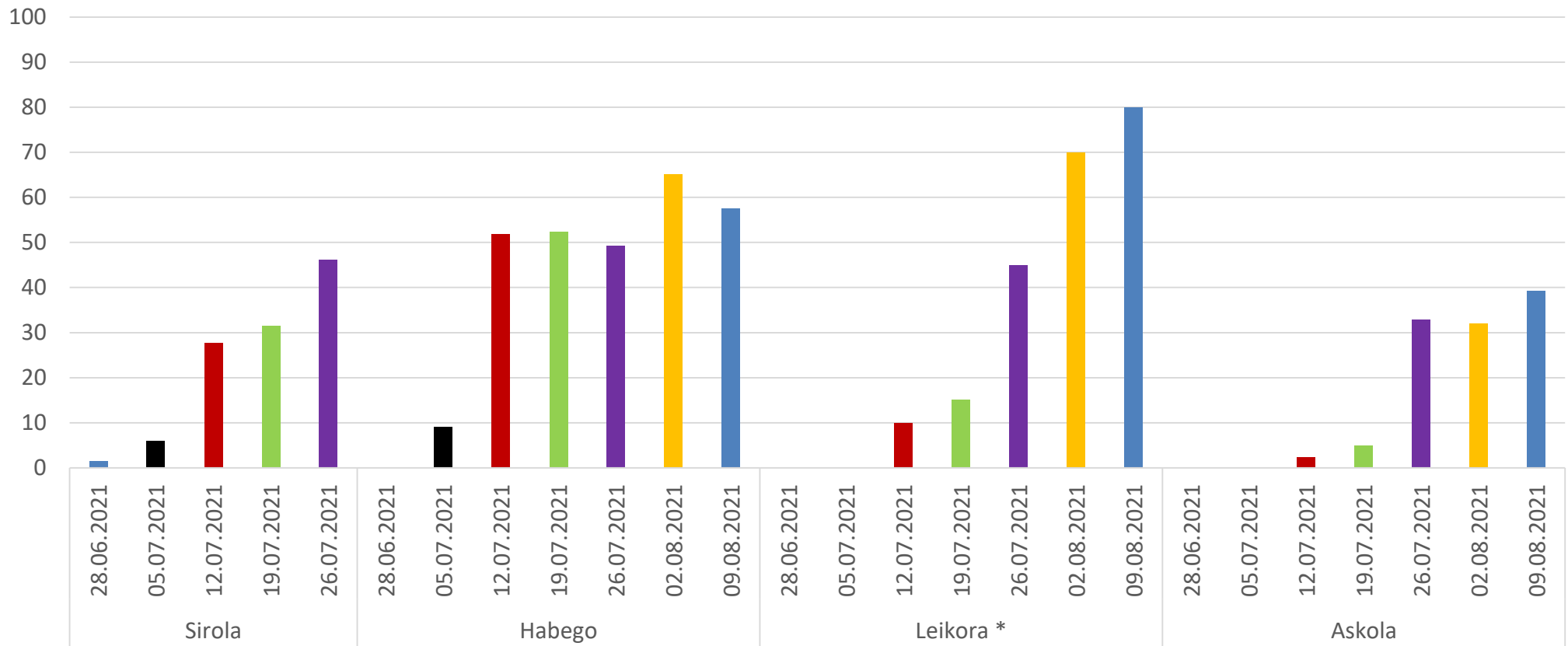
Frankfurt (Oder)-Nuhnen, 'Habego', untreated



Trial with exclusion netting 2021 – Development of infestation on different varieties

Frankfurt (Oder)-Nuhnen, ‚Sirola‘, ‚Habego‘, ‚Leikora‘, ‚Askola‘, untreated

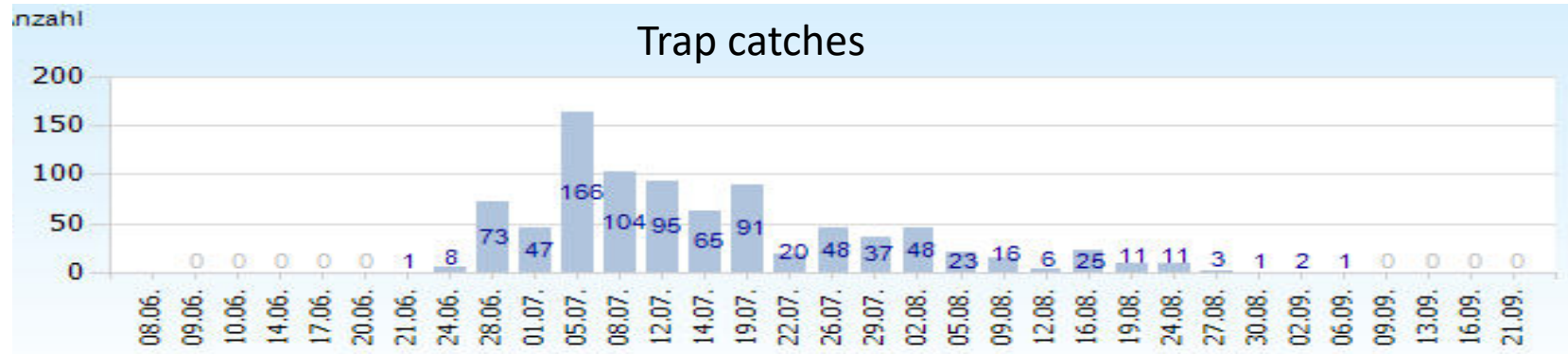
Development of infestation [%]



* estimated values

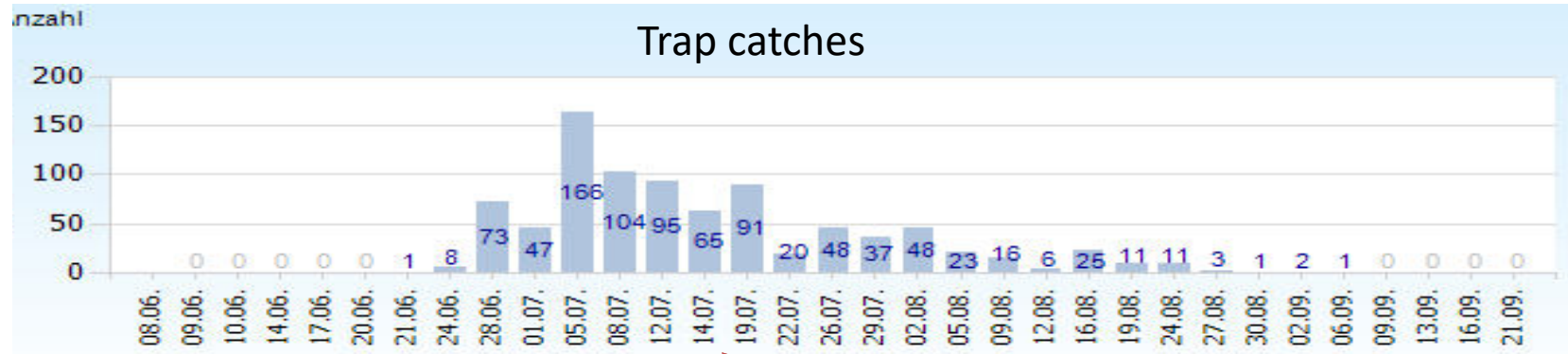
Trial with exclusion netting 2021 – Development of infestation on different varieties

Frankfurt (Oder)-Nuhnen, ‚Sirola‘, ‚Habego‘, ‚Leikora‘, ‚Askola‘, untreated



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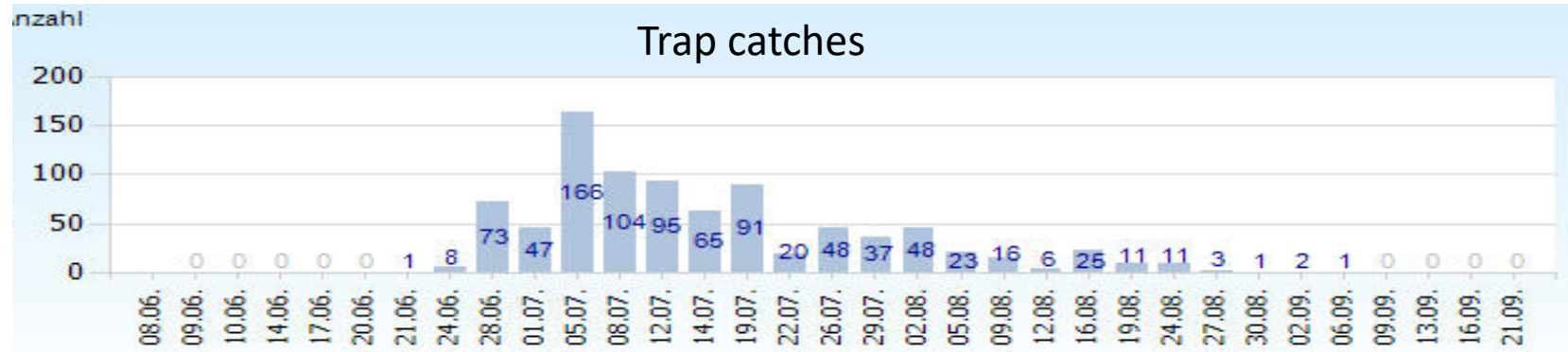
Infestation [%]: 15 52,3 5 31,4

45 49,2 32,8 46,1

70 65,1 31,9

Trial with exclusion netting 2021 – Development of infestation on different varieties

Frankfurt (Oder)-Nuhnen, ‚Sirola‘, ‚Habego‘, ‚Leikora‘, ‚Askola‘, untreated



Vulnerability of varieties



Sirola > Frugana/ Leikora > Habego >> Askola >>> Hergo/ seedlings



**big berries, with good vigour,
early coloured, on top of
shrubs are preferred for
oviposition (mostly)**



Active substances/ PPP – Which ones are effective against SFF?

Active substance group	Active substance	Product name	Authorisation in IP	Authorisation in Eco	Notes	MRL (mg/kg) (status: 19.11.21)
Neonicotinoids	Acetamiprid	Mospilan SG	yes, using side effect, 2x 0,25 l/ha, Preharvest Interval: 7 days	no		2,0
Spinosyns	Spinosad	SpinTor	permission possible, max. 2x 0,2 l/ha, Preharvest Interval: 3 days	permission possible, votum of associations?	good efficacy, but expensive, harmful to bees	1,5
Diamides	Cyantraniliprole	Exirel / (Minecto one)	no, only for trials	no	good efficacy, harmful to bees	4,0

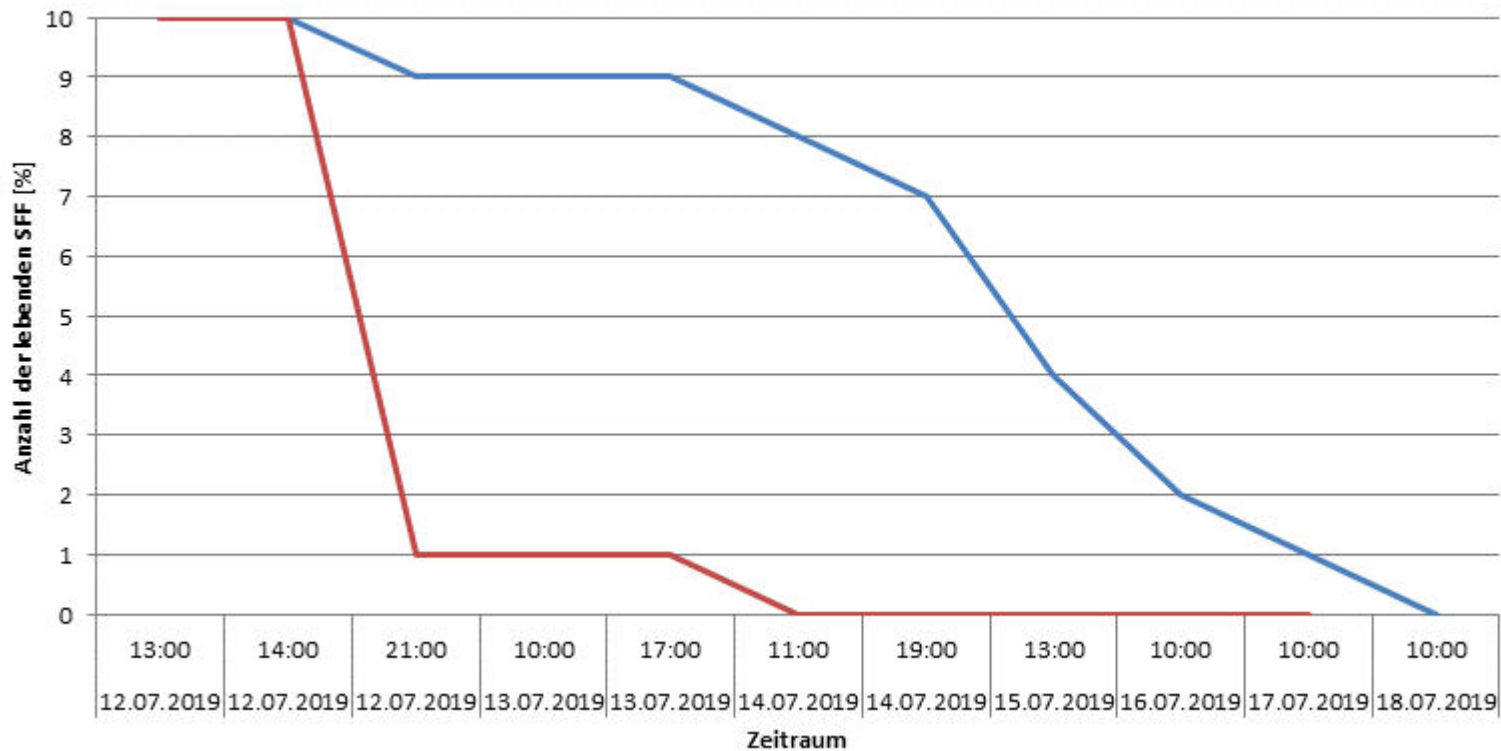


Cage -Trials PPP against adults

12.-18.07.19, origin flies: FF - Gericht,

 Mospilan SG (Acetamiprid) 0,25 kg/ha in direct contact

Mortalität der SFF



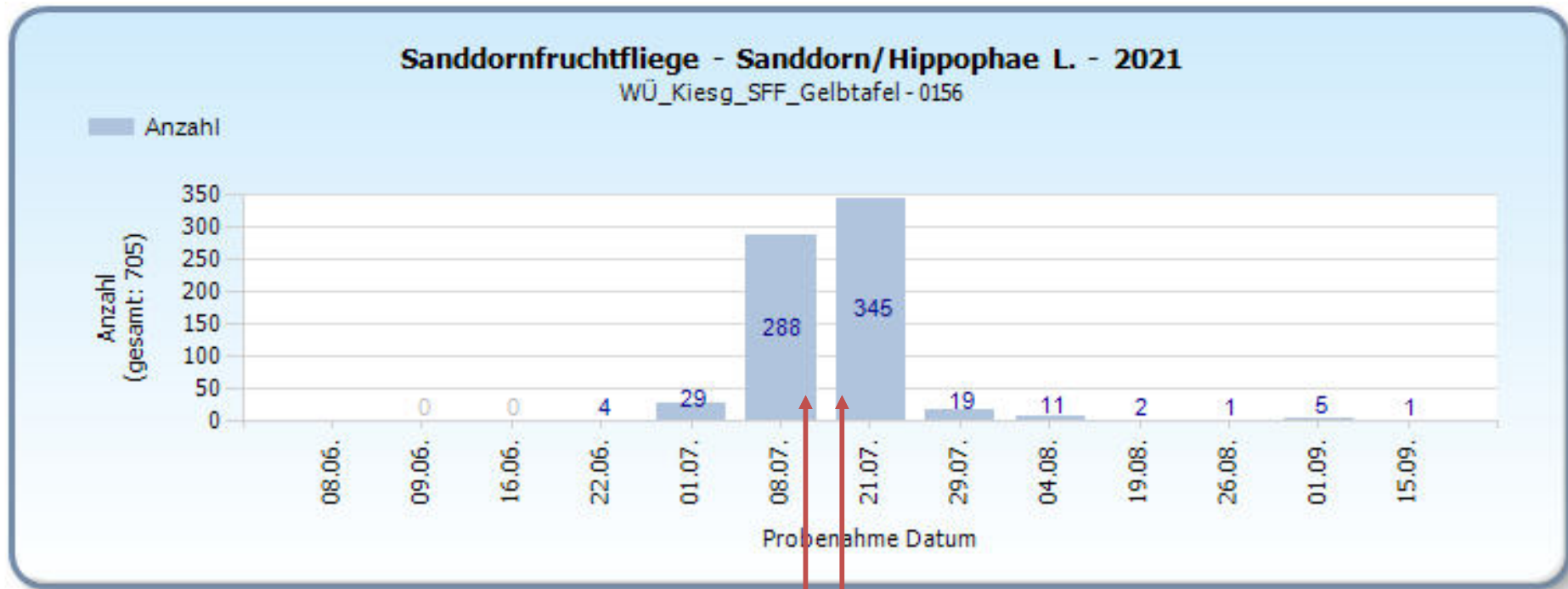
— UK

 — Mospilan Direkt [10 SFF]

Mortality of 90 % after 8 hours!; similar effects with Spinosad and Cyantraniliprole

Trap catches and control with PPP

p.E. Glindow (PM), organic production (EU-standard), 'Leikora'



measures with SpinTor (Spinosad): 12.07. + 19.07.2021

Infestation on 12.10.2021: 0%

Conclusions

- Oviposition starts from the beginning of noticeable increase in fruit size, mostly independent of fruit coloration
- differentiated according to variety
- Problem is long supply phase of attractive fruits in the main phase of fly activities (3-4 weeks)
- in good weather observe stocks and flies, use traps!
- good orientation for first measure against adults gives the first peak of fly activities, application on large, closed sites!, not on single blocks
- if lasting high activities, subsequent measure 7(-10) days later, depending on weather
- 2 applications of PPP are mostly sufficient, residues are far below MRL
- hygienic measures in years without harvest help to hold the population on low level (cutting single high branches with fruits at least before emigration of larvae)

Open questions

- Are there differences in hatching time of flies between the varieties?
- What do we know about movement of flies (years with less/ without fruits in orchards)? What is the percentage of twice overwintering pupae?
- Are there varieties which are unattractive for oviposition because of early ripening? (Essel?)
- How many eggs per female?
- On which level are the effects of non chemical measures (predators, entomopathogene fungi, mechanical barriers ...)? >>>project MoPlaSa
- Are there effects of chemical measures on predators? When, how long they hold on?

Until now: Why after growing sea buckthorn 30 years we got this problem from one year to the next and it is going one...? What is the main reason of the hype of SFF since 2012/2013?



**THANKS TO ALL COLLEAGUES OF LELF
WORKING WITH US
AND TO THE COMPANIES**

**BIO Hof Glindow GbR
Havelfrucht GmbH**

AND THANKS FOR YOUR ATTENTION!