



Recent advances in *Drosophila suzukii* control in fruit crops

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- Invasive species
- Serrated ovipositor
- Female 300 eggs - lifetime
- 2-3 week generation time
- Majority of soft and stone fruits
- 90% damage if left unchecked
- UK - 2 effective pesticides on emergency approval



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NIAB - East Malling Research

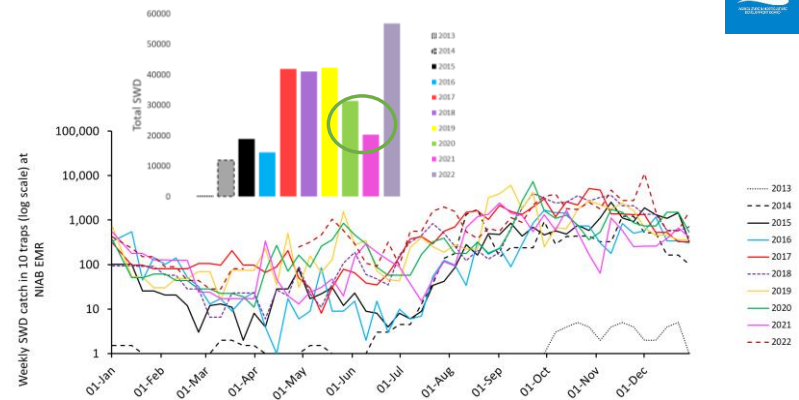
- Monitoring
- Egg laying deterrent
- Parasitoids
- Mass trapping
- SIT
- Bait sprays



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Monitoring SWD at East Malling 2012-2022

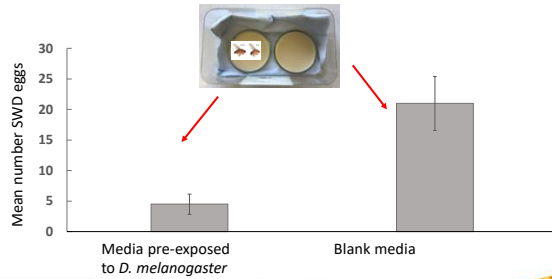


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Egg laying deterrent

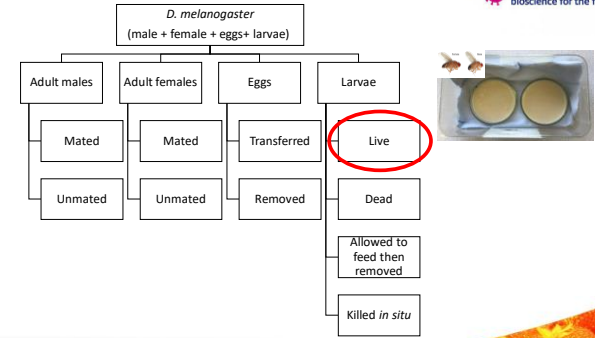


SWD lay **fewer eggs** on media previously visited by *Drosophila melanogaster*



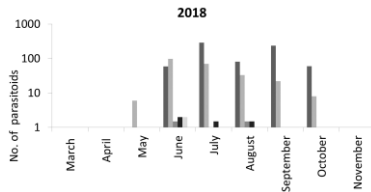
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Egg laying deterrent



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Parasitoids



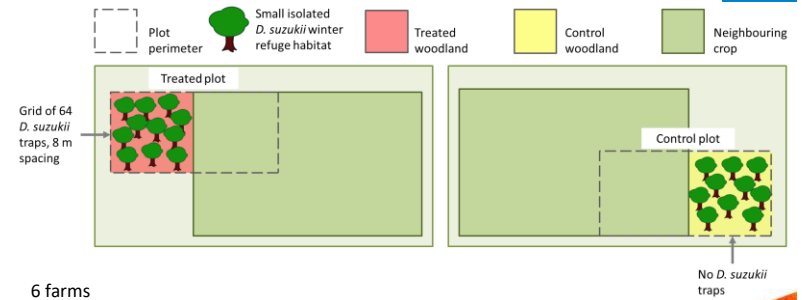
• SWD emergence from sentinel traps reduced ~21% by parasitoids

- Six generalist parasitoid species, 2 x larval parasitoids 4 x pupal parasitoids
- *Pachycrepoideus vindemmiae* most abundant



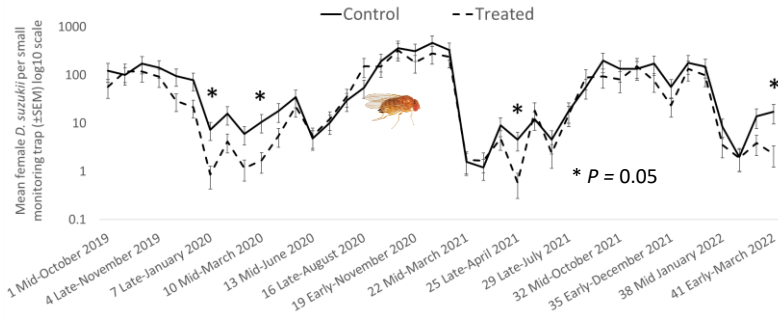
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Mass trapping



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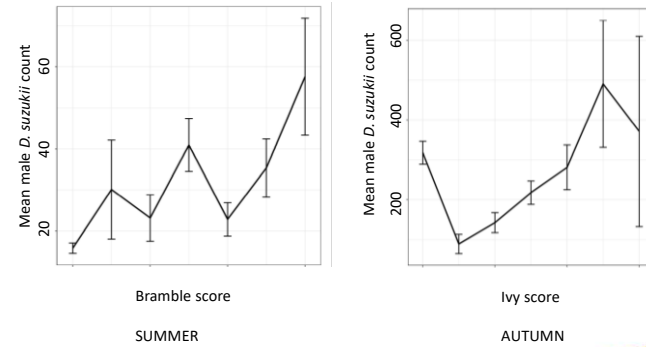
Mass trapping – females in crop and woodland



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Mass trapping - woodland habitat



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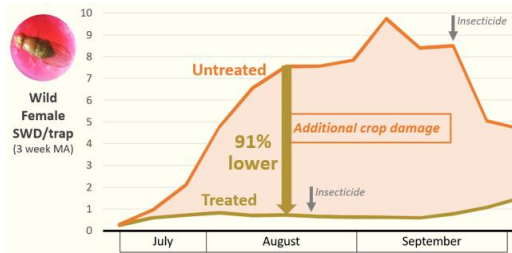
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Sterile Insect Technique - Strawberry

• 2021 World-First Field Trial, Kent, UK



1. Produce sterile male insects
2. Release sterile males to mate with wild females
3. Females have no offspring



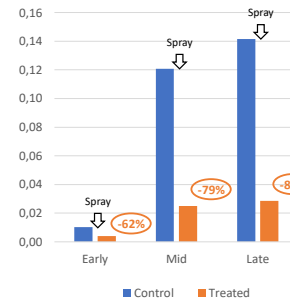
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Sterile Insect Technique - raspberry



SWD Larvae per Fruit



- 62% reduction in larvae in early season despite 139% more adult females in untreated crops at the beginning of the trial
- 80% fewer larvae per fruit



~11 Ha commercial raspberries in open polytunnels. SWD data based on five weeks during harvesting



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Bait sprays - non-targets

- Field (raspberry) trial
- Laboratory bioassays
- Bait combined with SWD insecticide (primarily spinosad)
- Band spraying /large droplets
- Compared to positive (fine droplet full foliar application) and negative controls (untreated and/or bait only)



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Bait sprays – Field trial raspberry

- Pollinator visits to raspberry flowers not impacted by bait sprays – were not observed feeding on bait droplets
- No difference in numbers of beneficials where baits + 50% field rate insecticide compared to 100% full foliar spray



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Bait sprays – Lab bioassay

- Bait alone not toxic to non-target insects
- Baits + spinosad, applied as large droplets to foliage; no more toxic to earwigs, Orius, adult hoverflies than full foliar sprays
- In principle, exposure to insecticides in field reduced; less product applied with bait sprays
- Normally away from fruit/flowers, reduced residues
- Promising biocontrol programmes for SWD and other pests



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- Mass trapping
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- Bait sprays



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Collaborators



- Francesca Elliott, Bethan Shaw, Adam Walker, Greg Deakin, Sebastian Hemer, Madeliene Cannon, Benjamin Brown, Francesco Rogai, Trisna Tungadi, Glen Powell



- Herman Wijnen



- David Hall, Dan Bray, Dudley Farman, Dudley Farman, Steve Harte, Conor Walsh



- Glen Slade, Rafael Homem



- Clare Sampson



- Richard Harnden

