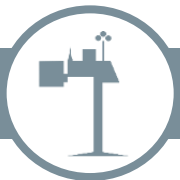




Remote insect monitoring by

iSCOUT[®]

J.Potprin, H.Denzer, C. Pilz
Pessl Instruments GmbH, Weiz, Austria



Monitoring of insects

➤ Detection/Identification of **insects**

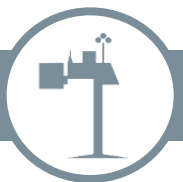
➤ Determination of **population density**

thresholds for pest management strategies

➤ **Distribution** of insects in the field/area

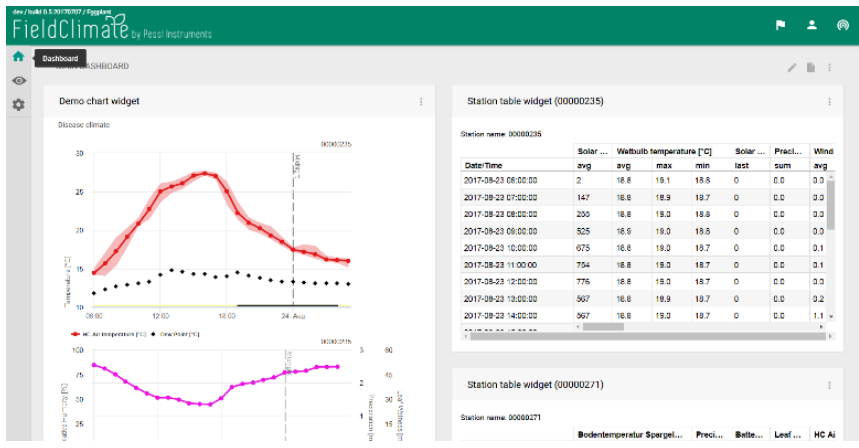
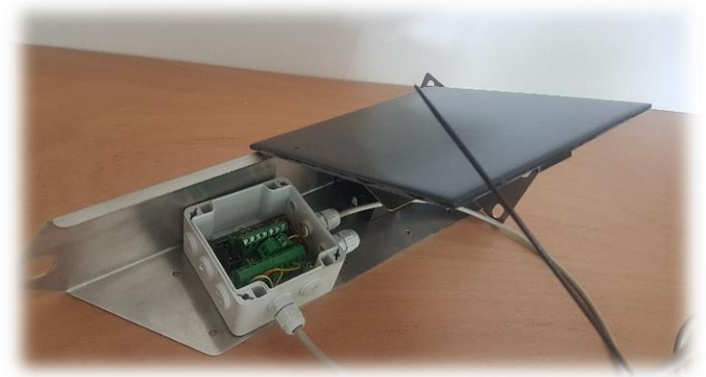
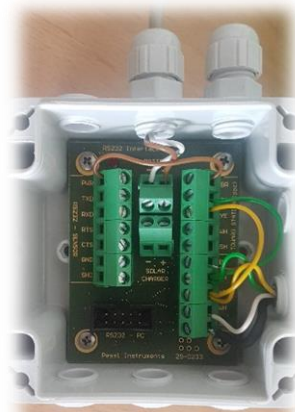


Quelle: Wikipedia, 18.10.2017



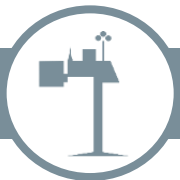
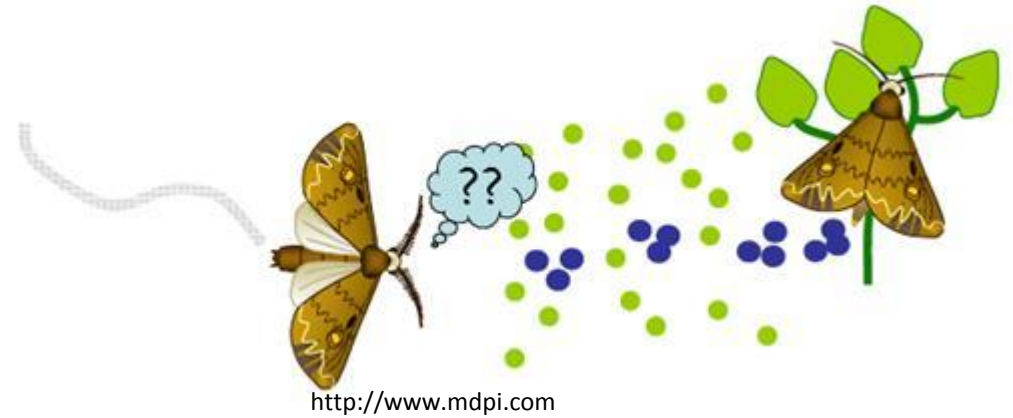
iSCOUT:

- MAIN UNIT WITH TRAP AND CAMERA
- CONTROL UNIT
- WEB PORTAL (FieldClimate.com)



Different Types of **iSCOUT**:

1. PHEROMON TRAP
2. FEEDING LURE TRAP
3. COLOR TRAP

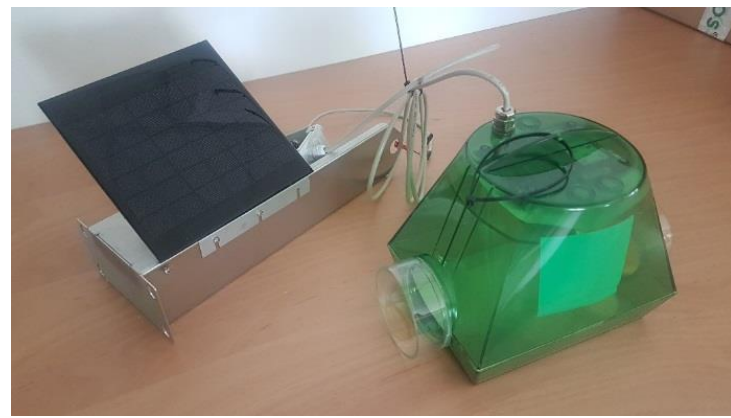
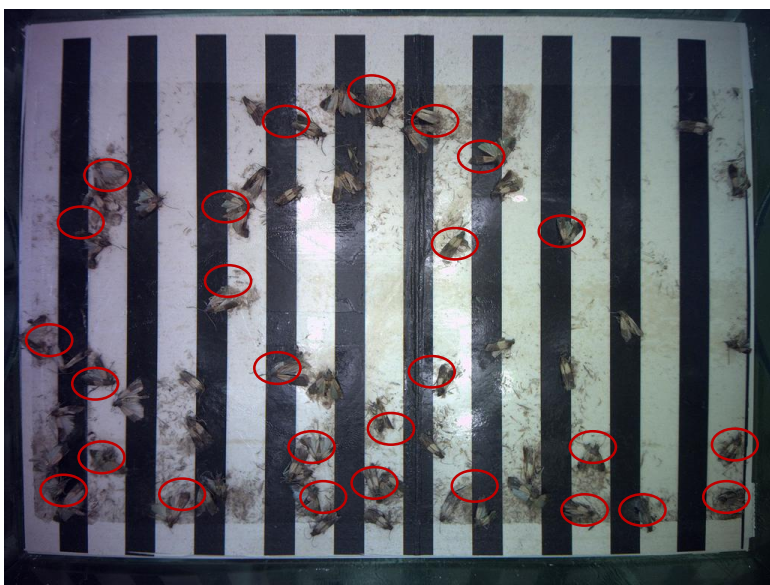


1. PHEROMON TRAP

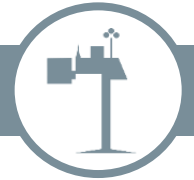
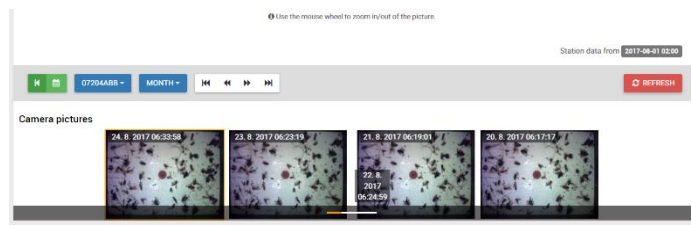


PHEROMON TRAP (e.g. moths):

- side entries
- Pheromon



codling moth, grape berry moth, tomato leafminers, indian mealmoth, and many others.

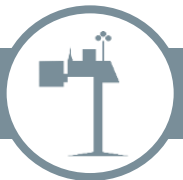


2. PHEROMON /LURE TRAP Bug

- Entry : below, with a green cross where bugs can land
- Bugs climb up, when they enter they will be caught
- Insect glue on white plastic

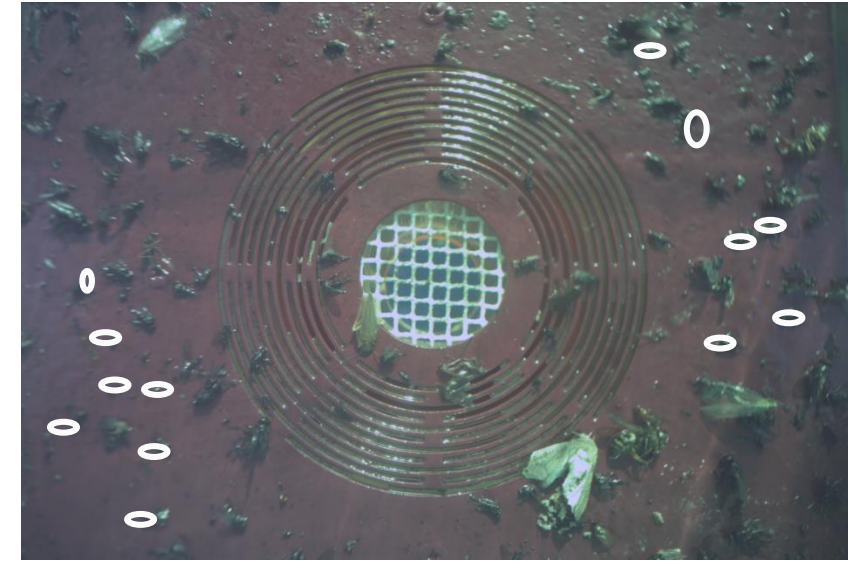
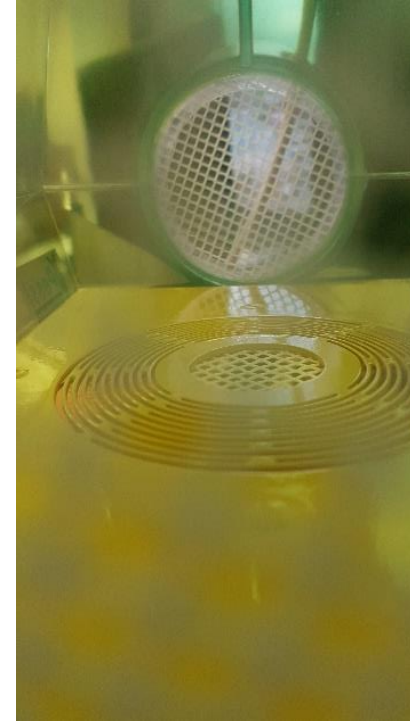


Catching stink bugs and other bugs species.

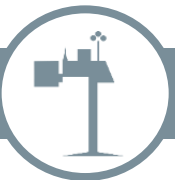
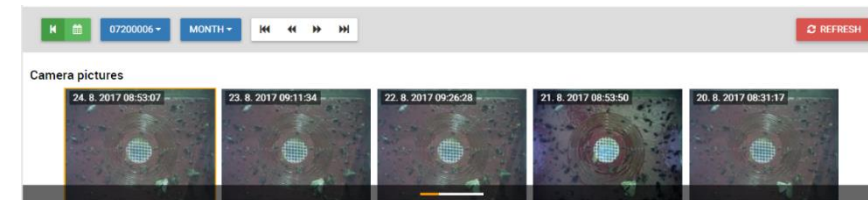


2. FEEDING LURE TRAP FRUIT FLY

- Side entries and entry on the ground (with net)
- tank for liquid feeding lure



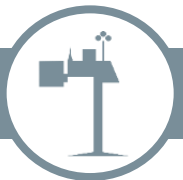
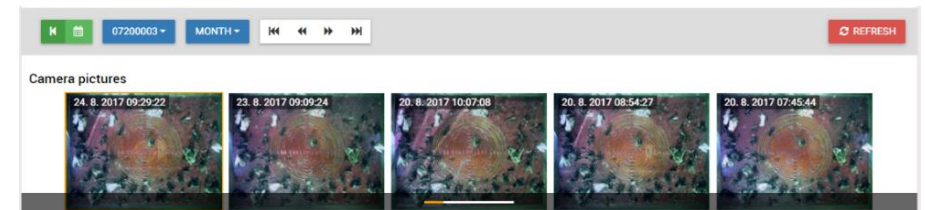
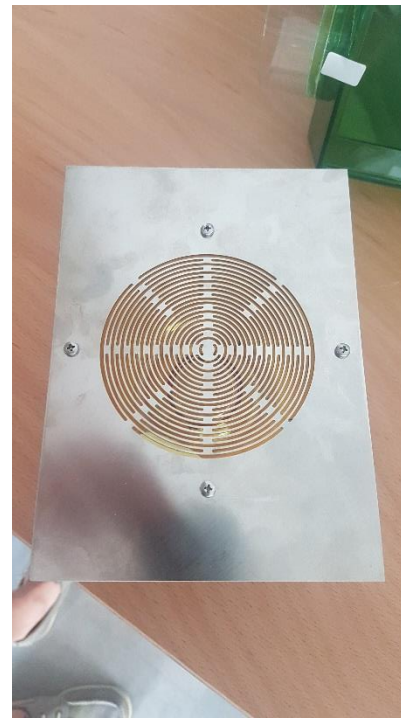
Target insects: *Drosophila suzukii*,
Olive fruit fly, Mediteranean fruit
fly and many others.....



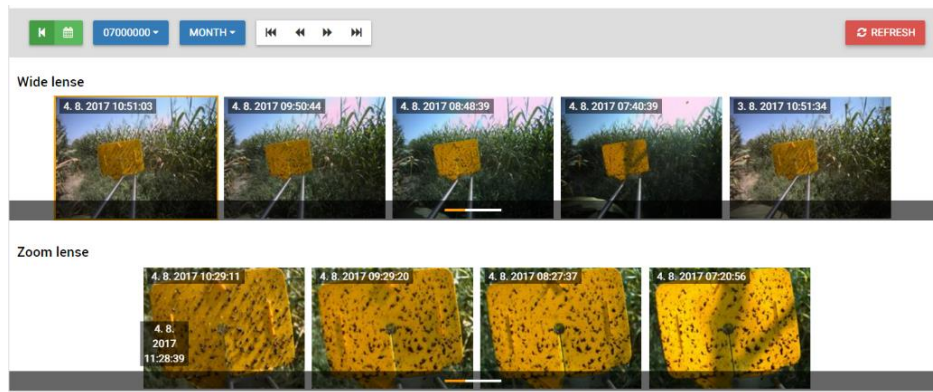
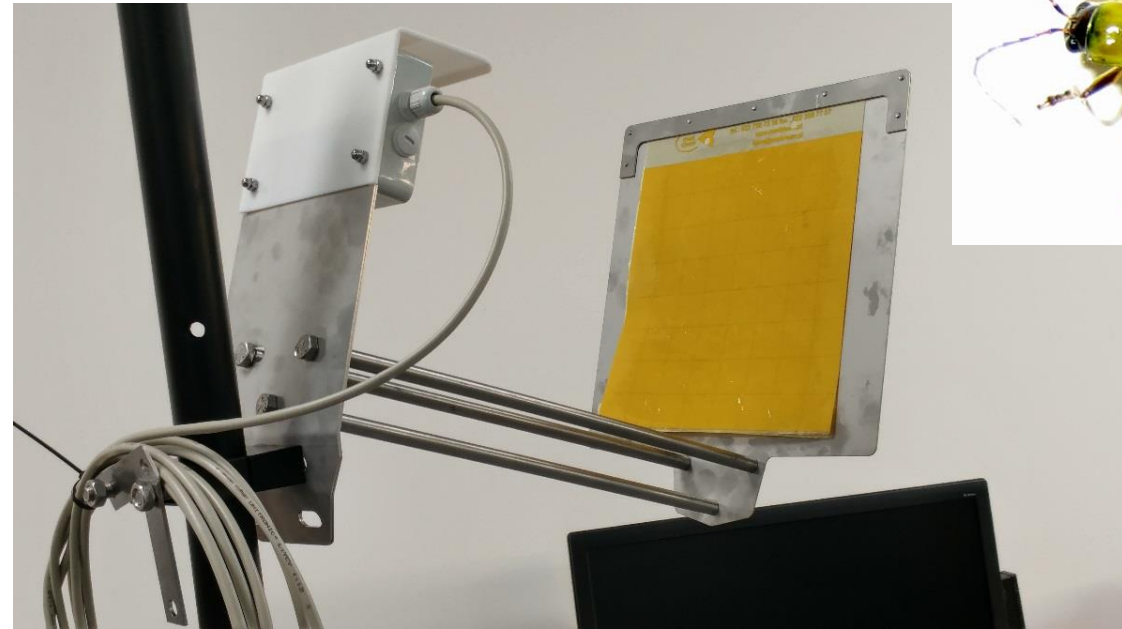
2. FEEDING LURE TRAP DIPTERA



- Trap for bigger flies
- Side entries with no netting
- Tank with feeding lure
- Sticky metal plate



3. COLOR TRAP



sticky trap

blue: *Frankliniella occidentalis*, *Thrips tabaci*, ...

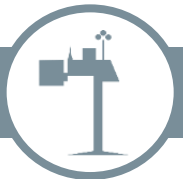
yellow: white flies, leafminers, sciarid flies, thrips (in viticulture), ...

white: apple sawfly, plum sawfly, plum fruit sawfly, raspberry beetle, ...



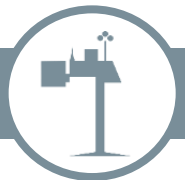
Conclusion

- combination hardware & software
- transparent housing (light)
- devices self-sufficient (solar panel, battery)
- high-resolution pictures (10 MP camera)
- images are sent via GPRS to iSCOUT® platform (once/day)
- automatically detection and analyzing of pest insect (family)
- visible on web or mobile devices (real-time)
- integration of an alert system/thresholds
- reusable trap system



CHALLENGES

- Training of the software („deep learning algorithms“)
- High resolution pictures (fruit flies)
- Catching of „non-targets“



THANKS for your attention!!

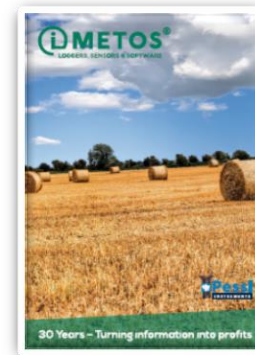


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DEVICE – TECHNICAL SPECIFICATIONS

- **Memory** 1 GB
- **Internet Connectivity** UMTS/LTE
- **GPS receiver** Yes
- **Dimensions of electronics without trap housing**
18 cm L x 13 cm W x 35 cm H
- **Weight** 0.93 kg without control unit
- **Transmission interval** Max. 3 times per day (usually once a day)
- **Battery type** Lithium battery 6V, 4.5 Ah
- **Solar panel dimensions:** 18 x 13 cm, 7.2 Volt, 333 mA
- **Model/Type:** Cortex M4 processor module with integrated Communication model for UMTS/LTE operation.
- **Camera** MT9J003 10 Mega Pixel 2/3" CMOS sensors
- Internet based monitoring device, solar panel, rechargeable battery, GPRS Logger, Interface for 1 temp. input (no sensors incl.), 1-year web service incl., GPS sensor

