acari
DETECT

## DIGITAL MITE RECOGNITION SYSTEM
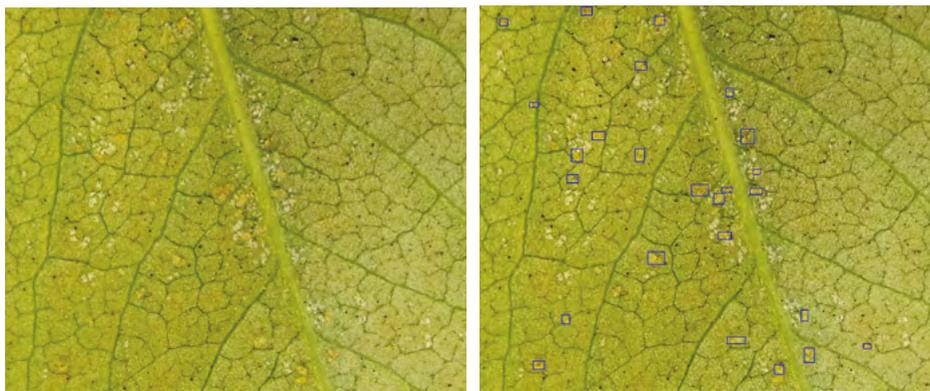
No need for a loupe or a microscope – the future is digital pest recognition

The digital mite recognition system allows to automatically monitor the population of two spotted spider mite (Tetranychus urticae) on leaves. The core of the system is a camera with android operation system that is a tool for farmers to take standardized high resolution images of the leaves and of the pests on the leaves. The images are uploaded to our central server through Wi-Fi or through our website, where they are processed by an image analyzer algorithm to assess abundance of mites on the leaves. Farmers visiting our website can register and log in to their own profile to check out the results, statistics and diagrams about the mite population on their fields. If pictures are taken along predefined points in greenhouses, the system can generate pest abundance maps. As the outcome of the analysis, farmers can assess the population size and decide on the necessity of a treatment. Farmers can also share data with their advisors, so they can support them on-line in their pest management decisions.

sampling → uploading images → statistical analysis

giving in treatment data ← → presenting results on the web
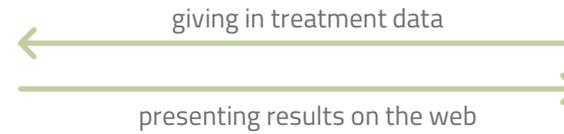
conclusions, pest management decision

Abundance intensity of two-spotted spidermite with confidencia intervals

Abundance intensity

20

15

10

5

0

1. Apr   1. May   1. Jun   1. Jul   1. Aug

Sampling data

● Vertimec Pro   ● Envidor   ● Lannate   ● Nissuron   ● Pyranica

Highcharts.com
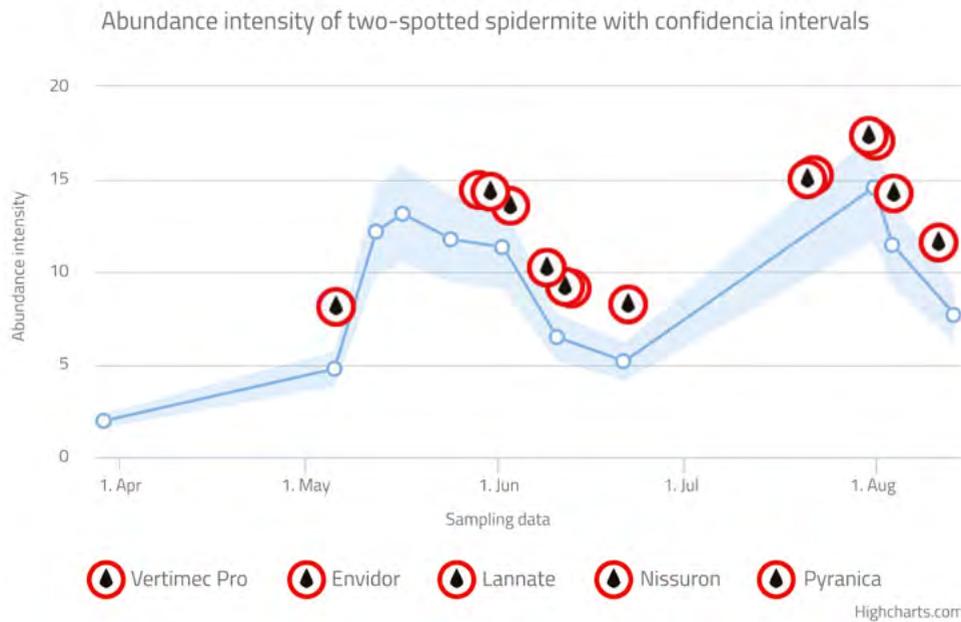
The innovation of the Acari Detect system is to provide users with quick, reliable and quantitative data about the mite population throughout the entire growing season. In addition, results can be visualized on maps, so farmers can identify hotspots of pest population. Based on this information farmers can decide not to treat entire fields but only hotspots. So by using Acari Detect system, less pesticides are sprayed and the production costs are decreased due to the better timing of pest management operations and to locally applied pesticides on the hotspots of the pest.

In case of the lack of pest prediction systems farmers usually sprayed 3-5 times per week as their pest management program. When applying integrated pest management strategy, economic threshold levels for pests are set by

04.08.
05.05.
05.16.
05.24.
05.31.
06.07.
06.14.

46
42
36
32
28
24
20
16
12
8
4
2
0
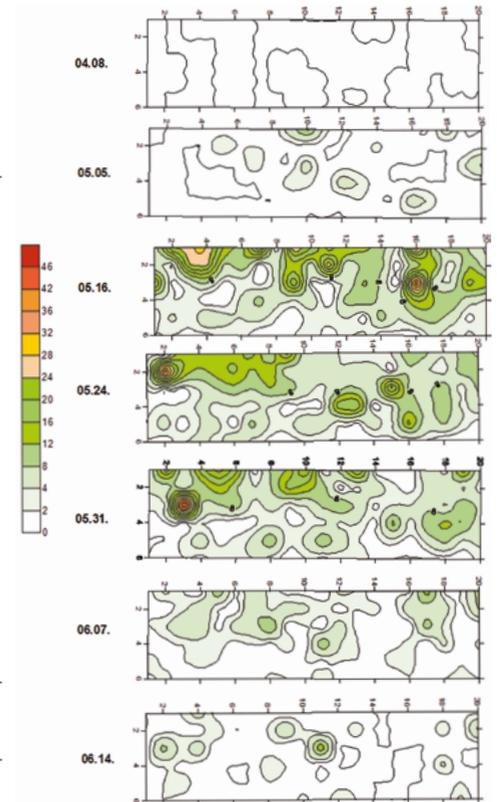
plant protection engineers or advisors, who may visit the fields and define the pest management decision based on visual assessment. Since mites cannot be detected using pheromone traps or color traps and the pests can hardly be visualized without microscope, quantitative data are usually not collected. As such, no precise pest population assessment can be provided, neither can data be archived and revised to understand the efficiency of treatments. Acari Detect system though provides farmers with reliable data quickly to allow them to take better pest management decisions. As such, farmers can protect their crops more efficiently and economize on costs and pesticide use. At long terms, farmers can also revise their pest management strategies.

Not only in production, but also in research the use of system can result in new achievements, because the processing speed of samples is significantly greater allowing for a significantly larger sampling size and data set. Besides that, also the amount of necessary working hours may also decrease allowing in savings of research costs. Using the new technology of Acari Detect the biology of the pests and its spatial-temporal population pattern can be described more precisely, as well as new pest prediction and decision support systems for farmers can be developed.

www.acaridetect.com