

Pest monitoring in cabbage crops with different sensor systems

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The application of insecticides is not always opportune because of residues as well as other possible adverse side effects. According to literature the use of insecticides can be reduced by up to 65 % due to economic thresholds. The probability of infestation, which is associated with thresholds values, can be determined with different techniques e.g. crop monitoring. The currently available estimation methods for pests in vegetable crops under field condition are either very time consuming or not area-specific and for this reason rarely applied in practice. Therefore, a key aim of this research is to workout automated area-specific and easy-to-handle monitoring methods. The methods will be tested on the example of cruciferous vegetables under field conditions.

In 2013 three systems have been highlighted particularly under field conditions; a TriangleCameraSystem, a technically modified funnel trap and TrapView. The TriangleCameraSystem as well as the technically modified funnel trap were developed in collaboration with the Hochschule Osnabrück - University of applied science.

The TriangleCameraSystem detects the cabbage root fly (*Delia radicum*) near the ground by three HD web cameras which are arranged around a stem of cabbage crops. The recorded pictures are implemented into an image processing program for analysis. The technically modified funnel trap with a motorized turning unit shall detect lepidopteran pests with an open source based smart camera (leanXcam). TrapView is a technically modified delta pheromone-trap for the automatic detection of codling moth (*Cydia pomonella*) and is commercially available since 2012. According to the distributor iMetos® the trap can also be used for other moths and butterflies. However, the evaluation must be done visually on the basis of transmitted photos of the sticky card.

The first results have revealed that the tested systems in spite of further optimizations are generally well suited for the detection of cabbage root fly (TriangleCameraSystem) or lepidopteran pests (modified funnel trap or TrapView). This project is part of the "WeGa- Kompetenznetz Gartenbau".