

Promising alternatives for pest control in *Brassica* crops

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From January 2014 the implementation of Integrated Pest Management (IPM) into modern agriculture is claimed by the EU regulation (2009/128/EU). In the EU project 'PURE' (Pesticide Use-and-risk Reduction in European farming systems with Integrated Pest Management) the development of different IPM approaches takes place aiming to reduce the application of chemical Plant Protection Products (PPPs) and thereby effects on human health and environment.

In Germany the most damaging insect pests on *Brassica* crops are cabbage root fly (*Delia radicum*), aphids (e.g. the cabbage aphid *Brevicoryne brassicae*) and caterpillars (e.g. cabbage butterfly - *Pieris rapae*, diamondback moth - *Plutella xylostella* as well as the cabbage moth - *Mamestra brassicae*). Thus, different PPPs are tested concerning efficacy, contribution to pesticide reduction and impact on the dif-

ferent pests. For combating cabbage root fly in cauliflower the compound SpinTor® (spinosad) and different alternative PPPs like entomopathogenic nematodes (*Steinernema feltiae*), PERLKA® (lime nitrogen) and the entomopathogenic fungi Naturalis® (*Beauveria bassiana*) are compared. Insecticides for controlling aphids and caterpillars in white cabbage were applied when action thresholds were exceeded.

The impact of SpinTor® (spinosad), broad spectrum insecticides (Karate Zeon® (lambda-cyhalothrin) and Perfekthion® (dimethoat)), selective insecticides (Steward® (indoxacarb) and Pirimor® (pirimicarb)) and biological products (Xentari® (*Bacillus thuringiensis* ssp. *aizawai*) and Micula® (rape oil) against insect pests named above and on their natural enemies is investigated.