

## New RNA gene technology fights potato beetles, reduces pesticides

Colorado potato beetles are a dreaded pest of potatoes all over the world. Since they do not have natural enemies in most potato producing regions, farmers try to control them with pesticides. However, this strategy is often ineffective because the pest has developed resistances against nearly all insecticides. Now, scientists from the Max Planck Institutes of Molecular Plant Physiology in Potsdam-Golm and Chemical Ecology in Germany have shown that potato plants can be protected using RNA interference (RNAi). (*Science*, February 2015).

During infection, many viral pathogens transfer their genetic information into the host cells as double-stranded RNA (dsRNA). The RNAi mechanism can be exploited to knock down any desired gene. Targeting an essential gene of a crop pest can turn dsRNA into a precise and potent insecticide.

To test this system on a real insect pest, the scientists chose the Colorado potato beetle. This little striped beetle was introduced into Europe accidentally at the end of the 19th century. Nowadays, it is a worldwide pest and can cause massive damage in agriculture. Besides potato leaves the adult beetle and its larvae also feed on other nightshade crops, like tomato, bell pepper and tobacco. The pest is difficult to control because of the widespread occurrence of insecticide resistance.

As many insect pests increasingly develop resistances against chemical pesticides and Bt toxins, RNAi represents a promising strategy for pest control. This technology allows for precise protection without chemicals and without production of foreign proteins in the plant.

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