Compound from wild tomatoes is natural, effective herbicide

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(Phys.org) -- A naturally occurring compound derived from wild tomato plants is also a fast-acting, nontoxic herbicide, according to researchers at North Carolina State University.

NC State entomologist Dr. Mike Roe had previously worked with the compound – known as 2-undecanone – as a natural replacement for the chemical DEET in insect repellents. Both he and his NC State colleague, entomologist Dr. George Kennedy, were exploring whether 2-undecanone could be used as an insecticide on plants, when they noticed an unexpected side effect: it killed the plants.

“The discovery was a bit unexpected – we were taking this chemical from a plant, so we didn’t expect it to have herbicidal qualities,” Kennedy says. “But in the wild tomato where 2-undecanone naturally occurs, it is held in tiny hairs all over the vine and fruit, so it never actually comes into contact with the plant itself.” This serendipitous discovery led the researchers to do some further testing, and they found that 2-undecanone provides both effective and fast-acting weed control. It seems to interfere with a plant’s ability to retain moisture, which kills it quickly.

“On a warm sunny day, you can apply this to a weed and it will be withered and dead within as little as 30 minutes,” Roe says. “It retains its effectiveness even in winter, when other herbicides tend to lose potency. Additionally, the chemical is volatile, meaning that it dissipates after 30 minutes.”

Roe and Kennedy believe that the compound has multiple potential uses: in the organic farming industry, by homeowners for outdoor weed control, by home gardeners and in larger agricultural operations.
“You’ve got something here that is already approved by the Environmental Protection Agency as an insect repellent safe enough for application to human skin,” Roe says. “The herbicidal effects occur with an even lower concentration of the active compound. Plus, it kills plants in minutes and then dissipates, so you don’t have to worry about soil or groundwater contamination.

“What more do you need? You’re fighting plants with plants – it’s perfect.”

Provided by North Carolina State University

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