**Beneficial nematodes**

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| Beneficial nematodes are tiny, usually microscopic, roundworms that can be applied to control caterpillars or grubs. Nematodes move within moist soil and enter a suitable host. The nematodes, along with an associated bacteria, kill the host within a few days.  **How to apply beneficial nematodes**   * Select a nematode species that is most effective against the target pest. Make sure you purchase nematodes from a [reputable supplier](http://www2.ca.uky.edu/entomology/entfacts/ef125.asp). * Apply when the caterpillar or grub stage of the pest is present and active. This can be throughout the late spring and summer for most pests. For white grubs, apply later in the summer or early fall when more mature larvae are present and active. A second application about 2 weeks after the first will enhance control. * Do not apply if the soil temperature is below 60°F. * Irrigate before application. The soil must be moist, but not soggy. * Mix up a solution of fresh, infective stage nematodes in cool, distilled water, pour the solution into a sprayer, and apply to the infected area. * Apply nematodes in the evening, especially in hot areas. Nematodes are killed by light and heat. * Irrigate after application. Several irrigations may be needed to keep the soil moist. * Follow up a week or so after each application. Look for red or yellow-brown infected larvae or pupae. | **Healthy and infected larvae**   |  | | --- | | ***Steinernema* and *Heterorhabditis* nematodes**  *Steinernema carpocapsae*   * Sit-and-wait foragers * Infect hosts that move near the soil surface * Do not move far into the soil to search out pests * Available at many retail nursery stores   **Target pests:** [Armyworms and cutworms](http://ipm.ucanr.edu/TOOLS/TURF/PESTS/incutwm.html), [billbugs](http://ipm.ucanr.edu/TOOLS/TURF/PESTS/inbill.html), [black turfgrass ataenius](http://ipm.ucanr.edu/TOOLS/TURF/PESTS/inbta.html), [crane flies](http://ipm.ucanr.edu/TOOLS/TURF/PESTS/incrane.html), [lawn moths](http://ipm.ucanr.edu/TOOLS/TURF/PESTS/insodweb.html)  *Steinernema glaseri*  **Target pests:** [White grubs](http://ipm.ucanr.edu/TOOLS/TURF/PESTS/inchaf.html)  *Heterorhabditis bacteriophora*   * Actively searches for prey below the soil surface   **Target pests:** [Black turfgrass ataenius](http://ipm.ucanr.edu/TOOLS/TURF/PESTS/inbta.html), [fiery skipper](http://ipm.ucanr.edu/TOOLS/TURF/PESTS/inskipper.html), [white grubs](http://ipm.ucanr.edu/TOOLS/TURF/PESTS/inchaf.html) (infected hosts turn reddish) | |