Strategies for Tick Control

Concern about ticks and the various diseases they can spread is a **very real issue** for residents of this part of the country. Often the first response may be, "What can I spray to keep my family safe?" Before embarking on such a journey, it would be wise to consider various strategies.

PERSONAL PROTECTION

First and foremost are taking **personal protective** measures which are inexpensive and have been proved to be the **most effective strategy**. These include careful and regular body checks of all family members (including pets), wearing light colored clothing with long sleeves and long pants when working outside, showering immediately after working outdoors, and washing and drying clothes at high temperatures to kill any remaining ticks on clothing. Keep pets out of areas that may have ticks.

YARD MODIFICATIONS

Modifications to your yard include the removal of barberry which has been proven to be an attractive place for ticks to reside, eliminate or discourage places that may be moist (under groundcovers, etc.), develop a border of wood chips or gravel between lawn and woods, move children's play areas away from wooded areas, etc.

SPRAYING

Spraying your yard is a popular option but it is best to be informed about the various products that may be used and the limitations of spraying itself. If using a commercial applicator, find out what chemicals will be used. Harsh chemicals, which should be avoided, fall into these broad categories:

- **Carbamates** such as carbaryl (Sevin) is extremely toxic to bees and beneficial insects and moderately toxic to fish.
- **Pyrethrins** are frequently in combination with piperonyl butoxide or other chemicals. Pyrethrins are toxic to bees and highly toxic to cats, fish and other aquatic organisms.
- **Pyrethroids** is a class of synthetic compounds which includes **permethrin**. Permethrin is extremely toxic to bees and fish and highly toxic to cats.

Other considerations about spraying:

- Pesticides should not be applied on windy days to avoid drift and non-target species.
- Before spraying close windows and doors of your home.
- Pesticides should not be applied near wetlands, streams, ponds, etc. Even organic pesticides can be toxic to fish and aquatic species.
- Effects of spraying will last only a given time and additional applications will be needed. Some companies recommend six sprayings per year – additional cost and inconvenience.
- Any beneficial effects from spraying are effective only when you are in the yard.

BOTANICAL INSECTICIDES

Botanical insecticides may be safer, but sometimes less effective, than traditional chemical compounds. They are not regulated by the government and usually are not standardized for the amount of active ingredient. Most have not been tested for effectiveness and/or toxicity to bees.

The botanical product that has been tested for its effectiveness against black-legged ticks is **garlic oil** (Hays and Stafford, *Journal of Medical Entomology*, March 30, 2015). The study concludes that garlic oil could provide a minimal-risk option for control of ticks.

More information can be obtained from a company called Mosquito Barrier which sells a garlic product that can be used for mosquitoes, ticks and other insect pests. Garlic will repel pests rather than killing them, so for bees the question is whether they are repelled to the extent that they no longer provide essential pollination services. To be safe spraying might be limited to times when plants are not in bloom.

It is reported that the royal gardens in England are frequently treated with garlic spray, despite the odor which dissipates after a day.

A number of commercial applicators use **cedarwood oil** to treat for ticks. Cedarwood oil is known to be toxic to fleas, ticks and mosquitoes specifically, while other pests are repelled by the odor. Cedarwood oil's effectiveness as a yard spray and/or any toxicity issues are unclear,

BIOLOGICAL CONTROLS

A naturally occurring fungus, *Metarhizium anisopliae*, has recently become available under the name **Met-52**. Residential trials in Connecticut and New Jersey showed good control of nymphal ticks. This fungus poses minimal risk to non-target species and does not harm many beneficial insects such as bees, green lacewings, lady beetles, or earthworms. It is offered by a number of different companies available on the internet.

OTHER

Tick tubes filled with permethrin treated cotton balls have been on the market since the late 1980s. However, studies have shown them to be ineffective in reducing numbers of infected ticks. (Communication from Kirby Stafford, Connecticut Agricultural Experiment Station).

CONCLUSIONS

Various strategies should be employed to reduce risk of contact with ticks. All strategies should be consistent with IPM (Integrated Pest Management) principles which mandate that the least toxic solution to a problem be given preference. Again, using personal protection measures is very effective if done regularly.

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