Effectiveness of Various Pesticides against Ticks

Graph created by the
Western Connecticut State University
Tickborne Disease Prevention Laboratory (April 2019)
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Graph data are summarized from Eisen and Dolan (2016). Data used in graph from studies showing: the maximum time of effectiveness with at least 85% control of host-seeking I. scapularis nymphs using high or low pressure sprays or granules, ground treatment in woodland or residential properties, spring application of a single spray (except essential oils, which were a dual spring spray, and garlic, which showed less than 85% nymphal control).

1 Pyrethroid data: Spring application of cyfluthrin spray or cyfluthrin granules in a woodland setting (Solberg et al. 1992, summarized in Eisen and Dolan, 2016).

2 Fungus: A single spring spray of Metarhizium brunneum (F52) on residential properties (Bharadwaj and Stafford 2010, summarized in Eisen and Dolan 2016).

3 Essential oils: EcoTrol T&O spray applied 2 times in June in a woodland setting. EcoTrol T&O essential oil formulation: 10% rosemary oil, 2% peppermint oil, and 0.5% sodium lauryl sulfate with wintergreen oil, vanillin, lecithin, and butyl lactate (EcoSMART Technologies Inc., Alpharetta GA; Jordan et al. 2011, summarized in Eisen and Dolan, 2016). This formulation and product do not appear to be currently available for purchase.


5 Garlic juice: A single spray application of Mosquito Barrier to lawn-forest border in residential settings. Mosquito Barrier formulation: garlic juice 99.3%, citric acid 0.5%, and potassium sorbate 0.2% (Bharadwaj et al. 2015, summarized in Eisen and Dolan 2016). This formulation acts as a tick-repellent.

Alaska yellow cedar oil: Data are not shown for the effectiveness of nootkatone or carvacrol (from Alaska yellow cedar, Chamaecyparis nootkatensis [D. Don] Spach), as these products are not commercially available (Dolan et al. 2009).

References cited:


Eisen, L. and M. C. Dolan. 2016. Evidence for personal protective measures to reduce human contact with blacklegged ticks and for environmentally based control methods to suppress host-seeking blacklegged ticks and reduce infection with Lyme disease spirochetes in tick vectors and rodent reservoirs. J. Med. Entomol. 53: 1063-1092.
