

Methods of reduction of tick population in the environment

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Control of ticks in the natural environment is difficult. From the 1960s to 1990s in US, Canada, Soviet Union (Russia) on areas of high risk of tick-borne diseases and mass occurrence of ticks only one method of tick control was the use of chemical acaricides. Effects of decreasing tick populations using biocides remains, depending on the acaricide, for a few to over a dozen days and inhibited activity of ticks for one season only. Furthermore, introduction of acaricides into the environment affected a very broad spectrum of organisms. There is no selective biocidal agent which would eliminate only ticks that is why search for alternative methods to reduce tick number were continued. A way of tick and tick borne diseases control is reduction of the number of ticks directly on their hosts or in their habitat (eg. rodent holes) with acaricides. To the locations of rodents tubes filled with permethrin/fipronil swabs are displayed. Those swabs were dragged by rodents into burrows and used as building nests material. This system of traps in the area inhabited by *Peromyscus leucopus* (a rodent) presented high reduction of *Ixodes scapularis* population. However in a study conducted in Sweden where *I. ricinus* lives off bank vole *Clethrionomys galareolus* reduction of tick number was not so significant. Satisfactory reduction in the population of ticks living off deer was obtained by using forest animal feeders equipped with rolls impregnated with permethrin, between which animals put their heads to collect food and through rubbing distribute the acaricide on the skin of the neck and ears. Another strategies used to reduce tick populations are activities undertaken to modify their habitats. Limiting the population of deer in the area, fencing heats and creating smaller plots available for animals contribute to reduction of population of *I. ricinus* living off them. There are several species of predators, parasites and pathogens that attack and kill ticks. One of the parasite living off ticks is a wasp *Ixodiphagus hookeri* that lays eggs in the larvae of various species of ticks. Production of large amounts of *I. hookeri* may, however be too expensive. In conclusion it should be stated that the use of personal protection measures such as impregnated clothes and tick repellents are the best methods of protection against ticks.