Protecting Man and Livestock From Ticks

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Much of Missouri, especially the southern wooded area, is heavily infested with ticks. These pests are so abundant on some farms that they are causing serious damage to livestock. Also, their menace to human health through the spread of Rocky Mountain spotted fever and tularemia is on the increase in the State. It is hoped that this report may be of some help to those in Missouri who have the tick problem to deal with.
Harmful Missouri Ticks

While there are several species of ticks found in the state, only two are of special importance—the lone star tick and the wood tick or American dog tick. In some sections of south Missouri the former species is much the more serious, while in other parts of the Ozarks and in wooded areas north of the Missouri River the wood tick is more abundant and it is the one which spreads Rocky Mountain spotted fever in this state. Ticks of both species are about the same size, and they both suck blood from man, livestock, and wildlife in all stages of development, except the seed-tick stage of the wood tick, which is found only on the small rodents. The lone star tick is distinguished by a conspicuous white dot on its back.

Life Story of the Tick

Ticks are not true insects, but belong to the same group of animals as the spiders, mites, and scorpions.

The common wood tick, on hatching from the egg, is scarcely large enough to be seen without magnification. It is known as the larva or seed tick, and usually wherever one seed tick appears a few thousand more will be found close by, since normally a mass of tick eggs will include several thousand and they all hatch about the same time. In this stage the tick has only six legs and, if successful in attaching itself to a desirable host animal, usually a small rodent, it begins to suck blood engorging itself. Its piercing mouth organs are armed with barbs, which make very difficult their forcible withdrawal from the flesh of the host.

After remaining attached for a few days, the seed tick takes on a round stuffed appearance, something like a grain of shot. It then withdraws its mouth organs from the skin of the host and drops to the ground, where it rests for several days, digesting its meal and shedding its skin. After shedding its skin it enters the second stage of development, the nymph. In this stage it has eight legs and the body is larger than the head of a pin. It may now attack almost any warm-blooded host, man included, though it prefers the dog. Again, it engorges itself and in this condition it may be considerably larger than an apple seed. Then, again, it lets go and drops to the ground, digests its meal, sheds its skin and becomes an adult tick with eight legs.

In Missouri, it usually spends the winter in this stage and in the spring, by early May, it attaches itself again to a dog, cow, man, or other animal. The smaller, more active male mates with the adult female while she takes her third and final fill of blood.
If permitted to fully engorge, the female resembles a small, purplish-brown, tightly stuffed rubber ball, over one-half inch in length and half that in width and thickness. Again, she drops from the host and after several days, under grass or other shelter, she begins to lay a mass of a few thousand brownish eggs. These usually hatch during June and July as seed ticks and thus the cycle is completed.

**Control**

It is not an easy matter to rid a farm or a community of ticks. This is especially true of the so-called three-host types of ticks, which are the kinds we have to deal with in Missouri. Ticks of this type may attack any one of several different kinds of domestic or wild animals and after each engorging they drop from the host. In this way they remain so scattered, some on livestock, some on wild animals, and some on the ground, that it is never possible to round them all up and dispose of them by spraying, dipping, or by means of pasture rotation for starving them out. However, it is possible to greatly reduce tick numbers on a farm and to reduce proportionately their injury to livestock and their menace to human health.

Ticks are usually worse in well-drained, wooded areas, and this fact helps to explain their abundance in the Ozarks. Cutting buckbrush, briars, and other underbrush from pastures and woodlots will help reduce tick abundance. A good plan of control would also provide for the treatment of infested cows, dogs, or other farm animals at weekly intervals. Of the various chemicals used to kill ticks, derris or other rotenone-bearing insecticide is perhaps best, though during the war they may not always be available. Derris powder well worked into the hair where the ticks are attached, or a wash containing derris sprayed or worked in so as to wet the hide and the ticks, will kill the pests. Oil emulsion and regular creosote stock dips may also be used with fair results. Where large numbers of cattle or other livestock are to be treated, dipping is most effective and an arsenical solution is the most satisfactory dipping solution yet developed. This same arsenical solution can also be used as a spray or wash for treating only a few animals where a dipping vat is not available. The formula recommended by the United States Department of Agriculture for preparing the dip at home is as follows:

- **Sal soda** .............................................. 24 pounds
- **Arsenic trioxide (white arsenic)** ... 8 pounds
- **Pine tar** ............................................. 1 gallon
- **Water** .................................................. 500 gallons
The sal soda and arsenic are boiled in an iron kettle with about 25 gallons of water and then the pine tar is added and all combined in the dipping vat with 500 gallons of water. If one wishes to prepare only a few gallons, say 10 gallons, he can use the following reduced formula:

- Sal soda ......................... 8 ounces
- White arsenic ......................... 2½ "
- Pine tar .......................... 3 "
- Water ................................ 10 gallons

Remember that this solution is poisonous and must be so handled and kept from livestock and children.

In place of mixing the arsenical dip or wash at home, it is now possible and preferable to purchase it from manufacturers ready to dilute with water.

**Treating Small Infested Areas**

Where only small areas are to be freed of ticks, as for instance a lawn, it is possible to spray such areas with a strong nicotine solution consisting of 3 tablespoonfuls of 40% nicotine sulphate, ½ ounce of soap, in 3 gallons of water. Paths in parks and other recreational grounds and areas around livestock watering places may be treated in this way to advantage.

**Diseases Which May Be Spread by Ticks in Missouri**

Each year the Missouri State Board of Health reports a number of deaths from Rocky Mountain spotted fever, which is spread by the common wood tick. Also, there are increasing numbers of cases of tularemia in Missouri, with a number of deaths traceable to the bite of the wood tick. This same tick is also responsible for the occasional local outbreak of anaplasmosis of cattle in the state. Naturally, measures used to reduce tick populations will help to lessen their injury to animals and their menace as carriers of disease. However, since, at best, one can only hope to reduce their numbers, other precautions should be taken where ticks are serious.

The person who must work or travel in infested areas should go clothed to escape attack. High boots and tight-fitting clothing will help. After coming out of tick ladened places, he should change clothing and make sure that no ticks are on him at night when he goes to bed. To introduce spotted fever the tick must bite for at least eight hours, so every precaution should be taken to be sure one does not spend the night biting its victim. Also, persons who spend much time in tick-infested places or work regularly with ticks, should take the Rocky Mountain spotted fever serum treatment.