Fowl Tick on Turkeys

control by organic phosphates sprayed on wooden feed troughs just before use

John L. Rodriguez and L. A. Riehl

Proper timing and selection of insecticides determine the effectiveness of sprays against the fowl tick, *Argas persicus* (Oken).

This tick, occasionally found on turkeys in southern California, causes unsightly skin blemishes that reduce the market price and make an important difference in profit. Heavy infestations may also affect the vitality of the birds.

Fowl ticks usually hide near the turkey roosts, in joints between pieces of wood, in cracks or similar places where they are not disturbed. They come out of hiding at night, find the roosting birds, and return to their hiding places after feeding. During the first instar—larval stage—about a week, young ticks stay on the host.

Investigation of infested flocks on a large commercial turkey ranch near Perris showed that ticks were hiding in the cracks of wooden feed troughs—8′ long, 1.5′ wide and 2.5′ deep—set on the ground. Roosts were not provided and the turkeys crowded on the feed troughs at night.

Nine range-type pens of turkeys were used in an experiment to test insecticides for tick control. Each pen had an area of from 1.0 to 1.5 acres and contained about 800 turkeys. Two separate pens were assigned at random to each of four treatments and one pen was left untreated.

The troughs were treated in September. All feed was removed with special care before spraying. Insecticides in aqueous mixture, containing 1.0% actual chemical, were mixed and applied by power-driven spray equipment, with agitation in the tank and a high-pressure pump operated at 400 pounds per square inch. The spray gun was adjusted to furnish a hard-driving stream, directed against the trough at close range to force the insecticide mixture into the cracks. A sufficient volume of material was used on each trough to allow runoff. Treated troughs were placed out of reach of the turkeys and were returned to use as soon as they were dry. To minimize absorption of insecticide by the feed, the first week, only the amount of feed which would be consumed in a short period was placed in the treated troughs.

Complete control was obtained in one day with the organo-phosphorus compounds Malathion and Diazinon. The chlorinated hydrocarbons Chlorobenzilate and Kelthane reduced the tick population, but control was not complete. The upper table gives numbers of live ticks found on treated troughs. Ticks were counted as they emerged to feed.

When ticks were eliminated, earlier injuries on the turkeys healed and disappeared in 3–4 weeks. When slaughtered for market, turkeys from pens where the troughs were treated with Malathion and Diazinon were free from tick-feeding skin blemishes.

The same insecticides were tested during the clean-up period after Christmas, when turkey pens were empty. Diazinon was used at 0.5% actual chemical, Malathion at 1.0%, Chlorobenzilate and Kelthane each at 2%. Each treatment was applied to six troughs, with the same thoroughness as before. There was rain on the sixth, eighth, eleventh, and fourteenth days after spraying, and probably some of the spray residue was washed away. The lower table gives tick counts during the 77 days after spraying, until the pens were put back into service for a new brood of turkeys. When troughs were out of service, it was necessary to pry apart the cracks of the troughs in order to find and count the live ticks.

Ticks were not controlled completely by any of the after-Christmas treatments. Direct spray does not reach many of the ticks in cracks, and for the remaining ticks to be killed they must crawl over the residual film of insecticide. Only the presence of roosting birds stimulates this activity. While pens were empty and ticks inactive, the continuous weathering by rain, sun, and wind destroyed much of the effectiveness of the insecticides. By contrast, the first experiment was successful because troughs were used for feeding as soon as the sprays had dried, and emerging ticks came into contact with a film of effective insecticide.

Mean Numbers of Live Ticks Found on Feeding Troughs Sprayed with Insecticides and Returned to Service

Spray material 1%	Before treatment	Days after treatment					
		1	4	7	11	14	21
None	1.3	20.5	12.2	10.7	6.0	12.7	6.7
Chlorobenzilate	2.4	42.5	0.8	2.2	0.5	0.9	1.0
Kelthane	5.0	5.4	0.6	0.4	1.3	2.3	0.7
Diazinon	6.8	0.0	0.0	0.0	0.0	0.0	0.0
Malathion	6.7	0.0	0.0	0.0	0.0	0.0	0.0

Mean Numbers of Live Ticks Found in Cracks of Sprayed Troughs During the Out-of-Service Periods

Spray material	Before treatment	Days after treatment						
		7	14	21	35	46	56	77
2% Chlorobenzilate	34.0	7.0	10.0	6.6	4.6	2.8	1.8	1.0
2% Kelthane	55.0	14.0	55.8	35.1	11.5	2.5	0.7	0.7
0.5% Diazinon	56.5	21.5	9.3	7.0	4.1	6.0	3.1	3.1
1% Malathion	59.2	0.8	1.6	2.0	6.0	6.0	8.0	8.0

John L. Rodriguez is Laboratory Technician in Entomology, University of California, Riverside.

L. A. Riehl is Entomologist, University of California, Riverside.

The above progress report is based on Research Project No. 1589.

ALFALFA PELLETS

Continued from opposite page

fall of rain, and occurred before the mean air temperatures had dropped to where they markedly restricted new forage growth. Thus, the new forage crop was off to a better start than usual.

The cattle immediately began to graze the scant new growth and took no more of the old than was necessary to obtain the new. With the change in cattle diet there was also a change in nutrient deficiency from protein to total energy, resulting from a shortage of total feed intake. That was why the supplements for Groups *1* and *2* were increased on October 16.

The winter period of this study—Period *4*—was more favorable than average in that the usual lower winter temperatures did not prevail in December and January. Also, whereas the average winter period terminates about February 1, this one ended January 16 and possibly could have ended even two weeks earlier. Control Group *3* made average daily gains of about 0.72 pound for the fourth period. Average daily gains of about 1.34 pounds—almost identical for Groups *1* and *2*—are evidence that 3.0 pounds of alfalfa pellets per head daily were as effective as 1.5 pounds each of cottonseed pellets and rolled barley.

K. A. Wagnon is Specialist in Animal Husbandry, University of California, Davis.

J. H. Meyer is Associate Professor of Animal Husbandry, University of California, Davis.

F. D. Carroll is Associate Professor of Animal Husbandry, University of California, Davis.

The above progress report is based on Research Project No. H-1005.