

## REVIEWS AND ABSTRACTS

~~DDT AND ITS APPLICATION IN VETERINARY MEDICINE.~~  
 DDT AND ITS APPLICATION IN VETERINARY MEDICINE. By C. R. Twinn. *Can. J. Comp. Med.* Nov. 1946: 301-314.

A discussion is given on the composition of DDT, its properties, mode of action and toxicity to insects and higher animals. Methods of using DDT to control insects affecting domestic animals are described for each of the insect species of importance to veterinarians in Canada. The report is based on a bibliography of 35 titles and on unpublished reports.

For fly control 1, 3, 4, and 5 per cent DDT-oil solutions and emulsions were used successfully as residual treatment in buildings applied at the rate of one imperial gallon to 1600 sq. ft. of surface. Manure pits were sprayed with 1 per cent solutions. The recommendations for mosquito control were to: (1) spray vegetation sheltering adults with 1 per cent DDT suspensions or aqueous emulsions at the rate of 4 to 5 gallons per acre; (2) for larval control apply 1 to 2 quarts of 5 per cent DDT-oil solution per acre with atomizing spray equipment or air-planes; (3) with ordinary hand equipment apply 2 to 3 gallons of a 1 per cent solution. Blackflies may be controlled by adding DDT either as a suspension or emulsion to the streams to give 1 part of DDT to 10 million parts of water at the point of application. It is suggested that this use of DDT needs further investigation to determine how the treatment affects other forms of aquatic life. Area spraying by air, aerosols or fogging with smoke generators have given appreciable reduction of blackflies. The horn fly was satisfactorily controlled in Ontario by spraying cattle with a 0.25 per cent water suspension. Results of other workers who successfully used 2½ to 1 per cent strengths as dips or sprays are also cited. The results of various workers summarized here indicate that DDT was not satisfactory for the control of bot and warble flies.

DDT applied to sheep as an emulsion in concentrations of 0.24 to 0.45 per cent still showed toxicity to sheep blowflies 5 weeks after application and was effective in preventing oviposition for about 6 weeks. The sheep ked was controlled by dipping or spraying sheep with 0.2 to 0.25 per cent DDT emulsions or suspensions. Fleas were controlled for 3 months on foxes with one application of a 10 per cent powder. The residual sprays applied in infested buildings provided satisfactory control as did applications of 8 oz. of 10 per cent powder per 1000 sq. ft. Either the residual sprays or dust applications will control bedbugs in chicken houses. Lice, both sucking and biting, on domestic animals, are controlled with DDT dust sprays or dips. The procedure for use for each type of animal is described. Various methods of using DDT for the control of ticks are described and mention is made of the relative ineffectiveness against

mites.—B. V. TRAVIS, Bureau of Entomology and Plant Quarantine, U. S. Dept. Agric., Orlando, Fla.

~~EL DDT Y SU APLICACIÓN A LA MEDICINA VETERINARIA.~~  
 EL DDT Y SU APLICACIÓN A LA MEDICINA VETERINARIA. (DDT and Its Application to Veterinary Medicine.) Por C. R. Twinn, *Can. J. Comp. Med.* Nov. 1946: 301-314.

Se discute la composición del DDT, sus propiedades, modo de hacer sentir sus efectos y su toxicidad para insectos y animales de más alta categoría. Se hace una descripción de los métodos de usar el DDT en el control de los insectos que atacan a los animales domésticos, para cada una de las especies de insectos de importancia para los veterinarios del Canadá. El informe se basa en una bibliografía con 35 títulos y en informes inéditos.

Para el control de la mosca (*Diptera*) se emplearon con éxito soluciones y emulsiones al 1, 3, 4 y 5 por ciento de DDT en aceite para el tratamiento residual en edificios, aplicados a razón de un galón imperial para cada 1600 pies cuadrados. Se rosiaron los estercoleros con soluciones al 1 por ciento. Las recomendaciones para el control de mosquitos fueron: (1) rociar la vegetación encubridora de adultos con emulsiones al 1 por ciento de DDT en suspenso o en agua a una razón de 4 a 5 galones por acre; (2) para el control larvario, aplicar 1 ó 2 cuartas de solución de DDT en aceite al 5 por ciento para cada acre, empleando aparatos de rociar vaporizado o aeroplanos; (3) con el equipo manual corriente, aplicar 2 a 3 galones de una solución al 1 por ciento. Se pueden controlar los simúlidos (*S. hirtipes*), depositando DDT, sea en suspenso o en emulsión, en las corrientes para dejar 1 parte de DDT a las 10 millones partes de agua en el punto de aplicación. Se hace la superencia que éste uso del DDT recama más experimentación para averiguar cuales son los efectos de este tratamiento con relación a otras especies de la fauna acuática. Se ha hecho una disminución considerable en la población de simúlidos rociando desde el aire, con aerosoles o con neblinas producidas por generadores de humo. Se logró un control satisfactorio de la *Haematobia serrata* en Ontario con rociar el ganado con una suspenso en agua al 0.25 por ciento. Se citan también los resultados obtenidos por otros investigadores que han empleado potencias de 2-½ ó 1 por ciento con inmersiones o rociados. Los resultados obtenidos por varios investigadores aquí sintetizados indican que el DDT no es satisfactorio en el control del rezoño (*Gastrophilus equi*) y el *Hypoderma bovis*.

El DDT aplicado al ganado ovino en emulsiones de concentraciones desde 0.24 hasta 0.45 por ciento aun demostraban toxicidad contra la moscarda ovina (*Oestrus ovis*) hasta las 5

semanas después de aplicado y su eficacia en evitar la oviposición perduraba unas 6 semanas. Se controló el *Melophagus ovinus* por medio de inmersiones de las ovejas o con rociarlas con emulsiones o suspensiones de DDT al 0.2 hasta 0.25 por ciento. Las pulgas en zorras se controlaron durante 3 meses con una sola aplicación de polvo al 10 por ciento. Las rociadas residuales aplicadas a edificios infestados dieron un control satisfactorio, como también aplicaciones de 8 onzas de polvo al 10 por ciento para cada 1000 pies cuadrados. Tanto los rociados residuales como las aplicaciones de polvo controlarán las chinches en los gallineros. Los piojos, tanto chupadores como mordedores, en animales domésticos, se controlan con pulverizaciones secas de DDT o por inmersión. Se describe el procedimiento a usarse en cada tipo de animal y se hace referencia a la ineficacia relativa contra los ácaros.—Translation of a review in English by B. V. Travis.

28662 Ca

OBSERVATIONS ON THE NIGHT-TIME RESTING AND BITING HABITS OF ANOPHELES MOSQUITOES IN DDT TREATED AND UNTREATED BUILDINGS. Clarence M. Tarzwell and Frank W. Fisk. (U.S.P.H.S., Communicable Disease Center, Technical Development Division, Savannah, Ga.) Pub. Health Rep. 62(3):84-94. 2 fig. 1947. (Abstract.)

Studies of the night-time behavior and resting habits of anopheline mosquitoes were conducted in rooms to which wild mosquitoes had free access and the walls and ceilings of which were marked off into numbered squares to facilitate counting and recording. At regular intervals the positions of all mosquitoes were plotted on scale drawings of the walls and ceiling, the species, sex and resting time being shown for each mosquito. An analysis of the data showed that *Anopheles quadrimaculatus* which entered the building to feed on the bait animal rested on the walls and ceiling for considerable periods before as well as after feeding. The resting period of the females varied from a few minutes to over 11 hours and there was no significant difference between the means for unengorged and engorged mosquitoes, being  $167 \pm 3$  minutes for the former and  $170 \pm$  minutes for the latter. After treatment, their resting period varied from a few to 90 minutes averaging  $40 \pm 3$  minutes for the unengorged and  $33 \pm 4$  minutes for the engorged. After treatment, 31 per cent of the *A. quadrimaculatus* resting on the walls were engorged females whereas before treatment only 14 per cent were engorged females. It is probable many of the unengorged mosquitoes were irritated by the DDT and left before attempting to bite. Before treatment the number of *A. quadrimaculatus* females increased throughout the night, reaching a maximum about an hour before daylight while after treatment the largest number was present just after the influx at dusk and only a small number were present at any

time during the remainder of the night.—C. M. TARZWELL.

9551 Ca

CONTROL OF ANOPHELINE MOSQUITO LARVAE BY USE OF DDT-OIL MISTS. Frederick F. Ferguson, Earl H. Arnold, and William M. Upholt. (Communicable Disease Center, Technical Development Division, U.S.P.H.S.) Public Health Reports, Vol. 62(9):296-302. 1947. (Abstract.)

Initial tests with DDT as a larvicide were with aqueous emulsions at total rates similar to those used for oil sprays. It was soon found, however, that when uniformly distributed, a gallon per acre of a No. 2 fuel-oil-DDT solution containing 0.5 per cent of a good spreader gave adequate control. This larvicidal material may be prepared by adding  $2\frac{1}{2}$  pounds of DDT and 1 quart of spreader to a 50 gallon drum of No. 2 fuel oil. For the application of this solution at 1 gallon per acre, small air-pressure hand sprayers fitted with mist or atomizing nozzles [Spraying Systems Co., 1/4LN 2.55; Marley Co., Inc., 1H41; Monarch Mfg. Co., No. 5, or equal] were satisfactory. When operated at pressures between 50 and 30 psi, these nozzles gave a discharge of 3 gph and droplet sizes of 70 to 220 microns. In operation, the sprayer was charged with 1 gallon of solution; and the vaporous oil mist was drifted with the wind, an effective swath width of 30 feet being obtained under normal conditions. Comparative field tests at equal dosages of DDT per acre indicated that oil mists at a gallon per acre were about as effective for mosquito control as emulsions applied at rates of 15 gallons per acre. Further, due to great reductions in material used and labor required, oil-mist larvicides are much cheaper than oil sprays and significantly less costly than DDT or paris-green dusts. All larval instars were susceptible to the mist spray.—C. M. TARZWELL.

19086 Ca

COMPARATIVE STUDIES OF DDT DUSTS, DDT-OIL SPRAYS AND PARIS-GREEN DUSTS USED ROUTINELY IN ANOPHELINE LARVA CONTROL. Willis V. Mathis, Frederick F. Ferguson, and S. W. Simmons. (U.S.P.H.S., Communicable Disease Center, Technical Development Division, Savannah, Ga.) Pub. Health Rep. 62(3):95-102. 1947. (Abstract.)

Evaluations have been made of anopheline larvicides when used in a general malaria-control program. DDT was used in fuel oil emulsion, in undiluted fuel oil and in dusts at the rate of approximately 0.1 pound per acre. Paris green was used in a dust at the rate of approximately 1 pound per acre. Comparative cost of the different materials and man-hours required to apply each to a given area was determined. DDT-fuel oil used as an emulsion or undiluted spray (1 gallon of solution per acre) gave a higher degree of control than did paris-green or DDT dusts. Data from the control-operations records showed that the undiluted DDT-fuel oil