growers. Moreover, there are reports of damage in Trithion trials from Washington State (Anthon, 1958) and from Australia (G. Miller, Tasmania Dept. of Agriculture, private communication).

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ERADICATION PROCEDURES FOR ORIENTAL FRUIT MOTH IN THE OKANAGAN VALLEY OF BRITISH COLUMBIA

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In 1957 plans were outlined for the eradication of a potential infestation of oriental fruit moth in the Southern Okanagan Valley (1). It is now intended to report on what was done and the results as noted to date.

In the fall of 1956 the ripening rooms of the two canneries involved were fumigated with methyl bromide. This served as an immediate check on the most probable locations of infestation as the fruit had been placed in these rooms on arrival and before going into cold storage until processed.

Extensive organization by federal and provincial authorities resulted in an early spring and summer program of insect elimination. This included cannery fumigation, removal of trees and fumigation of the orchard land where possible infested fruit waste had been scattered, fumigation of other waste dump areas, spraying of orchards adjacent to canneries and compensation for any losses, and trapping for possible recovery of adult oriental fruit moths throughout the Southern Okanagan Valley.

Early in the year fumigation matters were attended to and a deadline date of April 6, 1957, was set. After contracting for the fumigation of the canneries and certain land areas, it was necessary to assemble a great deal of material, including electric gas analyzers, polyethylene tubing, thermometers, leak detectors, test insects, cages, extension cords, etc. A mobile laboratory was obtained to house the gas analysis equipment. The fumigators, Columbia Pest Control, Ontario, California, supplied their own tarpaulins to cover the areas and, on March 13th, started to cover the cannery of York Farms, Osoyoos. This was completed in one day. The area fumigated was 333,015 cubic feet. In this same vicinity it was required to fumigate a junk pile of 11,000 cubic feet, settling pits of 13,000 cubic feet, and a fruit refuse dump area of 4,500 cubic feet.

On March 18th the operators moved to Barkwill Cannery at West Summerland. The area involved in the cannery fumigation was 298,000 cubic feet, an adjacent hillside 10,000 cubic feet, the orchard area 423,600 cubic feet, with a re-fumigation of 16,800

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cubic feet. A grand total of 1,109,915 cubic feet was fumigated. In all cases the initial dosage was at the rate of 5 lbs. methyl bromide per 1,000 cubic feet.

Prior to the fumigation of the orchard land the trees had been removed to one foot stumps, the trees being burned. In order to support the tarpaulins for the land fumigation, apple boxes were placed between the tree stumps to allow better circulation of the gas. Over 4,000 boxes were used and these had to be moved as each section was treated. The entire orchard was treated in 27 sections, ranging in size from 4,000 square feet to 38,000 square feet, with the average approximately 15,000 square feet. The initial dosage in all cases was at the rate of 5 lbs. methyl bromide per 1,000 cubic feet. Due to the tremendous soil sorption, especially in gravelly sections, the average amount of methyl bromide required was approximately 23 lbs. per 1,000 cubic feet.

The steep hillside adjacent to the cannery posed another problem in supporting the tarpaulins. This was solved by constructing a framework of 2 x 4's attached to stakes driven into the ground. The desired concentration of gas was maintained with 13 lbs. of fumigant per 1,000 cubic feet, with fan circulation.

The final fumigation was completed on April 10th, which was considered satisfactory for the project.

Following fumigation all roadways, parking areas and areas immediately adjacent to both canneries were thoroughly sprayed with diesel oil plus 25% emulsifiable DDT, 4 lbs. actual per 100 gallons of oil.

A spray program had been outlined for orchards adjacent to the canneries, as a follow-up of the fumigation. In order to be able to maintain an efficient and steady spray schedule a concentrate sprayer was purchased, to be operated under the supervision of the Entomology Laboratory at Summerland. Some seven acres of orchard were sprayed in the vicinity of the Osoyoos cannery, whereas thirty odd acres were sprayed adjoining the Summerland cannery. All varieties of fruits within these acreages were sprayed, using 50 gallons of spray per acre.

The spray period for Osoyoos was April 25 to May 10/13 for apricots, and April 18 to June 21/25 for peaches and other fruits. In Summerland the spraying extended from April 29 to May 23/24 for apricots and other fruits, and from April 26 to June 26/29 for peaches. The Osoyoos apricots received three applications of DDT 50% wettable powder, 12 lbs. per acre, Colloidal Spray Modifier 1 pint per acre. Four similar applications were given to apricots in Summerland. The peach spraying started at the rate of 12 lbs. per acre but was reduced to 6 lbs. later in the season because of the residue problem. In Osoyoos 5 applications were made at the higher rate and 2 at the lower, whereas in Summerland 4 applications were made at 12 lbs. and 3 at 6 lbs. Average figures on spray residue have been provided as DDT parts per million of fruit. The legal tolerance is 7ppm. By harvest time the residue problem on peaches and apricots was of very little concern.

Special problems in arriving at grower loss and fruit compensation values were encountered. Cherry yields and grades had to be estimated on the trees as the fruit was not harvested, due to excessive spray residue. Some spray damage occurred on apricots. The amount of damage due to reduced size of fruit, [illegible] fruit drop, and fruit burn were factors which had to be considered and reconciled so that the growers could be equitably compensated.

A trapping program was initiated to determine if oriental fruit moth had become established in the peach-growing sections of the South Okanagan Valley. Traps were set in a circumference of a mile from the fumigated canneries and in several

Fruit	Location	Last Spray	Residue on		Residue at harvest on	
Peach	Summerland	June 29	June 29	(36 ppm)	Aug. 13	(3.6 ppm)
Peach	Osoyoos	June 21	June 24	(22 ppm)	Aug. 27	(3.1 ppm)
Apricot	Summerland	May 24	June 29	(48 ppm)	July 24	(8.5 ppm)
Apricot	Osoyoos	May 10	June 24	(6.6 ppm.)		—

other strategic points throughout the Valley, from the international boundary to Summerland and into Naramata, Westbank and Kelowna. Four hundred and twenty-four traps were used. Throughout the season 9,231 trap inspections were made, using 1,360 gallons of bait which was prepared in batches of 45 gallons, using 2 gallons panomalt, 160 lbs. golden brown sugar, .5 lb. Brewer's yeast, and 42 gallons water. Two suspicious moths were found but neither proved to be oriental fruit moth.

Fruit fumigation trials were conducted at the London Laboratory, to determine the lethal dosage of the various stages of the insect, as well as the tolerance of the fruit. Modifications were made in the import regulations. Fumigation is now required only for the fruits of apricot, peach, pear, and quince.

Late season observations on the fumigated land indicated that there had been considerable killing of weed seeds, and the couch grass had been completely killed out in the entire orchard. Fruit trees which had been replanted showed very good growth, better than usual with freshly planted nursery stock.

Cost Estimates

Fumigation — including consultant fees, fumigation contract, gas, salaries, travelling expenses, extra labour	$ 43,843.00
Spraying — including sprayer, material, wages, labour	8,057.25
Trapping — including material, salaries, travelling expenses, labour	5,415.69
Provincial Government — including preliminary fumigations, orchard compensation, fruit compensation, transportation	17,333.89
	$ 74,649.83

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On the Reproductive Potential of the Sheep Nostril Fly *Oestrus ovis* L. (Diptera: Oestridae)

Most references state that the eggs of the sheep nostril fly hatch in the body of the mother and the fly deposits living larvae; Hearle (1) states that in one instance under observation, 60 larvae were deposited in one hour. Only one reference that I can find, (Smart, (2)) states that the fly deposits eggs.

In 1954 when working on the Lac du Bois cattle ranges some 13 miles from and 2000 feet above Kamloops, I found that newly emerged nostril flies clustered in crevices in the old log hut that was being used as a laboratory, particularly in the holes cut into the door frame to take the latches of the lock. On one morning before the sun warmed the cabin no fewer than four female flies were clustered there; they were freshly emerged and undamaged. There were no sheep on the ranges at this time so the flies may not have been chasing anything.

One of these flies was dissected to determine the egg-laying potential. The ovaries were distended with 624 eggs of uniform size each 0.4 mm. long, which readily separated out from the follicles. Abruptly smaller than this series, were strings of very tiny moniliform ova in the germaria.