

REPORT ON MONITORING THE AERIAL  
APPLICATION OF BAYGON FOR CONTROL OF  
CULEX TARSALIS, MANITOBA, 1975

by

Bert F. Zylstra

File Report No. 13      August 1975

Chemical Control Research Institute

Ottawa, Ontario.

(This report may not be cited nor published in whole or in part without the written consent of the Director, Chemical Control Research Institute, Canadian Forestry Service, 25 Pickering Place, Ottawa, Ontario, K1A 0W3).

Report on Monitoring the Aerial  
Application of Baygon for Control of  
*Culex tarsalis*, Manitoba, 1975

Introduction

In August of 1975, the incidence of the infected equine encephalitis mosquito (*Culex tarsalis*) was high enough in southern Manitoba that a health emergency was declared. The Provincial Government in co-operation with the city of Winnipeg and Federal Government representatives, embarked on a massive spray program to reduce the mosquito population to the point where it was no longer a health hazard.

On August 15, 1975, Dr J.A. Armstrong of C.C.R.I. attended meetings at Winnipeg concerning the proposed spray program. At the meeting a request was made by Mr Hamish Gavin, Regional Director, EPS, for C.C.R.I. assistance to aid in a ground monitoring program to gather data on spray deposition and droplet dispersal.

On August 18th, I was requested by Dr Armstrong to go to Winnipeg to aid Mr Vern Hildahl in establishing a ground monitoring system. Field crews for ground monitoring were made up of personnel from Environmental Protection Service, Northern Forest Research Centre and Chemical Control Research Institute.

MONITORING PLAN:

The acres to be sprayed were: an area of 500 square miles covering the city of Winnipeg, blocks of 36 square miles covering St. Pierre, Steinback, Morden, Selkirk and Portage la Prairie. The spray was to be applied using a DC-6 flying 200 feet above ground level

at 3,000 foot swath intervals. The insecticide used for the operation was Baygon applied at 3/4 oz a.i./acre in an emitted volume of 7 fluid ounces/acre. With the spray being applied over populated areas, the monitoring system could not be based on a collection and analysis of dyed spray. Teflon-coated slides and oil resistant dyed spray cards were obtained from Gulva Industries, Belle Chasse, Louisiana; these units can be used for droplet measurements of undyed spray.

Upon arriving in Winnipeg, I was informed that the Western half of the city had been sprayed the evening before and ground monitoring of spray deposit had been carried out at eight (8) scattered locations throughout the city using 23 teflon coated slides.

For the first blocks to be monitored, St. Pierre and Stainback; a triple set of monitoring units were set up to collect deposit and also for comparison to determine which set would give most accurate measurements for the undyed Baygon formulation.

The sets consisted of :

- 1) Dyed mylar cards (1)
- 2) Oil resistant (dyed) cards (2)
- 3) Teflon coated slides (3)

At each sample location duplicate sets of each collection method were used.

After the spray at St. Pierre, it was determined that the dyed

- 
- |   |  |
|---|--|
| 1 | developed by Wm. Haliburton of CCRI, Ottawa. |
| 2 | Gulva Industries, Belle Chasse, Louisiana.   |
| 3 | Gulva Industries, Belle Chasse, Louisiana.   |

mylar cards proved to be the most inaccurate method as the droplets had spread the dye to the point where drops ran into each other, thus making measurement of individual droplets impossible.

It was then decided to continue using the oil resistant cards and the teflon coated slides and to dispense the dyed mylar cards for the rest of the program.

The spray blocks on all spray zones outside the city of Winnipeg itself were to be 6 miles by 6 miles with the town at the center. The aircraft (whenever possible) would fly north and south swaths at 3,000 foot intervals so sampling stations were laid out along an east-west transect. Positions were coded with "O" as the center and East (E) or West (W) if the station was east or west of the center. The sampling interval was established at one-half ( $\frac{1}{2}$ ) mile intervals because of scarcity of materials and manpower available. The transect line was extended one mile east and west of the block boundary to pick up drift.

The procedure was followed for the towns of Stainback, Morden, St. Pierre and Selkirk as well as Portage la Prairie.

At Portage la Prairie however, two north running sampling lines were also set up to detect drift (if any) towards the bird sanctuary in the Delta Marsh area. One line, designated N, ran from the northern block boundary north for six miles and the other, N2, from the northern block boundary north for 4 miles.

#### Results and Conclusions

A preliminary visual assessment of spray cards from Winnipeg,

St. Pierre and Morden indicate a moderate but even distribution of spray deposit throughout the sprayed blocks. Counts from sprayed cards at St. Pierre indicate an average across the block of 19.4 drops per  $\text{cm}^2$ . There are also several large drops on some cards indicating a leaky or dripping nozzle(s) on the spray aircraft. This was brought to the attention of the aircraft crew who were to check all nozzles and replace the diaphragms.

Drops recorded on the west side of Morden indicate the leak had been repaired as none of the large drops were evident. Drop counts indicate an average of 5 drops /  $\text{cm}^2$  on the sprayed portion of the block.

Determination of volume figures and MMD, D.max, etc. cannot be made at this time as the spread factor of the Baygon formulation on the spray cards has not yet been calculated.

Further results will be available when accurate droplet measurements have been completed.