Reprinted from: *American Fruit Grower*, April 1987.

Decrease Pesticide Costs by Using Traps

George B. MacCollom *

Growers interested in controlling apple maggot fly populations in their orchards should note that an apple maggot fly trap-out strategy is now possible. Although it still may sound unrealistic to suggest that no chemical controls are needed, a successful trap-out was conducted at Shelburne Orchards in Shelburne, VT in the summer of 1986.

The premise of a feasible trap-out strategy was based on an evaluation in 1985 of several different traps as shown in Table 1. Similar studies were conducted in 1986, and those results also are included.

Overall, the odor-enhanced Ladd Traps (red hemispheres on a yellow panel with a synthetic apple odor) were the most effective of all traps evaluated, particularly in trapping indigenous flies in unsprayed, abandoned sites. It also compared favorably with the odor-enhanced red sphere in commercial settings where the principal problem is with sexually mature migrant flies.

The success of any trap-out has to be based on some knowledge of the daily fly population within a given orchard. A population of 100 flies per acre per season in a clean orchard would be relatively high according to the population estimates my colleagues and I have developed. Thus a trap capable of capturing 100 flies per acre per season could well result in elimination of any maggot fly threat.

This essentially was the basis for the trap-out strategy used on 70 acres of apple trees at Shelburne Orchards. Nicholas Cowles, owner and manager of the orchard, assisted in taking daily fly counts and ascertaining fly prevalence in the orchard as the season progressed. If at any point I determined that the traps were not capturing all the flies present, and that egg-laying had started, Mr. Cowles would have been advised to initiate a cover spray.

During the 1986 season, a total of 1963 flies were captured between July 2 and September 29, an average of 28 flies per acre, a total well below the 100 flies per acre set as an arbitrary limit. Only 10 traps were initially set out, but by the end of the season there were 60 traps on the 70 acres. Traps were placed, for the most part, uniformly throughout the orchard. Traps were also placed in wild or unsprayed trees within 300 yards of the orchard boundary.

Of the 1963 flies captured during this two and one-half month period, 41% were female. Of the total flies captured, 45% were found on the yellow rectangle, 55% on the red spheres.

The highest capture for all traps on a single day was 127 flies on August 19 with a high of 13 for a single trap on a single day (August 10). The highest

capture for an individual trap for the entire season was 124 on a trap near unsprayed trees.

Table 2 shows total flies and number of days that the particular trap was set up. Keep in mind that we did not initially hang 60 traps but put up additional traps as fly captures increased.

The only insecticides used at Shelburne Orchards during the 1986 season were Pounce 3.2 EC at 0.1 pounds active ingredient per acre on May 8 and on May 20 at petal fall. The first cover spray was applied May 30 (Guthion 50% WP at 1.5 pounds per acre). The only other application of any insecticides was the spraying of the outside rows on July 4 with Imidan 50W at 3 pounds per acre.

Two thousand fruit were examined prior to and following harvest with no maggot injury present. Although the success of this trap-out strategy and arbitrary thresholds is based on one orchard in one location, the fact remains that the maggot fly was trapped in sufficient numbers to preclude any damage on a 70 acre orchard.

The potential exists for substantial savings to apple growers in areas where the apple maggot is present. The economics are more favorable as cost of spraying can average $10 to $15 per acre per application whereas the trap investment will not exceed that cost (about $10/trap/season and the traps are reusable). In addition, labor should not involve more than two hours or so daily for removing flies, making counts and cleaning traps.

* The author is Professor of Entomology, Department of Plant and Soil Science, Hills Building, University of Vermont, Burlington, VT 05405

Table 1

Average Number of Flies Captured/Trap

	Managed Block		Abandoned Block	
	1985	1986	1985	1986
Yellow Panel[1]	0.5	1.5	12.0	3.5
Yellow Panel + OE[2]	2.0	2.5	20.5	15.0
Red Sphere[3]	5.0	1.0	17.5	23.5
Red Sphere + OE	25.0	18.0	42.0	31.5
Ladd Trap[4]	1.0	1.5	31.0	35.5
Ladd Trap + OE	6.0	17.5	76.0	56.0

---

[1] Pherocon, Apple Maggot Fruit Fly - AM (mfg. by Zoecon, Palo Alto, Calif.)

[2] OE, odor enhancement septa by Ladd (mfg. by Ladd Res. Industries, P.O. Box 1005, Burlington, VT 05401).

[3] Red spheres from Ladd Trap (mfg. as above).

[4] Ladd Trap (mfg. as above).

Table 2

(Season Total Trap Captures)

Trap #	Total Flies	Days Up	Trap #	Total Flies	Days Up
1	23	86	31	18	76
2	55	86	32	15	76
3	61	86	33	36	76
4	24	86	34	35	76
5	33	86	35	8	61
6	23	86	36	13	61
7	67	86	37	40	61
8	124	86	38	14	56
9	48	86	39	8	56
10	43	86	40	38	56
11	47	79	41	63	49
12	20	79	42	53	49
13	74	79	43	17	49
14	52	79	44	29	49
15	62	79	45	21	49
16	43	79	46	15	49
17	37	79	47	32	47
18	17	79	48	18	47
19	23	79	49	13	46
20	79	79	50	12	46
21	44	78	51	15	42
22	13	78	52	26	42
23	40	78	53	4	42
24	49	78	54	19	42
25	31	78	55	11	42
26	69	78	56	8	39
27	37	78	57	14	39
28	51	78	58	20	39
29	17	78	59	21	36
30	10	78	60	7	36