Artichoke Plume Moth Control

experiments and field practices during 1949-1957 show value of properly timed parathion treatments and good sanitation

W. H. Lange, R. H. Sciaroni, R. M. Drake, A. S. Greathead, J. E. Dibble

The artichoke plume moth—Platyptilia carduidactyla (Riley)—caused crop losses as high as 90% during 1956 and is the most important restricting factor in the production of artichokes.

Records kept in San Luis Obispo County—during a 14-year period—show that the artichoke plume moth has caused annual losses ranging from 10% to 90% with an average of 25%. Other counties report average seasonal losses of from 25% to 75%.

Artichokes planted in 1956—9,400 acres—had a fresh market value of $3,072,000 and the markets—for frozen artichoke hearts and for a new marinated product—will greatly increase the value of the crop in the next several years.

Factors responsible for severe infestations include continuous artichoke production on the same land, a tendency to grow the crop during the spring and summer months when the moth is very active, poor top disposal, and other poor sanitation practices.

The plume moth lays 70 to 300 eggs—with an average of 170 eggs—on the undersides of the woolly leaves of the artichoke plant. In the spring months they lay eggs also on the fuzzy stems below the buds. Eggs are rarely laid on the artichokes. The small worms hatch in from eight to 14 days and crawl to the bases of the shoots and feed upon the interfolded new leaves. If no bud is present they bore inside the stems. In the spring the young worms often enter upright buds and mine the outer bracts. Borings inside the stems or buds—black and filled with frass—are characteristic of the plume moth. Large worms may even enter the crowns of the plants.

Larvae feed for 36 to 86 days. Pupation occurs in the stems, or on the outer bracts of the buds. Adults emerge 10 to 30 days later and may live for 30 days. A cycle from egg to adult may take from 54 to 140 days depending upon climatic conditions and the season of the year.

Three overlapping generations of the moth make it possible to find all stages of the plume moth every month of the year. If plants are cut off at or below the soil surface during April through June—the usual practice—the summer generation is distinct. The larvae of this generation attack the leaf petioles, often boring the entire length inside the stems because few buds are produced. The fall generation larvae enter buds as they appear at the bases of the shoots and cause damage until the following February. The spring generation starts the end of November and causes damage until the plants are cut again from April to June.

Timing of insecticide applications in relation to seasonal production of artichokes.

Seasonal cycle of the artichoke plume moth.
Artichoke Production

Philip S. Parsons and R. H. Sciaroni

producing artichokes in the Half Moon Bay area during the 1956-57 season cost $513.36 per acre,—$2.20 per 22-pound box—according to information obtained from a recent survey.

The sample costs in Half Moon Bay are not presented as average for San Mateo County, however, because charges for individual items may vary in different plantings and increased yields would reduce per box costs. A yield of 225 boxes per acre,—of 22 pounds each—is considered good but in some seasons yields may be much lower. Under ideal growing conditions a yield of 300 boxes per acre is possible.

To achieve good quality and high yields of artichokes an adequate fertilizer program and an economic control of the plume moth—the most important pest of artichokes—must be maintained consistently.

The cost of developing artichoke plants on the ranches surveyed came to $61.00 per acre which—spread over a five-year producing life—gives an average cost of $12.20. Development costs include:

| Make plants | 15 man hrs. | $15.00 |
| Planting | 15 man hrs. | $15.00 |
| Truck | 1.5 hrs. | $3.00 |
| Replant | 3.00 |
| Stumping, 1st year | 5 man hrs. | $5.00 |
| Plants | 20.00 |

Total $61.00

Other costs were obtained from a number of growers during the survey and a sample schedule of work done, materials used, and prices as of 1956-57 was prepared as shown in the large table at the lower left.

Successful growers of artichokes must be skilled in the cultural and management phases of the enterprise because risk of crop failure—due to frost injury, heavy rainfall, and artichoke plume moth damage—is high in the production of artichokes.

Factors influencing net returns to growers are shown in the above single column table. A yield of 225 boxes per acre would require a seasonal average price of slightly more than $2.25 per box for the grower to break even with production costs.

Philip S. Parsons is Extension Economist, University of California, Davis.

R. H. Sciaroni is Farm Advisor, San Mateo County, University of California.
of these materials as full volume sprays—one-half gallon of spray per plant—gave control of worms.

Residues of parathion dusts and sprays on buds are not excessive. The outer foliage, however, may have 16–28 ppm—parts per million—after dusting or spraying, falling to 0.5–1.5 ppm in 7–10 days. Apparently the greatest hazard is involved in entering artichoke fields soon after applications are made. Therefore, a minimum period of 8–10 days should elapse before workers enter fields following parathion applications. Workers should wear protective clothing and utilize all the precautions specified by the manufacturers. Medical examinations at intervals may be necessary for workers having frequent exposure to parathion.

Local agricultural authorities should be consulted before parathion treatments are applied.

Sanitation

Proper disposal of the tops at the time they are cut is necessary. Cutting with a blade, placing within a few days in a ditch and covering with at least 6" of soil is the best method of top disposal. Chopping, disking, burning, and other methods simply allow more adults to emerge.

In certain areas air pollution control regulations may force discontinuance of the practice of burning the cut tops.

All wormy artichokes should be taken from the fields and utilized or destroyed, particularly in the spring of the year.

All thistles of the genus Cirsium and volunteer artichokes or cardoon should be removed because they harbor the plume moth.

A combination of good top disposal and chemical treatments makes possible adequate control of the artichoke plume moth.

W. H. Lange is Associate Professor of Entomology, University of California, Davis.
R. H. Sciaroni is Farm Advisor, San Mateo County, University of California.
R. M. Drake is Deputy Agricultural Commissioner, San Luis Obispo, California.
A. S. Greathed is Farm Advisor, Monterey County, University of California.
J. E. Dibble is Extension Field Technologist, University of California, Berkeley.

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