

Artichokes Would be Filled with Worms without Insecticide Use

U.S. Pesticide Benefits Case Study No. 29, May 2011

Leonard Gianessi and Ashley Williams

The artichoke is native to the Mediterranean area. The plant came to California with Italian immigrants in the mid-1800s and commercial production began in the early 1900s. California produces 100% of all commercially grown artichokes in the U.S.; the U.S. ranks sixth in the world in artichoke production. All artichokes grown in California go to the fresh market. Many growers regard the climate of the Monterey Bay area as one of the best in the world for artichoke production [1]. The artichoke is a member of the thistle family. Perennial artichokes are harvested for 5 to 10 years before replanting

The artichoke plume moth (APM) is native to North America. Prior to the introduction of artichokes, several thistle species commonly occurring throughout California served as primary hosts to the APM. Adult females deposit an average of 170 eggs on artichoke plants. Larvae start tunneling into the leaf stalk and work their way toward the center of the bud [2]. Larvae of the artichoke plume moth feed on all parts of the plant, but economic losses result when they feed on artichoke buds. The buds are unmarketable as a result of the eaten away portions of the bracts, borings inside of the heads, and blackened heads from feeding and frass exudation [3],[4]. Larvae may feed from 36 to 86 days [5].

In 1922 the damage was so severe that growers requested aid from the University of California. Applications of nicotine, pyrethrum, cryolite, and lead arsenate failed to reduce the percent of wormy artichokes [4]. In the 1952-53 and 1953-54 seasons, losses reached proportions as high as 50% to 70% [5]. Research in 1956 demonstrated that 8-9 applications of new chemical insecticides killed 96-100% of the larvae on plants [6]. Insecticides came into common use in the 1960s [3]. Current research demonstrates that insecticide applications can reduce APM infestations from 80% (untreated) to 2% [7].



Artichoke plume moth damage, top and middle



Artichoke plume moth larvae

References

1. Rubatzky, V.E., M.J. Snyder and R.H. Sciaroni. 1976. California globe artichoke production. *Nuovi Studi sul Carciofo, Proceeding of the 2nd International Congress on Artichoke Studies*. 1005-1025.
2. University of California. *UC Management Guidelines for Artichoke Plume Moth on Artichoke*. Available at: <http://ucipm.ucdavis.edu/PMG/r6300111.html>.
3. Ryder, E.J., N.E. De Vos and M.A. Bari. 1983. The globe artichoke (*Cynara scolymus* L.) *HortScience*. 18(5):646-653.
4. Lange, W.H. 1941. *The Artichoke Plume Moth and Other Pests Injurious to the Globe Artichoke*. University of California Berkeley, College of Agriculture. Agricultural Experiment Station Bulletin 653, October.
5. Lange, W.H. 1954. Artichoke Plume Moth Damage. *California Agriculture*. July.
6. Lange, W.H. 1957. Artichoke Plume Moth Control. *California Agriculture*. July.
7. Bari, M.A. 1997. *Field Evaluations of Alert 2SC and Success for APM Control*. The Artichoke Research Station.