

Florida's Sweet Corn Flourishes with Help from Insecticides

U.S. Pesticide Benefits Case Study No. 7, May 2011
Leonard Gianessi and Ashley Williams

Florida ranks number one nationally in the production and value of fresh market sweet corn, typically accounting for 25 percent of national sweet corn production. More than 500 million pounds of fresh sweet corn are produced annually in Florida. Yet the American Farm Bureau has estimated that without the use of insecticides, no commercial sweet corn production would exist in Florida because of the severe insect damage to the ears [1].

Florida's warm humid climate is ideal for the development of pest populations. Corn earworm and fall armyworm are two of the most important insect pests of sweet corn in Florida. Damage occurs when the larvae of these two pests eat the kernels. Corn earworm initially feeds on the silk, then tunnels downward, leaving a trail of damage and waste that often ruins the entire ear. Fall armyworm causes similar damage, though larvae may enter ears by burrowing through the husks on the side [2].

Sweet corn is grown in Florida in successive overlapping crops from late August to mid June. Female earworm moths are attracted to the silks for egg laying. Each female earworm lays 500 to 3,000 eggs and each armyworm moth may lay more than 1,000 eggs.

Prior to the development of synthetic chemical insecticides in the 1940s, Florida was considered an unlikely place for growing sweet corn. Control of insects was economically prohibitive. The first commercial production of sweet corn in Florida was reported in the 1947-48 season after the introduction of chemical insecticides. Research determined that the insecticide sprays would result in 96 percent worm-free ears in comparison to only 2 percent worm-free ears in untreated plots [3]. A great expansion in sweet corn production occurred in Florida in the 1950s after the introduction of chemical insecticides (Figure 1) [4]. The establishment of sweet corn in Florida is attributed largely to successful control of insects with the new insecticides [3].

Between 98 and 99 percent of Florida's sweet corn acreage is treated annually with insecticides, with 10 to 12 sprays made to each acre. Repeated sprayings are necessary due to the short time period for incubation of earworm eggs (24 to 36 hours) and due to the rapid rate of silk elongation.

References

1. Knutson, R.D., et al. 1993. *Economic Impacts of Reduced Pesticide Use on Fruits and Vegetables*. American Farm Bureau Research Foundation.
2. Mitchell, E.R. 1978. Relationship of planting date to damage by earworms in commercial sweet corn in North Central Florida. *Florida Entomologist*. 61(4).
3. Hayslip, N.C., et al. 1953. Corn earworms investigations in Florida. *Journal of Economic Entomology*. 46(4).
4. Guzman, V.L., et al. 1967. *Sweet Corn Production in the Organic and Sandy Soils of South Florida*. University of Florida, Institute of Food and Agricultural Services, Bulletin 714.



Insect damaged sweet corn



Fall armyworm larvae



Spraying sweet corn

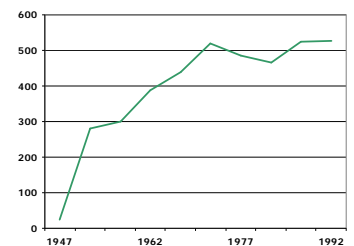


Figure 1: Florida Sweet Corn (Million Lbs/Yr)