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A STUDY ON CONTROL OF THE DIAMONDBACK MOTH IN FIELD BY IRRADIATED STERILITY

Rongxin Yang, Darong Xia, Weiping Gu, Yanjun Zhang
*Institute for Application of Atomic Energy,
Zhejiang Academy of Agricultural Sciences, Hangzhou, China*

The present paper synthetically discusses the control of DBM (*Diamondback Plutella xylostella* L.) by SIT. The studies included improvement of artificial diet, method of collecting eggs, mating characteristics, sterility of the F1 generation, spread ability of irradiated sterile DBM, field DBM control by irradiated sterile DBM, and DBM's parasites in field.

As results of spread ability of irradiated sterile DBM the 94.2% of sterile DBMs spread in 40m in 10 days and a few of DBMs do 120m. It indicates that the spread of sterile DBM is definitely time limit. The spread area is within 696M² in the first three days. In the study of field DBM control by irradiated sterile DBM, the ratio of sterile DBMs to wild ones is 4.7 : 1. The irradiated DBMs are released 10 times. As results, the rates of egg sterility in F1 and F2 generations are 79.0% and 81.7% respectively. The colony life periods of DBM is prolonged with 4-day delay for F1 generation and 12-day delay for F2 generation. Thus, the number of yearly generations is reduced, pupal period prolonged, while larval period and actual harmful period of DBMs are shortened. With the successive releasing of two generations, the control effectiveness in F1 generation is 80.8 % and that in F2 generation is 79.1%.

There are 3 to 4 species of DBM parasites in field in Hangzhou. They are a species of chalcide, a species of braconid and two species of ichneumon. The braconid is a superior specimen in DBM larva, its highest parasitic rate is 23.4%. The highest parasitic rate of ichneumon is 4.8%. The chalcide is a superior parasitic specimen in DBM pupa, its highest parasitic rate is 73.0%. The number of emerging chalcide are 3 to 16 for per DBM parasitized, it can be considered that combine F-1 sterility and release of this species of chalcide for the control DBM.

The commercial value of using F 1 sterility in a small field is not higher than that of using pesticide. But the value of environmental protection and state of health will be notable.