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EFFECT OF LOW TEMPERATURES ON HIBERNATING LARVAE AND PUPAE OF Earias insulana (1)

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SUMMARY

The sudden outbreak of spiny bollworm (Earias insulana) in 1966 in cotton growing areas of Gorgan & Gonbad caused great damages on cotton product in this region. Different ideas were expressed by research workers to this non expected outbreak and many factors of variation for population increase from year to year have been mentioned. The influence of winter frosts has been mentioned as an effective factor for population decrease of the pest, but up to that time no official and assured information of the resistance of larvae or pupae of E.insulana against

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winter frost, was reported. Therefore different experiments were carried out, in vitro and in vivo, with a wide range of temperature which the results are summerized as follow:

1-Different observations revealed that the larvae can not overwinter in Gorgan & Gonbod Even in years such as 1968 which the frosting period was low, compared with other years, the whole larval population could not resist the frost and died (Table 1 in Farsi text).

2-Temperatures of about -3 to -4 ^{0}C for a period of 10 to 15 hours showed a noticeable larval mortality. The occurenee of -2 to -3 degrees also showed a great harmful effect on the buds, flowers and bolls of remaining cotton and other host plants in the field. This phenomenon has an indirect effect on the overwintering larvae by loosing their stock of food.

3-In the winter of 1967 & 1968 when the lowest temperature was about -5 ^{0}C no mortality was observed among pupae.

4-At the beginning of january 1969 when the temperature dropped down to -11 ^{0}C and continued

up to six days with a fluctuation between 0^0 to -11^0, no pupae could survive. (Fig. 1 in Farsi text).

General conclusion : Experiments and observations were carried out to determine the effect of winter frost on the population density of Earias insulana. The results obtained can be summarized as follow:

In northern parts of Iran and other regions with similar climatical condition, low temperature is the most effective factor for elimination of the pest population. In the years following very hard winters, it is almost impossible to find even a single sample of the pest in the field of cotton or on any other host plants.