Ent. Phyt. Appliq.
Vol. 54, No. 1 & 2, Fév. 1987

# FORECASTING CODLING MOTH PHENOLOGY BASED ON THE DEGREE DAY SUMMATION IN THE APPLE ORCHARDS IN WEST OF ESFAHAN[1]

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## SUMMARY

Efficiency of pheromone, light and corrugated card board traps for codling moth *Laspeyresia pomonella* L. capture for west of Esfahan apple orchards in 1976-1983, and its relation to degree day summation for forecasting codling moth phenology in the area is discussed.

Average degree days summation more than 10°C and less than 31°C from January 21st to first pheromone trap catch, and from first pheromone trap catch to first peak at the time of 34 % catch, and for 5, 50, 95% catch in first generation were calculated respectively 85, 145. 6,27, 214 and 758 degree days summation for 5, 50 and 95% catch in second-third generation were estimated respectively 807,994, 1538 and1587, 1774, 2318. The model developed or 5-95% pheromone trap catch in first through third generation fairly well followed pheromone trap catch date in first generation (Fig. 3) and female trap catch data

1 - Received for publication, June 3, 1985.

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by light traps in first to third generation (Fig.4) (We expected captured females oviposited and ovipositing females). The model was also compared with the degeree of success in chemical control programe from 1977 - 1984. Four sprays, two of them in range of 107 - 474, one in 921 - 967 and one in 1689 - 1765 degree day from first pheromone trap catch were associated with 91. 5 - 96. 5% control of codling moth damage during the season and at harvest compared to check (Table 4). Graphically these range of degree days were respectively comparable to 20 - 84%, 34 - 45% and 30 - 48% of male codling moth activity (Fig. 4). The model is also compared with available literature. Results are accepted as relative confirmation of the model. At present it is suggested to pest control specialists in the area to use this model in forecasting programs, but also suggestions are given for further investigation and imporovement of the model.

## REFERENCES


ANON., 1968. Anleitung zum integrierten pflanzenschutz im Apfelanbau, Stuttgart, 22 pp.

DASTGHEYB - BEHESHTI, N., 1983. Control of codling moth *L. pomonella* L. by spraying against the first and second generation in Esfahan. Proceeding the seventh Plant Protection Congress of Iran, 52 pp.

CLARK, L. R., GELER, P. W., HUGHES, R. D. &MORRIS, R. F., 1974. The ecology of insect population in theory and practice. Jhon wiley & Sons, London, 232 pp.

FINNEY, D. J., 1952. Probit analysis. Rer. ed. Cambridge University press, London, 318 pp.

GLASS, EDWARD. H. 1975. Integrated pest management. Entomological, Society of America. Special publication 75 - 2; 141 pp.

MORRIS, R. F. and FULTON, W. C., 1970. Models for the development and survival of *Hyphantria cunea* in relation to temperature and humidity. Men. Ent - Soc. Can. No. 70; 60 pp.

MOSTAAN, M., 1983. Possibility for integrated conrol of apple pests in west Azarbayejan, proceeding of the seventh plant protection congress of Iran, P. 50.

NEWSON, L. D., SMITH, R. F. and WHITCOMB, W.H., 1976. Selective Pesticides and selective use of pesticides. Pages 565 - 591, in theory and practice of biological control. Edited by C. B. Huffaker P. S. Messenger. Academic press, New york; 788 pp.

OLOUMI - SADEGHI, H., ESMAILI, M. and SAEB GILANI, H. 1978. Studies on codling moth population change and its most suitable control time in Karaj. Report for two years. Department of Plant Protection, Karaj College of Agriculture, University of Tehran, 105 pp.

OLOUMI - SDEGHI, H. and ESMAILI, M., 1979. Studies on codling moth population change to determine ite most suitable control time. Iranian Journal of Agricultural Scien Vol 3, No 5, p 83 - 112.

OLOUMI - SADEGHI, H., ESMAILI, M. and KHARAZI - PAKDEL, A., 1983. The standard traps of the biologial studies of the codling moth, *Laspeyresia pomonella* (L.) and the strippcd rice stem borer *Chilo Suppressalis*(Walker), proceeding of the seventh Plant Protection Congress of Iran, P.48-49.

RADJABI, GH., D. BEHESHTI, N., AKRAMI, F., BAYATASSADI, H., DICKLER, E. and DAVOUDI, Z., 1978. Codling moth in Iran , researches made from 1975 - 1977. *Ent. Phyt. Appliq.* Vol. 46, No. 1 - 2, p. 1 - 55.

RADJABI, GH., D. BEHESHTI, N., AKRAMI, F. and BAYATASSADI, H., 1980. Codling moth control in first generation. *Ent. Phyt. Appliq.* Vol. 48, No. 1, p. 97 - 101.

RIEDEL, H., CROFT, B. A. and HOWITT, A. J., 1976. Forecasting codling moth phenology based on pheromone trap catches and physiological time models. The Canadian Entomologist, Vol. 108, No. 5, p. 449 - 460.

RIEDEL, H. and CROFT, B. A., 1978 a. Management of the codling moth, East Lansing, Michigan, Agriculture Experiment Station, Research Report (Farm science) 337 : 18 pp.

RIEDEL, H, and CROFT, B. A. 1978b. The effect of photoperiod and effective

temperatures on the seasonal phenology of the codling moth. Can. Ent. 110; p. 455 - 470.

RUPPEL, R. F. and DIMOFF, K., 1978. Tabular values for the logistic curve. Bulletin of the Entomological Society of America. Vol. 24, No. 2 : p. 149 - 152.

SOKAI, R. R. and ROHLF, F. J. 1969. Biometry W. H. FREEMAN company. San Francisco .

SOUTHWOOD, T. R. E. 1975. Ecological mothods with particular references to the study of insect populations Chapman and Hall, London, 391 pp.