

Can expert system simulation techniques support the decision-making tasks of pest management in sericulture?

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Many scientific techniques were used in sericulture research and rapid progress in their methodologies can aid in solving various complex situations associated with sericulture systems. Management of pests in sericulture is one such typical situation which requires more advanced computer technologies, such as expert systems and simulation models. Understanding the concept of pest management in sericulture with an appropriate expert system simulation model (ESSM) is important because of the fundamental impact of its complexity on production systems. With suitable unified ESSM technique, many difficult problems involved in management of pests in sericulture can be solved. In this article we review some suggestions and guidelines for such model developers.

THE history of silk began over five thousand years ago and has lots of myths associated with it. Silk is considered to be a luxury item among other fabric commodities of textile industry, because of its tensile strength, rich colours and sheen. Sericulture, a methodology to produce silk, has a great affinity to agriculture.

Sericulture has become more useful and profitable ever since man began practising it. In the past decades, many Asian farmers have been collectively trying to achieve optimum returns from the sericulture industry. Mulberry cultivation, silkworm rearing, silk reeling and trading are the kernel components of a sericulture system. Being an agro-based industry, sericulture has vast potential for generating income and employment, primarily to the rural masses in several Third World countries. Mulberry, the food plant for silkworm, cultivated under a wide range of climatic conditions, is usually attacked by a large number of pests. Similarly, pests of silkworm also cause serious concern to the farmers practising sericulture. Identification of various pests caused confusion and therefore sericulturists were unable to adopt suitable methods for their timely control. The real difficulty in managing these pest components is a fuzzy concept and requires more advanced technologies distinguished by modern methods of research. Developing of a suitable expert system simulation model

(ESSM) for appropriate decision making for pest management in sericulture is of significance and will benefit the silk growers and cultivators.

Computers in sericulture

Computerization is a focus with much attention towards the achievement of radical innovations in sericulture research. Because of its rapid progress, and many problems vested in sericulture research, computers emerge to solve them quickly and accurately to attain maximum suitable solutions. One of the latest methods of using computers for solving such practical problem domains is through the use of expert systems (ES) and simulation models (SM), which are quite different in their context and analogy. The two components, ES and SM, need some explanation, as they are quite new to the sericulture science.

Expert systems

Expert systems, the most elevated part of artificial intelligence (AI), are a set of defensive programming techniques implied through heuristics or rules of thumb. They process massive data on a subject, offer solutions on par with the human expert thinking faculty. An expert system is a program that contains a generalized inference engine and a rule-base, takes input data and assumptions, explores the inferences derivable from the rule base, yields conclusions and advice, and offers to explain its results by retracing its reasoning for the

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