

**Proceedings of the Fourth Consortium Implementation Committee (CIC) for the sub-project “Research into Development of Decision Support Systems for Insect pests of major rice and cotton based cropping systems” (C2046) under NAIP Component 4 on 18<sup>th</sup> July at CRIDA, Hyderabad**

The fourth CIC meeting was held on 18<sup>th</sup> July at CRIDA, Hyderabad involving the CRIDA project scientists and CCPI, DRR, Hyderabad to discuss the procurement related issues particularly procurement of software for which Rs 2.0 lakhs has been sanctioned under NRC. The participants list for the brainstorming session is enclosed.

Dr Y.G. Prasad, CPI highlighted the requirement for software that enables model building and simulation software for insect lifecycles which is one of the important approaches for modeling timing of pest attacks. In this context a market survey for available generic software was put before the participants for discussion: 1) DYMEX and CLIMEX suite of software by M/S Hearne Scientific Pty Ltd, Australia 2) MORPH by HRI-Warwick University, UK 3) GOSSYM/COMAX by USDA-ARS 4) Cottonlogic and Entomologic, CSIRO, Australia. After a thorough discussion on the features of each software available from relevant WebPages, the committee narrowed down to Dymex and Climex suite of software for the following reasons:

- 1) **DYMEX** is generic software that permits modeling of a wide range of organisms particularly insects. The software permits construction of models for insects based on lifecycle parameters such as fecundity, developmental duration and rates and mortality. **CLIMEX** software predicts the effect of climate on species distribution and seasonal abundance. 2) The software is essentially designed for users with no prior knowledge of programming
- 3) Interactive modeling of fluctuating populations of organisms in changing environments offers unlimited flexibility in building a model as the choice of model variables, functions and parameters as well as applications are made by the user. Models can be refined through an iterative process.
- 4) The software was developed and commercialized by CSIRO to Hearne Scientific. Extensive help material (insect tutorial, model building and simulation tutorials) are available and on-line help is provided as part of 12 month maintenance
- 5) The software is commercially available and is in use in several countries and Licensing terms and conditions are transparent / clearly mentioned in the WebPages
- 6) Both softwares can be used for applications related to cotton and rice cropping systems with ease
- 7) **MORPH** suite of predictive models has been mostly used for modeling temperate pests of temperate bulb crops, fruits and vegetables in the UK. The software suite also has a model building tool known as HIPPO. However, the software is untested in tropical conditions, is undergoing refinements/version improvements and is not commercially available as yet for deployment in conditions outside Europe.
- 7) GOSSYM/COMAX is a process-based cotton growth simulation model and expert system that simulates cotton growth given selected weather, soil and management practices. The software is essentially a decision support system for cotton cultivation in the US and may not work well with intersecting insect data.

8) CottonLogic is package of three software tools (NutriLogic, HydroLogic and EntomoLogic). Entomologic tools are to used at individual field level based on field sampling for *Helicoverpa* and mites and not for modeling emerging pests. Primarily CottonLOGIC is a decision support package tailor made for the Australian Cotton Industry. The software is distributed freely to farmers and is not commercially available for direct use in other countries.

Based on the in-depth discussion, the committee found DYMEX-CLIMEX suite as the most appropriate modeling generic software useful for achieving the project objectives and recommended for procurement from the supplier firm through direct contracting.

Submitted for kind approval of the proceedings

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