BUREAU OF SUGAR EXPERIMENT STATIONS

QUEENSLAND, AUSTRALIA

FINAL REPORT
SRDC PROJECT BS126S

A DATABASE OF PEST AND DISEASE
INCIDENCE FOR THE SUGAR INDUSTRY

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1.0   SUMMARY

This project established a system to collate, store and interrogate pest and disease data that are collected annually by Queensland Cane Protection and Productivity Boards (CPPBs). An Access database titled 'Bugbuster' was developed and this served as the template which was modified to accommodate the needs of individual CPPBs.

A separate database containing historical pest and disease data from each CPPB since 1970 was developed. This will be updated annually. The information in this database is provided to industry researchers involved in monitoring trends in pests and disease.

A handbook was written to provide standard guidelines for collection of pest and disease data. This was distributed to all CPPBs and BSES pathology, entomology and extension staff.

2.0   BACKGROUND

Cane insect and animal pests cause a reported loss to Queensland growers of $9m annually in reduced crop yield, together with pesticide costs of an additional $8m annually.   Some losses are undoubtedly not observed or reported. Estimates of losses due to disease are not made at present, but RSD alone is believed to cause losses of at least $10m.

Information on pest and disease incidence in Queensland is collected annually by all Cane Protection and Productivity Boards (CPPBs). There is a need to collate this information so that it is widely accessible to BSES and CPPB staff and to the industry.   Such information is used to:

1. monitor trends in pest and disease incidence so that patterns in the data can be recognised and strategic plans for reducing or eliminating these problems can be put into place; and

2. assess the economic importance of individual pests and diseases to a local mill area, so as to establish work priorities for local boards and research priorities on a statewide basis.

3.0   OBJECTIVES

- Develop an improved methodology for collection and collation of pest and disease information.

- Set up a database for recording incidence of pests and disease in each Productivity Board area.

- Audit existing available information and enter data from BSES archives back to 1970.

- Design a handbook describing methodologies and techniques to assess pest and disease losses.

- Develop guidelines for selection and implementation of software for CPPB staff to carry out this work, in conjunction with current users of advanced software.

4.0   METHDOLOGY/DISCUSSION

4.1 Pest and Disease Database

The method of collection and recording of pest and disease data by CPPBs throughout Queensland prior to 1995 differed greatly in each district.   Although a few CPPBs had a computerised data recording system in one form or another, most staff from CPPBs manually collated data from written records.

In order to improve the efficiency and accuracy of pest and disease data collection by CPPBs, a relational database program was developed to assist and encourage Productivity Boards to develop their own computerised data collection and record keeping systems.   The database program, 'Bugbuster', developed by Mr Ely Halili (BSES, Indooroopilly) served as a template in database systems being developed by Queensland CPPBs.   This will encourage standardised methods for collecting and recording data.

'Bugbuster' has a simple, point-and-click, menu-driven system that could easily be modified and enhanced by Productivity Board officers to better suit their local situations and requirements. It contains the following information:

- grower information which includes addresses, mill area, assigned area;

- planting details of varieties, areas, soil types, locations, hot water treatment (hwt) record;

- application of fungicides, Lorsban®, suSCon® Blue, other pesticides;

- plant inspection data which includes variety, disease, method of inspection, severity;

- disease inspection of variety by block, disease, method of inspection, severity;

- pest inspection of variety by class and block, pest, damage severity, tonnes lost, control measure;

- RSD survey results;

- hot water treatment record;

- seed distribution record.

Several built-in queries and reports are included in 'Bugbuster' to serve as an example and to demonstrate how data can quickly and easily be presented in a more meaningful format.   Other advanced querying and reporting capabilities have been added to the program as requested by individual Productivity Boards.

A separate database to 'Bugbuster' was developed by Mr Hallili and contains historical pest and disease data from 1970. This is updated on an annual basis. The information in this database is provided to industry researchers involved in monitoring trends in pests and diseases and was used to describe the history of incidence in the handbook described below.

4.2 Handbook to describe techniques to assess pest and disease losses

To further enable standard methods of data recording and to obtain some estimation of yield loss across all mill areas, a handbook was written which describes techniques for recording the incidence of pests and diseases in commercial sugarcane crops. The book titled 'Recording Pest and Disease Data in the Australian Sugar Industry' by Stringer, Magarey, Samson and Webster describes the symptoms, distribution, history of incidence and techniques to assess losses for each pest and disease in sugarcane. The book was distributed to all Queensland CPPBs and BSES pathology, entomology and extension staff. It is available upon request from BSES Head Office.

5.0 RECOMMENDATIONS FOR FURTHER RESEARCH

To further enable consistency in the methods of data recording, it would be beneficial to give CPPB staff further training in the identification of pests and diseases. CPPB staff would also find training in 'Bugbuster' useful as many Boards are now using it for data collation and processing.

6.0 INTELLECTUAL PROPERTY

Intellectual property matters are not regarded to be of any significance. Normal copyright provisions apply to the handbook. Copies of 'Bugbuster', the historical database and the handbook are being made freely available to sugar industry groups such as CPPBs and BSES research and extension staff.

7.0 PUBLICATIONS

Stringer, JK, Magarey, RC, Samson, PR and Webster, DE (1999) '*Recording Pest and Disease Data in the Australian Sugar Industry',* Bureau of Sugar Experiment Stations, Brisbane.

8.0 ACKNOWLEDGMENTS

The funding support from the Sugar Research and Development Corporation for this project is gratefully acknowledged together with the contribution from many current and former BSES pathology, entomology and extension staff during the compilation of the handbook.