MANAGEMENT OF RODENT PESTS IN SOUTHEAST ASIA

Newsletter 1: December 95

" World-wide, 3.5 million rats are born everyday. In India, where human population exceeds 600 million, rats outnumber man ten-fold." - R.L. Semple (1982)

THE RAT PROBLEM: The problem of rats attacking rice crops has been with us for centuries. With no effective method for control, farmers and officials alike have had to adopt a level of tolerance of the pest. A current conservative estimate is that rodents in rice-growing regions typically cause annual preharvest losses of between 5 and 17%. With Asia's population likely to increase from 3.1 billion in 1990 to 4 billion by 2025, there will be not enough rice to feed both men and rats.

THE RESEARCHERS: In January 1995, the Australian Centre for International Agricultural Research (ACIAR) commenced funding for the project "Management of Rodent Pests in Southeast Asia". Research is currently being carried out by scientists from Australia's Commonwealth Scientific and Industrial Research Organisation (CSIRO), Indonesia's Central Research Institute for Food Crops (CRIFC), and Malaysia's Universiti Pertanian Malaysia (UPM) and Malaysian Agricultural Research and Development Institute (MARDI).

THE RESEARCH: Why do rat numbers increase? Why do they decrease? How do rats use their landscape in and around rice farms at different times of the year? How effective are the methods that are currently used to control rats? Is there a more efficient way to implement their use? What diseases do rats carry? Are the diseases a risk to humans or livestock? What is their potential for rat control?

We seek answers to these questions with the aim of developing an effective rat management strategy.

This research is of little value if rodent managers, government officials and growers are not aware of its progress. It is hoped that this newsletter will create a link between researchers, extension staff and rodent control practitioners in Asia and elsewhere. In future issues we hope to have reports from other institutions on current research or on rodent management strategies. We welcome contributions from any interested individuals or institutions.

KEPALA BATAS PENANG MALAYSIA

Mr Lam Yuet Ming leads MARDI's team of rodent researchers. He joined MARDI's Research Centre at Kepala Batas over 23 years ago and has built a solid reputation as one of southeast Asia's most experienced rodent biologists.

Mr Lam has conducted extensive research on the biology and reproductive behaviour of rats in Malaysia, but one of his finest contributions to rodent management was the introduction of the "traps plus barrier system" (TBS) to the rice-growing community in 1985.

Originally named the "Environmentally Friendly System", the simple but effective design uses multiple-capture traps placed strategically in a rectangular metal or plastic fence.

During the course of the project, Mr Lam and his colleagues in Indonesia and Australia, aim to find the most effective strategy for TBS use. They are currently examining the effectiveness of an early-maturing or aromatic variety of rice planted within the fence which acts as a lure to rats. In theory, this system will not only protect the crop within the fence from attack but also the crops around the fence, by attracting rats from the surrounding area.

Later research will examine the optimal size, location and time of placement of the barrier and best use of a trap crop.

SERDANG SELANGOR MALAYSIA

Professor Sheikh Omar Abdul Rahman is Head of the Department of Pathology and Microbiology at UPM and is the coordinator of disease studies for the ACIAR project in Malaysia. He started his career at UPM in 1974 after completing his formal training in veterinary pathology in Australia and Canada.

In addition to his lecturing duties, Professor Sheikh Omar has been actively involved in identifying and studying diseases that affect livestock, domestic and wild animals. Through these studies, he has collaborated with research groups from many parts of the world.

In the current project, he is supervising undergraduates studying diet, parasites and bacterial infections of the rat. In addition, Professor Sheikh Omar is supervising a PhD student attempting to identify the viruses carried by the ricefield rat in different regions of Malaysia. This work will give an important insight into the potential to use diseases to control rats in the future.

SUKAMANDI WEST JAVA INDONESIA

In a country where preharvest crop losses (annually around 17%) are reported to be the highest in southeast Asia, it is not surprising that the Government of Indonesia has identified research on rodent pests as an important priority.

Drs Sudarmaji leads the Indonesian attack on the ricefield rat. Sudarmaji's formal training in plant protection culminated in the completion of a Master of Science in 1993. He joined the Research Institute for Rice, or RIR (formerly Sukamandi Research Institute for Food Crops, or SURIF) ten years ago and became the leader of the RIR Rodent Group in 1995.

The RIR Rodent Group is working closely with the CSIRO Rodent Research Group. The two groups are combining technical expertise, knowledge of the biology of the pest animal and enthusiasm to address one of the country's worst agricultural problems.

CANBERRA AUSTRALIA

With over 15 years experience in management of rodent pests in Australia, and expertise in population ecology, population genetics, behavioural ecology, rodent diseases and the use of biological control of rodents, Dr Grant Singleton is well suited to coordinate the current project.

Dr Singleton joined CSIRO Division of Wildlife and Ecology in 1982 and became leader of the Rodent Research Group in 1988. He has worked extensively on finding solutions to the problem of mouse plagues in rural Australia.

Current research on mouse management in his group has two foci: assessing best farm management practices for managing mouse populations; and developing biological control of mice. The current program on biological control is aimed at linking a contraceptive protein to a mouse-specific virus. Further details of this research will be provided in future newsletters.

Dr Singleton has also spent a considerable amount of time researching the problem of rats in Asia. In 1989, he completed a lecture tour of China; in 1992-93 he was contracted to review what is known of the ecology and current control strategies for rat management in southeast Asia (the report "A review of the Biology and Management of Rodent Pests in Southeast Asia" was subsequently published); in 1993-94 he completed an assessment of the effectiveness of the traps plus barrier system in the Philippines.

COMING EVENTS

The second Project Planning Meeting for the ACIAR Project "Management of Rodent Pests in Southeast Asia" will be held at UPM, Selangor from 10 to 11 January 1996 and MARDI Research Centre, Penang on 12 January 1996. Participants from Malaysia, Indonesia and Australia will be presenting results from the past year's work and discussing research directions for 1996.

Also attending the meeting will be representatives from the International Rice Research Institute in the Philippines, the Department of Agriculture and Extension in Laos, the Ministry of Agriculture and Rural Development in Vietnam and Sime Darby Plantations in Malaysia.

The fourth international conference on Fertility Control for Wildlife Management will be held on Great Keppel Island, Queensland, Australia from 8 to 11 July 1996. The conference will review developments in the fields of immunocontraception, delivery systems and ecological implications of fertility control, and discuss the ethical and social issues related to the management of wildlife.

Enquiries for further information should be directed to:

Fertility Control Conference, c/- ACTS
GPO Box 2200
Canberra AUSTRALIA 2601.
FAX: 61 6 257 3256

Recent publications available from CSIRO Rodent Research Group:

- A Review of the Biology and Management of Rodent Pests in Southeast Asia
  ACIAR Technical Reports 30 (1994): GR Singleton and DA Petch

- An experimental field study to examine whether *C.hepatica* (Nematoda) can limit house mouse populations in eastern Australia.
  Wildlife Research (1995): GR Singleton, LK Chambers and DM Spratt

- The prospects and associated challenges for the biological control of rodents.
  Proceedings of the 16th vertebrate Pest Conference, Santa Clara, California (1994): GR Singleton

Please direct correspondence, comments or contributions to:

Monica van Wensveen
CSIRO Division of Wildlife & Ecology
PO Box 84 Lyneham
ACT AUSTRALIA
FAX: 61 6 242 9691
E-MAIL: monicavw@dwe.csiro.au