

Integrated rat control

RATS are a major pest in Indonesia. They often damage rice plants and cause yield losses. Good technology for rat control is in fact available, but farmers often do not use it properly. As a result, they often fail to control rats. Furthermore, local farmers often do not coordinate with each other. Not all of them implement rat control methods regularly.

To control rats successfully, four main elements must be considered:

- Application of control technology which is appropriate to the ecosystem and the stage of the rice crop;
- Continuous monitoring and control; *and*,
- Good organization, to make sure all local farmers are carrying out monitoring and control.

Farmers should also be aware of the biology and population dynamics activities of rats, so their control methods are suitable.

Rat control can be carried out in two ways, habitat management and population control. Both methods can be used together in a system of integrated pest management (IPM). This must be carried out by coordinated and well-organized groups of local farmers.

Habitat management

Rats prefer to live in overgrown places beneath shrubs and bushes. Rat populations can grow rapidly under

favorable conditions, if food is available throughout the years. To control rats, the habitat must be controlled and managed in such a way that it is unfavorable for rats.

Habitat management can be performed in the following ways.

- **Synchronized planting** of the rice fields covering an area of around 25 ha, or the working area of one farmers' group.
- **Sanitation** of rice fields and the area around them. Bushes, shrubs, and wild grasses growing near the rice fields must be removed. This sanitation must be thoroughly carried out.
- **Plant spacing.** A wider spacing between the rice plants creates a more open habitat which is less favorable to rats. The system of "legowo" (Rice-fish Intercropping (see Practical Technology leaflet PT2001-7) is the best choice (Fig. 1). By applying this system, not only is the rice field likely to be free of rats, but the rice yield will be around 7.5 mt/ha.

Population control

Techniques of population control can take several forms, applied separately or together.



Fig. 1. Rat-proof fences and traps used with "legowo" system

Fencing

A plaited rattan trap fence should be built around the rice field. The three components in controlling rats using this system are:

- Planting trap crops;
- Using fences made of plastic (Fig. 2), and,
- Traps made of steel wire fitted into plaited rattan (Figs. 3 and 4).

Trap crops and trap fences

Trap crops are planted two or three weeks before the rice or other major crop. Based on the number of rats caught, a plaited rattan trap fence system is highly effective. The technology has good prospects for widespread use, especially in areas where rat populations are high, because it is simple, environmentally friendly, and effective (Fig. 4).

Placing bamboo tubes in the rice field

These are placed 5-10 m away from the bund (i.e. the levee around the rice field).



Fig. 2. A combination of plastic fences and trap crops is effective in reducing the level of infestation.

Sulfur fumes

Fumes from burning sulfur should be guided into active holes of rats in the bunds.

Mass hunting

"Gropyokan" (mass hunting by a group of farmers) is effective if it is performed and coordinated well. The appropriate time to carry out mass hunting is after harvest or when rice fields are being tilled.

Release of owls

Owls released into rice field areas give good control of rats (see Practical Technology leaflet PT2002-5).



Fig. 3. Farmer with wire trap full of rats



Fig. 4. Trapped rats in cage