stroke length. Variables considered were 0.5, 1.0, 1.5, 2.0, and 2.5 degree table slopes and 140, 150, 160, and 170 mm stroke lengths. A mixture of brown rice to rough rice of 9:1 was taken at a feed rate of 220 kg/h. The separator was run with a particular set of adjustments. Samples (100 g) were collected from both outlets at three different times.

Effectiveness of separation was highest at a 1-2 degree slope, with stroke length 150-165 mm. In general, processing capacity increased with table slope and stroke length. Energy consumption decreased with an increase in table slope and increased with an increase in stroke length.

When the separator is set up with a 1-2 degree table slope and 150-165 mm stroke length, a feed rate of 220 kg/h gave the best performance. ❑

SOCIOECONOMIC IMPACT

Environmental impacts

Impact of agrochemicals on mosquito larvae populations in ricefields

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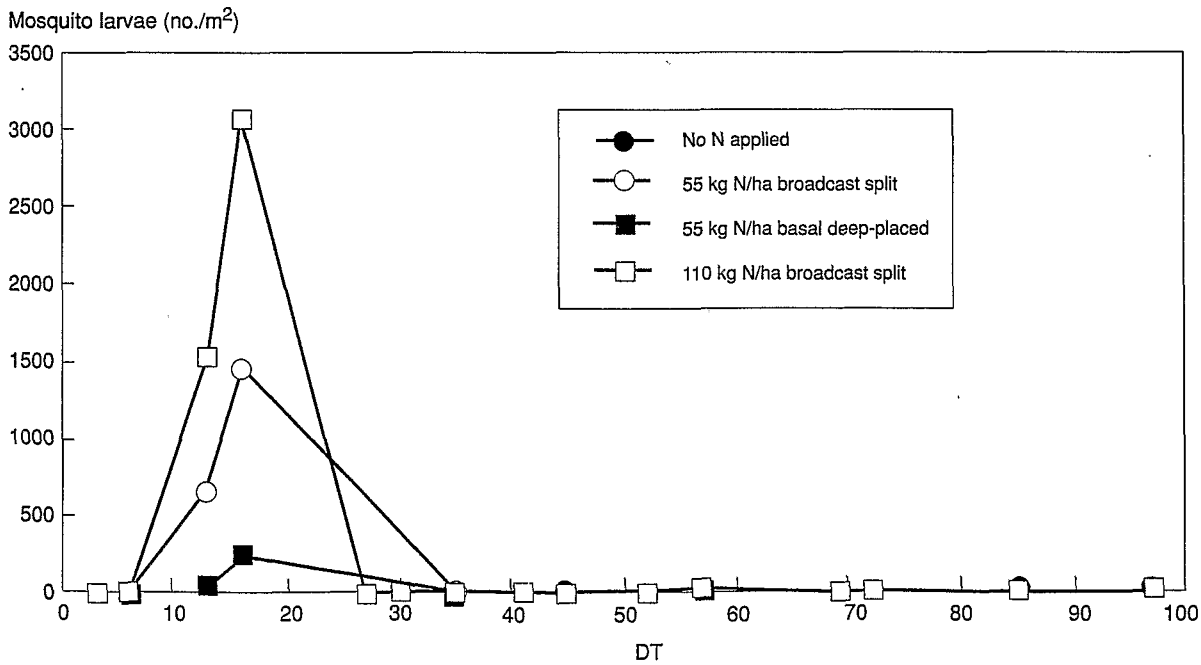
As part of an experiment to study the impacts of agrochemical use on floodwater and soil ecology in wetland ricefields, we investigated the combined effects of N fertilizer and two widely used pesticides—carbofuran and butachlor—on mosquito larvae in irrigated fields at the IRRI farm during 1990 dry season. The experiment involved 65 16-m^2-plots, with five replications. Treatments were

- one unplanted unfertilized control.
- ten combinations of five N treatments (no N, 55 and 110 kg N/ha broadcast split, 55 kg N/ha deep placed, and azolla incorporated before transplanting) and two levels of carbofuran (one at 0.1 kg active ingredient [ai]/ha and two at 0.3 kg/ha each).
- two additional treatments with 110 kg N/ha broadcast split combined with two applications of 0.5 kg carbofuran/ha each and five applications of 0.5 kg/ha each. Treatments with two and five applications of carbofuran also received one application of 0.375 kg ai butachlor/ha 3 d after transplanting (DT).

Pesticide rates represent low, medium, and high levels as commonly used by farmers in the Philippines.

Population density of mosquito larvae was determined by counting individuals in five samples collected by inserting 7-cm-diameter clear perspex cylinders into the soil and removing the enclosed floodwater and surface soil with a vacuum pump.

Mosquito larvae, tentatively identified as *Aedes davidi*, developed populations larger than 100/m^2 only during the first third of the crop cycle, peaking at about 16 DT. Largest populations—2000-3500 larvae/m^2—were in plots where inorganic N fertilizer was broadcast (Fig. 1). Population density remained lower than 300/m^2 in plots where N fertilizer was deep-placed, azolla was incorporated, and



1. Dynamics of mosquito larvae populations during a crop cycle under different N fertilizer inputs. Variance analysis at 12 and 16 DT shows no significant differences between no N and 55 kg N deep-placed. N broadcast at 55 kg showed significantly higher numbers than no N and 55 kg N deep-placed. N broadcast at 110 kg gave significantly higher numbers than 55 kg N broadcast. Each value is the average of 8 (N0, 55 kg N broadcast, 55 kg N deep-placed) or 16 (110 kg N broadcast) plots.

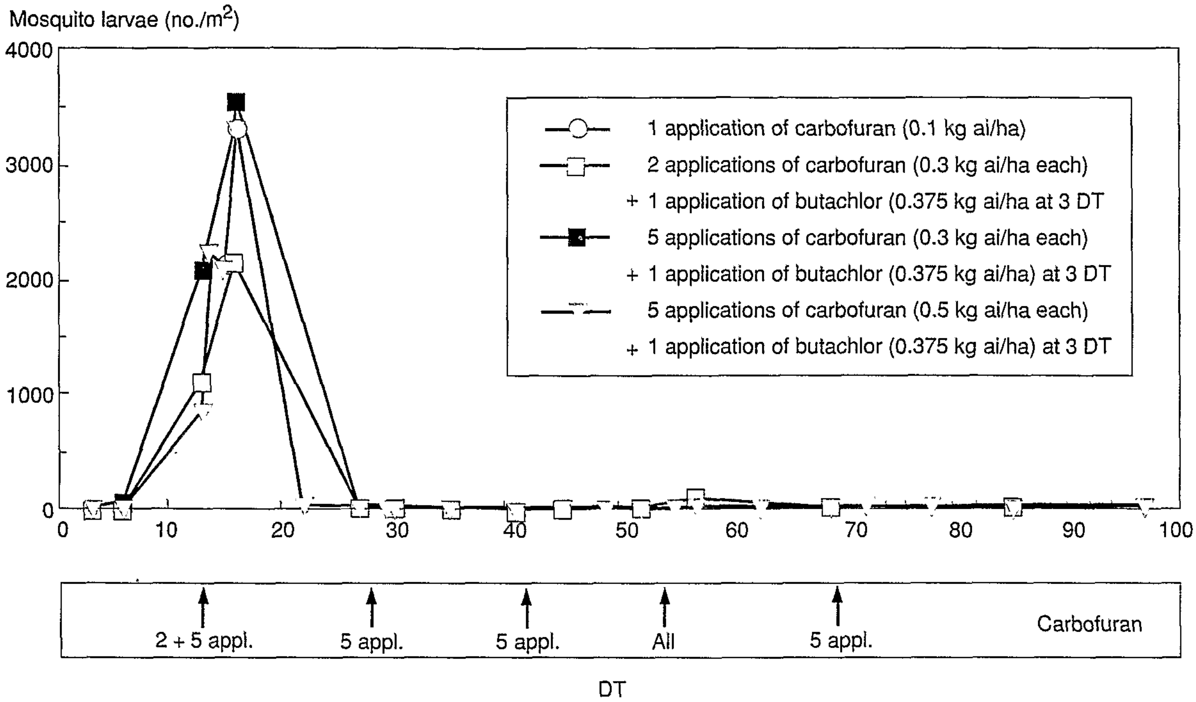
no fertilizer was applied (planted and unplanted). No significant increase in population density was observed after the second fertilizer application 55 DT.

During the first 4 wk, mosquito larvae peaked in three of the four treatments receiving 110 kg N as broadcast urea where carbofuran (0.3 and 0.5 kg ai/ha) and butachlor had been applied once. Populations at various levels of pesticides (Fig. 2) did not differ significantly.

Populations of mosquito larvae were higher in plots where N fertilizer had been broadcast than in plots with N deep-placement and no N. They were not affected by carbofuran and butachlor.

Broadcasting N fertilizer is known to favor blooming of unicellular eukaryotic algae. This was the case in our experiment, as indicated by dissolved oxygen measurements (data not shown) and microscopic observations. Such blooms increase floodwater pH, favor N loss by ammonia volatilization, and inhibit the growth of N_2-fixing blue-green algae. We found that broadcasting fertilizer encouraged the growth of unicellular eukaryotic algae and enhanced populations of mosquito larvae and other algal grazers, especially Ostracods (data not shown).

Deep placement of N fertilizer shows a further advantage: a significant reduction in the population of mosquito larvae. The adults of some mosquito species are vectors of human diseases associated with rice culture, such as malaria and Japanese encephalitis. ❑



2. Dynamics of mosquito larvae populations at 4 levels of pesticide application in plots with 110 kg N surface split-applied as prilled urea. Variance analysis at 12 and 16 DT shows no significant difference between treatments. Each value is the average of 4 plots.

ANNOUNCEMENTS

A new handbook for identifying rice leafhoppers and planthoppers published

Sap-sucking leafhoppers and planthoppers (Homoptera: Auchenorryncha) reduce rice yields by direct feeding or by transmitting virus and virus-like pathogens. Effective rice pest management requires the accurate identification of any pest species.

Handbook for the identification of leafhoppers and planthoppers of rice by M R Wilson, International Institute of Entomology, London, and M F Claridge, School of Pure and Applied Biology, University of Wales, Cardiff, provides keys for the identification of more than 70 leafhopper and planthopper species recorded in major rice-growing regions of the world. The handbook gives data on all the major pest species, as well as others frequently found, but not yet considered important.

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The IRRI blue-green algae (BGA) collection: strains available for distribution

The IRRI collection of N_2-fixing BGA was initiated in 1979 as part of a collabo-