In the Tangerine Grove

by Daniel Girard in Thailand

In 10 years as tangerine growers in a province about 40 kilometres north of the Thai capital, Krua Pophan, her husband and their two teenage children have been repeatedly poisoned by the pesticides they use. And through the spraying techniques she employs, Krua has developed a constant case of conjunctivitis, more commonly known as pink eye.

Despite the recurring sickness, Krua said she and other tangerine growers in the region have never been visited by government or pesticide industry officials to be instructed in the safe use of the products essential to their business. "People only promote pesticides," Krua said in an interview. "They don't care about the illnesses and the deaths. Of course we would like advice. Who wouldn't? There are lots of people getting sick."

Indeed, there are about 7,000 pesticide poisoning cases reported in Thailand each year, said Palarp Sinhaseni, a toxicologist at Chulalongkorn University in Bangkok. About half the cases result from occupational exposure, of which few people die. The remainder are suicidal, which carry a higher death rate, she said.

Tangerine farming, which requires spraying pesticides at head level and above, is consistently in the top five categories of poisoning cases across Thailand, Palarp said. These statistics are just part of the story. Tangerines are widely consumed in the country -- without any removal of chemicals -- and the crops are sprayed from boats in irrigation canals, leading to frequent contamination of water used by households downstream. For Palarp, these factors make the crop a good choice for an IDRC-sponsored project to devise a training program to educate workers, government officials and pesticide industry personnel on the safe use of chemicals.

The central question in the multidisciplinary project is why pesticide poisoning is so much more prevalent in developing countries than in the West, Palarp said. Therefore, the team from Chulalongkorn, including specialists in communications, curriculum development and education, socio-psychology, agricultural extension and toxicology, are trying to address such matters as how exposure can be reduced, why farmers do not follow advice they are given and how well government agriculture workers communicate with tangerine growers.

SAFETY NOT A PRIORITY

Research to this point shows that government agriculture workers in Thailand have typically focused their work with farmers on maximizing crop yields rather than the safe use of pesticides. And, as Krua pointed out, tangerine growers are rarely visited by the authorities. Palarp said the government workers are beginning to realize that overusing chemicals creates pesticide resistance and ultimately reduces crop yield. They are trying to use less, she said.
Project surveys show that the tangerine farmers want to protect themselves against pesticides and reduce their exposure to chemicals but lack the knowledge of how to accomplish that, Palarp said. She cited the example of Krua's children wearing sponge masks for protection while spraying. The devices actually led to poisoning because they soaked up the pesticides, bringing them in greater contact with the teenagers' mouths.

"You have to teach them not just what to do but how to do it," Palarp said. "In order for farmers to practice safe pesticide use, the government and industry have to provide them with the necessary tools."

Palarp, the project leader, said the research team is also pushing to limit access in Thailand to highly hazardous insecticides. They do not want the chemicals banned but instead, she said, they want to limit their use to experts wearing protective equipment. Currently, highly toxic pesticides are widely available with no restrictions or government-regulated scheme, Palarp said. "We are lagging behind in our regulations," she said. "But we'll do better. We're accelerating our speed."

While occupational poisoning, which results from mixing, loading, spraying, spilling or contaminating clothes with pesticides, is a main focus of the research team's work, the group is also examining other forms of pesticide contamination.

ENVIRONMENTAL DAMAGE

The other main problems are environmental, Palarp said. After spraying, the chemicals stay in the soil, get into the groundwater and lead to contamination through drinking and bathing, she said. They also damage air quality since the insecticides drift in the wind, Palarp added. Further environmental contamination results when produce grown between rows of sprayed crops absorbs the insecticides, she noted.

Another major research concern is the disposal of pesticide wastes. After spraying, the equipment is washed, spreading chemicals into the irrigation canals and then the water supply. Also, Palarp added, farmers often burn contaminated packaging and equipment, increasing the amount of pesticides in the air. In her view, a more environmentally friendly and affordable solution would be using a 5,000-baht (US$200) furnace that burns at such a high temperature that all the toxic elements are eliminated.

The sale by farmers of used, contaminated pesticide containers to middlemen who employ people to clean the containers also increases the potential for insecticide poisoning, Palarp said. Under the current Thai system, the cost of pesticide poisoning is paid by the public in the form of contaminated water supplies and foods and the high number of sick workers, Palarp noted. Multinational companies, which sell millions of dollars a year worth of insecticides, need to be pushed harder to pay for their share of the problem, she said.

TOUGHER LAWS

But ever since a massive chemical fire at a Bangkok port in 1991, the government has been trying to address the problem of hazardous substances, Palarp said. An act was passed putting tighter restrictions on chemicals. Since then both legislators and industry have been paying more attention to the issue, she added. According to Palarp, industry is being forced to pay closer attention to its packaging practices to try to reduce the amount of waste produced.

And in a country where 60 to 70% of its 55 million people are farmers, it is obvious that there is a tremendous need for a program to teach people how to use pesticides safely and provide them with the correct protective equipment. At present, there are no Thai-specific guidelines for pesticides, so the country refers to those set by the United Nations Food and Agriculture Organization. But tropical countries are more sensitive to pesticide poisoning; for example, the many and varied species of fish, an important protein source for many people in this region, have been killed in large numbers or otherwise made unfit for human consumption. This consideration makes the need for safe local practices all the more pressing, Palarp said.
Another important aspect of the project, Palarp noted, is to strengthen the system for recording pesticide poisonings. Currently, if a farmer goes into a hospital for sickness, he or she is treated but there is no monitoring of the illness, its circumstances or the chemicals involved. If that data were compiled, authorities would be better able to determine which chemicals are hazardous and develop a program to train government agriculture workers and farmers in their safe use, Palarp said.

While it focuses on one crop in one country, the tangerine pesticide safe use training program, slated to be ready by the end of 1994, will be about 60 to 70% applicable to different forms of agriculture in Thailand and other Southeast Asian countries, Palarp said. "Obviously the agricultural practices would be different in something like rice farming but communications, psychology and the impact of government agricultural workers would likely be very much the same," she said.

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