

ABSTRACT

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Farmer field survey, laboratory residue analyses and poisoning case studies were carried out to examine the use of pesticides in vegetable fields and its potential effects on human health and environment. Field information were collected using semi-structural questionnaire, face-to-face interview with 200 farmers from three districts (Bara, Dhading and Kavrepalanchok) of the Central Development Region of Nepal. A Checklist was prepared and used to gather necessary information from 30 Agro-vets giving services in these three districts. Three years poisoning cases starting from 2009 to end of 2011 were collected from the National Drug and Poisoning Centre, Kathmandu, and residues of twelve pesticides from 75 samples of 13 different vegetables from the study sites were also analyzed. National pesticide review revealed that the annual import of pesticide in Nepal was 410 mt (a.i.) in terms of actual ingredients consisting of 33.81 percent insecticides, 39.94 percent fungicides, 24.57 percent herbicides, 1.63 percent rodenticides, 0.035 percent bio-pesticides and 0.15 percent others, respectively and valued at NRs. 569.95 million (\$ 5.6 million) per annum. The farmers' field survey showed that almost all the farmers (95.33%) sprayed chemical pesticides and so they were directly exposed to pesticides. Nearly two-third of the farmers (59.0%) did not use any form of personal protection while handling pesticides, about half (49.0%) threw away the empty containers, while nearly one-third (31.0%) disposed them properly by burning or burying. Eighteen percent of farmers even sold the empty containers in market and poor farmers reused them for storage of food items. About three-fourth of the farmers (72.0%) purchased pesticides focusing on their effectiveness to control the target pests. Majority of farmers (55%) stored pesticides outside the house, while 44 percent stored them inside their house (living room, open space, under the staircase, etc.) and 1.5 percent even stored them in bedroom. More than half of the farmers (56.0%) expressed their views that application of pesticides caused pollution of water and air, while three-fourth of them (74.5%) believed that pesticide application was harmful to the health of farm workers. Fifty-four percent farmers did not follow waiting period at all after application of pesticides, whereas, 25.5 percent harvested vegetables next day of spraying. Majority of farmers (51.0%) depended on pesticide dealers for advice, followed by public extension system (32.0%), fellow farmers/friends (31.5%) and News/FM (15.5%). Analysis of poisoning cases within 3 years showed that agro-chemicals, especially insecticides were the main causes, and female poisoning cases were higher than male (i.e. 1.54:1). Among the poisoning cases, over two-third of the patients (69.55%) attempted suicide and the remaining were accidental cases. Residues analysis of 75 samples of 13 vegetables indicated that 58.0 percent of the vegetable samples contained no detectable level (NDL) of the monitored pesticides, 38.0 percent samples resulted in trace level of the pesticides residue or below

the minimum residue level (MRL), while 4.0 percent samples showed above MRL (EU Standard). Present study revealed ample scope for improvement on pesticides uses and their exposure to living beings and environment, for which there is a need of strong policy implementation, strengthening training, extension services and various awareness programs to farmers and agro-vets for judicious use of pesticides, their health safety and environment protection.