**Abstract**

The need to evaluate pesticide use in rural populations, particularly in developing countries, is urgent. Pesticide use and related risk perceptions were studied among 318 randomly selected farmers from two areas of the cotton belt of Punjab, Pakistan. A total amount of 4875 kg of pesticide active ingredients was reported to be applied by the farmers per annum and most of these active ingredients were classified as moderately hazardous (55%) or highly hazardous (23%) according to WHO classification. The number of pesticide applications per growing season ranged from 6 to 16, with an average of 10 or 11 applications, depending on district. Better-educated farmers were found to spray less. Most farmers (52%) considered the risk from pesticide use to be low, whereas a solid fraction (12%) considered there was no risk at all. To model farmers' behavior on pesticide overuse, a binary probit regression model was used expressing behavior as a function of age, education, level of risk perception, health effects, pesticide toxicity class, and Integrated Pest Management (IPM) training. Irrespective of age, there was a clear tendency towards pesticide overuse, but the probability decreased with IPM training, a high level of education, and use of highly toxic pesticides. Awareness of the high toxicity of a pesticide product tended to discourage overuse. On the contrary, neither the experience of health effects nor the levels of risk perception affected overuse. Farmers were not well informed about correct application practices and safe handling of pesticides. Overall, findings affirm an urgent need for training programs on pesticide use in the study area with the aim of conveying more specific information on health hazards from pesticides that will avert hazardous behaviors of farmers derived from misleading beliefs about pesticide use.