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Master Thesis

Environmental, Health and Other Issues Associated with the Acquisition and Application of Pesticides in Cameroon: The Case of Cocoa Production in Bafia and Owe Villages in the South West Province.

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5 CHAPTER FIVE: SUMMARY, CONCLUSIONS, RECOMMENDATION, LIMITATIONS AND FUTURE RESEARCH NEEDS

5.1 Summary

Pesticides are a useful tool in crop protection and the two main pests established in cocoa farms are capsid bug and black pod disease. Several pesticide formulations (insecticides, herbicides and fungicides) are used by cocoa farmers in Bafia and Owe villages some of which have been banned in developed nations. There are several classification schemes of pesticides. Most classification schemes of pesticides are usually based on their role, mode of action and chemical composition. Following the World Health Organisation classification of pesticide by hazards, 3.5% of the pesticides used in Bafia and Owe belong to WHO class Ia products (extremely hazardous), and another 3.5% to class Ib (highly hazardous). Fourthy-six and a half percent of the pesticides were WHO class II products (moderately hazardous) and 18% were WHO class III products (slightly hazardous). Further analysis showed that 25% of the products belong to WHO class U (unlikely to present acute hazard in normal use). Three and a half percent of the pesticides are not classified.

Seventy-eight percent of the farmers acquired pesticides from drug stores and 9% accepted they transported pesticides alongside with foodstuff. A few farmers (12%) assigned children to carry pesticides home. Pesticide label stood as the main source where farmers got information on the use of pesticides although some pesticide labels were in the French language which is not understood by the people in these study areas.

Practices regarding pesticide safety and management of residues are a cause of concern although most farmers are perceived to be aware of the threats posed by pesticide to their health, water bodies, beneficial insects, ecosystems and the environment. Point and non-point pollution is occurring due to accidental spill, disposal of used pesticides sachets on farms and in nearby water bodies respectively. Farmers sprayed pesticides in a shorter time interval rather than what is stipulated on the pesticide labels and some sprayed under windy conditions. A

majority of the farmers (59%) stored pesticides under their bedroom which was equally their living space. Some farmers also re-used pesticide containers to carry drinking water and to store oil. Fifty percent the farmers admitted they did not use any protective clothing while mixing and spraying pesticide.

Most (92%) of the farmers suffered from one or more health effects during or shortly after mixing and spraying pesticide. Skin, eye and body weakness amongst others were the most frequently reported health effects. The survey further showed that only 14% of the farmers who seeked treatment went to the hospital while the others preferred road side medications and self-treatment.

Epidemiological evidence of pesticide exposure and chronic toxicity to humans remains a very controversial issue. However, a review of literature revealed that there is a negative association between pesticides and cancer, reproduction, immune system, the central nervous system and other allergic effects. Pesticide can cause air, water and soil pollution. Pesticides have direct effects on wildlife and indirect /ecological effects. The direct effects on wildlife are direct poisoning, "food chain" or secondary poisoning and chronic or long-term effects on health. The indirect or ecological effects include: reduction and disappearance of species, loss of food and habitat sources, creation of new or secondary pests and pesticide resistance.

5.2 Conclusions

Although only 7% of the pesticides used in Bafia and Owe belong to WHO class Ia and class Ib products in contrast to the situation in many other developing nations where extremely toxic pesticides are used more extensively, unfortunately. pesticides banned in developed nations such as lindane and servin are still used in Cameroon. The government of Cameroon needs to be concerned about this problem.

Usually, pesticides which are being sold in the local markets have been tempered with or diluted especially herbicides and thus the pesticides become inefficient to control pests and diseases. This may be one of the reasons why farmers

sprayed not respecting the regular spraying interval as stipulated on the pesticide labels. It is also possible that due to over spray of pesticides, pests in these region have or will developed pesticide resistance and problems of accumulation of pesticides residues in cocoa are also likely to be occurring.

Point and non-point pollution is occurring in these study areas due to inadequate handling and management of pesticide residues. It was observed during visits to water bodies and farms that farmers cared very little about their health and the environment as practices regarding disposal of pesticide residues were not safe enough. The situation of disposal of used pesticide sachets in nearby water bodies could have been worse than the current situation except for the fact that most of the farmers have their farms far from water resource where they could mix pesticide. Poor phytosanitation practices can increase the spread of disease which eventually, may lead to low productivity of the farms resulting in a low income of the farmer which they complained is their maim reason for not being able to get protective devices.

An increased need of concern is necessary for farmers in order to redress issues regarding pesticides; storage, transportation, their sources of information on pesticide use, use of protective devices, personal hygiene, re-use of pesticide containers and cleaning of spraying equipments. Health and environmental problems may continue to deteriorate in the future given the fact that some pesticides labels were exclusively in the French language which is not understood by the inhabitants of these communities.

Pesticides have both acute and chronic effects to agricultural workers. Even though a few farmers reported not to have suffered from health effects associated with pesticide poisoning, it is possible that they may be suffering from pesticide poisoning unknowingly given that observed poisoning rates are much higher than self-reported rates. Farmers in these localities generally ignored the intensity of pesticide poisoning to their health as most of the sick farmers preferred self-treatment and road side medications rather than going to the hospital.

Although a number of health conditions have been associated with pesticide exposure, clear linkages have not yet been made between exposure and health effects except in cases of acute pesticide exposure. Another problem with epidemiological evidence of the chronic health effects associated with pesticide application is that, exposures usually occur several years before biological measurements are made. Considering the fact that a number of chronic health effects are associated with the use of pesticides as revealed in literature study, a quantitative risk assessment is needed to determine the current health state of the people in this population and to check the prevalence of chronic toxicity of pesticides by monitoring them later.

Although farmers claim knowledge of the threats posed by pesticides to their health, water bodies, beneficial insects, ecosystems and the environment, this survey and other studies show that it has not been sufficient condition to change their behaviours with regard to pesticide safety and management of residues. Their first priority is usually economic survival which generally overrides concerns for health and the environment. Farmers' reliance on the use of pesticides can be reduced by introducing integrated pest management to them.

It is estimated that the current world population will grow towards 9 billion by 2050 which will increase the future demand for food. To have the use of pesticide curtail in agricultural production to very low levels in a short time is still a night mare or dream come true given that only industrialised method of farming will be able to meet these future demands.

If informed farmers refused to buy hazardous products and demand less toxic substances, coupled with similar demands by consumers for safer foods, pesticide dealers and policy enforcers will have to respond positively. It is also important to remember that, no chemical can ever be proved to be totally safe, and that virtually all apparently harmless substances are toxic to man at a sufficiently high dose. Theophrastus Bombastus Paracelsus of Hohenheim, writing in the fifteenth century recognised this when he said "everything is poison, nothing is without poison, it is the dose which makes the poison". We therefore, only need to apply the principle of prudence.