

incurred risks by the gardeners in Ouagadougou, to bring them to adhere to the prevention strategies implemented for their health and safety.

Methods It was a descriptive and cross-sectional study. The study population consisted of 101 gardeners coming from three districts. They were involved in a no probabilistic way by a systematic recruitment.

Results Most of gardeners were illiterate (66.3%). Their ages ranged between 21 and 69 years old, with a median of 38 years. 78.2% of gardeners have been trained once on pesticides. Most of the vegetable growers used mainly pyrethroids (86%) as pesticide. More than 90% of gardeners apply products by spraying and they keep the stocks in the fields. Personal Protective Equipment (PPE) was not worn. The empty containers were either buried in the ground or thrown into the fields. The respiratory tract irritation, respiratory difficulties, eyes irritation, and headache were the dominant symptoms after pesticide application. The drinking water came from wells not well covered in majority.

Conclusion With the strong urbanisation and the increase of the demand, the gardeners were taken to big use of pesticides most of the time without follow-up nor control, with all the possible risks for their health, those of the populations as well as for the environment.

731 CROSS-SECTIONAL SURVEY ON GENITOURINARY SYSTEM HEALTH OF VEGETABLE GREENHOUSE GROWERS IN SUBURBAN AREAS IN YINCHUAN

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Introduction China has the largest greenhouse production area in the world, with the rapid development of Ningxia facility agriculture, some greenhouse growers use the pesticides blindly in order to eliminate pests and increase economic efficiency. However, they are lack of the knowledge about how to use the pesticides and the individual protection consciousness of them are not high. We need to evaluate the genitourinary system health of vegetable greenhouse growers and analyse related influencing factors so as to protect these occupational population and improve their health.

Methods Adopted the methods of whole group sampling at random studied on vegetable greenhouse growers in three districts and two countries of suburb in Yinchuan, collected the basic information and the pesticide exposure intensity by questionnaire. Used the logistic regression analytic method to each factor, found the influencing factors of the current state of genitourinary system in vegetable greenhouse growers, during April 2015 to May.

Results In this study, 207 females and 241 males vegetable greenhouse growers were selected, the valid questionnaire return rate was 97.4%. The genitourinary system prevalence rate reached 75.8% in the female growers. The results of multiple logistic regression analysis showed that increased the frequency of crop-spraying (OR=3.683) and chatting during crop-spraying (OR=2.532) were risk factors, while using abamectin (OR=0.311) was a protective factor. The genitourinary disease prevalence rate was only 14.11% in the male growers. The results showed that the risk factors of male genitourinary

system health included age (OR=1.048), pesticides exposure classification (OR=5.11), types of mixed pesticides (OR=3.243), and the proportion of mixed pesticides (OR=0.697). The frequency of eating meat per week (OR=0.697) was the protective factor.

Conclusion A higher prevalence rate of genitourinary diseases was found in female vegetable greenhouse growers in Yinchuan. Deficiency the correct pesticides use and the related protective measures are the main influencing factors.

1451 OCCUPATIONAL EXPOSURE TO PESTICIDES AMONG FARMERS: OUTCOMES OF SURVEY AND LEADS FOR PREVENTION

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Introduction Farmers are particularly exposed to pesticides while performing their professional tasks. In France, Certiphyto training program is aiming to decrease occupational exposure by improving knowledge.

Several studies have shown the importance of the following two aspects, which are not taken into account by Certiphyto: psychosocial factors such as risks perceptions, peer norms, self-efficacy are important to better understand the underlying mechanisms of occupational exposure to pesticides among farmers; alternative educational strategies such as prevention by peers and practical exercises.

Methods We have conducted a national telephone survey among 197 farmers from three agricultural settings (open-field, open-field – cattle-breeding, viticulture) and we also realised an ergonomic and psychosocial analyse of Certiphyto by observation of sessions and semi-structured interview of trainers.

Results Direct exposure, studied by descriptive and comprehensive approach with determinants – frequency of Personal Protective Equipment (PPE) and adequacy with recommendations, hygiene habits, level of knowledge and psychosocial factors – is analysed in a comparative inter-setting perspective, indirect exposures, in an exploratory approach.

Our results show that, among pesticide users, PPE use is weak but for gloves during preparation phase (60% of users use gloves systemically, 30% do not always use another PPE), and therefore insufficient according to recommendations. In addition, hygiene habits are also insufficient, both hygiene and PPE compliance being variable between agricultural settings. Similar observations have been made for indirect exposure. Analysis of psychosocial determinants highlights several obstacles for PPE use, among which discomfort of using PPE for specific task and peer norms. We also show persistence of inadequate habits and false knowledge after Certiphyto.

Conclusion We identified leads for the design of an alternative Certiphyto training including practical exercises and intervention of farmers peers. This prevention program, in design phase, will take into consideration psychosocial factors, specially risk perception, peer norms and health locus of control on developing psychosocial strategy.

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PESTICIDE EXPOSURE AND HEALTH PROBLEMS AMONG HORTICULTURAL PESTICIDE APPLICATORS IN ARUSHA, TANZANIA

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Introduction Exposure to pesticides has been reported to cause adverse health effects, and great numbers of people have been affected globally. Annual severe pesticide poisoning cases amount to 3 million worldwide; 25 million symptomatic occupational pesticide poisonings occur each year among agricultural workers in developing countries. Increased health symptoms have been reported as a result of pesticide exposure. In Tanzania there is limited information on health symptoms associated with pesticides exposure among horticultural pesticide applicators.

Methods A cross-sectional study was conducted among 140 pesticide applicators working in horticultural farms in three districts of Arusha region. Data on demograph, types of pesticides used, spray duration, use of personal protection equipment and neurological symptoms were collected by using a structured questionnaire. To determine the intensity of pesticide exposure, acetylcholinesterase assay was done by using the Test-mate Model 400 device with a photometric sensor. Data were analysed by using SPSS version 20.0.

Results The pesticide applicators were men with mean age 29.59 ± 6.789 years and mean work duration of 5.76 ± 3.036 years. Organophosphate pesticides were commonly used by 95% of the pesticide applicators. Sixty percent of pesticide applicators reported to use personal protection equipment during pesticide application. The neurological symptoms reported were body weakness, perspiration, headache, painful part of the body, poor appetite, depression and irritation. The mean average of acetylcholinesterase was 26.788 ± 4.0952 u/g hgb. About 27% of pesticide applicators had acetylcholinesterase level below the limit value of 24.5 u/g hgb.

Conclusion The study shows 27.1% of pesticide applicators had acetylcholinesterase level below the limit value suggesting that exposure to pesticide may result to the neurological symptoms reported. Therefore specific pesticide management interventions are needed to prevent pesticide exposure and reduce the incidence of neurological health symptoms among the pesticide applicators. Acetylcholinesterase monitoring is needed for horticultural farm workers' surveillance.

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OCCUPATIONAL HEALTH SURVEILLANCE ACTIVITIES FOR AGRICULTURAL WORKERS AND ANIMAL BREEDERS IN SOUTHWEST OF IRAN

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Introduction There are about 1.3 billion workers engaged in agricultural sector which is one of the most hazardous jobs in the world. Farmers are mainly at risk of exposure to physical, chemical and biological or hazards in the workplace. This paper is part of a wide project that will be addressed in health surveillance activities for the agricultural workers, and characterising exposure to biological, chemical and physical

risks among farmers and animal breeders in the Region of Abadan district, southwest of Iran.

Methods A cross-sectional study was carried out in Abadan district, southwest of Iran. Two groups of farmers and animal breeders were included in the study. Personal data and socio-demographic and clinical information, personal habits and the results of physical and laboratory examination were obtained by the personal data collection forms through health surveillance activities by expert health professionals. Blood samples were collected from all the subjects, lung function was measured using a spirometer. Data were analysed using IBM SPSS statistics 22 software (IBM, Armonk, NY, USA).

Results The study stresses the significant increase of immune parameters in animal breeders in the Abadan district. Workers in rural areas were relatively at higher risk of zoonoses and occupational diseases than in urban areas.

Conclusion Despite underreporting of occupational diseases in agriculture setting, available data clearly show a significant health risk, and therefore there is a strong need for conducting health surveillance activities at the workplace in southwest of Iran. The implementation of health surveillance programs for agricultural workers relies on the possibility of creating a system able to reach the workers at their workplaces and with the collaboration of employers' associations, will be able to support enterprises in several issues, including risk assessment and management

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OCCUPATIONAL EXPOSURE TO ACEPHATE AMONG OIL PALM PLANTATION WORKERS: GLOVE PERMEATION STUDY

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Introduction Spills or splash during mixing, loading and application organophosphate insecticide may entail significant dermal exposure to agricultural workers. Although gloves are religiously worn, the level of chemical protection afforded by these gloves is unclear. In this study, the influence of exposure temperature and duration on glove permeation were investigated for acephate, an organophosphate insecticide used for trunk injection on oil palm trees. Potential contamination on the skin of the workers was also investigated.

Methods Nitrile gloves used by oil palm plantation workers during trunk injection were tested at room temperature and elevated temperature (45°C), using standard permeation cells. Skin wipe samples were collected from the face and hands of the workers to examine whether acephate still contaminated their skin. Chemicals analysis was via HPLC-UV.

Results Higher maximum flux and greater cumulative permeation of acephate were observed over the 4 hour exposure period. Gloves with 5% simulated abrasion showed reduced performance compared to new gloves. Contamination on the face and hands of the workers were minimal.

Conclusion Limited protection is provided by gloves, even for diluted acephate, especially at 45°C. The findings indicate the need for more suitable gloves, with frequent change, especially when working in warmer conditions and where abrasion is observed on the gloves. While workers behaviour was good, emphasis on the correct techniques of glove removal may assist in avoiding transfer of contaminants.