HEALTH SYMPTOMS AND DERMAL EXPOSURE IN CASSAVA FARMERS

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In Thailand, information on the extent of pesticide exposure and the health effects of such pesticide exposure among farmers is lacking. In contrast, the agricultural chemical has increased in the worldwide. Data from a pilot study amongst 16 farming families (Hanchenlaksh, et al., 2011) indicated that dermal exposure to pesticides, as assessed using a previously validated structured, semi-quantitative observational method (DREAM) was collected. Showering or washing immediately after spraying greatly reduced potential exposure of family members.

The study was conducted in Suranaree sub-district, Muang district in Nakhonratchasima province, Thailand. 50 Cassava farmers, randomly selected from the agricultural communities, participated. Information on farmers was collected by an interviewer-led questionnaire and a self-completed diary for any health symptoms in the spraying week and a non-spraying reference period from the farmers. Dermal exposure of the farmers during one spraying session was assessed by the DREAM methodology.

Potential dermal exposure estimates indicated considerable dermal exposure for farmers that was, on average. Only 18% of farmers used any form of personal protective equipment (PPE) and such as actual dermal exposure equated potential exposure for the majority of farmers. Almost 90% of farmers showed immediately after using pesticides. During spraying season 92% reported muscle/joint, 68% breathing/heart, 64% reported gastro-intestinal, 62% visual, 42% skin problems and 38% eye problems; compared with the non-spraying season when adverse effects were only reported by 25%, 17%, 15%, 10%, 8%, 5%, respectively.

These data show that farmers experienced significant potential exposure to pesticides by the dermal route while spraying pesticides, and that only a small minority wore PPE. The prevalence of adverse health symptoms self-reported by farmers was much higher during the spraying season compared to non-spraying reference periods.

OSH IN AGRICULTURE – WHAT IS THE SECOND EUROPEAN SURVEY OF ENTERPRISES ON NEW AND EMERGING RISKS (ESENER-2) TELLING US?

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Introduction Agriculture plays an important part in Europe’s economy. The EU-28’s farm labour force in 2013 reached 22.2 million—not all full-time-, most of them in Poland and Romania (Agriculture, forestry and fishery statistics’, Eurostat, 2016). A majority of farms are small businesses, very frequently family run. The sector is highly diverse and so are its OSH challenges, most often leading to higher than average accidents and health problems, both physical and mental.

ESENER-2 provides a comparative picture of OSH management in agriculture across Europe.

Methods ESENER-2 is a survey of 49,320 establishments across 36 European countries, covering all size classes and sectors, completed in autumn 2014. It asks ‘the person who knows best in the establishment how OSH is managed’ about:

1. OSH in general,
2. psychosocial risks,
3. drivers and barriers to OSH management,
4. worker participation.

Data were analysed using SPSS.

Results Most frequently reported risks are ‘risk of accidents with machines or hand tools’ (78%) and ‘risks of accidents with vehicles in the course of work’ (73%), clearly above the average. Agriculture tops the ranking for two of the risk factors considered in ESENER-2: ‘heat, cold or draught’ (65%) and ‘repetitive hand or arm movements’ (63%), and is clearly above the average for ‘chemical or biological substances’ (62%) and ‘long or irregular working hours’ (35%).
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**Conclusion** At EU level these challenges have been recognised as a priority. ESENER-2 confirms the wide range of OSH issues identified in other sources and points too at a lower than average use of ‘support’ services in agriculture, as well as awareness problems. Further analyses of the findings contribute to a better understanding of the challenges and drivers and support policy makers and experts in their future actions to promote a health and safety culture in agriculture.

**1205 COHORT STUDY OF MORTALITY AMONG MALE FARM WORKERS IN SPAIN**

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**Introduction** Jobs in the agricultural sector are associated with high demands, risks, and stress for workers. Spain is of great importance for the European agricultural sector; nearly half the country’s land is dedicated to agricultural use. However, the health and mortality risks associated with agricultural work in Spain remain understudied. The aim of this study is to compare the mortality rates for male farm workers with mortality rates for males in non-agricultural occupations in Spain over a ten-year period.

**Methods** The prospective cohort study followed 8,695,560 male workers in Spain from 2001 to 2010. Participants in the study were selected from the 2001 census; at baseline, all participants were ages 16 to 64 years and employed in an agricultural job. Mortality data included in the present study were obtained from participants’ death certificates. For each cause of death, the age-adjusted mortality rates for farm workers and for non-farm workers was calculated per 100,000 person-years of follow-up. These rates were used to compare the rate ratio between male farm workers and non-farm workers.

**Results** The all-cause mortality rate for farm workers was 13% greater than that of non-farm workers, with a rate ratio estimate of 1.13 (95% CI: 1.11 to 1.16). For cancer deaths, the mortality rates of lip, laryngeal and skin cancer were higher and statistically significant for farm workers. Rates of death resulting from respiratory disease, circulatory disease, accident, and suicide were all significantly higher for farm workers than for non-farm workers.

**Discussion** These results are the first obtained in Spain from a large prospective agricultural cohort. They show that male farm workers are a vulnerable population in terms of health status. Elevated rates of all-cause and specific-cause mortality in male farm workers could be associated with frequent exposure to occupational hazards, including pesticides, high temperatures, and long working hours.

**1280 IMPROVING EXPOSURE ASSESSMENT METHODOLOGIES FOR EPIDEMIOLOGICAL STUDIES ON PESTICIDES**

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**Introduction** The presentation describes a comprehensive study to better understand the reliability of assessment of human exposure to plant protection products (PPP) in previous occupational epidemiological investigations, and to use this information to recommend improvements in scientific practice for future studies. Further, it aims to assess the reliability and external validity of surrogate measures used in these studies to assign exposure to individuals or groups of individuals on the basis of self-reported information, job/crop exposure matrices and exposure algorithms. The project will also evaluate the size and the effects of recall bias on the misclassification of exposure to PPPs and associated health effects.

**Methods** Existing and newly collected (biological) monitoring data from several existing epidemiological studies and historical records across various populations in Europe, Africa and Asia. Urinary metabolites of pesticides will be selected with due consideration on the extent of use within the study...