

**Results** Results showed that the majority of farmers (81.4%) used chemical pesticides in the production of cashew, but only 11% of them have been trained to safe use of pesticides. In addition, 16 of the 35 farmers (45.7%) had individual protection equipment appropriate. Thus, 10 cases of acute intoxication were reported during the application of pesticides. Glyphosate isopropylamine salt was responsible for 5 cases of poisoning, while 2.4 D amine salt caused 3 cases. However, 35% of these pesticides were not homologated for their use in cashew farming in Côte d'Ivoire.

**Conclusion** Pesticide use was a real handicap for the sustainability of the cashew farming in Côte d'Ivoire. High use of non-homologated pesticides and absence of farmers training in safe use of pesticides could be cause occupational hazards, possibly environmental pollution and affected cashew nut safety.

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#### A PESTICIDE EXPOSURE STUDY USING 24-HOUR BIOMONITORING AND DERMAL SAMPLING TO DETERMINE TOTAL UPTAKE AND THE ROUTES OF EXPOSURE

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10.1136/oemed-2018-ICOHabstracts.1327

**Introduction** A pilot exposure assessment study using biomonitoring was conducted in Ireland to determine the likelihood of exposure to pesticides among amenity horticulturalists. A spot sampling approach was employed of workers using pesticides, had urinary pesticide concentrations in post-work samples with a geometric mean (geometric standard deviation) of 0.66 (1.11)  $\mu\text{g L}^{-1}$  for glyphosate and 0.29 (1.69)  $\mu\text{g L}^{-1}$  for fluroxypyr. The study showed a potential for pesticide exposure during horticulture amenity work, higher than average environmental exposure levels and warranted further investigation.

**Methods** In 2017, an exposure assessment study involving 24 hour biomonitoring will take place to evaluate pesticide exposure among these workers. Workers will be grouped into four similar exposure groups based on application method and active ingredient used, glyphosate or fluroxypyr. Three urine samples will be collected for each task, a sample before the task begins, a sample within one hour of the task completion and a following morning void. The potential routes of exposure, will be examined through the collection of additional dermal, glove and potentially contaminated object wipe samples. Dermal wipes of the hands and the perioral region will be taken before and after the task and glove analysis will be conducted. Detailed contextual information will be collected by the researcher to support all samples collected.

**Results** The biomonitoring results will indicate the extent of pesticide uptake for each task. Correlation between the dermal and biomonitoring samples will be investigated to explore the contribution of dermal exposure. The perioral and the contaminated object wipes alongside the contextual information will be used to determine the potential exposure from inadvertent ingestion.

**Discussion** This study will provide a comprehensive biomonitoring dataset describing amenity horticultural user's exposure to glyphosate and fluroxypyr and the contribution of dermal and inadvertent ingestion routes on total body burden of pesticides.

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#### WORK-RELATED DISEASES AMONG FARMERS IN NORWAY: WHAT DO THE DOCTORS REPORT TO THE LABOUR INSPECTORATE REVEAL, AND WHAT THEY MISS?

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10.1136/oemed-2018-ICOHabstracts.1328

**Introduction** Doctors in Norway report work-related diseases to the Labour Inspection Authority as required by the Working Environment Act. These reports make the basis for the labour inspectorates registry for work-related diseases (RAS). The purpose of this study is to highlight the lack of reliable data with regards to work-related diseases among Norwegian farmers which hinders our preventive efforts.

**Methods** Data as they concern the occupation 'farmers' were extracted from RAS for the period 2005–2017. The data among others included variables pertaining to demographics, occupational exposures, diagnosis, year of reporting, and the type of doctor who reported the disease. We performed descriptive analysis on the extracted data to obtain frequency, and percentage distribution of the data. We plan to calculate incidence rates; however, it has been difficult to find a reliable denominator for such computations.

**Result** In the period 2005–2017, 616 cases of work-related diseases among farmers were reported. On average 44 reports of work-related disease among farmers were reported to the Labour Inspectorate annually. 95% of the reported cases were farmers under the age of 67 years. Hearing loss made up about 60% (n=368) of all the cases followed by respiratory diseases that make up 19% (n=116) of all cases. Only a few cases are attributed to other diagnosis groups like skin diseases, musculoskeletal- and psychological disorders.

**Discussion** The doctors report on work-related diseases among farmer's reveal that hearing loss is still a major challenge. Some of these data are being applied for preventive actions. Having said that, we know from research studies and self-reported data that farmers are exposed to among others dust, gas, pesticides, infectious materials. They work long hours in difficult postures. However, RAS data is missing a large number work-related diseases among the Norwegian farmers which is hindering effective prevention.

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#### HEALTH EFFECTS OF PESTICIDES: PROBLEMS TO SOLUTIONS

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10.1136/oemed-2018-ICOHabstracts.1329