fungicides use on NHL risk, overall and for multiple myeloma (MM), Chronic Lymphocytic Leukemia/Small Lymphocytic Lymphoma (CLL-SLL) and Diffuse Large B-cell Lymphoma (DLBCL).

Methods Nearly 1 82 000 participants affiliated in a health assurance system reported in the enrollment questionnaire (2005–2007) lifetime pesticide use with start and end year on 13 crops and were followed until 2013. Using the crop-exposure matrix PESTIMAT, associations between NHLs and benzimidazole fungicides exposure (overall and for benomyl, carbendazim, fenazaflore, thiabendazole and thiophanate methyl) were estimated using Cox models.

Results After exclusion of prevalent cases, individuals with incomplete agricultural profession history data or a zero tracking period, 1,133 NHL incident cases were identified from cancer registries (269 MM, 244 CLL-SLL, 190 DLBCL). Nearly 20% of participants were considered exposed (median duration from 7 to 20 years according to active ingredient). Increased NHL risk was observed with exposure to benzimidazole, overall, on any crops (NHL: HR=1.13, 95%CI=0.94–1.37, 150 cases, no duration relationship). Moreover, borderline positive associations were reported on specific crops: wheat/barley (NHL: HR=1.23, CLL-SLL: HR=1.42), beets (DLBCL, HR=2.19) and rape (DLBCL, 2.32). Significant increased risks were reported with MM for use of thiophanate-methyl on wheat/barley (HR=3.46, 23 exposed cases, no duration relationship) and with DLBCL for all 4 benzimidazole used on beets (HR from 2.34 to 2.57 and for the 2 used on rape (HR=2.39 and 2.46), although based on respectively 7 and 6 cases.

Conclusion These findings suggest positive associations between incidence of specific NHL subtypes, and exposure to benzimidazole as a chemical family or specific ingredients in this family.

01A.3 OCCUPATIONAL INSECTICIDE EXPOSURE, GLYCEMIC REGULATION AND BRONCHOCONSTRICTION: PRELIMINARY RESULTS FROM A SHORT-TERM COHORT STUDY AMONG SMALL-SCALE FARMERS IN UGANDA

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Introduction Epidemiological studies have suggested associations between exposure to some classes of non-persistent insecticides, airways obstruction (Doust et al, 2014) and diabetes mellitus (Evangelou et al, 2016). Yet the evidence is limited by cross-sectional study designs and exposure metrics based on self-reported information only. The purpose of this study is to investigate these associations in a strong study design employing objective exposure metrics.

Methods From September 2018 to February 2019, we are conducting a short-term cohort study in a population of 370 small-scale farmers in Uganda, half of which are conventional farmers and the other half working towards organic

certification. We examine participants before, during and after the October-November agricultural pesticide-spraying season. In each study round, participants perform spirometry, and glycemic regulation is assessed by analysis of glycated aemoglobin A (HbA1c) as well as fasting plasma glucose for a subgroup. Detailed questionnaire-based information on pesticide usage (frequency, intensity, duration, specific compounds, personal protective equipment etc.) is used to construct an internal task-exposure matrix. The task-exposure matrix will be validated by erythrocyte choline esterase (AChE) activity as a proxy for organophosphate and carbamate exposure, as well as passive pesticide samplers (silicone wristbands) worn by participants between the study rounds.

Results and discussion The baseline (pre-spraying season) data collection is finalized. Data collection for the two rounds of follow-up (during/after the spraying season) is ongoing. At the conference, we will present the first results on temporal changes across the spraying season in AChE and associations with glycated aemoglobin A, fasting plasma glucose and lung function.

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01A.4 ASSESSMENT OF PESTICIDE-RELATED POLLUTION AND OCCUPATIONAL HEALTH OF VEGETABLE FARMERS

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Objectives This study assessed the pesticide exposure and the occupational health of the agricultural farmers in the Philippines. The study site is one of the largest vegetable-producing province in the Philippines.

Methods This study used both survey questionnaire and physical health assessment, including mental state examination. The pesticide exposure was estimated based on the duration of years of use of pesticide, as well as the amount applied per spray application. The data results were segregated between gender because women are also heavily engaged in agriculture in this part of the Philippines.

Results The results showed that pesticide exposure usually happened during agricultural activities such as spray application in the field (63.9%), mixing (38.4%), loading (34.1%) and field re-entry (9.7%) The most frequently used pesticides were Tamaron (OP), Selecron (OP), and Dithane (Carbamate). The mean years of pesticide use was 14.23 years for males, and 15.4 years for females. For the exposure to pesticides, expressed in terms of number of years and amount used per spray application, the average exposure of the males was 2,024.43 ml-years; and for females, it was 993.55. Among farmers, 49% complained of being sick because of work. Of those who got ill, a large percentage of this, 69.8%, did not receive any medical attention. The most prevalent health symptoms were muscle pain (63.3%), easy fatigability (52.4%), and loss of appetite (27.5%). For the mini-mental state examination, abnormalities were found in 5.4% for males and 40.8% in females. The use of insecticide was associated with weakness, easy fatigability and weight loss.