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NUEVOS TRABAJOS PUBLICADOS

1. ANNALS OF AGRICULTURAL AND ENVIRONMENTAL MEDICINE

TÍTULO DEL TRABAJO	
Genetic profile for the detection of susceptibility to poisoning by exposure to pesticides (<i>Perfil genético para la detección de susceptibilidad a intoxicaciones por exposición a plaguicidas</i>)	
PUBLICADO EN:	Annals of Agricultural and Environmental Medicine, 2021, Volumen 28, Número 2, pp. 208-213
AUTORES:	Ceja Galvez, Hazael Ramiro; Flores, Joel Salazar; Torres Sanchez, Erandis Dheni; Bravo, Daniel Rojas; Reyna Villela, Mireya Zoila; Uribe, Emmanuel Reyes
DOI:	10.26444/aaem/136362
RESUMEN:	<p>Introduction. In humans, there are sets of genes that encode enzymes that decrease or increase the risks derived from exposure to pesticides. These include DNA repair genes (XRCC1, OGG1 and XRCC4); pesticide metabolizers (GSTP1 and PON1), and genes that act against oxidative stress (SOD2 and NQO1).</p> <p>Objective. The aim of this literature review is to provide information about the genes involved in the defence systems against exposure to pesticides, as well as their polymorphisms, functions, and general characteristics of the encoded enzymes.</p> <p>Materials and methods. Information was obtained from scientific articles published between 2015-2020 in the PubMed database (https://pubmed.ncbi.nlm.nih.gov).</p> <p>Results. Genes related to the defence processes against pesticides present single-nucleotide polymorphisms (SNPs) with allelic variants that affect the expressions or structures of the encoded enzymes, negatively altering their activities. If we knew the genetic profile that includes polymorphisms of DNA-repairing genes, metabolizing genes, and genes against oxidative stress in subjects exposed to pesticides, we would also know about their susceptibility to poisoning caused by these chemicals.</p> <p>Conclusion. The genes could be used to propose a genetic profile in farmers exposed to various pesticides, including 10 gene polymorphisms involved in susceptibility to various pathologies related to DNA repair, xenobiotic metabolism, and oxidative stress. It could also be useful as a preventive measure to identify susceptibility to pesticide poisoning.</p>
RESUMEN DE CONCLUSIONES EN ESPAÑOL:	Se realizó una revisión acerca de los genes que se encuentran afectados cuando hay exposición a plaguicidas. Para ello, se consultaron todos los artículos científicos que se habían publicado en PubMed en el período comprendido entre 2015 y 2020. Se concluyó que se podría proponer un perfil genético para los agricultores que se exponen a diversos plaguicidas. Además, conocer la propensión a la intoxicación podría ser una medida de prevención.

TÍTULO DEL TRABAJO	
The problem of Lyme borreliosis infections in urban and rural residents in Poland, based on National Health Fund data <i>(El problema de las infecciones por borreliosis de Lyme en residentes urbanos y rurales de Polonia, según datos del Fondo Nacional de Salud)</i>	
PUBLICADO EN:	Annals of Agricultural and Environmental Medicine, 2021, Volumen 28, Número 2, pp. 277-282
AUTORES:	Brzozowska, Melania; Wierzba, Adam; Sliwczynski, Andrzej; Mysliwiec, Michal; Kozłowski, Krzysztof; Wierzba, Waldemar
DOI:	10.26444/aaem/121056
RESUMEN:	<p>Introduction and objective. Some fragmentary studies show that the incidence of Lyme borreliosis in Poland is increasing. It has been generally accepted that the most affected are forestry workers and farmers. The aim of the study is to compare the incidence of borreliosis in urban and rural residents in 2008-2016.</p> <p>Materials and method. Databases on Lyme borreliosis from the National Health Fund and Central Statistical Office in Poland were analyzed. For each patient, ambulatory or discharged from every hospital, the diagnosis was compulsorily reported as encoded following the International Classification of Diseases.</p> <p>Results. A steadily increasing number of patients with borreliosis in Poland was found, which doubled in 2008 - 2016. The incidence was similar in urban and rural residents. In all the provinces in Poland, an increase in incidence of borreliosis was observed, although there were big differences between them. The highest frequency of borreliosis was in Podlasie and Warmia-Masuria provinces. The lowest incidence of borreliosis was noticed in Wielkopolska province. In the most of provinces the increase in the incidence of borreliosis was steady, except Warmia-Masuria, where it was very low in 2008, and soaring since 2011. The number of cases per year between 2008 - 2016 increased in both in males and females.</p> <p>Conclusions. The results suggest the need for higher awareness of the risk of Lyme borreliosis in urban residents, because the incidence of Lyme borreliosis is growing independently of the place of residence. Prompt measures to prevent tick bites and appropriate education are urgently needed.</p>
RESUMEN DE CONCLUSIONES EN ESPAÑOL:	Las personas que más padecen la infección de borreliosis suelen ser agricultores y trabajadores forestales. Este estudio se centró en comparar el número de residentes urbanos y rurales que la sufrían en el período comprendido entre 2008 y 2016. La información se obtuvo del Fondo Nacional de Salud y de la Oficina Central de Estadística de Polonia. Los resultados mostraron que era muy similar el número de residentes urbanos y rurales que padecían la infección. Además, se encontró un aumento de personas que sufrían la enfermedad, duplicándose el valor entre 2008 y 2016. Se concluyó la necesidad de medidas preventivas.

TÍTULO DEL TRABAJO	
Severe carbamates intoxication of 43-year-old farmer - case report (<i>Intoxicación grave por carbamatos en un agricultor de 43 años: informe de caso</i>)	
PUBLICADO EN:	Annals of Agricultural and Environmental Medicine, 2021, Volumen 28, Número 2, pp. 358-360
AUTORES:	Klatka, Barbara Zofia; Terpilowski, Michal; Orzel, Anna Katarzyna; Janeczko, Dominika; Holowczuk, Magdalena; Tchorz, Michal; Krajewska, Anna; Szponar, Jaroslaw
DOI:	10.26444/aaem/121067
RESUMEN:	<p>Introduction. Carbamate insecticides are methyl carbamic acid esters and reversible cholinesterase inhibitors. In contrast to the long-term action of organophosphate insecticides, this complex undergoes rapid hydrolysis.</p> <p>Case report. A suicidal poisoning by exposure to carbofuran in a 43-year-old farmer is reported. The patient had a sudden respiratory and cardiac arrest in the mechanism of bradycardia asystole. He was additionally diagnosed with metabolic acidosis and massive aspiration pneumonia. After applied treatment, the patient's general condition improved - alignment of efficiency of both respiratory and circulatory efficiency were reached.</p> <p>Conclusion. Carbofuran is one of the most toxic carbamate insecticides. It is therefore important to react quickly and choose the right treatment. Differentiation between organophosphate and carbamate intoxication is essential.</p>
RESUMEN DE CONCLUSIONES EN ESPAÑOL:	Un agricultor de 43 años se intoxicó por exposición al carbofurano. Tras el tratamiento que se le realizó, el estado de salud del trabajador mejoró. Debido a que este insecticida es muy tóxico se debe actuar de forma inmediata y emplear el tratamiento correcto.

TÍTULO DEL TRABAJO	
Occupational health and safety in agriculture - a brief report on organization, legislation and support in selected European countries <i>(Salud y seguridad en el trabajo en la agricultura: un breve informe sobre organización, legislación y apoyo en países europeos seleccionados)</i>	
PUBLICADO EN:	Annals of Agricultural and Environmental Medicine, 2021, Volumen 28, Número 3, pp. 452-457
AUTORES:	Jakob, Martina Carola; Santa, Dushica; Holte, Kari Anne; Sikkeland, Inger Johanne; Hilt, Bjorn; Lundqvist, Peter
DOI:	10.26444/aaem/140197
RESUMEN:	Introduction and objective. Agriculture and forestry are among the most dangerous professions in Europe, with a high level of accidents affecting the sustainability and viability of the sector. International conventions, EU directives and national legislation build the fundamental basis for prevention. The aim of the study is to describe and categorize national mechanisms of occupational safety and health (OSH) for agricultural workers in Europe, to assess the extent of implementing safety regulation, the body in charge, and to give examples of health and safety initiatives. Materials and method. Results of a questionnaire-survey on basic safety regulations on farms sent by e-mail to the representatives of 30 participating European countries in the context of the Sacurima COST action network (CA 16123) are presented. Due to the complexity, only selected countries are described in this study highlighting the regulative bodies, occupational health services or specific training offers, as well as the complexity of the mechanisms. Results. One of the most serious issues and deficits of EU OSH regulation is the exclusion of self-employed farmers who compose nearly 90% of the farming population. This leads to serious under-reporting of accidents, and because one of the most common measures for the performance of health and safety initiatives are the injury and ill health statistics, better registration systems are urgently needed in almost all countries as a basis for preventive efforts. Conclusions. The results of the study provide a basis for raising awareness about the current OSH systems in Europe, and the importance of developing sector specific OSH strategies. The proposed activities should assist in tackling high accident rates and poor occupational health for self-employed farmers.
RESUMEN DE CONCLUSIONES EN ESPAÑOL:	La agricultura y silvicultura engloban grandes riesgos para sus trabajadores en Europa. Este estudio tiene como objetivo analizar en profundidad la seguridad y salud laboral en estos casos. Se empleó un cuestionario acerca de las normas básicas sobre este ámbito en la agricultura, que se envió a los representantes de 30 países de Europa mediante correo electrónico. Los resultados del estudio detectaron que la normativa no tiene en cuenta a los trabajadores autónomos del sector de la agricultura, que representan aproximadamente al 90%. Por tanto, se deben contemplar los accidentes y lesiones de estos trabajadores, además de proponer medidas que los engloben.

2. ANNALS OF WORK EXPOSURES AND HEALTH

TÍTULO DEL TRABAJO	
Assessing the Psychosocial Work Environment in Relation to Mental Health: A Comprehensive Approach <i>(Evaluación del entorno laboral psicosocial en relación con la salud mental: un enfoque integral)</i>	
PUBLICADO EN:	Annals of Work Exposures and Health, Mayo 2021, Volumen 65, Número 4, pp. 418-431
AUTORES:	Shahidi, Faraz, V; Gignac, Monique A. M.; Oudyk, John; Smith, Peter M.
DOI:	10.1093/annweh/wxaa130
RESUMEN:	<p>Objectives: Prevailing job stress models encourage a multidimensional view of the psychosocial work environment and highlight the role that multiple co-occurring stressors play in the aetiology of mental health problems. In this study, we develop a latent typology of psychosocial work environment profiles to describe how a comprehensive array of job stressors are clustered in the Canadian labour market. We also examine the association between these latent psychosocial work environment profiles and several indicators of mental health.</p> <p>Methods: Data were collected from 6408 workers who completed the Canadian National Psychosocial Work Environment Survey. Psychosocial work exposures were measured using standard items from the Copenhagen Psychosocial Questionnaire. We employed latent profile analyses to identify groups of individuals with similar psychosocial work environment profiles. We used log-linear regression models to examine the association between latent psychosocial work environment profiles and burnout, stress, and cognitive strain.</p> <p>Results: Four distinct groups with highly divergent psychosocial work environment profiles were identified. Adjusting for a range of demographic and socioeconomic factors, latent psychosocial work environment profiles were strongly related to mental health. Individuals who reported exposure to a comprehensive array of psychosocial job stressors (11% prevalence) reported the highest probability of burnout (PR: 7.51, 95% confidence interval [CI]: 5.56-10.15), stress (PR: 8.98, 95% CI: 6.20-13.0), and cognitive strain (PR: 7.29, 95% CI: 5.02-10.60).</p> <p>Conclusions: Findings suggest that psychosocial work stressors are tightly clustered in the Canadian labour market, and that the clustering of work stressors is strongly associated with adverse health outcomes. Future scholarship may benefit from adopting a more comprehensive approach to the assessment of psychosocial job quality as a determinant of health and well-being.</p>
RESUMEN DE CONCLUSIONES EN ESPAÑOL:	Esta investigación se centra en los aspectos psicosociales en el trabajo en Canadá. Participaron en el estudio 6408 trabajadores de diversos sectores, entre ellos la agricultura. Se utilizó una encuesta, ítems de un cuestionario y otras técnicas para recopilar información y obtener resultados. Estos mostraron, entre otras cosas, que había cuatro grupos diferentes de perfiles de entorno laboral psicosocial, que estaban muy

	asociados con la salud mental. Se concluyó que los factores psicosociales están agrupados en el entorno de trabajo de Canadá y que conllevan a consecuencias perjudiciales para la salud.
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TÍTULO DEL TRABAJO	
<p>Estimating Exposure to Three Commonly Used, Potentially Carcinogenic Pesticides (Chlorolathonil, 2,4-D, and Glyphosate) Among Agricultural Workers in Canada <i>[Estimación de la exposición a tres plaguicidas potencialmente cancerígenos de uso común (clorolatonil, 2,4-D y glifosato) entre trabajadores agrícolas en Canadá]</i></p>	
PUBLICADO EN:	Annals of Work Exposures and Health, Mayo 2021, Volumen 65, Número 4, pp. 377-389
AUTORES:	Rydz, Ela; Larsen, Kristian; Peters, Cheryl E.
DOI:	10.1093/annweh/wxaa109
RESUMEN:	<p>Objectives Certain pesticides have been associated with adverse health outcomes including cancer and reproductive harms. However, little is known about the prevalence of occupational pesticide exposure among agricultural workers in Canada. The purpose of this study was to estimate the prevalence and likelihood of occupational exposure to pesticides in Canada's agricultural industry, using three commonly used, potentially carcinogenic pesticides [chlorothalonil, 2,4-dichlorophenoxyacetic acid (2,4-D), and glyphosate] as an example.</p> <p>Methods Estimates were calculated using the Canadian Census of Population and the Census of Agriculture. The number of workers and the proportion of farms applying 'herbicides' or 'fungicides' by farm type was estimated using survey data from the Census of Agriculture. These values were multiplied to yield the potential number of workers at risk of exposure. Likelihood of exposure (i.e. exposed, probably exposed, and possibly exposed) was then qualitatively assigned using information on crop type, primary expected tasks, crop production practices, and residue transfer data. Additional agricultural workers who are at risk of exposure but not captured by the Census of Agriculture were identified using the 2016 Census of Population.</p> <p>Results An estimated range of 37 700–55 800 workers (11–13% of agricultural workers) were exposed to glyphosate in Canada while 30 800–43 600 workers (9–11%) and 9000–14 100 (2.9–3.2%) were exposed to 2,4-D and chlorothalonil, respectively. Approximately 70–75% of workers at risk of exposure were considered probably or possibly exposed to any of the pesticides. Glyphosate exposure was most common among workers in oilseed (29% of oilseed farm workers exposed) and dry pea/bean farms (28%), along with those providing support activities for farms (31%). 2,4-D exposure was most common in corn (28%), other grain (28%), and soybean farms (27%), while chlorothalonil exposure was more likely among greenhouse, nursery, and floriculture workers (42%), workers on farms (28%, for occupations not captured by the Census of Agriculture, specifically), and those providing support activities for farms (20%). Regional variations broadly reflected differences in farm types by province.</p> <p>Conclusions</p>

	<p>This study estimated the prevalence of occupational exposure to three pesticides in Canada. Seasonal and temporary agricultural workers, which were captured by the Census of Agriculture, contributed to many additionally exposed workers. A large percent of the workers who were considered at risk of exposure were considered probably or possibly exposed, indicating a need for enhanced data collection and availability on pesticide use data in Canada. The study's methods can be applied to estimate workers' exposures to other pesticides within the agricultural industry.</p>
<p>RESUMEN DE CONCLUSIONES EN ESPAÑOL:</p>	<p>Este estudio tuvo como objetivo investigar la probabilidad de exposición a plaguicidas, de tres tipos, en trabajadores del sector agrícola en Canadá.</p> <p>Se obtuvo el dato de la cantidad de trabajadores que podían estar expuestos a plaguicidas. Para ello, se utilizó el censo de población canadiense y el censo agrícola. El tipo de cultivo, las prácticas o tareas y los residuos se emplearon como información para determinar la probabilidad de exposición. También se empleó el censo de población de 2016 para identificar trabajadores que estaban expuestos, pero que no fueron encontrados con el censo de agricultura.</p> <p>Los resultados mostraron que entre el 70 y 75% de trabajadores estaban probable o posiblemente expuestos a plaguicidas. También se determinaron los porcentajes de trabajadores dedicados a diferentes actividades en los que fue más común la exposición a cada uno de los tres tipos.</p> <p>Se concluyó que era necesaria una mejora sobre la información acerca de la utilización de plaguicidas en Canadá. Además, se determinó que los métodos empleados en esta investigación se podían hacer extensibles para otros tipos de plaguicidas.</p>

TÍTULO DEL TRABAJO	
Heat Stress and Cardiac Strain in French Vineyard Workers <i>(Estrés térmico y tensión cardíaca en trabajadores de viñedos franceses)</i>	
PUBLICADO EN:	Annals of Work Exposures and Health, Mayo 2021, Volumen 65, Número 4, pp. 390-396
AUTORES:	Grimbuhler, Sonia; Viel, Jean-Francois
DOI:	10.1093/annweh/wxaa115
RESUMEN:	<p>Agricultural workers often produce considerable excess heat due to the physically demanding nature of their activities, increasing their risk of thermal stress in even moderately warm conditions. Few studies have examined the physiological responses to heat load in agriculture. We aimed to assess the heat strain experienced by vineyard workers during canopy management in dry field conditions, and to disentangle the effects of the heat produced by the body and the thermal environment. Thirty workers from five Bordeaux vineyards of southern France were monitored during vine-lifting and trellising (June 2012). The mean heart rate, net cardiac cost, relative cardiac cost, and cardiac workload score were assessed during field activity. As the workers were nested within vineyards, multilevel linear regression models were used for correct inference. Skin temperature increased by an average of 1.0 degrees C. Cardiac indices showed marked differences between individuals. The workload was evaluated as 'heavy' or 'very heavy' for more than one-third of the workers, of whom one experienced heat exhaustion. Above some individual characteristics, we highlighted a contextual effect (air temperature) for the mean heart rate ($P= 0.03$), the relative cardiac cost ($P= 0.01$) and, to a lesser extent, a cardiac workload score ($P= 0.07$). Canopy management by hand in vineyards causes considerable cardiac and thermoregulatory strain. Appropriate instruments should be developed to simultaneously evaluate work intensity, work quality, and productivity at the vineyard level to raise the awareness of both managers and employees about taking preventive measures.</p>
RESUMEN DE CONCLUSIONES EN ESPAÑOL:	<p>Este estudio se centró en el estrés térmico de los trabajadores de viñedos en el manejo del dosel en campo seco. Participaron treinta trabajadores de Burdeos pertenecientes a cinco viñedos diferentes. Se monitoreó a estos trabajadores cuando realizaban las tareas de levantamiento y emparrillado de la vid. Se determinaron diferentes parámetros cardíacos y se emplearon modelos de regresión lineal multinivel. Se determinó un incremento de un grado Celsius de la temperatura de la piel y que más de un tercio de los trabajadores tenían una carga de trabajo pesada o muy pesada. De ellos, uno de los trabajadores sufrió agotamiento por calor.</p> <p>Se concluyó que la tarea del manejo de dosel provocaba efectos cardíacos y termorreguladores. Son necesarios equipos para analizar estos aspectos del trabajo y adoptar medidas preventivas.</p>

TÍTULO DEL TRABAJO	
Dose Setting for Dermal Absorption Studies on Dried Foliar Residues (Ajuste de dosis para estudios de absorción dérmica en residuos foliares secos)	
PUBLICADO EN:	Annals of Work Exposures and Health, Mayo 2021, Volumen 65, Número 4, pp. 397-405
AUTORES:	Morgan, Neil; Hewitt, Nicola J.; Felkers, Edgars; Wiemann, Christiane; Kluxen, Felix M.; Kuster, Christian J.
DOI:	10.1093/annweh/wxaa139
RESUMEN:	Currently, the standard approach to estimate systemic exposure of workers after contact with dried pesticide residues on crops during re-entry activities relies on using the highest identified dermal absorption value for aqueous spray dilutions. However, recent dermal absorption studies with dried residues and their respective in-use dilutions have shown that this is likely to significantly overestimate their dermal penetration potential and, thus, predicted systemic exposure. The choice of appropriate dose levels for these dermal absorption studies has not been defined. Moreover, actual skin loading during re-entry tasks may differ significantly from that achieved by applying a fixed volume of an aqueous dilution, which is the standard practice in generic dermal absorption studies. To address this, we propose an approach to dose setting for dried residue studies within the current European risk assessment framework. Skin loading for studies can be calculated from the existing exposure algorithms and by taking appropriate body surface areas into account. Thus, skin loading in studies will vary depending on the exact nature and duration of the task and the region of the body exposed, reflecting actual exposure scenarios.
RESUMEN DE CONCLUSIONES EN ESPAÑOL:	Este estudio muestra una nueva perspectiva sobre la exposición de los trabajadores del sector de la agricultura por el contacto con residuos secos de plaguicidas. En este trabajo se determinan las dosis necesarias para la investigación de absorción dérmica. Para el cálculo de la carga cutánea se consideran las zonas corporales necesarias y se utilizan algoritmos.

TÍTULO DEL TRABAJO	
Disruption of the Diurnal Cortisol Hormone Pattern by Pesticide Use in a Longitudinal Study of Farmers in Thailand <i>(Interrupción del patrón de la hormona cortisol diurna por el uso de plaguicidas en un estudio longitudinal de agricultores en Tailandia)</i>	
PUBLICADO EN:	Annals of Work Exposures and Health, Mayo 2021, Volumen 65, Número 4, pp. 406-417
AUTORES:	Kongtip, Pornpimol; Nankongnab, Noppanun; Kallayanatham, Nichcha; Pengpumkiat, Sumate; Gore, Rebecca; Pundee, Ritthirong; Konthonbut, Pajaree; Woskie, Susan R.
DOI:	10.1093/annweh/wxaa124
RESUMEN:	Alteration of the hypothalamic-pituitary-adrenal (HPA) axis hormones has been associated with a range of chronic metabolic and cardiovascular health conditions. This study evaluated whether type of farming (organic versus conventional) or the number of self-reported days of spraying pesticides in the past 8 months was associated with diurnal cortisol levels. Salivary cortisol levels were measured four times a day (waking, 30 min after waking, 6 h after waking and bedtime) longitudinally, 8 months apart during three rounds of data collection. Pesticide using (conventional) and organic farmers were recruited to participate. Pesticide use in the previous 8 months was determined as the number of spray days for each type of pesticide used (herbicide, insecticide, fungicide) from self-reported questionnaires. Estimates of cortisol levels at four time points, the cortisol awakening response (CAR), and the diurnal cortisol slope (DCS) were estimated with a longitudinal mixed model that accounted for the non-linearity of cortisol levels across the day. Conventional farmers had significantly lower cortisol levels at waking than organic farmers (3.39 versus 3.86 ng ml ⁻¹), 30 min after waking (5.87 versus 6.96 ng ml ⁻¹), 6 h after waking (1.62 versus 1.88 ng ml ⁻¹), and lower diurnal cortisol slope (-2.26 versus -2.51 ng ml ⁻¹). Farmers who frequently applied herbicides (90th percentile of the number of spray days in the past 8 months) had significantly lower waking, 30 min after waking, 6 h after waking, bedtime and diurnal cortisol slopes compared with those with no spray days of herbicide in the past 8 months (organic and some of the conventional farmers). Those who frequently applied insecticides in the past 8 months had significantly lower bedtime levels and diurnal cortisol slopes, compared with those with no spray days of insecticide in the past 8 months. There were no significant differences in cortisol hormones between those who frequently applied fungicides and those who did not spray fungicides. Repeated pesticide use appears to be disrupting the HPA axis and depressing the normal diurnal cortisol rhythm among conventional Thai farmers.

**RESUMEN DE
CONCLUSIONES EN
ESPAÑOL:**

Esta investigación tuvo como objetivo comprobar si los niveles de cortisol durante el día tenían relación con la agricultura practicada (orgánica o convencional) o con el total de días en los que se habían empleado pesticidas durante los 8 meses anteriores. Participaron trabajadores de ambos tipos de agricultura y para conocer la información de los últimos 8 meses se emplearon cuestionarios. Se realizaron cuatro mediciones salivales al día del nivel de cortisol, con un espacio de 8 meses. Se concluyó que la aplicación repetida de pesticidas alteraba el eje hipotalámico-pituitario-suprarrenal y disminuía los niveles de cortisol durante el día en los agricultores convencionales.

TÍTULO DEL TRABAJO	
Determinants of Skin and Respiratory Exposure to Lufenuron During Spraying and Re-entry in Italian Ornamental Plants Greenhouses <i>(Determinantes de la exposición respiratoria y de la piel al lufenurón durante la pulverización y la reentrada en invernaderos italianos de plantas ornamentales)</i>	
PUBLICADO EN:	Annals of Work Exposures and Health, Junio 2021, Volumen 65, Número 5, pp. 554-565
AUTORES:	Aprea, María C.; Centi, Letizia; Mericoni, Maria; Lunghini, Liana; Banchi, Bruno; Sartorelli, Pietro
DOI:	10.1093/annweh/wxaa108
RESUMEN:	The aim of this study was to evaluate dermal and respiratory exposure of workers to Lufenuron during spraying and re-entry on ornamental plants (stapling) in greenhouses. Potential and real skin exposure were evaluated using filter paper pads, hand contamination by washing, and respiratory exposure by personal air sampling. Dislodgeable foliar residues (DFRs) during re-entry were determined in order to calculate the dermal transfer factor (DTF). Lufenuron was analysed by liquid chromatography–mass detection. Respiratory dose (ReD) was calculated on the basis of a lung ventilation of 15–20 l min ⁻¹ and absorbed doses assuming a skin penetration of 13% and a respiratory retention of 100%. During stapling, from the dependence of exposure of hands from DFRs, the mean DTF was 0.575 cm ² h ⁻¹ (geometric mean). The ReD was 68.7–74.6 and 0.022–0.636% of the total real dose during spraying and stapling, respectively. The absorbed doses, 0.144–0.171 and 0.005–0.124 µg kg bw ⁻¹ during spraying and stapling, respectively, were less than the acceptable operator exposure level of 10 µg kg bw ⁻¹ . Proper use of equipment and personal protective equipment and personal hygiene are aspects of fundamental importance on which workers must be trained. Adequate occupational hygiene studies are needed to support and verify working practices.
RESUMEN DE CONCLUSIONES EN ESPAÑOL:	Se analizó la exposición respiratoria y de la piel a lufenurón en trabajadores de invernaderos de plantas ornamentales durante dos tareas: fumigación y grapado. Entre otras cosas, se realizó muestreo de aire o se emplearon almohadillas de papel de filtro. Los resultados mostraron que los niveles absorbidos en la realización de las tareas fueron menores al nivel aceptable. Se concluyó que la formación de trabajadores orientada al empleo de equipos de protección individual y a la higiene eran de gran relevancia.

TÍTULO DEL TRABAJO	
<p>Are Inflammatory Markers an Indicator of Exposure or Effect in Firefighters Fighting a Devastating Wildfire? Follow-up of a Cohort in Alberta, Canada <i>(¿Son los marcadores inflamatorios un indicador de exposición o efecto en los bomberos que luchan contra un devastador incendio forestal? Seguimiento de una cohorte en Alberta, Canadá)</i></p>	
PUBLICADO EN:	Annals of Work Exposures and Health, Julio 2021, Volumen 65, Número 6, pp. 635-648
AUTORES:	Cherry, Nicola; Beach, Jeremy; Galarneau, Jean-Michel
DOI:	10.1093/annweh/wxaa142
RESUMEN:	<p>Objectives The Fort McMurray fire in Alberta, Canada, devastated the townsite in May 2016. First responders were heavily exposed to smoke particles. Blood samples taken from firefighters in May and August/September 2016 were used to measure concentrations of inflammatory markers in plasma and the relation of these markers to exposures and respiratory ill-health.</p> <p>Methods Blood samples were drawn from firefighters from two fire services, who also completed questionnaires about tasks and exposures during their deployment to the fire and about respiratory symptoms. Plasma was analysed for 42 inflammatory markers in a multiplex assay. At Service A, samples were collected twice, within 19 days of the start of the fire (early sample) and again 14–18 weeks later (late sample). At Service B, only late samples were collected, at 16–20 weeks. Principal component (PC) scores were extracted from markers in plasma from the early and late samples and, at both time periods, the first two components retained. PC scores were examined against estimated cumulative exposures to PM2.5 particles, self-rated physical stressors during the fire, and time since the last deployment to an active fire. The relation of component scores and exposure estimates to respiratory health were examined, using self-ratings at the time of the blood draw, a validated respiratory screening questionnaire (the European Community Respiratory Health Survey [ECRHS]) some 30 months after the fire, and clinical assessments in 2019–2020.</p> <p>Results Repeat blood samples were available for 68 non-smoking first responders from Service A and late samples from 160 non-smokers from both services. In the 68 with two samples, marker concentrations decreased from early to late samples for all but 3 of the 42 markers, significantly so ($P < 0.05$) for 25. The first component extracted from the early samples (C1E) was unrelated to respiratory symptoms but the second (C2E) was weakly related to increased cough ($P = 0.079$) and breathlessness ($P = 0.068$) and a lower forced expiratory volume in one second/forced expiratory capacity (FEV1/FVC) ($\beta = -1.63$, 95% CI -3.11 to -0.14) $P = 0.032$. The first PC at 14–20 weeks (C1L) was unrelated to exposure or respiratory health but the second PC (C2L) from these late</p>

	<p>samples, drawn from both fire services, related to cumulative PM2.5 exposure. In a multivariate model, clustered within fire service, cumulative exposure ($\beta = 0.19$, 95% CI 0.09–0.30), dehydration ($\beta = 0.65$, 95% CI 0.04–1.27) and time since last deployed to a fire ($\beta = -0.04$, 95% CI -0.06 to -0.01) were all related to the C2L score. This score was also associated with respiratory symptoms of wheezing, chest tightness, and breathlessness at the time of the blood draw but not to symptoms at later follow-up. However, apart from the lower FEV1/FVC at 15–19 days, the marker scores did not add to regression models that also included estimated cumulative PM2.5 exposure.</p> <p>Conclusions Concentrations of persisting inflammatory markers in the plasma of firefighters deployed to a devastating fire decreased with time and were related to estimates of exposure. Although not a powerful independent predictor of later respiratory ill-health, they may serve as an indicator of previous high exposure in the absence of contemporary exposure estimates.</p>
<p>RESUMEN DE CONCLUSIONES EN ESPAÑOL:</p>	<p>Se hicieron análisis de sangre a bomberos que participaron en extinguir el incendio de Fort McMurray en Alberta, Canadá. El objetivo era conocer los marcadores inflamatorios en el plasma y su asociación con la exposición y con la aparición de problemas respiratorios. En el estudio se evaluó a trabajadores de dos servicios, que además rellenaron cuestionarios. También se diferenció entre fumadores y no fumadores. Los resultados mostraron que los marcadores inflamatorios fueron disminuyendo al pasar el tiempo y se asociaron con la exposición, aunque no se consideró que fueran un indicador muy relevante de problemas respiratorios futuros.</p>

TÍTULO DEL TRABAJO	
Exposure to Hand-Arm Vibration in the Australian Workforce (<i>Exposición a vibraciones mano-brazo en la fuerza laboral Australiana</i>)	
PUBLICADO EN:	Annals of Work Exposures and Health, Mayo 2021, Volumen 65, Número 6, pp. 659-667
AUTORES:	Lewkowski, Kate; Ytterstad, Elinor; Pugliese, Matthew J; McCausland, Kahlia; Heyworth, Jane S; Li, Ian W; Pettersson, Hans; Williams, Warwick; Fritschi, Lin
DOI:	10.1093/annweh/wxaa121
RESUMEN:	<p>Objective To estimate the prevalence of hand-arm vibration (HAV) in Australian workplaces.</p> <p>Methods The Australian Workplace Exposure Survey (AWES)—Hearing was a cross-sectional telephone survey of Australian workers conducted in 2016–2017. Respondents were asked about the time spent using tools or performing tasks known to be associated with HAV during their most recent working day. We created a library of HAV magnitude levels for each tool/task and estimated each worker’s daily HAV exposure level using standard formulae. We categorized each worker as to whether they exceeded the daily occupational limits of 2.5 and 5.0 m/s². Results were extrapolated to the Australian working population using a raked weighting method.</p> <p>Results In our sample of 4991 workers, 5.4% of men and 0.7% of women exceeded the HAV action limit of 2.5 m/s² on their most recent working day. We estimate that 3.8% of the Australian workforce exceeds the HAV limit of 2.5 m/s² and 0.8% exceeds the 5 m/s² limit. Men were more likely to exceed the HAV limits than women, as were those with trade qualifications, and those who worked in remote locations. Workers in the construction, farming, and automobile industries had the highest prevalence of HAV exposure. Tool groups that contributed to higher exposure levels included: compactors, rollers, and tampers; power hammers and jackhammers; and underground mining equipment.</p> <p>Conclusions HAV is common in the Australian working population. Given the health risks associated with this exposure, reduction strategies and interventions should be developed, with engineering controls as the starting point for exposure reduction strategies.</p>
RESUMEN DE CONCLUSIONES EN ESPAÑOL:	Este estudio analizó la vibración mano-brazo en entornos laborales de Australia. Se realizó una encuesta determinada a 4991 trabajadores entre 2016 y 2017 por teléfono. Se obtuvo información acerca del tiempo destinado a utilización de herramientas o tareas relacionadas con esta vibración en el último día de trabajo. Se analizaron, clasificaron y estudiaron los datos. Uno de los sectores que presentó mayor exposición a la vibración mano-brazo fue la agricultura. Se deberían llevar a cabo medidas para disminuir este riesgo laboral.

TÍTULO DEL TRABAJO	
Exposure to Bioaerosols During Fish Processing on Board Norwegian Fishing Trawlers (<i>Exposición a bioaerosoles durante el procesamiento de pescado a bordo de arrastreros pequeños noruegos</i>)	
PUBLICADO EN:	Annals of Work Exposures and Health, Julio 2021, Volumen 65, Número 6, pp. 694-702
AUTORES:	Heidelberg, Cecilie T.; Bang, Berit; Thomassen, Marte R.; Kamath, Sandip D.; Ruethers, Thimo; Lopata, Andreas L.; Madsen, Anne M.; Sandsund, Mariann; Aasmoe, Lisbeth
DOI:	10.1093/annweh/wxaa104
RESUMEN:	<p>Objectives The main objective was to gain more knowledge on exposure to bioaerosols in the processing area on board fishing trawlers.</p> <p>Methods Exposure sampling was carried out during the work shifts when processing fish in the processing area on board five deep-sea fishing trawlers (trawlers 1–5). Exposure samples were collected from 64 fishermen breathing zone and from stationary sampling stations on board five deep-sea fishing trawlers (1–5). Trawlers 2, 3, and 4 were old ships, not originally built for on board processing of the catch. Trawlers 1 and 5 were relatively new and built to accommodate processing machineries. On trawlers 1–4 round fish was produced; the head and entrails were removed before the fishes were frozen in blocks. Trawler 5 had the most extensive processing, producing fish fillets. Samples were analysed for total protein, trypsin activity, parvalbumin, and endotoxin. One side analysis of variance and Kruskal–Wallis H test were used to compare levels of exposure on the different trawlers.</p> <p>Results Personal exposure to total protein were higher on the three oldest trawlers (2, 3, and 4) compared with the two new trawlers (1 and 5). Highest activity of trypsin was detected on the four trawlers producing round fish (1–4). Parvalbumin was detected in 58% of samples from the fillet-trawler (5) compared with 13% of samples from the four trawlers producing round fish. The highest level of endotoxin was detected when using high-pressure water during cleaning machines and floors in the processing area.</p> <p>Conclusions Fishermen in the processing area on board Norwegian trawlers are exposed to airborne bioaerosols as proteins, trypsin, fish allergen parvalbumin, and endotoxin. Levels varied between trawlers and type of production.</p>
RESUMEN DE CONCLUSIONES EN ESPAÑOL:	Este estudio se realizó para conseguir información sobre la exposición a bioaerosoles de los trabajadores encargados del procesamiento de pescado a bordo de arrastreros noruegos. Se tomaron muestras en el área de respiración de los trabajadores mientras realizaban el procesamiento de pescado. Se realizó la investigación en un total de 5 arrastreros, tres de los cuales no estaban adaptados específicamente

	<p>para el procesamiento. Sin embargo, los otros dos sí lo estaban, por ser más nuevos. Cuatro barcos procesaban un tipo de pescado y el quinto se centraba en otra tarea. Se evaluó a 64 trabajadores. Se empleó estadística para analizar los resultados y se concluyó que los pescadores de la zona de procesamiento están expuestos a bioaerosoles. Los niveles de exposición eran diferentes según el tipo de arrastrero y de producción.</p>
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3. AUSTRALIAN JOURNAL OF RURAL HEALTH

TÍTULO DEL TRABAJO	
Comparison of severe on-farm injuries to older and younger persons in New South Wales (2012-2016) <i>[Comparación de lesiones graves en granjas entre personas mayores y más jóvenes en Nueva Gales del Sur (2012-2016)]</i>	
PUBLICADO EN:	Australian Journal of Rural Health, Junio 2021, Volumen 29, Número 3, pp. 429-434
AUTORES:	Walker, Jarrod; Lower, Tony; Peachey, Kerri-Lynn
DOI:	10.1111/ajr.12716
RESUMEN:	<p>Objectives To assess and compare rates of severe on-farm injury for older (> 50 years) and younger (15-49 years) cohorts, on NSW farms.</p> <p>Design Descriptive retrospective epidemiological study of the New South Wales Trauma Registry (Institute of Trauma and Injury Management - ITIM) for persons injured on a farm.</p> <p>Setting New South Wales, Australia.</p> <p>Participants Cases involving persons (≥ 15 years), with data on the NSW Trauma Registry (2012-16).</p> <p>Main outcome measures Comparison of injury rates and severity between younger (15-49 years) and older (50+ years) cohorts over the 2012-16 period based on Injury Severity Scores (ISS).</p> <p>Results Older males are injured at a rate that is roughly 18% higher than younger males and 13% higher than the overall injury rate. Older individuals also have significantly longer hospital stays post-injury ($P = 0.01$), with this being most pronounced for older men ($P < 0.01$). There was no statistically significant difference in ISS demonstrated between the age cohorts ($P = 0.64$), except for younger women having higher median ISS than their older female counterparts ($P = 0.02$).</p> <p>Conclusion Overall, the general trends displayed support the contention that older males are more likely to incur a severe on-farm injury than their younger counterparts. This provides support for a preventative focus targeting older farmers in NSW.</p>
RESUMEN DE CONCLUSIONES EN ESPAÑOL:	<p>Esta investigación se centró en la evaluación y comparación de la ocurrencia de lesiones de gravedad entre trabajadores de granjas de dos grupos de edad diferentes. El estudio se realizó en Nueva Gales del Sur. Se emplearon datos correspondientes al intervalo de tiempo desde el año 2012 a 2016 sobre lesiones graves del Registro de Trauma que englobaban a personas de 15 años o más.</p> <p>Se comparó la ocurrencia de lesiones y su gravedad entre trabajadores de 15 a 49 años y mayores de 50. Se concluyó que, en el trabajo en granja, los hombres con una edad más avanzada tenían una probabilidad más alta de tener una lesión grave que los de menor edad. Este estudio, promueve la determinación de medidas preventivas centradas en los trabajadores mayores.</p>

4. INTERNATIONAL JOURNAL OF INDUSTRIAL ERGONOMICS

TÍTULO DEL TRABAJO	
An ergonomic intervention for manual load carrying on Indian farms (<i>Una intervención ergonómica para el transporte manual de cargas en granjas indias</i>)	
PUBLICADO EN:	International Journal of Industrial Ergonomics, Mayo 2021, Volumen 83, Número de artículo 103126
AUTORES:	Kumar, Adarsh; Pramanik, Anilendu; Singh, J. K.; Tiwari, Ravindra Kumar; Jena, Swagatika
DOI:	10.1016/j.ergon.2021.103126
RESUMEN:	The farm inputs like seeds, fertilizers and produce are handled manually in most of the low-income and underdeveloped countries. Such practice of manual load carrying is one of the dominant contributors to back pain and associated physiological problems. In the present study, it was found that volume, quantum and distance determine the mode of load carrying. Bulky or voluminous commodities like harvested cereal crops and fodder are carried on the head. Heavy loads of paddy and vegetables filled in gunny bags, which limits the volume to bag size are carried on the back. Carrying the load on the head is by and large prevailing mode because it does not introduce eccentricity and postures remain balanced., In the present study, an attempt is made to develop a harness, which does not alter the head loading but prevents the loading of the spine. Three approaches considered were: Approach-I (harness H1): load passing through shoulders only (one path only); Approach II (harness H2): load passing through head and shoulder (through two paths only); Approach III (harness H3): Load passing through head and shoulder (through two paths), but in this approach, load on the cervical spine was limited to 10 kg and rest of the load was transferred to shoulder with proper stability. The outcome of ergonomic studies showed that Approach-III is the most metabolically economical, compared to other developed approaches and could be adopted for Indian agricultural farm load carriage for various purposes.
RESUMEN DE CONCLUSIONES EN ESPAÑOL:	El manejo manual de productos agrícolas tiene como consecuencia molestias de espalda y otros problemas. Este trabajo consideró tres escenarios ergonómicos para la manipulación de cargas en este sector. El primero era llevar la carga en los hombros, siguiendo solamente un camino, el segundo que la carga pasara por la cabeza y el hombro, mediante dos caminos y el tercero, el mismo caso que el anterior, pero limitando la carga a 10 kg en la columna y que la carga restante se pasara al hombro con cierta estabilidad. Se comprobó que el tercer enfoque era el más apropiado para ser adoptado en el manejo de cargas en el sector agrícola en India.

5. JOURNAL OF AGROMEDICINE

TÍTULO DEL TRABAJO	
Association of Category of Cattle Exposure with Tuberculosis Knowledge among Dairy Workers in Bailey Country, Texas <i>(Asociación de categorías de exposición del ganado con conocimientos sobre tuberculosis entre los trabajadores lácteos en el condado de Bailey, Texas)</i>	
PUBLICADO EN:	Journal of Agromedicine, Julio 2021, Volumen 26, Número 3, pp. 313-322
AUTORES:	Rodriguez, Anabel; Douphrate, David, I; De Porras, David Gimeno Ruiz; Perez, Adriana; Hagevoort, Robert; Nonnenmann, Matthew; Cienega, Leeroy
DOI:	10.1080/1059924X.2020.1765931
RESUMEN:	Objective To determine the knowledge of tuberculosis (TB) among dairy workers in Bailey County, Texas. Methods A cross-sectional study design was used to collect 225 survey responses concerning knowledge of TB among dairy workers on 10 dairy farms in Bailey County, Texas. Subjects used iPad tablets to log responses to 15 demographic questions and a 17-item TB knowledge quiz, measured by: (1) TB characteristics, (2) TB transmission, (3) TB symptoms, (4) TB diagnosis, (5) TB treatment, and (6) bovine TB. A proxy for exposure, dairy workers were classified into categories of cattle exposure - high, medium, and low. Results Relative to the medium/low group, workers in the high group tended to be younger (32.6 (SD 11.0)), Guatemalan (52.6%), K'iche' speaking (37.8%), males (89.1%) with less years living in the U.S. (10.8 [SD 12.5]) and lower levels of formal education completed (59.6% with no formal/elementary level). Overall, the average score was 7.1 (SD 4.9) out of 17 (41.8% out of 100.0%). Relative to one another, the medium/low group (8.0 (SD 4.6) out of 17) scored better than the high group (6.7 [SD 5.1] out of 17). No significant associations were found between the category of exposure and TB knowledge score. Conclusion Deficiencies in TB knowledge were identified in all categories of exposure. TB training on dairy farms should include all measured tested in this study and should be administered to all workers regardless of the category of exposure.
RESUMEN DE CONCLUSIONES EN ESPAÑOL:	Se evaluó el conocimiento acerca de la tuberculosis que tenían los trabajadores lácteos en Texas, concretamente en el condado de Bailey. Se analizaron 10 granjas, mediante la realización de una encuesta a un total de 225 trabajadores, que se clasificaron según su frecuencia de exposición al ganado, como alta, media y baja. Las puntuaciones fueron mejores para el grupo bajo y medio, aunque no se encontró relación entre la exposición y la puntuación obtenida. Se concluyó que el conocimiento de esta enfermedad era insuficiente para todos los grupos de trabajadores expuestos.

TÍTULO DEL TRABAJO	
Farm-Related Injuries and Fatalities Involving Children, Youth, and Young Workers during Manure Storage, Handling, and Transport <i>(Lesiones y muertes relacionadas con la granja que involucraron a niños, gente joven y trabajadores jóvenes durante el almacenamiento, manejo y transporte de estiércol)</i>	
PUBLICADO EN:	Journal of Agromedicine, Julio 2021, Volumen 26, Número 3, pp. 323-333
AUTORES:	Nour, Mahmoud M.; Field, Willam E.; Ni, Ji-Qin; Cheng, Yuan-Hsin
DOI:	10.1080/1059924X.2020.1795034
RESUMEN:	<p>Objective Manure storage, handling, and transport facilities and equipment have been associated with life threatening hazards on many livestock farms. These hazards have been documented in prior research as including 1) exposure to toxic manure gases or lack of adequate oxygen in enclosed structures, which can be fatal to both humans and livestock; 2) below and above ground liquid manure storage structures that have the potential risk for drowning and falling; and 3) mechanical hazards associated with manure handling and transport equipment, including entanglement, road collisions, runover, and equipment failure. Methods Over the past 40 years, Purdue University's Agricultural Safety and Health Program (PUASHP) has collected, documented, and maintained data regarding agricultural-related injuries and fatalities associated with agricultural confined spaces in the United States. As part of ongoing surveillance, a total of 369 fatal and non-fatal cases relating to manure storage, handling and transport equipment, and facilities have been documented. Of these, 89 have involved children, youth, and young farm workers ages (birth-21) documented between 1975 and 2019. The purpose of this study was to summarize these 89 documented cases to better understand contributing factors and to develop recommendations for evidence-based strategies to reduce the frequency and severity of these incidents. Though recognized as not comprehensive for all incidents of this type, the data represent the largest data set known to exist, providing insight into previously unstudied hazards facing children and youth living and working on, and visiting farms as non-workers. Results Findings in this study include: there has been an increase in the documented frequency of these incidents, which may be due, at least partially, to enhanced or more aggressive surveillance efforts; 57% of the cases were fatal; incidents involving underground or inground manure storage facilities were the most frequent type; incidents involving manure transport vehicles were higher than expected; 33% of the victims were five years of age and younger; and July was the month with the most documented incidents. Conclusions Recommendations for future injury prevention strategies include incorporation of information on manure-related hazards in curricula targeting children and youth, more aggressive enforcement of child labor laws that currently prohibit the employment of youth to work in manure storage structures or to be involved in their operations, and greater use of physical and administrative controls, including safety signage, fencing, gates, and covers to restrict access to manure storage structures.</p>

RESUMEN DE CONCLUSIONES EN ESPAÑOL:	<p>El objetivo de este trabajo fue recopilar y estudiar los casos de lesiones y muertes en niños, gente joven y trabajadores jóvenes debidos al almacenamiento, manipulación y transporte de estiércol. Además, a partir de esta información se propusieron recomendaciones para su disminución. Se recopilaron un total de 89 incidentes (documentados entre 1975-2019) consultando el Programa de Seguridad y Salud Agrícola de la Universidad de Purdue, relativa a lesiones y muertes en agricultura, concretamente en espacios confinados en Estados Unidos. Los resultados del estudio mostraron, entre otras cosas, un 57% de casos mortales. Un 33% de las víctimas con una edad menor o igual a 5 años. El mes de julio tuvo más casos documentados. Se concluyeron recomendaciones como: proporcionar información de estos peligros en los planes de estudio de niños y jóvenes, aplicación más rigurosa de leyes sobre el trabajo infantil y uso de medidas de seguridad como letreros, puertas, etc.</p>
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TÍTULO DEL TRABAJO	
Bovine Tuberculosis: A Re-emerging Zoonotic Infection (<i>Tuberculosis bovina: una infección zoonótica reemergente</i>)	
PUBLICADO EN:	Journal of Agromedicine, Julio 2021, Volumen 26, Número 3, pp. 334-339
AUTORES:	Quadri, Nasreen S.; Brihn, Auguste; Shah, Javeed A. ; Kirsch, Jonathan D.
DOI:	10.1080/1059924X.2020.1771497
RESUMEN:	Bovine tuberculosis is caused by Mycobacterium bovis (M. bovis), which infects both humans and cattle. In 2018, a dairy farm in Wisconsin was affected by M. bovis, including a farmworker with exposure to the affected herd. Largely eradicated by effective public health strategies in the United States, most cases are now associated with risk factors including occupational hazards, food consumption, and iatrogenic infections. M. bovis continues to cause disease worldwide affecting certain at-risk populations in the United States. Infections more often result in extrapulmonary sequelae and resistance to pyrazinamide is universal. Thus, successful treatment depends on early and correct identification of the mycobacterium species. A One Health approach to control this re-emerging disease is crucial.
RESUMEN DE CONCLUSIONES EN ESPAÑOL:	La tuberculosis bovina afecta al ganado y también a las personas. En el año 2018, el rebaño de una granja lechera de Wisconsin y el trabajador encargado la padecieron. Actualmente, la mayor parte de los casos se relacionan con riesgos en el trabajo, consumo de alimentos determinados e infecciones iatrogénicas. Un tratamiento correcto se basa en la detección temprana de la enfermedad y de las microbacterias.

TÍTULO DEL TRABAJO	
Identifying "Vulnerable Agricultural Populations" at Risk for Occupational Injuries and Illnesses: A European Perspective <i>(Identificación de las "poblaciones agrícolas vulnerables" en riesgo de sufrir lesiones y enfermedades profesionales: una perspectiva europea)</i>	
PUBLICADO EN:	Journal of Agromedicine, Julio 2021, Volumen 26, Número 3, pp. 340-345
AUTORES:	Ramos, Athena K.; Girdziute, Laura; Staric, Joze; Rautianinen, Risto H.
DOI:	10.1080/1059924X.2020.1771498
RESUMEN:	<p>Objectives A common understanding of the term "vulnerable populations" in the European agricultural context is needed. Therefore, the purpose of this paper was to identify vulnerable populations working in European agriculture. Methods Participatory dialogue with members of the Safety Culture and Risk Management in Agriculture (SACURIMA) network was used to identify and build consensus on the major vulnerable groups of people who work in European agriculture. Results Five groups of vulnerable people were identified, which included: (1) foreign-born farmworkers (including both immigrants and refugees); (2) migrant and seasonal farmworkers; (3) beginning farmers (those with <5 years of experience); (4) farm families (including women, children, and older adults), and (5) farmers and farmworkers who have physical, mental health, or intellectual disabilities. Conclusion By developing a consistent understanding of vulnerable populations working in European agriculture, we can promote consistency in health and safety messaging, measurement of health and safety constructs, and implementation and dissemination of health and safety programs and information.</p>
RESUMEN DE CONCLUSIONES EN ESPAÑOL:	<p>Este trabajo se centró en la identificación de los grupos de trabajadores vulnerables dentro del sector de la agricultura en Europa. Para ello, se dialogó y se consensuaron los grupos con personal de Sacurima (Safety Culture and Risk Management in Agriculture/Cultura de seguridad y gestión de riesgos en agricultura). Se clasificaron cinco grupos: trabajadores extranjeros (incluyendo inmigrantes y refugiados), trabajadores migrantes y estacionales, trabajadores con poca experiencia laboral (menor de 5 años), familias (incluyendo mujeres, niños y personas de edad avanzada) y trabajadores con discapacidad. Se concluyó que con una clasificación de los grupos vulnerables es posible mejorar la seguridad y salud en el trabajo.</p>

TÍTULO DEL TRABAJO	
<p>A Mobile Primary Care Clinic Mitigates an Early COVID-19 Outbreak Among Migrant Farmworkers in Iowa <i>(Una clínica móvil de atención primaria mitiga un brote temprano de COVID-19 entre trabajadores agrícolas migrantes en Iowa)</i></p>	
PUBLICADO EN:	Journal of Agromedicine, Julio 2021, Volumen 26, Número 3, pp. 346-351
AUTORES:	Corwin, Claudia; Sinnwell, Emily; Culp, Kenneth
DOI:	10.1080/1059924X.2021.1913272
RESUMEN:	<p>Migrant and seasonal farmworkers are a vulnerable population with unique health and safety challenges related to the entire spectrum of the social determinants of health. These challenges place migrant and seasonal farmworkers at a disproportionate risk of infection and illness because of the COVID-19 pandemic. This report presents a case study of an early COVID-19 outbreak among migrant farmworkers in Iowa and describes the role that a nimble and responsive mobile federally qualified health center played in the successful mitigation and response to this outbreak. Early during the pandemic, the clinic adopted a new model of service delivery utilizing telemedicine primary care visits, followed by in-person visits when necessary. As the pandemic progressed, clinic staff strategized to provide increased pandemic-related support to agricultural employers and migrant farmworkers across the state. Emphasis was placed on on-site testing and education regarding social distancing, mask utilization, and hand washing. Eventually, as migrant workers were infected and became symptomatic, more complex mitigation strategies such as isolation, quarantine, and clinical follow-up were also implemented. This report describes how a mobile primary care clinic developed a pandemic responsive model to provide successful mitigation of an early COVID-19 outbreak among essential and highly vulnerable migrant farmworkers.</p>
RESUMEN DE CONCLUSIONES EN ESPAÑOL:	<p>Este documento expone las estrategias que llevó a cabo una clínica de salud móvil para hacer frente a la COVID-19 en agricultores migrantes. Este centro de salud empleaba la telemedicina y solamente se realizaban visitas en caso de ser necesario. Se realizaban pruebas en el lugar de trabajo y se informaba sobre las medidas a adoptar (distancia de seguridad, lavado de manos y utilización de mascarillas). Para los trabajadores que padecieron el virus se aplicaron cuarentenas, aislamientos y se realizó un seguimiento médico. Esta clínica, por tanto, planteó estrategias de respuesta para acabar con un brote de COVID-19 entre estos trabajadores.</p>

TÍTULO DEL TRABAJO	
COVID-19 Awareness and Preparedness of Minnesota and Wisconsin Dairy Farms (<i>Conciencia y preparación de COVID-19 de las granjas lecheras de Minnesota y Wisconsin</i>)	
PUBLICADO EN:	Journal of Agromedicine, Julio 2021, Volumen 26, Número 3, pp. 352-359
AUTORES:	Yung, Mung Ting; Vazquez, Rosal Chela; Liebman, Amy; Brihn, Auguste; Olson, Anna; Loken, Delaney; Contreras-Smith, Ana; Bender, Jeff; Kirsch, Jonathan D.
DOI:	10.1080/1059924X.2021.1927925
RESUMEN:	Dairy farms that had participated in previous and ongoing projects with the National Farm Medicine Center (NFMC), Migrant Clinicians Network (MCN), and Upper Midwest Agricultural Safety and Health Center (UMASH) were asked to participate in a 17-question survey by phone or email to investigate biosecurity principles on Minnesota and Wisconsin dairy farms in response to COVID-19 and the effects of the pandemic on the dairy industry. Three additional farms were recruited via a press release published in agricultural newsletters. Of 76 farms contacted, 37 chose to participate in this study from June to July 2020. In response to the COVID-19 pandemic, dairies have implemented or increased biosecurity measures and COVID-19 precautions. Dairies reported adequate personal protective equipment for their workers, though face masks were not required on most dairies (n = 32, 86%). Producers were concerned about the safety of their families, maintaining a healthy workforce, and keeping their farms profitable. Access to healthcare was not perceived to be an issue for their workers. One-quarter of dairies reported COVID-19 infections on their farms. Even though the majority had an isolation protocol in place if someone on the farm were to become ill, less than half of respondents felt their farm was protected against COVID-19. Two-thirds of producers have not had to decrease production, and a majority of operations have not furloughed or terminated employees due to COVID-19. Our data suggest that dairy farms in Minnesota and Wisconsin have implemented biosecurity and safety measures in response to COVID-19. These measures can be improved. Farms would benefit from additional guidance and education on implementation of personal protective measures and disease prevention strategies to keep workers employed and safe.
RESUMEN DE CONCLUSIONES EN ESPAÑOL:	En este estudio participaron 37 granjas lecheras mediante la realización de una encuesta telefónica o mediante correo electrónico con un total de 17 cuestiones, entre junio y julio de 2020. El objetivo era analizar la respuesta ante la COVID-19 y sus efectos en la industria láctea en Minnesota y Wisconsin. Algunos de los resultados obtenidos mostraron que en la mayoría de los casos no se empleaban mascarillas, los productores mostraban cierta preocupación, una cuarta parte de las granjas informaron contagios por COVID-19, dos tercios no disminuyeron el nivel de producción durante la pandemia y en la mayoría de los casos no se despidió a trabajadores. Tras la investigación se concluyó que las granjas lecheras adoptaron medidas contra la pandemia, aunque podrían mejorarse mediante formación sobre medidas de protección personal y prevención.

6. JOURNAL OF OCCUPATIONAL HEALTH

TÍTULO DEL TRABAJO	
Pesticide exposure and adverse health effects associated with farmwork in Northern Thailand (<i>Exposición a plaguicidas y efectos adversos para la salud asociados con el trabajo agrícola en el norte de Tailandia</i>)	
PUBLICADO EN:	Journal of Occupational Health, Mayo 2021, Volumen 63, Número 1, Número de artículo e12222
AUTORES:	Forte, Chanese A.; Colacino, Justin; Polemi, Katelyn; Guytingco, Andrea; Peraino, Nicholas J.; Jindaphong, Siripond; Kaviya, Tharinya; Westrick, Judy; Neitzel, Richard; Nambunmee, Kowit
DOI:	10.1002/1348-9585.12222
RESUMEN:	<p>Objectives To assess pesticide exposure and understand the resultant health effects of agricultural workers in Northern Thailand.</p> <p>Methods This was a cross-sectional study. We quantified exposure to pesticides, including chlorpyrifos, methomyl, and metalaxyl, by air sampling and liquid chromatography/mass spectrometry. We estimated differences in self-reported health outcomes, complete blood counts, cholinesterase activity, and serum/urine calcium and creatinine concentrations at baseline between farmworkers and comparison workers, and after pesticide spraying in farmworkers only.</p> <p>Results This study included 97 men between the ages of 22 and 76 years; 70 were conventional farmworkers; and 27 did not report any prior farmwork or pesticide spraying. None of the farmworkers wore standardized personal protective equipment (PPE) for the concentrated chemicals they were working with. Methomyl (8.4-13 481.9 ng/m³), ethyl chlorpyrifos (11.6-67 759 ng/m³), and metalaxyl (13.9-41 191.3 ng/m³) were detected via personal air sampling. When it came to reporting confidence in the ability to handle personal problems, only 43% of farmworkers reported feeling confident, which reflects higher stress levels in comparison to 78% of comparison workers (P = .028). Farmworkers also had significantly lower monocyte counts (P = .01), serum calcium (P = .01), red blood count (P = .01), white blood cell count (P = .04), and butyrylcholinesterase activity (P < .0001), relative to comparison workers. After adjusting for body mass index (BMI), age, and smoking, methomyl air concentrations were associated with a decrease in farmworker acetylcholinesterase activity (beta = -0.327, P = .016).</p> <p>Conclusions This population of farmworkers had significant alterations in stress measures and clinical biomarkers, including decreased blood cell counts and cholinesterase activity, relative to matched controls. These changes are potentially linked to occupational pesticide exposures. Improving PPE use presents a likely route for preventive intervention in this population.</p>

**RESUMEN DE
CONCLUSIONES
EN ESPAÑOL:**

Este trabajo investigó la exposición a plaguicidas y las consecuencias para la salud de agricultores del norte de Tailandia. Entre otras cosas, se cuantificó la exposición a los plaguicidas, se determinaron diferencias en los aspectos de salud de los que informaron los trabajadores y se midieron diversos parámetros. Participaron 97 trabajadores hombres, de los cuales 70 eran agricultores y el resto no habían trabajado nunca en este sector. Se determinó que ningún agricultor empleó equipos de protección personal durante el uso de los plaguicidas, se encontraron diversos compuestos químicos en muestras de aire tomadas y se observaron niveles de estrés mayores en trabajadores agrícolas, entre otros muchos resultados. Una medida preventiva ante la exposición a los plaguicidas sería una mejora en la utilización de equipos de protección individual.

TÍTULO DEL TRABAJO	
<p>Assessment of dermal exposure to N, N-dimethylacetamide in spray workers by combining personal exposure monitoring, biological monitoring, and glove permeation monitoring: A pilot study <i>(Evaluación de la exposición dérmica a N, N-dimetilacetamida en trabajadores de pulverización mediante la combinación de monitoreo de exposición personal, monitoreo biológico y monitoreo de permeación de guantes: un estudio piloto)</i></p>	
PUBLICADO EN:	Journal of Occupational Health, Agosto 2021, Volumen 63, Número 1, Número de artículo e12265
AUTORES:	Yamamoto, Shinobu; Takeuchi, Akito; Yoshida, Yuichiro; Nishinoiri, Osamu; Ichiba, Masayoshi; Miyauchi, Hiroyuki
DOI:	10.1002/1348-9585.12265
RESUMEN:	<p>Objectives We assessed dermal exposure to N, N-dimethylacetamide (DMAC) in a spray worker by utilizing a combination of personal exposure monitoring, biological monitoring, and glove permeation monitoring. We also determined the protective effects of chemical protective gloves (CPGs). Methods Surveys with and without CPG usage were performed on different days. In the survey with CPG usage, the worker had worn leather gloves over the CPG. Personal exposure monitoring and glove permeation monitoring were performed using 3M Organic Vapor Monitor 3500 and PERMEA-TEC Pads respectively. Urinary concentration of DMAC and its metabolites (N-methylacetamide [NMAC], N-hydroxymethyl-N-methylacetamide [DMAC-OH], S-(acetamidomethyl) mercapturic acid [AMMA]) were measured in the before-shift and end-of-shift samples collected from the worker. Results Personal exposure DMAC concentration in the survey with CPG usage (0.32 ppm) was twice that in the survey without CPG usage (0.15 ppm). However, urinary concentrations of DMAC-OH and AMMA in the end-of-shift samples in the survey with CPG usage (DMAC-OH, 0.74 mg/g creatinine; AMMA, 0.10 mg/g creatinine) were lower than those in the survey without CPG usage (DMAC-OH, 1.27 mg/g creatinine; AMMA, 0.24 mg/g creatinine). Urinary concentrations of DMAC and NMAC were below the limit of detection in all samples. DMAC concentrations in PERMEA-TEC Pads that were used in the surveys with and without CPG usage were in the range of 0.3-2.1 μg/sample and 16.4-1985.2 μg/sample respectively. Conclusions The combination of CPG usage and leather gloves was effective in preventing dermal exposure to DMAC.</p>
RESUMEN DE CONCLUSIONES EN ESPAÑOL:	<p>Se analizó la exposición dérmica a N,N-dimetilacetamida en un agricultor encargado de la pulverización utilizando técnicas de monitoreo. Además, se evaluó el uso de guantes de protección química. Se realizaron encuestas cuando el trabajador usaba este tipo de guantes y sin ellos, en varios días. En el caso del uso de estos guantes, el trabajador se colocó guantes de cuero encima de los otros. Además del monitoreo también se tomaron algunas muestras. Se dedujo que usar los guantes de protección química junto con los de cuero prevenía la exposición de la piel a la N,N-dimetilacetamida.</p>

7. JOURNAL OF SAFETY RESEARCH

TÍTULO DEL TRABAJO	
Occupational injury rates among Norwegian farmers: A sociotechnical perspective (<i>Tasas de lesiones profesionales entre los agricultores noruegos: una perspectiva sociotécnica</i>)	
PUBLICADO EN:	Journal of Safety Research, Junio 2021, Volumen 77, pp. 182-195
AUTORES:	Kjestveit, Kari; Aas, Oddfrid; Holte, Kari Anne
DOI:	10.1016/j.jsr.2021.03.001
RESUMEN:	<p>Introduction: This study addressed relative injury risk among Norwegian farmers, who are mostly self-employed and run small farm enterprises. The aim was to explore the relative importance of individual, enterprise, and work environment risks for occupational injury and to discuss the latent conditions for injuries using sociotechnical system theory. Method: Injury report and risk factors were collected through a survey among Norwegian farm owners in November 2012. The response rate was 40% (n = 2,967). Annual work hours were used to calculate injury rates within groups. Poisson regression using the log of hours worked as the offset variable allowed for the modeling of adjusted rate ratios for variables pre-dictive of injury risk. Finally, safety climate measures were introduced to assess potential moderating effects on risk. Results: Results showed that the most important risk factors for injuries were the design of the workplace, type of production, and off-farm work hours. The main results remained unchanged when adding safety climate measures, but the measures moderated the injury risk for categories of pre -dominant production and increased the risk for farmers working with family members and/or employees. An overall finding is how the risk factors were interrelated. Conclusions: The study identified large struc-tural diversities within and between groups of farmers. The study drew attention to operating conditions rather than individual characteristics. The farmer's role (managerial responsibility) versus regulation and safety climate is important for discussions of injury risk. Practical Applications: We need to study sub-groups to understand how regulation and structural changes affect work conditions and management within different work systems, conditioned by production. It is important to encourage actors in the political-economic system to become involved in issues that were found to affect the safety of farmers.</p>
RESUMEN DE CONCLUSIONES EN ESPAÑOL:	<p>Este trabajo se centró en estudiar el riesgo de sufrir lesiones por agricultores de Noruega, que normalmente trabajan por cuenta propia. Se analizaron los riesgos individuales, empresariales y del entorno de trabajo.</p> <p>Se llevó a cabo una encuesta en noviembre de 2012 a los dueños de varias granjas, obteniendo un porcentaje de respuesta del 40%. Se emplearon como dato las horas de trabajo al año y se consideraron medidas de clima de seguridad.</p> <p>Los factores de riesgo de mayor relevancia fueron el tipo de producción, las horas que se trabajaba fuera de la finca y el diseño del puesto de trabajo. Al considerar las medidas del clima de seguridad, el riesgo fue más moderado en el caso de producción predominante y fue mayor en</p>

	el caso de agricultores que trabajaban con otras personas o con familia. Los resultados más importantes no se modificaron al considerar estas medidas.
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8. RURAL AND REMOTE HEALTH

TÍTULO DEL TRABAJO	
Health of illegal workers from cattle slaughterhouses in Northeast Brazil (<i>Salud de los trabajadores ilegales de los mataderos de ganado en el noreste de Brasil</i>)	
PUBLICADO EN:	Rural and Remote Health, Mayo 2021, Volumen 21, Número 2, Número de artículo 6061
AUTORES:	Oliveira, Larayne G. F.; Boere, Vanner
DOI:	10.22605/RRH6061
RESUMEN:	<p>Introduction: Slaughterhouse workers are at high risk of accidents and pathogen contamination. Despite good technology and large production, the slaughter industry still has clandestine settlements in several cities of Brazil's countryside. This illegal activity represents severe risks to the health of consumers and slaughterhouse workers. Only a few studies show the health of clandestine slaughterhouse workers, considered as a hidden population because of their illegal activity.</p> <p>Methods: Thirty workers (6 women and 24 men) answered a questionnaire about the work and health conditions of clandestine slaughtering from a small city in Northeast Brazil. The authors also did local observations of the slaughtering, which broadened the view of this activity.</p> <p>Results: Most slaughterhouse clandestine workers are young, have little educational background, and work without legal rights. Clandestine workers – men and women – have severe health problems related to the activity of cattle slaughtering, which include physical injuries, metabolic diseases and psychological disorders. Women appear to be more affected by these health problems. Working conditions are adverse, dangerous and offer risks of contamination, injuries and chronic diseases.</p> <p>Conclusion: The workers' poorness, low income and low education level can explain the vulnerability to the diseases observed in illegal slaughtering. This is the first study to analyze the health of illegal slaughterhouse workers in Brazil's countryside.</p>
RESUMEN DE CONCLUSIONES EN ESPAÑOL:	<p>Se realizó un estudio para analizar los riesgos laborales a los que se enfrentan los trabajadores de mataderos clandestinos en una ciudad de Brasil. Se llevó a cabo un cuestionario a un total de 30 trabajadores. Además, se hizo observación in situ del trabajo realizado. Los resultados mostraron que estos trabajadores sufrían lesiones físicas, enfermedades psicológicas y metabólicas. Se dedujo que las mujeres presentaban más inconvenientes de salud. Estos trabajadores estaban expuestos a graves riesgos y peligros en la realización de sus tareas.</p>

TÍTULO DEL TRABAJO	
What kills the agricultural worker? A systematic review on suicide <i>(¿Qué mata al trabajador agrícola? Una revisión sistemática sobre el suicidio)</i>	
PUBLICADO EN:	Rural and Remote Health, Agosto 2021, Volumen 21, Número 3, Número de artículo 6067
AUTORES:	Junior, Moisés B.; Sokulski, Carla C.; Salvador, Rodrigo; Pinheiro, Eliane; Carlos de Francisco, Antonio; Trojan, Flavio
DOI:	10.22605/RRH6067
RESUMEN:	<p>Introduction: The aim of this research is fourfold: (i) analyze which countries have the most publications on suicide among agricultural workers, (ii) understand the factors that lead to either suicide or intent, (iii) identify the methods of suicide or attempted suicide, and (iv) propose preventive measures so that rural agricultural workers are not exposed to risk factors to suicide.</p> <p>Methods: A literature review was conducted for the period 1996–2019; the Scopus, Lilacs, PubMed/MEDLINE, and Science Direct databases were searched, resulting in 44 articles deemed relevant to this research.</p> <p>Results: Agricultural workers were considered to be workers who perform agricultural activities, as either employees or employers. Australia, China, India, and Brazil had the most publications, and the causes of suicide were mostly easy access to or exposure to pesticides, and socioeconomic factors, such as masculinity, conditions of poverty, and social isolation.</p> <p>Conclusion: Compared with other workers, agricultural workers can be a group at risk, with a great number of factors leading to suicide. Based on the available literature, proposals for suicide prevention are suggested.</p>
RESUMEN DE CONCLUSIONES EN ESPAÑOL:	<p>Este trabajo se centró en estudiar el problema del suicidio de los trabajadores del sector de la agricultura. Se persiguieron los siguientes objetivos: conocer los países con mayor número de publicaciones sobre este tema, identificar los factores que conducían a esto y las formas de suicidio y recomendar medidas para prevenirlo. Para llevar a cabo el estudio se revisó la información disponible entre 1996 y 2019, buscando en varias bases de datos. Se obtuvieron un total de 44 artículos relacionados. Los países con más publicaciones sobre este tema fueron Australia, China, India y Brasil. Las causas encontradas fueron factores socioeconómicos y la facilidad para la exposición a plaguicidas. Se hicieron recomendaciones para prevenir el suicidio, basadas en la información revisada.</p>

9. SAFETY SCIENCE

TÍTULO DEL TRABAJO	
Safe and fruitful? Structural vulnerabilities in the experience of seasonal migrant workers in agriculture in Germany and Poland (<i>¿Seguro y fructífero? Vulnerabilidades estructurales en la experiencia de los trabajadores migrantes estacionales en la agricultura en Alemania y Polonia</i>)	
PUBLICADO EN:	Safety Science, Julio 2021, Volumen 139, Número de artículo 105275
AUTORES:	Fialkowska, Kamila; Matuszczyk, Kamil
DOI:	10.1016/j.ssci.2021.105275
RESUMEN:	This paper focuses on the occupational safety and health (OSH) of migrant farmworkers in two quite distinct socio-political contexts: Polish farmworkers in Germany and Ukrainian farmworkers in Poland. The authors apply the structural vulnerability concept to shed light on structural factors influencing migrants' vulnerabilities in the workplace and to address this issue through the perspectives of migrant farmworkers. This paper is based on participant observation and individual interviews that the authors conducted in Germany and Poland among migrant farmworkers, as well as semi-structured interviews with employers. The gathered evidence allows us to argue that functioning in different migration regimes results in differences regarding migrants' occupational safety and health, as well as in the levels of agency they are able to exercise given their migration-related positionality.
RESUMEN DE CONCLUSIONES EN ESPAÑOL:	Este trabajo evaluó la seguridad y salud laboral de trabajadores migrantes del sector agrícola. Por un lado, a trabajadores polacos en Alemania y por otro, a trabajadores ucranianos en Polonia. Se utilizó la observación y se realizaron entrevistas a trabajadores y empleadores. Se determinó que la seguridad y salud en el trabajo de los agricultores migrantes es diferente en cada caso.

TÍTULO DEL TRABAJO	
The relations of workplace safety, perceived occupational stress, and adjustment among Latino/a immigrant cattle feedyard workers in the United States <i>(Las relaciones de seguridad en el lugar de trabajo, estrés laboral percibido y ajuste entre trabajadores latinos / inmigrantes de corrales de engorde de ganado en los Estados Unidos)</i>	
PUBLICADO EN:	Safety Science, Julio 2021, Volumen 139, Número de artículo 105262
AUTORES:	Ramos, Athena K.; McGinley, Meredith; Carlo, Gustavo
DOI:	10.1016/j.ssci.2021.105262
RESUMEN:	Immigrant workers face significant occupational health and safety concerns and are often employed in dangerous, dirty, and demanding (3-D) jobs such as agriculture. To foster improvements in immigrant farm-worker health, integrative research that explores workplace safety, stress, and health and safety outcomes is needed. Therefore, the present study was designed to examine workplace safety characteristics and perceived stressors as predictors of Latino/a immigrant cattle feedyard workers' psychosocial adjustment. Data were from the "Health and Safety among Immigrant Cattle Feedyard Workers in the Central States Region" project, and participants included 243 Latino/a immigrant cattle feedyard workers from Kansas and Nebraska (M age = 37.68, SD = 10.10; 91.2% male). A path model including direct and indirect relations among the number of personal protective equipment and training types, safety climate, occupational stress, and adjustment outcomes (depression, anxiety, need for recovery, and life satisfaction) was examined. We found that the number of types of personal protective equipment and training positively predicted safety climate, which negatively predicted occupational stress. In turn, occupational stress was positively associated with depression, anxiety, and need for recovery, and negatively associated with life satisfaction. The present findings support the notion that workplace safety is directly associated with the health and well-being of immigrant workers and delineates the mechanisms by which workplace safety characteristics relate to workers' adjustment. This study yields supportive evidence for an ecological stress-based model of immigrant worker health and safety in U.S. Latino/a cattle feedyard workers. Implications for theory, research, and practice are discussed.
RESUMEN DE CONCLUSIONES EN ESPAÑOL:	Este trabajo evaluó la seguridad laboral y los factores de estrés de trabajadores latinos/inmigrantes de corrales de engorde de ganado. Los datos se recopilieron de un proyecto sobre este tema y participaron 243 trabajadores de Kansas y Nebraska. Además, se analizó un modelo de trayectoria con relaciones entre clima de seguridad, cantidad de equipos de protección personal, etc. Se obtuvieron diversos resultados, como por ejemplo que el estrés se asociaba positivamente con depresión, ansiedad o con necesidad de recuperarse. Los resultados condujeron a que la seguridad laboral está totalmente relacionada con el bienestar y salud de los trabajadores.

TÍTULO DEL TRABAJO	
<p>Is on-board noise putting fish harvesters' hearing at risk? A study of noise exposures in small-scale fisheries in Newfoundland and Labrador <i>(¿El ruido a bordo pone en riesgo la audición de los pescadores? Un estudio de la exposición al ruido en pesca artesanal en Terranova y Labrador)</i></p>	
PUBLICADO EN:	Safety Science, Agosto 2021, Volumen 140, Número de artículo 105325
AUTORES:	Burella, Giorgio; Moro, Lorenzo; Neis, Barbara
DOI:	10.1016/j.ssci.2021.105325
RESUMEN:	<p>Prolonged exposure to high noise levels is a common but under-studied hazard in fishing that can cause occupational noise-induced hearing loss (NIHL). This paper presents risk assessment for hazardous noise exposures spanning across seven different fisheries and 12 small fishing vessels (24.4 m and under in length overall) in the Canadian province of Newfoundland and Labrador (NL). We documented noise exposure levels using personal dosimetry on fish harvesters and a job-based approach during regular fishing trips, and collected data on fishing vessels skippers awareness on noise hazards and on typical work patterns using respectively structured questionnaires and un-structured interviews. The study (a) documented high, often hazardous noise exposures, in most of the analyzed fisheries, (b) found that all the participants were partially or completely unaware of being exposed, and, (c) identified which activities on board are the most exposed.</p> <p>Drawing on our results we present a series of recommendations including: (a) the use of adequate hearing protection devices; (b) the development of effective design solutions to mitigate hazardous noise levels on existing and future vessels; and (c) the design and implementation of programs to enhance fish harvesters' awareness of this important occupational hazard and how to prevent injury.</p>
RESUMEN DE CONCLUSIONES EN ESPAÑOL:	<p>Se analizó el riesgo de exposición al ruido de pescadores en Canadá, en concreto en Terranova y Labrador. Se empleó dosimetría y un enfoque centrado en el trabajo realizado en los viajes de pesca. También, se obtuvieron datos acerca de la visión de los patrones sobre los riesgos del ruido y sobre el trabajo mediante cuestionarios y entrevistas. Los resultados mostraron que los pescadores estaban expuestos con frecuencia al ruido, muchas veces perjudicial para ellos, también se demostró que los trabajadores no eran conscientes de esta exposición y por último se determinaron las tareas en las que tenían mayor exposición. Se llevaron a cabo recomendaciones como utilización de protección auditiva, estrategias para disminuir los niveles de ruido perjudiciales en los barcos y programas para concienciar a los trabajadores de este riesgo laboral.</p>

10. SAFETY AND HEALTH AT WORK

TÍTULO DEL TRABAJO	
<p>A Comparative Study of the Methods to Assess Occupational Noise Exposures of Fish Harvesters <i>(Un estudio comparativo de los métodos para evaluar la exposición al ruido en el trabajo de los pescadores)</i></p>	
PUBLICADO EN:	Safety and Health at Work, Junio 2021, Volumen 12, Número 2, pp. 230-237
AUTORES:	Burella, Giorgio; Moro, Lorenzo
DOI:	10.1016/j.shaw.2020.10.005
RESUMEN:	<p>Background Noise-induced hearing loss is a well-known occupational disease that affects many fish harvesters from many fisheries worldwide, whose risk factor is prolonged exposure to hazardous noise levels. To date, academic research activities and regulatory bodies have not provided any comparative analysis among the existing methods to assess noise exposure levels of fish harvesters. This paper provides a comparison of four relevant assessment methods of noise exposure, examining the results of a measurement campaign performed onboard small fishing vessels from Newfoundland and Labrador.</p> <p>Methods We traveled onboard 11 vessels engaged in multiple fisheries from Newfoundland and Labrador and performed extensive noise exposure surveys using the simplified International Maritime Organization method, the full-day measurement method, and the two methods provided by ISO 9612:2009, the task-based method and job-based method (JBM).</p> <p>Results The results showed that the four methods yield similar values when the noise components are dominated by the engine and auxiliaries (steady-state sources); when noise components are dominated by the fishing gear, task-based method and the simplified International Maritime Organization method estimates are less accurate than JBM, using full-day measurements as baseline.</p> <p>Conclusion The JBM better assesses noise exposure in small-scale fisheries, where noise exposure has significant variance and uncertainties on the exposure levels are higher.</p>
RESUMEN DE CONCLUSIONES EN ESPAÑOL:	<p>La exposición frecuente a niveles de ruido perjudiciales puede conducir a la pérdida de audición, que es una enfermedad laboral que sufren un gran número de pescadores a nivel mundial. En este estudio se compararon varios métodos de evaluación de la exposición al ruido. Para ello, se realizaron mediciones en barcos de pequeño tamaño de pescadores en Terranova y Labrador. Se emplearon 4 métodos en 11 embarcaciones: método simplificado de la Organización Marítima Internacional, método de medición de día completo y dos métodos</p>

	<p>proporcionados por ISO 912:2009 (método basado en tareas y método basado en trabajo).</p> <p>Con los cuatro métodos se obtuvieron datos parecidos cuando los niveles de ruidos eran producidos por el motor y equipos auxiliares. Cuando los niveles de ruido se debían a la tarea de pesca, dos de los métodos eran menos precisos. Se concluyó que el mejor método para la evaluación de la exposición al ruido en este ámbito era el método basado en el trabajo.</p>
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11. AGRICULTURE-BASEL

TÍTULO DEL TRABAJO	
Pesticide Usage Is Compromising People's Health in the United States: Ideas for Reducing Damages <i>(El uso de pesticidas está comprometiendo la salud de las personas en los Estados Unidos: ideas para reducir los daños)</i>	
PUBLICADO EN:	Agriculture-Basel, Junio 2021, Volumen 11, Número 6, Número de artículo 486
AUTORES:	Centner, Terence J.
DOI:	10.3390/agriculture11060486
RESUMEN:	The development of synthetic pesticides has provided new tools for addressing troublesome pests. A review of parts of the registration process for pesticides in the United States identifies an outdated evaluation system that undervalues health damages. Registration fails to adequately consider co-formulants and effects of exposure to multiple chemicals. Frustration with failures to protect people and property from damages accompanying pesticide usage has led injured plaintiffs to resort to tort lawsuits to secure relief. However, litigation involves compensating injured persons after they are injured rather than preventing injury. A more proactive approach would be to prevent situations that injure people. This paper offers four ideas to reduce health damages accompanying pesticide usage. Slight adjustments to pesticide registration requirements can offer greater protection for people's health.
RESUMEN DE CONCLUSIONES EN ESPAÑOL:	El uso de plaguicidas afecta a la salud de las personas en Estados Unidos. Sin embargo, los trabajadores son compensados tras sufrir lesiones por la exposición a estos productos, en lugar de prevenir estos problemas. Este estudio desarrolla cuatro ideas para disminuir los efectos perjudiciales para la salud de las personas en la utilización de plaguicidas.

12. AGRONOMY-BASEL

TÍTULO DEL TRABAJO	
Organic Farming Lessens Reliance on Pesticides and Promotes Public Health by Lowering Dietary Risks <i>(La agricultura biológica reduce la dependencia de los pesticidas y promueve la salud pública al reducir los riesgos dietéticos)</i>	
PUBLICADO EN:	Agronomy-Basel, Julio 2021, Volumen 11, Número 7, Número de artículo 1266
AUTORES:	Benbrook, Charles; Kegley, Susan; Baker, Brian
DOI:	10.3390/agronomy11071266
RESUMEN:	Organic agriculture is a production system that relies on prevention, ecological processes, biodiversity, mechanical processes, and natural cycles to control pests and maintain productivity. Pesticide use is generally limited or absent in organic agroecosystems, in contrast with non-organic (conventional) production systems that primarily rely on pesticides for crop protection. Significant differences in pesticide use between the two production systems markedly alter the relative dietary exposure and risk levels and the environmental impacts of pesticides. Data are presented on pesticide use on organic and non-organic farms for all crops and selected horticultural crops. The relative dietary risks that are posed by organic and non-organic food, with a focus on fresh produce, are also presented and compared. The results support the notion that organic farms apply pesticides far less intensively than conventional farms, in part because, over time on well-managed organic farms, pest pressure falls when compared to the levels on nearby conventional farms growing the same crops. Biopesticides are the predominant pesticides used in organic production, which work by a non-toxic mode of action, and pose minimal risks to human health and the environment. Consequently, eating organic food, especially fruits and vegetables, can largely eliminate the risks posed by pesticide dietary exposure. We recommend ways to lower the pesticide risks by increased adoption of organic farming practices and highlight options along organic food supply chains to further reduce pesticide use, exposures, and adverse worker and environmental impacts.
RESUMEN DE CONCLUSIONES EN ESPAÑOL:	En la agricultura biológica la utilización de plaguicidas es mínima o inexistente, al contrario que en la agricultura convencional dónde son ampliamente empleados. Este estudio expone datos acerca de la utilización de estos productos en ambos tipos de agricultura para cultivos. Además, se comparan los alimentos orgánicos y no orgánicos. Los resultados muestran que los bioplaguicidas son los más empleados en la agricultura biológica. Sus riesgos para la salud de las personas son mínimos, debido a que no son productos tóxicos. Una de las recomendaciones de este estudio es la implantación de labores orgánicas con el fin de disminuir los riesgos que generan los plaguicidas para los trabajadores y para el medio ambiente.

13. INTERNATIONAL JOURNAL OF ENVIRONMENTAL RESEARCH AND PUBLIC HEALTH

TÍTULO DEL TRABAJO	
Health Literacy Co-Design in a Low Resource Setting: Harnessing Local Wisdom to Inform Interventions across Fishing Villages in Egypt to Improve Health and Equity <i>(Codiseño de alfabetización sanitaria en un entorno de escasos recursos: aprovechar la sabiduría local para informar las intervenciones en los pueblos pesqueros de Egipto para mejorar la salud y la equidad)</i>	
PUBLICADO EN:	International Journal of Environmental Research and Public Health, Mayo 2021, Volumen 18, Número 9, Número de artículo 4518
AUTORES:	Anwar, Wagida A.; Mostafa, Nayera S.; Hakim, Sally Adel; Sos, Dalia G.; Cheng, Christina; Osborne, Richard H.
DOI:	10.3390/ijerph18094518
RESUMEN:	Fishermen in low resource settings have limited access to health services and may have a range of health literacy-related difficulties that may lead to poor health outcomes. To provide solutions and interventions based on their needs, co-design is considered best practice in such settings. This study aimed to implement a co-design process as a step towards developing health literacy interventions to improve health and equity in the Borollos Lake region of northern Egypt, a low resource setting with a high prevalence of chronic diseases. This study was guided by the Ophelia (Optimising Health Literacy and Access) process, a widely used and flexible co-design process that seeks to create local and fit-for-purpose health literacy solutions through genuine engagement and participation of community members and relevant stakeholders. Following a health literacy survey using the Health Literacy Questionnaire (HLQ), cluster analysis was conducted to identify the diverse health literacy profiles among the fishing communities. Seven health literacy profiles were identified. Vignettes, representing these profiles, were presented and discussed in ideas generation/co-design workshops with fishermen and health workers to develop intervention ideas. Seventeen fishermen, 22 wives of fishermen, and 20 nurses participated in four workshops. Fifteen key strategies across five themes, including 'Enhancing education among fishing communities', 'Provide good quality health services', 'Financial support for health', 'Social support for health', and 'Promote better health-related quality of life among fishermen', were generated. The ideas did not only target the individuals but also required actions from the government, non-government organizations, and fishermen syndicates. By harnessing local wisdom, the Ophelia process has created meaningful engagement with the local communities, leading to a wide range of practical and feasible solutions that match the special needs and environment of a low resource setting.
RESUMEN DE CONCLUSIONES EN ESPAÑOL:	En lugares con recursos bajos los pescadores tienen problemas con la alfabetización cuando precisan servicios de salud. En este trabajo se realizó un proceso de codiseño para llevar a cabo intervenciones de alfabetización en el ámbito de la salud, en una región del norte de Egipto donde los recursos eran bajos y existía una elevada tasa de enfermedades de tipo crónico. En el estudio participaron 17 pescadores,

	<p>22 esposas de pescadores y 20 enfermeras. Tras el procedimiento que se llevó a cabo en el estudio surgieron 15 estrategias correspondientes a varios temas principales: mejora de la educación en trabajadores de este sector, servicios de salud de alta calidad, apoyo financiero y social para salud y mayor calidad de vida en relación a la salud. Estas ideas no sólo eran propuestas para trabajadores, sino también para gobiernos, organizaciones y sindicatos de pescadores.</p>
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TÍTULO DEL TRABAJO	
The Health Impacts of Hazardous Chemical Exposures among Child Labourers in Low-and Middle-Income Countries <i>(Los impactos en la salud de la exposición a sustancias químicas peligrosas entre los niños trabajadores en los países de ingresos bajos y medios)</i>	
PUBLICADO EN:	International Journal of Environmental Research and Public Health, Mayo 2021, Volumen 18, Número 10, Número de artículo 5496
AUTORES:	Scott, Natasha B.; Pocock, Nicola S.
DOI:	10.3390/ijerph18105496
RESUMEN:	Of 218 million working children worldwide, many are suspected to be exposed to hazardous chemicals. This review aims to synthesize reported evidence over the last two decades on chemical exposure and adverse health consequences in children labourers in low- and middle-income Countries (LMIC). Included studies investigated health outcomes related to chemical exposures among child labourers aged 5-18 in LMIC. Twenty-three papers were selected for review, focusing on pesticides (n = 5), solvents (n = 3), metals (n = 13) and persistent organic pollutants (POPs) (n = 2). Adverse health effects identified among child labourers included abnormal biomarkers, for example elevated blood and urine chemical concentrations, neurobehavioural deficits and neurological symptoms, mental health issues, oxidative stress and DNA damage, poor growth, asthma, and hypothyroidism. Workplace exposure to chemicals has pernicious health effects on child labourers. Large research gaps exist, in particular for long-term health impacts through chronic conditions and diseases with long latencies. A sizeable disease burden in later life is likely to be directly attributable to chemicals exposures. We urge national and international agencies concerned with child labour and occupational health, to prioritize research and interventions aiming to reduce noxious chemical exposures in workplaces where children are likely to be present.
RESUMEN DE CONCLUSIONES EN ESPAÑOL:	Se trata de una revisión acerca de la exposición a sustancias químicas en niños trabajadores durante los últimos 20 años y sus efectos perjudiciales para la salud, en países de ingresos bajos y medios. El estudio se centró en niños de entre 5 y 18 años. Se utilizaron 23 artículos basados en plaguicidas, disolventes, metales y contaminantes orgánicos. Se expusieron consecuencias para la salud como la aparición de sustancias químicas en la sangre, enfermedades de salud mental, asma, etc. Se recomienda el fomento de investigaciones e intervenciones para disminuir la exposición a estas sustancias perjudiciales en entornos de trabajo con niños.

TÍTULO DEL TRABAJO	
Influence of Personal Protective Equipment on Wildland Firefighters' Physiological Response and Performance during the Pack Test <i>(Influencia del equipo de protección personal en la respuesta fisiológica y el desempeño de los bomberos forestales durante la prueba de paquete)</i>	
PUBLICADO EN:	International Journal of Environmental Research and Public Health, Mayo 2021, Volumen 18, Número 10, Número de artículo 5050
AUTORES:	Carballo-Leyenda, Belen; Gutierrez-Arroyo, Jorge; Garcia-Heras, Fabio; Sanchez-Collado, Pilar; Villa-Vicente, Jose G.; Rodriguez-Marroyo, Jose A.
DOI:	10.3390/ijerph18105050
RESUMEN:	The Pack Test (PT) is a widely used test to establish readiness for work in wildland firefighting. It is common to perform this test dressed in regular exercise clothing. However, wildland firefighters (WFF) have to wear personal protective equipment (PPE) during their deployments, which increases the physiological strain and reduces their work capacity. This study aimed to analyse the impact of full PPE on PT performance. Nine male professional WFF performed in random order a PT walking at the fastest possible self-pace wearing two different clothing configurations: (i) traditional short sports gear (SG) and (ii) the PPE currently used by Spanish WFF. Heart rate (HR), rating of perceived exertion and lap time were recorded during the PT. In addition, oxygen uptake (VO ₂) was estimated through the individual VO ₂ -HR relationship previously obtained during a graded exercise test. There was a significant decrease in the PT performance (i.e., completion time) (similar to 12%, $p < 0.05$) in PPE. The physiological demands with this configuration were significantly higher (similar to 10%, $p < 0.05$). WFF spent similar to 13 min above the anaerobic threshold in PPE vs. similar to 4 min in SG. A multiple stepwise regression analysis revealed that PT performance variation might be explained by the maximal aerobic velocity (84.5%) in PPE and the VO ₂ max (75.9%) in SG. In conclusion, wearing complete PPE increases WFF's physiological strain, which translates into a significant PT performance reduction. Performing the test walking at the fastest possible self-pace wearing the PPE would better reflect the high-intensity effort periods reported in real scenarios.
RESUMEN DE CONCLUSIONES EN ESPAÑOL:	Los bomberos forestales durante su preparación tienen que realizar la prueba de paquete. Normalmente, realizan esta prueba con vestimenta deportiva. En cambio, cuando realizan su trabajo deben colocarse el equipo de protección personal. Este estudio evaluó la influencia de llevar puesto este equipo de protección en la prueba de paquete. Para ello, 9 bomberos forestales hombres realizaron esta prueba con las dos vestimentas diferentes, deportiva y con el equipo de protección. En el estudio se obtuvieron varios parámetros, entre ellos, frecuencia cardíaca, consumo de oxígeno, tiempo consumido, etc. Se concluyó que con el equipo de protección personal se requería una tensión fisiológica más alta de los bomberos y se disminuía el rendimiento en la prueba.

TÍTULO DEL TRABAJO	
The Prevalence of and Risk Factors Associated with Musculoskeletal Disorders in Thai Oil Palm Harvesting Workers: A Cross-Sectional Study <i>(La prevalencia y los factores de riesgo asociados con los trastornos musculoesqueléticos en los trabajadores tailandeses de la cosecha de palma aceitera: un estudio transversal)</i>	
PUBLICADO EN:	International Journal of Environmental Research and Public Health, Mayo 2021, Volumen 18, Número 10, Número de artículo 5474
AUTORES:	Bhuanantanondh, Petcharatana; Buchholz, Bryan ; Arphorn, Sara; Kongtip, Pornpimol ; Woskie, Susan
DOI:	10.3390/ijerph18105474
RESUMEN:	Musculoskeletal disorders (MSDs) are common in various occupations. However, there is still limited research about the prevalence of, and risk factors associated with, MSDs among oil palm harvesting workers in Thailand. To investigate the prevalence of MSDs and risk factors associated with MSDs in Thai oil palm harvesting workers, face-to-face interviews were conducted with Thai oil palm harvesting workers in Krabi Province, Thailand, using a questionnaire. The questionnaire consisted of four sections which included information on demographic characteristics, work-related characteristics, job stress, and MSDs. A total of 334 oil palm harvesting workers participated in the current study. The prevalence of MSDs during the past 12 months was 88.0%. Lower back MSDs had the highest (59.0%) 12-month prevalence among oil palm harvesting workers, followed by shoulder (37.1%) and neck (27.2%). Factors associated with lower back MSDs included type of task, heavy lifting, and job stress. Moreover, type of task, repetitive movement, and job stress were associated with shoulder and neck MSDs. The cutters had a higher risk of having shoulder and neck MSDs, primarily due to the fact that their work involved cutting the fresh fruit bunches from high up in the trees. The collectors had more back issues due to the heavy lifting. These findings showed the need to raise awareness, and to design guidelines and interventions to prevent MSDs in oil palm harvesting workers.
RESUMEN DE CONCLUSIONES EN ESPAÑOL:	Se evaluaron los trastornos musculoesqueléticos (TME) y sus factores de riesgo en trabajadores de cosecha de palma aceitera en la provincia de Krabi (Tailandia). Un cuestionario mediante entrevista se realizó a 334 trabajadores. La aparición de TME fue del 88% en los 12 meses últimos. Las partes del cuerpo más afectadas fueron la lumbar, después los hombros y por último el cuello. Se identificaron los factores de riesgo para cada parte del cuerpo. Algunos fueron: estrés laboral, movimientos repetitivos, tareas realizadas, etc. Se concluyó que era necesario aplicar medidas de prevención y concienciar a los trabajadores.

TÍTULO DEL TRABAJO	
Relationship between Autism Spectrum Disorder and Pesticides: A Systematic Review of Human and Preclinical Models <i>(Relación entre el trastorno del espectro autista y los plaguicidas: una revisión sistemática de modelos humanos y preclínicos)</i>	
PUBLICADO EN:	International Journal of Environmental Research and Public Health, Mayo 2021, Volumen 18, Número 10, Número de artículo 5190
AUTORES:	Biosca-Brull, Judit; Perez-Fernandez, Cristian; Mora, Santiago; Carrillo, Beatriz; Pinos, Helena; Conejo, Nelida Maria; Collado, Paloma; Arias, Jorge L.; Martin-Sanchez, Fernando; Sanchez-Santed, Fernando; Colomina, Maria Teresa
DOI:	10.3390/ijerph18105190
RESUMEN:	Autism spectrum disorder (ASD) is a complex set of neurodevelopmental pathologies characterized by impoverished social and communicative abilities and stereotyped behaviors. Although its genetic basis is unquestionable, the involvement of environmental factors such as exposure to pesticides has also been proposed. Despite the systematic analyses of this relationship in humans, there are no specific reviews including both human and preclinical models. The present systematic review summarizes, analyzes, and discusses recent advances in preclinical and epidemiological studies. We included 45 human and 16 preclinical studies. These studies focused on Organophosphates (OP), Organochlorine (OC), Pyrethroid (PT), Neonicotinoid (NN), Carbamate (CM), and mixed exposures. Preclinical studies, where the OP Chlorpyrifos (CPF) compound is the one most studied, pointed to an association between gestational exposure and increased ASD-like behaviors, although the data are inconclusive with regard to other ages or pesticides. Studies in humans focused on prenatal exposure to OP and OC agents, and report cognitive and behavioral alterations related to ASD symptomatology. The results of both suggest that gestational exposure to certain OP agents could be linked to the clinical signs of ASD. Future experimental studies should focus on extending the analysis of ASD-like behaviors in preclinical models and include exposure patterns similar to those observed in human studies.
RESUMEN DE CONCLUSIONES EN ESPAÑOL:	Se hizo una revisión para estudiar si hay relación del trastorno del espectro autista con la exposición a plaguicidas. Se consultaron 45 estudios en humanos y 16 preclínicos, que se centraron en varios plaguicidas determinados y en exposiciones mixtas. Se concluyó que la exposición gestacional a determinados plaguicidas podría relacionarse con los síntomas del trastorno del espectro autista.

TÍTULO DEL TRABAJO	
Broadening Our Understanding of Farm Children's Risk Exposure by Considering Their Parents' Farming Background <i>(Ampliando nuestra comprensión de la exposición al riesgo de los niños de granjas al considerar los antecedentes agrícolas de sus padres)</i>	
PUBLICADO EN:	International Journal of Environmental Research and Public Health, Mayo 2021, Volumen 18, Número 10, Número de artículo 5218
AUTORES:	Becot, Florence; Bendixsen, Casper; Barnes, Kathrine; Rudolphi, Josie
DOI:	10.3390/ijerph18105218
RESUMEN:	While farm safety researchers have seldom considered the association between farm parents' background and their children's safety, researchers who have compared first- and multi-generation farmers have found differences that may shape safety outcomes. We draw on the farm safety and family farm bodies of literature and a survey of 203 United States farm parents to assess the role of farming background in farm children risk exposure. Exploratory in nature, the bivariate analysis revealed no statistically significant differences between first- and multi-generation farmers in children injury, agricultural safety perceptions, knowledge, and practices but revealed differences in key demographic characteristics and parenting styles. A range of factors likely explain these findings with meso- and macro-level factors likely impacting farm parents' ability to adopt safety practices. In contrast to the emphasis on knowledge and behaviors, we call for the integration of lived realities in farm safety research and to do so in a way that connects realities and choices to larger contexts. We also call on the need to expand the toolkit of interventions to address meso- and macro-level factors. A shift towards addressing social and economic conditions in agriculture could reduce farm children's injuries while supporting the sustainability of farm labor systems.
RESUMEN DE CONCLUSIONES EN ESPAÑOL:	Se estudió la seguridad de niños en granjas con relación a los antecedentes agrícolas de los padres. Se empleó información disponible acerca de seguridad agrícola y granjas familiares y una encuesta realizada en Estados Unidos a 203 padres de agricultores. No se encontraron diferencias entre las dos generaciones de agricultores en relación a la seguridad, pero sí en las características demográficas y educación. Considerar las condiciones económicas y sociales en el sector de la agricultura podrían disminuir las lesiones en estos niños.

TÍTULO DEL TRABAJO	
Toxicology and Microbiota: How Do Pesticides Influence Gut Microbiota? A Review (<i>Toxicología y microbiota: ¿Cómo influyen los pesticidas en la microbiota intestinal? Una revisión</i>)	
PUBLICADO EN:	International Journal of Environmental Research and Public Health, Junio 2021, Volumen 18, Número 11, Número de artículo 5510
AUTORES:	Giambo, Federica; Teodoro, Michele; Costa, Chiara; Fenga, Concettina
DOI:	10.3390/ijerph18115510
RESUMEN:	In recent years, new targets have been included between the health outcomes induced by pesticide exposure. The gastrointestinal tract is a key physical and biological barrier and it represents a primary site of exposure to toxic agents. Recently, the intestinal microbiota has emerged as a notable factor regulating pesticides' toxicity. However, the specific mechanisms related to this interaction are not well known. In this review, we discuss the influence of pesticide exposure on the gut microbiota, discussing the factors influencing gut microbial diversity, and we summarize the updated literature. In conclusion, more studies are needed to clarify the host-microbial relationship concerning pesticide exposure and to define new prevention interventions, such as the identification of biomarkers of mucosal barrier function.
RESUMEN DE CONCLUSIONES EN ESPAÑOL:	Se hizo una revisión de los efectos de la exposición a pesticidas en la microbiota intestinal. Se determinan los factores influyentes y se revisó la bibliografía actual. Se concluyó la necesidad de más estudios relacionados con este tema.

TÍTULO DEL TRABAJO	
Exposure to Organophosphate and Neonicotinoid Insecticides and Its Association with Steroid Hormones among Male Reproductive-Age Farmworkers in Northern Thailand (<i>Exposición a insecticidas organofosforados y neonicotinoides y su asociación con hormonas esteroides entre trabajadores agrícolas masculinos en edad reproductiva en el norte de Tailandia</i>)	
PUBLICADO EN:	International Journal of Environmental Research and Public Health, Junio 2021, Volumen 18, Número 11, Número de artículo 5599
AUTORES:	Suwannarin, Neeranuch; Prapamontol, Tippawan; Isobe, Tomohiko; Nishihama, Yukiko; Hashimoto, Yuki; Mangklabruks, Ampica; Pantasri, Tawiwat; Chantara, Somporn; Naksen, Warangkana; Nakayama, Shoji F.
DOI:	10.3390/ijerph18115599
RESUMEN:	Several studies indicated organophosphate (OP) and neonicotinoid (NEO) insecticides are endocrine disruptors; however, data are scarce. This cross-sectional study recruited 143 male farmworkers aged 18-40 years in Fang district, Chiang Mai province, northern Thailand. OP exposure was assessed by measuring urinary dialkylphosphate (DAPs) using a gas-chromatography flame photometric detector. Urinary NEOs, their metabolites (NEO/m) and serum steroid hormones were measured using liquid chromatography-tandem mass spectrometry. Characteristics of participants were determined by face-to-face interviews. DAPs and five NEO/m were detected in more than 60% of samples. The concentration of diethylphosphate was highest among DAP metabolites (geometric mean concentration (GM): 23.9 ng/mL) and the concentration of imidacloprid (IMI) was highest among NEO/m (GM: 17.4 ng/mL). Linear regression models showed that the IMI level was positively associated with testosterone, dehydrocorticosterone (DHC) and dehydroepiandrosterone (DHEA) levels. Imidacloprid-olefin and DHEA levels were positively associated. Thiamethoxam (THX) were inversely associated with DHC and deoxycorticosterone levels. Clothianidin (CLO), THX and N-desmethyl-acetamiprid levels were positively associated with the androstenedione level. CLO and THX levels were inversely associated with the cortisone level. In conclusion, the association between NEO insecticides exposure and adrenal androgens, glucocorticoids and mineralocorticoids, suggest potential steroidogenesis activities. Our findings warrant further investigation.
RESUMEN DE CONCLUSIONES EN ESPAÑOL:	En esta investigación participaron 143 trabajadores hombres del sector de la agricultura con una edad de 18 a 40 años, de una provincia del norte de Tailandia. Se analizó la exposición a insecticidas organofosforados y neonicotinoides usando varias técnicas. También se realizaron entrevistas a los trabajadores. Se identificaron en más del 60% de las muestras.

TÍTULO DEL TRABAJO	
Adverse Health Effects in Women Farmers Indirectly Exposed to Pesticides (<i>Efectos adversos para la salud en mujeres agricultoras expuestas indirectamente a plaguicidas</i>)	
PUBLICADO EN:	International Journal of Environmental Research and Public Health, Junio 2021, Volumen 18, Número 11, Número de artículo 5909
AUTORES:	Martin-Reina, Jose; Casanova, Alfredo G.; Dahiri, Bouchra; Fernandez, Isaias; Fernandez-Palacin, Ana; Bautista, Juan; Morales, Ana I.; Moreno, Isabel
DOI:	10.3390/ijerph18115909
RESUMEN:	Farmers are among the most vulnerable populations because of the exposure to low levels of pesticides. Acetylcholinesterase and butyrylcholinesterase activities are considered as biomarkers of pesticides poisoning. However, biomarkers of oxidative stress are also playing an important role in toxicity of these contaminants. Further, increased activities of gamma-glutamyltransferase, alanine aminotransferase, urea and creatinine have been linked with hepatic and nephrotoxic cell damage, respectively. The aim of this study was to ascertain if the indirect exposure to pesticides leads to some biochemical parameter changes. Thus, cholinesterase activities, oxidative stress status (lipid and protein oxidation), hepatic function (AST and ALT levels), hormonal function (TSH, T4, FSH, LH and AMH), renal function (serum creatinine and urea), as well as possible subclinical kidney damage (urinary proteins and biomarkers of early kidney damage) were evaluated in farmer women who collect fruits and vegetables comparing with a group of women non-occupational exposed to pesticides but living in the same rural environment. Samples were taken periodically along one year to relate the observed effects to a chronic exposure. Our main results showed for the first time a subclinical kidney damage in a rural setting with indirect chronic exposure to pesticides.
RESUMEN DE CONCLUSIONES EN ESPAÑOL:	Este trabajo se basó en identificar si una exposición a plaguicidas de forma indirecta puede tener como consecuencia modificaciones en los parámetros bioquímicos. El estudio comparó a mujeres trabajadoras en el ámbito de la agricultura, encargadas de la recolección de futas y verduras con mujeres que no trabajaban, pero que estaban expuestas a estos plaguicidas por vivir en la misma zona rural. Se recopilieron datos durante un año. Los resultados determinaron un daño renal subclínico debido a la exposición indirecta y crónica a estos plaguicidas.

TÍTULO DEL TRABAJO	
Executive Function among Chilean Shellfish Divers: A Cross-Sectional Study Considering Working and Health Conditions in Artisanal Fishing <i>(Función ejecutiva entre los buzos de mariscos chilenos: un estudio transversal que considera las condiciones laborales y de salud en la pesca artesanal)</i>	
PUBLICADO EN:	International Journal of Environmental Research and Public Health, Junio 2021, Volumen 18, Número 11, Número de artículo 5923
AUTORES:	Garrido, Marie Astrid; Mark, Lorenz; Parra, Manuel; Nowak, Dennis; Radon, Katja
DOI:	10.3390/ijerph18115923
RESUMEN:	Knowledge about professional diving-related risk factors for reduced executive function is limited. We therefore evaluated the association between decompression illness and executive functioning among artisanal divers in southern Chile. The cross-sectional study included 104 male divers and 58 male non-diving fishermen from two fishing communities. Divers self-reported frequency and severity of symptoms of decompression illness. Executive function was evaluated by perseverative responses and perseverative errors in the Wisconsin Card Sorting Test. Age, alcohol consumption, and symptoms of depression were a-priori defined as potential confounders and included in linear regression models. Comparing divers and non-divers, no differences in the executive function were found. Among divers, 75% reported a history of at least mild decompression sickness. Higher frequency and severity of symptoms of decompression illness were associated with reduced executive function. Therefore, intervention strategies for artisanal divers should focus on prevention of decompression illness.
RESUMEN DE CONCLUSIONES EN ESPAÑOL:	Este trabajo analizó la relación entre la enfermedad por descompresión de los buzos de pesca artesanal en el sur de Chile. Participaron 104 buzos y 58 pescadores, todos hombres. Los buzos aportaron información acerca de la enfermedad por descompresión, en concreto de sus síntomas y gravedad. Las funciones ejecutivas se analizaron empleando el "Test de Clasificación de Tarjetas de Wisconsin". También se consideró la edad de los participantes, el consumo de alcohol y los síntomas de depresión. No se detectaron diferencias en las funciones ejecutivas entre los que eran buzos y los que no. La frecuencia más elevada y gravedad de los síntomas de la enfermedad se relacionaron con bajas funciones ejecutivas. Se debe prevenir esta enfermedad en este grupo de trabajadores.

TÍTULO DEL TRABAJO	
The Deviation of the Behaviors of Rice Farmers from Their Stated Willingness to Apply Biopesticides – A Study Carried Out in Jilin Province of China <i>(La desviación de los comportamientos de los agricultores de arroz de su voluntad declarada de aplicar bioplaguicidas: un estudio realizado en la provincia de Jilin en China)</i>	
PUBLICADO EN:	International Journal of Environmental Research and Public Health, Junio 2021, Volumen 18, Número 11, Número de artículo 6026
AUTORES:	Guo, Hongpeng; Sun, Fanhui; Pan, Chulin; Yang, Baiming; Li, Yin
DOI:	10.3390/ijerph18116026
RESUMEN:	The substitution of chemical pesticides by biopesticides is crucial to ensure the quality of agricultural products and to foster environmental sustainability. This study takes the willingness and the behaviors of rice farmers on the application of biopesticides as the research object. The survey questionnaire was designed based on the theory of rational small-scale farmers from three aspects: "individual and family characteristics of farmers", "cognition of farmers" and "external factors". The survey was then conducted on 163 rice farmers in seven prefecture-level cities in Jilin Province of China. The logistic model was used to analyze the influencing factors resulting in the deviation of the behaviors of the rice farmers from their initial willingness on the application of biopesticides. The explanatory structure model (ISM) was used to analyze the logical hierarchical relationship among various influencing factors. The results show that: (1) For 45% of the farmers surveyed, there's a deviation between their willingness and behaviors regarding the application of biopesticides; (2) Among the significant factors leading to the deviation between farmers' willingness and behaviors concerning the application of biopesticides, the surface-level direct factor is biopesticide awareness. The mid-level indirect factors are agricultural product quality and safety awareness and the deep-level root cause is farmers' education level. (3) The primary reason for the deviation of the farmers' behaviors from their willingness is their lack of knowledge about biopesticides and the biopesticides' incomplete market structure. Based on the comprehensive analysis, it is recommended to improve the professionalization of the farmers, to strengthen the publicity of green production and to accelerate the formulation of the biopesticides market to further promote the usage of biopesticides.
RESUMEN DE CONCLUSIONES EN ESPAÑOL:	Este trabajo se centra en estudiar el punto de vista y comportamiento de los productores de arroz sobre la aplicación de bioplaguicidas. Se realizó una encuesta a 163 trabajadores de varias ciudades en China. En el 45% de los trabajadores había diferencia entre su disposición y su práctica en la aplicación de estos productos. Se presentaron las causas y razones principales, por ejemplo, la educación de los trabajadores. Se recomendó promover el uso de estos productos.

TÍTULO DEL TRABAJO	
Agricultural Stakeholders' Perceptions of Occupational Health and Safety in the Southeastern US Coastal States <i>(Percepciones de grupos de interés agrícola sobre la seguridad y salud en el trabajo en los estados costeros del sureste de EE. UU.)</i>	
PUBLICADO EN:	International Journal of Environmental Research and Public Health, Junio 2021, Volumen 18, Número 12, Número de artículo 6605
AUTORES:	Irani, Tracy; Pierre, Beatrice Fenelon; Nesbit, Tyler S.
DOI:	10.3390/ijerph18126605
RESUMEN:	Agriculture remains a highly dangerous industry for occupational health and safety. This study sought to understand the perspective of agricultural professionals with respect to the current state of the industry, challenges, and opportunities relevant to occupational health and safety. Additional questions related to the COVID-19 pandemic emerged in the findings as well. Eleven industry professionals were interviewed, and the transcripts were qualitatively analyzed for emergent themes following a constant comparative method. Three themes emerged in our findings: a description of the current state of occupational health and safety in the agricultural industry, barriers to improving occupational health and safety, and enablers of occupational health and safety. Each theme contained subthemes. The description of the industry encompassed regulations, inherent danger, and attitudes and education. Barriers included education, health care access, logistics, discrimination and cultural competency, economic considerations, and the labor contracting system. Enablers included education, regulations, and health care and prevention. These findings are consistent with existing literature, revealing interconnected and overlapping challenges and opportunities. Further research is recommended with a broader sample of participants, especially farmworkers.
RESUMEN DE CONCLUSIONES EN ESPAÑOL:	Este trabajo se centró en analizar el punto de vista de los profesionales del sector agrícola sobre la seguridad y salud en el trabajo. Para ello se hicieron 11 entrevistas. Los resultados revelaron tres temas: la seguridad y salud en el trabajo actualmente en este sector, obstáculos en su mejora y la forma de facilitarla. Se propuso hacer futuras investigaciones con mayor número de participantes.

TÍTULO DEL TRABAJO	
Reproductive Health Risks Associated with Occupational and Environmental Exposure to Pesticides <i>(Riesgos para la salud reproductiva asociados con la exposición en el trabajo y ambiental a plaguicidas)</i>	
PUBLICADO EN:	International Journal of Environmental Research and Public Health, Junio 2021, Volumen 18, Número 12, Número de artículo 6576
AUTORES:	Fucic, Aleksandra; Duca, Radu C.; Galea, Karen S.; Maric, Tihana; Garcia, Kelly; Bloom, Michael S.; Andersen, Helle R.; Vena, John E.
DOI:	10.3390/ijerph18126576
RESUMEN:	A marked reduction in fertility and an increase in adverse reproductive outcomes during the last few decades have been associated with occupational and environmental chemical exposures. Exposure to different types of pesticides may increase the risks of chronic diseases, such as diabetes, cancer, and neurodegenerative disease, but also of reduced fertility and birth defects. Both occupational and environmental exposures to pesticides are important, as many are endocrine disruptors, which means that even very low-dose exposure levels may have measurable biological effects. The aim of this review was to summarize the knowledge collected between 2000 and 2020, to highlight new findings, and to further interpret the mechanisms that may associate pesticides with infertility, abnormal sexual maturation, and pregnancy complications associated with occupational, environmental and transplacental exposures. A summary of current pesticide production and usage legislation is also included in order to elucidate the potential impact on exposure profile differences between countries, which may inform prevention measures. Recommendations for the medical surveillance of occupationally exposed populations, which should be facilitated by the biomonitoring of reduced fertility, is also discussed.
RESUMEN DE CONCLUSIONES EN ESPAÑOL:	Este trabajo consistió en una revisión de información disponible entre 2000 y 2020 para determinar la relación de los pesticidas con la infertilidad, anomalías en la maduración sexual y dificultades del embarazo. Se contemplaron las exposiciones en el trabajo, ambientales y transplacentarias. Además, se introdujo legislación relacionada. Se comentaron recomendaciones para grupos expuestos en el lugar de trabajo.

TÍTULO DEL TRABAJO	
Assessment of Cytogenetic Damage and Cholinesterases' Activity in Workers Occupationally Exposed to Pesticides in Zamora-Jacona, Michoacan, Mexico <i>(Evaluación de daño citogenético y actividad de colinesterasa en trabajadores expuestos a plaguicidas en Zamora-Jacona, Michoacán, México)</i>	
PUBLICADO EN:	International Journal of Environmental Research and Public Health, Junio 2021, Volumen 18, Número 12, Número de artículo 6269
AUTORES:	Valencia-Quintana, Rafael; Lopez-Duran, Rosa Maria; Milic, Mirta; Bonassi, Stefano; Ochoa-Ocana, Ma. Antonieta; Uriostegui-Acosta, Mayrut Osdely; Perez-Flores, Guillermo Alejandro; Gomez-Olivares, Jose Luis; Sanchez-Alarcon, Juana
DOI:	10.3390/ijerph18126269
RESUMEN:	Pesticides have been considered as potential chemical mutagens; however, little is known about toxic and genotoxic effects during pesticide application in Zamora-Jacona, Michoacan State in Mexico. This study sought to determine DNA damage and cholinesterase activities inhibitions in 54 agricultural workers exposed to complex mixtures of pesticides vs. control group (26 individuals) using Comet assay in peripheral whole blood, micronucleus (MN) test in oral mucosa cells, Cytokinesis-blocked MN assay in lymphocytes (L-CBMNcyt) and measuring AChE and BChE activities in whole blood and plasma samples, respectively. Exposed subjects demonstrated significantly elevated levels of primary (Comet assay: tail intensity, tail length, tail moment, Olive tail moment) and permanent DNA damage (MN assay: in blood/buccal cells; frequencies of nuclear buds, binucleated cells, cells with condensed chromatin, karyorrhexis, pyknosis, and karyolysis). However, inhibition of cholinesterase activities (AChE and BChE) was not observed in the workers. Confounding factors including sex, age, BMI, working exposure period, protection level, smoking habit (cigarettes per day units), alcohol consumption (weekly), medication, were considered in the analysis. These combined techniques demonstrated usefulness in the health hazards risks pesticide exposure assessment and suggested the need for periodic monitoring together with the education and the training of occupational workers for the safe application of potentially harmful pesticides.
RESUMEN DE CONCLUSIONES EN ESPAÑOL:	Se estudió el daño en el ADN y la inhibición de la actividad colinesterásica en 54 agricultores expuestos a mezclas de plaguicidas y en 26 personas de un grupo de control utilizando varias técnicas. Los resultados mostraron daño en el ADN para los trabajadores expuestos, pero no inhibición de la actividad de la colinesterasa. En el estudio también se tuvieron en cuenta otros factores como edad, consumo de tabaco y alcohol, etc. Se recomendó monitoreo, educación y formación de los trabajadores para aplicar los plaguicidas de forma segura.

TÍTULO DEL TRABAJO	
Comparison of Thyroid Hormone Levels between Women Farmers and Non-Farmers in Banten Indonesia (Comparación de los niveles de hormona tiroidea entre mujeres agricultoras y no agricultoras en Bantén Indonesia)	
PUBLICADO EN:	International Journal of Environmental Research and Public Health, Junio 2021, Volumen 18, Número 12, Número de artículo 6618
AUTORES:	Mardhiyah, Dian; Komaruddin, Wan Nedra; Jalal, Fasli Nedra; Wuryanti, Sri; Bahri, Syukrini; Qomariah, Qomariah; Sosiawan, Insan; Marsiati, Himmi; Legiono, Legiono; Hanif, Harliansyah; Woskie, Susan; Kongtip, Pornpimol
DOI:	10.3390/ijerph18126618
RESUMEN:	Pesticides are suspected of being endocrine disruptors. This cross-sectional study measured serum samples for levels of thyroid hormones including thyroid stimulating hormone (TSH), triiodothyronine (T3), thyroxine (T4), free T3 (FT3), and free T4 (FT4) among Indonesian female farmers (n = 127) and non-farmers (n = 127). A questionnaire was used to collect information on demographics and risk factors including work characteristics and frequency, and the use of home and agricultural pesticides. Results showed that there were no significant differences in the distribution of the clinical categories of thyroid levels between farmers and non-farmers except for FT3 and T4. However, in multivariable regression controlling for confounders, FT3 and T4 were significantly higher for farmers compared to non-farmers. In addition, 32% of farmers had clinically low iodine levels and 49% of non-farmers had clinically high iodine levels. We conclude that pesticide exposure may not be as important as iodine intake in explaining these findings. We recommend counseling by health workers about the importance of using iodized salt for farmers and counseling about high iodine foods that need to be avoided for non-farmers.
RESUMEN DE CONCLUSIONES EN ESPAÑOL:	En esta investigación se analizaron muestras de suero para conocer los niveles de hormonas tiroideas y así estudiar si los plaguicidas son disruptores endocrinos. Participaron en el estudio 127 mujeres agricultoras de Indonesia y 127 no agricultoras. Se empleó también un cuestionario sobre demografía, factores de riesgo, trabajo y su frecuencia y utilización de plaguicidas agrícolas o de uso doméstico. Se concluyó que la exposición a plaguicidas no era tan relevante, llamando más la atención la ingesta de yodo para explicar los resultados. Se hicieron recomendaciones sobre este tema tanto para las agricultoras como para las que no desarrollaban esta labor.

TÍTULO DEL TRABAJO	
Factors Associated with Suicidal Behavior in Farmers: A Systematic Review (Factores asociados con la conducta suicida en los agricultores: una revisión sistemática)	
PUBLICADO EN:	International Journal of Environmental Research and Public Health, Junio 2021, Volumen 18, Número 12, Número de artículo 6522
AUTORES:	Santos, Emelyne Gabrielly de Oliveira; Queiroz, Paulo Roberto; Nunes, Aryelly Dayane da Silva; Vedana, Kelly Graziani Giacchero; Barbosa, Isabelle Ribeiro
DOI:	10.3390/ijerph18126522
RESUMEN:	This review aimed to investigate the factors associated with suicidal behavior in farmers in the scientific literature. Two researchers participated independently in searching databases, specifically PubMed/MEDLINE, LILACS, Web of Science, Scopus, PsycINFO, and SciELO. Only observational studies were included. The quality of the selected studies was assessed with a critical assessment checklist for cross-sectional analytical and case-control studies, prepared by the Joanna Briggs Institute. Data related to the publication were collected (author and year; city/country); methodological design; sample/population (gender; average age), outcome, measuring instrument and factors associated with suicidal behavior. A total of 14 studies were included in the systematic review, and factors associated with farmers' behavior in mental health (depression), seasonal impacts (drought), and work exposures (herbicides and insecticides) were identified. However, heterogeneity was found in terms of the method, measurement of suicidal behavior, and associated factors, which indicates the need for further studies.
RESUMEN DE CONCLUSIONES EN ESPAÑOL:	Se realizó una revisión de la bibliografía, utilizando varias bases de datos, sobre los factores relacionados con la conducta suicida en trabajadores del sector agrícola. Se seleccionaron únicamente estudios observacionales. Se obtuvieron datos determinados de cada estudio como autor, año, métodos, etc. y finalmente se seleccionaron 14 estudios. Se determinaron factores como depresión, sequía y exposiciones a plaguicidas. Se concluyó que eran necesarias más investigaciones.

TÍTULO DEL TRABAJO	
Relationship between Prenatal or Postnatal Exposure to Pesticides and Obesity: A Systematic Review <i>(Relación entre la exposición prenatal o posnatal a plaguicidas y la obesidad: una revisión sistemática)</i>	
PUBLICADO EN:	International Journal of Environmental Research and Public Health, Julio 2021, Volumen 18, Número 13, Número de artículo 7170
AUTORES:	Pinos, Helena; Carrillo, Beatriz; Merchan, Ana; Biosca-Brull, Judit; Perez-Fernandez, Cristian; Colomina, Maria Teresa; Sanchez-Santed, Fernando; Martin-Sanchez, Fernando; Collado, Paloma; Arias, Jorge L.; Conejo, Nelida M.
DOI:	10.3390/ijerph18137170
RESUMEN:	In recent years, the worldwide prevalence of overweight and obesity among adults and children has dramatically increased. The conventional model regarding the onset of obesity is based on an imbalance between energy intake and expenditure. However, other possible environmental factors involved, such as the exposure to chemicals like pesticides, cannot be discarded. These compounds could act as endocrine-disrupting chemicals (EDC) that may interfere with hormone activity related to several mechanisms involved in body weight control. The main objective of this study was to systematically review the data provided in the scientific literature for a possible association between prenatal and postnatal exposure to pesticides and obesity in offspring. A total of 25 human and 9 animal studies were analyzed. The prenatal, perinatal, and postnatal exposure to organophosphate, organochlorine, pyrethroid, neonicotinoid, and carbamate, as well as a combined pesticide exposure was reviewed. This systematic review reveals that the effects of pesticide exposure on body weight are mostly inconclusive, finding conflicting results in both humans and experimental animals. The outcomes reviewed are dependent on many factors, including dosage and route of administration, species, sex, and treatment duration. More research is needed to effectively evaluate the impact of the combined effects of different pesticides on human health.
RESUMEN DE CONCLUSIONES EN ESPAÑOL:	Se llevó a cabo una revisión de la bibliografía para conocer si existe una relación entre la exposición prenatal y posnatal a pesticidas y la obesidad. Se revisaron 25 investigaciones realizadas en humanos y 9 en animales. Tras la revisión se determinó que no está claro si la exposición a estos productos afecta en el peso, ya que además se identificaron resultados contradictorios.

TÍTULO DEL TRABAJO	
Participatory Development Process of Two Human Dimension Intervention Programs to Foster Physical Fitness and Psychological Health and Well-Being in Wildland Firefighting <i>(Proceso de desarrollo participativo de programas de intervención en dos dimensiones humanas para fomentar la aptitud física y la salud y el bienestar psicológicos en la lucha contra incendios forestales)</i>	
PUBLICADO EN:	International Journal of Environmental Research and Public Health, Julio 2021, Volumen 18, Número 13, Número de artículo 7118
AUTORES:	Leduc, Caleb; Giga, Sabir, I; Fletcher, Ian J.; Young, Michelle; Dorman, Sandra C.
DOI:	10.3390/ijerph18137118
RESUMEN:	Intervention programs designed, delivered, and evaluated by and within organizations are a critical component in the promotion of employee health and well-being and in the prevention of occupational injury. Critical for transference of findings across complex occupational settings is a clearly articulated development process, a reliance on and evaluation of underlying theoretical foundations, and the inclusion of relevant outcomes emerging out of participatory action processes. To date, there have been no documented efforts outlining the development, implementation, or evaluation of human dimension intervention programs targeting wildland firefighters. The purpose of this paper is to outline the development of two collaborative and participatory intervention programs, targeting wildland firefighters' physical and psychological health and well-being. Two human dimension intervention programs were developed in a collaborative, iterative and participatory process following the Context-Content-Process-Outcomes Framework. First, a physical fitness training intervention program was designed to maintain wildland firefighter's physical fitness levels and attenuate risk of injury. Second, a psychosocial education intervention program was developed to mitigate the impact of psychosocial risk factors, foster work engagement, and decrease job stress. The current study provides evidence for the capacity of researchers and organizations to collaboratively develop practical programs primed for implementation and delivery.
RESUMEN DE CONCLUSIONES EN ESPAÑOL:	Para mejorar la salud y el bienestar de los bomberos forestales se desarrollaron dos programas de intervención. Uno de ellos estuvo dirigido a los aspectos físicos de estos trabajadores con el objetivo de mantener la forma física y disminuir el riesgo de lesiones. El otro se centró en el ámbito psicosocial, con el fin de reducir el estrés laboral, evitar las consecuencias del riesgo psicosocial y promover el compromiso laboral.

TÍTULO DEL TRABAJO	
<p>Factors Influencing Practice of Pesticide Use and Acute Health Symptoms among Farmers in Nakhon Sawan, Thailand <i>(Factores que influyen en la práctica del uso de plaguicidas y los síntomas de salud agudos entre los agricultores de Nakhon Sawan, Tailandia)</i></p>	
PUBLICADO EN:	International Journal of Environmental Research and Public Health, Agosto 2021, Volumen 18, Número 16, Número de artículo 8803
AUTORES:	Kangkhetkron, Teera; Juntarawijit, Chudchawal
DOI:	10.3390/ijerph18168803
RESUMEN:	<p>Information on knowledge (K), attitude (A), and practice (P) in terms of pesticide use is essential for an effective exposure control program. The objectives of this study were to survey the level of knowledge, attitude, and practice in terms of pesticide use, and the prevalence of acute health symptoms (AHSs) among farmers in Nakhon Sawan Province, Thailand. The study also tried to identify factors affecting the practice of pesticide use. Data from 680 farmers were collected using a face-to-face interview questionnaire. The relationship between safety practices and related factors was analyzed using ordinal logistic regression. This study found about 40% of the farmers had a good level of practice. Factors affecting practice were education, work experience, level of knowledge, or attitudes. Many participants experienced acute health symptoms in the past 24 h, and these symptoms were significantly associated with poor practice ($p < 0.05$). Public health organizations should provide farmers with more information, especially on chronic effects of pesticides.</p>
RESUMEN DE CONCLUSIONES EN ESPAÑOL:	<p>En este estudio se analizó a los agricultores de una provincia de Tailandia en relación a la utilización de plaguicidas y se investigaron los síntomas graves de salud. Participaron 680 agricultores y se les realizó un cuestionario mediante entrevista. Se estudió la asociación entre prácticas de seguridad y factores correspondientes. Los resultados mostraron que aproximadamente un 40% de los trabajadores tenían buenas prácticas de seguridad. Los factores principales que influían en la práctica eran la educación, experiencia en el trabajo, conocimientos y actitudes. Un gran número de trabajadores mostraron síntomas graves de salud en las últimas 24 horas y estos se relacionaron con malas prácticas.</p>

TÍTULO DEL TRABAJO	
Occupational Injuries among Latino/a Immigrant Cattle Feedyard Workers in the Central States Region of the United States <i>(Lesiones ocupacionales entre trabajadores latinos o inmigrantes de corrales de engorde de ganado en la región central de los Estados Unidos)</i>	
PUBLICADO EN:	International Journal of Environmental Research and Public Health, Agosto 2021, Volumen 18, Número 16, Número de artículo 8821
AUTORES:	Ramos, Athena K.; Adhikari, Suraj; Yoder, Aaron M.; Rautiainen, Risto H.
DOI:	10.3390/ijerph18168821
RESUMEN:	Agriculture is a dangerous industry with high rates of occupational injuries. Immigrants comprise the majority of the hired agricultural workforce in the United States, and these workers may be at a higher risk for job-related injuries. This study addressed the frequency, characteristics, and risk factors of occupational injuries among Latino immigrant cattle feedyard workers. Data were collected through structured interviews with Latino immigrant cattle feedyard workers in Kansas and Nebraska (n = 243; 90.9% male). Descriptive statistics and logistic regression were used to identify risk factors for injury. Nearly three-fourths of participants (71.2%) reported having experienced one or more injuries in the past while working on a cattle feedyard. The most frequent types of reported injuries, including those not requiring medical care, were bruises/contusions (40%), cuts/lacerations (21%), and sprains/strains (12%). These injuries were mainly caused by animals/livestock (33%), chemicals (23%), falls (12%), and tools (9%). Significant risk factors for injury included male gender (OR 5.9), being over age 35 (OR 2.6), working on a large or an extra-large feedyard (OR 5.4), having 11 or more employees on the feedyard (OR 3.6), and working more than eight hours a day (OR 4.7). Having received safety training was also associated with greater risk of injury in a univariable model (OR 2.6). Cattle feedyard workers are at high risk for injury and require more effective preventive measures.
RESUMEN DE CONCLUSIONES EN ESPAÑOL:	Se analizaron las lesiones que sufrían los trabajadores latinos de corrales de engorde de ganado. Se realizaron entrevistas a 243 trabajadores inmigrantes. Un 71,2% de los trabajadores afirmaron haber sufrido alguna lesión durante su trabajo. Se identificaron varias como frecuentes, siendo las principales los hematomas o contusiones. Se determinaron también las causas y factores de riesgo. Se concluyó que estos trabajadores están expuestos a importantes riesgos de lesiones y es necesario adoptar nuevas medidas de prevención.

TÍTULO DEL TRABAJO	
Machinery Safety and Ergonomics: A Case Study Research to Augment Agricultural Tracklaying Tractors' Safety and Usability <i>(Seguridad y ergonomía de la maquinaria: una investigación de estudio de caso para aumentar la seguridad y la usabilidad de los tractores de cadenas agrícolas)</i>	
PUBLICADO EN:	International Journal of Environmental Research and Public Health, Agosto 2021, Volumen 18, Número 16, Número de artículo 8643
AUTORES:	Gattamelata, Davide; Vita, Leonardo; Fagnoli, Mario
DOI:	10.3390/ijerph18168643
RESUMEN:	Occupational Health and Safety (OHS) in agricultural activities is an issue of major concern worldwide notwithstanding the ever stricter regulations issued in this sector. In particular, most accidents are related to the use of tractors and the main causes of this phenomenon are due to the lack of rollover protective structures (ROPSs). This happens especially when tractors are used in particular in-field operations that are characterized by limited clearances between tractor and crop rows so that farmers usually use tractors without ROPS (e.g., dismounting it). To solve such a problem, foldable protective structures (FROPSs) have been proposed, which should augment the operator's protection. However, FROPS's conventional solutions underestimate the operators' risk-taking behavior and the widespread misuse of FROPS due to the efforts needed to operate it. The current study aims at contributing to the improvement of the latter issue proposing the development of a novel approach for the implementation of partial assistance systems (PASSs) that can reduce the physical effort of the operator when raising/lowering the FROPS. The proposed methodology, which is based on a reverse engineering approach, was verified by means of a practical case study on a tracklaying tractor. Results achieved can contribute to expanding knowledge on technical solutions aimed at improving the human-machinery interaction in the agricultural sector.
RESUMEN DE CONCLUSIONES EN ESPAÑOL:	En este estudio se expone una estrategia nueva para la implementación de sistemas de asistencia parcial que disminuyan el esfuerzo físico de los agricultores a la hora de subir y bajar las estructuras de protección contra vuelcos en tractores. Esto surge debido a que gran parte de los accidentes que ocurren en el sector de la agricultura se producen con tractores y una de las causas es que no se emplean este tipo de estructuras contra vuelcos.

14. EXCLI JOURNAL

TÍTULO DEL TRABAJO	
Risk of musculoskeletal disorders in pepper cultivation workers (<i>Riesgo de trastornos musculoesqueléticos en trabajadores de cultivo de pimiento</i>)	
PUBLICADO EN:	EXCLI Journal, Junio 2021, Volumen 20, pp. 1033-1054
AUTORES:	Gómez-Galán, Marta; Callejón-Ferre, Ángel-Jesús; Díaz-Pérez, Manuel; Carreño-Ortega, Ángel; López-Martínez, Alejandro
DOI:	10.17179/excli2021-3853
RESUMEN:	Agricultural workers have an increased risk of musculoskeletal disorders, mainly due to the manual nature of the work. This study assesses the level of physical well-being in pepper cultivation workers in Almeria (Spain). The objective was to analyze pepper cultivation tasks performed in the Almeria-type greenhouse, using the OWAS (Ovako Working Posture Assessment System) and RULA (Rapid Upper Limb Assessment) methods. The OWAS results showed a normal posture percentage of 53 %, a medium risk of 30 %, a high risk of 16 %, and a very high risk of 1 %. The body areas most affected were the back and legs. The RULA assessment found high risk/action levels, with 50 % of the postures corresponding to level 3, 35 % to level 4, and 15 % to level 2. Improvements are therefore proposed; these include: redesigning tasks, mechanization, training, team development, and improving the workers' physical condition. The OWAS and RULA data may have overestimated the results, as workers do not appear to be limited in performing tasks and do not normally request sick leave.
RESUMEN DE CONCLUSIONES EN ESPAÑOL:	Este estudio se centró en evaluar el bienestar físico en trabajadores de cultivo de pimiento bajo invernadero en Almería (España). Para ello, se evaluaron las posturas de los trabajadores, durante todas sus labores, mediante dos métodos de evaluación: OWAS (Ovako Working Posture Assessment System) y RULA (Rapid Upper Limb Assessment). El primer método detectó un 53% de posturas normales y el resto con algún tipo de riesgo. Con el método RULA se identificó un mayor número de posturas con niveles de riesgo elevados. Se recomendaron medidas como mecanización, formación, rediseño de tareas, etc.

15. SUSTAINABILITY

TÍTULO DEL TRABAJO	
Impacts of COVID-19 on Agricultural Production Branches: An Investigation of Anxiety Disorders among Farmers <i>(Impactos del COVID-19 en las actividades de la producción agrícola: una investigación de los trastornos de ansiedad entre los agricultores)</i>	
PUBLICADO EN:	Sustainability, Mayo 2021, Volumen 13, Número 9, Número de artículo 5186
AUTORES:	Cevher, Celal; Altunkaynak, Bulent; Guru, Meltem
DOI:	10.3390/su13095186
RESUMEN:	The aim of our study was to determine the level of anxiety among farmers in different agricultural branches in Turkey during the COVID-19 outbreak and to examine its association with socioeconomic concerns and social support variables. Based on a survey of 2125 Turkish farm enterprises, this study examined effects on agricultural production during the implementation of COVID-19 restrictions among agricultural branches. The Generalized Anxiety Disorder Scale and Oslo Social Support Scale were used in the study. Survey data were collected from farmers by phone. Age, place of residence, income status, agricultural branches, land size, the use of trucks, animal husbandry, access to technical support from agricultural organizations, access to support from neighbors, and social support level were found to have a significant effect on anxiety level ($p < 0.05$). The anxiety levels of farmers engaged in animal husbandry and vegetable farming were found to be higher than those in other agricultural branches. The lowest anxiety level was observed in farmers engaged in cereal production. Taking these results into consideration is important for preventing problems in agricultural production. If anxiety levels are not improved, it is predicted that farmers in agricultural production branches with high levels of anxiety will move towards branches with lower levels of anxiety.
RESUMEN DE CONCLUSIONES EN ESPAÑOL:	En este trabajo se estudió la ansiedad que sufrieron los agricultores dedicados a diferentes actividades en Turquía durante la pandemia de COVID-19 y se determinó su relación con inquietudes de tipo socioeconómico y con el apoyo social. Se llevó a cabo una encuesta telefónica en numerosas empresas del sector de la agricultura, en concreto 2125. Se determinaron diferentes factores que afectaron a la ansiedad como por ejemplo la edad, tamaño de tierra, apoyo social, etc. Respecto a las diversas ramas, se observó que la ansiedad era mayor en agricultores que se encargaban de cría de animales y hortalizas y menor en producción de cereales.

16. WORKPLACE HEALTH & SAFETY

TÍTULO DEL TRABAJO	
<p>“Looking for Better (Job) Opportunities”: A Qualitative Analysis of the Occupational Health of Inmigrants in Southern Spain <i>(“Buscando mejores oportunidades (laborales)”): un análisis cualitativo de la salud laboral de los inmigrantes en el sur de España)</i></p>	
PUBLICADO EN:	Workplace Health & Safety, Mayo 2021, Volumen 69, Número 5, pp. 198-207
AUTORES:	de Diego-Cordero, Rocio; Romero-Saldana, Manuel; Jigato-Calero, Ana; Badanta, Barbara; Lucchetti, Giancarlo; Vega-Escano, Juan
DOI:	10.1177/2165079920988005
RESUMEN:	<p>Background: Spain hosts the fourth largest number of immigrants in Europe, resulting in a large proportion of migrant workers. To date, few studies have examined the working conditions of immigrants in Southern Spain who are known to be at risk for adverse working conditions. This study aimed to investigate the patterns of work and working conditions of immigrants living in southern Spain and to understand how these factors may affect their health.</p> <p>Methods: A qualitative study using semi-structured interviews was conducted throughout 2019 and included 93 immigrants. Transcription, literal reading, and theoretical categorization were performed and a narrative content analysis was carried out.</p> <p>Results: Three themes emerged on working conditions of this study population, including social and labor-related characteristics, working conditions, and occupational health issues. Four employment sectors were most commonly occupied by these immigrants, including caregiving and food service for women and agriculture and construction for men. Most immigrants were from Latin America, unemployed or working part-time jobs, and not hired under an employment contract. Most worked in low-qualified jobs, and were exposed to occupational hazards such as falls from heights, manual handling of materials, and psychological strain. The lack of training on occupational risk prevention and labor rights was related to a low identification of work situations having a negative impact on the health of immigrants.</p> <p>Conclusions/Application to Practice: These findings should be taken into account by the government and public health managers to provide better assistance to immigrant workers in Europe.</p>
RESUMEN DE CONCLUSIONES EN ESPAÑOL:	<p>España engloba un número elevado de trabajadores inmigrantes. Este estudio analizó el trabajo, sus condiciones y la salud laboral en inmigrantes del sur de España. Se realizaron entrevistas a 93 participantes en 2019. Los resultados mostraban que los sectores principales a los que se dedicaban las mujeres eran tareas de cuidado y</p>

	<p>servicio de alimentación. Los hombres a la agricultura y la construcción. La mayoría no tenían contratos y ocupaban puestos en los que estaban expuestos a riesgos laborales como caídas en altura, manipulación manual de cargas y riesgos psicológicos.</p>
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TÍTULO DEL TRABAJO	
Association of Exposure to Cattle with Self-Reported History of TB Among Dairy Workers (Asociación de exposición al ganado bovino con antecedentes autoinformados de tuberculosis entre trabajadores de la industria láctea)	
PUBLICADO EN:	Workplace Health & Safety, Julio 2021, Volumen 69, Número 7, pp. 306-314
AUTORES:	Rodriguez, Anabel; Douphrate, David, I; Hagevoort, Robert; Cienega, Leeroy; de Porras, David Gimeno Ruiz; Perez, Adriana; Nonnenmann, Matthew
DOI:	10.1177/2165079920976521
RESUMEN:	<p>Background: Mycobacterium bovis (bTB) is a potential health hazard to dairy workers. This study uses the One Health wholistic framework for examining bovine tuberculosis (TB) and its relationship to human health. This approach can help bridge surveillance data gaps and contribute to disease control and prevention programs for dairy farm workers, cattle, and the environment. The primary objective of this study was to compare the self-reported history of TB among dairy workers in Bailey County, Texas, with occupational categories of risk and exposure to TB.</p> <p>Methods: A cross-sectional study was conducted among dairy workers. Job positions were used as a proxy for exposure to cattle-high and medium/low. We employed bivariate analyses to examine differences between groups using both the chi-square test and the nonparametric Kruskal-Wallis test.</p> <p>Results: Of the 293 dairy workers invited, 77.0% (n = 225) participated. No statistically significant associations were found between job categories and reported history of TB exposure. Workers in the high group were younger, Guatemalan males with lower levels of formal education, more likely to be single with no children, and cohabitating with coworkers compared with the medium/low group.</p> <p>Conclusion/Application to Practice: Self-reported TB history among dairy workers is an imprecise measure of being previously diagnosed with TB. Dairy workers at risk for occupationally acquired TB could be tested for TB before employment and tested periodically thereafter, and more expeditiously treated if a positive test is obtained. Future studies should focus on the feasibility of offering on-farm health services, such as TB screening.</p>
RESUMEN DE CONCLUSIONES EN ESPAÑOL:	Se estudió la tuberculosis bovina en trabajadores de lecherías en un condado de Texas. Participaron 225 trabajadores en la investigación, a pesar de que se solicitó participación a 293. Los resultados no mostraron relación entre la categoría laboral y la exposición a la tuberculosis de estos trabajadores. Se propuso realizar pruebas de tuberculosis en este ámbito laboral antes de comenzar a desarrollar el puesto de trabajo y de

	forma periódica, con el fin de someterse a un tratamiento rápido si los resultados son positivos.
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TÍTULO DEL TRABAJO	
Cooling Interventions Among Agricultural Workers: A Pilot Study (Intervenciones de enfriamiento entre trabajadores agrícolas: un estudio piloto)	
PUBLICADO EN:	Workplace Health & Safety, Julio 2021, Volumen 69, Número 7, pp. 315-322
AUTORES:	Chicas, Roxana; Xiuhtecutli, Nezahualcoyotl; Elon, Lisa; Scammell, Madeleine K.; Steenland, Kyle; Hertzberg, Vicki; McCauley, Linda
DOI:	10.1177/2165079920976524
RESUMEN:	<p>Background Adverse health effects among agricultural workers due to chronic heat exposure have been characterized in the literature as not only due to high ambient temperatures but also due to intensive manual labor in hot and humid conditions. The aim of this study was to use biomonitoring equipment to examine the effectiveness of selected cooling devices at preventing agricultural workers from exceeding the core body temperature threshold of 38.0 degrees C (Tc38) and attenuating heat-related illness symptoms.</p> <p>Methods A convenience sample of 84 agricultural workers in Florida was randomized to one of four groups: (a) no intervention, clothing as usual; (b) cooling bandana; (c) cooling vest; and (d) both the cooling bandana and cooling vest. Biomonitoring equipment worn by the participants included core body temperature monitor and an accelerometer to capture physical activity.</p> <p>Findings A total of 78 agricultural workers completed one intervention workday trial. Compared with the control group, the bandana group had lower odds of exceeding Tc38 (odds ratio [OR] = 0.7, 90% confidence interval [CI] = [0.2, 3.2]) and the vest group had higher odds of exceeding Tc38 (OR = 1.8, 90% CI = [0.4, 7.9]). The simultaneous use of cooling vest and bandana showed an effect little different from the control group (OR = 1.3, 90% CI = [0.3, 5.6]).</p> <p>Conclusion/Application to Practice This is the first field-based study to examine cooling intervention among agricultural workers in the United States using biomonitoring equipment. This study found that using a bandana while working in a hot agricultural environment has the potential to be protective against exceeding the recommended Tc38 threshold.</p>
RESUMEN DE CONCLUSIONES EN ESPAÑOL:	En esta investigación se emplearon equipos de biomonitoreo para evaluar el uso de dispositivos de enfriamiento con el fin de que los agricultores no superen la temperatura corporal de 38°C y reducir las enfermedades laborales asociadas al calor. Participaron 84 trabajadores de Florida en el estudio y se crearon cuatro grupos: con ropa habitual, con pañuelo de enfriamiento, chaleco refrigerante y otro con la combinación de los dos últimos. Se concluyó que con el pañuelo de enfriamiento se podría evitar superar la temperatura recomendada.

17. RISK MANAGEMENT AND HEALTHCARE POLICY

TÍTULO DEL TRABAJO	
Using the Socio-Ecological Model to Frame the Influence of Stakeholders on Cocoa Farmers' Pesticide Safety in Nigeria: Findings from a Qualitative Study <i>(Uso del modelo socioecológico para enmarcar la influencia de las partes interesadas en la seguridad de los plaguicidas de los productores de cacao en Nigeria: hallazgos de un estudio cualitativo)</i>	
PUBLICADO EN:	Risk Management and Healthcare Policy, Junio 2021, Volumen 14, pp. 2357-2368
AUTORES:	Oludoye, Oluseye O.; Robson, Mark G.; Siriwong, Wattasit
DOI:	10.2147/RMHP.S311223
RESUMEN:	<p>Purpose: The aim of this study was to explore the roles of stakeholders on cocoa farmers' safe pesticide use in Nigeria using the socio-ecological model as the theoretical framework.</p> <p>Methods: This was a cross-sectional qualitative study where participants were purposefully selected based on some criteria. Then, they were interviewed in-depth using a semi-structured interview approach. The interview guide was designed based on other literature and the study objectives. The interview transcripts were transcribed verbatim and analyzed using the content analysis technique.</p> <p>Results: In all, 57 participants were involved in the interview process across all the study locations. Five layers of influence (cocoa farmers, pesticide retailers, extension officers, pesticide importers and government agencies) were considered. At individual level, cocoa farmers complained about lack of information from other stakeholders regarding pesticide use except retailers due to the farmers' proximity to their stores. However, pesticide safety information from the retailers were found to be inadequate due to their interest in financial gains rather than a focus on human health and the environment. Additionally, most retailers had no understanding about the characteristics of products they sold as they could not read pesticide labels. Furthermore, lack of motivations, human resources and facilities hindered effective extension education in the rural communities. Also, pesticide importers took efforts to train the farmers within their network, but majority of these trainings focused on lead farmers who were expected to disseminate the information to others. Besides, the agencies did organize training or workshop sometimes, but it was inadequate due to budget constraint. Lastly, environmental or agri-policies relating to Nigerian cocoa farmers concerning safe pesticide use and disposal were also inadequate.</p> <p>Conclusion: Generally, there was a large information gap with respect to pesticide safety between cocoa farmers and other stakeholders which undermined pesticide use safety. This study highlighted the need for government agencies in Nigeria to develop mechanisms to monitor information exchange among other stakeholders and cocoa farmers with respect to safe pesticide use and disposal.</p>

**RESUMEN DE
CONCLUSIONES
EN ESPAÑOL:**

Se investigó la actuación de las partes interesadas de los productores de cacao de Nigeria en la utilización segura de plaguicidas. Participaron 57 personas y se realizaron entrevistas. Se observó, entre otras cosas, que los minoristas carecían de información acerca de la seguridad de los plaguicidas, ya que se centraban, principalmente, en la parte financiera y que no podían leer las etiquetas. Se concluyó falta de información sobre la seguridad de plaguicidas en este sector.

TÍTULO DEL TRABAJO	
Landscaping Work: Work-related Musculoskeletal Problems and Ergonomic Risk Factors (<i>Trabajo de jardinería: problemas musculoesqueléticos relacionados con el trabajo y factores de riesgo ergonómico</i>)	
PUBLICADO EN:	Risk Management and Healthcare Policy, Agosto 2021, Volumen 14, pp. 3411-3421
AUTORES:	Lim, Mei Ching; Lukman, Khamisah Awang; Giloi, Nelbon; Lim, Jac Fang; Salleh, Hazeqa; Radzran, Ahmad Syukri; Jeffree, Mohammad Saffree; Rahim, Syed Sharizman Syed Abdul
DOI:	10.2147/RMHP.S314843
RESUMEN:	<p>Background: Work-related musculoskeletal disorders (WRMSDs) are considered one of the foremost reason of disability globally with significant economic impact due to loss of productivity. Landscaping work is considered a high-risk industry in the service sector. Landscape workers are susceptible to WRMSDs as they are exposed to high physical demands at work, and exert significant physical effort to complete daily repetitive tasks during long working hours. The aim of this study was to determine the prevalence of WRMSDs and to identify the ergonomic risk factors among landscape workers in a university setting.</p> <p>Methods: This was a cross-sectional study conducted among landscape workers at a public university in Kota Kinabalu, Sabah. Interviews were conducted due to low literacy of the participants, using structured questionnaires which consist of personal characteristics, work descriptions, ergonomic risk factors, as well as self-reported WRMSD symptoms using NORDIC questionnaire. Ergonomic risk assessment (ERA) using rapid entire body assessment (REBA) was then conducted.</p> <p>Results: Fifty-five of 60 landscape workers agreed to participate (92% response rate). The overall prevalence of WRMSDs among landscape workers was 85.5%. The highest prevalence involving the shoulder (65.5%), followed by neck (23.6%), wrist/hand (23.6%), and lower back (20.0%) regions based on their self-reported WRMSD symptoms over the past 12 months. Awkward posture was the risk factor identified through ergonomic risk assessment (ERA) conducted by ERA trained personnel. None of the working postures during assessment was noted to be appropriate. Although no significant difference was associated with self-reported WRMSDs, majority of the landscape workers (71%) were classified as medium ergonomic risk group using REBA, with the remaining 29% considered to be high ergonomic risk group.</p> <p>Conclusion: Improvement in awareness campaigns, modification of working tools, and enhanced administrative approaches are among the control and prevention measures recommended to or the occurrence of WRMSDs.</p>

RESUMEN DE CONCLUSIONES EN ESPAÑOL:	<p>Se realizó una evaluación de trastornos musculoesqueléticos (TME) en jardineros que trabajaban en una universidad y se identificaron los factores de riesgo. Se emplearon cuestionarios como el Nordic, se realizó una evaluación de riesgos ergonómicos y se aplicó el método de evaluación REBA (Rapid Entire Body Assessment). Participaron 55 trabajadores. La aparición de TME en los trabajadores fue de 85,5%. La parte del cuerpo más afectada fue el hombro. El factor de riesgo fueron las posturas incómodas. No se determinaron posturas correctas durante la realización del trabajo. El 71% de los trabajadores se englobaron en un riesgo ergonómico medio según REBA y el resto como alto. Se propusieron medidas para la prevención de estos trastornos.</p>
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TÍTULO DEL TRABAJO	
Genetic Polymorphisms of Pesticide-Metabolizing Enzymes and Transporters in Agricultural Workers and Thyroid Hormone Levels <i>(Polimorfismos genéticos de enzimas y transportadores metabolizadores de plaguicidas en trabajadores agrícolas y niveles de hormonas tiroideas)</i>	
PUBLICADO EN:	Risk Management and Healthcare Policy, Agosto 2021, Volumen 14, pp. 3435-3451
AUTORES:	Sirivarasai, Jintana; Chanprasertyothin, Suwanee; Kongtip, Pornpimol; Woskie, Susan
DOI:	10.2147/RMHP.S314510
RESUMEN:	<p>Purpose: Chronic exposure to pesticides has been associated with thyroid dysfunction owing to their endocrine disruption ability. Genetic variations in genes encoding phase I and II enzymes and phase III transporters are partly responsible for individual responses to chemical pesticides. This study investigated the association between variations in genes involved in pesticide metabolism and altered thyroid hormone concentrations. Methods: We assessed thyroid-stimulating hormone (TSH), free triiodothyronine (FT3), and free thyroxine (FT4) in organic agriculture workers (n = 216) and workers who used chemical pesticides (n = 229). A questionnaire was used to collect sociodemographic, pesticide exposure, and health status data. Blood samples were analyzed for TSH, FT3, and FT4. Genomic DNA was extracted and genotyped using the TaqMan real-time PCR genotyping assay and restriction fragment length polymorphism method for 15 metabolically related genes. Results: Significant differences in the TSH (1.58 vs 1.12 μ IU/mL) and FT3 (0.34 vs 0.31 ng/dL) concentrations between the chemical and organic worker groups were observed. The frequencies of all single nucleotide polymorphisms were in Hardy-Weinberg equilibrium and were mostly consistent with Asian populations. The findings showed the association between SNPs of enzymes and transporters and TSH, FT3, and FT4. The odd ratio and adjusted odd ratio (with sex, age, smoking status, alcohol consumption and exposure parameters) for subclinical thyroid disease by the variant alleles CYP1A1 rs1048943, CYP2B6 rs2279343, CYP2C19 rs4244285, NAT2 rs1799931, and PON1 rs662 in the chemical workers compared with the organic workers were found (P values < 0.05). Conclusion: This is the first study to assess gene-environment interactions in Thai agricultural workers by investigating disruptions of the hypothalamic-pituitary-thyroid axis. The investigated SNP profiles revealed several gene-thyroid hormone associations in which even low levels of pesticide exposure could disturb thyroid homeostasis. These findings provide a foundation for planning future studies investigating associations between complex diseases and occupational pesticide exposure.</p>
RESUMEN DE CONCLUSIONES EN ESPAÑOL:	Este trabajo analizó la hormona tiroidea en relación con la exposición a plaguicidas. Evaluaron a agricultores que hacían uso de plaguicidas químicos y a aquellos que practicaban agricultura biológica. Se empleó un cuestionario y otras técnicas. Se concluyó la relación entre genes y

	hormonas tiroideas, en las que niveles de exposición bajos a plaguicidas podían variar la homeostasis tiroidea.
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