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Instituto Andaluz de Prevención de Riesgos Laborales

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Consejería de Empleo, Formación y Trabajo Autónomo

TABLA DE CONTENIDOS

NUEVOS TRABAJOS PUBLICADOS

1. ANNALS OF WORK EXPOSURES AND HEALTH

TÍTULO DEL TRABAJO	
Mosquito Control Workers in Malaysia: Is Lifetime Occupational Pesticide Exposure Associated with Poorer Neurobehavioral Performance? *(Trabajadores de control de mosquitos en Malasia: ¿Está la exposición a pesticidas a lo largo de la vida en el trabajo asociada con un peor rendimiento neuroconductual?)*	
PUBLICADO EN:	Annals of Work Exposures and Health, Octubre 2022, Volumen 66, Número 8, pp. 1044-1055
AUTORES:	Muhammad Zubir Yusof; John W Cherrie; Niza Samsuddin; Sean Semple
DOI:	10.1093/annweh/wxac038
RESUMEN:	Background Use of pesticides has been linked to neurobehavioral deficits among exposed workers. In Malaysia, organophosphate and pyrethroid pesticides are commonly used to control mosquito-borne diseases. Objectives This study aims to assess workers' lifetime occupational pesticide exposure and examine the relationship with neurobehavioral health. Methods A cross-sectional study was conducted on 158 pesticide-exposed and 176 non-exposed workers. To collect historical exposure and job tasks, a questionnaire and an occupational history interview were used. Pesticide exposure was measured in a subgroup of workers via inhalation and skin contact. The total pesticide intake of each worker was assessed using inhalation and dermal exposure models. CANTAB® computerised neurobehavioral performance assessments were used. Results The participants' mean age was 31 (8) years. Pirimiphos-methyl (median = 0.569 mg/m3, Interquartile range [IQR] = 0.151, 0.574) and permethrin (median = 0.136 mg/m3, IQR = 0.116, 0.157) had the highest measured personal inhalation concentrations during thermal spraying. The estimated total lifetime pesticide intake for exposed workers ranged from 0.006 g to 12800 g (median = 379 g and IQR = 131, 794 g). Dermal exposure was the predominant route of pesticide intake for all workers. Compared to controls, workers with high lifetime pesticide intake had lower Match to Sample Visual (adjusted B = −1.4, 95% Confidence Interval (CI) = −2.6, 0.1), Spatial Recognition Memory (adjusted B = −3.3, 95% CI = −5.8, 0.8), Spatial Span (SSP) (adjusted B = −0.6, 95% CI = −0.9, 0.3) scores. Workers with low pesticide intake performed worse than controls (adjusted B = −0.5, 95% CI = −0.8, −0.2) in the SSP test, but scored higher in the Motor Screening test (adjusted B = 0.9, 95% CI = 0.1, 1.6). Higher Paired Associates Learning test scores were observed among

	higher (adjusted B = 7.4, 95% CI = 2.3, 12.4) and lower (adjusted B = 8.1, 95% CI = 3, 13.2) pesticide intake groups. There was no significant difference between the Reaction Time and Pattern Recognition Memory tests with lifetime pesticide intake after adjusting for confounders. Conclusion Pesticide exposure has been linked to poorer neurobehavioral performance. As dermal exposure accounts for a major fraction of total intake, pesticide prevention should focus on limiting dermal exposure.
RESUMEN DE CONCLUSIONES EN ESPAÑOL:	El objetivo de este estudio fue analizar la exposición de trabajadores a pesticidas y estudiar su relación con la salud neuroconductual. Participaron 158 trabajadores que estaban expuestos a pesticidas y 176 que no. En el estudio se empleó un cuestionario y una entrevista. Se realizaron mediciones de exposición a pesticidas mediante inhalación y modelos de exposición dérmica. Para la salud neuroconductual se emplearon evaluaciones por ordenador. Los resultados mostraron que la exposición dérmica a pesticidas fue la que más se producía entre los trabajadores. Se concluyó que la exposición a pesticidas se relacionaba con un déficit neuroconductual.
TEMÁTICA	Exposición; Plaguicidas

TÍTULO DEL TRABAJO	
Development of a New Dislodgeable Foliar Residue Analytical Laboratory Method for Pesticides *(Desarrollo de un nuevo método de laboratorio analítico de residuos foliares desprendibles para plaguicidas)*	
PUBLICADO EN:	Annals of Work Exposures and Health, Octubre 2022, Volumen 66, Número 8, pp. 1070-1080
AUTORES:	Mohamed H Badawy: Darragh Murnane; Kathleen A Lewis; Neil Morgan
DOI:	10.1093/annweh/wxac045
RESUMEN:	The dislodgeable foliar residue (DFR) is the amount of pesticide that exists on foliage after the pesticide has dried and which could dislodge to the skin or clothes of workers and is a key parameter for non-dietary risk assessments required to demonstrate safe use for pesticide registration. DFR data in the literature are described as insufficiently reliable, limited, and encompasses considerable statistical uncertainties. The purpose of this article is to describe a newly developed laboratory method for the quantification of DFR with an illustrative example. The laboratory method reflected available field DFR methodology but involved controlled application of droplets to leaves and validation of the wash-off process used to remove the residue from the leaf surface before the analytical quantification. A very high level of accuracy (99.7–102.1%) and precision (±1.5%) was achieved. Residue data generated from the illustrated application of the method showed a robust normal distribution, unlike field studies. The method is deemed to be controllable, cost-efficient, and time-saving, taking hours rather than days. This enables the generation of more data to allow extrapolation between the generated data by investigating multiple factors that may influence DFR. An improved understanding of DFR could save time, money, and resources.
RESUMEN DE CONCLUSIONES EN ESPAÑOL:	Este estudio describió un método de laboratorio cuyo objetivo era cuantificar el residuo foliar desprendible (DFR). Se consiguió una gran precisión y exactitud. Se trató de un método rentable, controlable y que ocupaba menos tiempo, solamente unas horas. Se concluyó que el estudio de DFR tenía como consecuencia un ahorro económico, de tiempo y de recursos.
TEMÁTICA	Exposición; Plaguicidas

2. INDUSTRIAL HEALTH

TÍTULO DEL TRABAJO	
Risk factors associated with heat-related illness among sugarcane farmers in Thailand *(Factores de riesgo asociados con enfermedades relacionadas con el calor entre agricultores de caña de azúcar en Tailandia)*	
PUBLICADO EN:	Industrial Health, 2022, Volumen 60, pp. 447-458
AUTORES:	Kanpitcha Kiatkitroj; Sara Arphorn; Chaiyanun Tangtong; Suchinda Jarupat Maruo; Tomohiro Ishimaru
DOI:	10.2486/indhealth.2021-0161
RESUMEN:	Heatstroke is defined as severe symptoms of heat-related illness, which could lead to death. Sugarcane farmers are at high risk of heatstroke under extremely hot outdoor working conditions. We explored the prevalence of heat-related illness symptoms and risk factors related to heat-related illness among sugarcane farmers working in the summer. We conducted a cross-sectional study using questionnaire interviews among 200 sugarcane farmers in Kamphaeng Phet Province, Thailand. The questionnaire addressed demographics, heat-related symptoms experienced during summer at work, and occupational factors. Bioelectrical impedance analysis was used to assess body mass index and body fat percentage. Watson formula equations were used to estimate total body water. The prevalence of heat-related illness symptoms was 48%; symptoms included heavy sweating, weakness/fatigue, dizziness, muscle cramps, headache, and vertigo. Factors associated with heat-related illness included women and clothing. Sugarcane farmers wearing two-layer shirts had a higher risk of heat-related illness. Farmers with fluid intake 3.1–5.0 liters per day had a 79% lower risk of heat-related illness. Our findings demonstrated that sugarcane farmers are at risk of heat-related illness. We confirmed that working conditions, including wearing proper clothing and water-drinking habits, can reduce this risk.
RESUMEN DE CONCLUSIONES EN ESPAÑOL:	Los agricultores de caña de azúcar están continuamente expuestos a sufrir golpes de calor, que tienen consecuencias muy graves. Este estudio tuvo como objetivo analizar los factores de riesgo y síntomas de enfermedades relacionadas con el calor entre estos trabajadores durante los meses de verano. Participaron 200 agricultores en Tailandia. Se empleó un cuestionario y se analizó el índice de masa corporal, porcentaje de grasa y agua corporal. Los resultados mostraron que la aparición de síntomas de enfermedades producidas por calor fue del 48% (fatiga, mareos, sudoración, etc.). Uno de los factores de riesgo fue el tipo de ropa empleada. El riesgo era menor para los trabajadores que tomaban líquidos (entre 3 y 5 litros al día).
TEMÁTICA	Seguridad en el trabajo; Calor

TÍTULO DEL TRABAJO	
Presenteeism among fruit farm workers in Northeast Brazil: cross-sectional study *(Presentismo entre trabajadores de fincas de fruta en el Nordeste de Brasil: estudio transversal)*	
PUBLICADO EN:	Industrial Health, 2022, Volumen 60, pp. 525-534
AUTORES:	Vitória B. Siqueira; Fernando M. Carvalho
DOI:	10.2486/indhealth.2021-0105
RESUMEN:	The scientific literature about presenteeism among farm workers is scarce. This study estimated the prevalence of and factors associated with presenteeism among paid fruit farm workers. A cross-sectional study investigated 340 paid employees of both sexes, aged 18 years or above, who worked during the 2019 irrigated fruit harvest in the municipality of Petrolina, Northeast Brazil. Information about sociodemographic characteristics, lifestyle, general health status, occupational characteristics, interpersonal work aspects, and the work environment's structural characteristics was collected in a structured questionnaire. Presenteeism was established when participants reported working one or more days during the previous season despite feeling ill or when injured. Cox regression was used to estimate prevalence ratios adjusted by sex, area of residence (urban or rural), employment contract (permanent or seasonal), satisfaction with management, participation in workplace decision-making, availability of on-site healthcare facilities, and on-site availability of sunscreen. The prevalence of presenteeism during the previous season was high: 58.2%. In the final multivariate model, the adjusted prevalence ratio was higher (≥1.20) among female workers (1.42), workers dissatisfied with management (1.28), and those for whom sunscreen was not available on site (1.61). The prevalence of presenteeism was high and associated with personal, work organizational, and workplace resources characteristics.
RESUMEN DE CONCLUSIONES EN ESPAÑOL:	Se realizó un estudio a 340 trabajadores de fincas de frutas asalariados en Brasil. Los participantes eran hombres y mujeres, mayores de 18 años o con esta edad. El objetivo fue analizar la prevalencia y factores de presentismo laboral entre estos trabajadores. Se empleó un cuestionario, entre otras cosas, para recabar datos como estado de salud, estilo de vida, ambiente de trabajo, etc. Los resultados mostraron un presentismo elevado, del 58,2% en la temporada anterior, relacionándose con características personales, organización y recursos en el trabajo.
TEMÁTICA	Seguridad en el trabajo; Factores

3. INJURY PREVENTION

TÍTULO DEL TRABAJO	
Work-related injuries among farm workers engaged in agricultural operations in India: a cross-sectional study *(Lesiones relacionadas con el trabajo entre los agricultores que participan en operaciones agrícolas en India: un estudio transversal)*	
PUBLICADO EN:	Injury Prevention, Octubre 2022, Volumen 28, pp. 415-421
AUTORES:	Abhijit Khadatkar; K N Agarwal; L P Gite; L S Kot
DOI:	10.1136/injuryprev-2022-044541
RESUMEN:	**Purpose** We aim to investigate nature, risk factors as well as magnitude of farm injuries and fatalities among agricultural workers in rural India. **Methods** An Agricultural Injury Study (AIS) was conducted using selected 1703 villages in eight states of rural India based on statistical consideration using unstructured proforma for 3086 victims/respodents, who were mostly agricultural workers or farmers. Injury incidence rate (IIR) was estimated per 1000 machines/tools per year for farm machinery and hand tools injuries, and per 100 000 workers per year for other sources. Questions about the injuries involved in farming tasks were used. **Results** About 36.2% fatalities were caused by farm machinery that involves tractors. The IIR per year of farm machinery, hand tools and injuries due to other sources were 3.2 per 1000 machines, 0.7 per 1000 tools and 77 per 100 000 workers, respectively. Correlation between number of injury-prone agricultural machines and number of farm machinery injury is r=0.80 (number of injuries increases with increase in number of machines). The χ^2=72.53; p<0.01 of number of hand tools and number of farm hand tools-related injuries, that is, they are statistically significant. **Conclusion** Exposures to agricultural machineries during farming operations can result in injuries confounding that may be fatal or non-fatal. Mapping down the cause and taking preventive measure to reduce the losses are of major concern. Also, customised safety programme as well as legislative awareness is needed to be raised for the higher injury incidence group.
RESUMEN DE CONCLUSIONES EN ESPAÑOL:	Se investigaron las lesiones y muertes relacionadas con el trabajo en agricultores de India. Se realizaron encuestas a 3086 participantes, siendo la mayoría trabajadores del sector de la agricultura. Los resultados mostraron que el 36,2% de las muertes se debían al uso de máquinas, entre ellas tractores. Además, había más lesiones al aumentar el número de máquinas. Se concluyó la necesidad de adoptar medidas preventivas.
TEMÁTICA	Seguridad en el trabajo; Factores

TÍTULO DEL TRABAJO	
Agricultural work-related fatalities and injuries in Punjab (India) *(Muertes y lesiones relacionadas con el trabajo agrícola en Punjab, India)*	
PUBLICADO EN:	Injury Prevention, Octubre 2022, Volumen 28, pp. 459-464
AUTORES:	Shiv Kumar Lohan; Prashant Singh; Sunil Kumar
DOI:	10.1136/injuryprev-2022-044566
RESUMEN:	**Objective** Analysis of data on monetary compensation and estimating the rate of injuries related to agricultural activities in the state of Punjab. **Methods** The primary data were collected from 22 districts of Punjab state for 2012–2015 through Punjab State Agricultural Marketing Board, Mohali. Data were analysed for the nature of health hazards, type of injuries, possible causes and factors of injuries and their gender. **Results** During the four consecutive years (2012–2015) an overall 5888 hazards cases related to agricultural activities were reported from the state, out of which 1993 (33.85%) were fatal and 3895 (66.15%) were non-fatal injuries. Among the fatal cases, the leading causes reported were due to electric motors (34.47%), poisoning through snake bites (21.48%), poisoning through pesticide applications with sprayers (19.62%) and crushed under/falling from the tractors and related equipment (13.50%). The annual fatality rate of the state of Punjab was estimated as 14.14 per 100 000 agricultural workers, while the overall injury incidence rate was observed as 39.57 per 100 000 agricultural workers. **Conclusions** Majority of agricultural work-related health hazards in Punjab were mainly due to negligence, lack of knowledge/experience, restlessness/sleeplessness, inadequate safety measures, over speed and wrong practices employed by the operator. There is a need for better ergonomic controls, work environments and practices for the prevention of injuries and health hazards related to agricultural activities.
RESUMEN DE CONCLUSIONES EN ESPAÑOL:	En este estudio se evaluaron las lesiones relacionadas con el trabajo agrícola. Los datos se obtuvieron de 22 distritos de Punjab entre 2012 y 2015. Los resultados mostraron que durante ese período de tiempo se produjeron un 66,15% de lesiones en agricultores y un 33,85% de peligros que tuvieron consecuencias fatales. Se concluyó que los principales motivos que provocaban los peligros para los trabajadores de este sector eran la escasa experiencia o conocimientos, falta de medidas de seguridad en el trabajo, prácticas realizadas de forma equivocada, etc. Por lo tanto, existía la necesidad de tomar medidas para la prevención de riesgos.
TEMÁTICA	Seguridad en el trabajo; Factores

TÍTULO DEL TRABAJO	
Lifejacket wear and the associated factors among boaters involved in occupational boating activities on Lake Albert, Uganda: a cross-sectional survey *(El uso de chalecos salvavidas y los factores asociados entre los navegantes involucrados en actividades de navegación ocupacional en el lago Albert, Uganda: una encuesta transversal)*	
PUBLICADO EN:	Injury Prevention, Diciembre 2022, Volumen 28, pp. 513-520
AUTORES:	Frederick Oporia; Fred Nuwaha; Simon P S Kibira; Olive Kobusingye; Fredrick Edward Makumbi; Mary Nakafeero; Ronald Ssenyonga; John Bosco Isunju; Jagnoor Jagnoor
DOI:	10.1136/injuryprev-2022-044608
RESUMEN:	**Background** Drowning death rates in lakeside fishing communities in Uganda are the highest recorded globally. Over 95% of people who drowned from a boating activity in Uganda were not wearing a lifejacket. This study describes the prevalence of lifejacket wear and associated factors among boaters involved in occupational boating activities on Lake Albert, Uganda. **Methods** We conducted a cross-sectional survey, grounded on etic epistemology and a positivist ontological paradigm. We interviewed 1343 boaters across 18 landing sites on Lake Albert, Uganda. Lifejacket wear was assessed through observation as boaters disembarked from their boats and self-reported wear for those who 'always wore a life jacket while on the lake'. We used a mixed-effects multilevel Poisson regression, with landing site-specific random intercepts to elicit associations with lifejacket wear. We report adjusted prevalence ratios (PRs) at 95% confidence intervals. **Results** The majority of respondents were male, 99.6% (1338/1343), and the largest proportion, 38.4% (516/1343) was aged 20–29 years. Observed lifejacket wear was 0.7% (10/1343). However, self-reported wear was 31.9% (428/1343). Tertiary-level education (adjusted PR 1.57, 95% CI 1.29- 1.91), boat occupancy of at least four people (adjusted PR 2.12, 95% CI 1.28 - 3.52), big boat size (adjusted PR 1.55, 95% CI 1.13 - 2.12) and attending a lifejacket-use training session (adjusted PR 1.25, 95% CI 1.01 - 1.56) were associated with higher prevalence of self-reported lifejacket wear. Self-reported wear was lower among the 30–39 year-olds compared to those who were aged less than 20 years (adjusted PR 0.66, 95% CI 0.45 - 0.99). **Conclusion** Lifejacket wear was low. Training on lifejacket use may improve wear among boaters involved in occupational boating activities on Lake Albert.
RESUMEN DE CONCLUSIONES EN ESPAÑOL:	Debido al elevado número muertes por ahogamiento entre pescadores de un lago de Uganda y a que más del 95% de estos trabajadores no llevaban chaleco salvavidas, se realizó un estudio sobre la utilización de este tipo de chalecos y los factores asociados en navegantes del lago de Albert. Se llevó a cabo una encuesta a 1343 trabajadores. Se empleó la observación para analizar la utilización del chaleco salvavidas y también

	la información que proporcionaron los trabajadores. Se concluyó que apenas se empleaban los chalecos salvavidas y la necesidad de formación sobre este equipo de protección para aumentar su uso.
TEMÁTICA	Mejoras en el trabajo; Chalecos salvavidas

4. INTERNATIONAL JOURNAL OF INDUSTRIAL ERGONOMICS

TÍTULO DEL TRABAJO	
Active commuting and work ability: A cross-sectional study of chicken meat industry workers in Thailand *(Desplazamiento activo y capacidad laboral: un estudio transversal de los trabajadores de la industria de la carne de pollo en Tailandia)*	
PUBLICADO EN:	International Journal of Industrial Ergonomics, Septiembre 2022, Volumen 91, 103339
AUTORES:	Wantanee Phanprasit; Chotirot Chotiphan; Pajaree Konthonbut; Wisanti Laohaudomchok; Tiina M. Ikäheimo; Jouni J.K. Jaakkola; Simo Näyhä
DOI:	10.1016/j.ergon.2022.103339
RESUMEN:	There is ample evidence regarding positive health effects of cycling or walking to work (active commuting [AC]). However, little is known about the effects of AC on work ability. Therefore, we examined 422 Thai chicken meat industry workers who assessed their current work ability (CWA) compared to their lifetime best by assigning scores ranging from 0 to 10. The CWA was compared between active and non-active commuters using linear regression, cumulative distributions, and quantile regression. Overall, 46 workers (11%) were active commuters. The average CWA score was 8.2 (standard deviation, 1.3; range, 4–10). It was higher by 0.5 units (95% confidence interval: 0.2–0.8) in active commuters. Cumulative distributions showed higher CWA scores among active commuters throughout the CWA scale, with the greatest difference (one CWA unit) at scores of 8–9. This benefit of AC persisted after adjustments and was observed at the 33rd, 50th, and 67th percentiles of CWA but not at percentiles higher or lower than the aforementioned ones. The model-predicted CWA scores for selected combinations of personal and work-related factors were up to two units higher among active commuters. In conclusion, active commuters have better work ability than non-active commuters. However, the potential effects may be limited to workers with good work ability.
RESUMEN DE CONCLUSIONES EN ESPAÑOL:	Se evaluó si los desplazamientos activos (es decir, utilizar la bicicleta o ir caminando al trabajo) influían en la capacidad laboral de las personas. En esta investigación participaron 422 trabajadores dedicados a la industria de la carne de pollo en Tailandia. Se analizó la capacidad laboral actual de trabajadores que realizaban desplazamientos activos y no activos. Se concluyó, que los desplazamientos activos provocaban una mayor capacidad laboral.
TEMÁTICA	Seguridad y salud en el trabajo

5. INTERNATIONAL JOURNAL OF OCCUPATIONAL SAFETY AND ERGONOMICS

TÍTULO DEL TRABAJO	
Safety climate and risk perception of forestry workers: a case study of motor-manual tree felling in Indonesia *(Clima de seguridad y percepción del riesgo de los trabajadores forestales: un estudio de caso de tala de árboles manual a motor en Indonesia)*	
PUBLICADO EN:	International Journal of Occupational Safety and Ergonomics, 2022, Volumen 28, Número 4, pp. 2193-2201
AUTORES:	Efi Yuliati Yovi; Dalia Abbas; Takuya Takahashi
DOI:	10.1080/10803548.2021.1986306
RESUMEN:	Timber harvesting processes, especially motor-manual felling, are hazardous to forestry workers' health and safety. The purpose of this study is to examine forestry workers' mental safety models (at the supervisor and operator levels) using the Nordic safety climate questionnaire. This study also examines how operators and their families perceive workplace risks (dread and unknown risk factors). The safety climate analysis revealed that supervisors misunderstand management safety priority, competence, empowerment and justice. Additionally, this study found that operators do not yet prioritize safety. There was a lack of safety communication and operators' skepticism about the current safety system. These findings highlight the critical importance of implementing safety measures into operators' work environments. The risk perception analysis revealed that family members had a greater risk aversion to dread risk factors than operators. As a result, we see a possibility for family members to act as safety-net figures, bolstering the operators' safety values.
RESUMEN DE CONCLUSIONES EN ESPAÑOL:	La tala manual a motor es una tarea peligrosa para los trabajadores. Se empleó el Cuestionario Nórdico de Clima de Seguridad para analizar la seguridad mental en trabajadores forestales (operadores y supervisores). También se investigó la percepción de los riesgos por las familias de los operadores. Los resultados mostraron que los supervisores no tenían del todo claro el tema de la seguridad y los operadores no lo consideraban algo prioritario. Las familias sí tenían más conciencia sobre este tipo de riesgos laborales.
TEMÁTICA	Seguridad en el trabajo; Factores

TÍTULO DEL TRABAJO	
Research on factors affecting the risk-taking behavior of personnel working in the forest products sector *(Investigación sobre los factores que afectan el comportamiento arriesgado del personal que trabaja en el sector de productos forestales)*	
PUBLICADO EN:	International Journal of Occupational Safety and Ergonomics, 2022, Volumen 28, Número 4, pp. 2315-2323
AUTORES:	Muhammet Cil; Tarik Gedik
DOI:	10.1080/10803548.2021.1992175
RESUMEN:	Objectives. The fact that occupational accidents are a permanent problem in the forest products sector encouraged this research to be conducted on the factors affecting the risk-taking behavior (RTB) of employees in the sector. Understanding the RTB of employees in the sector would help managers to reduce occupational accidents and to develop effective safety interventions. Therefore, this study aimed to determine the effects of individual, organizational and workplace factors and sub-factors on the RTB of employees by using the structural equation model (SEM). Methods. A survey was conducted on 623 employees of the forest products sector in 64 enterprises in the provinces of Düzce, Bolu, Sakarya, Kocaeli and Yalova. Results. The results revealed that organizational and workplace factors had a significant effect on the RTB of the employees. However, no effect was found for individual factors, although the sub-factor of cognitive bias had a positive impact on RTB. In contrast, safety climate, safety training, use of personal protective equipment (PPE)-1 and working conditions negatively impacted the RTB of the employees. Conclusions. In terms of occupational health and safety, this study could serve to guide both sector managers and decision-makers on ways to improve the safety perception of their employees.
RESUMEN DE CONCLUSIONES EN ESPAÑOL:	Se investigaron los factores organizacionales, individuales y del entorno de trabajo que influían en el comportamiento arriesgado de los trabajadores del sector forestal. Participaron 623 trabajadores de 64 empresas, a los que se les realizó una encuesta. Los resultados mostraron que los factores que influían en este comportamiento fueron los laborales y organizaciones. Se concluyó la necesidad de modificar la percepción de seguridad de los trabajadores.
TEMÁTICA	Seguridad en el trabajo; Factores

6. JOURNAL OF AGROMEDICINE

TÍTULO DEL TRABAJO	
Exposure Assessment at a Pullet Barn - A Case Study *(Evaluación de la exposición en un granero de gallinas: un estudio de caso)*	
PUBLICADO EN:	Journal of Agromedicine, 2022, Volumen 27, Número 4, pp. 339-345
AUTORES:	Alexandra Farfalla; Chandran Achutan
DOI:	10.1080/1059924X.2021.1979154
RESUMEN:	Poultry production is an integral part of agriculture and of the U.S. economy, accounting for millions of eggs and chicken products consumed annually. Most ubiquitous to the poultry industry from farm production to research are broiler and layer poultry operations, with pullet operations at the forefront. Although essential to the cycles of production, there is a dearth of evidence regarding the occupational exposure risks of pullet production. The aim of this case study was to measure total dust and ammonia levels during the growth cycle of pullets. Ammonia and total dust concentrations were measured as single day measurements at three different points of time during the 16.5-week growth cycle of pullet flocks using two fixed sampling stations configured to represent the breathing zone height of poultry workers. As birds grew from chicks to hens, concentrations of total dust and ammonia increased. Notably, from 3 weeks-of-age to 9 weeks-of-age concentrations of total dust increased from 1.1–1.2 mg/m^3 to 16.0–18.0 mg/m^3; and from 9 weeks-of-age to 15 weeks-of-age, dust concentrations reached 43.0–50.0 mg/m^3. Concentrations of ammonia also increased from 9 weeks to 15 weeks from 1.1–2.7 ppm to 22.0–30.0 ppm. Both levels of ammonia and total dust reached levels that have the potential to induce adverse health effects among farmers raising pullets.
RESUMEN DE CONCLUSIONES EN ESPAÑOL:	Se analizó el nivel de polvo y amoníaco al que se exponían los trabajadores avícolas. Se realizaron mediciones en la zona de respiración de los trabajadores empleando estaciones de muestreo. Los resultados mostraron que, durante la etapa de crecimiento a gallinas, se producía un aumento del polvo y amoniaco, alcanzando niveles que podían ser perjudiciales para la salud de estos trabajadores.
TEMÁTICA	Exposición; Polvo y amoníaco

TÍTULO DEL TRABAJO	
Development of a Test Battery for Fatigue Assessment of Agriculture Seating Systems: A Laboratory and Field Study *(Desarrollo de una batería de pruebas para la evaluación de la fatiga de los sistemas de asientos agrícolas: un estudio de laboratorio y de campo)*	
PUBLICADO EN:	Journal of Agromedicine, 2022, Volumen 27, Número 4, pp. 346-358
AUTORES:	Hamid Norasi; Jonathan Drum; Thorsten Baldus; Gary Mirka
DOI:	10.1080/1059924X.2021.2024469
RESUMEN:	The objective of this project was to evaluate a battery of tests that could be used to assess fatigue development in the long-duration, seated operation of farming machinery. A battery of eight tests that had been previously used to assess aspects of human fatigue were assembled and human subject testing procedures (six participants in a laboratory study, eight in a field study) were employed to identify those tests that were sensitive to fatigue development in this context. In the laboratory study, participants maintained a seated posture for a period of 2 hours and experienced a controlled seat motion profile consistent with that of farm machinery working in a moderately rough field, while the field study participants experienced an 8–10 h ground preparation (heavy tillage with chisel plow) workday. The battery of tests considered included physiological assessments, human performance assessments, and subjective assessments. TIME was the independent variable. The non-parametric Kruskal–Wallis test was performed to assess the effects of TIME. Subjective assessments (Swedish Occupational Fatigue Inventory and Body Part Discomfort) had the strongest relationship with TIME, while two physiological assessments (heart rate and heart rate variability) were also shown to be affected by TIME. Subjective assessments were the strongest measures and objective measures heart rate and heart rate variability were effective at showing fatigue of the seated machinery operators. Human performance assessment approaches were not found to be predictors of fatigue of the seated operator.
RESUMEN DE CONCLUSIONES EN ESPAÑOL:	Se evaluó una serie de pruebas que se emplearían para investigar la fatiga en trabajadores que permanecían sentados en maquinaria agrícola. Se utilizaron ocho pruebas y participaron seis personas en estudio de laboratorio y ocho en estudio de campo. Se tuvo en cuenta el tiempo que permanecían sentados los trabajadores, siendo para los del estudio de laboratorio de 2 horas y para los del estudio de campo de 8 a 10 horas. Las pruebas incluían evaluaciones de desempeño humano, fisiológicas y subjetivas. Solamente las dos últimas evaluaciones (fisiológicas y subjetivas) fueron útiles para evaluar la fatiga en estos trabajadores.
TEMÁTICA	Accidentes o lesiones laborales; Fatiga

TÍTULO DEL TRABAJO	
Protecting Young Agricultural Workers: The Development of an Online Supervisor Training *(Protección de los agricultores jóvenes: el desarrollo de una formación online para supervisores)*	
PUBLICADO EN:	Journal of Agromedicine, 2022, Volumen 27, Número 4, pp. 359-367
AUTORES:	Diane S. Rohlman; Shelly Campo; Megan TePoel
DOI:	10.1080/1059924X.2021.1979155
RESUMEN:	Adolescents and young adults working in agriculture are at greater risk of injury. We describe the development of an online safety and health training for people who hire, teach, or supervise young agricultural workers. The online training targeted specific skills supervisors can use to effectively supervise, train, and communicate with young workers about health and safety hazards that impact injury risk. Consistent with NIOSH's evidence-based Total Worker Health® approach, the training integrated safety and health promotion and was also informed by behavioral change theories. An iterative approach was used to develop and evaluate the training. A content review provided feedback on topics and organization of material. Safety and health experts assessed the revised training content and rated the training topics on clarity, accuracy, and completeness. Finally, a pilot study with employers and health and safety professionals was used to evaluate the training materials. The content review suggested ways to reorganize the material to improve flow and reduce redundancy. Ratings of clarity, accuracy, and completeness were high, ranging from 5 to 7 (mean ratings from 5.8 to 7.0) on a scale of 1 ("does not do this at all") to 7 ("does this very well"). The pilot study led to changes in wording and items used to assess knowledge. A theoretically-informed approach was used to develop an online supervisor training to increase awareness and build skills. An iterative process that included expert review, evaluation of learning competencies, and a pilot study with the end-users is described.
RESUMEN DE CONCLUSIONES EN ESPAÑOL:	Se desarrolló una formación en modalidad online para trabajadores encargados de contratar, formar y supervisar a los agricultores jóvenes. La formación se basaba en la seguridad y salud en el trabajo y en cambios de comportamiento. Se realizó una revisión de los contenidos de la formación, que condujo a una reorganización del material. Personal experto en seguridad y salud analizó el temario y lo evaluó según claridad, precisión e integridad, obteniendo calificaciones altas. Se realizó también un estudio piloto para la evaluación del material de la formación, dando lugar a modificaciones de redacción y de los ítems empleados para evaluar.
TEMÁTICA	Seguridad en el trabajo; Formación online

TÍTULO DEL TRABAJO	
The NIOSH Agricultural Centers' YouTube Channel: Time Series Modeling of Viewership of Agricultural Health and Safety Videos *(Canal de YouTube de los Centros Agrícolas de NIOSH: Modelado de series temporales de audiencia de videos de salud y seguridad agrícola)*	
PUBLICADO EN:	Journal of Agromedicine, 2022, Volumen 27, Número 4, pp. 368-377
AUTORES:	Cheryl L. Beseler; Kathryn J. Crawford; Devon E. Charlier; Athena K. Ramos
DOI:	10.1080/1059924X.2021.2000907
RESUMEN:	We sought to understand the mechanism underlying the growth trajectory in the United States Agricultural Safety and Health Centers YouTube channel. We also explored the benefits and limitations of using YouTube analytics to evaluate the impacts of public health interventions involving YouTube. Time series analysis of total views, total watch hours, average duration of watch time, and number of subscribers were assessed to determine the monthly patterns of non-seasonal and seasonal components in the data from 2013 to 2020. Health, safety, and animal handling video views were summarized descriptively across time and season. Lastly, time series regressions were used to determine the type of video that best predicted growth in the channel viewership metrics. The time series were not random but could be explained by autoregressive and moving average correlation structures. Health videos were the strongest predictors of future growth but were not the most watched type of video. Strong seasonality components indicated that videos were most watched during periods of high agricultural activity, but less so during the winter months. Generally, growth in YouTube viewership metrics was explained by past month viewership predicting future viewership. Outreach and media content may produce spikes of increased interest, but in order to sustainably grow the channel over time, Ag Centers and other agricultural stakeholders should continue to focus on the value of particular content to potential viewers, how and when content is released, and strategic promotion of the channel and its videos.
RESUMEN DE CONCLUSIONES EN ESPAÑOL:	Se investigó principalmente la evolución del canal de YouTube de los Centros de Seguridad y Salud Agrícola de Estados Unidos. Se analizó el número de visualizaciones, el tiempo de visualización, el número de suscriptores, etc. en los años de 2013 a 2020. Se concluyó que para una evolución positiva del canal de YouTube era necesario seguir centrándose en un contenido determinado para la audiencia potencial, en la forma y frecuencia de publicar contenido y en dar a conocer el canal y los vídeos.
TEMÁTICA	Seguridad y salud en el trabajo; Información

TÍTULO DEL TRABAJO	
Prevalence and Risk Factors for Pulmonary Conditions among Farmers and Ranchers in the Central United States *(Prevalencia y factores de riesgo de afecciones pulmonares entre agricultores y ganaderos en el centro de los Estados Unidos)*	
PUBLICADO EN:	Journal of Agromedicine, 2022, Volumen 27, Número 4, pp. 378-390
AUTORES:	Jagadeesh Puvvula; Lorena Baccaglini; Anthony Johnson; Yi Du; Jesse E. Bell; Risto H. Rautiainen
DOI:	10.1080/1059924X.2021.2025180
RESUMEN:	This study was conducted to evaluate the prevalence and risk factors for work-related respiratory conditions (asthma, farmer's lung, sinusitis, rhinitis, and environmental allergies, diagnosed by a physician) among farm and ranch operators in the central US. A survey was conducted by the Central States Center for Agricultural Safety and Health (CS-CASH) in 2018, focusing on work-related injuries, illnesses, exposures, and preventive measures in a seven-state region (Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, and South Dakota). Farms and ranches (n = 16,818) with an email address and annual sales exceeding $5,000 were randomly selected for the survey. Agricultural production and weather data were merged with survey responses. The relationship between exposures and respiratory conditions was analyzed using generalized estimating equations. We received responses from 3,268 agricultural operations (19% response rate) containing information on 4,064 individual operators. The life-time prevalence of (any) respiratory conditions among farm/ranch operators was 18%. Risk factors for respiratory conditions included exposures to grain/hay/feed dust (OR 2.41), animal confinement dust (OR 1.57), field/road dust (OR 2.11), manure/silage gasses (OR 1.66), anhydrous ammonia (OR 1.51), fuels/solvents/paints (OR 1.92), older age group >70 vs. <43 (OR 1.40), female gender (OR 1.82), and being primary vs. third operator (OR 1.61). Farmers and ranchers have a high prevalence of respiratory conditions associated with dust and gas exposures at work. More effective protective measures are needed using the hierarchy of controls, including improved use of respiratory protection.
RESUMEN DE CONCLUSIONES EN ESPAÑOL:	Se investigaron los problemas respiratorios en agricultores y ganaderos y los factores de riesgo asociados. Para ello, se realizó una encuesta sobre estos problemas, las exposiciones y medidas de prevención en siete estados. También se obtuvo información meteorológica y de producción agrícola. Los resultados mostraron que un 18% de los trabajadores sufrían problemas respiratorios de por vida. Como factores de riesgo se determinaron exposiciones a distintos productos (polvo, estiércol, combustibles, granos, etc.), edad avanzada, género y rango del puesto de trabajo. Se concluyó la necesidad de medidas como una mejor utilización de la protección respiratoria.
TEMÁTICA	Seguridad en el trabajo; Factores

TÍTULO DEL TRABAJO	
Community Health Workers' Role in Addressing Farmworker Health Disparities *(Rol de los trabajadores comunitarios de la salud para abordar las disparidades en la salud de los trabajadores agrícolas)*	
PUBLICADO EN:	Journal of Agromedicine, 2022, Volumen 27, Número 4, pp. 391-401
AUTORES:	Emery L. Harwell; Catherine E. LePrevost; Leslie E. Cofie; Joseph G. L. Lee
DOI:	10.1080/1059924X.2022.2040069
RESUMEN:	Community health workers (CHWs) are uniquely positioned to connect migrant and seasonal farmworkers to health promotion and clinical services. However, research on CHWs' experiences, particularly related to their provision of health education to farmworkers, is limited. To explore CHWs' practices and challenges in conducting health education outreach, we conducted three focus group discussions with farmworker health CHWs (N = 28) in North Carolina in the spring of 2020. We analyzed the focus group transcripts, and we compared the code outputs, thematic code summaries, and memos maintained throughout the analytic process to examine the experiences of CHWs in acquiring and disseminating health information and resources, including use of technology. We identified three themes related to CHWs' experiences providing health information to farmworkers. First, CHWs described short-term preparation, immediately before providing health outreach, and long-term activities, devoted to maintaining and improving their capacity to provide relevant health information to farmworkers. Second, they described their use of health education delivery methods, including open-ended questions, participatory and interactive approaches, and non-verbal aids. Third, participants described their current use of technology and related challenges, as well as the technology needed to enhance health outreach, including internet access. Findings reveal opportunities to improve farmworker health education through professional development for CHWs, identification of preferred methods of health education delivery to farmworkers, and provision of technology to farmworker-serving organizations. Establishing rural internet access and equipping outreach organizations with technology would position CHWs to be maximally effective as they strive to reduce farmworkers' health inequities.
RESUMEN DE CONCLUSIONES EN ESPAÑOL:	Se estudiaron las actividades de los trabajadores comunitarios de la salud con agricultores mediante discusiones de grupos focales en Carolina del Norte, en el año 2020. Se analizó la recopilación y difusión de información, los recursos de salud empleados y la utilización de tecnología por parte de estos trabajadores comunitarios. Los resultados mostraron oportunidades de mejora de la formación en salud de los agricultores mediante el desarrollo profesional de los trabajadores comunitarios de la salud, la determinación de las metodologías que prefieren los agricultores para recibir esta formación y el fomento de los recursos tecnológicos.
TEMÁTICA	Seguridad y salud en el trabajo; Información

TÍTULO DEL TRABAJO	
Risk Factors for Occupational Falls among Middle-aged and Elderly Farm Workers in Nan Province, Thailand (Factores de riesgo de caídas relacionadas con el trabajo entre trabajadores agrícolas de mediana edad y ancianos en la provincia de Nan, Tailandia)	
PUBLICADO EN:	Journal of A agromedicine, 2022, Volumen 27, Número 4, pp. 402-408
AUTORES:	Sara Arphorna; Tomohiro Ishimaru; Teepapipat Lertvarayut
DOI:	10.1080/1059924X.2022.2040071
RESUMEN:	As the workforce ages, the incidence of occupational falls is increasing. However, risk factors for occupational falls in farm workers have not been evaluated in detail. The current study sought to identify the risk factors for occupational falls among middle-aged and elderly farm workers in Thailand. We conducted a cross-sectional study using a self-administered questionnaire among 419 farm workers aged ≥40 years in Nan province, Thailand. Multiple logistic regression analysis was used to examine the factors associated with occupational falls. Occupational falls were experienced by 25.5% of participants. Men had 2.22 times higher odds of occupational falls than women (95% confidence interval [CI]: 1.19–4.13). Participants aged ≥60 years were less likely to experience occupational falls compared with those aged 40–49 years (odds ratio [OR]: 0.44; 95% CI: 0.20–0.96). Fruit growers were 2.72 times more likely to experience occupational falls than rice growers (95% CI: 1.33–5.55). Individuals with body mass index ≥30 kg/m2 and over were 3.05 times more likely to experience occupational falls than those with body mass index <25 kg/m2 (95% CI: 1.11–8.40). The sex- and age-related trends in fall risk may indicate that elderly individuals and women in agriculture tend to be assigned lighter duties through work accommodation. To prevent falls during agricultural work, it is necessary to pay attention to farm-specific tasks and work environments, such as working at a height in fruit cultivation, as well as instability of walking caused by obesity.
RESUMEN DE CONCLUSIONES EN ESPAÑOL:	Se estudiaron los factores de riesgo asociados a caídas de agricultores de edad media y avanzada en Tailandia. Se empleó un cuestionario y participaron 419 agricultores de 40 años o mayores. Un 25,5% de los trabajadores habían sufrido caídas de este tipo. La probabilidad de que se produjeran fue mayor en hombres, en una franja de edad entre 40 y 49 años, en productores de frutas y cuando el índice de masa corporal era igual o mayor a 30 kg/m^2. Se concluyó la necesidad de actuaciones para la prevención de este tipo de caídas.
TEMÁTICA	Seguridad en el trabajo; Caídas

TÍTULO DEL TRABAJO	
1955: The Entre` of Medicine and Public Health into the Field of Agricultural Occupational Safety and Health *(1955: El centro de medicina y salud pública en el campo de la seguridad y salud en el trabajo agrícola)*	
PUBLICADO EN:	Journal of Agromedicine, 2022, Volumen 27, Número 4, pp. 409-418
AUTORES:	Kelley J. Donham
DOI:	10.1080/1059924X.2022.2040070
RESUMEN:	The University of Iowa Institute of Agricultural Medicine (IAM) played a significant role in the development of the field of agricultural medicine. This article is an excerpt from the electronic book The Institute of Agricultural Medicine: an Iowa Idea – Worldwide Impact, 2021 (https://pressbooks.uiowa.edu/agriculturalmedicinehistory/) which provides a detailed history of this story. Olaus Magnus (a clergyman in the Christian Church) in Sweden in 1555, and Bernardon Ramazzini (a physician) in Italy in 1713 wrote of health conditions in farmers. However, there is no evidence found (in the Western Hemisphere) before 1955, where a specific institute was present for the preventive health and medicine for farmers, their families, and their workers. There was an absence of research and outreach in the medical and public health fields in agricultural medicine. The history of the Institute of Agricultural Medicine (IAM) provides a substantive grounding for the field as it stands today. Further, the institute serves as something of a precursor of the One Health Initiative. Here, we trace the history of the institute and highlight its contributions to today's field of agricultural medicine.
RESUMEN DE CONCLUSIONES EN ESPAÑOL:	Este documento se trata de un extracto del libro "The Institute of Agricultural Medicine: an Iowa Idea – Worldwide Impact, 2021 (https://pressbooks.uiowa.edu/agriculturalmedicinehistory/)". Se revisa la historia del Instituto de Medicina Agrícola de la Universidad de Iowa y su gran labor en el desarrollo del ámbito de la medicina agrícola.
TEMÁTICA	Seguridad y salud en el trabajo

7. JOURNAL OF SAFETY RESEARCH

TÍTULO DEL TRABAJO	
Safer tomorrow: Irish dairy farmers' self-perception of their farm safety practices *(Un mañana más seguro: autopercepción de los ganaderos lecheros irlandeses sobre sus prácticas de seguridad en la explotación)*	
PUBLICADO EN:	Journal of Safety Research, Septiembre 2022, Volumen 82, pp. 450-458
AUTORES:	Tracey O'Connor; Jim Kinsella; Denis O'Hora; John McNamara; David Meredith
DOI:	10.1016/j.jsr.2022.07.012
RESUMEN:	*Introduction:* Encouraging safe work practices (SWPs) is challenging in agriculture. Group-based social learning has effectively promoted SWPs and health behaviors in other occupations, and could be applied in agriculture (e.g., through farmer discussion groups (DGs)). In Ireland, dairy DG members are more likely to adopt novel technologies and practices, a relationship that might extend to SWPs. The extent of SWP adoption among Irish dairy farmers is unknown. This paper evaluates a 2018 baseline study of SWP implementation, conducted as part of a dairy DG-based intervention study. *Method:* A paper-based survey of SWP implementation and safety self-perception was distributed to 1,220 farmers from 84 dairy DGs. For eight SWPs, associated with high-risk farm hazards (livestock, slurry, machinery, or tractors), farmers were asked how frequently they implemented these practices in the previous year, and how frequently they intended to do so next year (0: never, 1: rarely, 2: sometimes, 3: most of the time, 4: all of the time). *Results:* Surveys were completed by 460 farmers. For the previous year, three SWPs, related to slurry, machinery, and tractor hazards, scored a median frequency of four. Four SWPs, related to livestock, slurry, and machinery hazards, scored a median frequency of three. The lowest median score (two) was for tractor exit behavior. Median intention scores matched or exceeded past frequency for all SWPs, while 73% intended to increase implementation of at least one SWP. Most (96%) considered themselves a "safe farmer." *Conclusions:* Farmers generally perceived themselves to be safe at work, which is reflected in their SWP implementation. Most farmers intended to increase SWP implementation, suggesting awareness of safety shortcomings and a desire to farm more safely. *Practical applications:* This study can inform farm safety promotion initiatives. The disconnect between farmers' safety self-perception and SWP implementation merits further research.
RESUMEN DE CONCLUSIONES EN ESPAÑOL:	En este estudió se realizó una encuesta acerca de la utilización de prácticas de trabajo seguras y la percepción que tenían los agricultores sobre seguridad. Participaron 1220 agricultores, de los cuales solamente 460 rellenaron las encuestas. Los resultados mostraron, entre otras muchas cosas, que el 96% de los trabajadores consideraban que realizaban el trabajo de forma segura. De todos modos, la mayor parte de los ellos querían implementar más prácticas laborales seguras.
TEMÁTICA	Seguridad y salud en el trabajo

TÍTULO DEL TRABAJO	
Ensuring data quality and maximizing efficiency in coding agricultural and forestry injuries: Lessons to improve occupational injury surveillance *(Asegurando la calidad de los datos y maximizando la eficiencia en la codificación de lesiones agrícolas y forestales: Lecciones para mejorar la vigilancia de lesiones relacionadas con el trabajo)*	
PUBLICADO EN:	Journal of Safety Research, Diciembre 2022, Volumen 83, pp. 323-328
AUTORES:	Erika Scott; Liane Hirabayashi; Kevin Luschen; Nicole Krupa; Paul Jenkins
DOI:	10.1016/j.jsr.2022.09.006
RESUMEN:	*Introduction:* Specialized occupational injury surveillance systems are filling the gap in the undercount of work-related injuries in industries such as agriculture and forestry. To ensure data quality and maximize efficiency in the operation of a regional occupational injury surveillance system, the need for continued dual coding of occupational injury records was assessed. *Methods:* Kappa scores and percent agreement were used to compare interrater reliability for assigned variables in 1,259 agricultural and forestry injuries identified in pre-hospital care reports. The variables used for the comparison included type of event, source of injury, nature of injury, part of body, injury location, intentionality, and farm and agriculture injury classification (FAIC). *Results:* Kappa (κ) ranged from 0.2605 for secondary source to 0.8494 for event and exposure. Individual coder accuracy ranged from medium to high levels of agreement. Agreement beyond the first digit of OIICS coding was measured in percent agreement, and type of event or exposure, body part, and primary source of injury continued to meet levels of accord reaching 70% or greater agreement between all coders and the final choice, even to the most detailed 4th digit of OIICS. *Conclusions:* This research supports evidence-based decision making in customizing an occupational injury surveillance system, ultimately making it less costly while maintaining data quality. We foresee these methods being applicable to any surveillance system where visual inspection and human decisions are levied. *Practical Applications:* Assessing the rigor of occupational injury record coding provides critical information to tailor surveillance protocols, especially those targeted to make the system less costly. System administrators should consider evaluating the quality of coding, especially when dealing with free-text narratives before deciding on single coder protocols. Further, quality checks should remain a part of the system going forward.
RESUMEN DE CONCLUSIONES EN ESPAÑOL:	Se evaluó la codificación de registros de lesiones relacionadas con el trabajo en agricultura y silvicultura. Se emplearon puntuaciones de Kappa y otras herramientas. Se analizó el tipo de evento, la naturaleza de la lesión, la zona corporal, etc. Se concluyó que estos métodos podrían utilizarse en cualquier sistema de vigilancia de este tipo.
TEMÁTICA	Seguridad y salud en el trabajo

8. SAFETY SCIENCE

TÍTULO DEL TRABAJO	
Prevention of accidents in facilities for the treatment and storage of selected agricultural products *(Prevención de accidentes en instalaciones de tratamiento y almacenamiento de productos agrícolas seleccionados)*	
PUBLICADO EN:	Safety Science, Septiembre 2022, Volumen 153, 105800
AUTORES:	Petr Trávníček; Luboš Kotek; Petr Junga
DOI:	10.1016/j.ssci.2022.105800
RESUMEN:	Process safety in the storage and processing of agricultural products is an important aspect related not only to reducing the risk of damage to the human health or property, but is also strategical to national food safety. A special emphasis must therefore be placed on risk assessment of the operation of these facilities. One of the cornerstones of the risk assessment process is the use of knowledge of past accidents. As the agricultural industry is rather marginal in the field of safety engineering compared to other sectors of the economy, available publications dealing with this topic are rather an exception. The aim of this paper is to conduct research on the available information on accidents that have occurred in agricultural processing and storage facilities in the past. The purpose is to provide professionals and operators with a comprehensive source of information useful for activities related to the prevention of these accidents. The output of the work is then a previously unrealised representative database of systematically sorted information on accidents that have occurred in the process of treatment or storage of agricultural products. This information was subsequently analysed and evaluated. The created database consists of 195 records of accidents that occurred between 1989 and 2018. To create a unique representative database, mainly publicly available databases of industrial accidents or professional publications were used. The author's database contains information on accident locations, accident causes and accident prevention measures. A total of 21 persons died and 32 persons were injured during the accidents. The analysis shows that fires are the most frequent manifestation of accidents (86%) and accidents in material handling facilities are the most frequent (33%). According to the information available in the database, organisational factors were identified as the most frequent causative factors of accidents (47%). For a better understanding of the accident process, a description of selected accident scenarios was also provided in the work. A linear model was used for this purpose. Due to the strategic importance of the evaluated facilities for processing and storage of agricultural products, efforts are made to prevent accidents from recurring or to reduce their impact on the surrounding area. Therefore, an integral part of the work is the description of possible measures against the recurrence of similar accidents.

RESUMEN DE CONCLUSIONES EN ESPAÑOL:	Se llevó a cabo una revisión de la información existente acerca de accidentes producidos en instalaciones de almacenamiento y procesamiento del sector de la agricultura. Se creó por tanto una base de datos con 195 accidentes comprendidos entre 1989 y 2018. Se aportaron datos como lugares en los que habían ocurrido los accidentes, sus causas y las actuaciones para su prevención. Se describieron medidas para evitar la repetición de accidentes o reducirlos.
TEMÁTICA	Seguridad y salud en el trabajo; Información

9. SAFETY AND HEALTH AT WORK

TÍTULO DEL TRABAJO	
Discrepancies Between Implementation and Perceived Effectiveness of Leading Safety Indicators in the US Dairy Product Manufacturing Industry *(Discrepancias entre la implementación y la eficacia percibida de los principales indicadores de seguridad en la industria de productos lácteos de EE. UU.)*	
PUBLICADO EN:	Safety and Health at Work, Septiembre 2022, Volumen 13, Número 3, pp. 343-349
AUTORES:	Peter Van Derlyke; Luz S. Marín; Majed Zreiqat
DOI:	10.1016/j.shaw.2022.04.004
RESUMEN:	Background In the United States, the dairy product manufacturing industry has consistently had higher rates of work-related nonfatal injuries and illnesses compared to the national average for industries in all sectors. The selection and implementation of appropriate safety performance indicators are important aspect of reducing risk within safety management systems. This study examined the leading safety indicators implemented in the dairy product-manufacturing sector (NAICS 3115) and their perceived effectiveness in reducing work-related injuries. Methods Perceptions were collected from individuals with safety responsibilities in the dairy product manufacturing facilities. OSHA Incident Rate (OIR) and Days away, restricted and transferred (DART) rates from 2013 to 2018 were analyzed. Results The perceived most effective leading were safety observations, stop work authority, near miss reporting, safety audits, preventative maintenance, safety inspections, safety training attendance, and job hazard analysis/safety analysis, respectively. The 6-year trend analysis showed that those implementing all eight top indicators had a slightly lower rates than those that did not implement all eight. Production focused mentality, poor training, and lack of management commitment were perceived as the leading causes of injuries in this industry. Conclusion Collecting leading indicators with the unique interest to meet the regulatory requirements and to document the management system without the actual goal of using them as input to improve the system most probably will not lead to an effective reduction of negative safety outcomes. For leading indicators to be effective, they should be properly selected, executed, periodically evaluated and actions are taken when necessary.
RESUMEN DE CONCLUSIONES EN ESPAÑOL:	Se analizaron los indicadores de seguridad principales de la industria láctea y su eficacia según percepción con el objetivo de disminuir las lesiones de origen laboral. Para ello se tomaron datos sobre la percepción de trabajadores de este ámbito encargados de la seguridad.

	Se evaluaron también tasas de incidentes. Según los resultados, los indicadores más relevantes fueron: observación, informes, auditorías, mantenimiento preventivo, inspecciones, formación, análisis de riesgos e interrupción del trabajo, todo con relación a la seguridad. Se concluyó que para que estos indicadores fueran útiles tenían que seleccionarse, adoptarse, evaluarse cada cierto tiempo y realizar acciones en caso necesario.
TEMÁTICA	Accidentes o lesiones laborales; Industria láctea

TÍTULO DEL TRABAJO	
Ergonomic Evaluation of Young Agricultural Operators Using Handle Equipment Through Electromyography and Vibrations Analysis Between the Fingers (Evaluación ergonómica de jóvenes operadores agrícolas utilizando equipos mediante electromiografía y análisis de vibraciones entre los dedos)	
PUBLICADO EN:	Safety and Health at Work, Diciembre 2022, Volumen 13, Número 4, pp. 440-447
AUTORES:	Federico Roggio; Ermanno Vitale; Veronica Filetti; Venerando Rapisarda; Giuseppe Musumeci; ElioRomano
DOI:	10.1016/j.shaw.2022.07.003
RESUMEN:	Background Agricultural handle equipment is present on all production areas' farms. They are handy and portable; however, excessive use can lead to acute traumas or accidental injuries. Repetitive movements, awkward postures, and hand-arm vibrations predispose them to pain and work-related musculoskeletal disorders. The purpose of this study was to observe the interaction of handle equipment in terms of electromyographic activity and analyze the postural work-related alterations. Materials and methods Twenty male agricultural operators, mean age 24 ± 1.54 years, underwent the electromyographic analysis testing their muscular activities with a brushcutter, electric saw, and hedge trimmer in four different test conditions. Results The brushcutter proved to be the agricultural handle equipment with the higher mean frequency (3.37 ± 0.38 Hz) and root mean square (5.25 ± 1.24 ms−2). Furthermore, the digital postural analysis showed a general asymmetry of the main arm and the respective side of the trunk. The head resulted right inclined in the anterior frontal plane by 5.7° ± 1.2°; the right scapula lower than the left in the posterior frontal plane (8.5° ± 1.8°), and a working trunk inclination of 34.15° ± 5.7°. Conclusions Vibrations of handle equipment and awkward working postures represent a risk for agricultural operators. Preventive measures are required to avoid young operators from experiencing musculoskeletal disorders all lifelong.
RESUMEN DE CONCLUSIONES EN ESPAÑOL:	El empleo excesivo de equipos de manejo agrícola puede dar lugar a lesiones o enfermedades laborales en los trabajadores. Se realizó un análisis con electromiografía de 20 agricultores hombres, de aproximadamente 24 años, durante el uso de una desbrozadora, una sierra eléctrica y una podadora de setos en diferentes condiciones. Se concluyó que tanto las vibraciones de dichos equipos como las posturas adoptadas por los agricultores durante su uso suponían un riesgo para la

	salud, siendo necesaria la adopción de medidas preventivas para evitar el desarrollo de trastornos musculoesqueléticos.
TEMÁTICA	Electromiografía; Procesamiento de datos

10. INTERNATIONAL JOURNAL OF ENVIRONMENTAL RESEARCH AND PUBLIC HEALTH

TÍTULO DEL TRABAJO	
Ergonomic Improvements to Agricultural Harvest Baskets to Reduce the Risk of Musculoskeletal Disorders among Farmers *(Mejoras ergonómicas en las cestas de cosecha agrícola para reducir el riesgo de trastornos musculoesqueléticos entre los agricultores)*	
PUBLICADO EN:	International Journal of Environmental Research and Public Health, Septiembre 2022, Volumen 19, Número 17, 10669
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DOI:	10.3390/ijerph191710669
RESUMEN:	Typical harvesting baskets (TB) are used in various agricultural workplaces; however, no study to date has reported their effect on the musculoskeletal system. Therefore, this study aimed to evaluate the effects of a novel basket with attached rotational handles (RHB) to help alleviate the work-related physical burden of farmers. We analyzed the surface electromyograms (EMGs) of seven muscles, evaluated the subjective discomfort levels and locally perceived discomfort (LPD) scores to investigate the discomfort in the whole body and seven hand muscles, respectively. The EMGs showed that muscle activity decreased in five muscles (flexor carpi ulnaris, extensor carpi radialis, lateral triceps, middle deltoid, and upper trapezius) and increased in two (biceps brachii and erector spinae) when the RHB was used ($p < 0.05$). The subjective discomfort score for the RHB decreased compared to that for TB ($p < 0.001$). The LPD scores also decreased, and the RHB and TB scores ranged from 1.25–1.40 and 3.1–3.25, respectively. The use of the RHB may prevent wrist bending, and reduce the activity of certain muscles while increasing the activity of other muscles. Therefore, it is necessary to conduct training and to evaluate the working posture while considering the affected muscles.
RESUMEN DE CONCLUSIONES EN ESPAÑOL:	Se analizó si disminuía la carga física de agricultores durante la cosecha al utilizar una cesta nueva realizada con asas giratorias. Se empleó electromiografía de superficie en siete músculos y se investigó el malestar con algunas herramientas. La electromiografía mostró que la carga muscular fue menor en cinco de los músculos evaluados, pero se incrementó en los dos restantes. El malestar también disminuyó.
TEMÁTICA	Seguridad y salud en el trabajo; Trabajo físico

TÍTULO DEL TRABAJO	
Predictors of Low Back Pain Risk among Rubber Harvesters (*Predictores del riesgo de dolor lumbar entre recolectores de caucho)*	
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RESUMEN:	Low back pain (LBP) is a significant work-related musculoskeletal disorder among rubber farmers. This major occupational health problem was highly reported in the agricultural sector. While rubber farming is a profession with high risk of LBP, predictors for LBP remain unclear. This study was designed to investigate the risk predictors of LBP among rubber farmers during the harvesting process. A cross-sectional study was conducted between January and March 2021, in which an interviewer administered a pretested structured questionnaire. Bivariate and multivariate binary logistic regression analyses were performed. A total of 317 rubber farmers were recruited with a 100% response rate. The prevalence of LBP was 71.2% with 95% confidence interval (CI) of (0.716–1.900). Significant risk predictors were working experience (adjusted odds ratio (AOR): 1.743, 95% CI (1.034–2.937)), agricultural registration (AOR: 2.022, 95% CI (1.078–3.792)), work without training (AOR: 2.037, 95% CI (1.083–3.832)), heavy workload (AOR: 2.120, 95% CI (1.242–3.621)), and prolonged standing (AOR: 2.944, 95% CI (1.586–5.465)). Intriguingly, those with sufficient income had a reduced risk of LBP than those with insufficient income. This study confirmed that LBP is a major work-related musculoskeletal disorder among rubber farmers. The result here suggests that the five predictors reported above should be prioritized for further disease prevention.
RESUMEN DE CONCLUSIONES EN ESPAÑOL:	Se estudiaron los predictores de riesgo de dolor lumbar en trabajadores de cosecha de caucho. Se realizó un cuestionario a 317 trabajadores y se emplearon análisis de regresión logística. Según los resultados, el dolor lumbar representó un porcentaje del 71,2%. Los predictores de riesgo obtenidos fueron la experiencia laboral, registro agrícola, trabajar sin formación, elevada carga laboral y mantenerse de pie durante mucho tiempo. Se concluyó la necesidad de recalcar la importancia de estos factores para prevenir el desarrollo de trastornos musculoesqueléticos en estos trabajadores.
TEMÁTICA	Accidentes o lesiones laborales; Dolor lumbar

TÍTULO DEL TRABAJO	
Assessment of Mancozeb Exposure, Absorbed Dose, and Oxidative Damage in Greenhouse Farmers *(Evaluación de la exposición al mancozeb, la dosis absorbida y el daño oxidativo en agricultores de invernadero)*	
PUBLICADO EN:	International Journal of Environmental Research and Public Health, Septiembre 2022, Volumen 19, Número 17, 10486
AUTORES:	Chiara Costa; Michele Teodoro; Federica Giambò; Stefania Catania; Silvia Vivarelli; Concettina Fenga
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RESUMEN:	Mancozeb (MNZ) is a fungicide commonly employed in many countries worldwide. This study assesses MNZ absorption dynamics in 19 greenhouse farmers, specifically following dermal exposure, aiming to verify the efficacy of both preventive actions and protective equipment. For data collection, a multi-assessment approach was used, which included a survey to record study population features. MNZ exposure was assessed through the indirect measurement of ethylene thiourea (ETU), widely employed as an MNZ biomarker. The ETU concentration was measured with the patch method, detecting environmental ETU trapped in filter paper pads, applied both on skin and working clothes, during the 8 h work shift. Urine and serum end-of-shift samples were also collected to measure ETU concentrations and well-known oxidative stress biomarkers, respectively, namely reactive oxygen metabolites (ROMs), advanced oxidation protein products (AOPPs), and biological antioxidant potential (BAP). It was observed that levels of ETU absorbed and ETU excreted were positively correlated. Additionally, working clothes effectively protected workers from MNZ exposure. Moreover, following stratification of the samples based on the specific working duty (i.e., preparation and spreading of MNZ and manipulation of MNZ-treated seedlings), it was found that the spreading group had higher ETU-related risk, despite lower chronic exposure levels. AOPP and ROM serum levels were higher in MNZ-exposed subjects compared with non-exposed controls, whereas BAP levels were significantly lower. Such results support an increase in the oxidative stress upon 8 h MNZ exposure at work. In particular, AOPP levels demonstrated a potential predictive role, as suggested by the contingency analysis results. Overall, this study, although conducted in a small group, confirms that ETU detection in pads, as well as in urine, might enable assessment of the risk associated with MNZ exposure in greenhouse workers. Additionally, the measurement of circulating oxidative stress biomarkers might help to stratify exposed workers based on their sensitivity to MNZ. Pivotally, the combination of both ETU measurement and biological monitoring might represent a novel valuable combined approach for risk assessment in farmhouse workers exposed to pesticides. In the future, these observations will help to implement effective preventive strategies in the workplace for workers at higher risk, including greenhouse farmers who are exposed to pesticides daily, as well as to clarify the occupational exposure levels to ETU.

RESUMEN DE CONCLUSIONES EN ESPAÑOL:	Se investigó la absorción de un pesticida denominado mancozeb tras la exposición dérmica de 19 agricultores de invernadero para comprobar la efectividad de las medidas preventivas y de los equipos de protección. Se realizaron mediciones indirectas de etilentiourea (utilizado como biomarcador de mancozeb) y una encuesta. También se tomaron muestras de orina y suero. Los resultados mostraron, entre otras cosas, que la ropa de trabajo protegía a los agricultores de este pesticida. Además, se concluyó que la utilización de forma conjunta de la medición de la etilentiourea y el monitoreo biológico era útil para la evaluación de riesgos de agricultores que emplean pesticidas.
TEMÁTICA	Exposición; Plaguicidas

TÍTULO DEL TRABAJO	
"We're Lucky to Have Doctors at All"; A Qualitative Exploration of Australian Farmers' Barriers and Facilitators to Health-Related Help-Seeking *("Tenemos suerte de tener médicos"; Una exploración cualitativa de las barreras y facilidades de los agricultores australianos para la búsqueda de ayuda relacionada con la salud)*	
PUBLICADO EN:	International Journal of Environmental Research and Public Health, Septiembre 2022, Volumen 19, Número 17, 11075
AUTORES:	Melissa J. Hull; Kate M. Gunn; Ashleigh E. Smith; Martin Jones; James Dollman
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RESUMEN:	This study aimed to explore barriers and facilitators that impact on farmers' help-seeking behaviours for health and mental health concerns. Fifteen semi-structured interviews were conducted with farmers (12 male; age 51.7 ± 12.6 years) from three rural regions in South Australia. Interviews explored demographic and farm-related characteristics, perceptions of individual (and where relevant family) health and mental health concerns and experiences, and perceived barriers of health support-seeking. Thematic analysis was used to identify key themes. Four key themes were identified relating to help-seeking; personal attitudes and beliefs, farm-related barriers, health system barriers and the provision of support from family and friends. Dominant personal attitudes included valuing independence, strength and privacy. Farm related barriers included the 'farm comes first' and the fact that 'farm work is never done'. Health system barriers included issues relating to availability of choice and access, professionals (lack of) understanding of farm life, and time and financial costs of accessing care. Provision of support from family and friends involved informal help and advice, including facilitating access to professional support. Multiple attitudinal, structural, and farm-related issues affect farmers' help-seeking. Professionals who understand farm work practices and routines are valued by farmers and this is likely to facilitate access to care. Workforce development programs and community programs that involve farmers' perspectives as consumers and co-designers, using evidence-based strategies, may assist in strengthening these relationships.
RESUMEN DE CONCLUSIONES EN ESPAÑOL:	Se investigaron los obstáculos y las facilidades que encuentran los agricultores para tratar sus problemas generales de salud y de salud mental. Se llevaron a cabo entrevistas con agricultores de tres regiones de Australia. Se determinaron cuatro ítems principales asociados a la búsqueda de ayuda por los agricultores: actitudes y creencias, obstáculos relacionados con la agricultura, obstáculos del sistema de salud y apoyo de familia y amigos. Se determinó que los problemas de actitud y los relacionados con la agricultura, entre otros, afectaban a la búsqueda de ayuda.
TEMÁTICA	Seguridad y salud en el trabajo