



Nº1

30 ABRIL

2025

**Boletín de
Seguridad y
Salud en el
Trabajo del
Sector
Agrícola**



**Instituto Andaluz de Prevención
de Riesgos Laborales**
Consejería de Empleo, Empresa
y Trabajo Autónomo

**Laboratorio-Observatorio Andaluz de
Condiciones de Trabajo en el Sector Agrícola
(LASA)**

<https://www.juntadeandalucia.es/organismos/iaprl/areas/investigacion/lasa.html>

FINALIDAD DE ESTE DOCUMENTO

Este boletín, realizado desde el Laboratorio-Observatorio Andaluz de Condiciones de Trabajo en el Sector Agrícola (LASA), engloba diferentes artículos científicos sobre Seguridad y Salud en el Trabajo (SST) en el sector de la agricultura. Recoge trabajos que han sido publicados en revistas del Journal Citation Reports en el primer cuatrimestre del año 2025. Se expone el título y resumen en inglés de cada artículo junto con su información principal. Además, en todos se presenta un breve resumen en español de los aspectos más destacados. Este boletín pretende facilitar la revisión de los artículos publicados en este ámbito en el período de tiempo indicado y el acceso a las revistas correspondientes.

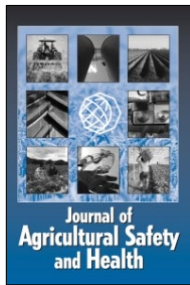
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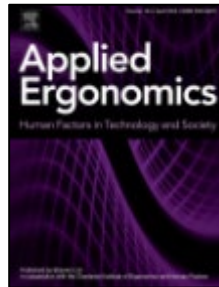
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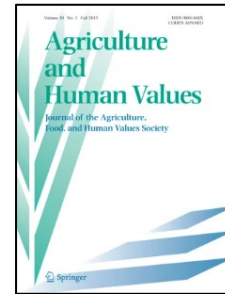
JOURNAL OF AGRICULTURAL SAFETY AND HEALTH



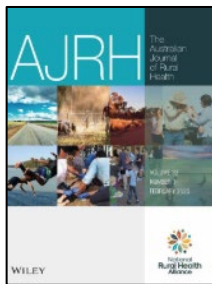
APPLIED ERGONOMICS



AGRICULTURE AND HUMAN VALUES



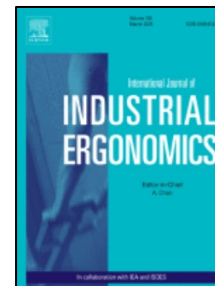
THE AUSTRALIAN JOURNAL OF RURAL HEALTH



HUMAN FACTORS: THE JOURNAL OF THE HUMAN FACTORS AND ERGONOMICS SOCIETY



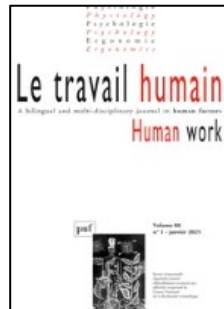
INTERNATIONAL JOURNAL OF INDUSTRIAL ERGONOMICS



JOURNAL OF AGROMEDICINE



LE TRAVAIL HUMAIN



WORKPLACE HEALTH & SAFETY



ARCHIVES OF ENVIRONMENTAL & OCCUPATIONAL HEALTH



SAFETY



JOURNAL OF AGRICULTURAL SAFETY AND HEALTH

ARTÍCULO 1: Developing Effective Protocols to Protect Farmworkers from Heat Stress and Illness While Working in Polytunnels

Polytunnels—also known as hoop houses—are used worldwide to grow certain crops year-round, primarily to protect plants from precipitation and cool temperatures. Farmworkers may be at increased risk in polytunnels due to higher temperatures and relative humidity. In the Central Coast region of California, polytunnels are commonly used to grow berries and other crops, but information on measures used to reduce heat stress in farmworkers working in polytunnels or how many workers are potentially exposed to these conditions is scarce. The purpose of this study was to: (1) estimate the area under polytunnels and the number of workers in them in California’s Central Coast region; (2) assess current practices to manage heat and protect workers in polytunnels; and (3) use this information to develop proposed best practices for protecting farmworkers in polytunnels. Using satellite imagery and crop production records, the area under polytunnels in the region was estimated at 5,162 ha with a conservatively estimated 46,000 farmworkers. Through key informant interviews, we found that farms are generally following OSHA worker safety regulations. However, additional measures may be needed to protect workers because environmental conditions inside polytunnels are variable and difficult to predict. For instance, wet bulb globe temperature would be a more accurate measure of heat stress risk than temperature alone. We propose recommendations that follow the hierarchy of controls to reduce the risk of heat-related illness among workers inside these structures.

Desarrollo de protocolos eficaces para proteger a las personas trabajadoras del sector de la agricultura del estrés térmico y de las enfermedades durante su trabajo en invernaderos

En la Costa Central de California son comunes los cultivos en invernadero tipo túnel. Las personas trabajadoras se exponen a humedad relativa y temperaturas elevadas al desarrollar las labores en su interior. Esta investigación tuvo como objetivo estimar la superficie ocupada por estos invernaderos y el número de trabajadores, analizar las medidas que se adoptaban para la protección de los agricultores y emplear la información obtenida para el desarrollo de buenas prácticas. Mediante imágenes satelitales y registros de producción agrícola se estimaron 5162 hectáreas bajo este tipo de invernadero y un total de 46000 trabajadores. Se concluyó con el uso de entrevistas que se aplicaban las normas de seguridad en el trabajo de OSHA, aunque eran necesarias más medidas para el control de temperaturas, por ejemplo, la utilización de la temperatura de bulbo húmedo como indicador.

AUTORES	Isabella Kaser, Maripaula Valdes-Berriz, Annemiek C. Schilder, Maureen McGuire, Catherine Carpenter, Ellen Brokaw, Michael Dimock, Gina M. Solomon
DOI	https://doi.org/10.13031/jash.16111
PUBLICACIÓN	Journal of Agricultural Safety and Health, 2025, Volumen 31, Número 1, pp. 15-30
TEMÁTICA	Temperatura

ARTÍCULO 2: An Intervention to Reduce Occupational Health Risk from Antibiotic Resistant Pathogens Among Dairy Farm Workers

This study focused on developing and evaluating an educational intervention designed to mitigate occupational health risks associated with pathogens and antibiotic-resistant bacteria among dairy farm workers. Data collected from farms and workers as part of a larger umbrella project that focused on dairy farm antibiotic use for cows and calves were used to inform elements of the Health Belief Model and the Theory of Planned Behavior, leading to eight intervention outcomes. The intervention targeted increased knowledge and promoted behavioral changes related to worker and workplace hygiene best practices, PPE use, biosecurity, and personal antibiotic stewardship. Educational materials included instructional videos, fact sheets in English and Spanish, and supplementary printed material, including illustrated take-home points, content summaries, and posters. The intervention was conducted with 32 workers from five dairy farms, using pre- and post-intervention assessments to measure knowledge gains and behavioral intentions. Results demonstrated statistically significant increases in knowledge across all targeted outcomes (p -value = .001), with most participants showing a high willingness and likelihood to implement recommended behaviors related to their workplace exposures and best practices. However, participants indicated a greater reluctance to change around issues of personal antibiotic stewardship. Time constraints were the most significant and most consistent barrier to behavior change. The study highlights the importance of ongoing research and refinement of intervention strategies to address barriers and enhance protective practices among often underserved farmworkers in agriculture. These intervention strategies contribute to improved occupational health outcomes with benefits to public health by reducing the spread of antibiotic-resistant infections to the broader population.

Una intervención orientada a reducir el riesgo para la salud en el trabajo causado por patógenos resistentes a los antibióticos entre los trabajadores de granjas lecheras

Se llevó a cabo una intervención en 32 trabajadores de cinco granjas lecheras, con el fin de disminuir los riesgos para su salud relacionados con patógenos y bacterias resistentes a los antibióticos. Se explicaron aspectos relacionados y se fomentó la realización de cambios en la higiene personal, uso de equipos de protección individual, bioseguridad y utilización responsable de antibióticos. Se proporcionaron videos, folletos informativos, carteles, etc. Se realizaron evaluaciones antes y después de la intervención, observando un aumento de conocimientos en estos temas y de la disposición de aplicar las recomendaciones y buenas prácticas. Los trabajadores mostraron reticencia a cambios en el consumo de antibióticos e indicaron el tiempo como una limitación para el cambio en su trabajo.

AUTORES Olivia Chao, John Shutske, Elsie Gonzalez, Danielle Veaser, Emily Diaz Vallejo, Ajay Sethi, Tony Goldberg, Ashley Kates, Mary Jo Knobloch, Juliana Leite de Campos, Pamela Ruegg, Nasia Safdar, Andrew Steinberger, Garret Suen, Amanda Young

DOI <https://doi.org/10.13031/jash.16158>

PUBLICACIÓN Journal of Agricultural Safety and Health, 2025, Volumen 31, Número 1, pp. 31-45

TEMÁTICA Formación

ARTÍCULO 3: Social and Individual Influences on ATV and UTV Operating Practices of Young Adult Agricultural Workers

ATV and UTV crashes are a leading cause of agricultural-related injury and death in the United States. Young adult agricultural workers (under the age of 25) contribute substantially to the agricultural workforce and often utilize ATVs and UTVs in their work. However, it is unknown if they have adopted recommended safe operating behaviors that could reduce the potential for injury or death. As such, we evaluated young adult agricultural workers' reported ATV and UTV operating practices and safety influences. Agricultural students from four Midwestern colleges and universities responded to an online survey about ATV and UTV operating behaviors, social influences (supervisor, peer, and parental risk-taking behaviors), and individual risk-taking orientation and tendencies. An ATV/UTV safety score was calculated from participants' responses, and linear regression methods were used to examine associations between scores and other aspects of risk-taking. Out of 193 respondents, a large proportion of participants reported never wearing hearing protection (68.6%), a seatbelt (59.2%), or a helmet (58.1%) while operating an ATV or UTV. The analysis identified gender ($p < 0.001$), global risk-taking ($p = 0.001$), risk-taking orientation at work ($p = 0.012$), and supervisor influence ($p = 0.015$) as significant factors influencing young adult agricultural workers' safety scores. The findings suggest that gender, individual risk-taking tendencies, and supervisor influence play crucial roles in safety behavior, indicating that risk management initiatives for young adult agricultural workers should not only focus on individual behavior change but also consider the broader social and workplace influences on safety.

Influencias sociales e individuales en las prácticas de operación de vehículos todo terreno y UTV de los trabajadores agrícolas adultos jóvenes

En Estados Unidos, una de las principales causas de lesiones y muertes en el sector de la agricultura son los accidentes con vehículos todoterreno. Este estudio analizó el uso de estos vehículos entre agricultores jóvenes. Se realizó una encuesta online a 193 estudiantes de agricultura. El 68,6% de los encuestados indicó que no empleaba protección auditiva, el 59,2% no usaba cinturón de seguridad y el 58,1% casco. Se concluyó que la gestión de riesgos no debe centrarse solamente en los trabajadores de manera individual, sino también en las influencias sociales y del entorno laboral.

AUTORES	Kaleigh Barnett, Josie Rudolphi, Diane Rohlman
DOI	https://doi.org/10.13031/jash.16154
PUBLICACIÓN	Journal of Agricultural Safety and Health, 2025, Volumen 31, Número 1, pp. 47-62
TEMÁTICA	Vehículos y Maquinaria Agrícola

ARTÍCULO 4: Using a Farm Safety Checklist to Assess Learner Performance Following a Safety Education Training

This study evaluates the use of Self-Directed Learning (SDL) and Performance-Based Assessment (PBA) to improve the accuracy of adult educators' completion of the Safe Farm Steward (SFS) application. PBA is a form of assessment commonly utilized in youth education, but there is limited evidence of its implementation among adults. Through implementing SDL, the researchers introduced a farm safety model to extension agents, agriculture teachers, and college professors to improve their performance assessment. The cohort attended a three-day professional development training followed by farm visitations; the training and visitations employed materials that incorporated SDL techniques. This study's findings indicate that the professional development training was moderately acceptable in preparing the cohort to accurately complete the SFS application. Though the cohort did not meet the expected score on each individual construct, the overall PBA demonstrated moderate acceptability compared to the expected score. The researchers highlight gaps in professional development where recommendations for improvement could be made.

Uso de una lista de verificación de seguridad agrícola para evaluar el desempeño de los alumnos después de una formación sobre seguridad

Se utilizó el aprendizaje autodirigido con el objetivo de formar en seguridad agrícola a docentes de este ámbito y de universidad. Para ello, asistieron a una formación de tres días, además de realizar visitas a explotaciones agrícolas. Posteriormente, se llevó a cabo una evaluación basada en el desempeño que concluyó que la formación fue aceptable, pero que no se obtuvieron las puntuaciones esperadas en todos los aspectos medidos. Además, se observaron carencias en el desarrollo profesional, siendo recomendable mejorar esta parte en futuras formaciones.

AUTORES Ruth D. Toole, Stacy K. Vincent, Alex Preston Byrd, Kang Namkoong, Yongwook Song, Sarah R. Sprayberry

DOI <https://doi.org/10.13031/jash.16156>

PUBLICACIÓN Journal of Agricultural Safety and Health, 2025, Volumen 31, Número 1, pp. 63-74

TEMÁTICA Formación

ARTÍCULO 5: Are Agricultural Youth Directors Prepared to Talk About Mental Health?

This study evaluates how frequently agricultural youth directors discuss mental health topics with youth and explores the influence of directors' knowledge and confidence on these discussions. We conducted a cross-sectional online survey assessing mental health knowledge and confidence among 242 directors from 4-H, Extension, and FFA in Illinois. The results indicate that discussions on sensitive mental health issues such as depression, suicide, traumatic experiences, isolation, eating disorders, self-harm, and substance use are infrequent and correlate with agricultural youth directors' limited knowledge and confidence in addressing these issues. The findings underscore the importance of mental health literacy as an essential part of professional development for agricultural youth directors and advocate for integrating mental health considerations into youth development models in agriculture. This research fills a gap in the existing literature on mental health in agricultural settings by pinpointing key areas for improving agricultural youth directors' ability to support youth mental health effectively.

¿Están preparados los directores juveniles del ámbito agrícola para abordar la salud mental?

Se evaluó la frecuencia con la que directores juveniles trataban temas de salud mental con jóvenes del ámbito de la agricultura. Además, se analizaron los conocimientos y la confianza de los directores en dicho tema. Para ello, se realizó una encuesta online a 242 participantes en Illinois. Los resultados mostraron que se trataban en pocas ocasiones temas como la salud mental, depresión, consumo de sustancias, etc. Además, los directores mostraron conocimientos limitados y baja confianza para abordar estos temas. Se concluyó la importancia de la formación en salud mental de estos profesionales.

AUTORES	Kaleigh Barnett, Courtney Cuthbertson, Josie Rudolphi
DOI	https://doi.org/10.13031/jash.16065
PUBLICACIÓN	Journal of Agricultural Safety and Health, 2025, Volumen 31, Número 1, pp. 75-91
TEMÁTICA	Riesgo Salud Mental

APPLIED ERGONOMICS

ARTÍCULO 6: Effects of different block designs on low back and shoulders biomechanical loads and postural stability during crab pot handling

In commercial Dungeness crab fishing vessels, the block pulls crab pots for harvesting and typically positions them to the side of vessels, rather than the sorting tables on board. Consequently, fishermen must reach outside the vessel to grab the pots, posing increased risk of musculoskeletal and fall-related injuries. To investigate the effects of block design on these risks, 25 participants in a repeated-measures laboratory study handled a pot under two block conditions: away-from-table (conventional setting) and above-table (intervention). Low back and shoulder muscle activities, angles, moments, perceived exertion, and postural stability were measured. The results showed reduced L5/S1 and shoulder moments and angles; decreased muscle activities in the low back, shoulders, and upper extremities; and lower perceived exertion ratings and postural sway measures with the intervention. These findings indicate that positioning the pot closer to fishermen onboard could reduce the injury and fall risk associated with crab pot handling.

Efectos de diferentes diseños de poleas sobre las cargas biomecánicas de la zona lumbar y los hombros y la estabilidad postural durante la manipulación de trampas de cangrejo

En los buques de pesca de cangrejo Dungeness se emplea una polea para elevar las trampas con las que se capturan dichos crustáceos, que son colocadas en un lado de la embarcación en vez de en las mesas de clasificación ubicadas a bordo. Debido a esto, los pescadores deben alcanzar dichas trampas desde dentro del buque, exponiéndose a un aumento de riesgo de trastornos musculoesqueléticos y caídas. Este estudio analizó si el diseño de la polea podía disminuir dichos riesgos. Se llevó a cabo un estudio en el que 25 participantes manipulaban una trampa de dos formas: lejos de la mesa (que es como se realizaba habitualmente) y sobre la mesa. Se tomaron medidas de la actividad muscular, ángulos y momentos en la zona lumbar y hombros para ambas situaciones. También se evaluó la percepción del esfuerzo y la estabilidad postural. Los resultados mostraron una disminución de las medidas, indicando que ubicar la trampa a bordo podría disminuir los riesgos.

AUTORES	Kiana Kia, Allen Chan, Mina Salehi, Laurel Kincl, Jeong Ho Kim
DOI	https://doi.org/10.1016/j.apergo.2024.104423
PUBLICACIÓN	Applied Ergonomics, 2025, Volumen 124, 104423
TEMÁTICA	Riesgo Físico

AGRICULTURE AND HUMAN VALUES

ARTÍCULO 7: Globalgap certification and working conditions of workers on smallholder mango farms in Ghana

Smallholder farm workers are important actors in global agricultural value chains. However, there is limited research on the extent to which certification affects their working conditions. This study analyzes the effects of GlobalGAP certification on the working conditions of smallholder farm workers in Ghana's mango sector, drawing on insights from the International Labor Organization (ILO) decent work framework and qualitative interviews with farmers, wage workers on both certified and non-certified mango farms, and key stakeholders. We found that GlobalGAP certification has the potential to improve working conditions by increasing wages and the number of people employed, creating a healthy working environment, establishing a grievance mechanism, and securing worker health and safety. However, we argue that the certification scheme does not necessarily promote decent work due to limitations in both the guidelines and implementation. We also found that financial constraints and the limited supply of an educated labor force impede the implementation of social standards stipulated in certification schemes. Based on these findings, we recommend that trade unions organize wage workers on mango farms to enhance social dialogue between the state and certification bodies. This can enhance the spread of social protection mechanisms in rural areas.

Certificación GlobalGAP y condiciones laborales de los trabajadores en pequeñas fincas de mango en Ghana

Se estudió cómo afectaba la certificación GlobalGAP a las condiciones laborales de las personas trabajadoras de cultivo de mango en Ghana. Se realizaron entrevistas con agricultores y trabajadores asalariados de fincas de mango, tanto certificadas como no certificadas. Se concluyó que dicha certificación mejoraba las condiciones laborales: entorno de trabajo saludable, garantizaba seguridad y salud de trabajadores, etc. En cambio, se observó que la certificación no aseguraba el trabajo decente, por limitaciones en sus directrices y puesta en práctica.

AUTORES Rexford Akrong, Angela Dziedzom Akorsu, Praveen Jha, Joseph Boateng Agyenim

DOI <https://doi.org/10.1007/s10460-024-10616-w>

PUBLICACIÓN Agriculture and Human Values, 2025, Volumen 42, pp. 405-419

TEMÁTICA Seguridad y Salud General

THE AUSTRALIAN JOURNAL OF RURAL HEALTH

ARTÍCULO 8: Stress and coping in Australian male farmers

Introduction: Farmers face high levels of stress, often related to unique farming industry stressors. Coping strategies in dealing with stress, can be less (avoidant) or more (approach) effective. No previous research has investigated coping strategies across a range of farming-specific stressors.

Objective: To determine levels of stress in various categories and the relationship between these stressors and coping strategies used.

Design: Cross-sectional survey, using self-report questionnaire. Independent variables included five stressor categories, and two types of coping.

Participants: One hundred and twenty-five rural male farmers, over 18 years of age, across Australia.

Main Outcome Measures: Demographic data were collected in addition to responses regarding stress and coping. The Australian Family Farming Stressor Scale, comprising five stressor categories, measured the stressors unique to Australian farming. The Brief COPE (B-COPE) measured approach and avoidant coping strategies.

Results: A total of 125 responses to the survey were analysed, with ages ranging from 19 to 84. While varying levels of stress were found in all stressor categories, Daily Stressors rated highest, followed by Financial Stressors. Higher levels of avoidant coping were utilised for Family Stressors, whereas higher levels of approach coping were utilised for farm-related stressors.

Conclusions: Findings indicate that the rating of stressors may be determined by current affairs, such as Daily Stressors rating highest. This could be due to the lack of available workforce during the COVID-19 pandemic. Furthermore, coping strategy findings could better inform clinical practice in assisting farmers in utilising their approach coping skills across all stressors.

Estrés y afrontamiento en agricultores australianos

Se identificaron los niveles de estrés y la relación de los diferentes estresores con las estrategias para hacerles frente que empleaban las personas trabajadoras del sector de la agricultura. Se utilizó un cuestionario que contemplaba cinco categorías de estresores y dos estrategias de afrontamiento. Participaron 125 agricultores (hombres) mayores de 18 años, procedentes de distintos lugares de Australia. Se obtuvieron niveles de estrés variable en todas las categorías de estresores. Los que obtuvieron mayor importancia fueron los estresores diarios, seguidos de los financieros. Las estrategias de afrontamiento menos efectivas se presentaron para estresores familiares y las más efectivas para los estresores asociados a la explotación.

AUTORES

Michele Anne Mitten MPsych, Pascal Molenberghs

DOI

<https://doi.org/10.1111/ajr.13207>

PUBLICACIÓN

The Australian Journal of Rural Health, 2025, Volumen 33, Número 1, e13207

TEMÁTICA

Estrés Laboral

ARTÍCULO 9: Investigating the Prevalence and Level of Pain Experienced by Australian Farmers

Objectives: This study evaluated the prevalence and level of pain in Australian farmers and how these compare to the general working population. We also explored factors related to the interference of pain on farmers' work.

Design: Logistic regressions were used to examine the prevalence of chronic pain and pain interference with normal work among farmers compared to the general working population, and also to examine the factors associated with pain interference in farmers. A multinomial logistic regression model was used to examine the level of bodily pain among farmers compared to the general working population.

Setting: The nationally representative HILDA (Household, Income, and Labour Dynamics Australia) survey data (wave 21) was used.

Participants: The final sample included 168 (1.6%) farmers and 10318 (98.4%) people in the general working population.

Results: There was a higher prevalence of chronic pain ($p < 0.001$), higher levels of bodily pain ($p < 0.001$), and pain interference with normal work ($p < 0.001$) in farmers than in the general working population. Age, gender, Body Mass Index (BMI), education level, remoteness, and personal social cohesion were not associated with pain interference with normal work in farmers.

Conclusion: The prevalence of chronic pain, level of bodily pain, and pain interference with normal work in Australian farmers is higher than the general working population. However, information is lacking on the factors that influence pain for this unique group. Further exploration is needed into why factors that are commonly associated with pain are not associated with pain in the farming population.

Investigación de la prevalencia y el nivel de dolor que experimentan los agricultores australianos

Se analizó el nivel de dolor y su prevalencia en personas trabajadoras del sector de la agricultura en Australia, además de si afectaba a la realización de su trabajo. También, se compararon dichos niveles con trabajadores de otros sectores. Participaron 168 agricultores y 10318 personas trabajadoras en general. Se utilizaron datos de una encuesta y se realizaron regresiones logísticas. Se concluyó mayor prevalencia y nivel de dolor corporal y una mayor interferencia del dolor en el trabajo para los agricultores que para el resto de la población trabajadora.

AUTORES Indika Koralegedera, Gemma Skaczkowski, G. Lorimer Moseley, Kate M. Gunn

DOI <https://doi.org/10.1111/ajr.70039>

PUBLICACIÓN The Australian Journal of Rural Health, 2025, Volumen 33, Número 2, e70039

TEMÁTICA Seguridad y Salud General

HUMAN FACTORS: THE JOURNAL OF THE HUMAN FACTORS AND ERGONOMICS SOCIETY

ARTÍCULO 10: Evaluation of Biomechanical and Mental Workload During Human–Robot Collaborative Pollination Task

Objective: The purpose of this study is to identify the potential biomechanical and cognitive workload effects induced by human robot collaborative pollination task, how additional cues and reliability of the robot influence these effects and whether interacting with the robot influences the participant's anxiety and attitude towards robots.

Background: Human–Robot Collaboration (HRC) could be used to alleviate pollinator shortages and robot performance issues. However, the effects of HRC for this setting have not been investigated.

Methods: Sixteen participants were recruited. Four HRC modes, no cue, with cue, unreliable, and manual control were included. Three categories of dependent variables were measured: (1) spine kinematics (L5/S1, L1/T12, and T1/C7), (2) pupillary activation data, and (3) subjective measures such as perceived workload, robot-related anxiety, and negative attitudes towards robotics.

Results: HRC reduced anxiety towards the cobot, decreased joint angles and angular velocity for the L5/S1 and L1/T12 joints, and reduced pupil dilation, with the “with cue” mode producing the lowest values. However, unreliability was detrimental to these gains. In addition, HRC resulted in a higher flexion angle for the neck (i.e., T1/C7).

Conclusion: HRC reduced the physical and mental workload during the simulated pollination task. Benefits of the additional cue were minimal compared to no cues. The increased joint angle in the neck and unreliability affecting lower and mid back joint angles and workload requires further investigation.

Application: These findings could be used to inform design decisions for HRC frameworks for agricultural applications that are cognizant of the different effects induced by HRC.

Evaluación de la carga de trabajo biomecánica y mental durante la tarea de polinización colaborativa entre humanos y robots

El objetivo de este estudio fue evaluar la carga de trabajo biomecánica y mental durante la tarea de polinización realizada conjuntamente entre humano y robot. Participaron 16 trabajadores y se estudiaron cuatro tipos de colaboración humano-robot. Se midió la cinemática de la columna, la activación pupilar y medidas subjetivas (carga de trabajo percibida, ansiedad debida a la participación del robot y actitud negativa ante esta tecnología). Se concluyó que la colaboración humano-robot disminuyó tanto la carga física como mental durante dicha labor agrícola. Aun así, es necesaria una investigación más detallada.

AUTORES Mustafa Ozkan Yerebakan Yu Gu, Jason Gross, Boyi Hu

DOI <https://doi.org/10.1177/00187208241254696>

PUBLICACIÓN Human Factors: The Journal of the Human Factors and Ergonomics Society, 2025, Volumen 67, Número 2, pp. 100-114

TEMÁTICA Seguridad y Salud General

INTERNATIONAL JOURNAL OF INDUSTRIAL ERGONOMICS

ARTÍCULO 11: IMU-based estimation of body posture: Laboratory validation in simulated commercial fishing

Work-related musculoskeletal disorders (WMSDs) account for a significant portion of all occupational injuries and illnesses in the U.S. This is especially concerning for physically demanding professions such as commercial fishing and farming. To investigate the relationship between WMSDs and non-neutral working postures, it is necessary to accurately quantify the working postures. However, due to the challenging working environment, for example, offshore and wet conditions in commercial fishing, objective biomechanical assessment using video or optical-based motion capture systems is extremely difficult. Therefore, this paper proposes an alternative approach to quantify body postures using an inertial measurement unit (IMU) sensor. We employed an IMU to determine the orientation of the torso and arm during two simulated commercial fishing tasks in a laboratory setting using two sensor fusion methods: complementary filter and Kalman filter. The estimation accuracy of each filter in these tasks is validated and compared using reference data obtained from a motion capture system that utilizes multiple vision cameras.

Estimación de la postura corporal basada en IMU: Validación de laboratorio en pesca comercial simulada

La evaluación postural en pescadores es compleja mediante el uso de sistemas de vídeo u óptica, debido a que se trabaja en entornos de alta mar y en condiciones húmedas. Sin embargo, estos trabajadores están expuestos a sufrir trastornos musculoesqueléticos debido a la gran exigencia física de sus tareas. Este estudio propuso una alternativa para la evaluación postural. En concreto, presentó el uso de un sensor de unidad de medición inercial para analizar la postura del torso y del brazo en la realización de dos tareas de pesca comercial simuladas en un laboratorio.

AUTORES

Umme Kawsar Alam, Ji-Chul Ryu, Jeong Ho Kim

DOI<https://doi.org/10.1016/j.ergon.2025.103712>**PUBLICACIÓN**

International Journal of Industrial Ergonomics, 2025, Volumen 106, 103712

TEMÁTICA

Riesgo Físico

JOURNAL OF AGROMEDICINE

ARTÍCULO 12: Hand Tool Intervention for Rubber Tappers Using Modified Michie Golledge Knife

Background and Objectives: Rubber tapping is a physically demanding and skilled agricultural operation that can cause musculoskeletal disorders (MSDs). This research investigated the impact of using an ergonomically modified rubber tapping knife on the hand posture of rubber tappers.

Methods: Initially, a postural assessment was conducted using CATIA V6 modelling software followed by a non-randomized longitudinal study with 32 rubber tappers. In the second phase, the study used a custom-modified Standard Nordic Questionnaire, video recordings, and direct observations. The study compared the results of the ergonomically modified rubber tapping knife with the traditional tapping knife, evaluating hand grip strength, endurance time chip thickness, time required to complete 300 trees, and posture using the Rapid Upper Limb Assessment (RULA) tool.

Results: Compared to pre-tapping values, the mean reduction in grip strength after tapping was significantly less with the modified rubber tapping knife than with the traditional tapping knife (2.96kg, SD 0.85kg vs 7.31kg SD 2.13kg). Similarly, the reduction in hand endurance time was less with the modified knife than with the traditional knife (1.78seconds, SD 0.47seconds vs 3.34seconds, SD 0.87seconds). The study also indicated that the modified knife did not significantly affect chip thickness. Additionally, a slight increasing in tapping time was observed with the ergonomically modified knife, which may be attributed to a learning curve phenomenon. This suggests that as rubber tappers become more accustomed to the new tool, their efficiency may improve over time.

Conclusion: The hand grip strength and endurance time was significantly lower with the ergonomically modified tapping knife. The study concluded that using an ergonomically modified tapping knife led to a significant improvement in hand posture among rubber tappers.

Intervención con herramientas manuales para extractores de caucho utilizando un cuchillo Michie Golledge modificado

Las personas trabajadoras dedicadas a la extracción del látex del árbol de caucho se exponen a carga física debida a la exigencia de la labor. Esto puede tener como consecuencia la aparición de trastornos musculoesqueléticos. Este estudio analizó la postura de la mano durante el empleo de un cuchillo modificado ergonómicamente para la realización de dicha tarea. Se llevó a cabo una evaluación de la postura empleando CATIA V6 y se realizó un estudio con 32 personas trabajadoras. Se aplicó el Cuestionario Nórdico Estandarizado modificado, grabación en vídeo y se realizaron observaciones de forma directa. Se comparó este nuevo cuchillo ergonómico con el tradicional. Se analizó la fuerza de agarre y otros aspectos como la duración de la tarea. Además, se aplicó el método REBA. Se concluyó una mejora importante en la postura con el cuchillo ergonómico. El tiempo en la realización de la tarea aumentó, pero se debió a que los trabajadores no conocían la herramienta. Con el aprendizaje, disminuiría el tiempo.

AUTORES

Abi Varghese, Vinay V. Panicker

DOI

<https://doi.org/10.1080/1059924X.2024.2404847>

PUBLICACIÓN

Journal of Agromedicine, 2025, Volumen 30, Número 1, pp. 1-13

TEMÁTICA

Riesgo Físico

ARTÍCULO 13: Occupational Exposure to Pesticides, Personal Protection, and Willingness to Reduce Chemical Sprayings Among Iranian Greenhouse Farmers

Objectives: The level of greenhouse farmers' personal protection in pesticide use and the possibility of environmental protection through farmers' willingness to reduce chemical sprayings were assessed in Khuzestan Province, Iran.

Methods: A survey of 80 active greenhouse vegetable growers was carried out in 2021 with face-to-face interviews. Willingness to reduce chemical sprayings was examined with the theory of planned behavior (TPB) model.

Results: Several intoxication symptoms were reported, with the most common symptom of pesticide intoxication being dizziness. Farmers showed unsafe or rather unsafe use of personal protective equipment (PPE) during pesticide handling. The maximum use of PPE pertained to the use of mask, spray clothing, and long-sleeved shirts. On a scale from 1 (= totally disagree) to 5 (= totally agree), the respondents showed negative attitudes towards reducing chemical sprayings (mean=2.30), rather low levels of subjective norms (mean=2.67), and rather low levels of perceived behavioral control over reduction of chemical sprayings (mean=2.76). The TPB variables accounted for 73% of the variance in farmers' behavioral intention. Overall, farmers' behavioral intention to reduce chemical sprayings was almost neutral.

Conclusion: Increasing knowledge of the adverse effects of pesticides on health is necessary to promote safety behavior of farmers in the greenhouse.

Exposición en el trabajo a tratamientos fitosanitarios, protección personal y disposición a reducir las fumigaciones químicas entre los agricultores iraníes de invernaderos

Se investigó el uso de equipos de protección individual durante la realización de tratamientos fitosanitarios en agricultores de invernaderos en Irán. También se analizó la disposición de estas personas trabajadoras a disminuir este tipo de tratamientos químicos. Se llevó a cabo una encuesta a 80 participantes mediante entrevistas. Se identificaron síntomas de intoxicación, siendo el más frecuente el mareo. Como equipos de protección individual empleaban mascarilla, ropa específica para estos tratamientos y camisas de manga larga. Los participantes tenían una actitud negativa a la disminución de los tratamientos químicos. Se concluyó la necesidad de formación sobre las consecuencias para la salud del uso de estos productos con el fin fomentar la seguridad durante esta labor.

AUTORES Asghar Bagheri, Ziba Shirzadi, Ali Akbar Shokohian, Abolmohammad Bondori, Christos A. Damalas

DOI <https://doi.org/10.1080/1059924X.2024.2413086>

PUBLICACIÓN Journal of Agromedicine, 2025, Volumen 30, Número 1, pp. 14-26

TEMÁTICA Tratamientos Fitosanitarios

ARTÍCULO 14: Hypertonic Saline Nasal Rinse Intervention: Immunomodulatory Effects in Dairy Workers

Objective: Increased risk of occupational exposure to bioaerosols has long been recognized in livestock operations including dairy facilities. Spanning the inhalable fraction (0–100 μ m), dairy bioaerosols comprise a wide variety of inflammatory components that deposit in the nasopharyngeal region. The resultant inflammatory response from bioaerosol exposure is likely driving the increased prevalence of respiratory disease observed in dairy workers. It is also thought the microbiome of the upper respiratory system may help mediate this inflammation. We investigated the viability of a low-cost hypertonic saline nasal rinse intervention in modulating inflammatory responses in bioaerosol exposed dairy workers and its impact on microbial diversity.

Methods: Pre- and post-shift nasal rinses were administered and collected alongside full shift inhalable personal breathing zone (PBZ) samples for each participant for up to 5 consecutive days. Treatment group participants (n=23) received hypertonic saline rinses while control group participants (n=22) received normotonic saline rinses. Particulate matter (PM) and endotoxin concentrations were quantified from PBZ samples using gravimetric and enzymatic analytical methods, respectively. Pre- and post-shift rinses were analyzed for pro- and anti-inflammatory markers and microbial diversity using a multiplex assay and 16S rRNA sequencing, respectively.

Results: PM and endotoxin concentrations were comparable between groups indicating similar exposures. Post-shift pro-inflammatory markers were significantly higher than pre-shift for IL-13 (p = .047), IL-1 β (p<.001), IL-6 (p<.001), IL-8 (p<.001), and TNF- α (p=.024). There was no evidence of a difference in log concentrations between intervention group or day among any of the measured inflammatory markers. Anti-inflammatory IL-10 concentrations increased across the 5 sample days, independent of treatment group suggesting tonicity may not be driving the change. However, this result was not significant (p=.217). Nasal microbiome alpha (within sample) and beta (between sample) diversity metrics did not differ significantly between group or day demonstrating no adverse washout intervention effects.

Conclusion: This study provided encouraging results that warrant future research to further evaluate saline nasal rinses as a workplace intervention.

Lavado nasal con solución salina hipertónica: Efectos inmunomoduladores en trabajadores de instalaciones de producción lechera

En instalaciones de producción lechera existe riesgo de exposición a bioaerosoles, que puede conducir a enfermedades respiratorias. Se investigó si una intervención basada en enjuagues nasales con una solución salina hipertónica podía modular la respuesta inflamatoria en las personas trabajadoras expuestas. 23 participantes recibieron enjuagues con esta solución (grupo de intervención) y 22 personas recibieron enjuagues con solución normotónica (grupo de control). Se administraron dichos enjuagues nasales antes del turno y una vez concluido. Además, se tomaron muestras personales de la fracción inhalable en el lugar de trabajo durante hasta 5 días consecutivos. Se concluyeron exposiciones similares para ambos grupos, pero se encontraron resultados más perjudiciales en las mediciones después del turno que al inicio.

AUTORES Grant Erlandson, Sheryl Magzamen, Julia L. Sharp, James Seidel, Jill A. Poole, Mary Bradford, Joshua W. Schaeffer

DOI <https://doi.org/10.1080/1059924X.2024.2416425>

PUBLICACIÓN Journal of Agromedicine, 2025, Volumen 30, Número 1, pp. 27-37

TEMÁTICA Exposición

ARTÍCULO 15: Factors Associated with Personal Protective Equipment Usage Rates in the Central States: Generalized Multilevel Multinomial Models

Objectives: This study examined the factors affecting the use of personal protective equipment (PPE) among US agriculture producers, specifically focusing on chemical, respiratory, and hearing protection. The primary goals were to identify demographic and farm-related factors linked to lower PPE usage and to explore the associations between PPE use and self-reported injuries or diseases in this occupational context.

Methods: We developed generalized multilevel multinomial logistic regressions for the agricultural safety and health survey data from 2018 and 2020. Our models aimed to explore associations between PPE use, covariates, and their impact on skin diseases, hearing loss, and respiratory diseases. The hierarchical structure of the data was accommodated by designating the survey year as the level-3 variable and the state of residence as the level-2 variable, further delineating the nested structure of the respondents. We proposed using Adaptive Quadrature methods to approximate marginal maximum likelihood function, along with Gauss-Hermite quadrature weights when estimating fixed-effects and random effects in the proposed models. Missing data in this hierarchical structure were addressed through a multiple imputation method.

Results: Our findings revealed older age is associated with lower PPE usage across all types. Males exhibited higher PPE use, particularly for chemical (OR: 1.26, 95% CI: 1.08, 1.47) and respiratory protection (OR: 1.33, 95% CI: 1.18, 1.52). Producers on grain-only farms showed increased chemical PPE use (OR: 1.26, 95% CI: 1.10, 1.43) compared to those on livestock-only farms. Additionally, individuals spending 0%–24% of their worktime on the farm/ranch demonstrated lower PPE use than those who spent more time engaged in farm-related activities.

Conclusion: The study underscores the importance of addressing low PPE usage among agriculture producers. Interventions tailored to specific groups, such as female producers, livestock-only farms, older-aged producers, and part-time producers, can effectively improve PPE use. By identifying these high-risk groups, interventions can be better adapted and targeted to enhance the adoption of PPE, subsequently reducing the risk of health hazards in the agriculture sector.

Factores asociados con los niveles de uso de equipos de protección individual en los estados centrales: modelos multinomiales multinivel generalizados

Se investigaron los factores que influían en la utilización de equipos de protección individual (EPI) en personas trabajadoras del ámbito de la ganadería en Estados Unidos. Se centraron en protección química, auditiva y respiratoria. Se realizaron modelos de regresión logística multinomial multinivel generalizados tomando los datos de una encuesta de seguridad y salud en agricultura de 2018 y 2020. Los resultados mostraron que las personas trabajadoras que menos utilizaban estos equipos de protección eran los hombres o los que dedicaban menos tiempo al trabajo. En concreto, los hombres hacían un mayor uso de estas protecciones principalmente para riesgos químicos y respiratorios. Las personas trabajadoras en granjas de granos hacían mayor uso de EPI químico.

AUTORES	Jianghu James Dong, Carter Vogel, Yi Du, Ellen Duysen, Risto Rautiainen
DOI	https://doi.org/10.1080/1059924X.2024.2407983
PUBLICACIÓN	Journal of Agromedicine, 2025, Volumen 30, Número 1, pp. 38-48
TEMÁTICA	Seguridad y Salud General

ARTÍCULO 16: Promoting Workplace Health, Safety, and Well-Being Among Essential Agricultural Workers Through Vaccine-Preventable Infectious Diseases Training in the Rio Grande Valley

Introduction: Health, safety, and well-being training programs provide essential education on anticipating, identifying, and mitigating exposures like infectious diseases. Gaps in infectious diseases awareness and education became especially apparent during the COVID-19 pandemic and subsequently were exacerbated by mis- and disinformation.

Methods: Vaccine-preventable infectious diseases training (influenza, hepatitis A and B, and tetanus infections, including COVID-19) was developed, delivered, and evaluated among 1,043 farmworkers, bodega workers, and production management in the Rio Grande Valley using mobile-learning technologies. The Kirkpatrick Four-Level Training Evaluation Model was utilized to evaluate training satisfaction (Level 1), effectiveness (Level 2), and effect on behavior (Level 3).

Results: The mean score on the pretest before training was 67.8% (SD 17.5), and the mean score on the same test immediately after the video training was 77.2% (SD 17.9). A paired t-test revealed that knowledge improved significantly from pre- to post-training ($p < .05$). We observed a difference between mean pre- and post-test scores relative to the pooled standard deviation, resulting in an effect size estimate of 0.53 indicative of a medium learning effect.

Conclusion: There is no “silver bullet” for training migrating bodega and farmworkers. Our findings suggest that the utilization of m-learning techniques continues to be a successful mechanism for delivering health, safety, and well-being awareness training content to agricultural workers in remote and challenging work environments. There is a long overdue need for offline capable software with features that allow equitable access to training, even in remote farming regions.

Promoción de la salud, la seguridad y el bienestar en el lugar de trabajo entre personas trabajadoras del sector de la agricultura mediante formación sobre enfermedades infecciosas prevenibles por vacunas en el Valle del Río Grande

Se desarrolló e impartió una formación centrada en enfermedades infecciosas que podían prevenirse con vacunas. Se empleó la tecnología móvil para el aprendizaje. Participaron 1043 personas trabajadoras del sector agrícola en el Valle del Río Grande. Se evaluó la capacitación realizada mediante el Modelo de Kirkpatrick. Se concluyó que fue eficaz para la mejora del conocimiento sobre seguridad, salud y bienestar.

AUTORES Anabel Rodriguez, David I Douphrate, Ana L Pineda Reyes, Susana Zavala, Andrea V. Cabrera Cruz, Maria D Alegria, Brian Ukaegbu, Annie J Keeney, Brenda Berumen-Flucker, Eva M Shipp, Shannon P Guillot-Wright, Maria E Fernandez-Esquer, David Gimeno Ruiz de Porras

DOI <https://doi.org/10.1080/1059924X.2024.2421249>

PUBLICACIÓN Journal of Agromedicine, 2025, Volumen 30, Número 1, pp. 57-67

TEMÁTICA Formación

ARTÍCULO 17: Electrical Hazards on Australian Farms: A Rapid Review of Electrical Perceptions in Agriculture

Objective: Electrical hazards on farms are one of the occupational risks that contributes to farm injury and fatality. Whilst electricity accounts for a low number of farm injuries each year, it is disproportionately fatal. The aim of this study is to raise the awareness of electrical safety on farms by providing an overview of the literature that explores the evidence of farmers' perception of electrical risk. The review sought evidence of farmers' efforts to promote electrical safety awareness and uptake of electrocution prevention strategies.

Method: A rapid review was performed following the Cochrane Rapid Reviews Method Group and PRISMA guidelines, searching grey and peer-reviewed databases with criteria that included both farming and electrical risk. This resulted in 35 key articles of interest and five themes.

Results: The prevalent causes and contributing factors of electrical incidents and near misses on farms is not easily explained. Farmers overlook its presence as one of the hazards on farm, but at the same time the element of danger or threat of electrocution deters farmers from taking unnecessary risks. The data to profile farmers at risk of electrical injury is inadequate however the scope of risk is described through five themes: epidemiology, risk perception, exposure, intervention and prevention.

Conclusion: Due to the seriousness of electrical injury, intervention and prevention strategies need to specifically address electrical hazards rather than incorporate electricity as a risk into all of the hazards found on farms. The review recommends future work that engages with Australian farmers and farm workers to better understand their experience of electricity exposures, the risks they are willing to take around overhead powerlines, and their insights into how to make working on farms safer.

Riesgos eléctricos en granjas australianas: Una revisión rápida sobre la percepción de la electricidad en la agricultura

Este estudio tuvo como objetivo concienciar sobre seguridad eléctrica en granjas a través de una revisión de literatura centrada en la percepción del riesgo eléctrico que tenían las personas trabajadoras. Se realizó una revisión rápida mediante bases de datos, en concreto buscando estudios que mostraran los términos de agricultura y riesgo eléctrico, obteniendo 35 artículos relacionados y 5 temas diferentes (epidemiología, percepción del riesgo, exposición, intervención y prevención). Se concluyó que los trabajadores subestimaban la electricidad como un riesgo laboral. Sin embargo, la amenaza de electrocución hace que tengan cautela.

AUTORES Amity Latham, Megan McCarthy, Olivia Larobina, Jacqueline Cotton

DOI <https://doi.org/10.1080/1059924X.2024.2427787>

PUBLICACIÓN Journal of Agromedicine, 2025, Volumen 30, Número 1, pp. 68-79

TEMÁTICA Riesgo Eléctrico

ARTÍCULO 18: Identifying and Describing Mental Health Stigma Among Agricultural Youth Directors: Does Stigma Influence Practices?

Objectives: This exploratory study aims to: 1) evaluate mental health stigma levels among agricultural youth directors, 2) examine the influence of professional characteristics on stigma, and 3) investigate the relationship between agricultural youth directors' stigma levels and their self-efficacy.

Methods: An online survey was administered from March to May 2022 to 642 agricultural youth directors in Illinois who work with youth aged 1–19. Directors' personal and perceived stigmas toward mental illness were measured using the Depression Stigma Scale. Directors' self-efficacy (perceived level of knowledge and confidence) across 19 mental health topics was measured using a 3-point Likert scale. Analyses were conducted by generating descriptive statistics and performing Mann–Whitney U tests on the data.

Results: The median personal depression stigma score was 7.57 (SD=8.02). Our analyses identified significantly higher personal depression stigma scores among men, FFA advisors, agricultural educators, and those lacking personal experience with mental illness. A lack of self-efficacy correlated significantly with increased personal stigma.

Conclusions: This study underscores the critical need for targeted educational interventions to reduce stigma among agricultural youth directors and enhance mental health literacy. Anti-stigma and mental health literacy initiatives are essential for fostering a supportive environment that encourages open discussions about mental health issues with youth within the agricultural community.

Identificación y descripción del estigma en salud mental entre directores de programas juveniles relacionados con la agricultura: ¿El estigma influye en las prácticas?

Se analizaron los niveles de estigma sobre salud mental entre directores de programas juveniles relacionados con la agricultura y se investigó la relación con su autoeficacia. También se estudió si las características profesionales tenían influencia en el estigma. Para ello, se realizó una encuesta online a 642 participantes en el estado de Illinois (EE.UU.), que se realizó en 2022, entre marzo y mayo. Los resultados presentaron puntuaciones más elevadas de estigma personal hacia la depresión en hombres, educadores agrícolas y en los que no tenían experiencias personales con enfermedades mentales. Una autoeficacia baja se relacionaba con un aumento del estigma personal. El estudio concluyó con la necesidad de formación para disminuir el estigma en salud mental.

AUTORES	Kaleigh Barnett, Courtney Cuthbertson, Josie M. Rudolphi
DOI	https://doi.org/10.1080/1059924X.2024.2416427
PUBLICACIÓN	Journal of Agromedicine, 2025, Volumen 30, Número 1, pp. 80-94
TEMÁTICA	Riesgo Salud Mental

ARTÍCULO 19: A Mixed Methods Assessment of an Online Mental Health and Resilience Program for Agricultural Sector Students

Financial, environmental, and socio-cultural challenges affect the mental health and wellbeing of those working and living on-farm. Education programs can help in improving mental health and overall wellbeing, but most of these programs are offered to established farmers in a face-to-face format, leading to a gap in offerings to many subgroups, including young agricultural entrants. To address these gaps, this paper assesses the value of an online mental health and resilience education program for young agricultural entrants. An explanatory sequential mixed methods approach was applied. Firstly, a quantitative survey was conducted with 172 first year agricultural tertiary students, aged 18–20, to assess the knowledge and skills gained due to program participation. Regressions and propensity score matching were used to determine the effect of program participation. Subsequently, seven interviews were conducted with program participants to provide insights into their experiences of the program. Thematic coding was applied to analyze the qualitative data. Findings from the quantitative survey show a significant increase in mental health knowledge and skills amongst program participants compared to participants in the control group. The qualitative interviews show the ability to work through the material in their own time and space, creates a safe environment for online students. Other mechanisms contributing to learning are using “normal language”, a peer voice in communicating wellbeing, and building on learnings in previous education. This paper addresses a gap in literature by being the first study to evaluate online mental health education for agricultural tertiary students. It provides educators and other program designers with valuable information for future program design to support the wellbeing of young agricultural workers.

Una evaluación con métodos mixtos de un programa online de salud mental y resiliencia para estudiantes del sector agrícola

Se investigó la utilidad de una formación online sobre salud mental y resiliencia orientada a jóvenes que se inician en el sector agrícola. Se realizó una encuesta a 172 participantes tras la participación en la formación, con el fin de analizar las habilidades y conocimientos adoptados. Se entrevistó a siete jóvenes para recolectar información más detallada. Las encuestas indicaron un aumento de conocimientos y habilidades relacionados con salud mental en las personas que participaron en la formación. Una de las conclusiones obtenidas mediante las entrevistas fue que poder seguir el material a su ritmo y de forma online era un beneficio para los estudiantes.

AUTORES Jorie Knook, Nicky Stanley-Clarke, Robbie Maris, Amanda Hay, Chris Andrews, Louise Winder

DOI <https://doi.org/10.1080/1059924X.2024.2421982>

PUBLICACIÓN Journal of Agromedicine, 2025, Volumen 30, Número 1, pp. 95-104

TEMÁTICA Riesgo Salud Mental

ARTÍCULO 20: Depression, Anxiety, and Coping Strategies Among Farmworkers Exposed to Substance Use at Work

Objective: Migrant farmworkers are at an increased risk of experiencing high levels of stress, depression, anxiety, and problematic substance use. Farmworker behavioral health is a predominant concern for agricultural health and safety efforts. While substance use has been found to be a visible part of the work environment among farming populations, there is scarce information about how farmworkers who are exposed to substance use at work are impacted.

Methods: This exploratory assessment investigated the association between substance use exposure at work and migrant farmworkers' (N=58) symptoms of depression, anxiety, and coping strategies used. Univariate, bivariate, and regression analyses were conducted to examine data from a survey administered to migrant farmworkers in Southern California's Riverside and Imperial Valley counties.

Results: Exposure to substance use at work was significantly associated with farmworkers reporting more severe symptoms of anxiety ($p=.018$). We also found that anxiety among farmworkers was significantly related to their experiences of sexual harassment ($p=.026$), being called names or insulted ($p=.05$), feeling unsafe ($p=.005$), having an increased work burden ($p=.001$), and caring for a colleague ($p=.001$). Furthermore, as exposure to substance use at work increased, farmworkers reported more severe symptoms of depression ($F(1,45)=7.90, p=.007$) and anxiety ($F(1,45)=16.743, p=.001$). To cope, the farmworkers in our sample reported using emotion-focused coping strategies most often.

Conclusions: Substance use exposure at work can affect migrant farmworker health and safety. Addressing and supporting the behavioral health of the entire farming community is warranted.

Depresión, ansiedad y estrategias de afrontamiento entre personas trabajadoras del sector agrícola expuestas al consumo de sustancias en el trabajo

Se estudió la relación entre el consumo de sustancias en el ámbito laboral y los síntomas de ansiedad, depresión y estrategias de afrontamiento empleadas por personas trabajadoras migrantes del sector agrícola. Se empleó una encuesta a 58 participantes de diferentes lugares del sur de California. El consumo de sustancias se relacionó con síntomas más importantes de ansiedad. Además, un aumento del consumo de estas sustancias, tenía como consecuencia síntomas más graves de depresión y ansiedad. Las personas trabajadoras de este sector empleaban estrategias para afrontar estos problemas centradas en las emociones.

AUTORES Annie J. Keeney, Dianne Ciro, Yu Meng, Laura Coco, Katherine Ekonomo

DOI <https://doi.org/10.1080/1059924X.2024.2407384>

PUBLICACIÓN Journal of Agromedicine, 2025, Volumen 30, Número 1, pp. 105-113

TEMÁTICA Riesgo Salud Mental

ARTÍCULO 21: The Health and Well-Being of Women in Farming: A Systematic Scoping Review

Objectives: Health and well-being have long been identified as key issues for investigation within agricultural communities. While myriad studies have been conducted to investigate causation, impact, outcomes and interventions among farming populations, the overall emphasis has been disproportionately weighted away from the experiences of women. This systematic scoping review determines the prevalence of topics, identifies the target populations and geographical locations of studies, outlines methodological approaches to the subject area, and summarizes the key findings and conclusions of the available literature.

Methods: With the guidance of the Arksey and O'Malley framework for conducting a scoping review, a single database search for publications focusing on the health and well-being of women in farming (including primary farmers, members of farm households, and farmworkers), in the Global North, published between 1990 and 2023, was conducted. Data were organized, thematically coded, critically appraised and analyzed using the systematic review online tool CADIMA.

Results: In total, 93 studies met the inclusion criteria for full review. The majority of studies were conducted in the United States, with the number of publications steadily increasing since the 1990s. Of studies, 68% were wholly quantitative in nature, and 23% wholly qualitative. Key findings suggest women are at particular risk from certain illnesses associated with some aspects of agricultural work and face a number of stressors (including gender-specific issues) that can lower well-being, but evidence is scarce in a number of areas. Clear gaps in research exist in relation to reproductive health, caring responsibilities, or help-seeking and support. Women primary farmer and farmworkers are particularly neglected as study cohorts.

Conclusion: Numbers of studies related to the health and well-being of women in farming are still relatively small in comparison with the wider body of related literature, and there exists an obvious need for further studies with a specific emphasis on particular cohorts, issues pertaining to the contemporary climate, and issues specific to women, as well as greater geographical reach. By emphasizing such research gaps, opportunities exist to improve the health and well-being situation of women in agriculture through more explicit studies with the intention of developing more effective, targeted solutions.

La salud y el bienestar de las mujeres en la agricultura: una revisión sistemática exploratoria

Se realizó una revisión de la literatura con el fin de estudiar la salud y el bienestar de las mujeres en el sector de la agricultura. Se buscaron estudios relacionados en una base de datos, comprendidos entre los años 1990 y 2023. Un total de 93 estudios se seleccionaron para la revisión, la mayoría llevados a cabo en Estados Unidos. Se observó un aumento de las investigaciones desde 1990 de forma constante. El 68% de ellas eran cuantitativas y el 23% cualitativas. Se concluyó que las mujeres se exponen a riesgo de enfermedades relacionadas con el trabajo y pueden sufrir estrés. Sin embargo, la cantidad de información sobre salud y bienestar de mujeres del ámbito de la agricultura es muy escasa.

AUTORES

Rebecca Wheeler Caroline Nye

DOI<https://doi.org/10.1080/1059924X.2024.2407385>**PUBLICACIÓN**

Journal of Agromedicine, 2025, Volumen 30, Número 1, pp. 132-152

TEMÁTICA

Seguridad y Salud General

ARTÍCULO 22: Concept Analysis: Challenge Coins as a Caring Support Tool to Prevent Farmer Suicide

Objectives: Challenge coins have a history in the military as symbolic tokens of belonging and appreciation. Members of some agricultural communities have recently expressed interest in using a challenge coin as a caring support tool to improve mental health among farmers. The objective of this analysis is to clarify the meaning and use of a challenge coin as an upstream suicide prevention caring support tool in agricultural communities.

Methods: A systematic search was performed in Google Scholar, PsycInfo, Sociological Abstracts, Web of Science, and PubMed following PRISMA guidelines, identifying literature available through October 2023. Thirty-five articles were included and analyzed using Rodger's Evolutionary Method for Concept Analysis.

Results: The attributes of challenge coins include its material presence (i.e. a medallion with official insignia) and its presentation as a recognition for contributions to society and signifying belonging to a group. The antecedents of the challenge coin were achievement, rank, or proficiency related to a role in public duty and membership in an occupational group facing unique challenges. The consequences were identified as improved morale and pride and fostering belongingness, connectedness, and community. These consequences can lead to the challenge coin serving as a cue for behavior change.

Discussion: This concept analysis provides additional understanding of a challenge coin when used as a caring support tool, particularly in agricultural communities. The challenge coin has historically been used in a military or first responder context, but it could be expanded to other service-oriented occupations such as farming.

Conclusion: Using a challenge coin for a mental health promotion intervention requires more community-based research to understand its efficacy in agricultural contexts. With the concept of a challenge coin clarified, a next step would be scientific efforts among mental health practitioners and industry leaders to support further development and testing of the challenge coin as a suicide prevention and caring support tool that fosters belongingness and appreciation within agriculture.

Análisis de concepto: Monedas desafío (Challenge coins) como herramienta de apoyo afectivo para prevenir el suicidio de agricultores

En algunas zonas agrícolas se están utilizando las monedas desafío (challenge coins) como símbolo de apoyo para mejorar la salud mental de las personas trabajadoras del sector de la agricultura. Este estudio investigó el uso y significado de dichas monedas para la prevención del suicidio. Para ello, se realizó una revisión bibliográfica mediante diferentes bases de datos. Se seleccionaron 35 artículos científicos, utilizando como fecha límite de búsqueda octubre de 2023. Estas monedas se tratan de un reconocimiento por contribuir a la sociedad, representan la pertenencia a un grupo y se emplean como medallas. Como aspectos positivos, destacaba la mejora de la moral y el orgullo. Normalmente, esta moneda se empleaba en el ámbito militar, pero su utilización se podría extender a trabajos como la agricultura.

AUTORES	Jeanne M. Ward, John R. Blosnich, Cheryl Dean-Witt
DOI	https://doi.org/10.1080/1059924X.2024.2418818
PUBLICACIÓN	Journal of Agromedicine, 2025, Volumen 30, Número 1, pp. 153-164
TEMÁTICA	Riesgo Salud Mental

ARTÍCULO 23: The Protective Factors of Suicide in Agriculture: A Global Scoping Review

Introduction: Each year, over 700,000 people die by suicide worldwide, and far more attempt and are impacted by the outcome. Agriculture is one of the most dangerous industries in which to work; it is also exposed to a lot of external stressors, such as climatic conditions, market forces (both input and output) and government regulation, as well as internal such as employment and of staff, multiple skills required and isolation. These stressors contribute to the higher rate of farm suicide cases. While there is growing evidence of the protective circumstances (factors) that protect against suicide and suicidality, more needs to be done in the agricultural sector.

Objective: To review global literature and consolidate the current knowledge regarding protective factors against suicide and suicidality in agricultural communities and elucidate the implications of these findings.

Method: A systematic scoping review following the Preferred Reporting Items for Systematic Scoping Reviews (PRISMA-Sc). A range of databases was searched for the terms “suicide*” or “suicidal behavior”, “suicide attempt”, or “suicidal ideation”, or “suicidality”, and “farm*” or ‘agricultural worker*’ or ‘rancher*’ and ‘protective factors’ or protect”. Paper included had to be peer reviewed in English, include people living, working in or with agriculture or lived in an agricultural area.

Results: Fourteen studies met the study criteria, predominately (72%) from the United States of America and Australia. Four (29%) articles discussed individual coping mechanisms and self-reliance as protective factors against suicide and suicidality, while six (43%) described the influence of social support and perceived sense of belonging on suicide risk. Five (36%) papers examined the association between health-promoting and suicide-prevention initiatives as protective factors in agricultural communities.

Conclusion: There is limited, however, growing literature about protective factors for the prevention of suicide in agriculture; however, it is skewed to high-income countries. This review demonstrates a link between the development of individual coping skills as a protective factor against suicide in agricultural communities, with a primary focus on farming occupations within this setting. Social support was found to help reduce suicide risk by increasing a sense of belonging. These need to be exploited to drive down suicide rates.

Los factores de protección contra el suicidio en la agricultura: una revisión global

Se realizó una revisión bibliográfica sobre los factores de protección contra el suicidio en el sector de la agricultura. Se emplearon diversas bases de datos y diferentes términos como “suicidio”, “trabajador agrícola”, etc. Los criterios para la selección de artículos fueron: revisión por pares, publicación en inglés y que incluyeran a personas que trabajaran o vivieran en el ámbito agrícola. Finalmente, se incluyeron 14 artículos. Los factores protectores identificados fueron los mecanismos individuales para afrontar problemas y la autosuficiencia (según 4 estudios), el apoyo social y la percepción de pertenencia (según 6 estudios) y la relación entre iniciativas para promover la salud y para prevenir el suicidio (según 5 artículos).

AUTORES

Nathan Dawes, Richard. C. Franklin

DOI

<https://doi.org/10.1080/1059924X.2024.2426500>

PUBLICACIÓN

Journal of Agromedicine, 2025, Volumen 30, Número 1, pp. 165-181

TEMÁTICA

Riesgo Salud Mental

LE TRAVAIL HUMAIN

ARTÍCULO 24: WRMDs in manual sugarcane cutting work the risk of developing work-related musculoskeletal disorders in manual sugarcane cutting work

Brazil is considered the world's largest sugarcane producer. Although this is a sector which contributes significantly to the Brazilian economy, health data and work safety are critical, since they indicate a high number of accidents, diseases, and work-related deaths. This article aims to identify the risks of Work-Related Musculoskeletal Disorders (WRMDs) among sugarcane cutters, attributable to physical work overload. Therefore, this study used the two first stages of Ergonomic Work Analysis (EWA) to better understand the activity and used the Ovako Working Postures Analyzing System (OWAS) biomechanical analysis software, and the calculation for the analysis of strength exerted by the erector spinae muscle and stress exerted upon the L5-S1 intervertebral disc, especially since the spine is subjected to important exposure in this kind of work. The results demonstrated that the cycles of repetition of movements per minute in this activity are predominant factors for the development of WRMD. Even though the stress exerted upon the L5 intervertebral disc and the contact force placed upon the erector spinae muscle are within the safety limit for static work, when the work is repeated, such forces may not be extended, which means that cutting sugarcane does not present a risk of lesion in a single movement, but the repetition of the activity may expose the worker to biomechanical hazards in a single work shift.

El riesgo de desarrollar trastornos musculoesqueléticos relacionados con el trabajo en el corte manual de caña de azúcar

Se estudiaron los riesgos de trastornos musculoesqueléticos relacionados con el trabajo en las personas dedicadas al corte de caña de azúcar en Brasil. Se emplearon las primeras fases del Análisis Ergonómico del Trabajo y se aplicó el método OWAS mediante software. También, se calculó el esfuerzo en la columna y la tensión en el disco L5-S1. Como factores, destacaron los movimientos repetitivos, que exponían al trabajador a riesgos biomecánicos durante la jornada laboral.

AUTORES Iracimara de Anchieta Messias, Sandra Francisca Bezerra Gemma, Flavia Traldi de Lima, Emico Okuno

DOI <https://doi.org/10.3917/th.881.0031>

PUBLICACIÓN Le Travail Humain, 2025, Volumen 88, Número 1, pp. 31-54

TEMÁTICA Riesgo Físico

WORKPLACE HEALTH & SAFETY

ARTÍCULO 25: Safety Leadership Training Effectiveness Evaluation on Behavior Change Among Large-Herd U.S. Dairy Farm Supervisors

Background: Prior research suggests leader-based interventions are considered to have a much stronger influence on worker safety behavior and climate than worker-based interventions. However, no prior research has evaluated training effectiveness of safety-specific leadership skill development for front-line supervisors on dairy farms. A tailored safety leadership training program targeting dairy farm supervisors was developed, delivered, and evaluated for its training effect on the supervisor's safety leadership behavior.

Methods: A 12-module safety leadership training program was developed and delivered in an asynchronous format using e-learning methods to 73 dairy farm supervisors, representing 30 farms across five western U.S. states. We employed the Kirkpatrick Model to evaluate different levels of training effectiveness.

Findings: Evaluation of knowledge gained among participants revealed significant differences between pre- and post-test scores with medium to very large learning effect sizes across all training modules, particularly with training modules addressing safety culture, workplace conflict, and safety meetings. Safety leadership behavior change evaluation revealed significant pre-post training effects across most training modules, particularly regarding safety dialogue, hazard assessment, safety modeling, and conducting safety meetings.

Conclusions: Our findings suggest that safety leadership training can result in essential leadership behavior change among front-line dairy farm supervisors.

Application to Practice: This study provides many insights into the successful implementation of a safety leadership training program in a challenging industrial sector (rural/remote workplaces, immigrant workforce), as well as training effectiveness evaluation using novel data collection methodology. Additional research is needed on the effectiveness and sustainability of safety leadership training in high-risk industrial sectors such as agriculture.

Evaluación de la eficacia de la formación de liderazgo en seguridad sobre el cambio de comportamiento entre supervisores de explotaciones lecheras de gran tamaño en Estados Unidos

Se desarrolló, puso en práctica y evaluó una formación de liderazgo en seguridad destinada a supervisores de explotaciones lecheras. Se compuso de 12 módulos, que se impartieron de forma online y asíncrona a 73 supervisores de 30 explotaciones diferentes de Estados Unidos. Se utilizó el Modelo de Kirkpatrick para evaluar la efectividad de la formación. Se demostró un aumento de conocimientos tras esta, principalmente en cultura de seguridad, manejo de conflictos y reuniones de seguridad.

AUTORES David I. Douphrate, Anabel Rodriguez, Pete Kines, Amir Hossein Javid

DOI <https://doi.org/10.1177/21650799241302817>

PUBLICACIÓN Workplace Health & Safety, 2025, Volumen 73, Número 4, pp. 180-192

TEMÁTICA Formación

ARCHIVES OF ENVIRONMENTAL & OCCUPATIONAL HEALTH

ARTÍCULO 26: Spray man and pesticide spraying – A unnoticed story

Pesticide application has become an indispensable process in crop production, but the inappropriate use of synthetic pesticides has led to significant risks for both human health and the environment. When we tried to map the diffusion network of pesticide-related information, we found that spray man is playing a crucial role. Therefore, we tried to assess the awareness of spray man regarding pesticide recommendations and application protocols. Our study employed snowball sampling to identify the spray man and content analysis to access their awareness level. The findings revealed that most spray men lacked knowledge about the recommended level of pesticide and safety protocols, handled pesticides carelessly, and were unaware of pesticide exposure management measures. Since spray men are one of the trusted information sources among the farmers, enhancing their knowledge about pesticide dosage and safety protocols would assist in not only regulating over-application but also saving their health and environment.

El fumigador y la aplicación de tratamientos fitosanitarios – Una historia desapercibida

Se analizaron los conocimientos que poseían las personas encargadas de la realización de tratamientos fitosanitarios en el sector de la agricultura sobre procedimientos para su aplicación y recomendaciones de uso. Se llevó a cabo un muestreo en cadena y un análisis de contenidos para conocer el nivel de conocimientos. Los resultados mostraron que la mayoría no tenían información sobre dosis recomendadas de estos tratamientos o medidas de seguridad, además de hacer un uso incorrecto de estos productos y no conocer las recomendaciones sobre la exposición. Se concluyó la necesidad de formación sobre estos temas para la protección de su salud y del medio ambiente.

AUTORES Logesh Mohankumar, Muthuprasad Thiyaharajan, Kavi Sidharthan Venkidusamy, Niranjana Sivalingam

DOI <https://doi.org/10.1080/19338244.2025.2491056>

PUBLICACIÓN Archives of Environmental & Occupational Health, 2025, Volumen 80, Número 3-4, pp. 63-67

TEMÁTICA Formación

SAFETY

ARTÍCULO 27: Large Language Models for Agricultural Injury Surveillance

The traditional approach to curating and disseminating information about agricultural injuries relies heavily on manual input and review, resulting in a labor-intensive process. While the unstructured nature of the material traditionally requires human reviewers, the recent proliferation of Large Language Models (LLMs) has introduced the potential for automation. This study investigates the feasibility and implications of filling the role of a human reviewer with an LLM in analyzing information about agricultural injuries from news articles and investigation reports. Multiple language models were tested for accuracy in extracting relevant incident and victim information, and these models include OpenAI's ChatGPT 3.5 and 4 and an open-source fine-tuned version of Llama 2. To measure accuracy, each LLM was given prompts to gather relevant data from a set of randomly selected online news articles already cataloged by human reviewers, such as the use of drugs or alcohol, time of day, or other information about the victim(s). Results showed that the fine-tuned Llama2 was the most proficient model with an average accuracy of 93% and some categories reaching 100%. ChatGPT-4 also performed well with around 90% accuracy. Additionally, we found that the fine-tuned Llama2 model was somewhat proficient in coding injuries using the OIICS classification scheme, achieving 48% accuracy when predicting the first digit. Though none of the models are perfectly accurate, the methodology and results prove that LLMs are promising in streamlining workflows in order to reduce human and financial resources and increase the efficiency of data analysis.

Modelos de lenguaje de gran escala para la vigilancia de lesiones en la agricultura

La recopilación, organización y difusión de información sobre lesiones en el sector agrícola se realiza mediante la introducción manual de datos y revisión por parte de personas. Sin embargo, se estudió la posibilidad de sustituir al revisor humano por Modelos de Lenguaje de Gran Escala para evaluar la información sobre este tema, mediante prensa y documentos de investigación. Se utilizaron diferentes modelos de lenguaje, incluyendo ChatGPT, OpenAI o Llama 2. Este último fue el modelo más preciso, con la posibilidad de optimizar los flujos de trabajo.

AUTORES	Jacob Muller, Daniel Petti, Changying Li, Serap Gorucu, Matthew Pilz, Bryan P. Weichelt
DOI	Safety, 2025, Volumen 11, Número 1, pp. 15
PUBLICACIÓN	https://doi.org/10.3390/safety11010015
TEMÁTICA	Accidentes y Enfermedades Laborales

ARTÍCULO 28: Using Machine Learning to Understand Injuries in Female Agricultural Operators in the Central United States

The number of women choosing agriculture as an occupation is increasing. Agriculture is dangerous work, and women are at risk of serious injury, but the research on injuries in females is sparse. Women perform different types of farmwork and have different exposures than men. Studies have not assessed injury in a large group of female agricultural operators. In this study, we used XGBoost, a machine learning algorithm, and logistic regression to examine 17 factors hypothesized to be associated with injury in 1529 farm and ranch women. The sample was split into a training group of 1070, and the results were replicated in a test group of 459. The model accuracy was 88%. We compared the results of XGBoost to those of the logistic regression models and computed odds ratios to estimate effect sizes. We found that the two methods generally agreed. XGBoost identified the total number of musculoskeletal symptoms, age, sleep deprivation, high work-related stress, and exposure to respiratory irritants as being important to injury. The multivariate logistic regression model identified higher income, higher stress, younger age, and number of musculoskeletal symptoms as being significantly associated with injury. The analysis highlights the importance of musculoskeletal disorders and work strain to injury in women.

Uso del aprendizaje automático para comprender las lesiones en las operadoras mujeres agrícolas del centro de Estados Unidos

En el sector de la agricultura, los estudios sobre lesiones a las que se exponen las mujeres son escasos, a pesar de que realizan numerosas labores en este ámbito. En esta investigación se empleó XGBoost y regresión logística para analizar 17 factores que podrían tener relación con lesiones. Participaron 1529 mujeres de granjas y ranchos. XGBoost determinó como factores relevantes el número de síntomas musculoesqueléticos, la edad, la falta de sueño, elevado nivel de estrés en el trabajo y exposición respiratoria a productos perjudiciales. El modelo de regresión logística indicó mayor estrés, mayores ingresos, menor edad y número de síntomas musculoesqueléticos. Los trastornos musculoesqueléticos y la carga de trabajo eran causas fundamentales en la aparición de dichas lesiones.

AUTORES	Cheryl L. Beseler, Risto H. Rautiainen
DOI	https://doi.org/10.3390/safety11010009
PUBLICACIÓN	Safety, 2025, Volumen 11, Número 1, pp. 9
TEMÁTICA	Accidentes y Enfermedades Laborales
