

39th INTERNATIONAL COLLOQUIUM of the INTERNATIONAL SECTION of the ISSA ON PREVENTION IN AGRICULTURE



VISION ZERO

*world prevention strategy
in agriculture*

15-17th MAY 2019 CÓRDOBA SPAIN

ORGANIZED BY

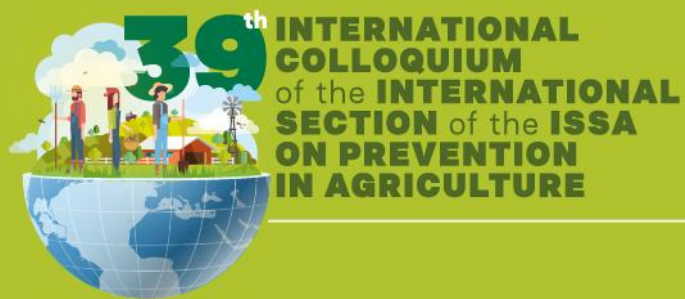


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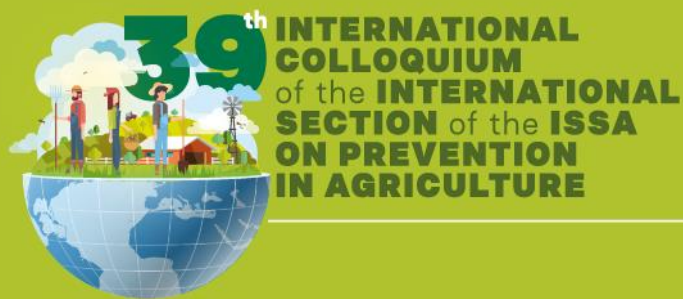


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Colloquium venue: Rectorate of the University of Cordoba

**ABSTRACTS BOOK OF THE 39th INTERNATIONAL COLLOQUIUM OF THE INTERNATIONAL
SECTION OF THE ISSA ON PREVENTION IN AGRICULTURE
«VISION ZERO - PREVENTION STRATEGY IN AGRICULTURE»
15-17 May 2019. Córdoba, Spain**

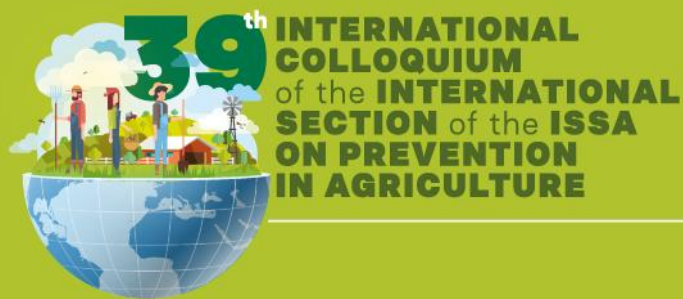


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ISSA ON PREVENTION IN AGRICULTURE
«VISION ZERO - PREVENTION STRATEGY IN AGRICULTURE»
15-17 May 2019. Córdoba, Spain**

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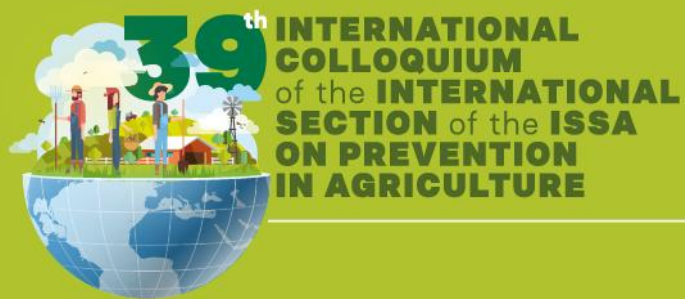
INTERNATIONAL SECTION OF THE ISSA ON

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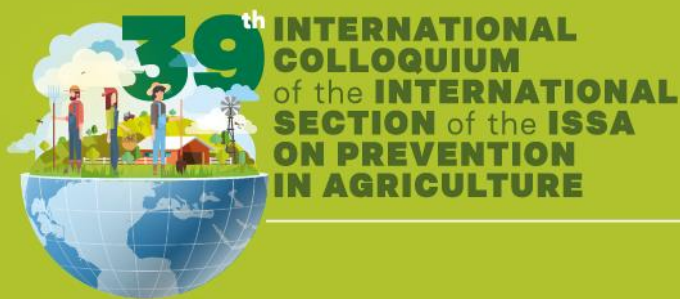


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WELCOME

RECTOR'S GREETING

From the University of Cordoba, I want to give the warmest welcome to the ISSA Management Committee, as well as to all its members, professionals or institutional representatives interested in attending the 39th edition of the ISSA International Colloquium, Agriculture Section.

Our university, which is located in the south-east of Spain and the south of Europe, has a marked agri-food character, leading a Campus of International Excellence in Agri-food, CeiA3, formed by 5 universities in Andalusia, and with a high level of research and technology transfer to the agricultural sector. This university, has a medium size, and has magnificent facilities and equipment, which we offer at the disposal of this international meeting of specialists in security in agriculture.

In our institution, Occupational Risk Prevention, and within it Safety, is one of the main axes included in our Strategic Plan, and applicable in all sectors of activity of our University. Therefore, and following the actions and objectives set out in this line, it is an honour and satisfaction to host this prestigious International Colloquium.

Córdoba, an area of multicultural encounter, a welcoming city with the millions of travellers who visit us every year, currently has 4 UNESCO recognitions as a World Heritage Site, the only city in the world that has been worthy of such an honour.

We hope that your stay in the city of Cordoba, and in our University, will be as pleasant as we wish, and with the level of scientific interest that the organizing entity guarantees.

Best regards

José Carlos Gómez Villamandos
Chancellor of the University of Cordoba

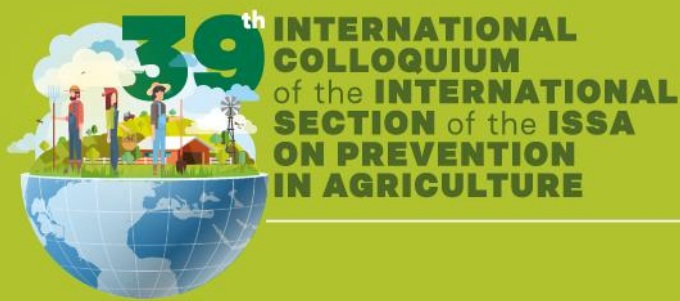


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FOREWORD FROM THE CHAIRPERSON OF THE INTERNATIONAL SECTION OF THE ISSA ON PREVENTION IN AGRICULTURE

As chairperson of the International Section of the ISSA on Prevention in Agriculture it is an immense pleasure for me to invite you to attend the 39th International Colloquium of the Section of the ISSA on Prevention in Agriculture organised by the Section in cooperation with the Agricultural Social Insurance Fund and the University of Cordoba.

The International Section of the ISSA on Prevention in Agriculture is one of the thirteen sections of the Special Commission on Prevention of the International Social Security Association (ISSA) which was founded in 1927 under the auspices of the International Labour Organization. The objectives of the Section are to improve occupational safety and health in agriculture, livestock farming, horticulture and forestry through international cooperation. For this purpose, every three years the Section organises a Colloquium dedicated to prevention of occupational accidents and diseases in agriculture.

This time the 39th International Colloquium of the Section will take place on 15-17th May 2019 in Cordoba and will focus on the implementation of the Vision Zero as world prevention strategy in the agriculture sector. The idea of the event is to promote the ISSA Vision Zero strategy which aims to reduce occupational accidents and diseases to zero. I hope that the Colloquium will be a tremendous occasion and a valuable platform for experts from around the world to share their experience and new ideas regarding the actions that will lead to zero accidents and occupational diseases in agriculture.

With this foreword, I would like to personally invite occupational safety experts, researchers, specialists of rural medicine and experts from the area of public health, as well as employers and employees from agriculture sector to present their experiences and research results and to actively share their valuable views and contribute their findings to make this event a great occasion for a fruitful exchange of ideas.

I am convinced the Colloquium will let us present and explore recent achievements and highlight good practices regarding various aspects of prevention in agriculture to help to protect lives, health and well-being of farmers and rural communities at large.

My special thanks go to the Chancellor of the University of Cordoba who kindly accepted to co-organise the Colloquium together with the International Section of the ISSA Agriculture on Prevention in Agriculture and to host the Colloquium in a magnificent setting of University of Cordoba in one of the most beautiful historical cities of the world.

I look forward to welcoming you at the Colloquium in Cordoba,

Aleksandra Hadzik

Chairperson ad interim of the International Section of the ISSA on Prevention in Agriculture

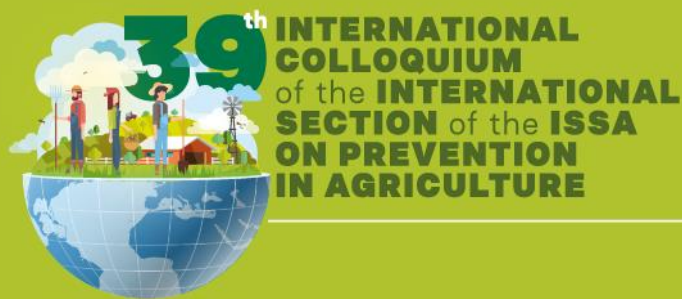


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COMMITTEES

SCIENTIFIC COMMITTEE FROM ISSA

Section Advisory Board and Bureau: Ordinary members

Isaac Abril Muñoz

*Instituto Nacional de Seguridad e Higiene en el Trabajo
Centro Nacional de Medios de Protección (CNMP)
SPAIN*

Magalie Cayon

*Caisse Centrale de la Mutualité Sociale Agricole
Les Mercuriales
FRANCE*

Martin Hartenbach

*Sozialversicherung für Landwirtschaft, Forsten und Gartenbau (SVLFG)
GERMANY*

Robert Liana

*Agricultural Social Insurance Fund – Head Office
Department of Rehabilitation
POLAND*

Ph.D. Professor Peter Lundqvist

*Swedish University of Agricultural Science
Department of Work Science
SWEDEN*

Marta Suchocka -Zielińska

*Agricultural Social Insurance Fund – Head Office
Department of Rehabilitation
POLAND*

Päivi Wallin

*Farmers' Social Insurance Institution MELA
The Unit of Insurance and Well-being Services
FINLAND*

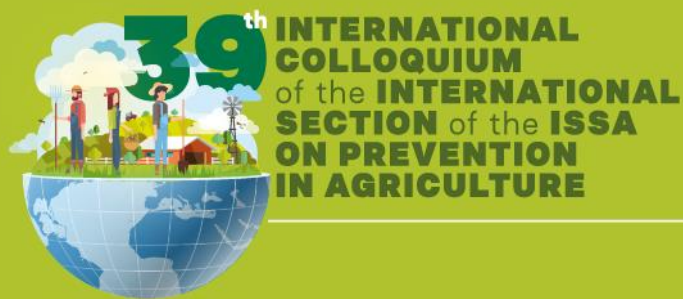


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University of Cordoba's Corresponding Member of ISSA

Dr. Pedro Delgado Cobos

Universidad de Córdoba

Dirección General de Prevención y Protección

Campus Universitario de Rabanales

Córdoba

SPAIN

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Ms Aleksandra Hadzik, President

Agriculture Social Insurance Fund (KRUS)

POLAND

Vice-Chairpersons

Päivi Huotari

President of the Farmers Social Insurance Institution

FINLAND

Eric Van Daele

Caisse Centrale de la Mutualité Sociale Agricole, FRANCE

Secretary General Ad interim

Ms Magdalena Wachnicka-Witzke

Agricultural Social Insurance Fund (KRUS)

POLAND

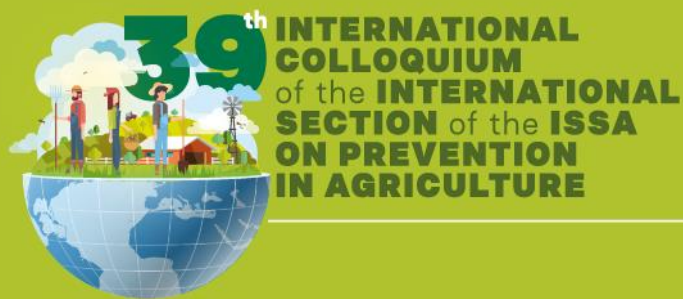


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Vice-Chancellor of Infrastructures and Sustainability

Manuel Vaquero Abellán

General Director of Prevention and Environmental Protection

M^a Dolores Redel Macías

Area of engineering projects professor

Fernando Palomares García

Head of the Health and Safety Office

Pablo López Roldán

Technician of Occupational Risks Prevention

Cristóbal Alférez Mejías

Technician of Occupational Risks Prevention

M^a Carmen Blanque Díaz

Head of Administrative Área

ORGANIZING COMMITTEE FROM ISSA

ISSA Section Secretariat

Ms Magda Wieczorkiewicz

Agricultural Social Insurance Fund (KRUS)

Ms Magdalena Szewczyk

Agricultural Social Insurance Fund (KRUS)

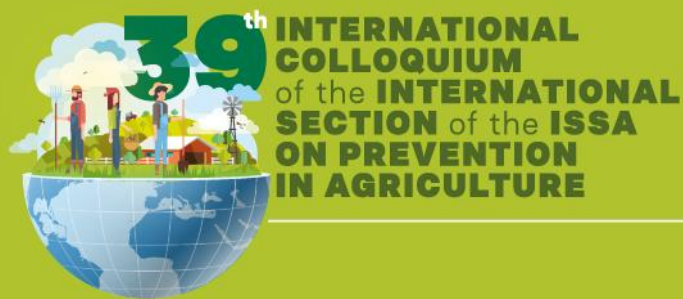


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Cristóbal Alférez Mejías

Technician of Occupational Risks Prevention

Francisco J. Torralbo Pérez

Technician of Occupational Risks Prevention

M^a José Rodríguez Morales

Administrative staff

M^a Carmen Blanque Díaz

Head of Administrative Área

ORGANIZING COMMITTEE FROM SOCIAL COUNCIL AT UNIVERSITY OF CORDOBA

Fernando Chacón Giménez

From Government Council at University of Cordoba



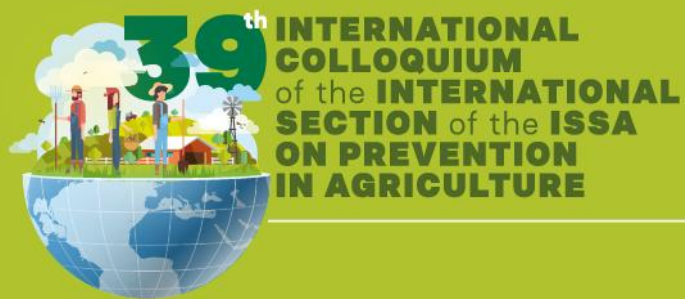
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PROGRAM



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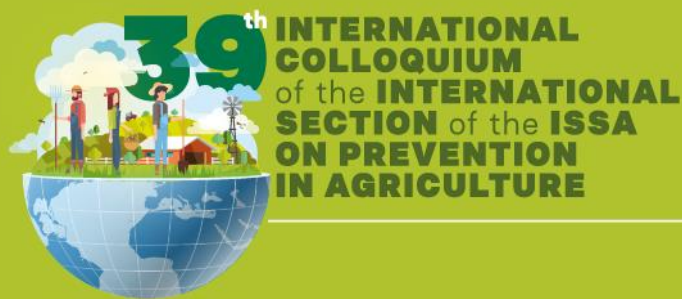


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WEDNESDAY, 15 MAY 2019

13h30 - 15h30 **Registration**

14h30 - 15h30 **Welcome coffee**

15h30 - 16h00 **Welcome address**

Mr. José Carlos Gómez Villamandos, Chancellor of the University of Cordoba

Mrs. Aleksandra Hadzik, Chairperson ad interim of the International Section of the ISSA on Prevention in Agriculture

16h00 - 17h45

NEW APPROACHES TO FARMERS SAFETY AND SOCIAL POLICY

Moderator: Professor Peter Lundqvist

Ph. D. - Swedish University of Agricultural Science; Member of the Advisory Board, International Section of the ISSA on Prevention In Agriculture

The Present and Future of Agricultural Health and Safety in South Korea

K Lee, K Kim, H Kim, K Kim, D Choi, M Seo

Rural Development Administration, South Korea

Trends and Prospects of the Colombian Agricultural Sector in the Field of Occupational Risks

Patricia Londoño Pérez

Universidad Militar Nueva Granada, Colombia

Spanish awareness campaign Tractor overturns: Tu vida, sin vuelcos

Isaac Abril Muñoz

President of the working group "Agriculture Sector" of the Spanish Commission for Safety and Health at Work

Working in partnership to reduce fatalities in agriculture in UK and beyond

Alan Plom

IOSH - Rural Industries Group, UK

Farmers' children – KRUS prevention ambassadors

Agnieszka Nowalska

KRUS, Poland

17h45 - 18h15 **Coffee break**

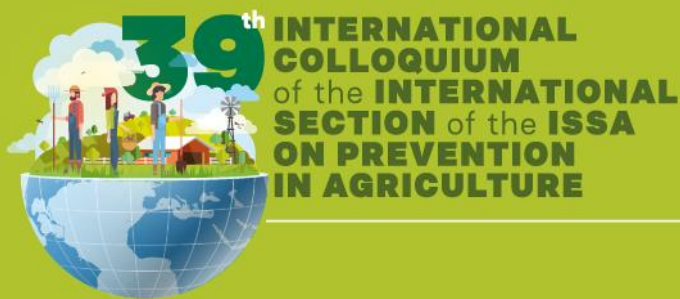


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18h15 – 20h00

INNOVATION AND NEW TECHNOLOGIES IN AGRICULTURE

Moderator: Ph. D. Antonio J. Cubero Atienza
Vice Chancellor of the University of Cordoba

AgroTech. Biostimulants. Smart Farming
JA de Cote Mesa
iQBiotech, LLC. Agrosiences, Spain

Dosaolivar: two new devices to ensure pesticide applicator's safety in olive orchards
Gregorio L. Blanco-Roldán, Antonio Miranda-Fuentes, Alberto Godoy-Nieto, Fernando Chacón
Universidad de Córdoba, Spain
Universidad de Sevilla, Spain

Prevention and integration of new technologies in farms
Coralie Hayer
CCMSA (Central fund of the French agricultural social insurance), France

New risks in olive harvesting: accidents by 'RECOGEFARDOS'
Carmen Ropero Montoro, Modesto Román Delgado
CPRL Córdoba
Junta de Andalucía, Spain

Development of a tractor driving simulator with immersive virtual reality for training to avoid occupational hazards
Gustavo Adolfo Salcedo Eugenio, Álvaro Macián Morales, Isidro Ibarra Berrocal, Lola Ojados Gonzales, Bernardo Martin Górriz, Isaac Abril Muñoz, Rafael Cano Gordo, Tamara Ruiz Rodriguez
Universidad Politécnica de Cartagena
Instituto Nacional de Seguridad y Salud en el Trabajo (INSST), Spain

THURSDAY, 16 MAY 2019

8h00 - 9h00 **Registration**

9h00 - 10h30

HEALTH PROTECTION/PREVENTION FOR FARMERS

Moderator: Dr. Erich Koch
Sozialversicherung für Landwirtschaft, Forsten und Gartenbau (SVLFG); Secretary General of the European Network of Agricultural Social Protection Systems (ENASP)

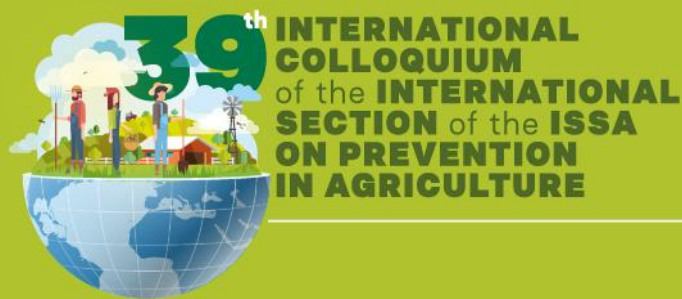


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Agricultural Machinery Safety – Improvement thanks to investigations after accidents or observation during work

Benoit Moreau

CCMSA (Central fund of the French agricultural social insurance), France

Analytical techniques to identify the components of plant protection products in counteracting counterfeit products

Charles Richard Glass, Marta Vargas, Rosalia Lopez, Francisco J Egea, Jose Luis Martinez Vidal, Antonia Garrido

CHAP, UK

A new method of preventing exposure to tick-borne diseases for employees of the agricultural sector

Adam Poscik, Joanna Szkudlarek

CIOP-PIB, Poland

Mobilization of the decision maker: payers, regarding MSD prevention. A method and its tools: « TMSA® »

Magalie Cayon, Dominique Semeraro

CCMSA (Central fund of the French agricultural social insurance), France

10h30 - 11h00

Coffee break

11h00 - 12h30

DISABILITIES AND RETURN TO WORK

Moderator: Dr. Robert Liana

Agricultural Social Insurance Fund (KRUS); Member of the Advisory Board, International Section of the ISSA on Prevention In Agriculture

Measuring of sun exposure

Martin Hartenbach, Markus Breuer

SVLFG, Germany

Prevention and rehabilitation - twin-track approach in return to work

Friedrich Mehrhoff

DGUV, Germany

Epidemiological Study of Temporary Disability in agricultural workers in Andalusia

Esther Alvarez Theurer, José Antonio Mulero

Coordinadora Provincial IT-UMVI Córdoba, Spain

Back to the job

Martin Hartenbach, Ina Siebeneich, Andrea Engemann

SVLFG, Germany

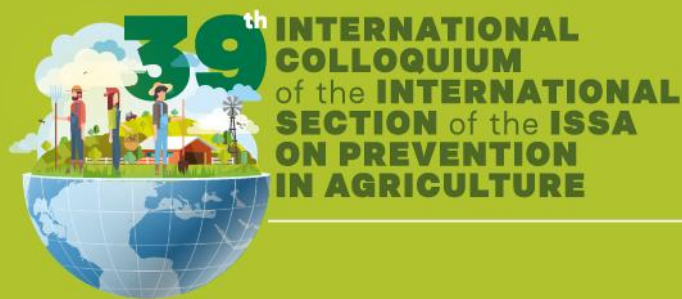


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12h30 - 14h00 Lunch

14h00 - 15h30

STRESS RELEASE AND MENTAL HEALTH PROGRAMMES

Moderator: Ms Päivi Huotari

Farmers' Social Insurance Institution MELA; Vice-Chairperson of the International Section of the ISSA on Prevention In Agriculture

Acting on the quality of working life (QWL) of agricultural leaders, a bet to improve workers' occupational health and safety

Philippe Tran Tan Hai

MSA Fund from Ile de France, France

Finnish project helps farmers to maintain their work ability

Päivi Wallin

Mela, Finland

Suicide Prevention Plan

Patrice Heurtaut

CCMSA (Central fund of the French agricultural social insurance), France

Burn out in Agriculture - Phenomenology and Approaches to Prevention

Erich Koch

SVLFG, Germany

15h30 - 16h00 Coffee break

16h00 - 17h45

VISION ZERO IN AGRICULTURE ON NATIONAL LEVEL

Moderator: Ms Magdalena Wachnicka-Witzke

Agricultural Social Insurance Fund (KRUS); Secretary General (ad interim) of the International Section of the ISSA on Prevention In Agriculture

Guide to good practices on the protection of health and safety of workers in the agricultural sector

Pedro Delgado Cobos

University of Cordoba, Spain

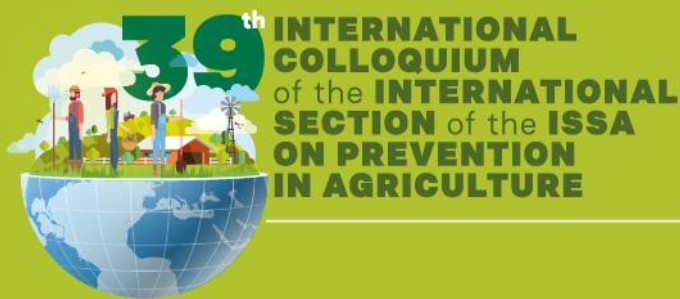


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Occupational fatalities in Swedish agriculture – before, during and after a 5-year national intervention program

Peter Lundqvist

Swedish University of Agricultural Sciences, Alnarp, Sweden

Sectorial strategy on occupational health and safety for the food and wood value chain of the "Basque Country" (Spain) 2019-2025

Andoni Gamboa Martínez

OSALAN / Basque Institute for Occupational Safety & Health (Basque Government, Spain)

Vision Zero in agriculture – implementation & promotion

- Finland – Mela
- France – MSA
- Germany – SVLFG
- Poland – KRUS

ISSA Agriculture Section's members

17h45 - 18h00

Closing remarks

FREE CULTURAL PROGRAM ACTIVITIES

19h30

Guided tour: Mosque-Cathedral of Cordoba

21h00

Dinner – Cocktail: Royal Stables of Cordoba
(C/ Caballerizas Reales, 1)

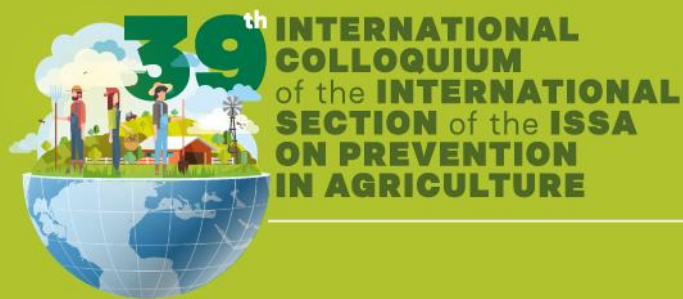


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FRIDAY, 17 MAY 2018

TECHNICAL VISIT

- | | |
|----------------------|---|
| 09h00 | Departure from Córdoba
Rectorate of the University of Cordoba. Avda. Medina Azahara, s/n |
| 11h00 – 12h00 | Technical visit to the packaging plant of "Mercaoleo" and "Bodega de aceite"
(DCOOP: Agri-food Cooperative) |
| 13h00 – 14h00 | Technical visit to the wine cellars «Pérez Barquero» and «Gracia» (Wine Cellar Designation of Origin «Montilla Moriles») |
| 14h00 – 15h30 | Lunch-cocktail at «Bodega Pérez Barquero» |
| 15h30 – 16h15 | Return to Córdoba
Rectorate of the University of Cordoba. Avda. Medina Azahara, s/n |

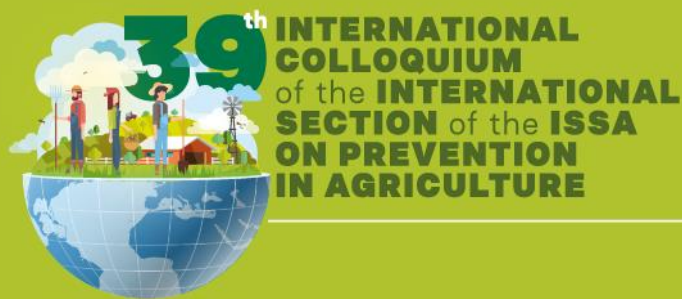


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POSTER PRESENTATIONS

Acetylcholinesterase as a marker of exposure to pesticides. Role of the clinical laboratory in its determination

Laura Torres Ballesteros, Concepción Flores Muñoz, Francisco de Asís Manchado López, Azahara Alcantarilla Serrano, Manuel Vaquero Abellán

Health Care Area

Occupational Risk Prevention Centre of Cordoba

University of Cordoba

Cualtis, Cordoba

Characterization of occupational accidents in the agrarian sector of Cordoba

Daniel Gamboa Aguilera

Occupational Risk Prevention Centre, Córdoba

CIPA-TOX: a database to assess retrospective occupational exposure and health effects to pesticides

Mounia El Yamani, A Paul, L Chaperon, B Charbotel, J Spinosi

Santé publique, France

Collective Health Surveillance Experience in Technical Professionals in the protection of the Environment. Alterations in health and preventive activities

Azahara Alcantarilla Serrano, Laura Torres Ballesteros, Concepción Flores Muñoz, Natividad Alba Rodríguez, Francisco de Asís Manchado López, Manuel Vaquero Abellán

Health Care Area

Occupational Risk Prevention Centre of Cordoba

University of Cordoba

Cualtis, Cordoba

Encourage winemakers to develop tools to prevent pesticide risks: How to build together the analysis of real work and occupational health to design pesticide risk prevention

Fabienne Goutille, Caroline Jolly, Isabelle Baldi, Marion Albert, Alain Garrigou

Population Health Research Centre – Inserm Université de Bordeaux

Exposure prevalence to arsenical pesticides in viticulture between 1979 and 2001 in France

Laura Chaperon, Johan Spinosi, Delphine Jezewski-Serra, Mounia El Yamani

Santé Publique France

Good practices for the safe and sustainable use of plant protection products

María Isabel Lara Laguna, María del Carmen Márquez

Instituto Nacional de Seguridad y Salud en el Trabajo (INSST), Spain

AEPLA

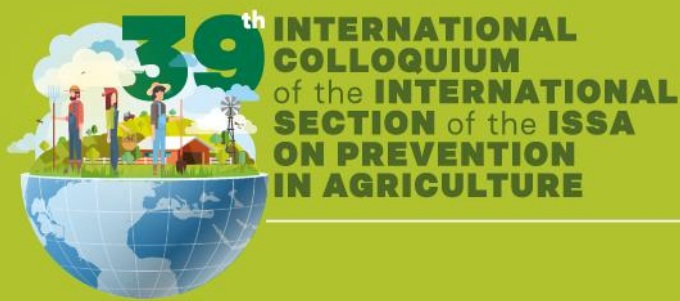


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Health & Safety in European agriculture - organization, legislation and support

Peter Lundqvist, Martina Jakob, Catherine Laurent, Dushica Santa, Eleni Petridou, Joanna Makulska, Barbara Tombarkiewicz, Inger J Sikkeland, Björn Hilt, Mladenka Vujosevic, Jarkko Leppälä, Risto Rautiainen
European COST Action (CA16123) with the title 'Safety Culture and Risk Management in Agriculture'

Prevalence of occupational exposure to pesticides used on bananas by the French West Indies workers and study of associated health effects

Johan Spinosi, C Gentil, L Cahour, L Chaperon, M El Yamani
Santé Publique France, Direction Santé Travail, Équipe Associée à l'Umrestte, France

Safety and health applied to the risk of overturning of tractors

Ana María Cárdenas de la Torre
Centro de Prevención de Riesgos Laborales de Jaén, Spain

Safety conditions of centrifugal spreaders of fertilizer in use

Rafael Cano, Isaac Abril
Instituto Nacional de Seguridad y Salud en el Trabajo (INSST), Spain

The influence of skating on the overturning of the tractor in plowing and the importance of theoretical-practical training to increase safety and energy efficiency

José Manuel Morales Lagares, Carlos Ruíz Frutos, Pedro Cernuda Navarro, Benito López Castilla
Mi Tractor Seguro
Universidad de Huelva

Virtual laboratories for ubiquitous training of occupational risks prevention professionals in occupational noise

Manuel Vaquero Abellán, M^a Dolores Redel Macias, Pilar Aparicio Martínez, Pilar Martínez Jiménez, Antonio J. Cubero Atienza
University of Cordoba



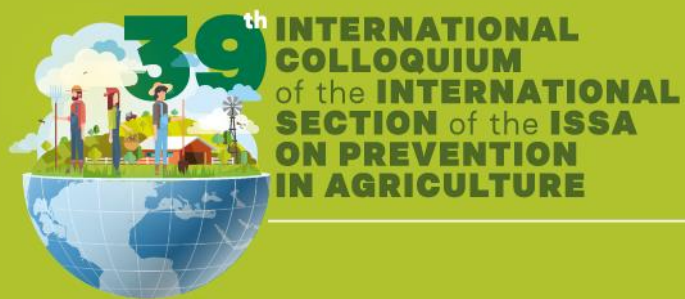
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ORAL PRESENTATIONS



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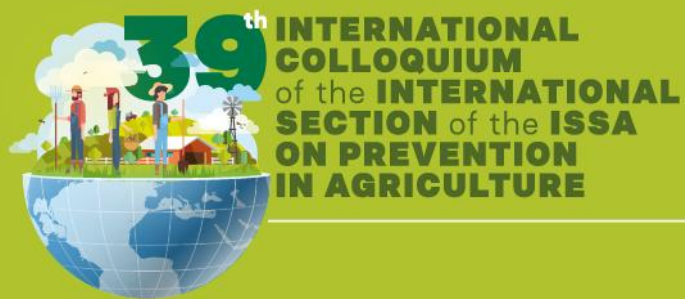


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PANEL I:

**NEW APPROACHES TO
FARMERS SAFETY AND
SOCIAL POLICY**



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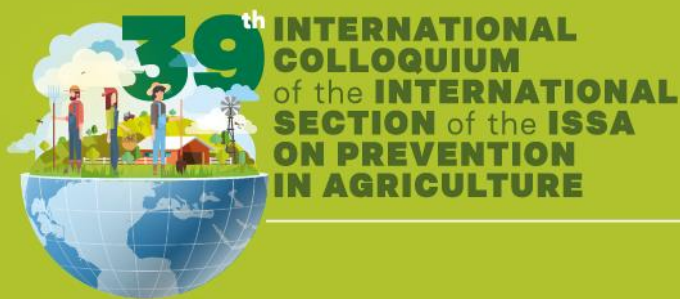


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15-17th MAY 2019 **CÓRDOBA** SPAIN

THE PRESENT AND FUTURE OF AGRICULTURAL HEALTH AND SAFETY IN SOUTH KOREA

K Lee, K Kim, H Kim, K Kim, D Choi, M Seo

Rural Development Administration, South Korea

BACKGROUND

Korean farmers' occupational injury and disease rates have been reported to be higher than those in other industries, but most Korean farmers (at usually small-scale and owner-operator farms) have been excluded from national industrial safety and health management system. To improve farmer's health and safety, the present efforts and future directions on national system have been discussed and pursued.

RESULTS

Rural Development Administration (RDA) has conducted various studies and preventive activities for agricultural health and safety since the late 1990s. Considerable results have been achieved including the production of agricultural injury statistics, enactment of relevant laws, and expansion of relevant research and services such as several types of community-based demonstrative intervention.

The present and the future directions could be addressed in terms of prevention, compensation, and insurance. As for prevention, building of stable national system including training system for farm safety managers with a national certificate, education system for farmers, and preventive services for all farmers are needed rather than the current demonstrative prevention projects which has been provided to a limited number of farmers. Regarding occupational health and health insurance for farmers, change to a mandatory social insurance system from the current optional entry system is discussed. As for health care and rehabilitation for farmers, expansion of functions and numbers Centers for Farmers' safety & Health which is based on hospital is needed.

CONCLUSIONS

Efforts to build a systematic, effective, and national management system encompassing the law, system, research and preventive projects have been being made. To make an optimum national management system, considerations on specific circumstances of Korea, references to the best practices from foreign countries, proper international regulations, and active international exchange and cooperation are essential.

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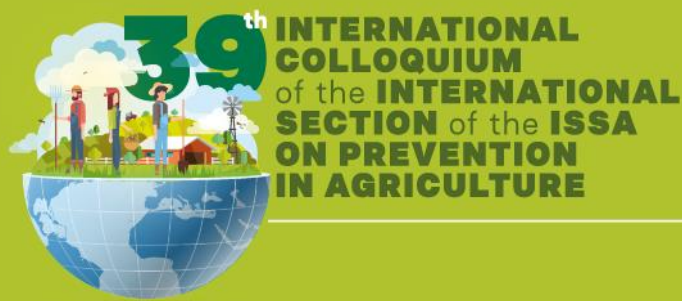


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TRENDS AND PROSPECTS OF THE COLOMBIAN AGRICULTURAL SECTOR IN THE FIELD OF OCCUPATIONAL RISKS

Patricia Londoño Pérez

Universidad Militar Nueva Granada, Colombia

KEYWORDS: decent work, informality, work accidents, occupational diseases, occupational hazards.

BACKGROUND

Colombia, is benefited by having a wide variety of climates, associated with altitude, latitude and thermal levels, has an area of 11.420,000 hectares, there are currently 7.131,500 hectares that are used in processes related to agriculture, that is, more than half of the country works in any agricultural activity. Those more than seven million hectares are worked by 4.9 million of people, equivalent to 22% of the working population, only 16% of the producers in the dispersed rural area claim to have access to machinery, while the 17% of them claim to have support infrastructure to develop their agricultural work.

RESULTS

In 2018, agriculture became the industry that most generated new jobs, the cyphers continue showing that it is the protagonist of the national economy and demonstrates the rebirth of the countryside and the Colombian economy, emphasizing that agriculture was driven mainly by livestock and permanent and transitory crops, which maintains good indicators in cyphers of foreign trade, production, planted area, commercialization, generated jobs and credit placement.

However, in the last census, the cyphers showed that more of the 45% of rural workers are not wage earners, that is, they are hired as day laborers or family employees, they don't have access to a contributory social security scheme, and therefore they are not affiliated to occupational risks.

The productive capacity of the agrarian sector in Colombia can be negatively impacted by the high percentage of informality, in the system of land contracting, as well as the high volume of informal workers, constituting a large gap to reach the minimum of a job decent. In 2018, the number of companies affiliated to occupational risks increased in 18%. In the rural sector, the accident rate quadruples the national accident rate, in the period from April 2017 to March 2018, there were 267 occupational diseases and 15 in the Agriculture, Livestock, Hunting and Forestry sector. of work accidents.

CONCLUSIONS

Low coverage in occupational risks, employers aren't doing the activities of health promotion and prevention of work accidents and occupational diseases in an effective way. It is essential to establish a social dialogue, to carry out an analysis of the contents of the collective bargaining agreements of the Agricultural Union in the occupational safety and health component.

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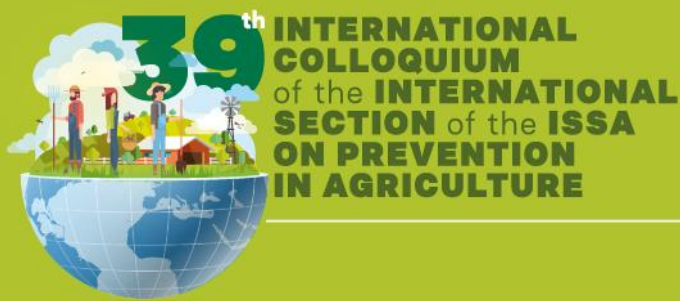


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SPANISH AWARENESS CAMPAIGN TRACTOR OVERTURNS: TU VIDA, SIN VUELCOS

Isaac Abril Muñoz

President of the Working Group "Agriculture Sector" of the Spanish Commission for Safety and Health at Work

KEYWORDS: tractor ROPS overturns.

BACKGROUND

Tractor overturns are the leading cause of fatalities in the agricultural sector. Among other reasons, tractors without roll over protective structure (ROPS) or drivers misusing the foldable ROPS may cause more than one death per week in Spain. Official statistics do not reflect the actual situation since accidents suffered by self-employed or retired people (who usually drive old tractors without ROPS) are not included

RESULTS

To solve this problem, the Spanish Commission for Safety and Health at Work has just launched an awareness campaign dealing with tractor overturns, based on awareness workshops. Campaign materials includes:

- Promotional materials: Poster, leaflet and merchandise material (pin, sticker, magnets, keychain) and a promotional video to reinforce the campaign visibility and present all material and how to participate on the campaign.
- Technical materials: Poster, brochure, awareness workshop slides and a tractor driving simulator available for computer and mobile devices.

All these materials can be downloaded from the website: www.tuvidasin vuelcos.com, where different forms of participation in the campaign could also be found.

With the objective to reach to the agricultural farmers and tractor drivers, technical workshops, in addition to awareness workshops, will also be organized

CONCLUSIONS

To reduce the consequences of tractor accidents in the agricultural sector, the promotion of practical training courses is essential to increase tractor ROPS adoption, to persuade farmers to replace old tractors with newer ROPS-equipped ones and to avoid the misuse of the ROPS.

Nevertheless, the Spanish Commission for Safety and Health at Work is also working on campaign parallel activities, such as agricultural subsidies and other programs trying to reduce the number of tractors without ROPS

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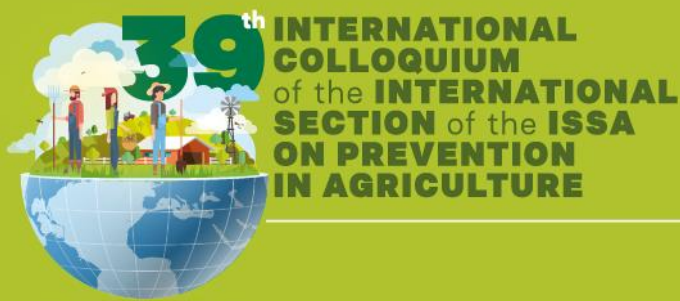


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WORKING IN PARTNERSHIP TO REDUCE FATALITIES IN AGRICULTURE IN UK AND BEYOND

Alan Plom

IOSH - Rural Industries Group, UK

KEYWORDS: Farm Safety, Partnership, Campaigns.

BACKGROUND

IOSH, the Chartered body for health and safety professionals, is keen to share our work on helping to prevent injury, illness and death in the agriculture sector and to learn from others. This session will outline some of the initiatives IOSH is involved in, both in the UK and internationally, which will be reviewed to reflect how they can contribute to the ISSA's World Prevention Strategy in Agriculture, Vision Zero, a campaign which IOSH has been pleased to work alongside ISSA during its development.

As in other countries, agriculture continues to have the highest incidence of fatalities in the UK and England's Farm Safety Partnership (FSP England) has set a target to reduce fatalities on farms by at least 50% by the summer of 2023.

The Partnership in England is supported by over 40 organisations and companies. Individual 'partners' have their own initiatives, networks and spheres of influence, but work together with the other national Farm Safety Partnerships and Regulators in Wales, Scotland, Northern Ireland and the Republic of Ireland to maximise the impact of guidance and publicity, e.g. during the annual Farm Safety Week, and after incidents or prosecutions.

IOSH is an active supporter of all the national Partnerships and Regulators, e.g. having a representative on the Board of FSP England and chairing its Working Groups; being actively involved in HSE's Agricultural Industry Advisory Group, through the IOSH Rural Industry Group (RIG) and with members involved in other national Partnerships. IOSH/RIG has also convened workshops on behalf of FSP England, on machinery safety, handling cattle, and transport and deliveries, to help identify priorities, raise awareness and influence the industry by sharing good practice and guidance.

IOSH-FSP held an event on 1 May 2019 to discuss and share the findings of research to improve communications and influence farmers and farm workers more effectively. This event focused on HSE's 'Insight' research which has 'segmented' farmers into different groups requiring varying methods of communication, and initiatives by Universities and other Partners, including the 'Yellow Wellies' campaign, which is aimed at young people.

IOSH's international focus includes working collaboratively with colleagues in Turkey and Macedonia, as part of the IOSH WORK 2022 strategy and our No Time to Lose occupational cancer prevention campaign.

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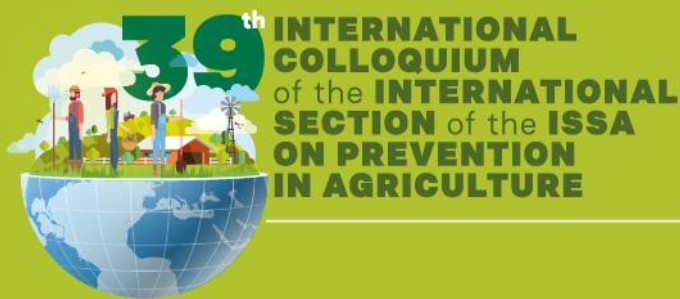


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15-17th MAY 2019 CÓRDOBA SPAIN

FARMERS' CHILDREN – KRUS PREVENTION AMBASSADORS

Agnieszka Nowalska

KRUS, Poland

KEYWORDS: prevention, accidents, safety.

BACKGROUND

The Agricultural Social Insurance Fund (KRUS) of Poland is one of the largest state executive institutions of the government administration that successfully provides social insurance services for farmers and performs other tasks commissioned and financed by the state budget funds for farmers population regarding social policy, health care and prevention activities.

KRUS undertakes actions aimed at preventing accidents at work and farmers' occupational diseases. The preventive activity of the Fund involves examination of causes and circumstances of accidents at work as well as propagation of knowledge about threats and safe work rules among the insured people. This activity is addressed to different age groups living in rural areas, among other things to children. The knowledge of health and safe work is popularized via training courses for farmers organized by the Fund, publications and films, competitions, exhibitions, press articles and radio and TV programs. One of the above mentioned actions is the National Art Competition for Children "How to Be Safe in the Country".

The aim of the competition is to promote positive behaviour related to the work and play of children on the farm among primary school pupils from rural areas, as well as to promote the List of particularly dangerous activities related to running a farm, which must not be entrusted to children under 16. Each year the competition draws attention to a different type of hazard on a farm.

RESULTS

The competition raises awareness among children about safe behaviour on a farm and at agricultural work. Learning good habits during childhood impacts behaviour of adults. In this way children become prevention ambassadors. Since 2010 in the National Art Competition for Children "How to Be Safe in the Country" participated more than 30,000 children from about 3 000 elementary schools each year. The knowledge gained by children in the competition contributes to the reduction of fatal accidents in rural areas in Poland, especially those involving.

CONCLUSIONS

The National Art Competition for Children "How to Be Safe in the Country" organised by KRUS in Poland is an innovative education approach focused on children to familiarize them with safety issues in rural areas in a pleasant way. Safety rules learned in early childhood are remembered for life. This way the prevention activities have a life-long durable effect.

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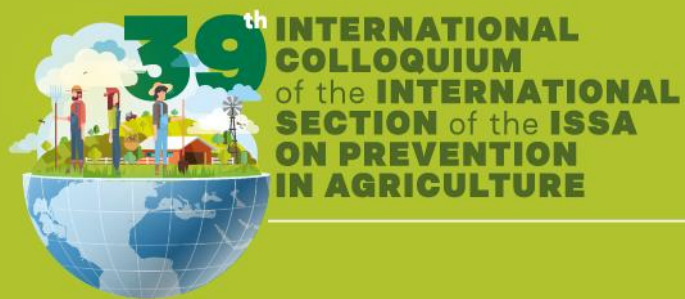


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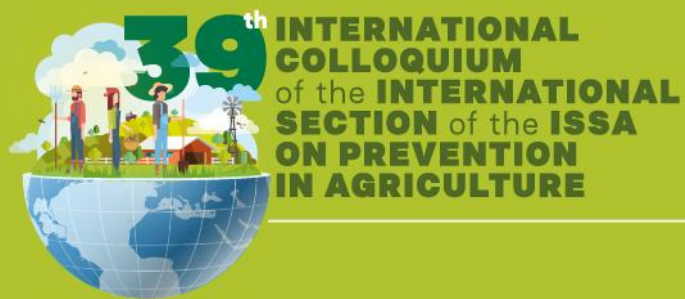


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PANEL II:

**INNOVATION AND NEW
TECHNOLOGIES IN
AGRICULTURE**



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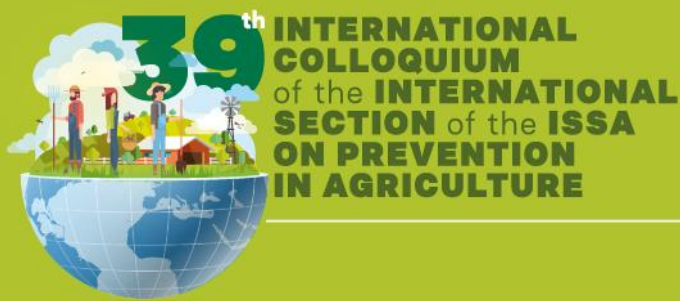


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15-17th MAY 2019 **CÓRDOBA** SPAIN

AGROTECH. BIOSTIMULANTS. SMART FARMING

JA de Cote Mesa

iQBiotech, LLC. Agrosiences, Spain

KEYWORDS: biostimulants, artificial intelligent, crops, big data, biofertilizer, smart farming, productivity, environment, sustainability, safety, health.

BACKGROUND

Although your experience closest to the world of agriculture has been the section of fruit and vegetables of your supermarket of confidence, it is quite likely that you have run into terms such as 'biostimulant', 'biofertilizer', 'artificial intelligence' 'Smart Farming' or other concepts that share the prefix 'bio', 'AgroTech' beyond the borders of the specialized press in the biotechnological sector.

That these terms are on everyone's lips is not surprising: the concern more and more palpable on the part of the consumer about the origin and quality of the food that he buys, the greater awareness of the impact that human activity causes on the medium and the pressing problem posed by the effect of climate change on thousands of croplands throughout the world are launching a major change in the agricultural sector, which seeks to solve these problems without this negatively affecting the crop productivity.

Biotechnology and artificial intelligence of course, are presented as one of the main strengths of humanity to solve these problems. This may, however, raise two questions:

How exactly can biotechnology and big data help this change take place? What exactly will it influence in the international agricultural landscape? What is the pace of the markets on these new technologies?

But, without a doubt, what many of you are asking yourself: what is a bioestimulant? What is Smart Farming? iQBiotech since 2016 has been working both technology platforms in extensive and intensive crops in the Americas. We will present productivity trials with the use of our biostimulant iQForte whose raw material is an organic product of agrobusiness activity and we will show based on big data the ability to make predictions in crop yields, pest prediction, optimization of supply chain... etc.

The innovation platforms that are the subject of this presentation lead to reduce the number of occupational diseases in agriculture by reducing the use of agrochemicals.

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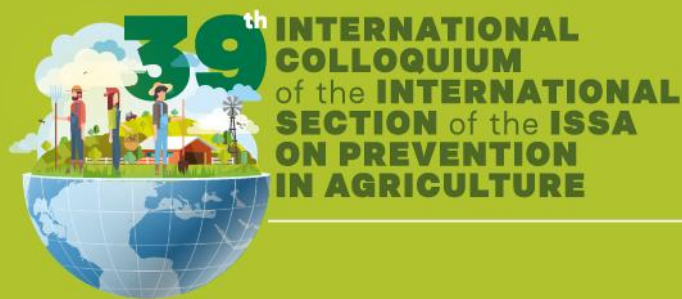


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DOSAOLIVAR: TWO NEW DEVICES TO ENSURE PESTICIDE APPLICATOR'S SAFETY IN OLIVE ORCHARDS

Gregorio L. Blanco-Roldán¹, Antonio Miranda-Fuentes², Alberto Godoy-Nieto¹, Fernando Chacón³

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3 Desarrollo Tecnológico Agroindustrial, Campus tecnológico Rabanales 21, ctra. Nacional IV, km 396, 14014, Córdoba, Spain

KEYWORDS: pesticide, olive, spray security, automatization.

BACKGROUND

Pesticide applications are risky for non-trained operators. The high toxicity of these products requires important safety precautions not always taken into account by non-expert applicators. One of the main problems present in this operation is the product handling, in which the operator plays a key role, as the spray mix preparation lies on his/her hands. New developments are required to ensure the operator's safety and DOSAOLIVAR, an operative group led by DCOOP with the help of the University of Cordoba, CEIA3, DTA and Osuna Sevillano is on the way

RESULTS

The main purpose of the group is the development of two different items to help farmers preparing and dosing pesticides without handling the sprayer. The first development consists of a Smartphone app. Its basis lies on the possibility to give accurate dosing recommendations according to the olive type, leaf density and size. It also provides help for farmers at the time of mixing the pesticides in the sprayer's tank. This is particularly important because concentration units tend to be a problem for farmers, who usually ignore the pesticide instruction sheet and apply the product in the concentration recommended by the product seller, which is usually higher than the one advised by its manufacturer. The second development, a sensor and actuator kit, automatically regulates the sprayer according to the recommendations of the app, the forward speed of the tractor and the row spacing, enabling the spray only when trees are detected. This is particularly important for two reasons. On the one hand, it provides accurate spraying without making the operator to manually regulate the system, which is completely automatic. On the other hand, there is no need to have the actuators placed inside the tractor cabin, as there is nothing to regulate. This has a key importance to prevent operator damage in the case of an accidental pipe burst

CONCLUSIONS

The developments included the advice of an expert sprayer manufacturer, who takes part in the group. The main purpose is to develop a kit to be installed in any commercial sprayer, so that it can be easily spread to help the biggest number of farmers. There are many field trials performed by the University of Cordoba to support the mathematic models included in the program. It is also planned that there are big-scale trials, performed with farmers, to get their feedback and develop a representative and useful tool for olive orchards

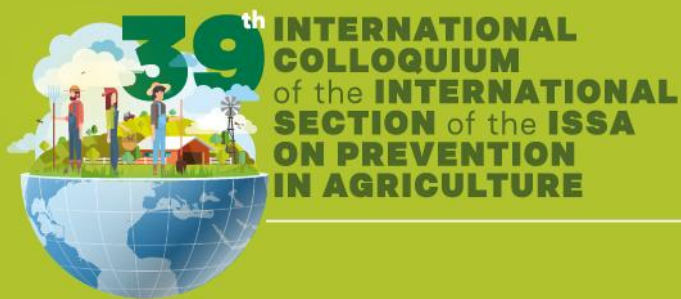


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PRACTICAL APPLICATIONS

The practical applications are the main aspect of the developments proposed. They are intended to serve as useful tools for daily spray treatments, what is stimulated by the calendar function. Their impact in operator's safety is, therefore, very important.

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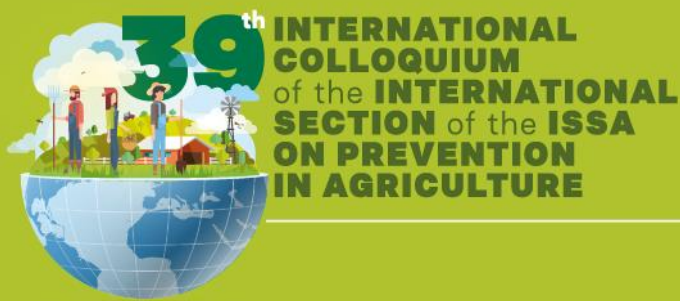


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PREVENTION AND INTEGRATION OF NEW TECHNOLOGIES IN FARMS

Coralie Hayer

CCMSA (Central fund of the French agricultural social insurance), France

New technologies get into the agricultural sector. At first glance, their development in favour of the agricultural sector seems to favour the reduction of some risks (MSDs or painful working situations for example). Nevertheless, assistance must be provided to this transition of professional methods because they can also be at the origin of new risks or at the heightening of already emerging risks like the psychosocial risks.

This 4.0 revolution transforms men work and questions preventions advisers. Thanks to its projects and studies, MSA is integrated in this dynamics and thus equips itself with the resources to question the introduction of new technologies in work, to measure its positive and negative consequences on workers' health and hence to be in a position to give advise on precautions to be taken to preserve salaried and non-salaried workers' (farmers) Health and Security at Work.

MSA monitors closely these evolutions and support them. A research & development Covenant with IRSTEA makes it possible to include prevention at the very early stage of some equipments' design. Projects concern:

- Autonomous robots which perceive workers in their environment in order not to raise risks
- Tractor driving simulator that allows young people undergoing vocational training to learn to drive without risk of overturning.

New technologies are also useful to relieve work arduousness, exoskeletons tests are being conducted in some sectors, notably in Gardens Green Areas. They contribute to relieve upper-body strained posture without replacing man at work.

The study carried out on the impact of milking robotization on the quality of life at work of farmers and their salaried workers is an illustration of MSA's implication in the area of new technologies. This study shows that milking robotization can have a positive impact on life at work if the introduction of this new tool is anticipated and the impact of its introduction on the work organisation, workers skills and their jobs and working conditions is studied.

Following this study, MSA developed an accompaniment tool for farmers who had an investment project in new technologies. This tool's objective is to allow the farmer contemplate all the dimensions of his project in technical, organisational, human and financial terms.

New technologies also help modernize our prevention tools and raise professionals' awareness on risks taken in a playful manner. The immersion in virtual reality allows MSA's Health and Security at Work teams make people experiment situations conducive to accidents like work at height, intervention on machines or contacts with animals without taking risks. Then, prevention messages are easier to understand and to implement.

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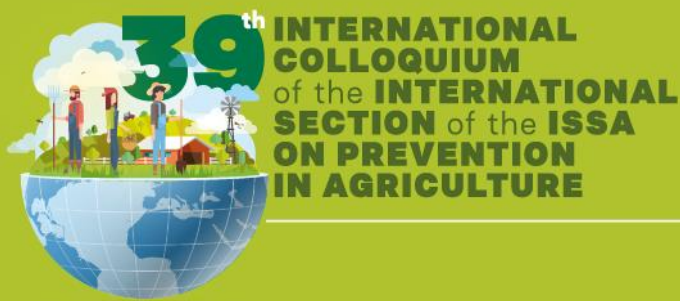


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NEW RISKS IN OLIVE HARVESTING: ACCIDENTS BY 'RECOGEFARDOS'

M^a Carmen Ropero Montoro, Modesto Román Delgado

CPRL Córdoba. Junta de Andalucía

KEYWORDS: New Risks; Agricultural Machinery, Accidents By 'Recogefardos'.

BACKGROUND

The technological advancement in the agriculture sector has incorporated a great innovation in the agricultural machinery. The mechanization of tasks, like the collection of olives, by the incorporation of new equipment that eliminates ergonomic risks-origin of musculo-esqueleticos disorders and lumbar injuries-, requiring less manpower and increasing the productivity. The use of "Recogefardos" machines has come to trigger new risks for workers, causing serious and fatal accidents, as some "Recogefardos" machines models fail to comply with labor regulations, assuming unevaluated hazards.

RESULTS

The analysis of the accidents with these equipment occurring in our province, leads us to obtain conclusions of great relevance for the sector.

CONCLUSIONS

The technological advancement in the agriculture sector has incorporated a great innovation in the agricultural machinery. The mechanization of tasks, like the collection of olives, by the incorporation of new equipment that eliminates ergonomic risks-origin of musculo-esqueleticos disorders and lumbar injuries-, requiring less manpower and increasing the productivity. The use of "Recogefardos" machines has come to trigger new risks for workers, causing serious and fatal accidents, as some "Recogefardos" machines models fail to comply with labor regulations, assuming unevaluated hazards. The analysis of the accidents with these equipment occurring in our province, leads us to obtain conclusions of great relevance for the sector:

- Emergence of mechanical hazards by entrapments in accessible moving elements, which increase the severity and number of injuries.
- There are commercialized "recogefardos" machines, which despite having the declaration of conformity, in the initial phase of the design of the machine have not taken into account the intrinsic safety requirements, risks that are not identified, nor protected.
- The joint work of eventual workers, with low training, boosts emerging risks, especially due to the lack of training of the tractor driver and the misinformation of agricultural pawns.

PRACTICAL APPLICATIONS

It is necessary to apply technical improvements in this type of machinery, as well as to ensure that no improvisations are allowed or the incorporation of mechanical drag elements without instruction manual and/or that lack the appropriate protections.

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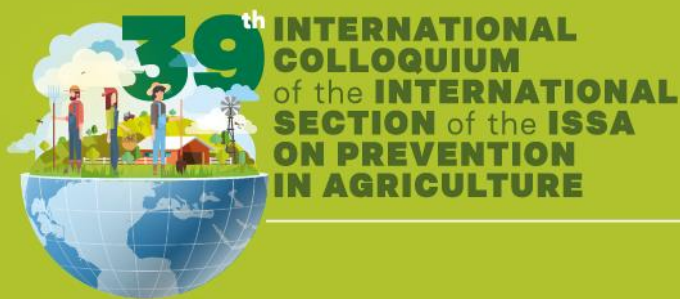


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DEVELOPMENT OF A TRACTOR DRIVING SIMULATOR WITH IMMERSIVE VIRTUAL REALITY FOR TRAINING TO AVOID OCCUPATIONAL HAZARDS

Gustavo Adolfo Salcedo Eugenio¹, Álvaro Macián Morales¹, Isidro Ibarra Berrocal¹, Lola Ojados Gonzales¹, Bernardo Martín Górriz¹, Isaac Abril Muñoz², Rafael Cano Gordo², Tamara Ruiz Rodríguez²

¹ Universidad Politécnica de Cartagena, Spain

² Instituto Nacional de Seguridad y Salud en el Trabajo (INSST), Spain

KEYWORDS: Education and training; Tractor driving simulator; Immersive virtual reality; Risk of rollover

BACKGROUND

Tractor overturns are the leading cause of fatalities in the agricultural sector. Among other reasons, tractors without roll over protective structure (ROPS) or drivers misusing the foldable ROPS may cause more than one death per week in Spain. Official statistics do not reflect the actual situation since accidents suffered by self-employed or retired people (who usually drive old tractors without ROPS) are not included.

To solve this problem, the Spanish Commission for Safety and Health at Work are developing an awareness campaign dealing with tractor overturns, based on awareness workshops which include practical demonstrations using a tractor driving simulator with immersive virtual reality for training to minimize this risk.

Despite the fact that immersive virtual reality technology development began more than 50 years ago, its application as a training tool to minimize occupational risk is relatively recent. It is demonstrated that perception of risk and safety of workers increase significantly after its use. Also, in the agricultural sector, tractor driving simulators make it possible to train drivers in high risk situations that are not feasible in the real field due to the high risk of rollover.

RESULTS

To reduce the consequences of tractor accidents in the agricultural sector, the promotion of practical training courses is essential to increase tractor rollover protective structures (ROPS) adoption, to persuade farmers to replace old tractors with newer ROPS-equipped ones and to avoid the misuse of the ROPS.

Tractor driving simulator development, including training scenarios with actual risk situations and a driving circuit on an agricultural field to check lessons learned, is a fundamental tool to achieve all these goals. It is based on the regulation NTP 1087 (Agricultural tractor: rollover risk prevention) and NTP 1086 (Agricultural tractor: rollover stability).

The driver can choose among different types of tractors and implements, to experiment how it affects rollover stability. When you select tractors with folding ROPS, at any time you may operate the safety device. You can move up the ROPs in case of risk or move it down to prevent hitting fruit trees and obstacles.

When you finish the circuit, a report is generated by the program with the driving results (mistakes, speeding, time, map of the route, and score). A result report will be generated to see users' evolution.

CONCLUSIONS

The application of immersive virtual reality is a potentially powerful tool for training in Occupational Risk Prevention.

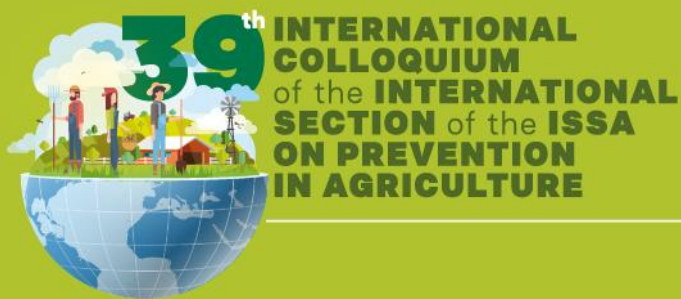


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The simulator is useful for investigation and training in risk rollover prevention, safe driving, and the correct use of the ROP. Users are sensitized about the risk of tractor rollover accidents and safe behavior is reinforced.

PRACTICAL APPLICATIONS

This tool will be implanted in technical seminars to train tractor drivers and prevention workers.

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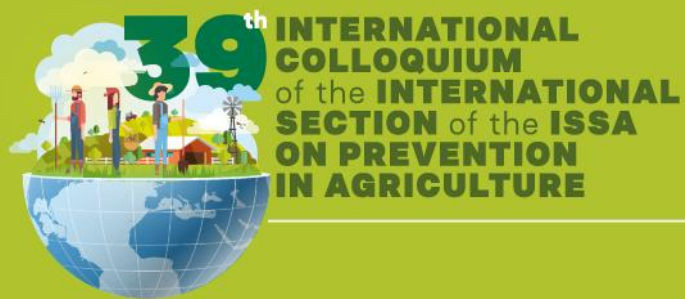


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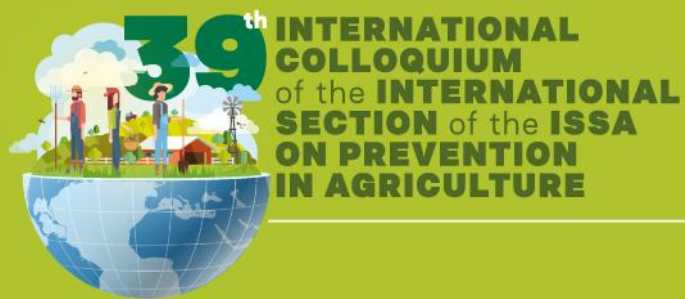


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PANEL III:

**HEALTH PROTECTION/
PREVENTION FOR FARMERS**



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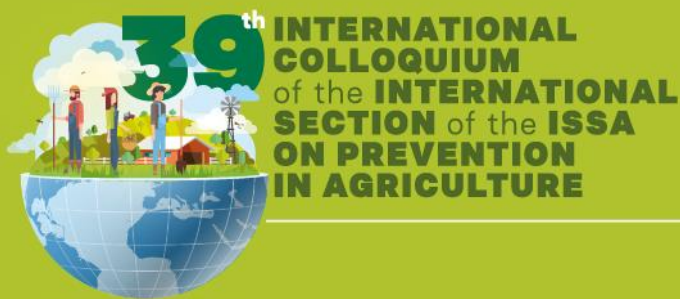


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AGRICULTURAL MACHINERY SAFETY – IMPROVEMENT THANKS TO INVESTIGATIONS AFTER ACCIDENTS OR OBSERVATION DURING WORK

Benoit Moreau

CCMSA (Central fund of the French agricultural social insurance), France

KEYWORDS: machinery, safety, accidents, investigations, agriculture.

In France, work equipment represents 17% of the total number of work related accidents, 20% of the costs for all agricultural workers, and about one third of fatal accidents. The prevention of risk with machines can be carried out at several levels:

- in terms of design and standardization, which corresponds to an investment in primary prevention with the aim of eradicating risk from the design of agricultural equipment,
- at the placing on the market level: this involves relying on public authorities to report equipment that generates safety problems and supporting companies on the criteria for choosing equipment when purchasing it.
- at the user level, it is a question of reinforcing, through information and training, the safe use of its equipment.

For many years, MSA has been contributing to regulatory and standardisation work, in particular concerning the most at-risk agricultural work equipment: wood chippers, manure spreaders, silage cutters, filtered air cabins, etc.

Despite an often-lengthy process, it appears that these investments in standardization have been the most relevant and effective in improving safety and reducing risk exposure.

This is why MSA has included primary prevention in its SST 2016-2020 plan with the aim of strengthening its capacity to act in the field of standardization of work equipment.

Since 2017, MSA's OHS network has taken advantage of its presence all over the country and the knowledge of companies to carry out investigations on equipment targeted by the MSA's Central Fund (CCMSA) according to its dangerousness and/or according to the standardization timeframe.

After having identified the occupational accident notifications for these machines, prevention advisors must collect information from victims or other users regarding the precise circumstances under which accidents occurred.

Advisors can also carry out observations of machines in operation to collect the broader issues related to the use of these machines. In 2017, for example, the 35 MSA local funds made a feedback on nearly 150 surveys concerning 4 categories of machines.

The objective is to capitalize on this detailed information to act more efficiently with manufacturers, to provide public authorities with information and to provide concrete elements to move the benchmarks of decision-makers in standardization bodies. A second objective is to disseminate these results to users, for example by producing prevention documents or communications at trade fairs.

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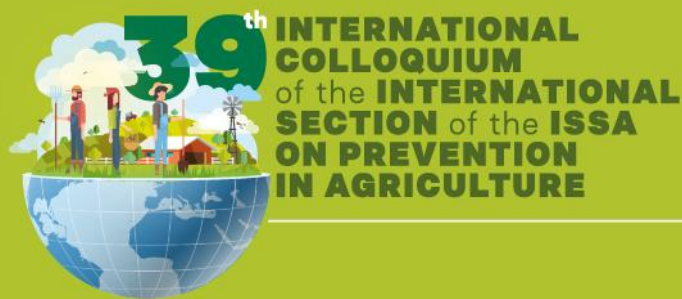


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ANALYTICAL TECHNIQUES TO IDENTIFY THE COMPONENTS OF PLANT PROTECTION PRODUCTS IN COUNTERACTING COUNTERFEIT PRODUCTS

Charles Richard Glass¹, Marta Vargas², Rosalia Lopez², Francisco J Egea², Jose Luis Martinez Vidal², Antonia Garrido²

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KEYWORDS: counterfeit products, analytical techniques, risk of operators.

BACKGROUND

The label of a plant protection product has detailed safety information for the hazards and risks posed by the formulation constituents. The principle component of a formulation is the active substance, however to achieve a stable formulation which can be applied in either concentrated or dilute form with a carrier such as water, co-formulants are required. In addition, there are often impurities present, which are by-products of the production process. The risks posed by known compounds in the formulation have been assessed as part of the regulatory process to safeguard human health and the environment

RESULTS

In the case of counterfeit products the label bears no relation to the constituents, and therefore the use of counterfeit products poses an unknown risk to the operator and re-entry workers, as well as consumers of any produce and the environment in general. Rapid identification of the formulation constituents allows counterfeit products to be detected and removed from the market.

The development of orthogonal techniques, such as high-resolution mass spectrometry (HRMS) and nuclear magnetic resonance (NMR), together with powerful softwares, such as Mass-Metastite and other several databases, enables the unambiguous identification of structures of unknown compounds, including impurities or metabolites that likely appears during fabrication, storage and application stage.

CONCLUSIONS

These innovations in technology, are relevant to establish systematic procedures to monitor the presence of counterfeit products, establishing differences with the legal ones, and by extension, to trace-back the presence of impurities or metabolites in food-stuffs or exposed agricultural workers to the applied plant protection products.

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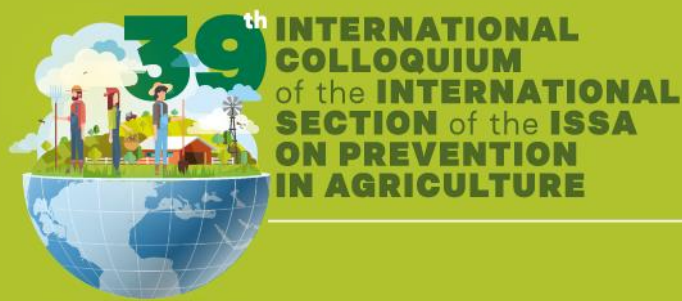


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A NEW METHOD OF PREVENTING EXPOSURE TO TICK-BORNE DISEASES FOR EMPLOYEES OF THE AGRICULTURAL SECTOR

Adam Poscik, Joanna Szkudlarek

Central Institute for Labour Protection National Research Institute, Poland

KEYWORDS: borreliosis, protective clothing, ticks.

BACKGROUND

Ticks (*Ixodes ricinus*) belong to the group of parasitic mites (Para-sitiformes). They can be found all over Europe, with the exception of the northern parts of the continent. Ticks are vectors of *Borrelia burgdorferi* bacteria, causing borreliosis and viruses that cause tick-borne encephalitis. In recent years, due to the rapid increase in the ticks population, a dynamic increase in the number of cases of both Lyme disease and tick-borne encephalitis has been noted. It is estimated that in Poland between 20% and 50% of ticks are vectors of *Borrelia burgdorferi* bacteria that cause Lyme disease. In 2017, over 21,000 cases of Lyme disease and 250 cases of tick-borne encephalitis were registered in Poland.

Ticks on the front legs have a Haller's organs sensing smells: pheromones, heat, carbon dioxide, butyric acid, as well as vibrations, thanks to which they can sense the victim. There are many clothing solutions and tick protection bands available on the EU market, the effectiveness of which has not been proven by any tests. In order to check the effectiveness of protective clothing against ticks, an objective test method has been developed in the Central Institute for Labour Protection – National Research Institute (CIOP-PIB).

RESULTS

Ticks live mainly in tall grass, that's why they are usually attached to the lower part of the clothing, at the level of the shank. Therefore the model of human leg was used for testing. The developed test stand consists of:

- cylindrical housing made of transparent plastic,
- shoe and shank model equipped with a 3-zone temperature control system in the following ranges: $25 \pm 2^\circ\text{C}$, $30 \pm 2^\circ\text{C}$, $36 \pm 2^\circ\text{C}$
- ultrasonic humidifier with a hygrometer, maintaining the humidity of $85 \pm 5\%$, a set of thermostats for measuring and controlling temperature, and fans to ensure the airflow in the test chamber.

The principle of testing of the effectiveness of protective clothing against tick bite is based on placing adult forms of ticks (*Ixodes ricinus* collected from the wild) in the chamber and checking their behavior.

In order to force the ticks to move on the model of the shank it was heated to the human body temperature and covered with clothing material soaked with a chemical attractor in the form of an aqueous solution of butyric acid (imitating the smell of the host's sweat). Tested material or element (band) soaked with the repellent solutions (DEET or permethrin) was placed on the shank and we checked whether the ticks were transferred to the shank model after 8 and 12 hours.

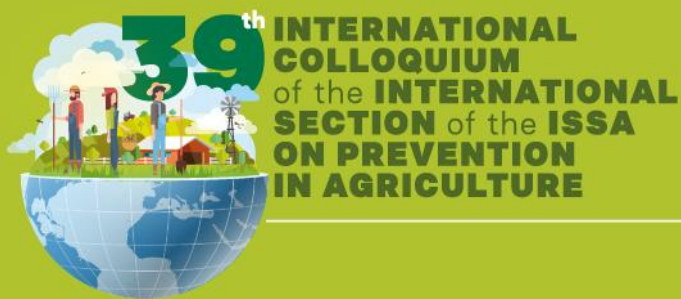


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CONCLUSIONS

The test method developed in CIOP-PIB allows for an objective assessment of the effectiveness of clothing protecting against tick bites in conditions close to the natural environment of ticks invasion.

The results of tests carried out by CIOP-PIB indicate that an effective method of protection against ticks is the use of clothing equipped with elements attached at the level of the shank, soaked with repellents: DEET or permethrine solutions.

PRACTICAL APPLICATIONS

The developed test method could be used in the EU type examination procedure for clothing protecting against ticks bites conducted by notified bodies in accordance with the requirements of the Personal Protective Equipment Regulation no 2016/425.

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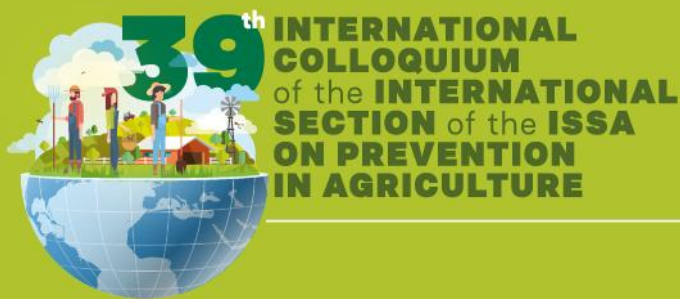


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MOBILIZATION OF THE DECISION MAKER: PAYERS, REGARDING MSD PREVENTION. A METHOD AND ITS TOOLS:

«TMSA®»

Magalie Cayon, Dominique Semeraro

CCMSA (Central fund of the French agricultural social insurance), France

BACKGROUND

At the beginning of 2010, the Central MSA fund (Caisse Centrale de Mutualité Sociale Agricole or CCMSA) made a triple analysis:

- MSD are always at the forefront of occupational diseases in France (93% of occupational diseases of agricultural salaried workers),
- MSD prevention, led by the MSA's Health & Security at Work network and addressed at the agricultural workers, is too technical and top-down/prescriptive,
- It is difficult to link "decision makers worries (entrepreneurs, individual farmers)" and "MSD prevention" and consequently to mobilise them.

In order to counter this analysis by creating a dynamic of change in the company, without mobilising too many MSA resources, CCMSA, the Central fund, devised a method (and its tools) mobilising decision makers to MSD prevention: « TMSa®: Trouver Mes Solutions adaptées » (i.e. Finding of Adapted Solutions).

In 2016, this method was made available to MSA's Health & Security at Work network (350 occupational doctors, 260 prevention advisers, 160 occupational health nurses) under the "MSD" priority of 2016-2020 Plan on Health and Security at Work in Agriculture.

In 2017-2018, CCMSA trained more than 230 MSA volunteer prevention advisers to this method. It is a 2 days training followed by 1 day for feedback after a 4 months inter-sessional period.

METHOD AND TOOLS

«TMSa®» is a method called "emergence method". For a prevention adviser it consists in a 2 hours personal interview with a decision maker (labour employer or not). During the interview, the latter discusses freely about his concerns as a manager and is then invited to remember the ones that can be solved thanks to MSD prevention. Later on, they are enacted in an action fiche and a prevention project is initiated.

Tools associated to this method are a user manual, "manager/farmer" fiche to acquire knowledge on MSD multi-causality and to take notes, "prevention adviser" fiche to prepare and assess the interview through a set of questions gathered in a fun media (playing cards format).

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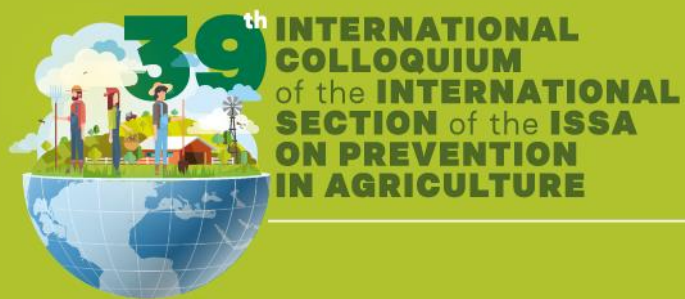


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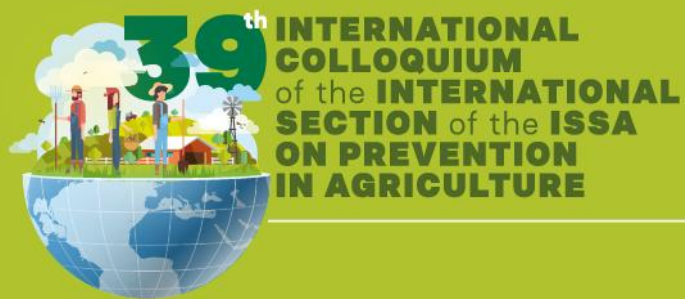
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PANEL IV:
DISABILITIES AND RETURN
TO WORK



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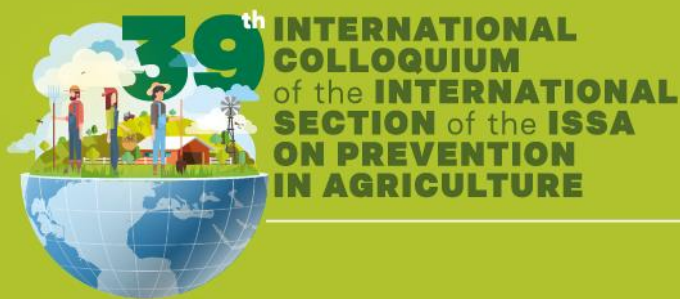


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MEASURING OF SUN EXPOSURE

Martin Hartenbach¹, Markus Breuer²

1 SVLFG-head of department, Germany

2 SVLFG-referent, Germany

KEYWORDS: cancer, UV radiation.

BACKGROUND

Since January 1st 2015, occupational disease No. 5103 "Squamous cell carcinoma and multiple actinic keratosis of the skin through natural UV radiation" has been officially recognised in Germany in the ordinance on occupational diseases (Berufskrankheitenverordnung).

Since 2015, the SVLFG has treated numerous cases of suspected occupational diseases, with over 2,000 suspicious cases processed annually.

The SVLFG has participated since 2014 in the measuring campaign "GENESIS-UV" organised by the Institute for Occupational Safety and Health of the German Social Accident Insurance (IFA). Up to now, as part of this measuring campaign, over 200 subjects in agriculture, forestry and horticulture have been equipped with dosimeters to determine the solar exposure of people working in different industrial sectors.

Every working day between April 1st and October 31st of each year, from 7:30 am to 5:30 pm, the test persons wore a dosimeter on their left upper arm. With a measuring cycle every second, ½ billion data points were generated.

RESULTS

The results are of paramount importance for the development of a work-related exposure register. This can form the data basis for risk assessment.

In addition, the measuring results will provide the basis for retrospective assessment of exposure at the workplace in order to take concrete exposure at the workplace into account during occupational disease procedures.

CONCLUSIONS

Therefore the results can be used directly to derive protective measures for concrete areas of activity in agriculture, forestry and horticulture as well as to help to counteract the increase in occupational disease.

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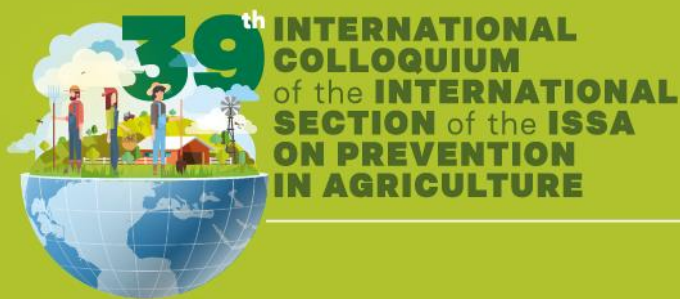


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PREVENTION AND REHABILITATION - TWIN-TRACK APPROACH IN RETURN TO WORK (RTW)

Friedrich Mehrhoff

German Social Accident Insurance, DGUV, Germany

KEYWORDS: return to work.

BACKGROUND

The message of the lecture: Open the traditional model of segregation between technical inspectors and disability managers to a more cooperative relationship. This kind of strategy facilitates to reach the goal of retaining and returning the employability of the working population in Europe

RESULTS

For a long time terms like safety at work places, health promotion, disability management and rehabilitation have been used for a specific phenomenon of health conditions of workers. But employers and employees are continuously interested in a holistic service in a diverse society (vision zero barriers).

Health related services for enterprises offered by social security agencies must create a spectrum of methods for an efficient collaboration amongst experts dealing with prevention and rehabilitation. The work accident insurance in Germany (DGUV) highlights this one-stop-shop service over years.

Some of the driving legal and financial incentives for a more cooperative structure in social security institutions will be presented in Cordoba based on international experiences with the ISSA-Guidelines on RTW and an educational EU-program in Poland with DGUV as junior partner to establish rehabilitation management in complex cases

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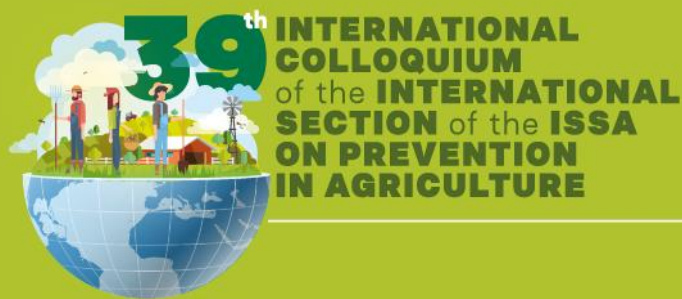


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EPIDEMIOLOGICAL STUDY OF TEMPORARY DISABILITY IN AGRICULTURAL WORKERS IN ANDALUSIA

Esther Alvarez Theurer¹, José Antonio Mulero²

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KEYWORDS: Temporary disability, agricultural workers, duration.

BACKGROUND

Absenteeism is an economic, social and health problem. The loss of work hours due to temporary disability (TD) causes a significant reduction in productive resources and an increase in public spending on medical services and economic benefits, estimating that attention to temporary disability generates a relative burden of between 1.5 and 4 per 100 of the Gross Domestic Product of a country.

We present a retrospective cohort analytical observational study, which assesses the incidence of the Temporary Disability situation in Andalusia with 247187 agricultural workers from January 1, 2017 to December 31, 2018, as well as the determinants of the duration of the TD.

RESULTS

There were a total of 23529 work absences, corresponding to the parts issued in the study period in agricultural workers collected by the Medical Units of Assessment of Disabilities of the Andalusian provinces.

The percentage corresponding to the TD processes of men is 61.2%, significantly higher than women (38.8%). However, if we adjust for the exposed population, which in our case is the number of active workers in Andalusia, we observe that women have a higher rate of absenteeism than men. The global incidence rate processes of TD / 100 affiliates per year is 10.7. For men 9.5 and for women 13.2 ($p < 0.01$).

The processes of the musculoskeletal system are the most frequent and represent more than one third of the incident processes of TD.

The age of workers with IT processes follows a normal distribution with an average of 43.3 years (range 16-78 years). The average age of women who initiate an TD process (42.9 years) is lower in one year than that of men (43.6 years) ($p < 0.001$).

Half of the TD processes are resolved in less than 56 days.

Comparing the medians of the duration of the process in relation to sex, the median duration of TD processes in women (63 days) is higher than that of men (49 days), showing the difference statistical significance ($p < 0.001$).

CONCLUSIONS

Of the diagnoses that most frequently appear as a reason for Temporary Disability, we highlight low back pain, cervicgia, knee and shoulder pathology and anxiety-depressive disorders. In Andalusia, women have a higher level of TD absenteeism than men. The duration of TD processes is due to factors other than diagnosis.

Programs are recommended that include aspects of epidemiological surveillance, information to the worker from the prevention and primary care services and collaboration between the medical inspection of the public health

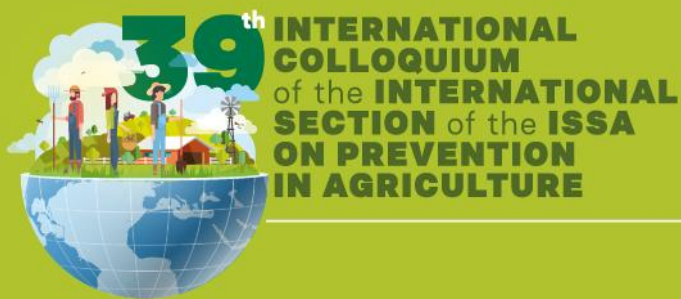


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service and the primary care professional; through training to primary care professionals, as well as the support of the medical inspection of the public health service in the decision making of the family doctor, responsible for issuing the sick leave.

PRACTICAL APPLICATIONS

Occupation plays an important explanatory role in the incidence of TD episodes. It would be interesting to plan specific preventive actions for workers in their place of work.

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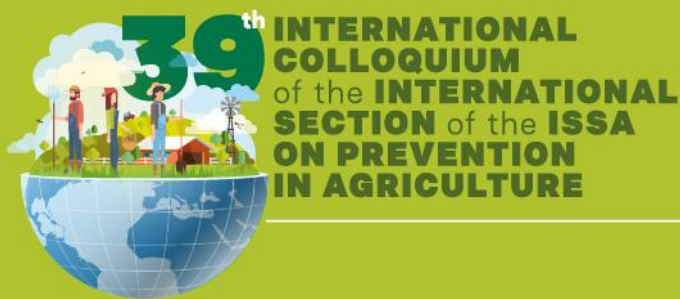


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BACK TO THE JOB

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3 SVLFG-deputy. Department "Healthcare and Work", Germany

KEYWORDS: Integration Management in the Workplace.

BACKGROUND

Whether a large, medium-sized or small company: since 2004, all businesses in Germany with employees have been obliged to offer a company integration management system (BEM) for their employees if they are ill for more than 6 weeks within one year. This is a systematic procedure to support the affected employees by means of any measures deemed necessary in the workplace or by the employer.

RESULTS

The aims of the BEM are:

- to overcome the incapacity for work
- to prevent any renewed incapacity for work
- to retain the job for the employee.

The insurance landscape of the SVLFG is characterised in many respects by small and micro-enterprise structures.

CONCLUSIONS

A practical guide developed for the green sector supports companies in setting up and implementing a BEM. In this, employers can find a step-by-step explanation of all of the measures that are required, as well as simple and comprehensible documentation aids, which you can separate off an original document. In addition, the SVLFG offers companies free seminars on the BEM. In a 2-day training course, experienced experts explain everything worth knowing for uncomplicated and successful integration management. If you have any questions on the subject, the SVLFG's Coordination Office for Corporate Integration Management can provide you with professional contacts.

COMMENTS

Additionally, the subject of the BEM is closely connected to the current 'kommitmentensch' prevention campaign. In 2019, the campaign will promote greater acceptance of the topic of company integration in companies working in the horticultural, agricultural and forestry fields under the heading 'participation'.

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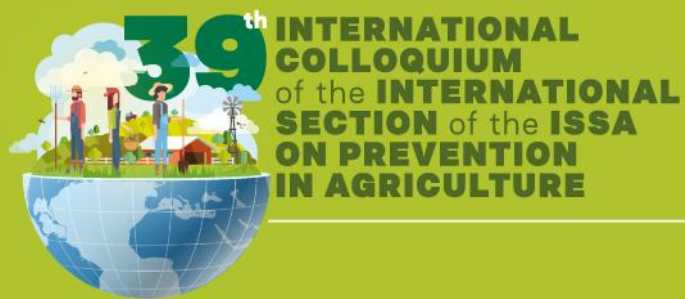


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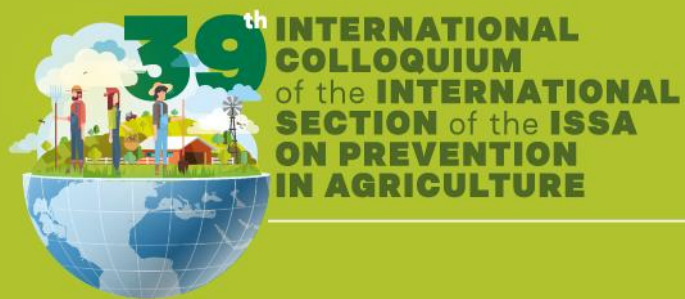


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PANEL V:

**STRESS RELEASE AND
MENTAL HEALTH
PROGRAMMES**



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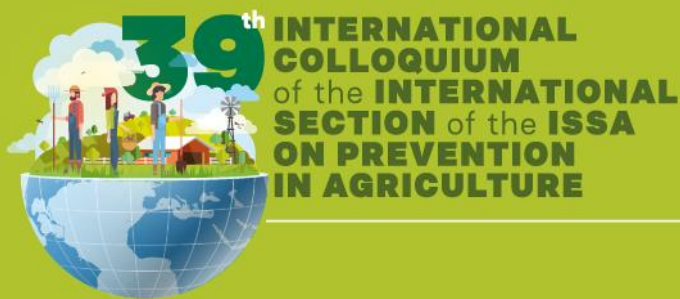


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ACTING ON THE QUALITY OF WORKING LIFE (QWL) OF AGRICULTURAL LEADERS, A BET TO IMPROVE WORKERS' OCCUPATIONAL HEALTH AND SAFETY

Philippe Tran Tan Hai

MSA Fund from Ile de France, France

The manager's concerns are a lever to promote his health and safety at work as much as the one of his employees.

The analysis of the difficulties of agricultural leaders deserves to be taken into account in the prevention approaches. The prevention advisor no longer positions himself as the expert of the rule or the turnkey solution but as a professional at your disposal to listen to your difficulties at work and to find solutions to be built together with the entrepreneur according to the situation presented.

This positioning allows the leader to reconsider his concerns through the prism of a central dimension which hasn't been really explored up to now: the work, his work but also the one of his employees.

This point of view will be illustrated by 3 examples of interventions:

- a company facing a social and managerial concern following a major IT management reorganization project. Following a meeting with the management, who presented us its project and concomitant complaints from workers during medical visits, we proposed a one-year prevention approach to PHI: coaching and change awareness,
- a company manager complains that he doesn't know what to do to deal with workers' behavior and in particular addictive ones. We propose a collective awareness on the risk addictions as well as a diagnosis in health and safety at work.
- a company manager who is out of his management and whose structure' economic sustainability is threatened. We propose a diagnosis focused on work. The results shared with the structure as a whole lead to the constitution of a trans-hierarchical support group regarding work

In the 3 situations, the diagnosis gave rise to real managerial difficulties preventing any listening or glance on the workers' experience in terms of PRD or MSD. Regarding addictions, we succeeded in moving this exclusively exogenous public health issue towards a reflection on the possible link between addictive behaviors and work.

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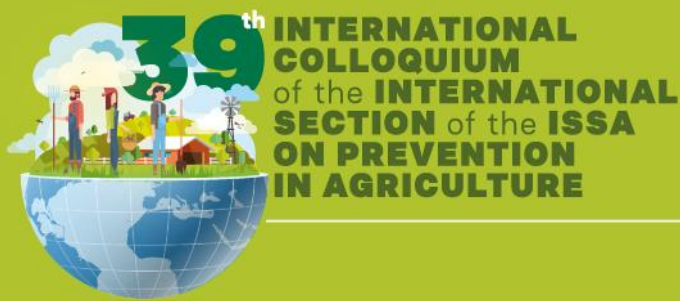


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FINNISH PROJECT HELPS FARMERS TO MAINTAIN THEIR WORK ABILITY

Päivi Wallin

Farmers' Social Security Institution Mela, Finland

KEYWORDS: stress management, work ability.

BACKGROUND

Extreme weather conditions and strong decline of profitability in farming have sharply increased mental stress perceived by Finnish farmers in the past 3-4 years. Economic problems in agriculture cause a remarkable risk to the work ability of the farmers.

The difficult situation was acknowledged by the Finnish Government, which targeted an allowance to a project to support farmers' wellbeing as a part of 'crisis package for farming' in 2017. Based on the good results the project was continued until the year 2020 (total budget 6 M€). The Farmers' Social Insurance Institution Mela is responsible for carrying out the project.

RESULTS

The key idea of the project is to help farmers, who are working under severe economical and mental pressures, to get the situation under control and prevent the risk of the loss of their work ability. The two most important tools are the individual help for farmers provided by Mela's project workers and a voucher for expert services.

Mela's project workers help farmers to form a clear picture of their situation and to define the steps that need to be taken to solve the problems. Farmers often need help for mental and physical problems, and they are too exhausted to look for help themselves. Project workers help farmers to get healthcare or to negotiate financial arrangements, for instance.

If the help given by the project worker is insufficient, the farmer can get a voucher worth of 500 euros to buy expert services (psychotherapy or economical counselling). 1 113 vouchers were issued in 2018. 86 % of them were targeted to social services. According to a study (1/2018) 90 % farmers were satisfied in the help given by a voucher in 2017.

CONCLUSIONS

Another important aim of the project is to establish a permanent network for early intervention. The early intervention model was created in 2010. The network is now made more visible and structured by making contracts between partners (farm stand-in services, insurance companies, farmers' unions, authorities, advisory organizations etc) and the network coordinator Mela. The idea of early intervention is to educate co-operation partners to make observations about early symptoms of burnout, bring up their observations with the farmer and assist the farmer to get help to the problems. Mela organizes regional meetings and seminars for the network.

Our next step is to carry out a pilot project of the work ability coordinator service in agriculture. In other sectors work ability coordinator is a person appointed by the employer or by the public employment and business services. Their aim is to allow people with partial or decreased work capacity to remain employed. The work ability coordinator

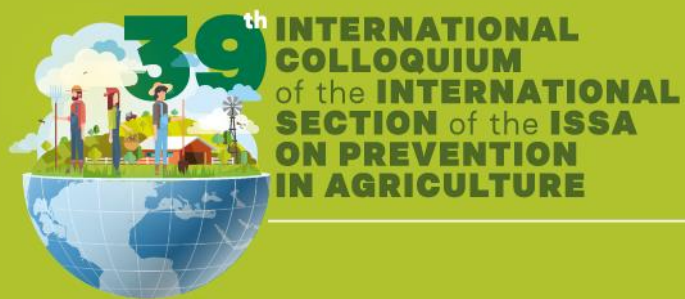


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works together with the people with partial work capacity in order to find various alternatives in tools, benefits and services that best suit his or her needs.

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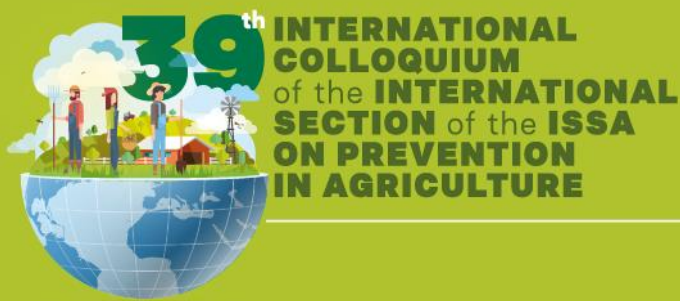


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SUICIDE PREVENTION PLAN

Patrice Heurtaut

CCMSA (Central fund of the French agricultural social insurance), France

The rate of French farmers' suicides is one of the most important among socio-professional categories (32/100 000 versus 28/100 000 among workers and 8/100 000 among higher intellectual occupations).

In 2011, the Minister of Agriculture announced the launch of a National Plan of Suicide Prevention in the agricultural sector consisting of 3 axes:

- To better know the reality of suicide in the agricultural sector,
- To create listening devices for farmers in distress,
- To create prevention cells in each MSA funds in order to identify farmers in a difficult situation.

Axe 1: To better know the reality of suicide in the agricultural sector.

In partnership with the National Institute for Health Surveillance (InVS), a study regarding farmers was carried out. The study revealed comparatively higher mortality by violent death among which by suicide, when compared to the general population. This concerns in particular beef farmers and is in relation with an economic crisis in this business sector.

A study to assess the reality of suicide among French agricultural salaried workers has also been carried out.

Axe 2: To create listening devices for farmers in distress.

In 2014, Agri 'écoute, a national free telephone number for the agricultural population, was launched. Available 24 hours a day, 7 days a week, it provides access to contact counselling psychologists. After the first contact, the insured person has the possibility to call 3 times more the same counselling psychologist.

Communication campaigns are carried out regularly in order to give information regarding this phone number to farmers, agricultural salaried workers, spouses, neighbours. Today an average of 400 calls per month are recorded.

Axe 3: To create prevention cells in each MSA funds in order to identify farmers in a difficult situation

A Suicide Prevention Cell has been set up within each MSA fund. Its aim is to identify and accompany people in difficulty.

- Each cell involves the MSA's Health and Social Affairs sector, occupational medicine professionals, prevention of occupational risks professionals and elected MSA members present on the territory. Their mission consists in setting a diagnosis regarding the difficulties people are confronted with. Half of these cells work in collaboration with external professionals (psychologists, general practitioners...).

Major suicide determinants are: economic difficulties, social or geographical isolation, crisis in the sector of activity, working conditions, family crisis.

MSA is now recognized as a central actor in the management of suicide in rural areas.

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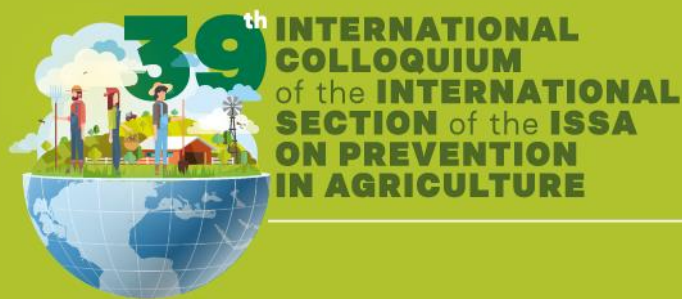


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BURN OUT IN AGRICULTURE - PHENOMENOLOGY AND APPROACHES TO PREVENTION

Erich Koch

SVLFG, Germany

KEYWORDS: Burn out in Agriculture, Prevention.

BACKGROUND

A number of scientific publications in different countries point to a steadily increasing number of burnout sufferers. Recent surveys on the risk of burnout among farmers, rising numbers of patients and suicide cases show a worsening condition. Surprisingly, the results of scientific research and surveys vary widely from country to country. This seems to be only partly due to the non-uniform definition. Farmers experience a variety of stressors, including occupational stressors such as declining social recognition and lack of opportunities to break down boundaries between work and private life. Irrespective of the inconsistent definition of burn outs, questions arise about the causes, consequences and promising preventive approaches. In this context, the personal sources of power of the profession (handling animals, living in nature, self-determination, working together and living with the family) have long been assumed to be to be protective factors against the development of burnout. However, according to more recent studies, they hardly seem to have any effect.

RESULTS

How can the phenomenon of burnout be effectively countered? Sensitizing the entire agricultural sector not only seems meaningful, but also absolutely necessary. Bringing the entire field of mental illnesses in agriculture out of the taboo zone could be a first step towards finding and promoting individual protection and prevention possibilities that counteract the various burdens. New fields of prevention will emerge here on a permanent basis. In addition, politics and society are called upon to paint a realistic picture of modern agriculture beyond the idealization of smallholder structures. The profession and the scientific community, for example, demand that the requirements, evidence and documentation obligations be limited to a reasonable, practicable level. They want respect for the profession of the farmer, courtesy in dealing with digital media.

CONCLUSIONS

Following a stocktaking and critical analysis, the lecture will above all attempt to outline a prevention strategy oriented towards the possibilities and limits of social insurance.

PRACTICAL APPLICATIONS

Measures to reduce burn out in agriculture have the greatest social and economic significance. The SVLFG is in the process of implementing initial measures with scientific support.

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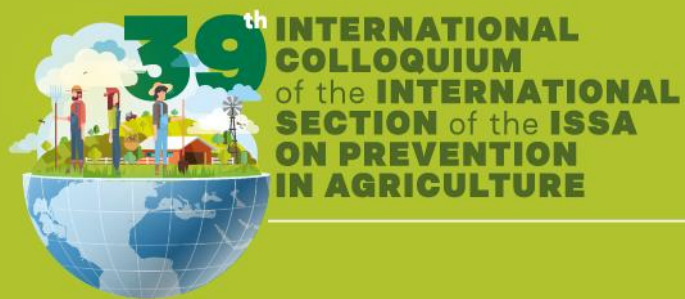


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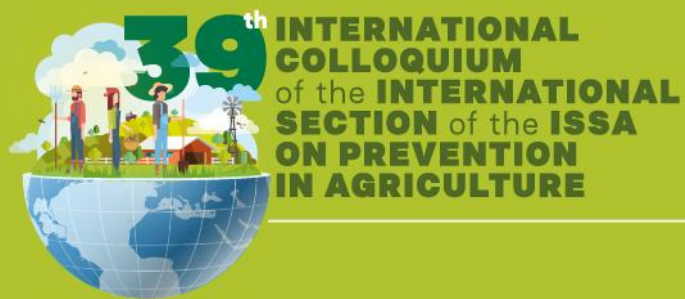


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PANEL VI:

**VISION ZERO IN
AGRICULTURE ON NATIONAL
LEVEL**



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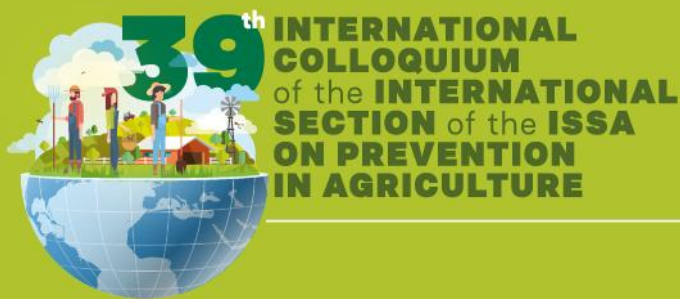


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GUIDE TO GOOD PRACTICES ON THE PROTECTION OF HEALTH AND SAFETY OF WORKERS IN THE AGRICULTURAL SECTOR

Pedro Delgado Cobos

University of Cordoba, Spain

KEYWORDS: Guide, Good practices, Agricultural sector, European Commission.

BACKGROUND

At present there is no single European level Directive that specifically deals with the protection of the health and safety of workers in all aspects of agriculture, including livestock farming, horticulture and forestry. However, the Framework Directive 89/391/EEC on the introduction of measures to encourage improvements in the safety and health of workers at work, and several individual Directives pursuant thereto are applicable in this sector of activity.

The particular features of the agricultural sector (working in the open air and with heavy machinery and animals, isolation at the place of work, low levels of training, use of chemical and plant protection products etc.) increase the risks facing the workers, as reflected in an accident rate that is higher than the average for other sectors.

For these reasons, the European Commission considered that the drafting of a non binding modular guide specific to the protection of workers in the agricultural sector, would contribute to improved understanding and application of the Community Directives in this sector, and hence a reduction in the number of accidents and occupational illnesses.

RESULTS

The technical supervision of this guide was carried out by a tripartite working group (governmental, employers and workers members), which was established in 2007 by mandate of the Advisory Committee on Safety and Health at Work. Spain had two members in the working group, one from ASAJA on representation of the employers and the undersigned participated as governmental representative through INSHT.

This guide is based on the results of the risk assessment, legal requirements and available technological solutions. Risk assessments were carried out on 50 farms in Cyprus, Greece and the United Kingdom, and the guide was validated in Cyprus, Ireland and Spain.

The guide is a 170-page document, comprising of 21 chapters and 11 appendices. It addresses owners, managers and workers in the agriculture, livestock farming, horticulture and forestry sectors. Its main purpose is to assist the user in understanding the basic concepts of occupational health and safety, carrying out his/her own risk assessments, improving his infrastructure and workplace conditions, and putting into place procedures that increase the level of safety and health in the establishment.

CONCLUSIONS

One of the most important chapters is devoted to risk assessment explaining the need and importance, providing background information and illustrating practical tools and models so that the reader can carry out his/her own risk assessment for his/her activity. This chapter makes reference to the interactive risk assessment provided on a CD as additional material.

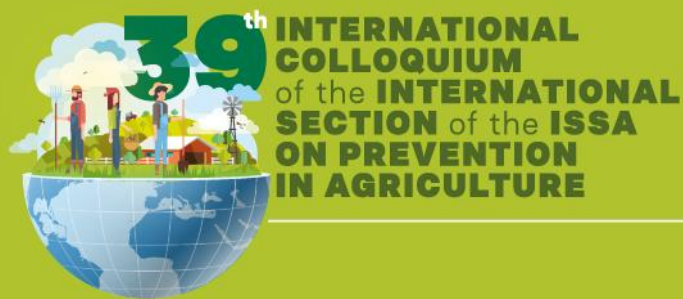


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The European Commission published this guide in 2012 in English, French and German, and later on in electronic format in the other official languages of the European Union.

PRACTICAL APPLICATIONS

The guide helps the user to understand the basic concepts of occupational safety and health, carry out their own risk assessments, improve their infrastructure and workplace conditions, and implement procedures that increase the level of safety and health on the farm.

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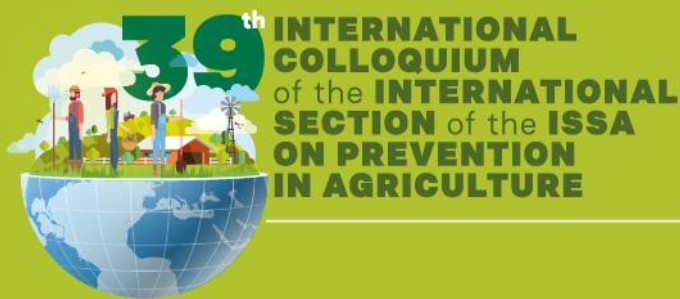


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OCCUPATIONAL FATALITIES IN SWEDISH AGRICULTURE – BEFORE, DURING AND AFTER A 5-YEAR NATIONAL INTERVENTION PROGRAM

Peter Lundqvist

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KEYWORDS: agriculture, occupational injuries, fatal injuries, intervention program.

BACKGROUND

Working in agriculture is associated with a number of hazards and risk factors. Different approaches have been used to reduce the number of injuries and fatalities through different interventions such as engineering solutions, enforcement through rules and legislation as well as different types of education-based programs. The Nordic countries agreed on a Kuopio-declaration that they would try to have a zero-vision for occupational injuries in agriculture by the year 2012. In Sweden there was a major education-based intervention program during the time period 2009-2013. The program are called Safe Farmers Common Sense with a farmer perspective organized activities such as short courses, individual farm visits by supervisors, farm walks and lot of media attention. During the same period of time other stakeholders added a number of other activities also in order to prevent farming injuries. This program together with other measures was evaluated, including the rate of occupational fatalities.

RESULTS

The results of the study regarding occupational fatalities showed that 5-year period (2004-2008) before the intervention had a mean of 8 fatalities per year. During the intervention period – the 5-years 2009-2013, the numbers decreased to a mean figure of 4 fatalities per year and even reached zero fatalities in the year 2013. The program ended that year and most other stakeholders ended or decreased their activities as well. The following 5-year period (2014-2018) the number of occupational injuries increased again to a mean figure of 7 fatalities per year.

CONCLUSIONS

It is obvious that the numbers are quite small and it could be a matter of co-incidents or is it a sign that agriculture is an industry that needs constant attention from outside stakeholders in order to motivate farmers to work in a safer way and to work with measures to prevent injuries on their farms?

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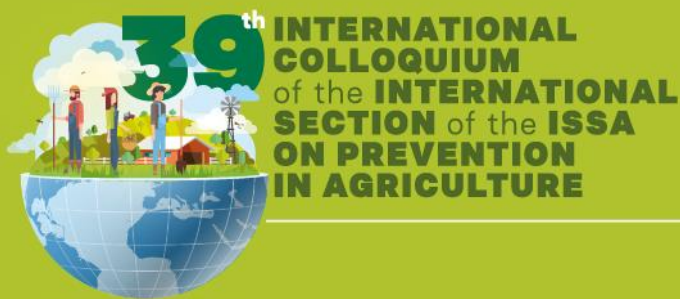


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SECTORIAL STRATEGY ON OCCUPATIONAL HEALTH AND SAFETY FOR THE FOOD AND WOOD VALUE CHAIN OF THE "BASQUE COUNTRY" (SPAIN) 2019-2025

Andoni Gamboa Martínez

OSALAN / Basque Institute for Occupational Safety & Health (Basque Government), Spain

KEYWORDS: Future scenarios, new risks, agri-food, wood industries, value chain, commitment, stakeholders, Basque Health and Safety Strategy, Osalan, safe, healthy and sustainable environments, social reference, reduce accidents rate, cost / benefit ratio, culture, safe, healthy and sustainable work environments (3S+1), comprehensive knowledge management, "Zero" vision, training, gender perspective, recognition, "Avanza Vision 0" (AV0), management, governance, innovation.

At present, characterized by change and technology, it is difficult to foresee future scenarios, but we can need to design tools to establish policies that effectively address new risk situations. Technological and industrial change, and the modification of work processes and tasks, has always been relevant in the primary sector in general and in particular in the agri-food and wood industries. These changes entail the appearance of new risks that must be managed differently. That's why the Basque Government has designed a Sectorial Strategy for Health and Safety in the Food and Wood Value Chain. It is a flexible tool to face both the current situation and the changing scenarios. This challenge requires the support and commitment of all stakeholders, always being subject to constant improvement.

The plan is framed in the Basque Health and Safety Strategy 2015-2020, designed by OSALAN, and is in line with the strategies and programs of a sectorial nature of the Department of Economic Development of the Basque Government.

One of the main objectives is that our primary sector is recognized for being competitive within the value chain, for developing its activities without accidents and occupational diseases, for creating safe, healthy and sustainable environments, with appropriate technologies, equipment and innovative systems, and participatory. This way of working should be a social reference of value in terms of safety, occupational health and sustainability. The fundamental objectives are that fatal accidents do not occur and reduce accident rates by 15%. In 2016 the incidence of accidents in the primary sector was 7.68, that is, out of every 100 workers in the sector almost 8 suffered an accident with work leave (657 mild, 12 serious and 4 fatal).

The approach of the Strategy is practical, aligning our actions with the objectives. Operational plans analyzed if that activity or project acts on the determinant causes of a fatal accident, if they are a significant cause of an accident or occupational disease in a target sector, and the cost / benefit ratio is calculated.

The Strategy is integrated into 4 axes, culture and society, safe, healthy and sustainable work environments (3S+1), comprehensive knowledge management, involvement and commitment, which are concreted in actions such as: "Zero" vision in the sector, Activation of references of the value chain, training and education, gender perspective, recognition of professionals, promotion of control systems and voluntary commitment to self-improvement "Avanza Vision 0" (AV0), management, governance, innovation, digital transformation, surveillance and technological prospective, networks or adaptation of regulations.

The Strategy foresees a 6-year financing of € 5.5 million, € 600,000 from the Department of Economic Development and € 108,000 from Osalan per year.

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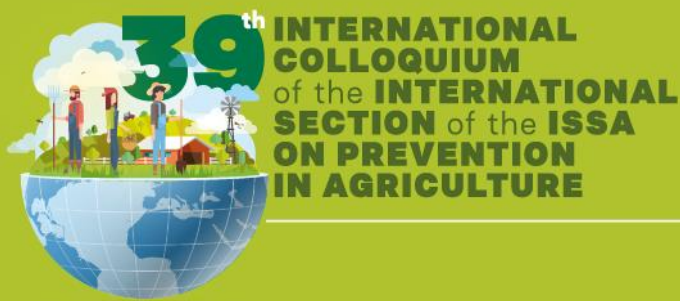


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VISION ZERO IN AGRICULTURE – IMPLEMENTATION & PROMOTION

Magdalena Wachnicka-Witzke

KRUS, Poland

KEYWORDS: Keywords: occupational safety, well-being at work, ISSA, Vision Zero campaign, prevention culture, Vision Zero, social security, prevention of accidents at work, health in the workplace, 7 Golden Rules.

BACKGROUND

"Vision Zero" is an International Social Security Association (ISSA) strategy of prevention in the field of occupational safety. It combines three dimensions of human work: health, safety and well-being at all levels of workplace management. This strategy is based on 7 Golden Rules, the use of which helps to design the work environment in a manner that will reduce the risk of undesirable events, i.e. so that nobody loses life or health at work. International thematic prevention sections belonging to ISSA are in the process of developing guides to the Vision Zero, allowing for the use of assumptions of this strategy in every sector of the economy. Reducing the number of accidents at work and occupational diseases will guarantee better working conditions, as well as healthy society. It will have a positive impact on the economic living conditions and it will also contribute to the decrease in institution's expenses on sickness benefits. Leading the ISSA International Section on Prevention in Agriculture, the Agricultural Social Insurance Fund (KRUS) joined the international campaign promoting the "Vision Zero" in 2018, thus becoming the official Partner of "Vision Zero". Other members of ISSA Agriculture Section also joined the Vision Zero campaign, initiating the implementation of Vision Zero in Agriculture on national levels. They actively promote the "Vision Zero" strategy for agriculture and provide practical advice how to implement it on a farm or in an agricultural company.

MATERIALS AND METHODS

Publications, prevention activities and strategies belonging to the Vision Zero campaign prepared by International Section of the ISSA on Prevention in Agriculture and the Agricultural Social Insurance Fund of Poland (KRUS), as well as Farmers' Social Insurance Institution of Finland (MELA), Social Insurance for Agriculture, Forestry and Horticulture of Germany (SVLFG), Social Insurance for Agriculture of France (MSA).

RESULTS

The "Vision Zero" strategy is based on the belief that accidents at work and occupational diseases can be eliminated through the use of appropriate prevention strategy. An innovation in this strategy is drawing attention to three dimensions in human work: safety, health and well-being, which have a key impact on the occurrence or non-occurrence of accidents, injuries or diseases caused by work. In order to implement the Vision Zero in the workplace, the ISSA Association invited experts to develop a universal tool, which would help to put the "Vision Zero" slogan into practice. This way, 7 Golden Rules were created, on which the "Vision Zero" is based:

Rule 1: Take leadership demonstrate commitment.

Rule 2: Identify hazards control risks.

Rule 3: Define targets develop programmes.

Rule 4: Ensure a safe and healthy system be well-organized.

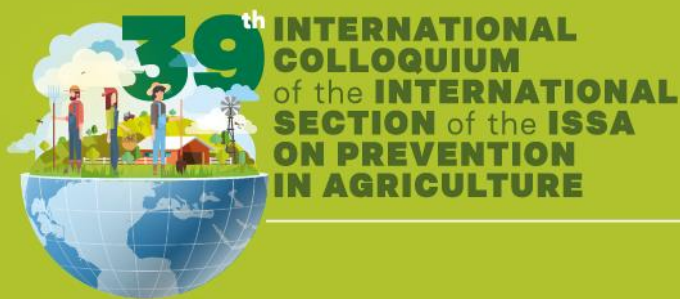


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Rule 5: Ensure safety and health in machines, equipment and workplaces.

Rule 6: Improve qualifications develop competence.

Rule 7: Invest in people motivate by participation.

The use of these rules helps to design the work environment in a manner that will reduce the risk of undesirable events, i.e. so that nobody loses life or health at work. It is worth to note the requirement of involving all employees in creation of a safe work environment, which facilitates the creation of a high prevention culture at the workplace, where everyone feels responsible for safety at work and every day strives to ensure it in practice. 7 Golden Rules do not impose a specific method of their implementation on employers and employees. Each company may find its own best way to implement individual rules. The members of ISSA Agriculture Section on national level provide information and training about the Vision Zero strategy, as well as practical advice how to implement it best. They developed a set of Vision Zero implementation and promotion methods adapted to age and specific working and living conditions of farmers and their families, as well as workers/employees of the agriculture sector.

CONCLUSIONS

The "Vision Zero" strategy is supposed to provide awareness regarding the significance of actions undertaken by institutions dealing with social security. Preventive actions are extremely important for every sector of the economy. Reducing the number of accidents at work and occupational diseases will guarantee better working conditions, as well as healthy society. It will have a positive impact on the economic living conditions and it will also contribute to the decrease in institution's expenses on sickness benefits. The question is what is the best practice which allows the most effective Vision Zero implementation on national levels.

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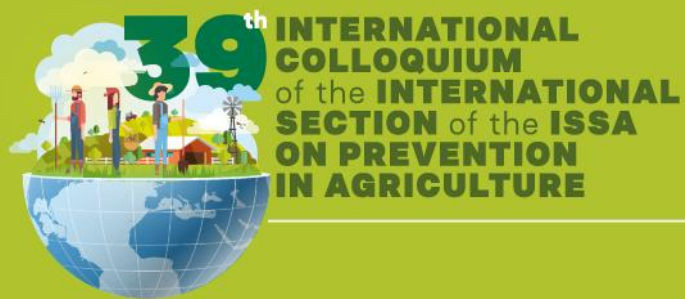
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POSTER PRESENTATIONS



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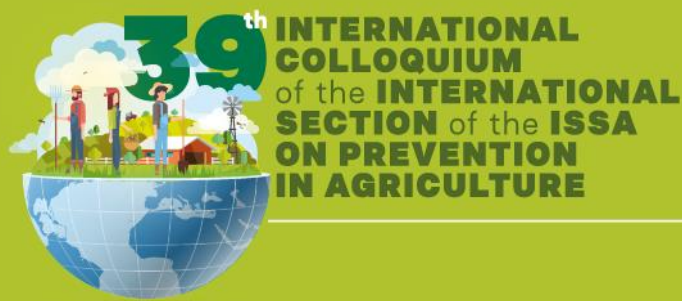


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ACETYLCHOLINESTERASE AS A MARKER OF EXPOSURE TO PESTICIDES. ROLE OF THE CLINICAL LABORATORY IN ITS DETERMINATION

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KEYWORDS: Acetylcholinesterase, exposure, pesticides, laboratory determination.

BACKGROUND

Workers have the right to effective protection in matters of safety and health, established in general in art. 14 Law 31/1995 of Occupational Health and Safety, implying that 'the employer will guarantee the workers at his service the periodic monitoring of their health status based on the risks inherent in the work' (Article 22).

According to the Protocol of pesticides biological control is based on the determination of plasma cholinesterase, erythrocyte, GPT and GGT.

The decreases in the level of Cholinesterase, even if they do not reduce their blood value below 25%, especially if they occur in more than one worker, will be indicative of re-evaluating working conditions, including personal protective equipment. It will be taken into account in particular the job position, the time of exposure to pesticides and the type of the managed product.

Analyzes are carried out in a group of workers who handle pesticides, finding a decrease of more than 25% of the value of plasma cholinesterase with respect to the baseline levels determined previously in the respective Health Surveillance

After the recommended restrictions regarding the handling of pesticides, we made a second determination of plasma cholinesterase values, finding similar diminished values with respect to the previous ones.

RESULTS

After reviewing the cases, having ruled out other causes related to the decrease in cholinesterase levels, we found that the cause of these variations is a change of laboratory and the use of another analytical method.

CONCLUSIONS

Currently, there is no single analytical reference method available for the determination of cholinesterase. There are different colorimetric methods varying the accuracy and precision of one method to another, being able to find great differences from one laboratory to another.

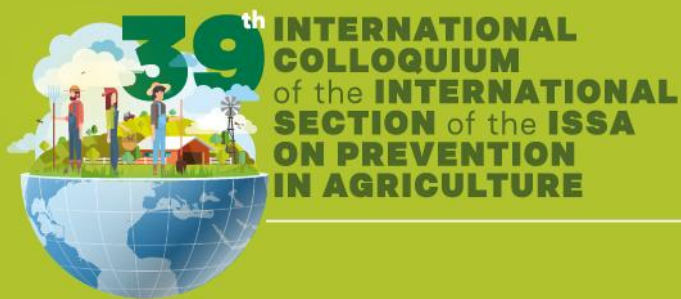


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PRACTICAL APPLICATIONS

Periodic surveillance of workers exposed to pesticides, through biological markers, assessing possible medical conditions that may worsen with exposure to pesticides or that may cause health alterations that may be caused by exposure to pesticides.

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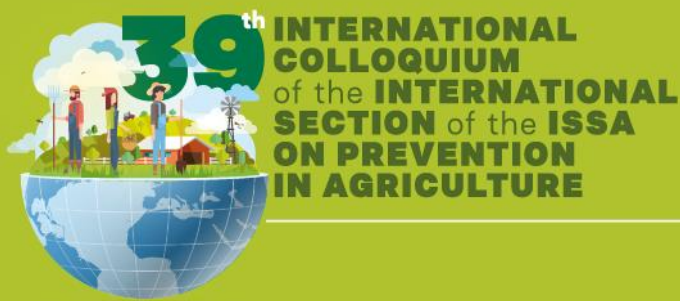


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CHARACTERIZATION OF OCCUPATIONAL ACCIDENTS IN THE AGRARIAN SECTOR OF CORDOBA

Daniel Gamboa Aguilera

Occupational Risk Prevention Centre of Cordoba, Spain

KEYWORDS: Agrarian sector, occupational accidents, material agent, cause, type of accident.

BACKGROUND

Vision Zero is a strategy for preventing workplace accidents, based on the view that all accidents are preventable and that a world without fatal and serious accidents is possible.

For this purpose it is very important to have a characterization of the most common occupational accidents in each sector and region. This allows establishing more appropriate preventive measures.

The Department of Employment, Training and Autonomous Work of the Regional Government of Andalusia has a database with relevant data of the occupational accident reports by employers as well as of the investigations carried out by the technicians of the Occupational Risk Prevention Centers.

The data corresponding to fatal and serious accidents, which have occurred in the last fifteen years and which have been investigated by these technicians, has been studied in order to get a characterization of occupational accidents in the agrarian sector of the province of Córdoba

These data refer to different aspects (type of accident, material agents, causes, ...) that do not usually appear in the Official Occupational Accident Statistics, or are not specified for the agrarian sector.

RESULTS

The results obtained are presented in different graphs and show the categories of these aspects that have higher incidence in the occupational accidents of the agrarian sector in the province of Córdoba.

CONCLUSIONS

The study serves as guidance for all the intervening agents for the establishment of preventive measures or action plans aimed at mitigating the factors that have a greater influence on accidents.

PRACTICAL APPLICATIONS

The study serves as guidance for all the intervening agents for the establishment of preventive measures or action plans aimed at mitigating the factors that have a greater influence on the accident rate in the agrarian sector of the province of Córdoba.

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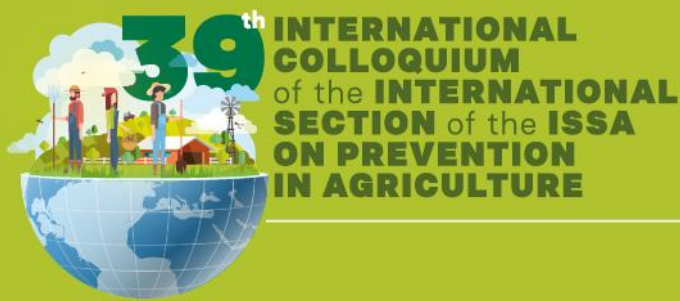


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CIPA-TOX: A DATABASE TO ASSESS RETROSPECTIVE OCCUPATIONAL EXPOSURE AND HEALTH EFFECTS TO PESTICIDES

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KEYWORDS: CIPA-TOX, plant protection products, occupational exposure, agricultural workers, Health effects.

BACKGROUND

The phytopharmaceutical products (PPP) Index is a repertoire of pesticides listing the active substances (AS) authorized and marketed in France each year since 1961. Each AS is identified with information about its chemical family, its crop uses, and the conditions of the uses. We collected and stored all this information in a database: CIPA and we complete it with relevant toxicological information related to each PPP in a new database: CIPA-TOX.

The method used to inform toxicological effects is based on European regulations, international classification (mainly IARC and US-EPA for carcinogenic substances) and on the search for toxicological reference values (TRV). These elements made it possible to attribute to each substance one or several health effects. Several classes of toxicity were retained: carcinogenicity, reprotoxicity, neurotoxicity, endocrine disruption, etc.

RESULTS

CIPA-Tox provides information about the use of 1053 PPP over time in France. The number of AS authorized in a single year peaked in the 1990-2000 period for all three pesticides groups (herbicides, fungicides and insecticides). This number decreased slightly in the second half of the first decade of the millennium, when it averaged around 100 ASs authorized per year for herbicides and fungicides and almost 60 for insecticides; it then remained stable through 2014.

For the toxicological field, according to our method, more than 70% of the substances authorized in France since 1960 have at least one health effect. Six substances classified as probable or proven carcinogens remain on the market. A focus is made for endocrine disruptors (ED): 458 AS have been studied and 54% of them are potentially ED. The related health effects are mainly on reproduction, thyroid, and adrenal glands.

For all health effects, fungicides are the most numerous group concerned, followed by the herbicides and then the insecticides. The chemical families that come first are organophosphorus, triazoles and dithiocarbamates. The most affected crops are vegetable crops, vines and arboriculture.

CONCLUSIONS

CIPA-TOX has several strengths: it takes into account all the AS marketed since 1961; the method to identifying health effects is based on a clear and rigorous protocol and crops are informed for each PPP used. The limits are that some substances do not show any health effect. This doesn't mean that they are not harmful but only that the data are

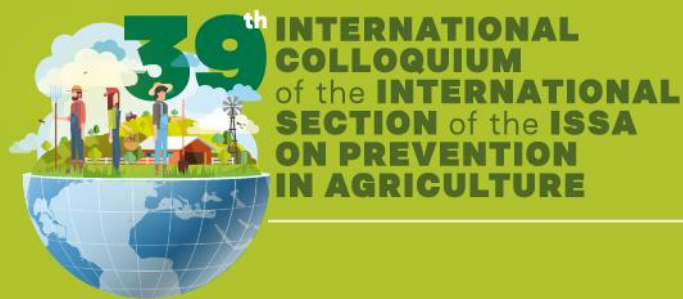


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lacking. The TRV are based on a threshold to avoid the first relevant health effect that appears, this doesn't mean that other effects do not exist.

The scope of this work will be widened to take into account the real uses of pesticides. Matphyto project aims at developing Crop Exposure Matrix to the main crops grown in France. CIPA-TOX and Matphyto can be very good tools to characterize the populations of highest occupational exposure to PPP in France.

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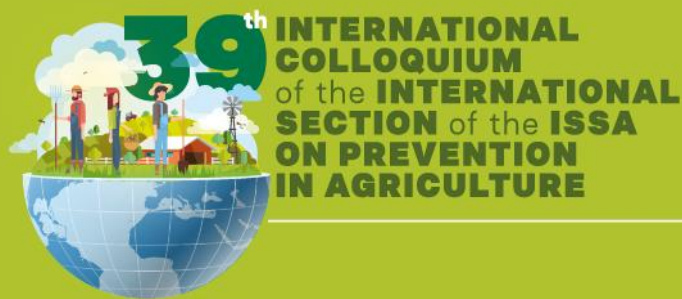


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COLLECTIVE HEALTH SURVEILLANCE EXPERIENCE IN TECHNICAL PROFESSIONALS IN THE PROTECTION OF THE ENVIRONMENT. ALTERATIONS IN HEALTH AND PREVENTIVE ACTIVITIES

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KEYWORDS: Environmental worker, Occupational Medicine, Collective Health Surveillance, prevention, health promotion.

BACKGROUND

Environmental technicians in the province of Córdoba are workers who carry out their functions in areas of different characteristics and with different working conditions, which may influence their health. The Collective Surveillance aims to analyze the group results to adopt preventive measures Descriptive observational study, with 104 workers, classified by work areas. The mean and standard deviation for the quantitative variables were calculated; for qualitative variables, table of frequencies. To test the means of the three study groups, the analysis of the variance test was performed and for quantitative variables and Chi-square for the qualitative variables.

RESULTS

Significant differences were found between the three groups of study, for: group of ages between 46-55 years BMI, total cholesterol, LDL and glycemia. It highlights a high prevalence in musculoskeletal symptoms, overweight, hypercholesterolemia and prediabetes, with a higher prevalence in workers over 46 years of age.

CONCLUSIONS

Based on the results obtained, it is recommended to carry out preventive and health promotion activities in the older age groups, planning activities in Health Surveillance that encompass the health alterations found.

PRACTICAL APPLICATIONS

Detect differences in health status in different areas of work, diseases more prevalent. Propose preventive activities and health promotion for the alterations detected.

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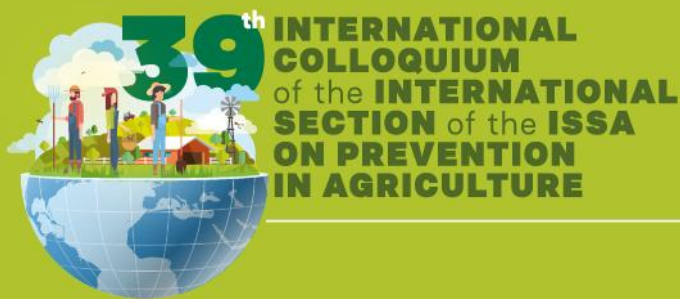


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ENCOURAGE WINEMAKERS TO DEVELOP TOOLS TO PREVENT PESTICIDE RISKS: HOW TO BUILD TOGETHER THE ANALYSIS OF REAL WORK AND OCCUPATIONAL HEALTH TO DESIGN PESTICIDE RISK PREVENTION?

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KEYWORDS: Ergonomics design, Pesticide risk prevention, Action research, Occupational health, Empowerment, Vineyards.

BACKGROUND

It is about sharing with the public a research-action experience set up as part of the realization of a thesis in ergonomics.

(Thesis and research-action project led by Alain Garrigou, professor in ergonomics, within the EPICENE team - Epidemiology of cancers associated with environmental nuisances - INSERM Bordeaux, within the framework of axis 2 of the team: Characterization exhibitions).

This research-action was conducted for 3 years (2016-2019) in France and more specifically in Aquitaine where there is the largest production of wine and use of phytosanitary products. It was built with winemakers and occupational health researchers with the aim of jointly developing practical tools for the prevention of pesticide risks. The aim is to arouse the interest of the winemakers and to facilitate the design of prevention tools by themselves and for themselves.

This research-action is based on ergonomics-analyze of the activity within five vineyards – which conduct differently phases of preparing and applying the mixture. We use video, photo, and game simulation to discuss and to design together the future activity.

RESULTS

For the design of prevention tools to maintain health, safety and performance during the activity it is more specifically:

- to start from real uses and problematic exposure situations brought by the winemakers.
- to bring winemakers to share their activity by co-constructing an analysis of activity and health at work.
- to co-build the visibility of problematic situations and their determinants.
- to allow a hybridization of knowledge and know-how concerning health and safety in the uses of phytosanitary products.
- to build the approach in order to allow the group of vine growers to gain autonomy in the design and dissemination of low-risk risk prevention tools.

CONCLUSIONS

The main objective of this communication is to discuss with the participants about the PREVEXPO device (method, results, imitates): Prévenir les Risques Ensemble en milieu Viticole des EXPOSITIONS chimiques peu perceptibles.

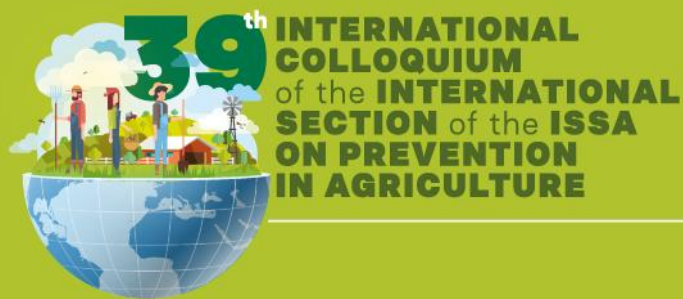


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The other objectives of this communication are:

- discuss the role of operators and facilitators in designing prevention tolos.
- present tools from popular education to encourage the construction of horizontal exchanges between issues of prescription and production (contributions and crafts between cold knowledge and warm knowledge to design together).
- Present the analysis of shared activity as a possible intermediate object to build new prevention solutions concerning the low perceptible risks.

PRACTICAL APPLICATIONS

Know how to involve farmers in risk prevention.

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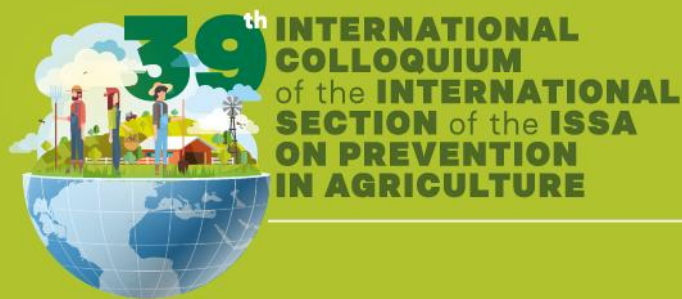


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EXPOSURE PREVALENCE TO ARSENICAL PESTICIDES IN VITICULTURE BETWEEN 1979 AND 2001 IN FRANCE

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¹ Santé Publique France, France

KEYWORDS: pesticides, occupational exposures, viticulture.

BACKGROUND

Retrospective assessment of exposures to pesticides of agricultural workers is a necessary step to understand and establish links between their past professional activities and potential serious pathologies such as cancers or neurodegenerative diseases. There are few reliable tools with a precise and structured methodology.

Inorganic arsenic is considered to be carcinogenic to humans by IARC (International Agency for Research on Cancer) and by the European Union. The main inorganic arsenic compounds used in agriculture are the lead arsenate, calcium arsenate and sodium arsenite. They have fungicide and insecticide properties. The sodium arsenite was particularly used on grapevines in treatments against diseases of wood.

A crop-exposure matrix (CEM) was realised to assess the use of arsenic derivatives in viticulture in France. The prevalence of using arsenic compounds was established from 1945 to 2001, date on which arsenic derivatives were banned. The prevalence of exposure to arsenical pesticides among the winegrowers was estimated by using CEM; it varies from 20 to 35% in viticulture. Crossing the CEM with agricultural censuses (AC) held in 1979, 1988 and 2000 provides a number of wine workers exposed to arsenical pesticides for each year of the census, as well as a description of this population (age, sex, work time etc.).

RESULTS

Between 1979 and 2000, 60,000 to 100,000 agricultural workers used arsenical pesticides for the treatment of the vines. These estimations include family workforce and employees (> 8 months) on the farms. Temporary workers (employees < 8 months and service providers) are not included due to the difficulty to identify this workforce and to estimate their number in France. However, in 2000, temporary workers concerned 61% of winegrowers workforce and 48% of those involved as service providers. According to the CEM and AC, each farm used an average of 15.0 kg of arsenic in 1979, 18.4 kg in 1988 and 26.8 kg in 2000. The increase of arsenic quantities is not explained by an increase in the dose per hectare, but by an average vineyard area per farms that increases: 4.2 ha in 1979, 5.3 ha in 1988 and 7.6 ha in 2000.

CONCLUSIONS

To the best of our knowledge, it is the first study providing occupational prevalence to arsenical pesticides among winegrowers as well as a description of the exposed population. These results will allow an implementation of a secondary and tertiary preventive action plan targeting this population. The goal is to avoid the development or worsening of certain cancers induced by arsenic compounds and to act at the earliest possible stage.

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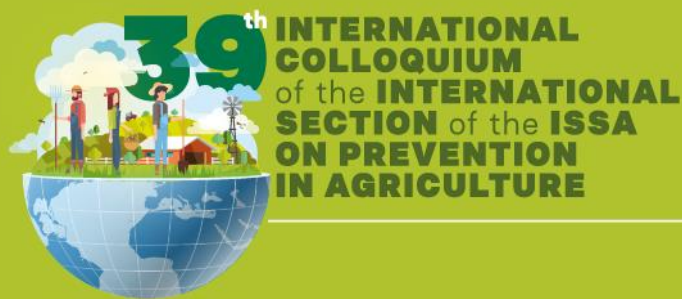


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GOOD PRACTICES FOR THE SAFE AND SUSTAINABLE USE OF PLANT PROTECTION PRODUCTS

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1 Instituto Nacional de Seguridad y Salud en el Trabajo (INSST), Spain

2 AEPLA, Spain

BACKGROUND

Plant Protection Products (PPP) are one of the available tools to assure a modern and sustainable agriculture. Despite providing various benefits, such as protection of agricultural crops, PPP can be harmful to the environment and human health. For these reasons, they must be produced, sold, stored, used and disposed of in a safe and sustainable manner. With the aim of promote and disseminate good practices for the safety and sustainable use of PPP, this poster summarizes human and environmental mitigation measurements. It is based on a poster published by Union of Plant Protection Industries (UIPP) of France, adapted to Spanish legislation (mainly Real Decreto 1311/2012).

RESULTS

This Poster that deals with “good practices for the safe and sustainable use of plant protection products”, aimed to raise awareness among farmers and to increase information about the necessity of using the PPP in a sustainable and safe way, showing in a very visual way the requirements established by the regulations.

In this regard, all the stages that indicate the use of PPP in agricultural farms are presented schematically, covering before, during and after the phytosanitary treatment.

CONCLUSIONS

This work is the result of a great effort of synthesis, trying to encompass and summarize to the maximum all the stages related to the use of PPP.

PRACTICAL APPLICATIONS

It is expected that it can serve as a visual and didactic guide, both for workers and for companies that usually utilize PPP, while at the same time it helps to improve awareness and consciousness-raising in order to promote the sustainable and safe use of this products.

COMMENTS

This poster has been made by the Working Group formed to improve the conditions of use of personal protective equipment by the applicators of phytosanitary products and workers during re-entry, which members are the National Institute of Safety and Health at Work (INSST), the Ministry of Health, Consumption and Social Welfare (MSCBS) and the National Association for the Protection of Plants (AEPLA).

This work will make a significant contribution to achieving one of the quantitative objectives included in the National Action Plan for the sustainable use of phytosanitary products 2018 - 2022. More specifically, it will aid to implement the measure 5.4. "Improve the conditions of use of EPI by the applicators of phytosanitary products and workers during the re-entry".

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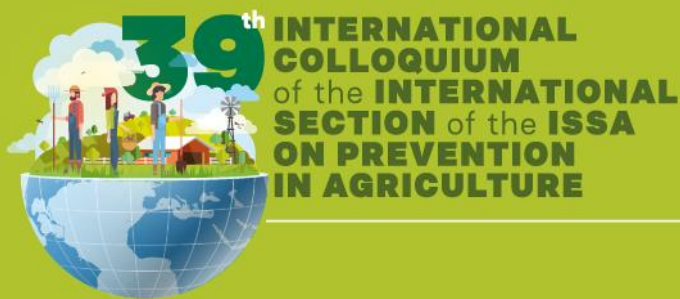


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HEALTH & SAFETY IN EUROPEAN AGRICULTURE - ORGANIZATION, LEGISLATION AND SUPPORT

Peter Lundqvist¹, Martina Jakob², Catherine Laurent³, Dushica Santa⁴, Eleni Petridou⁵, Joanna Makulska⁶, Barbara Tombarkiewicz⁶, Inger J Sikkeland⁷, Björn Hilt⁷, Mladenka Vujosevic⁸, Jarkko Leppälä⁹, Risto Rautiainen⁹

European COST Action (CA16123) with the title 'Safety Culture and Risk Management in Agriculture' (Country representatives: 1. Sweden, 2. Germany, 3. France, 4. North Macedonia, 5. Greece, 6. Poland, 7. Norway, 8. Montenegro, 9. Finland)

KEYWORDS: agriculture, health & safety, COST, Europe.

BACKGROUND

More than 30 countries collaborate in an European COST Action (CA16123) with the title "Safety Culture and Risk Management in Agriculture". The work is organized in different Working Groups and one important part is to survey how different countries handle health & safety regarding organization, legislation and the support to farmers. COST Action includes tools only for networking activities and do not fund for research. Survey activities and analysis are so far based on national resources and existed data in each country.

RESULTS

The results describes the diversity within Europe regarding such issues as: the National authorities for OHS, to whom the H & S regulations apply in agriculture, by what kind of inspections are H & S regulations enforced, who is covered by inspections, specific agricultural health services, pension systems for farmers, occupational injury insurance systems, farm relief worker systems, education systems for H & S and examples of national H & S initiatives within the agricultural sector.

CONCLUSIONS

The survey of how health & safety issues in agriculture is in focus within different European countries serves as an important knowledge base for the development of further collaboration and development of sustainable solutions.

PRACTICAL APPLICATIONS

Health & Safety in agriculture is a very important aspect of a sustainable agro-food system, but each country has limited resources. Collaboration on an European level is important to make agriculture a safe and healthy sector for farmers, farm families and farm workers.

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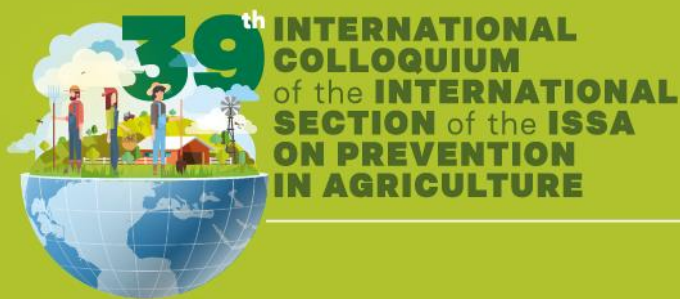


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PREVALENCE OF OCCUPATIONAL EXPOSURE TO PESTICIDES USED ON BANANAS BY THE FRENCH WEST INDIES WORKERS AND STUDY OF ASSOCIATED HEALTH EFFECTS

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² Santé publique France, Direction santé travail, Saint Maurice, France

³ Santé publique France, Direction Appui, Traitements et Analyses des données, Saint-Maurice, France

KEYWORDS: Pesticides, occupational exposure, banana crop, health effects.

BACKGROUND

Retrospective evaluation of pesticide exposures of agricultural workers is a necessary step to understand and establish links between their activities and the potential occurrence of serious pathologies such as cancer or neurodegenerative diseases. Reliable materials and methods in this area are few.

Banana crop required and continues to require the use of many plant protection products (PPPs). No studies to date have been performed to estimate the number of workers exposed to these PPPs, to characterize their exposures over time, or to identify the health effects consequence of this exposure.

RESULTS

A specific crop-exposure matrix (CEM) has been developed for banana crop in the French West Indies. This CEM, integrated to the Matphyto project, has identified 62 active substances (AS) used on this crop since 1960, divided into 29 chemical families, as well as the frequency and probability of their use. A database (CipaTox) has been established to list the main known or suspected health effects associated with chronic exposure to all AS registered in France since 1961. The computerized agricultural censuses of 1981, 1989, 2000 and 2010 identify the sociodemographic characteristics of agricultural workers. By crossing these three data sources, we calculated prevalence of exposure to PPPs by focusing on carcinogenic, mutagenic and reprotoxic (CMR) PPPs as well as those potentially endocrine disruptors (EDs).

At the 4 dates of the agricultural census used, all banana workers were exposed to at least one CMR or ED substance. The number of workers exposed varies from 13,504 (in 1981) to 5,270 (in 2010). We identified 11 ASs in 1981 vs 4 ASs in 2010 probably carcinogenic, 2 ASs vs 0 SA probably mutagenic, 8 ASs vs 5 ASs probably reprotoxic and 12ASs vs 7 ASs potentially ED.

The permanent agricultural population consisted of 1/3 women and 2/3 men, and more than 50% of the permanent workforce was non-family.

CONCLUSIONS

Our study shows that banana workers are highly exposed to PPPs. With an aim of occupational prevention, it would be relevant to: promote alternative production methods, limit the use of PPPs, circumscribe or ideally ban the use of PPPs with AS potentially CMR or ED, raise workers' awareness on health risks and better inform family physician and occupational physician to facilitate recognition of occupational diseases.

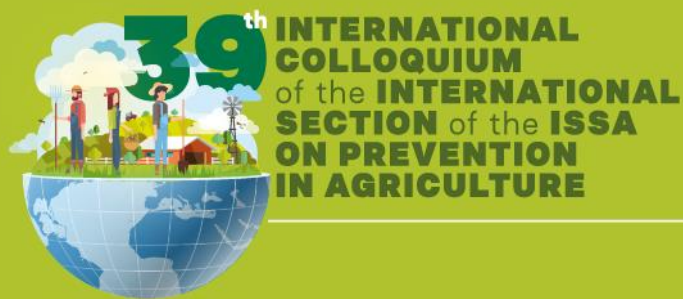


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Our department also reconstituted an agriculture banana workers cohort in the French West Indies. It will study the mortality/morbidity causes of agricultural workers in banana plantations, based on their exposure to PPPs. The Mathphyto CEM will be used to assess the retrospective exposure of all PPPs.

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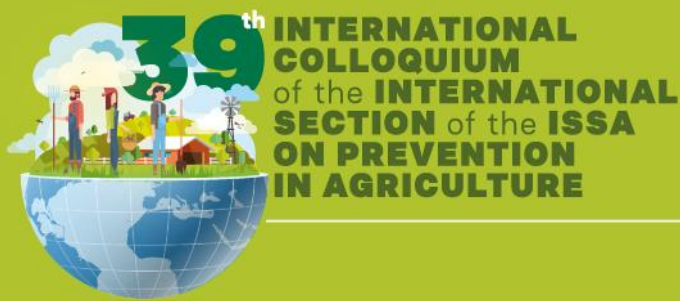


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SAFETY AND HEALTH APPLIED TO THE RISK OF OVERTURNING OF TRACTORS

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KEYWORDS: Tractors, safety, rollover, protection structure, homologation, quad, off-road vehicle, buggy. Certificate of Conformity, tests.

BACKGROUND

In recent years the sale and use of small four-wheeled vehicles (quads, ATV...) has been expanding as if they were agricultural machinery.

According to the Official Registry of Agricultural Machinery (ROMA), 90% of these vehicles are enrolled in Andalusia, 70% of which in Jaén. The work done with these vehicles can cause accidents by overturning them, with entrapment of the driver, not having an approved protection structure. Its consequences are usually serious or fatal.

The lack of institutional clarity regarding the requirements that agricultural vehicles must meet to be available to workers can cause confusion and misunderstandings, so it is essential to specify them

RESULTS

The current regulations on the prevention of occupational hazards, regulations of homologation of agricultural vehicles and regulations on registration of agricultural machinery, both at the state and European level, have been analyzed.

According to Royal Decree 1215/1997, which establishes the minimum health and safety regulations for the use of work equipment by workers, the employer must adopt the necessary measures so that the tractors put at the disposal of workers are suitable for the work that must be done, in a way that guarantees their safety and health.

To do this, the tractors must have a rollover protection structure (ROPS), as well as their approval (CERTIFICATE OF CONFORMITY AND MARKING) under the Regulations (EU) 167/2013 and 1322/2014. This homologation is obtained after the tests carried out by the Agricultural Mechanical Station (EMA), which is the only official Spanish laboratory recognized by the Organization for Economic Cooperation and Development (OECD) to carry out the tests required by European regulation.

CONCLUSIONS

Every tractor must be subject to risk assessment and vehicles whose protective structures (ROPS) are not approved by the EMA will not be made available to workers. In addition, QUAD, OFF-ROAD or BUGGY vehicles may NOT be used by workers for agricultural use, nor shall they be used for 'uses other than those foreseen' by the manufacturer.

It is important to highlight that the registration in ROMA does not imply the fulfillment of the obligations in matter of prevention of labour risks

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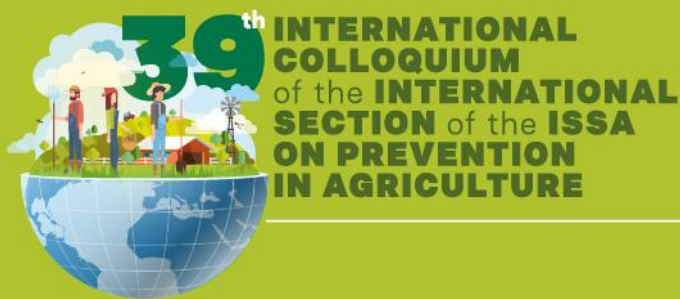


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SAFETY CONDITIONS OF CENTRIFUGAL SPREADERS OF FERTILIZER IN USE

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Instituto Nacional de Seguridad y Salud en el Trabajo (INSST), Spain

KEYWORDS: agricultural machinery safety.

BACKGROUND

The use of machinery in agricultural tasks must not cause risks to the safety and health of workers and is therefore subject to legal provisions that affect both placing on the market and use.

The purpose of this study is to verify the safety conditions of the centrifugal spreaders in use. A checklist (identification, maintenance and adjustment conditions, safety requirements, and in use inspection requirements) and a guide to facilitate the correct application of the checklist are included.

The safety requirements are based on the Machinery Directive 2006/42/CE and the European standard EN 14017:2005+A2:2009 "Agricultural and forestry machinery. Solid fertilizer distributors. Safety".

The methodology of this study could be applied to check the safety conditions of other agricultural machinery types in use.

RESULTS

59 centrifugal spreaders in use were verified.

No CE mark were found on 16,9% of the machines due to deterioration or lack of the machine identification plate. Also, the operator's manual were not available on 18,6% and the CE declaration of conformity on 23,7%.

The lack of the input shaft guard on the machine (43.1%) and of the distributing components (64.4%) are the more frequent unfulfilments.

The grid of the hopper is absent or damaged on 11.9% of the sampled machines, lack of hopper capacity marking (74.6%), lack of level indicator (76.3%).

The three requirements referring to the adequate guarding of the power take-off drive shaft present an important unfulfilment percentage (no guard: 35.6%, no attaching system: 69.5%, no support device: 74.6%).

The year of manufacturing has a significant influence on the degree of compliance as a result of the safety deficiencies and the absence of appropriate maintenance and adjustment.

CONCLUSIONS

The actions to improve the degree of compliance should be:

To increase the use of the operator's manual of the machine to carry out the maintenance and adjustment operations.

To provide adequate protection to the input shaft and to the distributing components of the centrifugal spreader and to improve the accessibility to the instruction manual.

Greater compliance with the safety requirements related to the guard and support of the power take-off drive shaft.

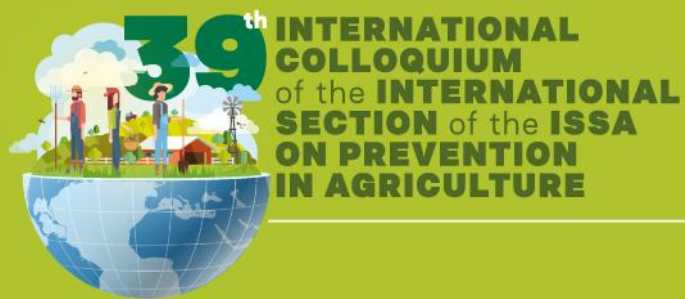


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PRACTICAL APPLICATIONS

The improvement of the safety conditions of the agricultural machinery in use.

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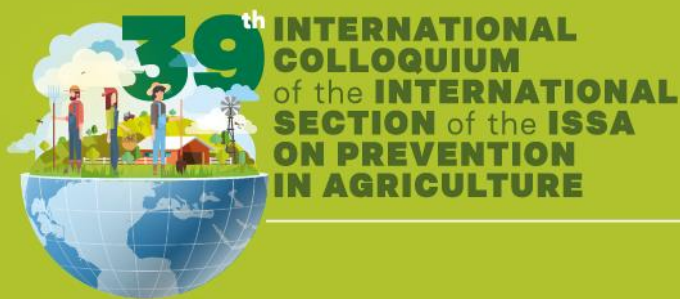


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THE INFLUENCE OF SKATING ON THE OVERTURNING OF THE TRACTOR IN PLOWING AND THE IMPORTANCE OF THEORETICAL-PRACTICAL TRAINING TO INCREASE SAFETY AND ENERGY EFFICIENCY

Jose Manuel Morales Lagares, Carlos Ruiz Frutos, Pero Cernuda Navarro, Benito Lopez Castilla

Mi Tractor Seguro, Spain

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KEYWORDS: Agriculture, Safety, Prevention, Tractor, Efficiency, Training, Overturning.

BACKGROUND

The tractor is an essential tool for agriculture, assuming 100% of the operations of extensive agriculture and 90% of the tasks of intensive agriculture. They are related to 80% of fatal accidents in the agricultural sector. In fatal accidents in tractors highlight the overturning and entrapment. In most accidents studies, the types of tractors are not distinguished nor are the implements in use detailed. Information is often obtained about the slope of the terrain, the provision of the anti-tilt frame, and whether the worker was wearing a seat belt.

RESULTS

50 tractors have been studied performing the work with the mouldboard plow, measuring the degree of skating in the performance of plowing, the causes of skating, and preventive measures. The optimal value for a standard model tractor of double traction in the work of plowing is between 4 and 8%, verifying that only 7 tractors entered the range. Four of the tractors had a power lower than that required by the implement and in 8 the tire was of a width less than that recommended by the manufacturer.

Studying the 17 units that still had a major skating, we found that in 14 of them the tractor driver had not achieved an adequate tractor-implement attachment and in 3 of them they had the plow bars worn.

None of the tractor drivers analyzed had received theoretical-practical training on the use of the tractor with the plow. 82% had attended some theoretical talk but no practical training.

Many of the factors that favor an accident risk, such as the use of a suitable tire, also influence energy consumption, of great concern to the tractor operator.

CONCLUSIONS

A high percentage of the tractor drivers analyzed (82%) are exposed to the loss of grip, with the consequent increase in the risk of tipping on slopes, as well as a loss of average energy efficiency of 8%. A theoretical-practical training can correct both factors and be more attractive to the driver.

PRACTICAL APPLICATIONS

The practical application of the control of the degree of compliance that the tractor brings to the ground in plowing is very applicable, since this work is very common among farmers. Even in farmers who have crops with cycles longer than a year, who do not use the plow, also usually have annual crops in other plots, so that both the use of the tractor and the use of the plow we could say that it is 100% of agricultural holdings in Spain. The use of the tractor in

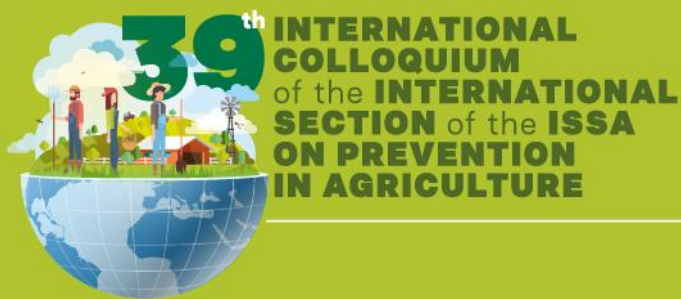


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agriculture is necessary in 100% of the cases and its good practices improve safety and efficiency in all agricultural operations.

COMMENTS

The collective of workers who work with tractors and plough does not usually have enough time, nor is it usual, to read technical documents where to acquire information on safety or energy efficiency. For this reason, a practical training to acquire them becomes fundamental for the assimilation of said concepts, being especially important the didactic methodology adapted to the needs of the group.

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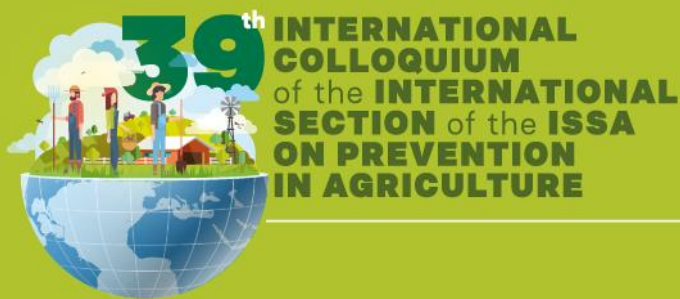


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VIRTUAL LABORATORIES FOR UBIQUOUS TRAINING OF OCCUPATIONAL RISKS PREVENTION PROFESSIONALS IN OCCUPATIONAL NOISE

Manuel Vaquero Abellán, M^a Dolores Redel Macías, Pilar Aparicio Martínez, Pilar Martínez Jiménez, Antonio José Cubero Atienza

University of Córdoba, Spain

KEYWORDS: Industrial Hygiene, prevention, Virtual laboratories, technical training, occupational noise.

BACKGROUND

In this work, the use of a web portal for ubiquitous training in occupational noise prevention is explained. The computer programs (<http://www.uco.es/RiesgosLaborales/fisicoyquimico/ruidos/>) can be used from the online area of ceiA3 Virtual Laboratory group internet server <http://www.uco.es/RiesgosLaborales/> in order to be executed via web. This computer application permit to simulate the noise at work laboratories step by step and in the same way as they are run in the real laboratory, obtaining the corresponding calculations and plots. The main objective of this work is to provide new learning strategies and methodologies that motivate professionals and to give an attractive challenge to learn risk prevention at work. Furthermore, it has been observed that users of the virtual laboratory can prepare their experiment lessons before to the real use of the equipment, and as many times as they want to. Consequently, by using this telematic application the computer as a complementary training tool, the quality of teaching from the university is greatly improved.

This is mainly representative in rural areas, due to the lack of laboratories in nearby places, nor high-level technical equipment, as is necessary. This makes for learning in rural areas, these LV are especially useful and versatile, and their performance in the training of both technicians in prevention, and farmers in general is especially high. Farmers are the rural workers most directly involved in the possible improvement of working conditions, and those who can contribute the most in this regard. Having high-level training means, such as these LV, provide a unique possibility to improve their training in this objective.

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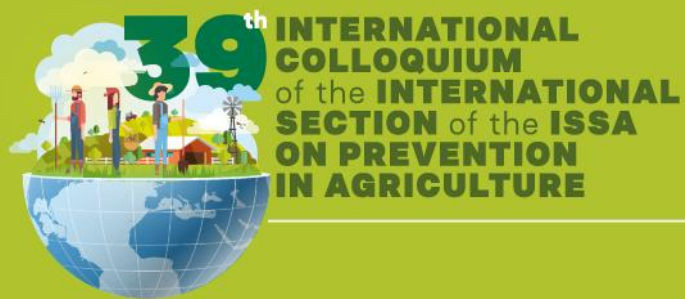


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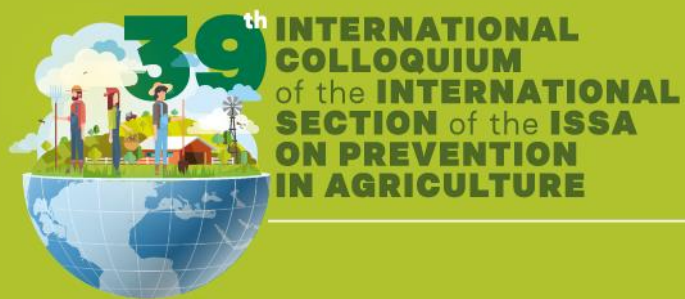


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