

# Tools and measures to identify knowledge, attitudes and perceptions on safety culture and risk management among farmers

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# Health and safety in agriculture

- Agriculture has the worst fatal accident record of all major employment sectors
  - Over 550 fatal accidents in farming the EU each year
    - **Fatal accident rate** for the EU15 in 2000 was 12.6 /100 000 workers
    - Rate for **accidents with more than 3 days absence** is over 6000/100 000 workers
  - Relative share of fatality burden
    - UK: 15-20% of workforce fatalities for 1.5% of the workforce
    - Ireland: 50% of workforce fatalities for 5% of the workforce
- Higher than average rate of self-reported illness
  - musculoskeletal disorders
  - skin diseases
  - viral and bacterial infections
  - allergies, asthma and cancer
  - hearing impairment
  - mental problems (incl. burnout and suicide)

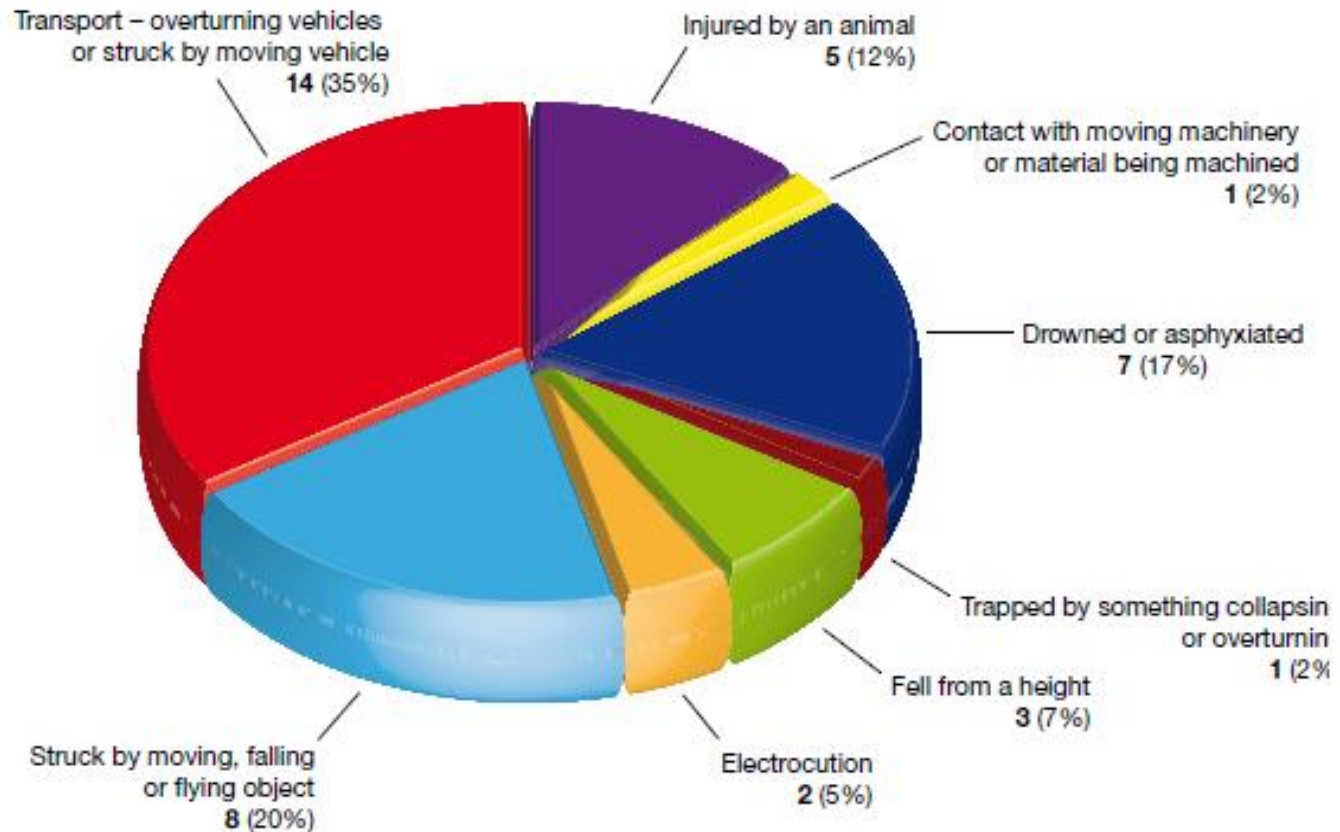
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# Behavioral risk factors

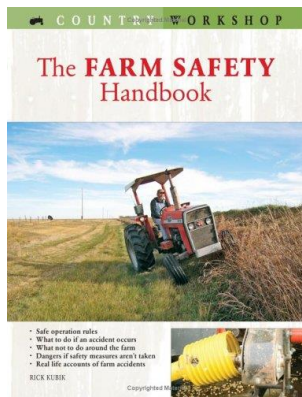
## Causes of fatalities in agriculture

Fatal injuries in farming, forestry, horticulture and associated industries, UK, 2011-12



# Ways to address health and safety problems

- Address the consequences
  - Rapid intervention to save lives
  - Adequate medical and psychological care
- Address the causes
  - Influence the behavioural and environmental determinants of health and safety problems through **prevention**
  - 3 “E”s of health and safety: **E**ngineering, **E**nforcement and **E**ducation

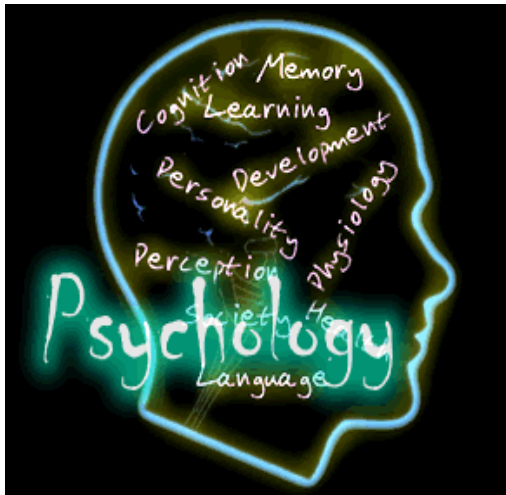


# Building the evidence base for effective farm safety programmes



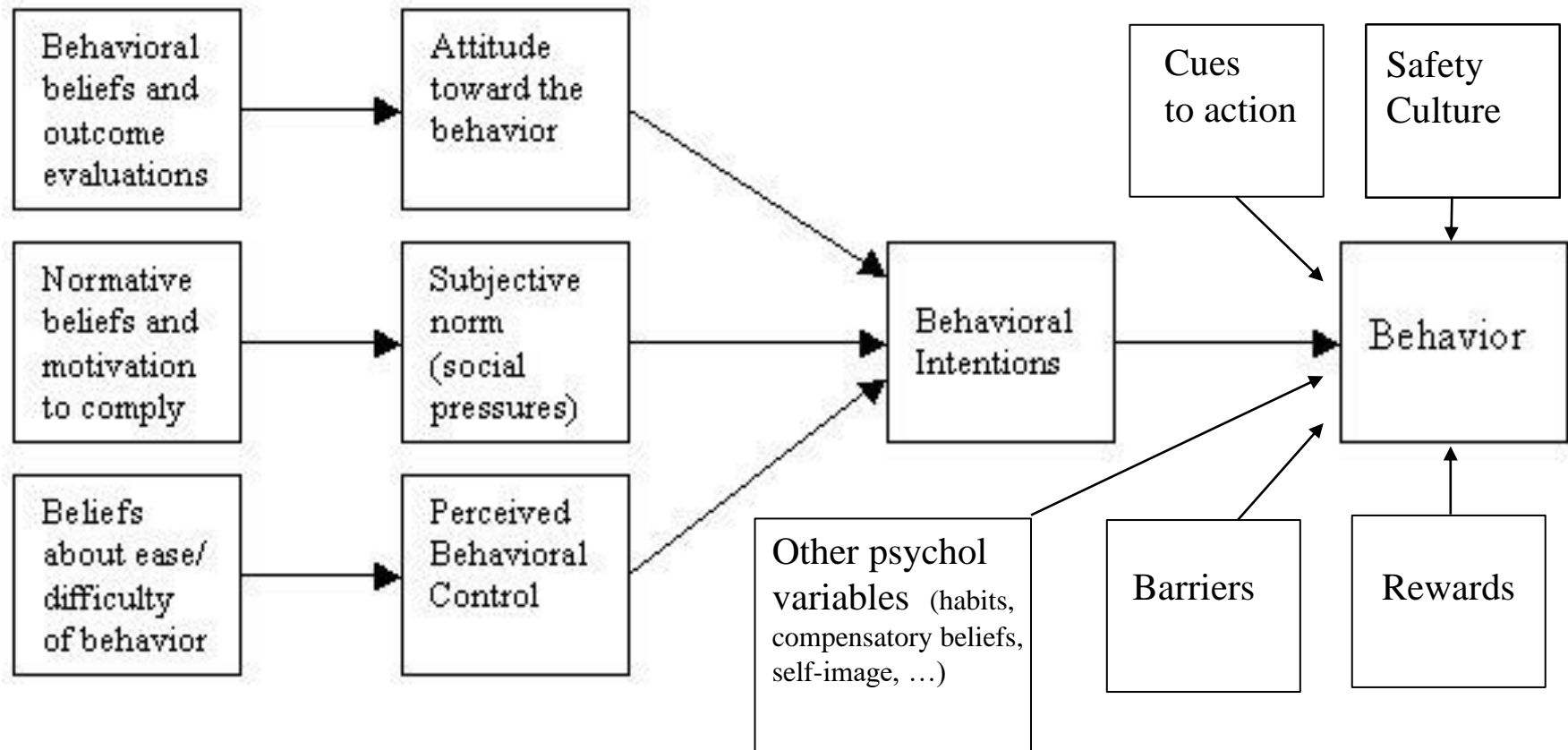
1. Identify behavioural risk factors
2. Analyse the determinants of unsafe or unhealthy behaviour
3. Develop and test interventions to influence health related behavior
4. Investigate conditions for successful implementation and sustainability

# Analyse the determinants of unsafe/unhealthy behaviour



- Environmental factors
  - Physical environment (facilities, barriers)
  - Social environment (regulations, safety culture)
- Psychological factors
  - Cognitive factors
    - lack of knowledge
    - low (health) literacy
    - information processing  
(e.g., inaccurate risk perceptions)
  - Motivation and attitudes
    - subjective evaluation of advantages and disadvantages of behavioural options
    - perceived norms and competence
  - Stress

# Extended motivational theory of factors influencing risk behavior



# “Safety culture”

- Definitions of safety culture
  - “The way in which safety is managed in a workplace. It is the combination of beliefs, perceptions and attitudes of employees toward the safety of workers and the overall safety of the work environment. Cultivating a safety culture is a key aspect in maintaining workplace safety.”
  - “A positive safety culture is the culture of a workplace in which all the employees think of safety as an important thing and behave in a way that prioritizes their own safety as well as the safety of those around them. This includes using proper personal equipment, following the safety laws and just generally being conscious of safety and safe practices at all times.”

Safeopedia (2018)

- Characteristics of organisations with a positive safety culture
  - communications founded on mutual trust
  - shared perceptions of the importance of safety
  - confidence in the efficacy of preventive measures



# WG2 Sacurima COST Action

(Safety Culture and Risk Management in Agriculture)

- Understand the determinants of safety behavior in agriculture
  - Individual determinants (knowledge, attitudes, perceived risks, perceived norms, safety culture)
  - Contextual/environmental determinants (safety culture)
- Produce an innovative tool to measure
  - Knowledge, attitudes, perceived risks, norms and behaviors among farmers regarding safety, health and risk management and to measure safety culture on farms
  - Safety culture
- Measure determinants of safe behavior among farmers, and use it for benchmarking national performance

# Survey of safety culture and risk behavior among European farmers

- Objective

collect comparative data on the safety practices and its main determinants among agricultural workers in the countries that participate in COST Action SACURIMA

- Method

- Self-report questionnaire study in 12 countries (B,HR,SF, D, GR, IRL, MK, P, RO, SRB, S, TR)
  - translated in each country's language(s) using forward - backward translation
  - focus group to check the comprehensibility of the translated version
- Data collection (depending on the country)
  - face-to-face interviews (paper version)
  - telephone-based interviews
  - online survey
- Convenience sampling procedure
- Sample sizes varying between 13 (Romania) and 599 (Finland)

# Survey Tool

- **Background information** (age, gender, type of farm, ...) (8 items)
- **Injury history** (3 items)
- **Safety practices** (falls prevention, machinery handling, pesticides and chemicals handling, animal handling) (17 items)
- **Attitudes, norms perceived behavioral control, and intentions** (35 items)
- **Safety culture in the farmer community** (5 items)
- **Obstacles to safety behavior** (tiredness, stress, workload, weather conditions, ...) (7 items)

# SACURIMA Survey Tool

## Part 2: Injury history

9. Have you personally been involved in an accident on the farm you working in the last 10 years?  
☐ No ☐ Yes.....-Accidents
10. Has anyone else been involved in an accident on the farm you work in the last 10 years?  
☐ No ☐ Yes.....-Accidents
11. Of all the accidents that have occurred on your farm, how severe was the most serious accident?  
☐ Injury requiring 0-3 days off work ☐ Injury requiring 4 or more days off work ☐ Fatal injury

## Part 3: Your safety practices

For each of the following working practices, please tick the box that best represents your view:

|   | 1<br>Never               | 2<br>Rarely              | 3<br>Some-<br>times      | 4<br>Most of<br>the time | 5<br>Always              |
|---|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| <i>Falls prevention</i>   |                          |                          |                          |                          |                          |
| 12. I make sure the floors of my farm are always dry                    | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 13. I clean dirty floors immediately                                    | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 14. I store my tools carefully  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 15. When I have to carry a heavy load, I check in advance for obstacles | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

### Machines handling

16. Do you work with machines on your farm? ☐ Yes  
☐ No (-> go to question 21)

|  | 1<br>Never               | 2<br>Rarely              | 3<br>Some-<br>times      | 4<br>Most of<br>the time | 5<br>Always              |
|--|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 17. Before I use a new machine, I read the manual carefully  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 18. Before using tractors and machinery I check that they are in good working order (e.g., brakes, lights, PTOs, etc.) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 19. I work with machinery without a PTO or proper guarding   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 20. I wear safety gear when necessary (e.g., goggles, ear defenders, high-vis jacket, etc.)                            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

### Chemicals and pesticides handling

21. Do you work with chemicals and/or pesticides on your farm? ☐ Yes  
☐ No (-> go to question 27)

|   | 1<br>Never               | 2<br>Rarely              | 3<br>Some-<br>times      | 4<br>Most of<br>the time | 5<br>Always              |
|---|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 22. I read the instructions through before I start working with chemicals or pesticides | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 23. I store chemicals and pesticides in a separate storage room                         | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 24. I have an inventory of all pesticides on the farm                                   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

## Part 4: Your and others' views with regard to safety behaviour

### Machines handling

40. Do you work with machines on your farm? ☐ Yes  
☐ No (-> go to question 49)

|   | 1<br>strongly<br>disagree | 2<br>disagree            | 3<br>indifferent         | 4<br>agree               | 5<br>strongly<br>agree   |
|---|---------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 41. I find it important to read the manual carefully before using a machine for the first time    | <input type="checkbox"/>  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 42. I find it dangerous to work with machinery without proper protection or guarding              | <input type="checkbox"/>  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 43. Other farmers would disapprove if I would use machinery without proper protection or guarding | <input type="checkbox"/>  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 44. Most farmers check if no one is standing in the way before they drive away                    | <input type="checkbox"/>  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 45. I can decide for myself whether I take precautionary measures when working with machinery     | <input type="checkbox"/>  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 46. Whether I maintain my machines well depends on the circumstances, not on myself               | <input type="checkbox"/>  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 47. I intend to read the manual before using a new machine in the future                          | <input type="checkbox"/>  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 48. I intend to take precautionary measures when working with machinery in the future             | <input type="checkbox"/>  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

### Animal handling

49. Do you have animals on your farm? ☐ Yes  
☐ No (-> go to question 59)

|  | 1<br>strongly<br>disagree | 2<br>disagree            | 3<br>indifferent         | 4<br>agree               | 5<br>strongly<br>agree   |
|--|---------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 50. I find it important not to stand behind animals                      | <input type="checkbox"/>  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 51. I find it obvious to approach aggressive animals with caution        | <input type="checkbox"/>  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 52. It is important to look for signals of restlessness in animals       | <input type="checkbox"/>  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 53. Other farmers do not let themselves be entrapped by an animal        | <input type="checkbox"/>  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 54. Other farmers think that one should be extra careful with animals    | <input type="checkbox"/>  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 55. I can decide myself whether or not I need to stand behind my animals | <input type="checkbox"/>  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 56. It is impossible for me to ventilate my stables                      | <input type="checkbox"/>  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 57. I intend to approach animals with caution in the future              | <input type="checkbox"/>  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 58. I will try to keep my stables well ventilated                        | <input type="checkbox"/>  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

# SACURIMA Survey Tool

## Part 5: The safety norms in your farmer community

The following statements refer to the safety norms held by the community of farmers that you belong to or can refer to. For each of the following practices, please tick the box that best represents your view:

|   | 1<br>strongly<br>disagree | 2<br>disagree            | 3<br>indifferent         | 4<br>agree               | 5<br>strongly<br>agree   |
|---|---------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| The farmers in my community ...   |                           |                          |                          |                          |                          |
| 70. Talk about safety issues  | <input type="checkbox"/>  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 71. Discusses with us how to improve safety                                   | <input type="checkbox"/>  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 72. Give higher priority to safety than to the on-time completion of tasks    | <input type="checkbox"/>  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 73. Invest in safety training for farmers and workers                         | <input type="checkbox"/>  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 74. Use programs to improve farmer health and wellness (e.g., diet, exercise) | <input type="checkbox"/>  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

## Part 6: Obstacles to safety behavior

For each of the following issues, please indicate to what extent they may prevent you from behaving safely on your farm:

|   | 1<br>no<br>influence     | 2<br>small<br>influence  | 3<br>some<br>influence   | 4<br>strong<br>influence | 5<br>very strong<br>influence |
|---|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------|
| 75. General tiredness                             | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>      |
| 76. Stress  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>      |
| 77. Unavailability of suitable tools or equipment | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>      |
| 78. Not enough time to prepare for the job        | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>      |
| 79. Financial constraints                         | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>      |
| 80. Workload                                      | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>      |
| 81. Weather conditions                            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>      |

# Participants characteristics and experience with accidents

| Country         | Number of respondents | Gender % M/F | Full-time farmer % | Farm owner % | Employing others % | Personally involved in injury % | Others involved in injury % |
|-----------------|-----------------------|--------------|--------------------|--------------|--------------------|---------------------------------|-----------------------------|
| Belgium         | 55                    | 69/31        | 73                 | 84           | 53                 | 33                              | 26                          |
| Croatia         | 202                   | 57/43        | 63                 | 32           | 10                 | 16                              | 19                          |
| Finland         | 599                   | 59/41        | 81                 | 91           | 22                 | 47                              | 35                          |
| Germany         | 107                   | 88/19        | 77                 | 85           | 39                 | 29                              | 42                          |
| Greece          | 36                    | 89/11        | 58                 | 81           | 58                 | 42                              | 19                          |
| Ireland         | 226                   | 85/15        | 46                 | 74           | 17                 | 23                              | 13                          |
| North Macedonia | 47                    | 77/23        | 53                 | 79           | 49                 | 34                              | 17                          |
| Romania         | 16                    | 63/37        | 75                 | 63           | 44                 | 13                              | 0                           |
| Serbia          | 79                    | 92/8         | 54                 | 84           | 22                 | 27                              | 9                           |
| Sweden          | 26                    | 62/38        | 54                 | 73           | 54                 | 35                              | 31                          |
| Turkey          | 224                   | 75/25        | 70                 | 75           | 25                 | 25                              | 22                          |
| Portugal        | 27                    | 89/11        | 63                 | 85           | 74                 | 4                               | 30                          |
| Total           | 1,642                 | 69/31        | 69                 | 77           | 25                 | 32                              | 26                          |

% of farmers involved in accident varies between 4% (Portugal) and 46.9% (Finland)

% dans country

# Seriousness of farm accidents

|         |                 | severity of accident |          |         |       |
|---------|-----------------|----------------------|----------|---------|-------|
|         |                 | no accident          | 0-3 days | 4+ days | fatal |
| country | Belgium         | 56,4%                | 7,3%     | 36,4%   |       |
|         | Croatia         | 73,7%                | 15,7%    | 10,6%   |       |
|         | Finland         | 39,4%                | 14,1%    | 46,4%   | 0,2%  |
|         | Germany         | 40,2%                | 19,6%    | 40,2%   |       |
|         | Greece          | 61,3%                | 25,8%    | 12,9%   |       |
|         | Ireland         | 70,8%                | 13,3%    | 14,6%   | 1,3%  |
|         | North Macedonia | 58,7%                | 28,3%    | 13,0%   |       |
|         | Portugal        | 66,7%                | 14,8%    | 18,5%   |       |
|         | Romania         | 87,5%                | 6,3%     | 6,3%    |       |
|         | Serbia          | 64,6%                | 22,8%    | 12,7%   |       |
|         | Sweden          | 53,8%                | 19,2%    | 26,9%   |       |
|         | Turkey          | 80,3%                | 10,1%    | 6,1%    | 3,5%  |
| Total   |                 | 57,1%                | 14,9%    | 27,3%   | 0,7%  |

# Farm accidents by farm type

|   | <i>% accident</i> | <i>B</i> | <i>Wald</i> | <i>OR</i> | <i>p</i> |
|---|-------------------|----------|-------------|-----------|----------|
| <b>Personally involved in an accident with injury</b> |                   |          |             |           |          |
| dairy farming   | 43.9%             | 0.616    | 28.529      | 1.852     | <0.001   |
| livestock   | 30.1%             | -0.167   | 2.067       | 0.846     | 0.150    |
| pigs or sheep farming                                 | 28.4%             | -0.113   | 0.434       | 0.893     | 0.510    |
| subsistence farming                                   | 31.8%             | -0.167   | 0.808       | 0.860     | 0.369    |
| commercial plantations                                | 34.2%             | 0.176    | 1.226       | 1.192     | 0.268    |
| horticulture  | 15.0%             | -0.992   | 15.355      | 0.371     | <0.001   |
| commercial grain farming                              | 25.3%             | -0.380   | 53.285      | 0.488     | <0.001   |
| <b>Others involved in an accident with injury</b>     |                   |          |             |           |          |
| dairy farming   | 39.3%             | 0.951    | 60.970      | 2.587     | <0.001   |
| livestock   | 25.1%             | -0.030   | 0.058       | 0.970     | 0.810    |
| pigs or sheep farming                                 | 31.3%             | 0.448    | 6.702       | 1.565     | 0.010    |
| subsistence farming                                   | 21.5%             | -0.542   | 7.729       | 0.582     | 0.005    |
| commercial plantations                                | 28.3%             | 0.277    | 2.650       | 1.319     | 0.104    |
| horticulture  | 20.3%             | -0.140   | 0.371       | 0.870     | 0.542    |
| commercial grain farming                              | 21.7%             | -0.229   | 2.757       | 0.796     | 0.097    |

Dairy farming most likely to cause personal accident, horticulture least likely

# Farm accidents by sociodemographic characteristics

|                          | % accident | B     | Wald   | OR    | p    |
|--------------------------|------------|-------|--------|-------|------|
| Age group                |            |       |        |       |      |
| <35                      | 26.4%      | ,057  | ,430   | 1,058 | ,512 |
| 35-49                    | 32.5%      |       |        |       |      |
| 50-65                    | 36.3%      |       |        |       |      |
| >65                      | 26.9%      |       |        |       |      |
| Gender                   |            |       |        |       |      |
| Male                     | 32.2%      | -,078 | ,267   | ,925  | ,606 |
| Female                   | 34.2%      |       |        |       |      |
| Education level          |            |       |        |       |      |
| None                     | 12.5%      | -,034 | ,111   | ,967  | ,739 |
| Primary                  | 24.3%      |       |        |       |      |
| Secondary                | 28.9%      |       |        |       |      |
| Higher                   | 35.3%      |       |        |       |      |
| Postgraduate             | 33.3%      |       |        |       |      |
| Agricultural training    |            |       |        |       |      |
| None                     | 26.4%      | ,371  | 34,115 | 1,449 | ,000 |
| 1-5 years                | 27.3%      |       |        |       |      |
| 5-10 years               | 40.1%      |       |        |       |      |
| >10 years                | 47.8%      |       |        |       |      |
| Farm ownership           |            |       |        |       |      |
| No                       | 29.8%      | ,299  | 2,462  | 1,348 | ,117 |
| Yes                      | 36.3%      |       |        |       |      |
| Employing others on farm |            |       |        |       |      |
| No                       | 15.2%      | ,422  | 8,433  | 1,526 | ,004 |
| Yes                      | 42.3%      |       |        |       |      |

# Farm accidents and safe behaviour

|                                   | <i>INJURY</i> |           | <i>NO INJURY</i> |           | <i>F</i> | <i>P</i> | <i>DISCRIMINANT FUNCTION</i> |
|-----------------------------------|---------------|-----------|------------------|-----------|----------|----------|------------------------------|
|                                   | <i>M</i>      | <i>SD</i> | <i>M</i>         | <i>SD</i> |          |          |                              |
| Fall prevention                   | 3.78          | 0.727     | 3.99             | 0.722     | 30.174   | <0.001   | 0.847                        |
| Machine handling                  | 3.77          | 0.797     | 3.81             | 0.823     | 1.100    | 0.294    | 0.229                        |
| Chemicals and pesticides handling | 4.13          | 0.804     | 4.27             | 0.690     | 8.836    | 0.003    | 0.605                        |
| Animal handling                   | 4.25          | 0.664     | 4.22             | 0.715     | 0.526    | 0.468    | -0.024                       |

# Determinants of safe farmer behaviour

|                               | $R^2_{\text{adjusted}}$ | $\beta$ | t      | p       |
|-------------------------------|-------------------------|---------|--------|---------|
| Fall prevention               |                         |         |        |         |
| <i>Intention</i>              | 0.291                   |         |        |         |
| Attitude                      |                         | 0.269   | 12.961 | < 0.001 |
| Subjective norm               |                         | 0.263   | 11.667 | < 0.001 |
| Perceived behavioural control |                         | 0.184   | 8.316  | < 0.001 |
| <i>Behaviour</i>              | 0.173                   |         |        |         |
| Intention                     |                         | 0.310   | 12.133 | < 0.001 |
| Safety climate                |                         | 0.165   | 6.913  | < 0.001 |
| Personal obstacles            |                         | -0.112  | -4.520 | < 0.001 |
| External obstacles            |                         | 0.100   | 3.976  | < 0.001 |
| Perceived behavioural control |                         | -0.021  | -0.877 | 0.381   |
| Machine handling              |                         |         |        |         |
| <i>Intention</i>              | 0.428                   |         |        |         |
| Attitude                      |                         | 0.585   | 26.584 | < 0.001 |
| Subjective norm               |                         | 0.153   | 6.936  | < 0.001 |
| Perceived behavioural control |                         | 0.000   | 0.015  | 0.988   |
| <i>Behaviour</i>              | 0.207                   |         |        |         |
| Intention                     |                         | 0.388   | 15.114 | < 0.001 |
| Safety climate                |                         | 0.142   | 5.565  | < 0.001 |
| Personal obstacles            |                         | 0.049   | 1.770  | 0.077   |
| External obstacles            |                         | -0.090  | -3.242 | 0.001   |
| Perceived behavioural control |                         | 0.095   | 3.694  | 0.381   |

# Determinants of safe farmer behaviour

|  | $R^2_{adjusted}$ | $\beta$ | $t$    | $p$     |
|--|------------------|---------|--------|---------|
| <b>Chemicals and pesticides handling</b> |                  |         |        |         |
| <b><i>Intention</i></b>                  | 0.189            |         |        |         |
| Attitude                                 |                  | 0.244   | 8.483  | < 0.001 |
| Subjective norm                          |                  | 0.153   | 5.415  | < 0.001 |
| Perceived behavioural control            |                  | 0.197   | 7.010  | < 0.001 |
| <b><i>Behaviour</i></b>                  | 0.202            |         |        |         |
| Intention                                |                  | 0.225   | 7.764  | < 0.001 |
| Safety climate                           |                  | 0.314   | 11.199 | < 0.001 |
| Personal obstacles                       |                  | 0.085   | 2.793  | 0.005   |
| External obstacles                       |                  | -0,012  | -0.406 | 0.685   |
| Perceived behavioural control            |                  | 0.082   | 2815   | 0.005   |
| <b>Animal handling</b>                   |                  |         |        |         |
| <b><i>Intention</i></b>                  | 0.253            |         |        |         |
| Attitude                                 |                  | 0.314   | 12,687 | < 0.001 |
| Subjective norm                          |                  | 0.238   | 8,833  | <0,001  |
| Perceived behavioural control            |                  | 0.134   | 4,932  | < 0.001 |
| <b><i>Behaviour</i></b>                  | 0.130            |         |        |         |
| Intention                                |                  | 0.191   | 6.282  | < 0.001 |
| Safety climate                           |                  | 0.161   | 5.507  | < 0.001 |
| Personal obstacles                       |                  | 0.238   | 7,800  | < 0.001 |
| External obstacles                       |                  | -0.267  | -8.541 | < 0.001 |
| Perceived behavioural control            |                  | -0.070  | -2.340 | 0,019   |

# Conclusions

- Farming is a hazardous and increasingly stressful occupation
- The specificity of agriculture and the risks facing farmers and their families are often missed or neglected in general health and safety
- Farm safety campaigns should be based on a sound understanding of the risk or health-damaging behaviour
  - documented impact of specific behavioural factors
  - importance of the determinants of risk behaviour using psychological models
- An extended version of the Theory of Planned Behaviour applied to farmer safety behaviour shows that safe behavior is influenced by
  - the intention to behave in a safe way, determined by attitudes, perceived social norms and perceived control of the behaviour
  - safety climate of the farmer community
  - perceived personal and external obstacles
- The questionnaire developed in the context of SACURIMA WG2 can be used to measure the determinants of farmers' safety behaviour

“ An ounce of prevention is worth a pound of cure”

- Benjamin Franklin



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