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# **Safety and Health at Work**

## **Assessment Tool – Horticultural**

### **Products – Sweets and Jams**

#### **User Manual**



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# **Safety and Health at Work Assessment Tool – Horticultural Products – Sweets and Jams User Manual**

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UNIÃO EUROPEIA  
Fundo Europeu  
de Desenvolvimento Regional



# Introduction

This manual aims to assist the Work Health and Safety Assessment Tool – Horticultural Products – Sweets and Jams user, in carrying out a simplified and easy-to-use occupational risk assessment with a view to adopting risk control solutions at workplaces.

The design of this tool tries to provide an instrument capable of being used without internet access or specific software installation.

In addition to its main purpose, this tool can also be used for workers consultation or training actions, provided as a complement of the other instruments developed within the scope of this project.

The tool is organized in three distinct parts (see Figure 1): the first, where a checklist is filled out, from which a graphical overview is obtained, which will give the overview of the level of risk control (second part). This synthesis of results allows the user to immediately visualize the level of control of the main risks and in which will have to make major interventions. Finally, the third part appears, where a report is generated with solutions, particularized for each one of the risks in which the adoption of measures proves necessary.



Fig. 1 – Structure of the risk assessment tool.

The use of this tool does not dispense or replace the use of the OiRA tool (Online interactive Risk Assessment) developed within the scope of this project to be used by Horticultural Products Enterprises since this is configured as a tool for "screening" of risk situations, and not as an exhaustive diagnosis. Through the OiRA tool, it will be possible to obtain an adequate risk assessment for micro, small and medium-sized enterprises and also to define an action plan.

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# 1. Risk Assessment

## 1.1. Checklist

The tool begins by filling out a checklist (see Fig. 2), which covers 17 dimensions of analysis, namely:

- Management of Safety and Health at Work;
- Workplaces Installations;
- Thermal Environment, Lighting, Noise e Chemicals;
- Psychosocial Risks and Stress;
- Ergonomic Risks;
- Electrical Risks;
- Safety Management of Machinery and Work Equipment;
- Personal Protective Equipment (PPE);
- Containers Under Pressure;
- Reception and Storage of Primary Materials – Stands and Shelves;
- Reception and Storage of Primary Materials – Conservation Chambers;
- Preparation of Ingredients;
- Cooking Sweets and Jams;
- Primary Packaging;
- Secondary Packaging;
- Final Product Storage;
- Emergencies.

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## Risk assessment

This tool has the objective of helping the employers to validated the main risks in the sweets and jams products' enterprises, enabling a simple and fast way to adopte solutions for their controls. For a more detaiid evaluation we advice the filling of the OIRA Tool "Horticultural Products" in:  
<https://oiraproject.eu/pt/oira-tools>  
<https://maisagro.pt/sst/ferramentas-computacionais-de-analise-de-perigos-e-riscos-em-pmes-do-setor-agroalimentar/>

**Horticultural Products - Sweets and Jams**      Yes   No   N/A  
Note: Put X in the correct option.

**1. MANAGEMENT OF SAFETY AND HEALTH AT WORK**

1.1	The company has organized occupational health and safety services.			
1.2	Risk assessments were carried out before adopting prevention measures.			
1.3	Workers are consulted, in writing, at least once a year in matters of Occupational Health and Safety.			
1.4	Workers have training and up-to-date information on Occupational Safety and Health.			
1.5	Surveillance of workers' health is carried out.			

**2. WORKPLACES INSTALLATIONS**

2.1	Workplace floors are fixed, stable, non-slip, without dangerous slopes, overhangs and cavities.			
2.2	The workplaces are tidy and well organized.			

**3. THERMAL ENVIRONMENT, LIGHTING, NOISE AND CHEMICALS**

3.1	The temperature and air humidity of the workplace are adequate for the health of workers.			
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Risk Assessment    Results Summary    Report with Solutions

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Fig. 2 – Checklist – Risk Assessment tool

For a better understanding of each dimension of analysis, a brief description of the aspects covered by them is presented, seeking to provide a set of information relevant to different types of users (namely employers and workers).

### 1.1.1. Management of Safety And Health At Work

Safety and health at work are fundamental to guarantee the physical, psychological and health of workers while ensuring the productivity of enterprises.

In this dimension of analysis we intend to approach in a summarized way:

- General principles of prevention;
- Employer and employee general obligations;
- Workers consultation, information and training;
- Work organization and occupational health and safety services activities;
- Workplace Accidents.

### **1.1.2. Workplaces Installations**

Workplaces Installations conditions can influence the health and safety of workers. In this dimension of analysis, the aspects associated with the floors and the organization of the workplaces are discussed.

### **1.1.3. Thermal Environment, Lighting, Noise And Chemicals**

Environmental risks can be caused by physical, chemical or biological agents which, when present in the workplace and above the threshold values, can lead to occupational diseases and contribute to an increase of accidents at work and decreased productivity. In some cases it may also contribute to the occurrence of defects in production, for example, confusing identical patterns and colors.

At this point, aspects related to the following topics will be evaluated:

- Thermal environment and ventilation;
- Lighting;
- Noise;
- Chemicals.

### **1.1.4. Psychosocial Risks and Stress**

Psychosocial risks derive from deficiencies in the design, organization and management of work, as well as from a problematic social context of work, which can have negative psychological, physical and social effects such as work-related stress, exhaustion or depression. Some examples of factors inducing psychosocial risks are:

- Excessive workloads;
- Contradictory requirements and lack of clarity in the definition of functions;
- Lack of participation in decision-making that affects the worker and lack of control over the way he/she performs the work;
- Poor management of organizational changes, job insecurity;
- Ineffective communication, lack of support from bosses and colleagues;
- Psychological or sexual harassment, violence by others;
- Difficult reconciliation of family and professional life.

Concerning stress, it comes when people realize that there is an imbalance between the demands of work and the physical and mental resources they have available to deal with these demands. As examples of stress-inducing factors we can indicate:

- Insufficient time to perform the required work;
- Do not have the emotional and cognitive skills to perform the tasks or functions;
- Lack of personal control;
- Inadequate support;
- Bad relationships between peers;
- Conflict of roles or lack of clarity;
- Violence (verbal or physical) by third parties.

Thus, this dimension of analysis evaluates factors who may induce psychosocial and stress risks.

### **1.1.5. Ergonomic Risks**

Inadequate postures associated with repetitive tasks are often responsible for musculoskeletal-disorders that can cause loss of productivity and workers absence for long periods of time.

Many of the ergonomic hazards can be avoided if the work area is properly sized and suitable equipment is used (height of workplaces and desks, shelves and cabinets, etc.).

Some activities at Horticultural Products enterprises are carried outstanding, require a high body movement or, the use of force or range, requiring special attention.

More information:

<https://osha.europa.eu/pt/themes/musculoskeletal-disorders>

### **1.1.6. Electrical Risks**

The main risks associated with the use of electricity are direct and indirect electrical contacts, fire and explosion.

In this dimension of analysis, only the aspects related to the general installation are addressed, and the aspects related to the machines and equipment themselves are

approached throughout the tool.

### **1.1.7. Safety Management of Machinery and Work Equipment**

The use of electric machines and equipment may expose the workers to different risks, especially in terms of cuts, entanglements or electrical contacts. The prevention in these cases involves the acquisition of safe machinery and equipment (with CE marking), for their adequate maintenance, guarantee that the safety systems are still installed in the machines and also for the training of the workers in the safe use of these machines and equipment.

All of them carry potential risks to workers, so it is necessary to carry out a correct management of these machines and equipment to prevent accidents at work and occupational diseases.

This dimension of analysis will evaluate the general safety aspects of machines and tools in the workplace. The aspects covered are applicable to all existing machines in the enterprise, which should be the first to control, and then be possible to pass to the specific risks of different machines.

### **1.1.8. Personal Protective Equipment (PPE)**

Personal protective equipment (PPE) should be the last resource to protect the health and integrity of workers.

Before adopting PPE, other protective measures should be adopted:

- Replace what is dangerous so it is safe from danger;
- Use of collective protection equipment (protection of machines and equipment, ...);
- Rotativity of workers.

In this dimension of analysis, it is intended that the enterprise evaluate the adequacy and use of PPE.

### **1.1.9. Containers Under Pressure**

Some enterprises in the horticultural industry use gas under pressure, especially propane gas to power stoves. Equipment that has pressurized fluids are potential bombs that can explode causing a serious material and human damage.

In this context, it is important to analyze the main risk factors associated with the use of gas cylinders, contributing to the adoption of measures to improve working conditions.

#### **1.1.10. Reception and Storage of Primary Materials – Stands and Shelves**

Storage systems on stands or shelves are widely used in the industry. However, there may be quite different situations, in terms of height and in terms of load capacity.

The height and load capacity determine the equipment used, namely stairs/ladders or mechanical means, such as manual or electric pallet truck, stacker, among others.

The main risks are associated with the transportation and storage of materials, with special attention to the structures used, the manual handling of loads, the fall of materials and workers falls.

#### **1.1.11. Reception and Storage of Primary Materials – Conservation Chambers**

When moving the materials/products from and to the cold chambers, workers are subjected to very low temperatures, especially in the negative cold chambers where the temperature can drop to -30°C.

As the extremities of the body are cooled faster than the rest of the body, the fingers (hands and feet), as well as the head (nose, chin and ears), are the parts that suffer most from exposure to cold. Care should be taken to ensure that the skin temperature does not fall below 12°C so that the supply and use of protective clothing appropriate to the cold must be guaranteed.

At the same time, abrupt changes in temperature can cause different diseases, both respiratory, joint and muscular.

Another situation that could lead to consequences that could be serious or even very serious, is a possible imprisonment of the worker inside the cold room.



As with other machines, there are moving parts, such as the fan blades. If those parts are not protected can cause damage to the worker.

The main risks are associated to the transportation and storage of the materials, with special attention to the manual handling of loads, to the fall of materials and workers falls, to the discomfort or thermal stress.

### **1.1.12. Preparation of the ingredients**

The design and organization of the manufacturing area must comply with principles that eliminate or minimize risks, in terms of surfaces and workplaces.

Effectively, an adequate, non-slip flooring, regular and with no level differences, provides safe travel. However, the absence of containers to receive enough waste and placed in convenient places (so that packaging or meat waste can be eliminated immediately), along with the lack of periodic cleaning routines, will quickly transform them into insecure floors.

Likewise, the lack of space organization, placing materials or work equipment in places of passage, will increase the risk of workers falling.

The organization is therefore decisive, and the workspace must be organized so that everything has a place (a place for each thing and everything in its place).

At the same time, close attention must be paid to workplaces to avoid dangerous postures and movements, which reduce productivity and cause accidents.

Thus, it is important to analyze the main risk factors associated with work surfaces and plans, contributing to the adoption of behaviors and measures to improve working conditions.

The use of cutting tools (eg knives) takes particular care in view of their danger, which is reflected in the number of accidents involving the use of these tools. These accidents mainly hit the hands of the user himself. It is therefore crucial that workers are aware of the risks involved in using these tools as well as the rules for safe use.

### **1.1.13. Cooking Sweets and Jams**

In some enterprises, hot or very hot liquids may be used. The possible presence of live flame and surfaces at high temperature (from the stove), has associated risks of thermal burn in the workers.

Taking into account the seriousness of injuries caused by an accident involving contact with liquids and hot surfaces, preventive measures to avoid them are particularly important.

The proper organization of the workspace allows space between the different work areas or equipment, reducing the risk of contact with liquids or hot surfaces.

In the same way, knowledge and compliance with elementary safety rules allow reducing these risks.

Personal protective equipment may play an important role in eliminating residual risk. It is therefore essential that workers know how to identify risk situations and know the rules and measures to be taken for safe work.

### **1.1.14. Primary Packaging**

After the cooking step and after obtaining the desired consistency, the jam and the sweet have to cool slightly, and then can be filled into the containers where they will be packed.

In the case of automated processes, the pulp is sent immediately to the filling system, being packaged in hot packs so that the product itself sterilizes the packaging.

In the case of manual filling, this is done in workbenches, where the jars are placed to place the jam or compote. The vials and lids were pre-sterilized in the sterilizer, being carried to the filling benches manually or by conveyor belts.

After filling the packs, they are closed with the respective lids, again passing through a sterilization process, which consists of keeping them in boiling water for approximately 15 minutes. Here too, the transport between the filling zone and the sterilization can be done manually or with conveyor mats.

The vials are then cooled until they return to room temperature, so that they are labeled and passed through the metal detector.

In all of these steps, cross-risk factors such as exposure to hot vapors and contact with hot surfaces, work plane height, standing static work, repetitive twisting movements of the hand and manual movement of loads are identified.

### **1.1.15. Secondary Packaging**

In this area of the production process, the products are packaged, which can be essentially manual or by using machines, such as the wrapping machine, the labeler or the palletizer.

In enterprises with predominantly manual processes, the existing risks are fundamentally associated with the ergonomic conditions of workplaces, such as the height of workplaces, static work carried out on foot or manual handling of loads (bending weight and frequency of movement).

In case the packaging process is eminently carried out using machines, to the risks associated with the ergonomic conditions of the works described above, also add the risks associated with the operation of machines (such as cutting, entrapment or crushing).

### **1.1.16. Final Product Storage**

The storage may be carried out on shelves or on pallet racks, and the packaging should be done by hand or with equipment intended for this purpose. Thus, according to the way this storage is carried out, there are different risks to which the worker will be subject.

Storage systems on stands or shelves are widely used at an industrial level, but there may be quite different situations, both in terms of height and in terms of load capacity.

The height and load determine the equipment used, namely stairs/ladders or mechanical means, such as manual or electric pallet truck, stacker, among others.

Taking into account these assumptions, there is the possibility of several risks occurring, which can result for the employee:

- Mucoeskeletal pain and lesions;
- Crushing;
- Light and severe injuries.

### **1.1.17. Emergencies**

Fires and explosions are examples of emergency situations with great destructive power, both in terms of loss of life and the level of material losses.

First of all, enterprises must assess the risks and implement measures that, on the one hand, reduce them and, on the other hand, be prepared to respond in the most appropriate way in an emergency, preserving lives and property.

Preparing to deal with emergency situations can mean the difference between life or death for workers, the reduction of material damage and even safeguarding the continuity of the enterprise.

In a first phase, enterprises should identify the potential emergency situations that may occur in their facilities (eg fire, explosion), and then adapt themselves in terms of human and material resources to deal with such emergency situations. Undoubtedly, the training and continuous information of workers have a key role to play in responding to the emergency.

This dimension of analysis covers fire prevention and fire safety, as well as assesses the level of response to emergency situations.

## 1.2 Rules for completing the checklist

In order to obtain correct results and to promote the easy use of the available risk assessment tool, there are a number of alerts that are considered important and for which the following explanations are given:

- ✓ Before starting to fill the checklist, the options are all "salmon" or "roasted yellow" (depending on the monitor) and only change to another color when the desired option is set (see Fig. 3). This function lets you check that you have not left any statements to evaluate.
- ✓ When placing a cross (X) in the correct option, all the options in this line change color, passing to a white background, as shown in the figure below:

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### Risk assessment

This tool has the objective of helping the employers to validated the main risks in the sweets and jams products' enterprises, enabling a simple and fast way to adopte solutions for their controls. For a more detailed evaluation we advice the filling of the OIRA Tool "Horticultural Products" in:  
<https://oiraproject.eu/pt/oira-tools>  
<https://maisagro.pt/sst/ferramentas-computacionais-de-analise-de-perigos-e-riscos-em-pmes-do-setor-agroalimentar/>

Horticultural Products - Sweets and Jams		Yes	No	N/A
1. MANAGEMENT OF SAFETY AND HEALTH AT WORK				
1.1	The company has organized occupational health and safety services.	X		
1.2	Risk assessments were carried out before adopting prevention measures.			
1.3	Workers are consulted, in writing, at least once a year in matters of Occupational Health and Safety.			
1.4	Workers have training and up-to-date information on Occupational Safety and Health.			
1.5	Surveillance of workers' health is carried out.			
2. WORKPLACES INSTALLATIONS				
2.1	Workplace floors are fixed, stable, non-slip, without dangerous slopes, overhangs and cavities.			
2.2	The workplaces are tidy and well organized.			
3. THERMAL ENVIRONMENT, LIGHTING, NOISE AND CHEMICALS				
3.1	The temperature and air humidity of the workplace are adequate for the health of workers.			

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Fig. 3 – Checklist's filling - Choose the correct option with an "X" (cross).

- When placing two or three options for the same assertion, the cells will change color, such as crosses, turning the background pink and the crosses to red color (see Fig. 4):

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Horticultural Products - Sweets and Jams		Yes	No	N/A
<b>1. MANAGEMENT OF SAFETY AND HEALTH AT WORK</b>				
1.1	The company has organized occupational health and safety services.	X		X
1.2	Risk assessments were carried out before adopting prevention measures.			
1.3	Workers are consulted, in writing, at least once a year in matters of Occupational Health and Safety.			
1.4	Workers have training and up-to-date information on Occupational Safety and Health.			
1.5	Surveillance of workers' health is carried out.			
<b>2. WORKPLACES INSTALLATIONS</b>				
2.1	Workplace floors are fixed, stable, non-slip, without dangerous slopes, overhangs and cavities.			
2.2	The workplaces are tidy and well organized.			
<b>3. THERMAL ENVIRONMENT, LIGHTING, NOISE AND CHEMICALS</b>				
3.1	The temperature and air humidity of the workplace are adequate for the health of workers.			

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Fig. 4 – Checklist's filling - Error when placing two options at the same time.

When see the pink colored line and the red crosses, the user easily realizes that it should analyze the affirmation again and leave only one option.

- ✓ By filling in the checklist, the user can save the work done so that he can interrupt and resume this activity whenever he wishes. At the end of the checklist, there is a cell that updates the fill date whenever a recording is performed (see Fig. 5), so the user can always know when the file was last updated.
- ✓ In order to ensure that the results obtained for each analysis dimension reflect reality, the user must ensure that he/she responds to all statements, confirming that the option lines are blank with black crosses (see Fig. 5). In some situations, there may be a need to record everything in order to visualize this color change and validate the answers.

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## Risk assessment

**Horticultural Products - Sweets and Jams**      Yes   No   N/A  
Note: Put X in the correct option.

**17. EMERGENCIES**

17.1	There is a plan of action or instructions for dealing with emergency situations.		X	
17.2	A structure is defined to deal with emergencies in the company.		X	
17.3	The emergency exits are signposted, unobstructed and are of easy access to the outside.	X		
17.4	Training courses on fire safety, explosions and first aid were carried out.		X	
17.5	Evacuation drills are organized periodically.		X	
17.6	Sufficient fire extinguishers exist and are suitable for existing fire classes.	X		
17.7	Emergency lighting is installed throughout the company and is inspected at least once a year.	X		
17.8	There is a first-aid box with easy access in case of emergency.	X		

Responsible for evaluation: \_\_\_\_\_      Date: 16/09/2018

Risk Assessment    Results Summary    Report with Solutions

Fig. 5 –Checklist's filling - Date of filling / last recording.

- At the end of the checklist, there is also, beyond the date, a space for the signature of the person responsible for the evaluation (Fig. 5). This document can only be signed after it has been printed.



# 2. Risk Assessment Results

## 2.1 Synthesis of results

The synthesis of the results comes after completing the checklist and is presented by means of a 2D bar graph that allows us to quickly verify the enterprises' situation related to the 17 dimensions of analysis proposed, as shown in the following figure:

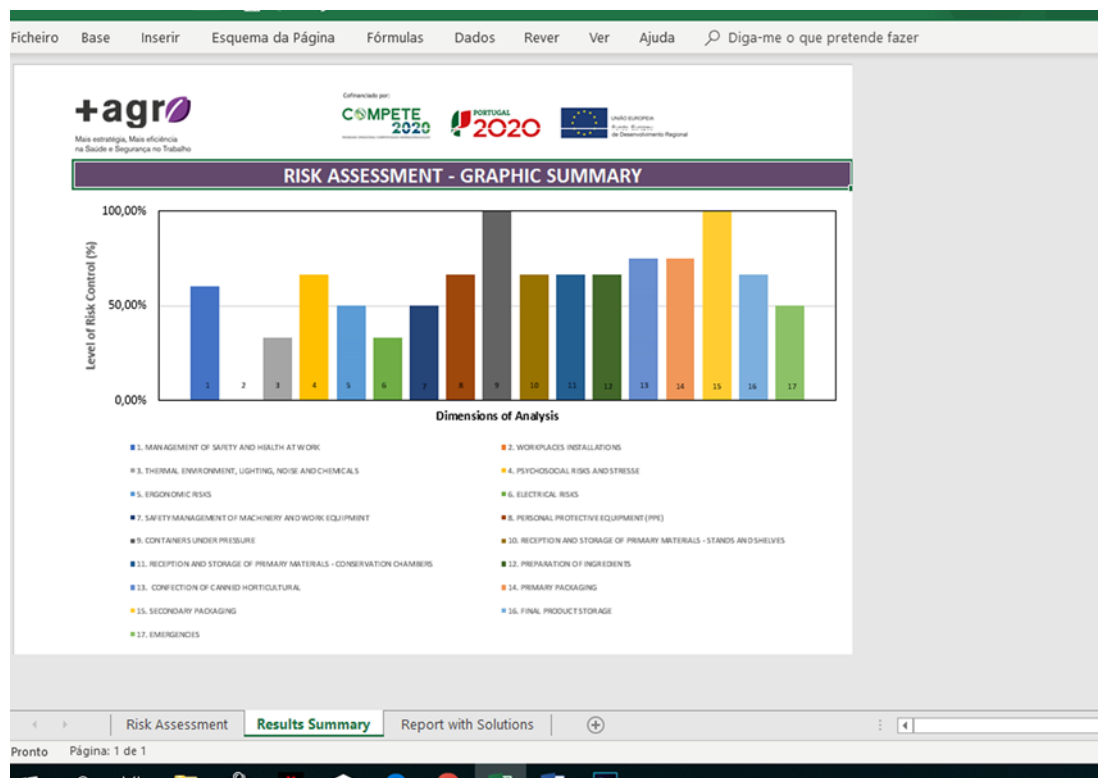


Fig. 6 –Graphical summary of the results - Risk Assessment Tool

In order to know the percentage obtained in each dimension of analysis, the user must place the cursor on the respective column and, thus, obtain the indication of the exact value (Fig. 7):

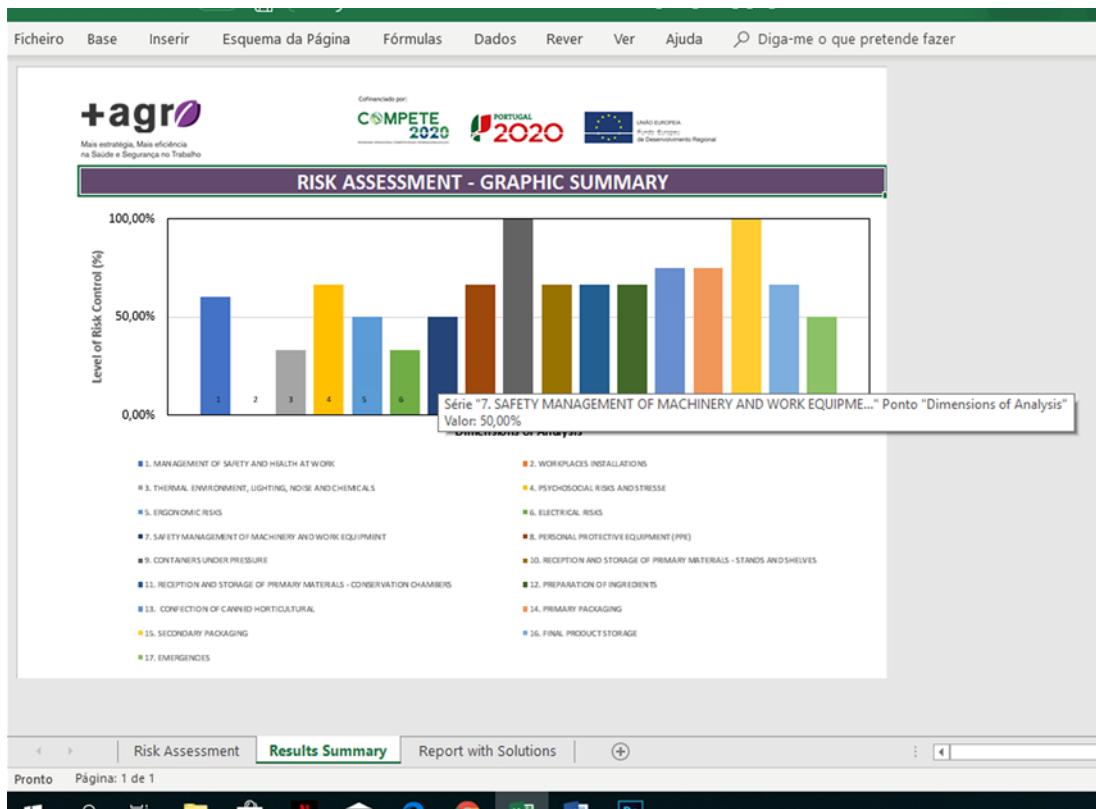


Fig. 7 – Graphical summary of the results - Levels of Risk Control (%).

Reading this graph should allow the user to make several observations:

- 1) In what dimensions of analysis the enterprise is at an adequate risk control level (in the example of Fig. 6 and Fig. 7 these dimensions are at 9 and 15);
- 2) In what dimensions of analysis will the enterprise have to make interventions because the risk control is deficient or does not exist (in the example of Fig. 6 and Fig. 7 this situation is registered in all dimensions with values less than 100 %).

In the case of the dimensions of analysis that fall under an adequate risk control situation, the enterprise should be vigilant to ensure that there are no changes that could interfere with current levels of control and to continue to adopt an attitude of improvement to be continued.

For dimensions with values below 100%, it is considered that risk control is not being adequate or efficient, and there is, therefore, a need to promote initiatives conducive to change.

Given that the enterprise may not carry out all necessary interventions

simultaneously, it will be necessary to carry out a cross-analysis of this graph with the solution proposals indicated for each statement in the "Report with Solutions" tab, and then make decisions based on an analytical reflection of the measures.

## 2.2 Report with solutions

After completing the checklist and careful reading of the graphical summary of the results, the user should consult the "Report with Solutions", in which you can find a set of options that will allow you to control the risk inherent in each statement whose answer fell to the option "No" (see Fig. 8).

The screenshot displays the +agro Risk Assessment software interface. The left pane, titled "Risk assessment", shows a checklist for "Horticultural Products - Sweets and Jams". The checklist has columns for "Yes", "No", and "N/A". An arrow points from the "No" column of item 1.2 to the right pane. The right pane, titled "Risk Assessment Report and Solutions Proposal", shows the corresponding solution proposal for item 1.2, including a measurement plan and implementation details.

Horticultural Products - Sweets and Jams			
	Yes	No	N/A
<b>1. MANAGEMENT OF SAFETY AND HEALTH AT WORK</b>			
1.1 The company has organized occupational health and safety services.	X		
1.2 Risk assessments were carried out before adopting prevention measures.		X	
1.3 Workers are consulted, in writing, at least once a year in matters of Occupational Health and Safety.		X	
1.4 Workers have training and up-to-date information on Occupational Safety and Health.	X		
1.5 Surveillance of workers' health is carried out.	X		
<b>2. WORKPLACES INSTALLATIONS</b>			
2.1 Workplace floors are fixed, stable, non-slip, without dangerous slopes, overhangs and cavities.		X	
2.2 The workplaces are tidy and well organized.		X	
<b>3. THERMAL ENVIRONMENT, LIGHTING, NOISE AND CHEMICALS</b>			

**Horticultural Products - Sweets and Jams**

**1. MANAGEMENT OF SAFETY AND HEALTH AT WORK**

1.1 The company has organized occupational health and safety services.  
Risco controlado/inexistente.

1.2 Risk assessments were carried out before adopting prevention measures.  
Solution - Preparation of measurement plan:  
- Draw up a measurement plan with the aim of eliminating or minimizing risks, according to the risk assessment carried out.  
- The measurement plan must contain at least, in addition to the measures to be implemented, who is responsible for implementing the measures, deadline, costs (financial and / or human) and the periodicity of monitoring the implementation of the measures.

1.3 Workers are consulted, in writing, at least once a year in matters of Occupational Health and Safety.  
Solution - Create information documents and consult workers:

Fig. 8 – Report with Solutions - Proposals for solutions to situations where there is risk.

Thus, the report made available is not an end in itself but a window of opportunity for improving working conditions in the enterprise, by implementing measures that translate into adequate control of risks.

This tool should be used as a "rater" instrument and then the complete "diagnosis" can be made using the OiRA tool designed specifically for the Horticultural Products enterprises.

*OiRA tools provide:*

*“- A document recording the results of the risk assessment that can be downloaded, edited and printed. This record can be used as a basis for the information to be passed to the persons concerned; for monitoring to assess whether necessary measures have been introduced; for evidence to be produced for supervisory authorities; and for any revision if circumstances change.*

*- An action plan (that can also be downloaded, edited and printed) focusing on the preventive measures to be implemented, who does what by when, etc.*

*- An overview of all the risks. This record can be used as a basis for passing information to the people concerned and for monitoring whether or not risks identified and measures to be taken are dealt with properly.*

*- An overview of the preventive and protective measures to be implemented. This record can be used as a basis for passing information to the people concerned and for monitoring the measures to be implemented in the forthcoming three months.”<sup>1</sup>*

OiRA tools have periodic updates, thus as changes of legislation, development of new examples of good practice, ensuring that they are always up to date.

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<sup>1</sup> <https://oiraproject.eu/pt/oirra-faqs>

Para mais informações sobre o projeto, contactar através de [geral@maisagro.pt](mailto:geral@maisagro.pt) ou diretamente os promotores do projeto



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