

OCCUPATIONAL RISK PREVENTION



▶ **GUIDE TO BEST PRACTICES IN
WORK IN THE FRUIT
AND VEGETABLE SECTOR**

Edita:

Consejería de Empleo
Dirección General de Seguridad y Salud Laboral

Producción y redacción:

Fundación Andaluza Fondo de Formación y Empleo

Diseño:

la azotea, arte y diseño

Impresión:

J. DE HARO

Depósito Legal:

presentation

This Guide to Best Practices in Work in the Fruit and Vegetable Sector aims to provide training and necessary information to all persons working in this sector.

The persons working in this sector face technological, environmental and organisational changes that are rapidly changing the occupational risks present in their work places.

Workers, as the main persons responsible for prevention, must be familiar with the preventive measures required to minimise these types of risks.

This guide analyses the most common risk scenarios, as well as the preventive measures that may be applied in each case.

We hope that the advice presented in this guide is useful to promote recommendations in the area of occupational risk prevention that will help us turn our work places into areas that are "harmless" for human health.

This guide is defined by a series of general sections covering the specific tasks intrinsic to the work performed in this sector. These sections aim to describe the most common risk scenarios, as well as the preventive measures to be taken in order to minimize these risks.

As could not be otherwise, the guide starts by focusing on tractors, since these are the most popular and well-known machines used in farming, before looking at other farming machinery, manual tools and other farming equipment.

Another section focuses on phytosanitary products, including pesticides and fertilizers.

Subsequent sections focus on different noteworthy aspects of importance in the sector, namely risks and preventive measures in harvesting operations, adverse weather conditions, differentiating between risks in greenhouse horticulture and fruit tree farming.

The guide also contains a section on the most frequent zoonoses and corresponding preventive measures, before concluding with a series of recommendations on the growing importance of immigration in the sector and its influence on occupational risk prevention.

BASIC CONCEPTS		7
TRACTORS	General Risks	9
	Preventive Measures	10
MACHINERY, MANUAL TOOLS AND EQUIPMENT	General Risks	15
	Preventive Measures	16
PESTICIDES AND FERTILIZERS	General Risks	19
	Preventive Measures	20
HARVESTING	General Risks	27
	Preventive Measures	28
WEATHER CONDITIONS	General Risks	33
	Preventive Measures	34
GREENHOUSE FARMING	General Risks	37
	Preventive Measures	38
FRUIT TREE FARMING	General Risks	41
	Preventive Measures	42
ZOONOSES	Forms of Transmission	47
	Most common Diseases	47
	Preventive Measures	48
INDIVIDUAL PROTECTION EQUIPMENT		51

BASIC CONCEPTS



To facilitate understanding of the texts contained in this guide, readers should be familiar with the definitions of a number of terms often used in literature on occupational risk prevention.

Therefore, it was considered that the first section of this guide should provide definitions of the following terms:

■ **Hazard:** anything that may harm or deteriorate the quality of life of individuals or collectives.

■ **Harm:** the result of a hazard on the quality of life of individuals or collectives.

■ **Risk:** the likelihood of a worker suffering a specific occupational injury.

■ **Prevention:** technique for dealing with hazards to eliminate them and prevent their harmful consequences.

■ **Protection:** techniques for dealing with the harmful consequences and damage or injury hazards may have on individuals, collectives or their environment.

■ **Individual protection equipment (IPE):** any equipment to be worn or held by the worker to protect them from one or various risks that may threaten their safety or health in the workplace, as well as any complement or accessory designed for this purpose.



Tractors are the agricultural machines par excellence of modern farming. They are undeniably the most important machines used to perform most farming activities. It is therefore essential to understand the risks inherent in their usage so that the appropriate preventive measures can be taken and thus ensure that tractors are used safely.

Tractors are normally used for pushing or pulling operations,

and may or may not be associated with the drive supply. Moreover, in most cases these operations are performed by attaching an implement or machine to the tractor to perform a specific agricultural task.

All these farming operations performed with tractors and farming implements give rise to endless risk scenarios that may result in accidents, often with serious consequences, the most risks being tractor overturns or "roll-overs".

General Risks

- Overturns or "roll-overs" of tractors either sideways or backwards.
- Falls when getting on or off the tractor.
- Entrapments.
- Amputations.
- Running over.
- Traffic accidents.
- Vibrations.
- Fire.





Preventive Measures

▶ Tractors must only be handled by trained tractor drivers. Tractors may not be driven by persons under 18 years of age.

▶ In all cases, the use of safety belts is obligatory.

NO

YES



▶ All tractors must have a cabin or safety frame to prevent the driver from being crushed if the tractor overturns. If the tractor does not have a cabin or safety frame, the driver should use a safety helmet.

► Perform all tractor maintenance operations and checks indicated in the instruction manual and ensure the tractor undergoes the corresponding Vehicle Inspection Test (*Inspección Técnica de Vehículos - ITV*; equivalent to an MOT).



► When refuelling, always bear in mind the risk of fire and/or explosion. Never smoke when refuelling the tractor. It is strongly recommended that tractors should be equipped with fire extinguishers and a first-aid kit.





► **Different factors should be taken into account according to the specific work place and the most appropriate precautions to be taken in each situation:**

- ❶ If work is being performed uphill or downhill, take maximum caution with driving speed, particularly if a trailer or heavy machinery is attached to the tractor.
- ❷ If work is to be performed on a steep slope, take maximum caution when turning, and never hurry since this may affect the stability of the tractor.
- ❸ The morphology of the plot, the presence of

ditches, boundaries, rocks, uneven land, etc., increase the risk of overturning. Therefore, when driven the tractor must be kept at a safe distance from such areas at all times i.e. at a minimum safety distance of 1 m.

- ❹ The presence of elements such as posts, wells or trees increases the risk of accident; the driver must look in the direction in which the tractor is being driven at all times.



► **Do not exceed the recommended maximum temperature indicated in the technical specifications of the trailer and distribute loads evenly.**

► When attaching farming instruments or trailers to the tractor, use authorised drawbars, and make sure the coupling point is as low as possible at all times. Protective gloves for working with machinery must be worn to perform coupling operations.

NO



YES



► Tractors are industrial vehicles and not cars. Therefore, passengers must never be transported in the cabin or on the trailer.



▶ **To avoid entrapments with moving parts (particularly the axle shaft), use form-fitting clothing and do not wear hanging items (scarves, chains, etc.)**

▶ **Do not get off the tractor when the engine is running; activate the locking devices, stop the engine and remove the key from the ignition.**

▶ **Protective devices or mechanisms must never be modified or disabled. Protective devices and mechanism must always be placed in their correction positions.**

MACHINERY, MANUAL TOOLS AND OTHER FARMING EQUIPMENT



Most farming operations are performed manually using auxiliary equipment. This includes farming implements, which may or may not be coupled to the tractor, all portable equipment (chainsaws, rotary tillers, etc.) and all manual tools (shears, handsaws, hoes, etc.).

Many injuries in this sector are caused by incorrect use of such auxiliary equipment. Therefore, knowledge of the associated risks and their control is essential to ensure that work is performed safely.

General Risks

- Contact with cutting elements.
- Projection of fragments and particles.
- Knocks due to overstraining.
- Electric shock: inadequate insulation.
- Contact with hot surfaces or elements: burns due to contact with hot elements.
- Noise.
- Vibrations.





Preventive Measures

► For tools with cutting or sharp elements (pruning shears, handsaws, hoes, etc.), use portable covers or stationary storage equipment with locking systems and adjustable or removable safety catches.



► Manual tools with non-slip handles are recommended since they are easier to use and prevent accidents during usage, especially in the case of cutting or sharp elements often used in pruning, grafting, harvesting, etc.

▶ **Programme daily tasks and avoid using cutting machinery or tools (shears, chainsaws, curved pruning knives, etc.) at the end of the working day when tiredness affects concentration. For example, during harvesting perform harvesting work early in the morning and then classify harvested crops in the afternoon.**

▶ **Specially-designed machinery or equipment is available on the market for every type of farming operation; use the correct tool for each task and only use it to perform the operations specified in the usage instructions.**

▶ **When a tool becomes worn or no longer fulfils its function, notify the manager so that it can be replaced; these situations are common in the case of shared tools (chainsaws, ladders, hoes, etc.).**

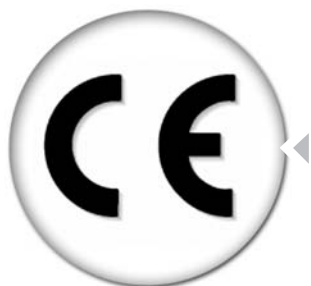




▶ **Install and use machinery in accordance with manufacturers' instructions and keep the documentation relating to each machine or tool.**

▶ **Use adequate working clothes and IPE suitable for the task at hand (see page 51: Individual Protection Equipment).**

▶ **Cleaning and maintenance operations on machinery must only be performed by qualified personnel who have received specific training (foremen, maintenance experts, etc.) and always after the machine in question has been turned off or disconnected accordingly. If operations are performed on hot machine parts (for example, when changing the chainsaw chain, mechanical operations, etc.), make sure these parts cool down first.**



▶ **Purchase safe machinery, equipment and tools. The certificate accompanying each piece of machinery (CE conformity marking) indicates that the machine complies with general safety requirements.**



Pesticides

are used in many areas of human activity. However, the most important pesticides are used in agriculture. These products have contributed enormously to the increase in agricultural productivity.

The most important risks associated with the application of pesticides are: *the type of phytosanitary product to be used; and the application technique used.* These will determine the route of entry of contaminants, the toxic effects on health and the environment, physical stress and the qualifications required for using the machinery.

All persons in contact with phytosanitary products must control these two factors, and know the risk factors deriving from the physical-chemical properties of both the compounds and the most important elements in the application technique used. This information, together with the product safety data sheet and the equipment instructions manual, will allow workers to develop the most appropriate procedures for each task in the application phases (mixing-loading, application, re-entry, etc.).

Fertilizers are normally safer than pesticides, although this does not mean that they can be used without taking adequate protection measures.

General Risks

- Dizziness, general discomfort, digestive problems, sore eyes and mucosa, risk of poisoning (see Table 1).





Preventive Measures

► **Nitrates are artificial fertilizers widely used on fruit and vegetable farms. The most dangerous nitrate is ammonium nitrate since, in case of fire, it can explode if present in large quantities. Therefore, smoking is completely prohibited in premises where nitrates are stored. As a rule, they must be handled in sacks and must not be accumulated in large quantities.**

► **The danger with any pesticide (herbicide, insecticide, fungicide, nematicide, etc.) lies in its chemical composition and the physical characteristics of its formulation. As a universal principle of prevention, products containing less toxic substances are recommended due to their lower toxicity and preferably in capsule or granulated form rather than in dust or aerosol form**

Xn



- Inflamable
- Nocivo por inhalación, por ingestión y en contacto con la piel.
- Irrita las vías respiratorias.
- Manténgase fuera del alcance de los niños.
- Manténgase lejos de alimentos, bebidas y piensos.
- Protección de fuentes de ignición. No fumar.
- No comer, ni beber, ni fumar durante su utilización.
- Evite el contacto con los ojos y la piel.

• Usen indumentaria y guantes de protección adecuados.
• En caso de accidente o malestar, acuda inmediatamente al médico (si es posible muestrele esta etiqueta).

ANTIDOTOS Y RECOMENDACIONES AL MEDICO EN CASO DE INTOXICACION O ACCIDENTE

Síntomas de intoxicación:
- Irritación de ojos, piel y mucosas.
- Sudoración, lagrimeo, debilidad, confusión, calambres estomacales y convulsiones.
- Cefaleas, náuseas, vómitos, opresión torácica, inestabilidad en la marcha, parálisis y dificultad respiratoria.

Primeros auxilios:

- Refúgio a la persona de la zona contaminada.
- Quite inmediatamente la ropa manchada o salpicada.
- Lave los ojos y piel con abundante agua.

Vigile la respiración:

- Si la persona no respira. Practique la respiración artificial.
- Si la persona respira y está inconsciente: Acuéstela boca abajo con la cabeza de lado.
- No provoque el vómito.
- Traslade al enfermo a un Centro Hospitalario.

NO DEJE SOLO AL INTOXICADO EN NINGUN CASO.

Recomendaciones al médico:

- Si se ha ingerido, -arrisque lavado gástrico con precaución y evitando la aspiración.
- Aplique respiración artificial con oxígeno, caso de que fuera necesario.
- Administre: Atropina (2 mg. vía intravenosa cada 10 minutos hasta que aparezcan signos de antipodación).
- En caso de convulsión administre Diazepam.

Oximas (Fenitoinas). Antes de administrar las oximas obtener 10 cm³ de sangre para determinar coenzimasa.
No administrar: Morfina, Teofilina, Etadina, Furosemida, Reserpina, Barbitúricos ni Fenotiazina.

En caso de intoxicación llame al Instituto Nacional de Toxicología Tel: 91 562 04 20.
Para información de los profesionales de la medicina, ponerse en contacto con nuestro médico consultor Tel: 91 316 69 68.

Eliminación de envases vacíos: ES OBLIGATORIO ENJUAGAR ENERGICAMENTE TRES VECES O MEDIANTE DISPOSITIVO DE PRESION, CADA ENVASE DE PRODUCTO QUE SE VA A USAR, PREPARAR LA DILUCION Y VERTEER LAS AGUJAS AL TANQUE DEL PULVERIZADOR. UTILIZAR LOS ENVASES VACIOS Y DEPOSITARLOS EN LUGAR SEGURO Y NO CONTAMINANTE.

Peligrosidad en fauna terrestre: Mediana CATEGORIA II.
Muy peligroso para las abejas, por lo que se deberán tomar precauciones no realizando talamientos en épocas de actividad.
Peligrosidad en fauna acuicola: Baja CATEGORIA I.

► **Have detailed knowledge of the safety data sheets of the phytosanitary products used in order to become familiar with potential risks, handling and storage recommendations and actions to be taken in emergencies.**

► **Phytosanitary products must only be applied by persons wearing or carrying adequate individual protection equipment, i.e. impermeable gloves, impermeable suit, breathing mask with face protection and impermeable boots with gaiters or leg guards over boots (see page 51: Individual Protection Equipment).**

NO



YES





▶ Apply phytosanitary treatments on clear days. Do not apply treatments when it is windy.

▶ The least toxic products must be selected. Avoid toxic and very toxic products. Only apply phytosanitary treatments when necessary.

▶ Use adequate containers or bottles. Do not transfer the product to other recipients. Under no circumstances must food recipients be used store any type of phytosanitary product.



▶ Only the person authorised to apply these treatments must be present at the time of usage. Make sure that other workers do not interfere in the application process. These products may only be used by persons holding the corresponding applicator licence



► Store pesticides and fertilizers separately from food products. Take all necessary personal hygiene measures and do not eat, smoke or drink near these products.

NO



YES



► After applying phytosanitary products, shower and ensure clothing used in the treatment process is washed.



MAIN PESTICIDES USED IN FARMING ACCORDING TO THEIR CHEMICAL GROUP	EXAMPLES	EFFECTS IN THE EVENT OF ACUTE POISONING
<p>ORGANOCHLORIDES: Organic compounds containing chlorine atoms in the molecule. They remain in the atmosphere and accumulate in the organism.</p>	<p>Endrin, Dieldrin, Aldrin, Lindane, HCH, Heptachlor, DDT, Methoxychlor, Chlordane, Canfechlor...</p>	<ul style="list-style-type: none"> ➤ Central Nervous System alterations: headaches, insomnia, muscular contractions, trembling, etc. ➤ Gastrointestinal effects: diarrhea, gastroenteritis, vomiting, etc. ➤ Cardiocirculatory effects: tachycardia, arrhythmia, hypertension, paleness, etc. ➤ Ocular effects: sight alterations, eye irritation, etc. ➤ Hepatic, renal lesions, etc.
<p>ORGANOPHOSPHORATES: mainly phosphoric acid esters, currently of widespread use.</p>	<p>Demeton, Parathion, Methyl Parathion, Fenthion, Diazinon, Dichlorvos, Fenitrothion, Trichlorfon, Dimethoate, Malathion...</p>	<ul style="list-style-type: none"> ➤ Neurological effects: paresis, profuse salivation, somnolence, perspiration, dizziness, vertigo, psychosis, hallucinations, hyperthermia, etc. ➤ Cardiocirculatory effects: bradycardia, hypertension, hypotension, etc. ➤ Ocular effects: eye pain, blurred or darkened vision, cataract, watering eyes, etc. ➤ Respiratory effects: apnea, dyspnea, chest tightness, wheezing, pulmonary edema, laryngeal spasms, etc. ➤ Dermatitis, hepatic lesions, renal lesions, etc.
<p>CARBAMATES: are derivatives of N-methyl-carbamic acid.</p>	<p>Aldicarb, Carbofuran, Methomyl, Propoxur, Pirimicarb, Carbaryl...</p>	<ul style="list-style-type: none"> ➤ Peripheral Nervous System effects: temporary paralysis of extremities, alteration of reflexes, trembling, etc. ➤ Gastrointestinal effects: epigastric pain, nausea, vomiting, diarrhea, etc. ➤ Ocular effects: eye pain, darkened or blurry vision, cataract, watering eyes, etc. ➤ Respiratory effects: pulmonary edema, dyspnea, chest tightness, etc. ➤ Cardiocirculatory effects: tachycardia, arrhythmia, hypertension, paleness, etc. ➤ Skin irritation, etc.
<p>PYRETROIDES: similar to pyrethrins, chemically synthesized products.</p>	<p>Resmethrin, Alethrin, Deltamethrin, Cypermethrin, Permethrin, Fenvalerate...</p>	<ul style="list-style-type: none"> ➤ Neurological effects: convulsions, paralysis, headaches, ataxia, etc. ➤ Gastrointestinal effects: diarrhea, vomiting, etc. ➤ Dermal effects: edemas, dermatitis, etc. ➤ Respiratory: dyspnea, etc. ➤ Hepatic and renal problems, etc.

MAIN PESTICIDES USED IN FARMING ACCORDING TO THEIR CHEMICAL GROUP	EXAMPLES	EFFECTS IN THE EVENT OF ACUTE POISONING
<p>BYPIRIDYLS: substances formed by the union of two pyridyl rings.</p>	<p>Paraquat and Diquat.</p>	<ul style="list-style-type: none"> ➤ Gastrointestinal effects: nausea, vomiting, diarrhea, dehydration, etc. ➤ Dermal effects: loss of colour, skin softening, etc. ➤ Renal and urinary effects. ➤ Respiratory effects: haemorrhages, pulmonary edema, etc.
<p>CHLOROPHENOXY ACIDS: derivatives of phenoxyacetic acid.</p>	<p>Marketed as salts, esters and amines: 2, 4-D and 2,4,5-T.</p>	<ul style="list-style-type: none"> ➤ Neurological effects: pain, itching and sweating of extremities, hyperthermia, hypotension, trembling, convulsions, etc. ➤ Gastrointestinal effects: nausea, vomiting, diarrhea, ulcerations, etc. ➤ Dermal and ocular effects. ➤ Hepatic and renal damage. ➤ Circulatory effects: tachycardia, vasodilatation, etc.
<p>CHLORINE AND NITROPHENOLS.</p>	<p>Pentachlorophenol, Dinitro-o-cresol, Dinoseb...</p>	<ul style="list-style-type: none"> ➤ Neurological effects: hyperthermia, headaches, trembling, cerebral edemas, insomnia, psychosis, etc. ➤ Gastrointestinal effects: abdominal pain, nausea, vomiting, diarrhea, etc. ➤ Hepatitis. ➤ Renal and urinary lesions. ➤ Respiratory effects: pulmonary edema, dyspnea, chest tightness, etc.
<p>ORGANOMERCURIAL PESTICIDES: these are mercury atoms linked to organic radicals.</p>	<p>Phenylmercuric acetate.</p>	<ul style="list-style-type: none"> ➤ Neurological effects: anxiety, apathy, convulsions, delirium with hallucinations, headaches, memory loss, etc. ➤ Gastrointestinal effects: abdominal pain, ulcerations, gastroenteritis, nausea, vomiting, diarrhea, etc. ➤ Dermal effects: burning, dermatitis, etc. ➤ Deafness, kidney failure, weight loss, hepatic necrosis, etc.
<p>THIOCARBAMATES: derivatives of thiocarbamic and dithiocarbamic acid.</p>	<p>EPTC, Molinate, Di-allate, Tri-allate, Metham Sodium, Thiram, Maneb, Zineb...</p>	<ul style="list-style-type: none"> ➤ Diarrhea, nausea, sneezing, vomiting, skin irritation, urticarias, conjunctivitis, nasal respiratory difficulty, vertigo, somnolence, muscular paralysis, etc.
<p>TRIAZINES: the nucleus of the molecule is a triazine.</p>	<p>Atrazine, Simazine, Cyanazine...</p>	<ul style="list-style-type: none"> ➤ Abdominal pain, diarrhea, nausea and vomiting, dermatitis, eye irritation, etc.
<p>ORGANIC COMPOUNDS OF TIN: tin atoms linked to various types of organic radicals.</p>	<p>Cihexaestan, Fenbutestan, Fenestanhydroxyde.</p>	<ul style="list-style-type: none"> ➤ Weakness, somnolence, cerebral and pulmonary edema, headaches, abdominal pain, dermatitis, conjunctival edema, photophobia, etc.

Table 1



Harvesting

in modern farming is highly mechanised. The interaction of agriculture with mechanical means gives rise to a wide range of risks. Moreover, since harves-

ting takes place at a specific moment in the production cycle of crops and requires much labour, workers may lack the necessary training, making them more prone to accidents.

General Risks

- Vehicle accidents or collisions.
- Traffic accidents when travelling to and from rural areas.
- Falls from different heights when climbing trees or when using inadequate means such as boxes, broken hand ladders, etc.
- Falls at ground level (slipping on mud, fallen fruit, while walking on the edge of irrigation channels, etc.)
- Falling or collapsing stacked boxes.
- Physical stress due to:
 - repetitive movements (tendinitis).
 - incorrect postures.
- Electric shock due to direct contact with electrical cables present in the countryside.
- Cuts when using cutters or pricks from branches.
- Knocks against objects.
- Heat stress due to heavy work at high temperatures on very hot days.
- Exposure to low temperatures on cold days.
- Exposure to solar radiation.
- Insect bites.
- Stepping on piercing objects.
- Overstraining when handling boxes.





Preventive Measures

▶ Do not stack boxes and use these as a ladder.

▶ Avoid copious meals and alcohol. Working or driving under the effects of alcohol and/or drugs is completely prohibited.

▶ Never touch electricity cables located in rural areas. Be especially careful with overhead electricity cables situated near crops, and take precautions when handling irrigation pipes in areas where there are electricity cables.



▶ Take extra care in the presence of objects that may cause falls at ground level (drip irrigation hoses, boxes, irrigation channels, fruit, etc.).

► Wear a cap to protect yourself from the sun in the summer, and warm clothing and gloves in winter, keeping feet dry and protected by wearing warm, waterproof footwear (see page 51: Individual Protection Equipment).

► Workers performing the most physically-demanding jobs, e.g. loading and unloading boxes containing harvested crops, moving benches and ladders, etc. should rotate.

► Take short breaks to drink water in the shade and eat something light in the summer; drink hot beverages in the winter.





When performing **loading** and **unloading** operations:

1 Plan the route with the load from its origin to its destination; if necessary, use mechanical means or ask a colleague to help; never load two boxes at the same time.



2 Stand with feet slightly separated to maintain a balanced and stable posture.

3 When approaching the load, flex your legs and keep your back straight at all times.

4 Hold loads firmly with both hands.



5 Use your legs to provide the strength necessary to gradually lift the load.



6 Do not twist your trunk or overstrain your back while holding the loading. Put the load down gently. Only adjust the boxes once you have put down the load.



▶ **Do not handle loads with wet or greasy hands; use protective gloves to prevent loads from slipping in your hands.**

▶ **The use of insect repellents is recommended. If you are bitten by an insect, consult a doctor.**

▶ **Wash hands before eating, drinking or smoking to eliminate remains of pesticides**

▶ **Use of the following IPE is recommended: caps, protective goggles, gloves, adequate footwear (never sandals), high-visibility vests, insect repellent cream and sun cream, etc. (see point 10: Individual Protection Equipment).**

▶ **Do not leave tools scattered on the ground; after work, store the tools in the indicated places.**

ADVERSE WEATHER CONDITIONS



Andalusia

is famous for its sunny weather and light. In other production sectors, these factors would not have such an important impact on workers. However, in agriculture they are particularly impor-

tant because workers normally work outdoors. Therefore, it is extremely important to be aware of the risks associated with weather conditions in Andalusia and the need for preventive protection measures.

General Risks

- Contact with hot surfaces or elements.
- Colds.
- Tiredness.
- Fainting.
- Dehydration.
- Hypothermia.
- Sunburn, etc.





Preventive Measures

▶ **Use adequate clothing to protect against the inclemencies of the weather:**

- ① Light clothing and a hat or cap in the summer
- ② Waterproof clothing during rainy periods.
- ③ Warm clothing in the winter.

▶ **Change the pace of work to acclimatize to environmental conditions, alternate periods working in the sun and in the shade, change tasks (static and dynamic).**

▶ **Do not work in wet clothes since in extreme temperatures this may produce a sense of suffocation.**

▶ **Acclimatization to heat is a gradual process; full acclimatization takes three weeks of physical activity. During the acclimatization process, add 1 g of salt for every litre of drinking water. The effects of acclimatisation start to disappear after 3 or 4 days of inactivity.**

▶ **Use sun cream to avoid sunburn and hand and lip cream to avoid cracking and lesions caused by cold weather.**



▶ **Take utmost care when working in very cold areas since there may be danger of ice forming and workers may slip on icy surfaces.**

▶ **Drink a lot of water and eat refreshing meals in very hot weather and highly nutritional meals when it is very cold.**

SPECIFIC RISKS IN GREENHOUSE FARMING



Greenhouse

farming has revolutionised modern farming. It is one of the strongest emerging and most important production sectors in Andalusian agriculture today.

A wide range of agricultural activities are performed in greenhou

ses. Knowledge of these activities and identification of the associated risks ensures that appropriate preventive measures can be taken to eliminate or control such risks. This will allow us to control the most common risks and substantially reduce the number of accidents and their consequences.

General Risks

- Knocks and/or entrapments with greenhouse structural elements and/or machinery.
- Falls from different heights or at ground level due to the lack of protection and/or lack of organisation in workplaces.
- Cuts or amputations due to cutting elements of machinery commonly used in greenhouses such as pruning shears, harvesting shears, small hoes, etc.
- Exposure to noisy machinery: pneumatic compressors, fertilizer spreaders, shredders, grinders, etc.
- Contact with dangerous chemical products, phytosanitary products (insecticides, fungicides, defoliant, predicide (predator killer), herbicides, etc.) and fertilizers (nitrogen-based, phosphorous and potassium solutions, etc.).
- Work in forced positions (back bent, squatting, arms extended out) and/or load handling.
- Lack of information on the use of individual protection equipment.





Preventive Measures

▶ Obtain information on risks inherent in the structure of greenhouses, mainly those relating to their usage.

▶ Only use roads or paths intended for use by workers; avoid walking through other areas.

▶ Respect signs indicating crops have been treated recently, and avoid direct contact with treatment products to avoid intoxication from pesticides or other phytosanitary products.

▶ Install noisy machinery (compressors, cultivators, generators, etc.) as far away from workers as possible; use ear protectors whenever necessary.

▶ Fruit and/or vegetables will be selected in the indicated areas; do not stack boxes of material on slopes or uneven surfaces.



► Do not overstrain yourself when handling normal loads in greenhouses (harvesting boxes, transport carts, wheelbarrows, etc.) by handling loads correctly. Use mechanical means whenever possible and do not lift weights over 25 kg.



► Since greenhouse workers are required to bend down to pick up most vegetable and fruit loads, they must rest frequently or alternate work postures.





▶ **Dangerous equipment, such as chainsaws or pneumatic pruners, must only be used by personnel authorised and trained by the company, i.e. personnel with knowledge of and training in the specific functions and uses of the machinery in question and the risks deriving from their usage, etc.**

▶ **Light working clothes should be worn, e.g. cotton fabrics and light clothing when there is no risk of intoxication from phytosanitary products, which is more likely in greenhouses.**

▶ **In greenhouses, use the appropriate IPE according to the type of substance being treated; complete individual protection equipment consists of protective goggles, a mask, boots, gloves and a protective suit (see page 51: Individual Protection Equipment).**

▶ **Use adequate tools in each situation, e.g. only use pruning shears to cut crops, rakes to gather crop remains, pallet trucks to transport boxes and not persons, etc.**

▶ **Workers sweat profusely in greenhouses. Therefore, they must replenish perspired water by drinking cool water frequently and in small quantities.**

SPECIFIC RISKS IN FRUIT TREE FARMING



Fruit trees crops - both stone and pip fruits - are very common in Andalusia. We set forth below a series of general recommendations that have not been addressed previously. This section also

contains information on the risks and preventive measures associated with fruit tree crops. Therefore, workers normally working in fruit tree orchards can use this information to be able to perform their work safely:

General Risks

- Falls.
- Knocks.
- Cuts.
- General discomfort.
- Digestive problems.
- Sore eyes and mucosa.
- Risk of poisoning.
- Overstraining.





Preventive Measures

▶ Ladders must be in perfect condition, i.e. they must not have broken or repaired rungs, they must be securely supported, they must not be rusty, etc.

▶ Risks in fruit tree farming are normally the same in all types of fruit trees and are mainly associated with pruning and harvesting due to the size of fruit trees. Workers are normally required to use hand ladders and/or mechanical means to reach branches or fruits. For this reason, the ladders, benches or other mechanical means used to pick fruit must be securely positioned on the ground.



▶ Use protective goggles to pick fruit to avoid injuries caused by leaves or branches (see page 51: Individual Protection Equipment).

▶ Ladders must be adapted to the height of the trees; never stand on the final rungs of ladders to reach top branches.

▶ **Machinery cleaning and maintenance work must be performed by trained personnel. Before using such machinery, completely disconnect the machinery in question, cover cutting elements with protective covers, prevent other workers from wandering around the machine and never disable or modify safety devices or mechanisms. After cleaning or maintenance work has been completed, all protective devices or covers must be placed on the machine and then check the machine to ensure they have been fitted correctly.**

▶ **Potentially dangerous equipment or machinery (chainsaws, cultivators, motor hoes, pneumatic shears, etc.) must only be used by authorised personnel and with authorisation from the farm manager, due to the risk of entrapments, projected particles, amputations, cuts, etc.**

▶ **Do not pick fruit when other workers are standing below; as a general rule, each worker must work on one tree only.**





► **Do not overstrain yourself by handling loads correctly. Whenever possible, use mechanical means or ask a fellow worker to help. As a general rule, always keep your back straight and flex your legs when receiving loads, never twist your trunk**

when holding boxes or other loads, plan routes along which loads are to be transported and make sure there are no obstacles on these routes such as irrigation pipes, ladders, harvesting boxes, etc.



▶ **Before using any agricultural machinery or equipment, such as cultivators, chain-saws, etc., carefully read the corresponding instruction manuals beforehand for information and instructions on their usage.**

▶ **Fruit must be stored in the indicated areas. Do not stack boxes of fruit on slopes or uneven surfaces.**

▶ **Manual tools with non-slip handles must be purchased since these adapt perfectly to the necessary movements of the tool and ensure the tool is held in the correct position.**

▶ **Remove tools that are in poor condition or worn with new ones.**

▶ **Implements or tools must only be used for the purpose for which they have been designed and under no circumstances must they be used to perform other work; a typical example is the use of axes as hammers or the use of pruning shears as hand-saws or cutting-off machines.**

▶ **Use adequate working clothes for the workplace: safety boots with non-slip soles, long sleeved clothing, hats, etc. (see PAGE 51: Individual Protection Equipment).**

DISEASES TRANSMITTED TO HUMAN BEINGS BY ANIMALS (ZONOSSES)



Zoonoses

are diseases transmitted natu-

rally from vertebrate animals to human beings, and vice-versa.

Forms of Transmission

Forms of transmission:

- **Bites.**
- **Ingestion** of derivative products (meat, milk, cheese, etc.).
- **Contact** with animal excrement (faeces, urine).
- **Through the skin** of dead or sacrificed animals that have not been burned or disinfected beforehand.
- **Through soil**, where the biological agent may have remained for some time, adopting resistant forms (spores).

Most common Diseases

From the occupational risk prevention standpoint, the most common zoonoses in farming work are known as direct zoonoses. These are diseases transmitted from one host (infected vertebrate animal) to another host (worker), provided that the latter is susceptible to contracting the infection, through direct contact, through a contaminated object or by means of any other mechanical vector. The most common examples of this type of zoonosis are brucellosis, rabies and trichinosis.



In relation to the work performed in the fruit and vegetable sector, the main zoonoses may be classified according to the group of animals that are the source of infection, in particular those produced by household pets and wild animals:

■ **Domestic animals:** such as poultry and household pets: these form the largest group and are responsible for infections such as anthrax, brucellosis, Q fever, leptospirosis (Weil's disease), tuberculosis, etc.

■ **Wild animals:** the zoonoses deriving from this group include, among others, the plague, tularemia (rabbit fever), salmonellosis, leptospirosis (Weil's disease), Q fever, etc.

We have briefly mentioned the most common zoonoses that affect farm workers. We will now look at the most adequate preventive measures to prevent these diseases.

Preventive Measures

▶ Control domestic animals, especially dogs, and ensure they receive regular vaccinations under strict veterinary control.

▶ Generally avoid direct contact with infected animals and/or infected animal products.

▶ Maintain strict personal hygiene at all times, especially in the case of skin lesions, which are the main source of infection.

▶ Eliminate infected animals appropriately; after sacrifice, burn the corpses.

▶ Fully disinfect previously contaminated areas.

▶ Provide all exposed workers with adequate training and information.

▶ Use personal protection clothing, mainly gloves and boots.

▶ Identify and control foci of infection, such as contaminated water, rat populations, etc.

▶ Do not eat, drink or smoke in areas shared with animals.

**INDIVIDUAL PROTECTION EQUIPMENT
(IPE)**





AREA TO PROTECT	EXAMPLES OF INDIVIDUAL PROTECTION EQUIPMENT (IPE)	EXAMPLES OF WHERE THEY MUST BE USED
<p>HEAD</p>	<p>▶ Helmet to protect against knocks or impacts.</p> <p>▶ Caps, hats, etc.</p> 	<p>▶ Driving unprotected agricultural machinery (tractor, harvester, etc.).</p> <p>▶ Outdoor tasks, protection against the inclemencies of the weather.</p>
<p>EARS</p>	<p>▶ Earplugs, earmuffs or earphones, etc.</p>	<p>▶ Use of noisy machinery like chain-saws, shredders, pneumatic compressors, etc.</p>
<p>EYES AND FACE</p>	<p>▶ Goggles, face shields, etc.</p> 	<p>▶ During harvesting, pruning, preparation of crop treatment mixtures, etc.</p>
<p>MOUTH AND NOSE</p>	<p>▶ Filtering masks to filter annoying, harmful or toxic particles.</p> <p>▶ Filtering masks to prevent inhalation of gases and vapours.</p> <p>▶ Combined filtering equipment.</p> <p>▶ Autonomous equipment, etc.</p> 	<p>▶ Work in dusty environments.</p> <p>▶ During the preparation of treatment mixtures.</p> <p>▶ During the application of phytosanitary treatments.</p> <p>▶ In contaminated areas, etc.</p>
<p>HANDS AND ARMS</p>	<p>▶ Gloves to provide protection from machinery (perforations, cuts, vibrations, etc.), chemicals, electrical currents or heat/fire, etc.</p> <p>▶ Gloves, sleeves, etc.</p> 	<p>▶ Using manual tools.</p> <p>▶ Loading and unloading operations.</p> <p>▶ Preparation and application of phytosanitary products.</p> <p>▶ Harvesting, pruning, harnessing, etc.</p> <p>▶ Crop and/or installation maintenance, etc.</p>

INDIVIDUAL PROTECTION EQUIPMENT


AREA TO PROTECT	EXAMPLES OF INDIVIDUAL PROTECTION EQUIPMENT (IPE)	EXAMPLES OF WHERE THEY MUST BE USED
FEET AND LEGS	<p>Safety footwear. Protective footwear. Work footwear. Rubber boots. Instep protectors.</p> <p>▶ Leg guards and gaiters. Knee pads, etc.</p> 	<ul style="list-style-type: none"> ▶ In general, safety footwear must be used in all agricultural operations. This footwear must also provide adequate protection for each specific operation; for example, waterproof safety boots must be used when working in wet areas. ▶ Breathable footwear must be used when working in hot atmospheres. ▶ When there is a risk of projecting particles, e.g. when using shredders, cultivators or chainsaws, use leg guards and safety boots to provide protection from machinery.
SKIN	<p>▶ Protective creams.</p>	<ul style="list-style-type: none"> ▶ In Andalusia, exposure to the sun may cause different degrees of sunburn; protect skin against these types of risks before starting any work.
TRUNK AND ABDOMEN	<p>▶ Vests, jackets and aprons to provide protection from machinery (perforations, cuts, projections of fusing metals, etc.) or chemicals. Anti-vibration belts and body-belts, etc.</p>	<ul style="list-style-type: none"> ▶ Use of agricultural equipment and machinery. ▶ Loading and unloading operations. ▶ Driving tractors. ▶ During harvesting operations, etc.
FULL BODY	<p>Equipment to protect against falls from different heights. Protective clothing to provide protection from machinery or chemicals.</p> <p>▶ Protective clothing to provide protection from cold temperatures.</p> <p>Signalling clothing and accessories (e.g. reflective or fluorescent arm bands, gloves, etc.).</p>	<ul style="list-style-type: none"> ▶ When walking along roads and paths also used by vehicle traffic. ▶ In adverse weather conditions. ▶ During the preparation and application of phytosanitary products. ▶ Driving tractors, etc. ▶ Crop and/or installation maintenance work (greenhouses, crop support wires), etc.

Table 2

