MANUAL ON HEALTH AND SAFETY IN THE BANANA INDUSTRY - CAMEROON

A practical guide for risk management on farms

Part 2: Manual for workers
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Part 2: Manual for workers

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ACKNOWLEDGEMENTS

This manual has been developed as part of the Banana Occupational Health and Safety Initiative (BOHESI), co-coordinated by members of the World Banana Forum (WBF) including Solidaridad (Jeroen Kroezen and Annelot Van Leewen), Banana Link (Anna Cooper and Jacqui Mackay) and the WBF Secretariat/FAO (Victor Prada), under the auspices the Food and Agriculture Organization of the United Nations (FAO) within the Trade and Markets Division (EST).

The manual was originally written for use in Ecuador, with support from the Ecuadorian Ministry of Labour (MdT), Ministry of Agriculture (MAG), the Ecuadorian Social Security Institute (IESS) and the Association of Banana Exporters of Ecuador (AEBE). BOHESI partners and WBF members also contributed providing sample OHS manuals and resources and also by reviewing the manual contents. The Initiative has also been supported by the International Labour Organization (ILO) and FAO’s Social Policies and Rural Institutions Division (ESP).

This manual for Ecuador was then translated into English and French and adapted for the Cameroonian context by the BOHESI Health and Safety consultant Adama Traore, with essential input being provided by local banana industry partners Compagnie Fruitiere, Plantations du Haut Penja (PHP), Cameroon Development Company (CDC), the PHP Trade Union Platform and the Fako Agricultural Workers Union (FAWU). A final manual review workshop was facilitated by Banana Link to validate the manual with local Cameroon partners.

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This second part of the Occupational Health and Safety Manual aims to promote a culture of risk prevention and control by educating workers in the banana industry.

This part is a teaching tool aimed at male and female workers so that they know the fundamental measures which, applied to their daily activities, can contribute to managing risks and enable them to work in safe conditions. The content of this manual is a guide and not a set of regulations and should be applied according to what is appropriate and practical in the course of the activities carried out for each job or task.

The information presented comprises a brief introduction, a description or general considerations about what workers are supposed to do in relation to the task or job that is entrusted to them. Subsequently, there is a description of the job-specific risks that the workers are exposed to whilst carrying out their tasks or job. Finally, there are considerations or actions aimed at controlling risks.

The overall aim is to give the employer, Occupational Health and Safety Committee or trade union representative, educational materials which can be distributed to workers separately, according to the specific task they carry out on the plantation.

The information common to various tasks has been included in several annexes which can be found at the end of this manual to be printed and distributed to workers with the main educational materials, so that each chapter provides all the relevant information to carry out specific tasks in a safe and healthy way.

For each task it is also relevant to print and share Annex 4 ‘Active Pause’ as a key activity for preventing ergonomic risks in every task or role in the banana production process.

The report of plant protection products and certification of treatment equipment entitled “List of Pesticides Approved in Cameroon, 31 July 2013”, by the MINADER National Committee for Professional Certification also should be shared with workers and displayed in the workplace. This document sets out the information about a certain number of parameters linked to pesticide use. These parameters include information about the trade name of a product, the active ingredients, the formulation, the toxicity class, the illness or the target pest and usage restrictions.

As a result of this learning, participants will be able to identify the risks posed by their work, know more about the potential dangers to which they are exposed and they will be able to apply the appropriate measures to best ensure their health and safety.

However, it is essential that these educational materials are accompanied by formal training for all workers, on prevention and control in relation to occupational health and safety, as described in the first part of this manual. Before completing any task, workers should be able to identify all risk situations that can present themselves and they should take all measures to control the risk. This is only possible through formal training, especially in cases where workers’ literacy levels limit their ability to use the following educational material.
1. RISKS DURING THE APPLICATION OF HERBICIDES FOR WEED CONTROL (APPLICATOR)

On plantations, weeds compete with crops for water, sun and nutrients. They also harbour insects and diseases. Weed control is achieved through using cultural, mechanical and chemical methods, which in turn generate risks.

Chemical methods are the most commonly used to control weeds on plantations. This is achieved through the use of herbicides which inhibit and delay growth or destroy the weeds in a crop. There are several different types of herbicides mentioned in the document on plant protection products and certification of treatment equipment entitled “List of pesticides approved in Cameroon, 31 July 2013”, by the National Committee for Professional Certification. List reserved for the general public. Nevertheless, it should be mentioned that the use of any herbicide depends heavily on the nature and complexity of the existing weed, the soil type, economic factors and climatic conditions.

1.1 RISK IDENTIFICATION

The use of herbicides for weeding requires workers to carry a pressure pump on their backs. During this task, the following risks may arise:

1. **Mechanical risks**: ground-level falls due to the conditions and the state of the ground the workers walk across.
2. **Physical risks**: heat stress due to the high temperatures on plantations.
3. **Biological risks**: caused by insect or animal bites such as snakes.
4. **Ergonomic risks**: overexertion due to workers lifting and carrying the spray pump on their backs, and from adopting certain postures for extended periods during spraying. This has musculoskeletal consequences.
5. **Chemical risks**: risks during the preparation, use and handling of the herbicide applied by workers.

The most commonly used herbicides are Gramoxone, Bravo, Finale and Panzer and are categorised in a toxicity class that ranges from ‘IV Practically non-toxic’ to ‘II moderately toxic’. This indicates that specific control measures must be taken.

The following table shows the substances most commonly used, their active component and their toxicity category:

<table>
<thead>
<tr>
<th>GENERIC NAME</th>
<th>COMMERCIAL NAME</th>
<th>TOXICITY CATEGORY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glyphosate</td>
<td>Panzer</td>
<td>III</td>
</tr>
<tr>
<td>Glyphosate</td>
<td>Gialka Glifosato 480</td>
<td>IV</td>
</tr>
<tr>
<td>Clorothalonil</td>
<td>Bravo</td>
<td>IV</td>
</tr>
<tr>
<td>Clorothalonil</td>
<td>Daconil</td>
<td>IV</td>
</tr>
<tr>
<td>Paraquat</td>
<td>Gramoxone</td>
<td>II</td>
</tr>
</tbody>
</table>
Risk identification: if swallowed, herbicides can cause abdominal pains or a burning sensation.

If herbicides come into contact with the skin, they can cause irritation, redness, a rash on the exposed area or a temporary skin sensitisation (allergy). They can also cause severe eye damage, causing irritation, redness, pain and blurred vision.

Inhaling the fumes or mist can be fatal or cause respiratory tract (bronchial) irritation. In case of prolonged or repeated exposure, other organs may be damaged. Fumes are also very toxic and have long-term negative effects on aquatic life.

1.2 PRECAUTIONS FOR RISK CONTROL

1. In order to manage the risk of (ground-level) falls, before beginning their work, workers should identify all possible scenarios in which a fall could take place. For example, they should take into consideration the terrain (slippery, muddy or uneven), and the condition of the soles of their shoes (smooth, with no grip). For each identified scenario, the worker should implement every possible measure available to manage risk.

2. To manage heat stress, the worker should carry out the task in the early hours of the morning whenever possible and wear a cotton shirt to avoid sunlight exposure.

3. As for biological risk management, plantation workers must use long-sleeved shirts and apply insect repellent before starting the day’s work to avoid insect bites.

4. In order to manage ergonomic risks, which can lead to musculoskeletal damage, workers must know the techniques for correctly lifting heavy loads when lifting the spray pumps. This must be done by following the instructions on how to lift loads correctly.

For more information read ANNEX 2: HOW TO LIFT LOADS CORRECTLY.

1.2.1 For chemical risks

Firstly, read ANNEX 1: WORKING WITH CHEMICALS

1. During the application of herbicides
   - Application must be done when the ambient temperature is below 31°C, relative humidity is at 60% and wind speed is between 3.5 and 6.5 kilometres per hour. The plantation managers can check the meteorological conditions in real time using the National Directorate of Meteorology.
   - Apply the product perpendicularly to the wind.

2. Personal protective equipment
   - Eye protection: wear air-tight safety goggles with indirect ventilation that prevent splashes.
   - Protection for hands: wear chemical-resistant gloves (made out of PVC, neoprene or nitrile). Gloves must be replaced if they show any sign of wear-and-tear or are visibly torn.
   - Skin protection: wear rubber or neoprene boots. Wear a long-sleeved shirt with long trousers that are waterproof or made of cotton, and a waterproof hood or head cover, or chemical-resistant clothes, depending the length of contact, and filtration and seepage characteristics of the chemical. Trousers must hang outside the boots.
   - Respiratory protection: Wear a protective mask with a NIOSH-approved cartridge or filter (with activated carbon) for protection against organic fumes. Filters must be replaced according to the expiration date, when breathing becomes difficult or when the chemical’s smell is detected during use. The expiration date is printed on the filter.

Read the information contained in the following annexes carefully to ensure the proper implementation of the precautions:

Annex 1 Working with chemicals
Annex 2 How to lift loads properly

If you wish to distribute a photocopy of these precautions to workers, it is essential to also distribute a photocopy of the aforementioned annexes.
2. RISKS DURING GROUND SPRAYING FOR DISEASE CONTROL

Chemical substances such as fungicides are used to control banana plantation diseases like black sigatoka. Fungicides can be applied by ground or aerial spraying.

Ground spraying is carried out by a plantation worker bearing a mechanical pump on their back, which works with an internal combustion engine.

2.1 RISK IDENTIFICATION

During ground spraying, plantation workers are exposed to the following risks:

1. **Mechanical risks:**
   - Ground-level falls due to the state and condition of the ground the workers walk across.
   - Burns caused by the engine’s combustion gasses.

2. **Physical risks:**
   - Noise caused by the spray pump engine on the worker’s back.
   - Heat stress caused by the high temperatures on plantations and the heat emitted by the equipment.

3. **Biological risks:** caused by insect or animal bites such as snakes.

4. **Ergonomic risks:** overexertion due to workers lifting and carrying the spray pump on their backs, and from adopting certain postures for extended periods during spraying. This can have musculoskeletal consequences.

5. **Chemical risks:** during the mixing, use and handling of the pesticide being applied by workers.

The most commonly used pesticides are Mancozeb, Chlorothalonil, Terbufos, Tridemorph, Tebuconazole and Propiconazole, which range from “III Slightly toxic” to “Ib highly toxic”. This indicates that very specific control measures must be taken during handling.

The following table shows the substances most commonly used, their active component and their toxicity category:

<table>
<thead>
<tr>
<th>GENERIC NAME</th>
<th>COMMERCIAL NAME</th>
<th>TOXICITY CATEGORY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mancozeb</td>
<td>Ridodur</td>
<td>III</td>
</tr>
<tr>
<td>Chlorothalonil</td>
<td>Cosmos</td>
<td>II</td>
</tr>
<tr>
<td>Propiconazole</td>
<td>Salto Súper</td>
<td>II</td>
</tr>
<tr>
<td>Terbufos</td>
<td>Counter FC</td>
<td>Ib</td>
</tr>
<tr>
<td>Tridemorph</td>
<td>Keren</td>
<td>II</td>
</tr>
<tr>
<td>Tebuconazole</td>
<td>Folicur</td>
<td>III</td>
</tr>
<tr>
<td>Propiconazole</td>
<td>Crysconazol</td>
<td>III</td>
</tr>
</tbody>
</table>
Chemical substances can enter the body through the skin (the most common), the respiratory tract (by inhaling them) and the digestive tract or through the mouth.

If these chemical substances come into contact with eyes, they can cause irritation, pain and discomfort, watery eyes and redness. The effects can last after the exposure has ceased and, in case of severe exposure, there can be long-term or permanent damage (to the cornea, for example).

If inhaled, excessive exposure can cause upper respiratory tract (nose and throat) irritation and lungs.

If workers do not wear appropriate protective clothing, they are likely to suffer from discomfort and experience moderate to severe effects such as itchy, blistered or reddened skin.

Exposure to substances used for ground spraying can be harmful to health, depending on their toxicity level.

2.2 PRECAUTIONS FOR RISK CONTROL

1. To control the risk of falling, before starting the day’s work plantation workers should conduct an assessment of the tasks that need to be performed in order to identify all the possible risk scenarios, such as terrain conditions. For each identified scenario, risk control measures such as safe working practices should be taken.

2. To control the risk of burns caused by engine gas emissions, workers must be careful when putting the pump on their back and when taking it off.

3. To control heat stress as far as possible, workers must wear a cotton shirt. They must also perform this task early in the morning, to avoid the adverse effects of sunlight exposure.

4. To avoid the heat generated by the engine, workers must wear a protective insulating cover on their back or shoulder before wearing the pump.

5. To manage biological risks, such as insect bites, workers must use long-sleeved shirts and apply insect repellent before starting the day’s work.

6. To manage ergonomic risks, in order to avoid musculoskeletal disorders, workers must know how to lift heavy loads correctly when lifting the spray pumps. Workers must be aware of the appropriate techniques (body mechanics) to lift loads properly.

For more information read ANNEX 2: HOW TO LIFT LOADS CORRECTLY.

2.2.1 For chemical risks

Firstly, read ANNEX 1: WORKING WITH CHEMICALS

To manage chemical risks, workers must have previous knowledge of which product is being sprayed. This is because some substances, like Chlorothalonil, are on the list of chemicals that are extremely dangerous to health as they are considered to be CARCINOGENIC.

Before spraying, workers must check the product label and the Material Safety Data Sheet (MSDS) which contains sufficient information on how to handle a specific chemical, the necessary protective equipment and what to do in case of exposure. Therefore, generalising is not recommended.

Personal protective equipment

- Respiratory protection: use a NIOSH-approved breathing apparatus (air purifier) with filters or cartridge (with activated carbon) to protect against organic fumes. Filters must be replaced according to the expiration date, which should be checked by the worker. They must also be changed when breathing becomes difficult or when the chemical’s smell is detected during use. The expiration date is normally printed on the cartridge.

- Protection for hands: wear chemical-resistant gloves made out of polyethylene, or polyvinyl chloride (PVC or vinyl), neoprene, nitrile/butadiene rubber (nitrile or NBR).

- Eye protection: wear air-tight safety goggles with indirect ventilation that prevent splashes from getting into the eyes.

- Skin protection: wear a long-sleeved shirt, long trousers, waterproofs, rubber boots and a hat. Trousers must hang outside boots. Do not wear leather products (such as boots or straps) if they have been contaminated, they must be taken away and destroyed.
# 3. RISKS ASSOCIATED WITH AERIAL SPRAYING

Aerial spraying is used to control black sigatoka when it is needed to cover large areas of a plantation. This task is done by an agricultural aircraft.

The most commonly used pesticides to combat diseases include: TILT, SICO, CALUXIN and MANCOZEB, some of which are known to be carcinogenic, namely, Triazoles fungicides including the active ingredients Propiconazole, Fenbuconazole, Tebuconazole and Expoxiconazole. These range from categories “III Slightly toxic” to “II moderately toxic”.

The risks associated with this task are more critical because spraying can harm plantation workers, the aerial spraying company workers, such as pilots and loaders, and nearby communities.

Pilots are not only exposed to chemical poisoning, but also to aircraft accidents due to technical failures, power lines, trees and birds. They are also exposed to physical risks such as noise, excess light and ergonomic issues as a result of the seated position during the flight.

Firstly, read ANNEX 1: WORKING WITH CHEMICALS

## 3.1 PRECAUTIONS FOR RISK CONTROL FOR PLANTATION WORKERS

1. The plantation management must forbid workers to enter the premises before the specified time required and safety period has passed.
2. It must be clear to workers that accessing or entering production areas during aerial spraying is prohibited. They should not enter the area for any reason.
3. The plantation management must place warning signs or posters with pictograms or other safety measures in access areas to stop unauthorised people from entering sprayed areas.

### Personal protective equipment

If a worker needs to access the plantation to assess the quality of the spraying after it has been done, he / she must do so wearing protective equipment. The equipment should consist of a long-sleeved shirt, long trousers, rubber boots, indirect-ventilation (air-tight) safety goggles, NIOSH-approved air-purifying respirator with approved filters for protection against organic fumes (with activated carbon), nitrile gloves, waterproofs and protective headgear.

## 3.2 PRECAUTIONS FOR RISK CONTROL FOR AERIAL SPRAYING STAFF

Pilots must comply with spraying government regulations, such as: not flying more than four metres above the crops and not spraying within a 200-metre radius from schools, populated areas and sensitive zones such as rivers, water reservoirs, and fish or poultry farms, among other areas.

### Personal protective equipment

- Pilots must wear a protective helmet with built-in headphones, flame-retardant overalls, air-purifying respirators with filters or cartridges approved for use against organic fumes (with activated carbon), flight gloves, indirect-ventilation (air-tight) goggles and appropriate footwear.
- During spraying, the pilot must wear an air-purifying respirator.
- Pilots and loaders must change the filters or cartridges according to the manufacturer’s expiration date, when breathing becomes difficult or when the chemical smell is detected during use.
- After spraying, the pilot must shower with plenty of soap and water and their clothes must be washed immediately after use.
- Before mixing the products, pilots and loaders (people who mix the chemical products) must check the product label and Material Safety Data Sheet (MSDS) to ensure its correct use and control measures in case of an accident.
- Loaders (people who mix the chemicals) must wear a work overall (long-sleeve one-piece), protective headgear, rubber or nitrile gloves, NIOSH-approved air-purifying respirator for protection against organic fumes (with activated carbon), ear protectors, safety goggles and rubber boots.

Read the information contained in the following annexes carefully to ensure the proper implementation of the precautions:

**Annex 1 Working with chemicals**

If you wish to distribute a photocopy of the precautions to workers, it is essential to also distribute a photocopy of the aforementioned annexes.
4. RISKS IN DISEASE CONTROL USING NEMATICIDES

For disease control using nematicides, workers are not only exposed to the same biological, physical and safety risks as those who use the spraying pumps but also to the risks associated with the chemicals (nematicides) being used.

Nematicides are highly toxic organophosphate and carbamate substances used in the control of nematodes that affect production on banana plantations. These chemicals inhibit cholinesterase and can be fatal if ingested or inhaled. They can also damage skin and eyes if exposed to it.

The following table shows the substances most commonly used, their generic name / active component and their toxicity category:

<table>
<thead>
<tr>
<th>COMMERCIAL NAME</th>
<th>GENERIC NAME</th>
<th>DESCRIPTION</th>
<th>TOXICITY CATEGORY</th>
</tr>
</thead>
<tbody>
<tr>
<td>CONTROL</td>
<td>Terbufos</td>
<td>Organophosphate</td>
<td>Ib</td>
</tr>
<tr>
<td>FOOTBALL</td>
<td>Cadusafos</td>
<td>Organophosphate</td>
<td>Ib</td>
</tr>
<tr>
<td>RUGBY</td>
<td>Cadusafos</td>
<td>Organophosphate</td>
<td>Ib</td>
</tr>
<tr>
<td>VYDATE L</td>
<td>Oxamyl</td>
<td>Carbamate</td>
<td>Ib</td>
</tr>
</tbody>
</table>

4.1 RISK IDENTIFICATION

To apply nematicides, workers use a spray pump or dosage device which must be carried around the plantation. During this task workers face the following risks:

1. **Mechanical risks:** ground-level falls due to the state of the ground workers walk across.
2. **Physical risks:** heat stress due to the high temperatures on plantations.
3. **Biological risks:** caused by insect or animal bites such as snakes.
4. **Ergonomic risks:** due to workers having to lift and carry the spray pump or the dosage device on their shoulder, and from adopting certain postures for extended periods during spraying. This has musculoskeletal consequences.
5. **Chemical risks:** during the mixing, use and handling of the nematicide being applied by the worker.

4.2 PRECAUTIONS FOR RISK CONTROL

1. In order to manage the risk of **falls**, workers should conduct an assessment of the tasks that need to be performed in order to identify all the possible risk scenarios, such as terrain conditions. For example, they should take into consideration the terrain they will be walking across. For each identified scenario, the worker should implement every possible measure available to manage risk.
2. To manage **heat stress**, the worker should carry out the task in the early hours of the morning whenever possible, and wear a cotton shirt to avoid the adverse effects of sunlight exposure.
3. As for **biological risks**, to avoid insect bites plantation workers must use long-sleeved shirts and apply insect repellent before starting the day’s work.
4. In order to manage **ergonomic risks**, which can lead to musculoskeletal damage, the worker must be aware of the correct way to lift heavy loads when picking up the spray pumps.

For more information read ANNEX 2: HOW TO LIFT LOADS CORRECTLY.
4.2.1 For chemical risks:

Firstly, read ANNEX 1: WORKING WITH CHEMICALS

Periodically, employers must take a blood or urine sample from workers to test the cholinesterase base level, depending on the pesticide used. Before spraying, workers must be aware of the state of their health based on the test results. These will determine whether they can spray or not.

1. During spraying

- **Personal Protective Equipment**

  Workers in charge of spraying must wear trousers and a long-sleeved shirt, a hat, rubber or nitrile gloves, a back pad if carrying the pump on their back, or an apron if using a dispensing gun, an air-purifying respirator with approved filters or cartridges for use against organic fumes (with activated carbon), safety goggles and rubber boots.

2. After spraying

- **Workers must wait 24 hours after spraying to re-enter the treated area.** If they need to access the treated area before then, they must always wear rubber boots, trousers and a long-sleeved shirt.

- **Plantation workers must be made aware that being in or entering production areas when they are being sprayed is prohibited.** Under no circumstance must workers enter the area.

- If a worker needs to access the plantation to assess the quality of the spraying after it has been done, they must wear a long-sleeved shirt, long trousers, rubber boots, indirect-ventilation (air-tight) safety goggles, NIOSH-approved air-purifying respirator (with filters or cartridges) for protection against organic fumes, nitrile waterproof gloves, and protective headgear.

**Plantation management must place warning signs or posters** with pictograms or other safety measures in access areas to stop people from entering sprayed areas.

Do not apply on surfaces of flat land, less than 20 metres from rivers and streams.

Read the information contained in the following annexes carefully to ensure the proper implementation of the precautions:

**Annex 1** Working with chemicals

**Annex 2** How to lift loads correctly

If you wish to distribute a photocopy of the precautions to workers, it is essential to also distribute a photocopy of the aforementioned annexes.
5. RISKS IN THE USE OF COVERS AND IMPREGNATED STRIPS (BAGGERS’ WORK)

To protect the fruit from ravages caused by insects (aphids, thrips, beetles and moths), covers are used (bags or sheaths), and insecticide-impregnated strips. The insecticides used are chlorpyrifos or bifenthrin using concentrations of 0.5% to 2%.

5.1 RISK IDENTIFICATION

Workers face the following risks whilst bagging:

1. **Mechanical risks**: ground-level falls due to the state of the ground workers walk across and falls from a height whilst the worker is on a ladder, and if the ladder is in poor condition or is badly positioned.

2. **Physical risks**: heat stress due to the high temperatures on plantations.

3. **Biological risks**: caused by insect or animal bites such as snakes.

4. **Ergonomic risks**: as a result of overexertion due to workers having to handle the ladder and other work tools.

5. **Chemical risks**: workers are exposed to chemical risks when they handle the bags or strips impregnated with insecticide.

The most commonly used insecticide is Chlorpyrifos which is an organophosphate categorised in a toxicity class ‘II moderately toxic’. This indicates that very specific control measures must be taken. Persistent health effects follow acute poisoning or from long-term exposure to low doses, and exposure during pregnancy can result in developmental effects in fetuses and children.

5.2 PRECAUTIONS FOR RISK CONTROL

1. In order to manage the risk of (ground-level) falls, before beginning their work, workers should assess all tasks that need to be completed to identify the scenarios in which a risk is present. For example, they should take into consideration the terrain or the ladder. For each identified scenario, workers should implement the measures available to manage risks, namely following the applicable procedures and taking the specified precautions.

2. To manage heat stress, workers should carry out their work in the early hours of the morning whenever possible and wear a cotton shirt to avoid sunlight exposure.

3. As for biological risks, to avoid insect bites, plantation workers are advised to wear long-sleeved shirts and apply insect repellent to protect their skin before starting the day’s work.

4. In order to manage ergonomic risks, which can lead to musculoskeletal damage, whilst workers carry the ladder, they must do so by holding it from the centre and avoid letting it swing. Workers must be aware of the body mechanics to help with lifting and carrying loads correctly.

For more information, read:
*ANNEX 2: HOW TO LIFT LOADS CORRECTLY*
*ANNEX 3: HOW TO USE LADDERS CORRECTLY*

5.2.1 For chemical risks:

1. If covers or sheaths have been pre-treated, pregnant and breastfeeding workers should not carry out this task.

2. If workers handle bags treated with chlorpyrifos they should periodically take health tests to know their level of cholinesterase.

3. Before proceeding with bagging the bunch of bananas, workers must be aware about the state of their health and, therefore, the results of the health tests. These tests will determine whether workers are able to work or not.

4. The covers used should be stored in designated areas. These areas must be delimited by a wire fence or other, and clearly marked in order to prevent materials that are impregnated by agrochemical products being inadvertently removed.

5. The plantation must ensure that waste is disposed of appropriately by giving it to the body authorised to collect them.

6. During the work (bagging):
   - Workers must open the covers before bagging.
   - Workers must open the treated covers only in designated areas.
   - Whilst the treated covers are being opened, workers must prohibit the entrance of staff who are not authorised to enter the designated area.

Personal protective equipment:

- Workers must wear long trousers, a long-sleeved shirt, rubber or nitrile gloves, an apron and a mask with filters or cartridges to protect against organic fumes (with activated carbon). The clothes and gloves used by the workers must not be torn.
- Workers must ensure the filters or cartridges are replaced by checking the expiration date, when breathing becomes difficult or when the chemical’s smell is detected during use. The expiration date is printed on the filter or cartridge.
6. RISKS ASSOCIATED WITH CROWN INSPECTION

The procedure consists of spraying crowns and cuttings made during the selection process with systemic fungicides, combined with a healing substance either with a dilute bleach solution or aluminium and ammonium sulphate.

6.1 RISK IDENTIFICATION

During crown inspection, workers face the following risks:

1. **Biological risks:** caused by insect or animal bites such as snakes.

2. **Ergonomic risks:** due to being in a static standing position. This has cardiovascular and musculoskeletal consequences on the lower limbs if the movements are not performed properly.

3. **Chemical risks:** risks during the preparation, use and handling of the fungicide to prevent the crown from rotting.

The substances approved and used are outlined in the List of pesticides approved in Cameroon, 31 July 2013. The most commonly used fungicide is Thiabendazole which has a toxicity category of “II Moderately toxic” so special precautions are necessary.

6.2 PRECAUTIONS FOR RISK CONTROL

1. In the case of **biological risks**, to avoid insect bites workers must use long-sleeved shirts and apply insect repellent before starting the day’s work.

2. In order to manage **ergonomic risks** when lifting the spray pumps, which can lead to musculoskeletal damage, workers must know the appropriate body movements (body mechanics) to use in order to lift loads correctly. In addition, due to workers’ static standing position during the whole day, they should arrange for there to be a footrest in their work area. This will allow them to change position and, therefore, help blood circulation to their lower limbs to avoid circulatory problems.

For more information, read ANNEX 2: HOW TO LIFT LOADS CORRECTLY.

6.2.1 For chemical risks:

Firstly, read ANNEX 1: WORKING WITH CHEMICALS

**Personal protective equipment**

- Workers must wear long trousers, long-sleeved shirt, rubber or nitrile gloves, an apron and a NIOSH-approved mask with filters or cartridges for protection against organic fumes (with activated carbon).

- Workers must ensure filters and cartridges are replaced according to the expiration date, when breathing becomes difficult or when the chemical’s smell is detected during use.

Any pregnant or breastfeeding women must not be assigned this type of work.

Using the spraying enclosure helps to reduce personal contact with the fungicides used after harvest to protect the crowns.

Read the information contained in the following annexes carefully to ensure the proper implementation of the precautions:

- **Annex 1** Working with chemicals
- **Annex 2** How to lift loads correctly

If you wish to distribute a photocopy of the precautions to workers, it is essential to also distribute a photocopy of the aforementioned annexes.
7. RISKS ASSOCIATED WITH PREPARING THE SOIL

The soil needs to be prepared before sowing crops and it involves a range of activities, covered here. These activities are performed in the open air and can be carried out using mechanical equipment such as a tractor or hand tools.

The tools required for these activities are those used when loosening soil: picks, spades, hoes, and rakes.

When these activities are carried out using equipment such as tractors, workers are in a sedentary position during the whole working day. When the ground is prepared with hand tools, workers exert all their strength to perform this activity.

7.1 RISK IDENTIFICATION

When an activity is performed using mechanical equipment, workers face the following risks:

1. **Mechanical risks**: noises and vibrations produced by the running engine, which could affect a worker’s hearing system and joints, respectively.

2. **Physical risks**:
   - Excessive natural light, exposure to the sun’s UV rays.
   - Heat stress caused by the high temperatures due to exposure to the sun’s rays.

3. **Biological risks**: caused by insect or animal bites such as snakes.

4. **Ergonomic risks**: due to the effort expended by the worker when using tools to loosen and prepare the soil (with a spade, for example), and prolonged positions held when using the pick and spade, which can have musculoskeletal consequences.

5. **Chemical risks**: due to the particles generated whilst loosening the soil when it is completely dry.

When an activity is performed using hand tools, workers face the following risks:

1. **Mechanical risks**:
   - Ground-level falls due to the state and condition of the ground workers walk across.
   - Knocks and shocks when using the tool, or slipping of the tool itself. Cuts caused when using sharp tools and injuries to the eyes due to projecting particles from the ground or the tool.

2. **Physical risks**:
   - Excessive natural light, exposure to the sun’s UV rays.
   - Heat stress caused by the high temperatures due to exposure to the sun’s rays.

3. **Biological risks**: caused by insect or animal bites such as snakes.

4. **Ergonomic risks**: due to the effort expended by the worker when using tools to loosen and prepare the soil (with a spade, for example), and prolonged positions held when using the pick and spade, which can have musculoskeletal consequences.

5. **Chemical risks**: as a result of mineral fertilisers (granulated) that workers use before sowing.

7.2 PRECAUTIONS FOR RISK CONTROL

1. Workers must not use tools that are in poor condition (poorly maintained) or use them incorrectly, nor should they misuse them to perform any kind of operation.

2. Workers must not use tools other than what they are designed for or use them beyond their technical capacity.

3. Workers must not carry cutting tools and sharp tools without their sheaths.

4. In the work space, work tools, equipment and materials should be well stored in order to prevent any risk of tripping over them.

5. Workers should keep all work tools and accessories clean and use them only if they are in good condition.

6. If the tasks entail exposure to sun rays, tasks should be organised so that they are performed early in the day.

7. Areas of the plantation where there are holes, boreholes, pits and deep ditches should be marked as they constitute a risk if someone were to fall into them.

8. If conditions allow, workers should protect themselves from the sun’s rays and stay in the shade.

Personal hygiene is very important: skin irritations that are put down to work can be due to a person’s lack of cleanliness during and after work.

7.2.1 In the event of chemical risks:

Firstly, read ANNEX 1: WORKING WITH CHEMICALS

**Personal protective equipment**

- For their personal protection, workers should use work clothes consisting of long trousers, a long-sleeved shirt, leather gloves for heavy-duty tasks (as used by engineers), a wide-brimmed hat, boots and an N95 particulate filtering face piece.

- To avoid insect bites, workers must wear long-sleeved shirts and apply insect repellent before starting the day’s work.

- If workers are responsible for applying fertilisers, they must also wear rubber or nitrile gloves to protect themselves.
8. RISKS ASSOCIATED WITH PLANTING AND REPLANTING WORK

Banana plants are reproduced asexually or vegetatively, by traditionally using stumps, shoots or offshoots which grow out of the bottom of the plant. Vegetative reproduction can also be done by multiplying plant tissue or meristem culture, in a laboratory or in vitro in nurseries.

The risks that workers are exposed to depend on the method of planting and replanting activities used, given that different tools are used depending on the case.

8.1 RISK IDENTIFICATION

Regardless of the reproduction process followed at the plantation, for planting and replanting activities, the worker uses hand tools, in a static, lowered position, during the working day.

The risks that workers are exposed to can be summarised as follows:

1. **Mechanical risks:**
   - Ground-level falls due to the conditions and the state of the ground workers walk across.
   - Cuts caused when using sharp tools and injuries to the eyes due to projecting particles from the ground or the tool.

2. **Physical risks:**
   - Excessive natural light, exposure to the sun's UV rays.
   - Heat stress caused by the high temperatures due to exposure to the sun's rays.

3. **Biological risks:** caused by insect or animal bites such as snakes, spiders and scorpions that are found in the plants that need to be planted. If workers have previously fertilised the soil using organic matter, they have therefore exposed themselves to fungi and bacteria that are found in compost.

4. **Ergonomic risks:** due to the effort expended by workers when using the tools to loosen and prepare the soil (with the spade, for example), and the prolonged positions, squatting or similar, this can have musculoskeletal consequences.

5. **Chemical risks:** as a result of mineral fertilisers (granulated) that workers use before planting and replanting activities.

8.2 PRECAUTIONS FOR RISK CONTROL

1. To avoid insect bites plantation workers must use long-sleeved shirts and apply insect repellent before starting the day’s work.

2. Workers must not use tools that are in poor condition (poorly maintained) or use them incorrectly, nor should they misuse them to perform any kind of operation.

3. Workers must not use tools other than what they are designed for, or use them beyond their technical capacity.

4. Workers must not carry cutting tools and sharp tools without their sheaths.

5. In the work space, work tools, equipment and materials should be well stored in order to prevent any risk of tripping over them.

6. Workers should keep all work tools and accessories clean and use them only if they are in good condition.

7. If the tasks entail exposure to sun rays, tasks should be organised so that they are performed early in the day.

8. Areas of the plantation where there are holes, boreholes, pits and deep ditches should be marked as they constitute a risk if someone were to fall into them.

9. If conditions allow, workers should protect themselves from the sun’s rays and stay in the shade.

10. Personal hygiene is very important: skin irritations that are put down to work can be due to a person’s lack of cleanliness during and after work.

8.2.1 In the event of chemical risks

Firstly, read ANNEX 1: WORKING WITH CHEMICALS

**Personal protective equipment**

- For their personal protection, workers should use work clothes consisting of long trousers, a long-sleeved shirt, a wide-brimmed hat, and boots.

- Workers must use nitrile gloves as a means of protection if they apply granulated fertiliser if they are exposed to this risk.
Workers assigned to a plot, have several jobs or tasks to carry out at various times. Workers use cutting tools to perform these tasks throughout the plantation and they are in charge of tasks that can be summarised as follows:

**Desuckering:** this operation consists of removing the offshoot (female plants) from the mother plant before they become too developed, in order to avoid them competing with the mother plant, by capturing the light, water and nutrients.

**Pruning:** this consists of removing the dried shoots and pods that cover the pseudostem.

**Deleafing:** this activity involves removing the leaves that are dry and green, folded or affected by sigatoka, in order to avoid the aggressive development of the disease.

**Fertilisation:** this takes place when the plant needs to be fed. This is done using compost and organic matter (manure) or matter made from minerals (granulated).

9.1 **RISK IDENTIFICATION**

Regardless of the task workers carry out, they must handle hand tools, whilst moving around the whole plantation, alternating between seated, squatting, standing or inclined positions during the working day.

The risks that workers are exposed to are:

1. **Mechanical risks:**
   - Ground-level falls due to the conditions and the state of the ground the workers walk across.
   - Cuts caused due to using sharp tools.

2. **Physical risks:**
   - Excessive natural light, exposure to the sun’s UV rays.
   - Heat stress caused by the high temperatures under the sun.

3. **Biological risks:** caused by insect or animal bites such as snakes, spiders and scorpions that are found in the plants that need to be planted. If workers have previously fertilised the soil using organic matter, they have therefore exposed themselves to fungi and bacteria that are found in compost.

4. **Ergonomic risks:** due to the effort expended by workers when using the tools, which can lead to sprains. There are also the risks associated with prolonged positions, such as squatting or similar, this can have musculoskeletal consequences in the lower back.

5. **Chemical risks:** as a result of handling fertilisers used to strengthen plants.

9.2 **PRECAUTIONS FOR RISK CONTROL**

1. To avoid insect bites plantation workers must use long-sleeved shirts and apply insect repellent before starting the day’s work.

2. Workers must not use tools that are in poor condition (poorly maintained) or use them incorrectly, nor should they misuse them to perform any kind of operation.

3. Workers must not use tools other than what they are designed for, or use them beyond their technical capacity.

4. Workers must not carry cutting tools and sharp tools without their sheaths.

5. In the work space, work tools, equipment and materials should be well stored in order to prevent any risk of tripping over them.

6. Workers should keep all work tools and accessories clean and use them only if they are in good condition.

7. Areas of the plantation where there are holes, boreholes, pits and deep ditches must be marked as they constitute a risk if someone were to fall into them.

8. If conditions allow, workers should protect themselves from the sun’s rays and stay in the shade.

9. Personal hygiene is very important: skin irritations that are put down to work can be due to a person’s lack of cleanliness during and after work.

**Personal protective equipment**

- For their personal protection, workers should use work clothes consisting of long trousers, a long-sleeved shirt, a wide-brimmed hat, and boots.
- Workers must use nitrile gloves as a means of protection if they apply granulated fertiliser if they are exposed to the risk.

Read the information contained in the following annexes carefully to ensure the proper implementation of the precautions:

**Annex 1 Working with chemicals**

If you wish to distribute a photocopy of the precautions to workers, it is essential to also distribute a photocopy of the aforementioned annexes.
10. RISKS ASSOCIATED WITH STAKING (ATTACHING TIES)

To prevent banana plants from falling, due to the weight of the bunch of bananas or wind strength, ties must be attached using rope. They are stretched between plants or stakes are placed to straighten the pseudostem. They are made of sticks or stalks from the same plantation. It is important to note whether they are fixed in the ground or above the ground.

The risks that workers are exposed to depend on the type of rope used as a holding aid, because the tools differ according to each type of rope.

6. If workers use a ladder to carry out staking from above, they must know the appropriate techniques for correctly lifting ladders.
7. Personal hygiene is very important: skin irritations that are put down to work can be due to a person's lack of cleanliness during and after work.

For further information, read ANNEX 2: HOW TO USE LADDERS CORRECTLY

10.1 RISK IDENTIFICATION

Regardless of the type of staking used, the risks that workers are exposed to can be summarised as follows:

1. Mechanical risks:
   - Ground-level falls due to the conditions and the state of the ground the workers walk across.
   - Falls from the ladder when staking is performed from above.
   - Cuts caused due to using sharp tools when a stake needs to be cut down with a tool.

2. Physical risks:
   - Excessive natural light, exposure to the sun’s UV rays.
   - Heat stress caused by the high temperatures due to exposure to the sun's rays.

3. Biological risks: caused by insect or animal bites such as snakes, spiders and scorpions that are found in the plants.

4. Ergonomic risks: due to the extra effort expended by workers when carrying the ladder to carry out staking from above, this can entail musculoskeletal consequences in the lower back.

10.2 PRECAUTIONS FOR RISK CONTROL

1. To avoid insect bites plantation workers must use long-sleeved shirts and apply insect repellent before starting the day’s work.
2. Workers must not use tools that are in poor condition (poorly maintained) or use them incorrectly, nor should they misuse them to perform any kind of operation.
3. Workers must not use tools other than what they are designed for, or use them beyond their technical capacity.
4. Workers must not carry cutting tools and sharp tools without their sheaths.
5. Workers should keep all work tools and accessories clean and use them only if they are in good condition.

Personal protective equipment
- For their personal protection, workers should use work clothes consisting of long trousers, a long-sleeved shirt, a hat and boots.
- Workers must use gloves for light work when attaching ties with a pick, but they must be sufficiently robust so as to prevent perforations and splinters from the stalks.

Read the information contained in the following annexes carefully to ensure the proper implementation of the precautions:

Annex 2 How to use ladders correctly
If you wish to distribute a photocopy of the precautions to workers, it is essential to also distribute a photocopy of the aforementioned annexes.
11. RISKS ASSOCIATED WITH MAINTENANCE OF THE DRAINAGE SYSTEM

This task must be carried out so that the canals (primary, secondary and tertiary) are maintained in good condition and serve to drain away water, particularly in winter.

For this, workers use different tools, spades, pickaxes and machetes and in certain cases agricultural machinery, such as mechanical diggers.

The risks that workers are exposed to depend on the tool or equipment used.

11.1 RISK IDENTIFICATION

Regardless of the method used to maintain canals and drains, the risks that workers are exposed to are as follows:

1. Mechanical risks:
   - Ground-level falls due to the conditions and the state of the ground the workers walk across.
   - Cuts caused due to using sharp tools. Projecting particles are also possible (cf. cutting weeds).

2. Physical risks:
   - Excessive natural light, exposure to the sun’s UV rays.
   - Heat stress caused by the high temperatures due to exposure to the sun’s rays.
   - If the activities are carried out with diggers. In addition, workers are exposed to the noises and vibrations produced whilst operating this large equipment.

3. Biological risks: caused by insect and/or animal bites, such as snakes.

4. Ergonomic risks: due to the effort expended by workers when using the tools, which can lead to sprains when remaining in static semi-squatting position. This can have musculoskeletal consequences in the lower back. If workers use machines, the complications can occur due being in a static sedentary position and exposure to vibrations.

11.2 PRECAUTIONS FOR RISK CONTROL

1. To avoid insect bites plantation workers must use long-sleeved shirts and apply insect repellent before starting the day’s work.
2. Workers must not use tools that are in poor condition (poorly maintained) or use them incorrectly, nor should they misuse them to perform any kind of operation.
3. Workers must not use tools other than what they are designed for, or use them beyond their technical capacity.
4. Workers must not carry cutting tools and sharp tools without their sheaths.
5. Workers should keep all work tools and accessories clean and use them only if they are in good condition.
6. Areas of the plantation where there are holes, boreholes, pits and deep ditches must be marked as they constitute a risk if someone were to fall into them.
7. If the tasks entail exposure to sun rays, tasks should be organised so that they are performed early in the day.
8. If conditions allow, workers should protect themselves from the sun’s rays and stay in the shade.
9. Personal hygiene is very important: skin irritations that are put down to work can be due to a person’s lack of cleanliness during and after work.

Personal Protective Equipment

For their personal protection, workers should use work clothes consisting of long trousers, a long-sleeved shirt, light gloves, boots and a wide-brimmed hat.

Workers must use hearing protection when using motorised equipment. The seat must be fitted with an anti-vibration mechanism.
12. RISKS ASSOCIATED WITH HARVESTING (THE CUTTER, BACKER AND HAULER)

The harvesting work is carried out by three types of workers who cover the whole plantation. Their roles are described below:

The cutter is responsible for selecting the banana bunch that is ready to be cut, they make a V-shaped cut above the top third of the pseudostem and cut the bunch. The cutter then places it on the padding on the backer’s back.

The backer receives the bunch once it has been cut on a type of padding that they carry to the cableway.

The hauler collects the bunches carried by the backer, from the side of the pseudostem, and hangs it to the cable’s hook with a chain. This task is repeated until there is a row of approximately 20 bunches. Subsequently, the worker pulls the row of bunches and guides it, using the cable, to the receiving and processing station.

12.1 RISK IDENTIFICATION

The risks are specific to each stage of the harvesting process and can be summarised as follows:

1. Mechanical risks:
   - Falls due to the conditions and the state of the ground workers walk across.
   - Cuts that the cutter and backer can suffer whilst using sharp tools.
   - The worker responsible for the (bunches) cableway can suffer cuts and injuries if the cableway derails.

2. Physical risks:
   - Excessive natural light, exposure to the sun’s UV rays.
   - Heat stress caused by the high temperatures under the sun.

3. Biological risks: caused by insect and/or animal bites, such as snakes and spiders hidden in the plants and bunches.

4. Ergonomic risks: due to the effort expended by the cutter when using the cutting tool, the backer must balance the bunch when transporting it to the cableway, and the worker responsible for the cableway train must pull the row of bunches to bring it back to the processing station. All these tasks can cause musculoskeletal complications and sprains and hernias of the lumbar vertebrae.

5. Chemical risks: these can occur in cases where workers handle covers and treated materials, if there is toxic residue.

For more information read ANNEX 2: HOW TO LIFT LOADS CORRECTLY.

12.2 PRECAUTIONS FOR RISK CONTROL

1. To avoid insect bites plantation workers must use long-sleeved shirts and apply insect repellent before starting the day’s work.
2. Areas of the plantation where there are holes, boreholes, pits and deep ditches must be identified and marked as they constitute a risk if someone were to fall into them.
3. The cutter must not use tools that are in poor condition (poorly sharpened) or use them incorrectly, when cutting at the stem of the banana plant.
4. The backer must quickly inspect the bunch before receiving it to check if there are insects present or other factors that could affect them.
5. If conditions allow, workers should protect themselves from the sun’s rays and stay in the shade.
6. Workers must not carry cutting tools and sharp tools without their sheaths.
7. Workers should keep all work tools and accessories clean, well sharpened, and use them only if they are in good condition.
8. Workers responsible for the cableway and backers should have basic knowledge about body mechanics.
9. Personal hygiene is very important: skin irritations that are put down to work can be due to a person’s lack of cleanliness during and after work.

Personal protective equipment

For their personal protection, workers should use work clothes consisting of, long trousers, a long-sleeved shirt, a cap or hat, and boots. Latex or nitrile gloves must also been worn in case of contact with treated covers.

In addition, workers responsible for the cableway must wear a helmet to protect their head and wear gloves designed for light work.
13. RISKS ASSOCIATED WITH PREPARATION AND PACKING WORK

When the bunches arrive at the receiving station, a worker removes the cover on the pseudostem or the bunch, removes the separators and finishes removing the floral parts before prewashing the bunch.

13.1 RISK IDENTIFICATION

When preparing the bunches for packing, workers are exposed to the following risks:

1. **Mechanical risks:** falls due to the condition and the state of the ground the workers walk across.
2. **Physical risks:** excessive natural light, exposure to the sun’s UV rays and stress caused by the high temperatures under the sun.
3. **Biological risks:** caused by insect or animal bites, such as snakes or other, that can be found in the bunches.
4. **Ergonomic risks:** due to the effort expended when pulling the transporting cable to the work station, when loaded. This can lead to musculoskeletal problems, such as sprains and lumbar hernias.
5. **Chemical risks:** these can occur in cases where workers handle covers and treated materials, if there is toxic residue.

13.2 PRECAUTIONS FOR RISK CONTROL

1. To avoid insect bites plantation workers must use long-sleeved shirts and apply insect repellent before starting the day’s work.
2. Workers must quickly inspect the bunch before handling it in order to check whether there are insects or other factors that could harm them.
3. If covers or sheaths have been pre-treated, pregnant and breastfeeding workers should not carry out this task.
4. If conditions allow, workers should protect themselves from the sun’s rays and stay in the shade.
5. Workers should be aware of body mechanics.
6. Personal hygiene is very important: skin irritations that are put down to work can be due to a person’s lack of cleanliness during and after work.

**Personal protective equipment**

For their personal protection, workers must use work clothes consisting of long trousers, a long-sleeved shirt, a cap or a wide-brimmed hat, a latex or nitrile apron, latex or nitrile gloves and boots.
14. **RISKS ASSOCIATED WITH DEHANDING**

Cutting, or dehanding, is carried out using a well-sharpened dehanding knife. The hands (clusters) are placed in washing tanks to allow the latex to flow out of the fruit.

### 14.1 RISK IDENTIFICATION

Workers carry out this task whilst standing or resting on the washing tanks and they are exposed to the following risks:

1. **Biological risks:** caused by insect or animal bites, such as snakes or other, that can be found between the hands, or surrounding wasps and bees.
2. **Ergonomic risks:** due to being in a static standing position throughout the day and due to the hand movements for handling the knife and cutting. This can lead to joint problems in the hands and arms. It can also have cardiovascular consequences due to working whilst standing.
3. **Physical risks:** cuts to the hands due to using a cutting tool and possible cuts and injuries caused if the cableway derails.

### 14.2 PRECAUTIONS FOR RISK CONTROL

1. To avoid insect bites plantation workers must use long-sleeved shirts and apply insect repellent before starting the day’s work.
2. Workers must not use tools that are in poor condition (poorly maintained) or use them incorrectly, nor should they misuse them to perform any kind of cut.
3. Workers must not leave their tools and knives in an inappropriate place.
4. Workers must not carry cutting tools and sharp tools without their sheaths, and even less so in their pockets.
5. Workers should keep all work tools and accessories clean, well sharpened, and use them only if they are in good condition.
6. Personal hygiene is very important: skin irritations that are put down to work can be due to a person’s lack of cleanliness during and after work.

**Personal protective equipment**

- Workers must use work clothes consisting of trousers, a short-sleeved shirt, and rubber boots.
- For their personal protection, workers must use rubber or nitrile gloves and an oilcloth or nitrile apron.
15. RISKS ASSOCIATED WITH SELECTION

Workers who carry out selection work stand all day, and perform the work with the help of a selection knife. The tool must be well sharpened, which can wound the workers.

The selected clusters are placed in a washing tank.

15.1 RISK IDENTIFICATION

Workers complete this work standing sideways or resting against the washing tank, and they are exposed to the following risks:

1. **Biological risks:** caused by insect or animal bites, such as bees, that are in the environment, or germs that can grow in the tank where the fruit are placed.

2. **Ergonomic risks:** due to being in a static standing position throughout the day and due to the hand movements for handling the knife and cutting. This can lead to joint problems in the hands and arms. It can also have cardiovascular consequences on the lower limbs, due to working whilst standing.

3. **Physical risks:** cuts to the hands due to using cutting tools. In addition, due to the humid environment, workers should protect themselves by using plastic boots and a waterproof apron.

15.2 PRECAUTIONS FOR RISK CONTROL

1. To avoid insect bites plantation workers must use long-sleeved shirts and apply insect repellent before starting the day’s work.

2. Workers must not use tools that are in poor condition (poorly maintained) or use them incorrectly, nor should they misuse them to perform any kind of cut.

3. Workers must not leave their tools and knives in an inappropriate place.

4. The workstation must be equipped with a footrest so that workers can change their position and to allow blood to flow to the lower limbs, which prevents circulatory problems.

5. Workers must not carry cutting tools and sharp tools without their sheaths, and even less so in their pockets.

6. The plantation is responsible for keeping all work tools and accessories clean, well sharpened, and give them to workers in good condition.

7. Personal hygiene is very important: skin irritations that are put down to work can be due to a person’s lack of cleanliness during and after work.

**Personal protective equipment**

- Workers must use work clothes consisting of trousers, a short-sleeved shirt, and rubber boots.

- For their personal protection, workers must use gloves that protect against cuts or rubber gloves to protect the hand that is not holding the tool, and an oilcloth or nitrile apron.

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16. RISKS ASSOCIATED WITH CLASSIFICATION, WEIGHING, LABELLING AND PACKAGING

This involves three distinct tasks but they pose nearly the same risks.

For classification (traying), workers stand all day. They collect the hands from the washing tank, depending on the quality of the fruit required (thickness, size and general appearance), they then place them on trays on the conveyor (which uses rollers), and then push them into spraying chambers for post-harvest treatment.

Next the trays with banana clusters are weighed. Workers also complete this activity standing all day. After the weighing stage, the hands are then moved forward on the conveyor.

Workers who weigh the fruit hold the trays with the banana clusters and check the weight to ensure that the fruit meet the required criteria. Subsequently, they are returned to the conveyor.

The trays that are pushed along the conveyor reach the packaging stage. However, before this they reach the station where the fruit are labelled or marked, depending on the trading or exporting company. This task is also performed whilst standing.

At the end of the process, workers who are responsible for packaging take the hands from each tray and put them in a cardboard box with a polypropylene plastic liner. Workers use this to cover the fruit and close the carton.

16.1 RISK IDENTIFICATION

Workers perform this work whilst standing, facing the conveyor during the whole post-harvesting process. They are exposed to the following risks:

1. **Biological risks**: caused by insect or animal bites, such as bees, that are in the environment, or germs that can grow on the fruit.

2. **Ergonomic risks**: due to being in a static standing position throughout the day and due to repetitive hand movements when handling the fruit. This can lead to joint problems in the hands and arms. It can also have cardiovascular consequences on the lower limbs, due to working whilst standing.

3. **Chemical risks**: due to inhalation of vapours from fungicide sprays by the trayers.

16.2 PRECAUTIONS FOR RISK CONTROL

1. The workstation must be equipped with a footrest so that workers can change their position and to allow blood to flow to the lower limbs, which prevents circulatory problems.

2. The plantation is responsible for keeping all work tools and accessories clean, well sharpened, and giving them to workers in good condition.

3. Personal hygiene is very important: skin irritations that are put down to work can be due to a person’s lack of cleanliness during and after work.

4. The trayers must be provided with appropriate respirators.

**Personal protective equipment**

Workers must use work clothes consisting of trousers, a short-sleeved shirt, and rubber boots.

For their personal protection, workers must use rubber or nitrile gloves, a cap or net over their head. In addition, for selection work, workers must wear an oilcloth or nitrile apron.
Workers must manually lift the packed cartons from conveyor and stack them on pallets and load the vehicle that will transport them to the port of embarkation.

This work requires a good understanding of how to handle loads and body movements.

17.1 RISK IDENTIFICATION

This activity takes place on an embarkation platform and workers are therefore exposed to the following risks:

1. **Physical risks:** cuts to the hands caused by the tool used to cut the straps that secure the boxes. Workers also risk getting trapped and banging themselves whilst handling the boxes and falling from the platform, when safety ramps are not used.

2. **Biological risks:** caused by bites, from insects such as bees, that are in the environment.

3. **Ergonomic risks:** due to handling and moving the loads during the whole working day, which can lead to musculoskeletal consequences in the lower back.

17.2 PRECAUTIONS FOR RISK CONTROL

1. When loading the pallet in the vehicle, this must be done by several people so that the effort is split between them and the ergonomic risks are reduced for each person.

2. Before loading and moving loads, workers must know the principles of body mechanics.

3. When the platform is sloped, a chain or a safety rail must be fitted and the transit areas must be delimited to prevent falls from a height.

For more information, read ANNEX 1: HOW TO LIFT LOADS CORRECTLY

**Personal protective equipment**

Workers must use work clothes consisting of trousers, a short-sleeved shirt, and industrial footwear.
ANNEX 1: WORKING WITH CHEMICALS

17.3 TO MANAGE CHEMICAL RISKS DURING WORK:

1. Collect information by checking the MSDS (Material Safety Data Sheet).
2. Analyse the exposure, its duration, intensity, and absorption mechanisms.
3. Classify the problems, identify the relevant issues and the action plan to reduce them.

There is sufficient information in the Material Safety Information Sheet (MSDS) on how to handle chemicals, the necessary protective equipment and what to do in case of exposure. Therefore, generalising is not recommended.

4. The employer must provide formal training for all workers on Managing Chemical Risks in the workplace.
5. The plantation must set out written procedures for working safely when handling and using substances and make these procedures known to workers.
6. Workers must follow the procedures for working safely when handling substances, set out by the plantation.

THE 5 GOLDEN RULES OF PREVENTION

1. Always read and understand the product label
2. Be aware of safety precautions
3. Keep the application equipment in excellent condition.
4. Always wear the Personal Protective Equipment recommended on the product label.
5. Keep good personal hygiene.

17.4 BEFORE APPLICATION

1. Before application, the worker must check the product label and the Material Safety Data Sheet (MSDS) to be aware of its correct use and the control measures that should be taken in case of an accident.
2. Check the spray pump or other equipment.
3. Wear the Personal Protective Equipment recommended on the label of the product being applied (look at the pictograms described on the bottom part of the product label).

4. Review and check that the protective equipment is in good working order; for example, change the filters/cartridges according to the expiry date, which must be checked by the worker. They must also be changed when breathing becomes difficult or when the chemical smell is detected during use. The expiration date is normally printed on the filter/cartridge.
5. Bear in mind the colours of each label which indicate the substance’s toxicity degree.
17.5 DURING APPLICATION

1. Do not eat, rub your eyes, or smoke whilst using chemical products.
2. Do not remove the recommended personal protective equipment whilst working.
3. If personal protective equipment must be removed, stop the task immediately.

Refer to the section which corresponds with the task for more specific information on identifying and preventing chemical risks during use, and for more information on the appropriate personal protective equipment for each task.

17.6 AFTER APPLICATION

1. For personal hygiene, after use, workers must shower with water and soap and their clothes must be washed immediately after wearing them at their place of work. Wash skin with water and soap before eating or drinking.
2. Contaminated clothes must not be brought back to workers’ homes to be washed, this is to avoid all forms of contamination that could affect the rest of the family.
3. The triple rinse decontamination technique must be employed for contaminated containers and equipment.

<table>
<thead>
<tr>
<th>LABEL COLOUR</th>
<th>LEVEL OF TOXICITY</th>
<th>HAZARD</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ia Extremely toxic</td>
<td>VERY TOXIC</td>
</tr>
<tr>
<td></td>
<td>Ib Highly toxic</td>
<td>TOXIC</td>
</tr>
<tr>
<td></td>
<td>II Moderately toxic</td>
<td>HARMFUL</td>
</tr>
<tr>
<td></td>
<td>III Slightly toxic</td>
<td>DANGER</td>
</tr>
<tr>
<td></td>
<td>IV Practically non-toxic</td>
<td>CAUTION</td>
</tr>
</tbody>
</table>

All crop product labels have a coloured stripe on the bottom part indicating their toxicity level. They also have pictograms on the use of protective clothing and environmental protection:

MEASURES TO PROTECT THE ENVIRONMENT

- Toxic to livestock
- Toxic to fish and shellfish
- Toxic to bees
- Toxic to wildlife.

In this case, spraying must not be carried out on flat land, less than 20 metres from rivers and streams.

Drain the container. Add water until it is one fourth (1/4) full.

Seal the container. Shake for thirty seconds.

Pour the water into the spray tank and repeat the procedure three times.

Puncture the empty container to prevent it from being reused. Store and take to the collection centre.
17.7 IN CASE OF ACCIDENTAL SPILLAGE

1. In case of spillage, isolate the area, contain the spillage and clean up by applying absorbent materials (such as sawdust or dry soil). Keep in a plastic bag or canister and dispose according to plantation procedures. Use the spillage clean up kit.

2. Place the collected material in labelled containers and dispose of according to the procedures established by the plantation.

3. Do not allow the wash water from the spill or leakage to come into contact with other sources of water or go into the sewage system.

4. Do not pollute with rubbish or empty containers. If the product were to pollute canals, sewers or water courses, immediately inform the plantation management.

17.8 STORAGE

1. Keep the product in its original packaging, sealed and labelled.

2. Do not repackage the product in another container.

3. Do not store in dwellings.

4. Store the product in a safe place, away from food and feed. Store in an area that will ensure long-term preservation (dark, fresh, dry and well vented).

5. Only transport with agrochemical products, NEVER with products meant for human or animal consumption.

17.9 FIRST AID

Symptoms of poisoning: if there is contact with a harmful substance, workers can feel weak, experience headaches, tightness in the chest, excessive sweating, blurred vision, constricted pupils and with no reaction, excessive salivation, convulsions, nausea, vomiting, diarrhoea and stomach cramps.

The first aid that must be administered to the worker will depend on the way the substance entered the body:

1. If the product is swallowed, seek medical advice immediately from a doctor and show them the safety sheet or the product label. Never administer anything by mouth to an unconscious person. Do not induce vomiting if the product that has been swallowed is corrosive (as in the case of pesticides).

2. If the substance is inhaled and there is a risk of poisoning, the victim must be removed from the contamination zone, take the victim outside and keep the person in a resting position, on their side whilst monitoring their breathing. An unconscious person who is still breathing can be positioned in the recovery position whilst seeking medical attention.

If breathing is irregular or stops, administer artificial respiration and consult a doctor immediately.

3. If the substance comes in contact with the skin, remove contaminated clothing immediately and wash the affected area of skin with sufficient water. If skin irritation persists, it is preferable to call a doctor. Contaminated clothes must be washed before reusing them.

4. If the substance comes in contact with the eyes, flush the eyes thoroughly with water for at least 15 minutes and wash under the eyelids and cover the affected eye before taking the patient to a doctor.
ANNEX 2: HOW TO LIFT LOADS PROPERLY

If workers must lift loads that are on the ground or almost at the same level, they must use the technique to handle loads by using their leg muscles rather than back muscles. The technique is as follows:

1. Separate your feet to ensure that you have a stable and balanced position to lift the load, by putting one ahead of the other in the direction of the movement.

2. Bend your legs while keeping your back constantly straight and your chin tucked in. Do not bend your knees too much.

3. Do not turn your torso or adopt forced positions.

4. Hold the load firmly with two hands by holding it near your body. The best type of hold is the hook hold, but this depends on individual preferences, most importantly this must be performed without risk. When you need to change the hold, do this slowly and rest the load on something to reduce the risk.

5. Straighten yourself slowly, by extending your legs and keeping your back straight. You must not throw the load or move it quickly or suddenly.

6. Avoid turning round at all costs. It is better to move your feet beforehand to position yourself in the correct position.
ANNEX 3: HOW TO USE LADDERS PROPERLY

If workers need to use a ladder, they must follow the following precautions:

1. Examine the ladder BEFORE and AFTER work.
2. Do not carry ladders that weigh more than 25kg.
3. Do not carry the ladder horizontally, carry it with the front part tilted down.
4. Do not pivot or carry the ladder on your back.
5. Do not place the ladder on uneven surfaces.
6. Place the ladder on the floor so that the supports rest on something solid enough so that it will not slide.

The surface must be flat, horizontal, strong and non-slippery. Not respecting these precautionary measures can lead to serious accidents.

The ladders must not be used for purposes other than those for which they were designed.

The ladders must be stored horizontally, attached to fixed mounts that are nailed to the wall.

Climbing and descending the ladder, and tasks from the ladders must be performed from the front of the ladder.

To correctly position the ladder, the ladder must be inclined approximately 15 to 20 degrees, and the space between the wall must be 1/4 of the longitude of the ladder.
“Active pauses” are recommended as the main activity for the prevention of ergonomic risks involved in each task or job in banana production.

The ILO’s encyclopaedia of Health and Safety recommends 5-minute breaks or changing your posture every hour. Under no circumstances should you keep the same working position for more than two hours, in this case an active pause of no less than 15 minutes is required.

These are some recommended movements to include in active breaks.

1. Turn your head to the right, hold for 10 seconds and repeat on the other side.
2. Lift your chin up, hold for 10 seconds and then rest your chin on your chest, hold for 10 seconds.
3. Lift your shoulders to your ears, hold for 10 seconds. Then put your shoulders back to the beginning position.
4. Tilt your head to the right with your right hand, hold for 10 seconds and then repeat on the other side.
5. Place your palms together in front of your chest and cross your fingers. Bend your right wrist and push your fingers to the right, hold for 3 seconds and then repeat the movement on your left side. Move between the two positions for 10 times.
6. Lock your fingers and raise them with your palms facing the sky and hold for 20 seconds.
7. Cross your left arm to your right side, hold straight and with your left hand push towards your chest for 20 seconds. Rest and repeat with the other arm.
8. Raise your right arm over your head and lean your torso to the left, hold for 20 seconds. Rest and repeat on the other side.

9. Raise your left arm behind your head, push your left elbow down with your right hand, hold for 15 seconds. Rest and repeat on the opposite side.

10. Raise your left leg and push your left knee upwards towards your body with your two hands, hold for 15 seconds. Rest and repeat on the opposite side.

11. Bend your right knee and hold your right foot with your right hand, hold for 15 seconds. Rest and repeat on the opposite side.

12. Very slowly flex your torso forwards, it does not matter if you are not able to reach the ground, hold for 15 seconds. Then slowly straighten your back to return to your normal position standing position.

13. Transfer your weight forwards onto your toes, hold for 5 seconds, then transfer your weight backwards onto your heels, hold for 5 seconds before going back to the centre.
This manual is a practical guide for risk management on banana farms and has been developed in two parts:

Part One - Manual for trainers with technical material for the global understanding of necessary measures to improve occupational health and safety.

Part Two - Manual for workers with specific educational material that can be distributed to workers as separate task-related handouts depending on their work on the farm. This learning tool provides workers with an understanding of basic measures which when applied to daily activities, control risk and allow work to be undertaken safely.

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