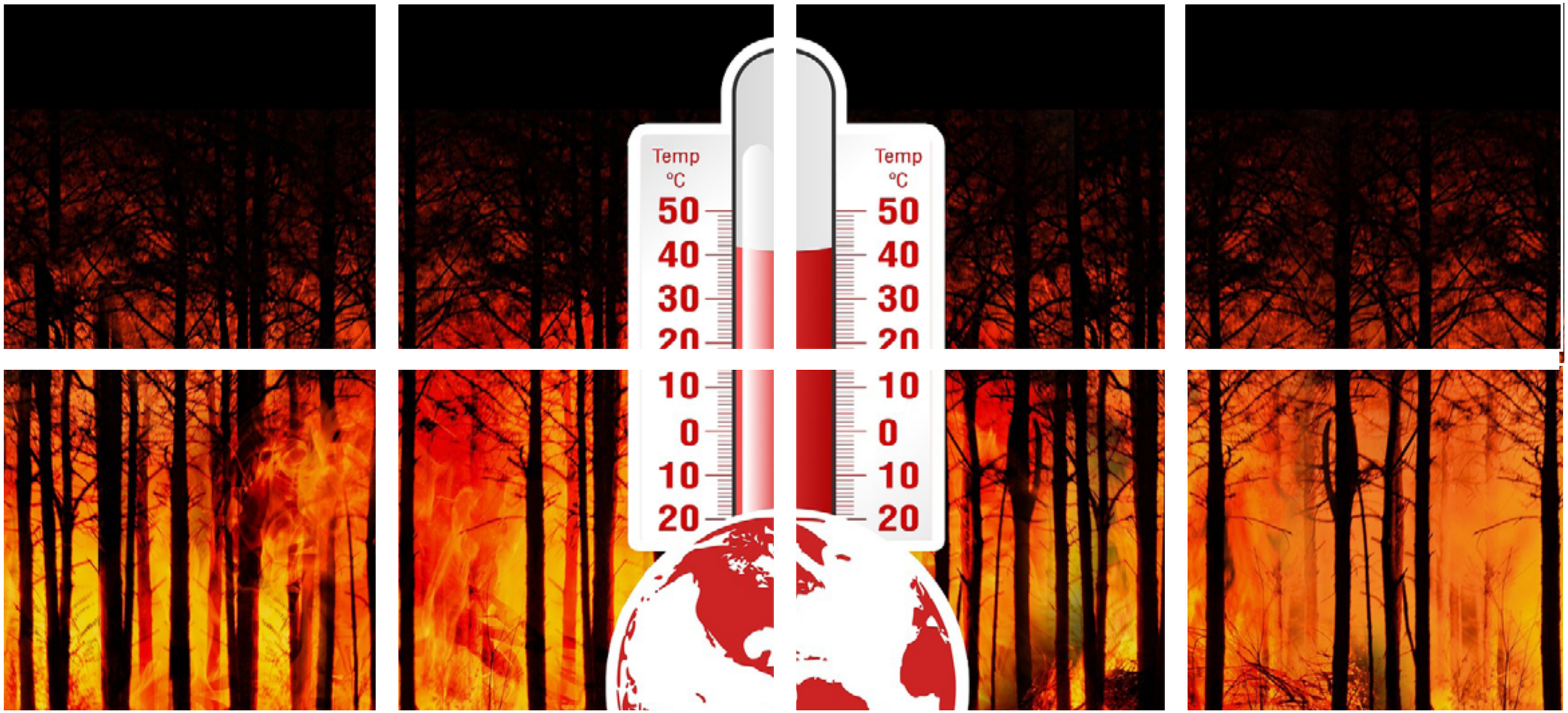

Extreme Heat: Impacts on People Working in Food Supply Chains

A guide for FNET members, November 2024

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Contents

Guide objectives

- Summarise how extreme heat impacts worker health
- Outline suggested actions for businesses to mitigate heat stress risk for workers
- Provide some topics to help guide discussions between businesses and workers on mitigating extreme heat stress.

Introduction

The last two years, 2023 and 2024, have been warmer than any prior year on the temperature record. 38 countries saw all-time records broken, including much of Central and South America, Canada, Africa, Europe, China, the Middle-East and South-East Asia. It is predicted that global warming will exacerbate existing decent work deficits, poverty and inequalities, and intensify food and water insecurity, adverse health impacts, ecosystem degradation and economic losses, particularly in regions already facing development challenges.

Extreme weather events linked to climate change and a warming planet include:

- Increased frequency and intensity of heat waves
- Increased risk of wildfires
- More frequent and severe droughts
- Increased rainfall and extended monsoon periods.

Acknowledgements
Thanks to Bev Hall, and members of the FNET Climate & Human Rights working group for their contributions.

Impact of extreme heat on communities

Climate Rights International mapped the range of human rights at risk by rising temperatures and exposure to extreme heat. These risks include the right to life, health, food, water, education, and a safe and healthy work environment. Those most at risk include children, women, older people, those with disabilities, those living in poverty, outdoor workers, and a range of already marginalised populations. The number of people in regions across the world affected by extreme heat stress could increase nearly 15-fold if the world's temperature rise reaches 2°C; a rise from 68 million people to around one billion

Communities impacted by heat, drought and fires may be affected through loss of livelihoods, reduction in food production and result in increased hunger and poverty. The most vulnerable groups, smallholder agricultural producers, are often the most food insecure and exposed to risks.

Impact of extreme heat on workers

Workers, especially those working outdoors, are frequently the first to be exposed to the consequences of climate change, often for longer periods and at greater intensities than the general population. The ILO estimates, that at least 2.41 billion workers are exposed annually to excessive heat at work.

Increasing temperatures and excessive heat are:

- Serious impacting the safety and health of workers in all regions of the globe
- Increasing risks for outdoor workers in physically demanding jobs
- Exacerbating the effects of poorly ventilated workplaces where temperature is not regulated
- Increasing the health impact of environmental pollution and agri-chemical substances.

Heat-related risks are influenced by environmental conditions, physical exertion and clothing or equipment. Heat can exacerbate existing health problems associated with a wide variety of cardiovascular, respiratory, reproductive health and other acute illnesses.

Some health-related conditions associated with heat stress: heat stroke, heat exhaustion, rhabdomyolysis, heat syncope, heat cramps, heat rash, cardiovascular disease, acute kidney injury, chronic kidney disease, physical injury.

Heightened risks for vulnerable groups

The ILO global report, Ensuring safety and health at work in a changing climate, identifies the following vulnerable groups at risk:

Migrant workers: Often employed in dangerous, dirty and demanding work, who are potentially at higher risk due to a lack of access to Health & Safety awareness, language barriers, job insecurity and limited access to complaints mechanisms. On-site accommodation may not be insulated or properly ventilated.

Low income and casual (piece rate) workers: As a casual worker low pay and job insecurity are barriers to taking rest breaks to seek shade or drink water.

Women workers: Women are 3.7 times more likely to be heat intolerant than men during physical work. Pregnant workers are particularly vulnerable to heat-related illnesses. There is a heightened risk of pregnancy-related complications including hypertension, miscarriages and stillbirths.

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6. Heat at work: Implications for safety and health | International Labour Organization (ilo.org)
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Heat-related health issues and workplace considerations

The summary table below is drawn from the FNET working group discussions, a Building and Wood Worker's International (BWI) heat presentation and two ILO reports.

Examples of how climate and environmental impacts can manifest as human rights risks in agricultural supply chains

Outline	Symptoms	Considerations in the workplace
Heat stress happens when the body's way of controlling its internal temperature starts to fail. As well as air temperature, factors such as work rate/ intensity, humidity and work clothing may lead to heat stress. Heat stress can also has long-term impacts on health.	• An inability to concentrate, muscle cramps, heat rash • Severe thirst & fainting • Heat exhaustion – fatigue, dizziness, nausea, headache, moist skin • Heat stroke – hot dry skin, confusion, convulsions and eventual loss of consciousness. This can result in death if not detected at an early stage • Dehydration can result in acute kidney and chronic kidney disease	• Work rate – the harder someone works the more body heat is generated • Working climate includes air temperature, humidity, air movement and working near a heat source • Work clothing and personal protective equipment (PPE) –may prevent sweating and other ways of regulating temperature • A worker's age, body type and medical factors may affect their tolerance of heat • Break periods that are not long enough for the body to cool
Solar radiation and UV radiation In excess UV radiation can cause various types of damage to the skin and the eyes.	Sunburn, skin blistering, acute eye damage, weakened immune systems, pterygium, cataracts, skin cancers.	• Extended periods of exposure to sunlight • Lack of shade or cooling stations • Lack of sufficient head covering or eye protection • Wearing black clothes to protect from solar radiation may contribute to increased heat stress because black absorbs heat.
Agrochemicals: The combined impact of agrochemical exposures with excessive heat could increase the likelihood of ill-health in workers.	Poisoning, cancer, neurotoxicity, endocrine disruption, reproductive disorders, cardio- vascular disease, Chronic obstructive pulmonary disease (COPD), immune suppression	• As workers sweat more, they are at risk of greater exposure from the high rate of dermal absorption. • Workers may be exposed to high levels of dust • Pollution occurs during handling, dilution, mixing, application, and disposal of pesticides, as well as during cleaning of containers and handling of crops.

Stakeholders and rights holders need to prioritise worker health and safety during all periods of excessive heat, not only during heatwaves.

Businesses are encouraged to take a rights-based approach for workers, which includes the following principles:

- **the fundamental right to a safe and healthy working environment heat stress**
- **the right for workers to remove themselves from dangerous situations.**

Social dialogue must be the foundation for action. Stakeholders & rights holders at all levels need to prioritise social dialogue as a fundamental component of developing and implementing OSH policies and strategies on heat stress, with workers and their representatives trained and empowered to participate in these processes.

References
9. Heat at work: Implications for safety and health | International Labour Organization (ilo.org)
10. Ensuring safety and health at work in a changing climate | International Labour Organization (ilo.org)
11. Building and Wood Worker's International is the Global Union Federation grouping with members in the Building, Building Materials, Wood, Forestry and Allied sectors.
12. Heat at work: Implications for safety and health | International Labour Organization (ilo.org)

How to include heat stress in your human rights due diligence

Risk Assessment

Geographical information
Use tools to identify temperature increases and heat mapping across a region/country to identify level of risk for product sourcing, producers and workers.

Regional & country profiles provide information on high-level risks-related to climate change. For example, the UN, FOA provide a risk mapping toolbox.

Identify national heat management policies, regulations and mitigation measures. The Nationally Determined Contributions (NDC) registry provides country commitments and plans related to the Paris agreement. This is useful to determine a country's priorities.

An understanding of national law on heat and working. For example:
- In Spain, there are measures based on weather alerts in place to prohibit outdoor working in periods of extreme heat. Guidance covers temperatures between 26-32 degrees stipulating that people should have access to cooling PPE and above 32 degrees people will be sent on breaks.

- In Portugal, the temperature of a workplace must by law be between 18 and 22 degrees Celsius and have a specific humidity management system.

- In Belgian a 'law on thermal environmental factors', targeted at both heat and cold, action is mandatory when the legal occupational exposure temperature limit is exceeded.

Workplace assessments (desk-top)
- Asses any existing protocols for managing health and safety including record keeping, risk assessments and dedicated responsible personnel.
- Identify a health & safety committee or consultative forum and understand how health and safety is managed onsite.
- Review collective agreements with trade union partners negotiating rovisions to protect the safety and health of workers from extreme weather conditions.
- Liaise with suppliers to understand information from any health indicators/audits, medical reports, mitigation strategies, grievances, rest breaks, access to water and shade provisio

Workplace assessments (site visit)
- Survey the workplace and identify possible heat-related hazards and their specific risks to safety and health. This could include:
  - The type of work being performed
  - Duration and intensity of the tasks
  - Work and rest patterns
  - Availability of drinking water
  - Exposure to chemicals and/or hazardous substances
  - Uniforms and PPE used by workers and any direct exposure to sunlight or other heat sources
  - For packhouses and/or processing areas this would include indoor temperature, humidity, air movement, ventilation, nature of work and air quality
  - It is important to include the following non-work locations in the assessment
  - Accommodation on site - heat reduction, ventilation, air movement and access to clean water.
  - Transport provision for workers to and from the worksite (especially if it is a significant duration) to reduce exposure to direct sunlight if an open vehicle. For covered vehicles to assess for heat, humidity and access to water.

Prioritisation

- Review risk assessments and audit data with specific consideration to:
  - Occupational health and safety statistics for health indicators
  - Type of workers – seasonal, contractual, women and other vulnerabilities due to age, medication or pre-existing medical conditions
  - Types of work and associated risks
  - Scale and severity of the heat risk
  - Identify priority sites/suppliers where heat stress risk is highest or most severe.

References
13._Nationally determined contributions (NDCs) are at the heart of the Paris Agreement and the achievement of its long-term goals. NDCs embody efforts by each country to reduce national emissions and adapt to the impacts of climate change.
14._HM28_Heat stress at work not just a hot topic but a political emergency_2023.pdf (etui.org)

Action

Policies & processes

- Review and harmonise Human Rights, Climate Change and Occupational Health & Safety (OSH) policies. This can include:
  - Reference in climate related policies to regions and countries experiencing extreme heat
  - Heat stress is identified as a salient risk to suppliers and workers in human rights risk mapping – this could include intended action and/or remedy
  - Ensuring that your OSH policy includes heat stress management and reference to specific items such as personal protective equipment (PPE), hydration and access to shade.
  - Develop a heat stress/mitigation strategy and key performance indicators for prioritised sites that include tracking (based on evidence and assessment). KPIs for example could cover health indicators, wellbeing of workers, vulnerable workers, working time and mechanical innovation.

Engagement within the business

- Prepare briefings/information-sharing for commercial, procurement, legal and partnership teams to raise awareness on heat stress and priority supply chains.
- Establish information flow with commercial teams to understand when supply has been affected by extreme heat in order to mitigate and remediate heat stress for workers.
- Update codes of conduct and/or supplier portals with relevant information.

Actions to prepare and mitigate heat stress impacts for workers

- Create and implement a heat stress policy – this should be developed in conjunction with worker representatives and Health & Safety representatives on how to manage heat stress for workers. This should include information on the measures the business will undertake during ongoing extreme heat and particular heatwave occurrences.

These could cover

- Early warning systems for extreme heat periods and associated people planning - take predictive temperatures so that workers are informed in advance to come later or earlier depending on expected temperatures
- Stipulating a maximum working temperature (based on national law and company guidelines)
- Altering shift patterns to an earlier start and then a later part of the day when it is cooler.
  This may affect workers with other/caring responsibilities such as childcare arrangements so essential to consider additional policies to mitigate the impact of shift pattern changes.
- Increased shade provision via canopies, sheeting, or similar covering over open areas, or on vans that have shade, drinking water and sanitation facilities.
- Sanitation facilities – drinking more water may mean more toilet breaks.
- Adjusting rest breaks to include sufficient time for cooling the body temperature, and in
  a close enough location to the work to ensure workers take the breaks. This may mean increasing their frequency so important considerations are worker remuneration if not paid for breaks.It is important to note from La Isla Network case study that a reduction in hours worked, led to increased worker productivity (see below).
- Provide ice cream /lollies on hot days.
- Adjusting tasks or workplace conditions to minimise heat stress.
- Allowing workers to wear appropriate clothes to cool down e.g. can they have shorts and light footwear (based on the risk assessment).
- Access to drinking water and potentially showers.
- Worker remuneration when hours are reduced due to extreme heat.
- PPE and additional considerations for workers exposed to agricultural chemicals.

For packhouses or processing units:

- Ensure sufficient ventilation or air movement
- Provide cooling systems
- Assess equipment that produces additional heat
- Assessment of PPE in case it is creating heat
- Develop or share easily understandable and visible resources to raise awareness of the impact of heat and symptoms of heat stress.

Some examples can be found in the tools listed below.

These could include:

- Harmful effects of sun exposure and protection measures
- Rest periods long enough to allow the body to cool down
- Drinking plenty of water before, during and after work
- Shade - Stay in the shade under a tree, umbrella or other shelter.
- Clothing - Wear long-sleeved shirts, trousers and skirts, made from tightly woven fabric.
- Hat - Wear a hat that has a brim all the way around to protect your face, ears and the back of your neck.
- Sunglasses - Wrap-around sunglasses that block both UVA and UVB protection work best
- Raise awareness and increase safety measures for workers exposed to agricultural chemicals.

- **Inform workers of the reporting procedures** concerning heat stress-related signs
- Train supervisors or shift leads on heat stress and the signs and symptoms they need to be aware of
- **Workplace-level risk assessments and preventive and control strategies** should explicitly incorporate heat stress considerations and require direct input from workers.
- **Worker consultation with trade union partners** or other worker representative bodies to establish awareness of risks, ideas for mitigation and/or improvements and how to raise collective concerns.
- **Adapt current Health & Safety policy,** risk assessments and practice to include action on heat impacts
- **Provide heat stress training** for all workers and supervisors.

Monitoring & communication

- Consult with suppliers and workers to develop appropriate monitoring and improvement strategies.

- Apply KPIs to priority sites and actions to ensure effective implementation on heat stress preparation and mitigation. KPIs for example could cover health indicators, wellbeing of workers, vulnerable workers, working time and mechanical innovation.
  Data could also be gathered through operational grievance mechanisms and third-party non-compliance audit data.

- Ensure all monitoring is communicated within the business to relevant teams (commercial, procurement, legal) as well as with suppliers, and the workers.

- Formal reporting in the public domain would be in sustainability reports and ideally reflected as a climate change related salient risk to workers.

Additional resources and information

Reports, insight and guidance documents

- **Heat at work: Implications for safety and health:** A global review of the science, policy and practice, 25 July 2024, ILO
- **Heatwaves as an occupational hazard:** The impact of heat and heatwaves on workers' health, safety and wellbeing and on social inequalities (2021), European Trade Union Institute
- **Too Hot to Handle:** How Climate Change May Make Some Places Too Hot to Live (2022) NASA
- **One billion face heat-stress risk from 2°C rise** - Met Office.
- **Extreme Heat & Human Rights in the Context of Climate Change (2024)** Climate Rights International
- **UN Human Rights:** Office of the High Commissioner (2019) United Nations High Commission for Human Rights
- **How could climate change impact food production?** (2021) The World Economic Forum.
- **'State of the climate:** 2024 now very likely to be warmest year on record' (2024) The Carbon Brief
- **How Climate Change Is Disrupting the Global Supply Chain.** (2022) Yale School of the Environment
- **How does climate change impact on international trade?** (2023) Grantham Research Institute
- **Heat and health (2024)** World Health Organization (WHO)
- World Meteorological Organization (WMO) **Early Warnings for All**
- Hazards **BOILING POINT** | Hot and bothered (with checklist)

Tools for assessing heat and some resources

- **The National Institute for Occupational Safety and Health** (NIOSH), (USA), including a heat safety tool app, information posters for workers, podcasts on how to protect yourself, recommendations for PPE.
- **Health & Safety Executive** (HSE) heat risk assessment, checklist and templates
- **FAO's Climate Risk Toolbox** Climate risk screenings visualization of climate risk hotspots by identifying hazard probability, exposure and vulnerability of targeted agricultural systems and communities
- Copernicus: **Surface air temperature maps**
- Carbon Brief: **Country profiles**
- Global Heat Health Information Network: **Reporting on Heatwaves and the Health Impacts of Heat**

Resources for workers

- BWI Building and Wood Workers' International: **Heat Up Workers' Rights,not the Planet!** Lots of resources aimed at workers including posters, videos, manifestos and business agreements.

Case studies

Member case study

Research in 2009 on working conditions and heat in the sugarcane industry in Costa Rica led to a Regulation for Prevention and Protection of Workers Exposed to Heat Stress in 2015. The research was the first study to demonstrate kidney damage within the workday of cane cutters, highlighting workload, heat stress and dehydration as primary drivers.

As a result of the regulation, some fresh produce growers invested in water purification plants to provide free, clean drinking water for workers, and they also supplied electrolyte powders. Electrolyte solution replenishes the body's water and electrolyte concentrations lost through exertion and sweating.
In addition, breaks were scheduled for every two hours throughout the day. The resulting increase in productivity mitigated the stoppage time.

Workers were initially reticent at first about whether the drinks would be of benefit but soon realised they were not as tired as had previously been because they were less fatigued during the day. They also had increased picking rates which in turn increased their earnings.

Member case study

For a fresh produce supplier in the UK, Farm Safety Briefings were drafted for all colleagues to be aware of the signs/symptoms of heat related illness and prevention, hydration, rest, reduction in exposure to the sun, diet and checking skin.The briefing also covered amendments to working environment and conditions including:

- Shift changes to agree very early starts and fishing late morning
- Water coolers available year-round
- Additional breaks
- Wellness checks
- Isotonic drinks and ice creams
- Suncream and peaked hats are provided

Recognising the need for preventative action, hot weather & fire risks were also covered. These activities included safety checks and being extra vigilant to fire risk areas, providing designated smoking areas and monitoring of compost heaps for combustible reaction and equipment. It was stressed to all workers that any grievances or concerns in relations to heat stress should be raised immediately.

Member case study

For a fresh produce supplier in the UK, Farm Case study. Evidence-based worker protections for sustainable development in a changing climate - recommended actions from case study on sugar cane workers in Nicaragua
Dr Becky Lucas (School of Sport, Exercise & Rehabilitation Sciences, University of Birmingham), Adalante Initiative and La Isla Network.

During the harvest season, workers worked 12 hours a day in temperatures that climbed past 37.8°C. The impact on the individual worker was increased risk of accidents, long term heat related illnesses and even death. To avoid these impacts and mitigate against further risk to workers, the following recommendations were presented:

- Regular breaks should be scheduled for workers
- Provision for adjustable, mobile shade tent that can move with workers
- Hydration – and providing workers with clean water to drink near workstations
- Designate a member of staff who oversees that workers are okay
- Provide safe and clean sanitation in the fields (so workers do not restrict intake of water due to lack of facilities)

La Isla Foundation (LIF) published a report examining rights violations experienced by sugarcane workers at Ingenio San Antonio, the largest sugarcane plantation and production facility in Western Nicaragua. The report, entitled "Sickly Sweet: Human Rights Conditions for Sugarcane Workers in Western Nicaragua," documents the contrast between legal protections of Nicaraguan sugarcane workers and the reality of their working and living conditions.
In addition to the recommendations provided above, the report includes additional recommendations calling for:

- The provision of sufficient protective equipment in good repair and conduct of educational programming, to protect workers from agrochemical exposure, regardless of employee contractual status.
- The provisions for all employees to unfettered access to medical information obtained through medical examinations conducted by the producer or medical personnel affiliated with the producer.
- Adoption of working practices that follow internationally recognized guidelines for safe work in hot climates, such as the Occupational Health and Safety Administration's Water. Rest. Shade. program.

A Memorandum of Understanding (MOU) was signed between four organisations, La Isla Network, San Antonio mill, the National Committee of Sugarcane Producers of Nicaragua and Bonsucro. The MOU agrees to set up a new initiative – Adelante – which aims to improve work practices within the country's sugarcane industry.

Member case study

An organic fresh produce business with global supply chains started to measure heat stress in their complex supply chains to identify where workers might be at risk of extreme heat or heat stress. The business' suppliers vary greatly in size, geographical location, levels of maturity and resourcing. EFC wanted to treat all the suppliers fairly to collect comparable data that could be used to identify and prioritise action where extreme heat poses a risk in their supply chains so they developed the following approach.

1) Step 1 – Supply chain mapping. This was based on two areas:

a) Horizon scanning data on extreme/impactful weather that has impacted supply and data. This is collected by colleagues in different teams who notice when there has been extreme weather occurrences that have impacted on crops, or other issues reported from sites. Although this is retrospective data, it provides an accurate information on what is happening at a specific moment in time in a region, and over time can indicate trends.

b) Risk Assessment. Using the WWF Risk Filter Suite (Water and Biodiversity), EFC currently use 6-7 indicators to understand environmental impacts on people, and in the Biodiversity Filter, there is a specific indicator on "extreme heat" that looks uses data that has been collected over 5 years.

2) Step 2 – Salient Risk & Prioritisation (Action Plan)

The next step was to identify which supply chains and/or the sites that were affected by heat stress, and then identify where extreme heat was the most salient risk across EFC supply chains using the WWF "heat indicator". EFC also prioritised sites where extreme heat was not the most salient risk but still sufficiently high to be significant, and so it was weighted with other indicators on soil quality or pollination.

The prioritisation process was also sense-checked by cross-referencing which key labour-intensive agricultural activities took place during the hottest part of the year. For example, on citrus where the harvesting took place outside the peak of the heat season, therefore extreme heat didn't necessarily pose a risk for the majority of workers.

3) Step 3 – Engagement and Monitoring

EFC then created a checklist for suppliers for them to complete to understand what their awareness is on heat stress and what measures they have in place to mitigate them.

They used information from the Spanish Ethical Trade Forum's Guide on Prevention Against Extreme Heat and Stronger Together's Good Practice Checklist to manage the impact of the extreme heat in the workplace indoor and outdoor to ensure best practice was being followed.

Once suppliers completed the checklist, they weighted the scores to prioritise action and support for those suppliers.

Training for technical team and buyer teams– Every time colleagues (buyers, technical managers etc.) travel they complete a short checklist on heat mitigation measures taken by the supplier. This constitutes part of a wider human rights training programme across the business so there is high engagement from staff on these visits. Training is partially conducted via "lunch and learn" sessions.

Upcoming plans are to engage with suppliers at the annual supplier conference on heat stress to better understand and support mitigation measures.

4) Step 4 – Review

As information changes, the new data is reviewed and the risk assessment and other resources are updated.

Furthermore, as trained colleagues report on their findings, the questionnaire is also reviewed to ensure that it is as robust as possible against the challenges faced. For example, following supplier visits in 2024 to sites with a high number of Muslim workers, the cultural fasting during Ramadan was highlighted as being an additional risk and therefore questions regarding fasting during working hours and site mitigation plans for the additional risk are being added to the questionnaire.

Tractor with built-in shade, canteen and sanitation facilities, Chile.

Made by the farmer

Photography references

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