



P O Box 10800 Market Harborough LE16 0HU
cfa@chilledfood.org www.chilledfood.org

Extreme Weather Event Protocol Guidance

Introduction

Extreme weather events are increasing in frequency and can be defined as periods of high temperatures, heavy rainfall, high winds, or drought. Extreme weather events have the ability to disrupt supply of fresh produce by impacting on availability, supply and quality, and increasing the risk of microbial contamination.

All growers of fresh produce should set critical limits to trigger documented actions from extreme weather events.

The procedure should include critical limits, such as mm of rainfall , to trigger the implementation of additional controls post extreme weather and **MUST** incorporate the following key requirements:

- Harvesting should be planned to take place prior to extreme weather where possible and where crop quality will not be compromised due to extended residency time. Harvested crop **MUST** be protected from rain post-harvest.
- Increased frequency of microbiological testing and visual monitoring of water sources and storage facilities when water levels are low after prolonged dry periods.
- Standards for water used for fertigation and spraying of crops, which are:
 - Growers are expected to carry out daily start up checks which should include identification of any risk from extreme weather.
 - Guidance on completing a best practice pre-harvest risk assessment in the event of extreme weather can be found in the Appendix 1. Physical crop walking and field inspections should be carried out by a competent person or trained assessor as part of the pre-harvest risk assessment as well as during harvest, where appropriate.
 - Growers should communicate to customers all extreme weather events impacting, or likely to impact on, food safety or quality of crop being supplied.

Contents

Best Practice Pre-harvest Risk Assessments for Extreme Weather Events.....	2
Appendix 1 Example Extreme Weather Pre-Harvest Risk Assessment	3
Appendix 2 Example Extreme Weather Events: Hazards & Common Control Failure Causes	5
Appendix 3 Characteristics of Common Hazard Microorganisms.....	6

10/10/23 First edition

Best Practice Pre-harvest Risk Assessments for Extreme Weather Events

Effective pre-harvest risk assessments have a profound impact on reducing food safety risks on crops supplied and final product particularly where used raw.

Following the steps below will reduce the risk of microbial contamination and presence of foreign bodies in crops in the event of extreme weather.

See Appendix 1 for an example best practice pre-harvest risk assessment.

<p>1. Timing</p> <ul style="list-style-type: none"> • After the extreme weather event and no more than 24 hours prior to harvest.
<p>2. Physical Crop Walk/Field Inspection</p> <ul style="list-style-type: none"> • MUST be carried out by a competent person or trained assessor. • Continued during harvest where appropriate.
<p>3. Site Risk Assessment</p> <ul style="list-style-type: none"> • Review the site risk assessment. What risks were identified and have controls been correctly implemented?
<p>4. Assess Risks</p> <ul style="list-style-type: none"> • Are there any new risks? • Attention MUST be given to high risk areas such as near watercourses and field edges. • If in doubt whether crop is safe to harvest seek guidance, e.g from customer.
<p>5. Determine Actions</p> <ul style="list-style-type: none"> • Actions are agreed either internally and/or externally (with the customer) and completed prior to harvest. • Areas of heavily soiled (i.e beyond normal specifications) crop after heavy rain, through splash from machinery or any other means, are assessed for suitability of harvest against specifications. Areas which are not suitable should be marked out and not harvested. • Areas of standing water from heavy rain (above the bed/in contact with edible part of crop) should be marked out and affected crop not harvested for 48h and then re-assessed and/or microbiologically tested to determine whether it is put on the market. Any areas flooded by nearby bodies of water, e.g. rivers or subject to run-off from field containing livestock MUST not be harvested. • Interim cleaning of baby leaf harvesters if machinery is heavily soiled due to wet/muddy conditions where this is both practical and possible, and decisions made as to whether harvest is feasible. Any cleaning MUST always take place away from the crop. MUST use detergent and sanitisers and brushes etc to remove gross debris rather than relying on pressure washers alone. • Adjusting the speed of the harvester to the conditions, where possible, to reduce soil splash from any standing water in the wheelings. • Excessive debris, vegetative or otherwise present in the crop following high winds is removed prior to harvest. • Ensure risks and actions are fully communicated to harvest teams.
<p>6. Full Documentation</p> <ul style="list-style-type: none"> • Date and time of inspection. • Confirmation controls implemented following the site risk assessment are in place and are effective in reducing risk. • All new risks and actions taken are recorded. • Date, time and volume of last irrigation event is recorded as part of standard crop management. • Weather conditions prior to harvest are recorded including mm of rain in 7 days prior to harvest. • Approval to harvest is given/not given and risk assessment is signed off by a senior competent person at the grower.

Appendix 1 Example Extreme Weather Pre-Harvest Risk Assessment

Details of Extreme weather event	<i>(Provide information on scale, date and duration of event – summary of crops affected and impact)</i>		
Field(s) Being assessed		Assessment Date & Time	
		Assessed By	
Proposed Harvest Period		Physical Crop Inspection Completed?	Y/N
Crop(s)		Senior Management Sign Off:-	
Extreme Weather Risks identified from site RA	Risk identified Yes/No	Controls in place & effective Yes/No	Details/Comments
1. Extreme Rainfall Event - Field/Crop Risk Assessment			
○ Any areas flooded by nearby bodies of water, e.g. rivers		MUST not be harvested	<i>(Areas clearly defined on field plans)</i>
○ Any areas subject to run-off from field containing livestock/Livestock units		MUST not be harvested	<i>(Areas clearly defined on field plans)</i>
○ Is there any standing water in the field because of heavy rainfall event?		<i>Crop submerged or partially submerged should be identified and not harvested</i>	<i>(Areas clearly defined on field plans)</i>
○ Excessive crop soil contamination present		<i>Level of soiling agreed with customer</i>	
○ Field conditions allow effective harvesting without soil contamination of crop and equipment			
2. Extreme Event - Irrigation Source			
○ Any contamination risks to irrigation water sources from event?			
○ Withholding period between last application and harvest applied (min 48 hrs)			
○ Physically inspection of water storage facilities where water levels are low following dry weather no risk identified.			
3. Extreme Event – Other Risks - Field/Crop Risk Assessment			
○ Excessive debris, vegetative or otherwise present in the crop following high winds			
○ <i>Other identified risks</i>			
○ <i>Other identified risks</i>			

Summary of risks and actions required:

Confirmation of Actions – key teams to confirm understanding of risk assessment and risk mitigation actions and confirm implementation where appropriate

<i>TEAM</i>	<i>Name</i>	<i>Signature</i>	<i>Date</i>
Technical			
Operation/Growing			
Harvest/Packing			

Appendix 2 Example Extreme Weather Events: Hazards & Common Control Failure Causes

Event	Organisms of Concern	Common Failure Causes
Flooding	Micro Pathogens	Run-off of water from intensive animal production/animal housing near to growing area.
		In-flood river floods cropped land causing human sewage contamination. Increased soil on the crop carried by flood water, leaving crop totally or partially submerged.
	Foreign bodies	Increased foreign bodies.
Drought	Micro Pathogens	During drought the dense canopy cover of spinach can cause growth of pathogens.
		Increased animal pressure due to dryness of unirrigated land.
		Increased irrigation events: low reservoirs and / or alternative sources required.
	Foreign Bodies	Increased insect (caterpillar) presence leading to more "frass"
Hot Weather	Micro pathogens	The heat creates better conditions for pathogen survival and multiplication in water.
		Irrigation reservoir levels are low leading to more turbidity and less UV penetration
		Integrity of chill chain is compromised during prolonged hot weather.
High Winds	Micro pathogens	Soil and dust blown onto crops over short or over long distances carrying pathogenic bacteria.
	Foreign Bodies	Wind-blown foreign bodies blow onto cropping areas prior to harvest
Heavy Rain	Micro pathogens	Increased soiling on crop due to soil splash.
		Heavy rain causes localised flooding – refer to flooding hazards (Section 1)

Appendix 3 Characteristics of Common Hazard Microorganisms

Microorganism	Primary Contamination source	Main vector	Onset of infection	Duration	Symptoms
Salmonella	Raw Meat, milk, egg, carriers, pets, rodents, terrapins, water, sewage	Contaminated high risk foods which requires no further preparation or treatment	6 to 72 hours more commonly 12 to 36 hours	1 to 7 days (may be longer)	Diarrhoea, vomiting, fever, abdominal pain, may lead to secondary infection such as blood poisoning.
E.coli O157	Sewage, water and raw meat, infected farm animals, unpasteurised milk or dairy products.	Contaminated cooked products. Unwashed salad items which have been sprayed with untreated sewage.	10 to 72 hours. Most commonly 12 to 24 hours.	May be as long as 8 days.	Abdominal pain, diarrhoea, vomiting. May lead to secondary infection and kidney failure.
Listeria monocytogenes	Widely distributed in the environment	Unpasteurised dairy products, meat pate, coleslaw, chicken, turkey, shellfish, unwashed vegetables	3 - 70 days	Varies.	Septicaemia, influenza like symptoms. Abortion in pregnant women. Meningitis
Viruses And gastroenteritis	Humans	Shellfish and other ready to eat foods	24 to 96 hours	1 to 2 or more days.	Diarrhoea, projectile vomiting, malaise, nausea and fatigue.
Cryptosporidium	Person to person spread. Infected Farm Animal. Contaminated water	Food washed in contaminated water	Usually 2 - 7 days. Can be up to 12 days.	Up to 2 - 3 weeks	Watery diarrhoea, abdominal pain fever nausea vomiting.
Shigella (Dysentery)	Person to person spread, particularly in nurseries or households.	Contaminated food or water	1 - 7 days	4 - 7 days average	Fever and watery diarrhoea. Abdominal pain, vomiting.