



**BUILDING RESPONSIBLE
GLOBAL VALUE CHAINS
FOR SUSTAINABLE
TROPICAL FRUITS**

**CLIMATE CHANGE ADAPTATION WORKING GROUP SESSION 1 –
CLIMATE RISKS AND IMPACTS ON PRODUCTION**

Summary report

13 October 2022, 16:30-17:30 CEST (UTC +2), on Zoom

Background

This first session of the Working Group on Climate Change Adaptation introduced participants to the preparation of the Technical Guide on Climate Change Adaptation for the avocado and pineapple sector that is being developed by FAO's [Responsible Fruits project](#).

The session outlined the purpose of the guide and the key role that companies, producers and associations can play in supporting the development of the guide. Through active participation in this and future working group sessions, participants will ensure the guide is relevant for the avocado and pineapple industries. The session began by highlighting the five main objectives of the guide and the scope of the guide. The session also aimed to validate a set of key climate risk factors identified from the literature as affecting tropical fruit production in general, and avocado and pineapple production specifically, as well as incorporating new risks identified by participants. The session took place online via Zoom on 13 October 2022, and was held in Spanish with participation from the avocado and pineapple value chains in Latin America and the Caribbean.

Session objectives

1. Introduce and discuss the main objectives of the Technical Guide on Climate Change Adaptation.
2. Identify and validate the climatic risks for the production of tropical fruits found in literature.
3. Identify key climate risks factors affecting avocado and pineapple production in the participants' countries.

Participation

Sixteen participants joined the event, representing companies, producers and producer organizations from Colombia, Costa Rica, Dominican Republic and Mexico.

Summary

The event agenda is presented in Annex 1. All presentation slides are available by sending a request to Responsible-Fruits@fao.org. FAO introduced this event and its context in the framework of the [project's activities](#) on climate change.

PART 1 What is the purpose of the Climate Change Adaptation Guide?

Valentina Pérez-Mardones, FAO

The five main objectives of the guide are:

1. Provide up-to-date information on recent and projected climate change effects in key avocado and pineapple producing and exporting countries.
2. Identify climate change risks and impacts on the production and trade of avocado and pineapple.

3. Identify adaptation practices and recommendations that may help to address these risks and minimise negative impacts
4. Share good practices adopted by companies to address climate-related production risks.
5. Identify gaps in information, research and technical solutions needed to strengthen the availability and adoption of adaptation practices.

To better understand the scope of the guide, the project framed what the guide will cover and what it will not. In summary:
What is the guide?

- It builds on existing research on the trends and impact of climate change and analyzes how these trends and risks impact production.
- It is based on research to identify adaptation recommendations proposed in scientific literature.
- It collects information on risks and adaptation practices from companies to share experiences and good practices.

What is not part of the guide?

- It will not validate information in the field, nor will it endorse any practice carried out by companies. It provides information for self-assessment only and will not lead to any form of certification or seal of approval for companies.

Part 2 - The risks of climate change for the production of tropical fruits

Juan Joan Mata Leon, FAO

Climate plays a key role in plant physiology, phenology, fruit quality and other characteristics, especially for perennial fruit crops. The impact of climate change on fruit crops is likely to be more detrimental than on annual field crops, as the adaptation capacity of shorter duration crops is greater than perennials. Developing new fruit crop varieties can take between 15 to 20 years, making it more difficult for these crops to compete with obstacles brought on by climate change. Table 1 summarizes some of the effects and potential impacts found in literature on the production of tropical fruits.

Table 1. General climate change effects and the potential impacts on the production of tropical fruits

Effects of climate change (general)	Potential impacts on the production of fruits
El Niño (droughts, floods, and higher temperatures)	<ul style="list-style-type: none"> • Increased transpiration • Delayed/early flowering • Disruption of pollinators
La Niña (higher precipitations and lower temperature)	<ul style="list-style-type: none"> • Delay in fruit development and crop harvest • Increased disease pressure reducing fruit productivity
Increased moisture	<ul style="list-style-type: none"> • Increase in pests and diseases • New pests/minor pests becoming major pests
Other extreme climatic events (hurricanes, hailstorms etc.)	<ul style="list-style-type: none"> • Fruit loss • Tree/plant damage • Infrastructure damage
Increased CO ₂	<ul style="list-style-type: none"> • Carbon dioxide is an essential element for photosynthesis • Greater potential for fruit set and fruit retention • Rise in temperature and a shift in rainfall pattern may cancel out the positive effects

Part 3 - Discussion

Juan Joan Mata Leon, FAO, and some participants

In this session, the discussion was facilitated to validate the impacts that were described in the literature and gain a better understanding of climate effects and risks for avocado and pineapple production. This section also enhanced the project team's understanding of what is happening in each specific country and region, and what are the risks of climate change and impacts on production.

Most of the participants agreed on the preliminary findings from the literature. They provided further details on the risks and impacts of climate change on the production of avocado and pineapple in their regions, as presented in Table 2.

Table 2.

Climate Change effect (Extreme weather conditions)	Country and Region	Potential impact on fruit production and productive areas
Hailstorms	Michoacán (México) Avocado	<ul style="list-style-type: none"> • Reduction on fruit quality (5-23% damage from hailstorms)
Strong winds (Hurricanes)	Michoacán (México) Avocado	<ul style="list-style-type: none"> • Flowers drop due to strong winds, reducing fruit set
Droughts/reduced precipitations	Michoacán (México) Jalisco (México) Avocado	<ul style="list-style-type: none"> • Due to increase in irrigation use, groundwater deposits have decreased • Reduction of pollinators and lower fruit set • Increase in soil erosion requiring more nutrition inputs
Increase in precipitation/flooding	Michoacán (México) Jalisco (México) & Costa Rica Avocado & Pineapple	<ul style="list-style-type: none"> • Due to floods and landslides, the productive area is slightly reduced • Increase in diseases (soil fungi) and new pests • Less natural flowers • Delay in fruit ripening
Temperature changes (increase and decrease)	Michoacán (México) Avocado	<ul style="list-style-type: none"> • Physiological changes in plants (reduction of volatile organic compounds) making plants more susceptible to pests and diseases reducing plants natural defenses
Temperature changes (increase and decrease)	Jalisco (México) & Colombia Avocado	<ul style="list-style-type: none"> • Increase in pests and diseases so more inputs are used to control them. Which causes more contamination due to excess use of chemicals • Reduced natural fauna (fewer natural predators for some animals; increasing plant damage because they are not naturally predated e.g., Gophers) • Biodiversity loss
Lower solar radiation	Costa Rica Pineapple	<ul style="list-style-type: none"> • Lower solar radiation and more humidity affects plant physiology e.g., stimulates early flowering

Part 4 - Wrap up and next steps

Valentina Pérez-Mardones, FAO

The Guide will cover research on climate change impacts and adaptation practices from eleven countries. These countries were selected based on their importance in global avocado and pineapple production and trade, and include Mexico, Peru, Chile, Colombia, South Africa, and Kenya for avocado; and Costa Rica, Ecuador, Ghana, the Philippines, and Thailand for pineapple. Inputs from other producing countries facing similar climate change impacts are welcome.

The next steps for the development of the guide were presented. It was explained that the next working group session will look at:

- Identifying adaptation practices and recommendations that can help address the risks identified during the working group's first meeting.
- Sharing good practices adopted by companies to address climate-related production risks.

Some tables will be shared via email to collect more specific data (from companies who wish to share this information) to help expand the details that may be presented in the guide.

The work plan (Table 3) for developing the guide, including how this work links with the project's ongoing work on resilience, was shared with the participants.

Table 3.

Timeline	Action
Oct-Nov 2022	Background research on climate change (CC) effects in producing countries to identify key risks to production and adaptation measures (ongoing). One-to-one interviews with companies on CC challenges, adaptation measures and resilience.
3 November 2022 to 24 November 2022	Companies invited to submit good practice examples of adaptation measures for review and inclusion in guide following format provided by RTF team (email). Deadline for submission of good practice examples to RTF team that address risk areas identified.
30 November 2022	Second Working Group Session – adaptation recommendations
Dec-Jan 2022	Write-up of draft chapters
Early Feb 2023	Sharing of draft guide with WG members for input (2 weeks for comments)
Mid-Feb 2023	Webinar to present draft guide key findings to all RTF project participants
March 2023	Final revisions to CCA guide
April-May 2023	Copy editing and publishing

FAO invited participants to the second working group session for the elaboration of the Technical Guide on climate change adaptation, which will take place on 30 November 2022.

As always, the project team welcomes suggestions or questions on the project's activities at any time. Please contact us at: Responsible-Fruits@fao.org

Annex 1

Working languages

The first group session was fully held in Spanish.

Agenda

Section Title	Facilitator
Welcome and introduction (5 min) <ul style="list-style-type: none"> • Purpose of the working group and expectations • The goal is to develop relevant guidance for the industry; Your input is needed to make it happen. 	Valentina Perez-Mardones, Outreach Specialist, Responsible Fruits Project
Part 1: Purpose of the Guide (5 min) <ul style="list-style-type: none"> • Seek agreement from the working group on the objectives of the Guide. • Clarify what the guideline is and is not. • Discussion (do we all agree?) 	Valentina Perez-Mardones
Part 2: Identification of climate risks for tropical fruit production - literature (10 min)	Juan Mata, Agronomist Responsible Tropical Fruits Project
Part 3: Discussion (30 min) Validation and identification of key climate risk factors affecting avocado and pineapple production in your countries. Discussion: <ul style="list-style-type: none"> • What climate risks are most relevant to avocado/pineapple production in your country and region? • What impact have they had on production in recent years? • Do you keep records of climate-related hazards and impacts? 	Juan Mata
Part 4. Next steps (5 min)	Valentina Perez-Mardones
Closing (5 min)	Juan Mata