



Food and Agriculture
Organization of the
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WORLD BANANA FORUM

*Working together for sustainable
banana production and trade*



The World Banana Forum Project and Soil contaminants of concern

INSOP Food Quality WG meeting
14 December 2023

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WBFS Secretariat



WORLD BANANA FORUM

- Creates the foundation for **inclusive and open collaboration** between stakeholders, for the benefit of all.
- **Promotes the exchange of information** and a better understanding of the banana value chain, through contributions from the members of the World Banana Forum, governments, academia and the banana industry.
- **Acts as a catalyst** for materials, findings and events that are relevant to the banana industry.
- **Facilitates the creation of partnerships** at the local and regional level by providing visibility to the work of industry stakeholders.
- **Reference point** for awareness raising and capacity building materials.



Retailers



Producer Organizations



Traders
(Importers/Exporters)



Civil Society/ NGOs



Research Centers/
Universities



Intergovernmental
Organizations



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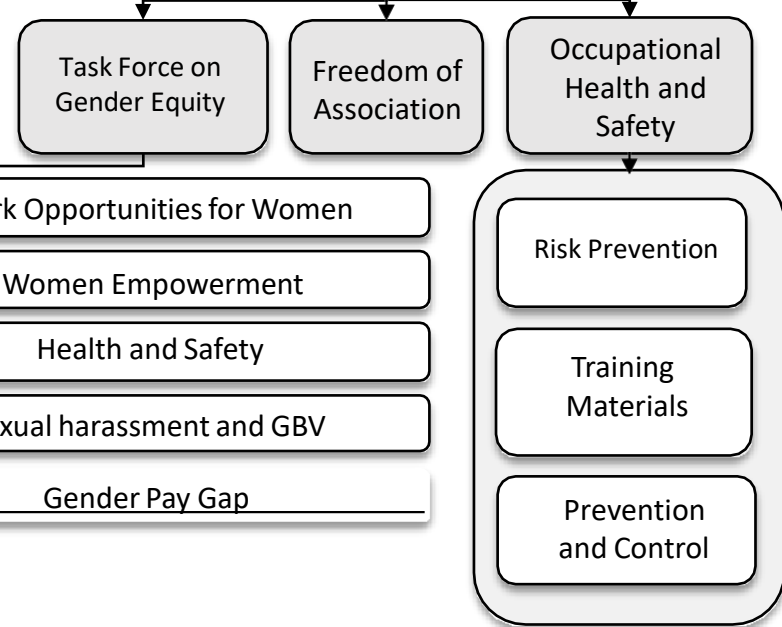
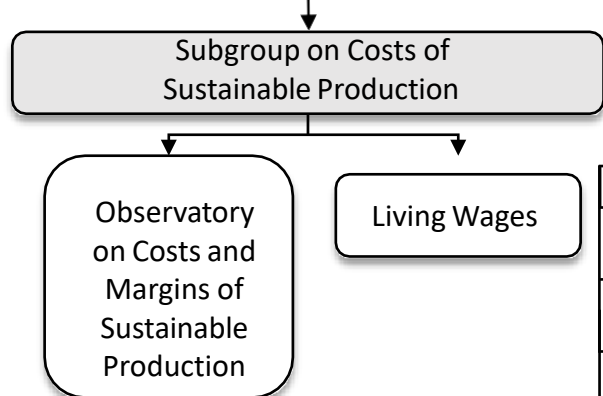
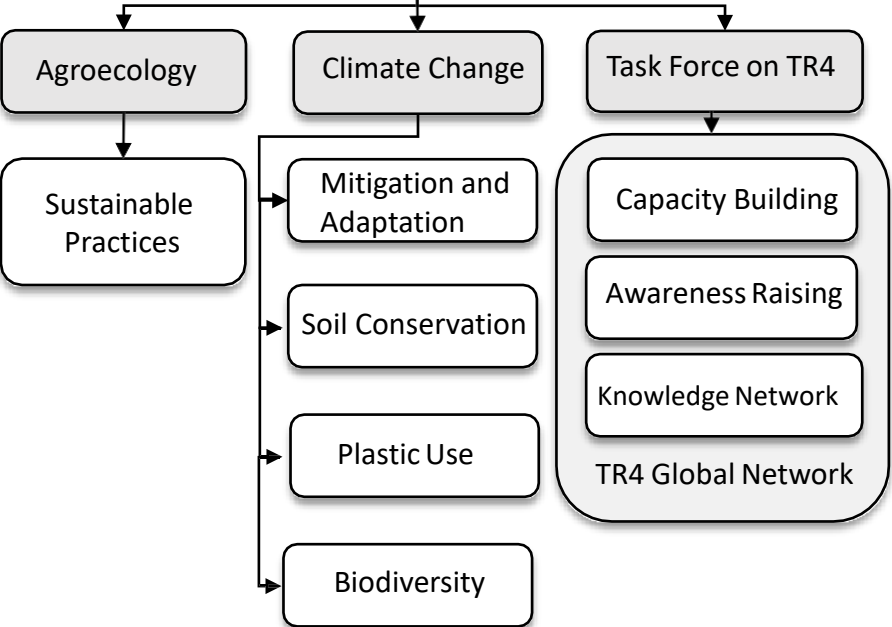


WORLD BANANA FORUM

WG01 | Sustainable Production Systems and Environmental Impact

WG02 | Distribution of Value

WG03 | Labour Rights





Soil contaminants of concern – Macro and Microplastics

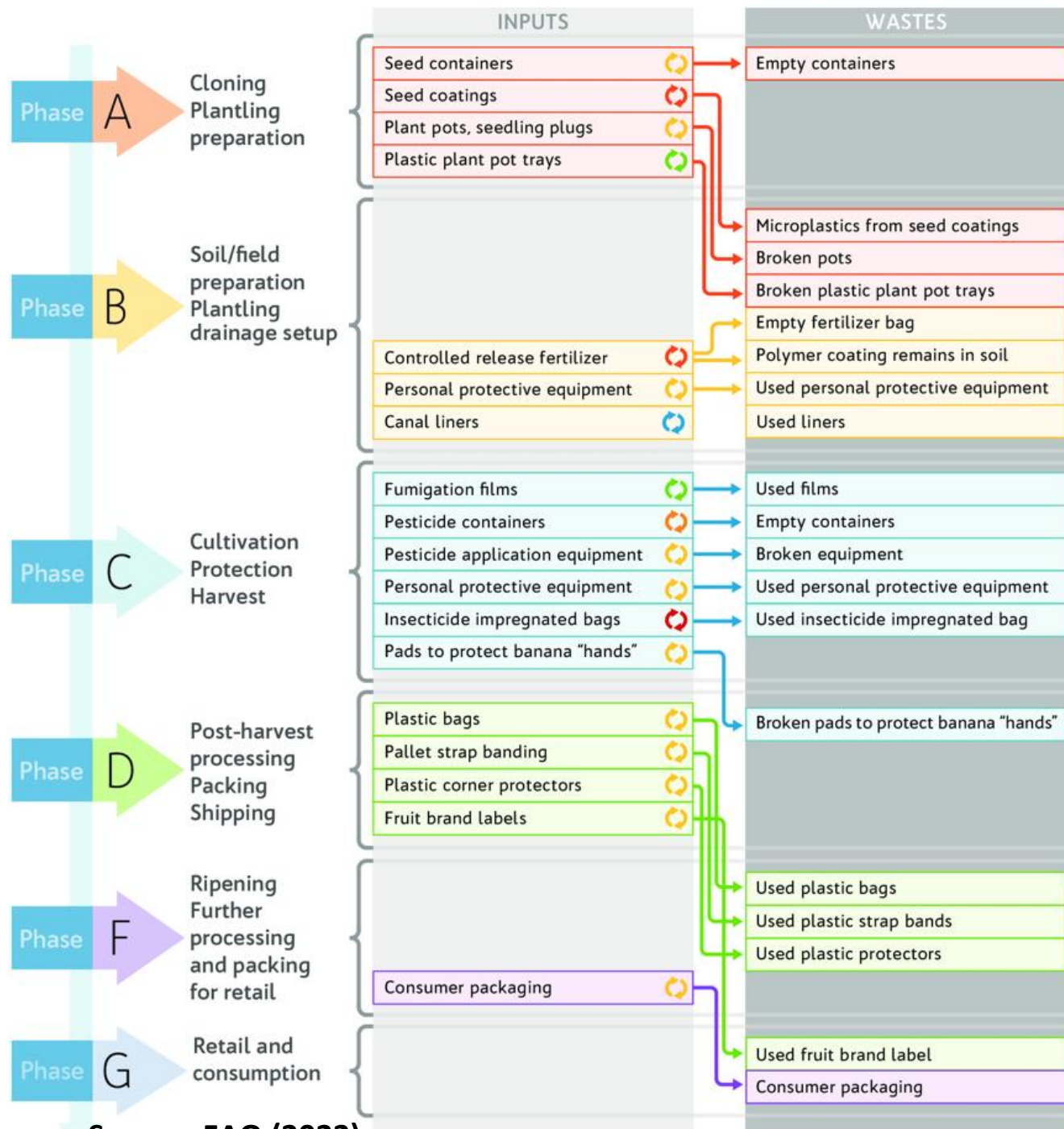
Banana production often relies on the utilization of plastics for various purposes.

Specific examples of plastic items commonly used by the banana industry include **single-use plastic bunch bags**, natural (for organic banana) or **impregnated with insecticides**, protective foam for banana hands on the bunch, and nylon ropes.





Types of Plastics used by the Banana Industry



Source: FAO (2022)



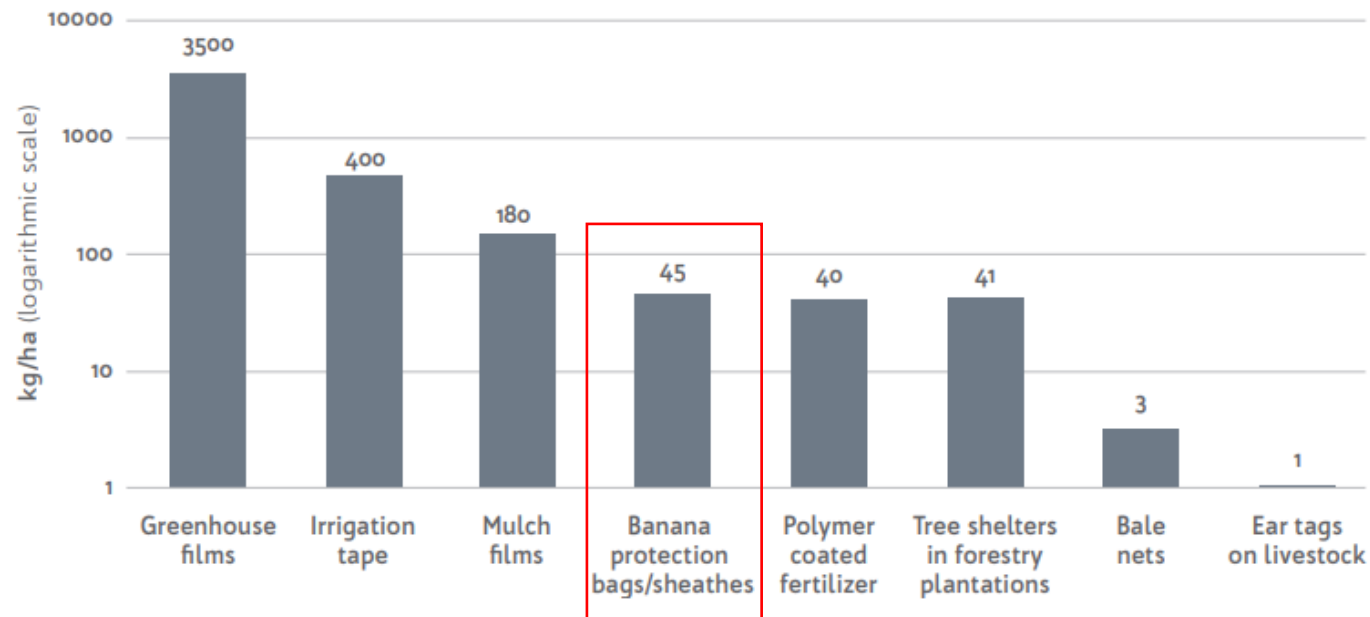
Insecticide Impregnated – Bunch Bags

- Bunch bags are typically made of polyethylene with different thicknesses (12 and 25 μm) and densities (HDPE, LDPE).
- Insecticide-impregnated bags are used in conventional banana production to protect fruit from insects.
- Different concentrations of insecticides (0.5%, 1%, and 2%) effectively control aphids, thrips, moths, and beetles.
- **Chlorpyrifos and bifenthrin** are commonly used insecticides; chlorpyrifos is banned by the EPA and EFSA due to residues.



Estimative of the Use of Plastics in Banana Farms – Bunch Bags

Figure 11: Estimated quantities of agricultural plastics used per hectare of land



Source: Adapted from Sanchez (2020) and FAO (2021).





Estimative of the Use of Plastics in Banana Farms

Table 4: Source of data for quantities of agricultural plastic products*

SECTOR	TYPE OF ITEM	QUANTITIES OR USE	LEAKAGE
Tropical agriculture (bananas)	Plastic bags	Data available for specific situations	No specific data available

*Colour coding: green= data available; amber= limited data available; red= no specific data available.

Source: FAO, 2021.

Active Ingredient	Characterization factor in Human Toxicity (cases /kg)	Characterization factor in Ecotoxicity (PaF.m ³ day/ kg)
Bifenthrin	1.28289 e-7	6 578 866.63
Chlorpyrifos	0.00000780919	7088.05

Source: UseTox





Soil contaminants of concern – Macro and Microplastics

- **Plastic residues, particularly from Insecticide Impregnated Bunch bags,** pose a significant concern for banana soils.
- The WBF Secretariat is actively engaging with stakeholders to obtain precise data regarding the extent of plastic residues affecting banana soils.
- **Chiquita's** latest Sustainability Report highlights their rejuvenation program, indicating the removal of approximately **1 ton of plastics per hectare from banana soils.**
- Despite these efforts, **the amount of micro and nano plastics in banana soils remains unknown,** emphasizing the need for further research.





Soil contaminants of concern – Potential Solutions

Reverse Logistic Programmes

3 Examples

- CropLife International's plan
- Adivalor (**France**)
- InPev – Clean Field Programme (**Brazil**)

Use of Plastic Alternatives During Banana Production

2 Examples

- Agrofair (**Perú**)
- Dominique Farms/Bananas Santa Marta (**Colombia**)

Reuse of Plastics Programmes

2 Examples

- Del Monte (**Global**)
- Fyffes (**Global**)

Recycling Programmes

4 Examples

- ECOBAN SRL (**Perú**)
- RECYPLAST (**Costa Rica**)
- Reybanpac (**Ecuador**)
- AUGURA (**Colombia**)

Biobased Alternatives to Plastics

2 Examples

- PATI (**Italy**)
- Smurfit Kappa (**Spain**)

Rejuvenation Programmes

1 Example

- Chiquita (**Global**)





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THANK YOU

To discover the benefits of becoming a member of the World Banana Forum and to take an active role towards a sustainable banana sector, please visit our website:

www.fao.org/world-banana-forum

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