



TR4 BIOSECURITY STANDARD

Principles and Criteria

ENGLISH VERSION 1.0_SEP23

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PRINCIPLES AND CRITERIA

Note: Related information is offered in the TR4 Biosecurity Standard guidelines. Please read them carefully before you start with the principles and criteria (P&Cs).

N°	Principles	Criteria	Level
TR4 01	UNDERSTANDING FOC TR4 (THE THREAT)		
TR4 01.01	Awareness of Foc TR4 and risk assessment plan		
TR4 01.01.01	The producer is aware of the magnitude of the problem, available solutions, and any local efforts to contain/avoid Foc TR4.	<p>The producer shall demonstrate awareness of and access (where applicable) to national or regional efforts and solutions for containing/avoiding Foc TR4.</p> <p>Applicable documents shall be available (e.g., agricultural ministry plan for the eradication and control of Foc TR4).</p>	Major Must
TR4 01.01.02	If national legislation demands specific preventive measures on the farm (e.g., if Foc TR4 has been categorized as a quarantine organism), these are being implemented on the farm.	Where national legislation specifies specific preventive measures, these specifications shall be available and shall be properly implemented on the farm. This includes (where available) quarantine measures for Foc TR4 in the respective country.	Major Must

N°	Principles	Criteria	Level
TR4 02	TRAINING AND AWARENESS-RAISING ACTIVITIES		
TR4 02.01	People present on the farm		
TR4 02.01.01	People present on the farm (including management, workers, and relatives present or living on the farm) are made aware of the risk that Foc TR4 poses to banana and plantain cultivation as well as the basic principles of prevention.	The producer, workers, and any other persons living or regularly present on the farm or who visit other banana and plantain farms shall be made aware of the threat that Foc TR4 poses to banana and plantain cultivation, as well as the basic principles of prevention and the risks that arise when preventive measures are not implemented.	Major Must
TR4 02.01.02	Workers are trained according to their activities to prevent the risk of introducing or spreading Foc TR4.	Workers shall be trained according to their activities to minimize the risk of introducing or spreading Foc TR4. Training shall be based on the TR4 Biosecurity Standard guidelines, section 4, “Basic principles in the prevention of the spread of Foc TR4” and shall be appropriate to the workers’ responsibilities. For example, field workers shall be trained in the prevention of mud/soil dispersal and contamination in packhouses. All workers shall be trained in on-farm biosecurity practices, handling contaminated water, etc. Training shall be refreshed periodically according to the workers’ activities.	Major Must
TR4 02.01.03	Training activities are recorded.	Records of training shall be kept and shall include: <ul style="list-style-type: none"> • Date of training and duration • Topic(s) covered • Names of trainer(s) or training provider(s) • Names of trainee(s) (e.g., attendance list(s)) • Evidence of attendance (e.g., trainee signature) 	Major Must

N°	Principles	Criteria	Level
TR4 03	FARM MANAGEMENT		
	<i>One of the key features of sustainable agricultural production is that it continually integrates site-specific knowledge and practical experience into management planning and practices for the future. The purpose of this section is to ensure that the fields, facilities, and other areas that form the structure of the farm are properly managed in order to prevent the introduction/spread of Foc TR4.</i>		
TR4 03.01	Risk assessment		
TR4 03.01.01	A documented risk assessment is completed for all registered sites.	<p>A written risk assessment, covering all sites and the biosecurity measures that have been adopted to prevent the introduction/spread of Foc TR4, shall be available. It shall be ready for the initial certification body (CB)/verification body (VB) audit, kept up to date, and reviewed whenever new sites enter into production and/or when risks for existing sites have changed, or at least annually, whichever is more frequent.</p> <p>The risk assessment may be based on national regulations for each country/region/area but shall be customized to the individual situation.</p> <p>The risk assessment shall take into account the potential risks on the site of the introduction/spread of Foc TR4 and at least, consider:</p> <ul style="list-style-type: none"> • Farm access (TR4 03.04) • Farm workers'/harvest teams'/packhouse workers': <ul style="list-style-type: none"> ○ Daily routes to work (across other fields?) ○ Main means of transport (walking/motor vehicles/bicycles/animals) • Visitors 	Major Must

N°	Principles	Criteria	Level
		<ul style="list-style-type: none"> • Members of the local community • Service providers (waste collection, energy, telephone, water/drainage, etc.) • Official agency workers (extension services, etc.) • Wild animals that could become vectors of contaminated soil (endogenous and migratory) • The movement of domestic animals/livestock, including farm dogs • Water sources, areas susceptible to flooding, and the potential risk of tropical storms and seasonal flooding • Machinery and tools (including ladders) <p>The risk assessment shall define risk areas for banana and plantain production and mark them accordingly.</p> <p>See the TR4 Biosecurity Standard guidelines, section 5, “Risk assessment guideline.”</p>	
TR4 03.01.02	A management plan that establishes strategies to minimize the risks identified in the risk assessment (TR4 03.01.01) is developed and implemented.	<p>A management plan shall address the risks identified in the risk assessment (TR4 03.01.01) and describe the hazard control procedures that demonstrate that the site in question implements the proposed biosecurity measures. The management plan shall:</p> <ul style="list-style-type: none"> • Be reviewed together with the risk assessment (annually or when changes occur) and address all biosecurity risks identified in the risk assessment • Describe the control measures implemented for the risks identified • Be appropriate to farm operations 	Major Must

N°	Principles	Criteria	Level
		<ul style="list-style-type: none"> • Support facility design, cleaning activities, pest control, and other activities to minimize biosecurity risks • Ensure that the layout and flow of operations is suitable for the intended purpose, consider applicable structures, and be designed to minimize biosecurity risks • Be effective and visibly implemented 	
TR4 03.01.03	The producer completes a minimum of one self-assessment annually.	<p>The self-assessment shall evaluate compliance, review implementation, and support the identification of improvement opportunities.</p> <p>A documented self-assessment for individual producers or for multisite producers with QMS and producer groups shall:</p> <ul style="list-style-type: none"> • Occur at least once a year before the certification body (CB)/verification body (VB) audit • Be completed by the producer, assigned worker, or consultant, and/or as part of a QMS • Include all applicable topics covered by the standard, even those addressed using subcontractors (including harvest and postharvest handling) • Assess all applicable sites and products <p>Self-assessments shall contain comments regarding the evidence observed for all not applicable and non-compliant Major Must principles and criteria.</p>	Major Must

N°	Principles	Criteria	Level
TR4 03.02	Farm area/location		
TR4 03.02.01	The producer has a system in place for identifying the sites and facilities used for production.	<p>The producer shall have a system to identify:</p> <ul style="list-style-type: none"> • Fields, orchards, vineyards, greenhouses, or other production areas • Water sources, storage and handling facilities, agrichemical storages, yards, buildings, and any features that may pose a workers' health and safety, food safety, biosecurity, or environmental risk <p>Identification may be implemented on a map or through the use of signs at each site.</p>	Major Must
TR4 03.03	People in transit in the proximity of and on the farm		
TR4 03.03.01	Appropriate measures are in place to inform people in the proximity of and/or on the farm premises about the biosecurity measures that are in place.	<p>Appropriate measures shall be in place on the boundaries of the farm. People using common transit routes on, or in the proximity of the farm shall be aware of the biosecurity measures. There shall be a system in place to ensure measures are being observed.</p> <p>Any local and national initiatives in the region shall be followed.</p>	Major Must
TR4 03.04	Farm access points		
	<i>Farm access points are defined locations where people enter or leave the farm. Within the farm, different biosecurity measures shall be implemented according to the activities performed there, i.e., farming or cropping areas require different measures than storage or packing areas. Each farm shall identify these areas in order to address the risk of contamination accordingly.</i>		
TR4 03.04.01	Farm access points are identified.	Farm access points shall be clearly identified on the farm map.	Major Must

N°	Principles	Criteria	Level
TR4 03.04.02	The management plan establishes and implements strategies to minimize the risks at farm access points.	<p>The management plan shall address the risks identified in the risk assessment and describe the biosecurity measures that have been implemented at each farm access point and in between each farm area.</p> <p>The management plan shall include necessary training schedules for the workers in charge of the farm access points, investment budgets for biosecurity installations (boot/foot baths, boot changing stations, fencing, gates at entrances, signs, etc.), and operational budgets for the maintenance of these installations (additional staffing, disinfectant, boots, etc.). Access protocols may be applied based on the type of farm area.</p> <p>The management plan shall aim to reduce unnecessary access to the farm.</p>	Major Must
TR4 03.04.03	Clear signs and protocols are in place to ensure an effective implementation of the biosecurity measures.	<p>Signs and protocols shall be in place to ensure that biosecurity measures are implemented at farm access points and in farm areas.</p> <p>This principle and the relevant criteria apply in addition to the visual identification by the certification body (CB)/verification body (VB) auditor and farm map.</p>	Major Must
TR4 03.04.04	Farm access points for people and vehicles are properly controlled.	<p>Farm access points shall have measures in place to prevent the introduction/spread of Foc TR4. This includes measures against the introduction/spread of Foc TR4 via contaminated soil, water, and/or plant materials.</p> <p>A register shall be kept of people, vehicles, and machinery entering the farm (see the TR4 Biosecurity Standard guidelines, section 6, “Biosecurity declaration template”).</p>	Major Must

N°	Principles	Criteria	Level
TR4 03.04.05	Farm access points are properly equipped according to the management plan and protocols are in place.	The necessary equipment (e.g., for disinfecting boots) and resources (e.g., workers) shall be available to enable the successful implementation of the management plan (TR4 03.04.02).	Major Must
TR4 03.04.06	Boot/Foot baths and disinfection stations are available for people at each farm access point.	<p>Each farm access point shall have effective boot/foot baths, appropriate to the risks identified in the risk assessment (TR4 03.01.01) and to the number of workers and the amount of machinery that access the farm.</p> <p>Disinfection protocols for people shall ensure the effective exclusion (prevention of further spreading) of Foc TR4. Water decontamination agents and workers' compliance shall be constantly monitored. Records shall be kept.</p>	Major Must
TR4 03.04.07	Vehicles, farm machinery, and railway lines are properly decontaminated before entering and/or exiting the farm/farm area.	<p>Any vehicle that needs to enter the farm shall be properly decontaminated from soil/dust/mud and plant material and then disinfected. Farm machinery changing farm areas shall also be decontaminated and disinfected before changing areas.</p> <p>Vehicle movement shall be kept to the minimum. Visitor parking areas should be defined and properly marked. If public roads pass nearby, extra measures shall be in place to prevent contamination from the road (green fences, ditches, etc.).</p> <p>Cleaning, decontamination, and disinfection protocols for vehicles, farm machinery, and railway lines shall ensure the effective exclusion (prevention of further spreading) of Foc TR4.</p>	Major Must

N°	Principles	Criteria	Level
		Water decontamination agents and workers' compliance shall be constantly monitored. Records shall be kept.	
TR4 03.05	Waste management		
TR4 03.05.01	Organic waste material produced in packhouses or other areas is deposited in a specific area of the farm that is protected from flooding and the escape of sewage effluent and where access by people and animals is restricted.	<p>Organic waste material (including leaves, bells, stems, bananas and plantains not suitable for sale) produced in packhouses or other areas shall be collected in a specific area of the farm. This area shall be designed to prevent drainage to the surrounding cultivation areas, water sources, or protected areas in order to minimize the environmental impact and possible spread of Foc TR4.</p> <p>The waste collection area shall be located in an accessible area where the entry of vehicles does not present a risk of spreading Foc TR4. The area shall not be susceptible to flooding, and wildlife access and other unauthorized access shall be restricted.</p> <p>If a vehicle or person needs to enter the waste collection area to collect waste, the protocols issued by local authorities and the requirements under TR4 03.04 shall be observed.</p> <p>If national legislation specifies waste management measures, they shall be applied appropriately at farm level.</p>	Major Must

N°	Principles	Criteria	Level
TR4 03.05.02	Bunch bags and strings are handled in a manner that prevents the spread of Foc TR4 and protects the environment.	Bunch bags and string waste shall be recycled and/or kept separate if the bags are treated with a plant protection product. A procedure shall be in place to safely dispose of these according to local regulations, without affecting the environment, and while preventing the spread of Foc TR4.	Major Must
TR4 03.06	Wildlife management and conservation plan		
TR4 03.06.01	Local fauna that may present a risk of spreading of Foc TR4 are monitored and covered by the risk management plan.	Local fauna (e.g., wild pigs, migratory birds) shall be identified and preventive measures shall be implemented (where feasible) in accordance with the findings, taking account of endangered wildlife species. Any animal that may move soil (or plant material) shall be considered.	Major Must
TR4 03.07	Tool, equipment, and machinery management		
TR4 03.07.01	Tools, vehicles, machinery, and railway lines are disinfected when necessary and according to the characteristics of the farm operations.	Tools (including ladders), vehicles, farm machinery, and railway lines shall be kept clean and in good condition and shall be disinfected when necessary and according to the characteristics of the farm operations. When tools, equipment, and/or farm machinery move between farm areas, they shall also be disinfected before being moved. Sanitization protocols for tools, vehicles, farm machinery, and railway lines shall ensure the effective exclusion (prevention of further spreading) of Foc TR4. Water decontamination agents and workers' compliance shall be constantly monitored. Records shall be kept.	Major Must

N°	Principles	Criteria	Level
TR4 03.08	Natural disaster management plan		
TR4 03.08.01	A natural disaster management plan (for cyclones, floods, storms, etc.) is in place to facilitate pre- and postdisaster management to protect the farm's biosecurity and to quickly restore any damaged infrastructure after the disaster.	<p>A natural disaster management plan shall be in place to protect the farm's biosecurity infrastructure (e.g., boot baths). It shall explain how to quickly restore any damaged infrastructure after a disaster and ensure that there are adequate resources (e.g., disinfectant supplies) to operate the facilities. It shall also consider how plant residues and fruit may come into contact with the soil and how this shall be managed. If flooding from adjacent banana and plantain plantations (that may be infected with Foc TR4) is identified as a potential risk (TR4 03.01.01), preventive measures such as drainage canals and dykes could be part of the predisaster management plan.</p> <p>The management plan may also include measures to restore crop plots using clean planting material.</p>	Major Must
TR4 04	AGRONOMIC MEASURES		
TR4 04.01	Planting material		
TR4 04.01.01	Planting material is sourced from approved laboratories or nationally approved, disease-free nurseries.	<p>Planting material and substrates shall be Foc TR4 free and shall be acquired from nationally approved in vitro laboratories and/or nurseries. Planting material shall be free of soil and/or substrates. Documentation shall be available to prove the source of the planting material, its properties, and the status of the supplying nursery.</p> <p>On-farm nurseries shall have hygiene measures in place that prevent the spread of Foc TR4 and comply with local and national laws.</p>	Major Must

N°	Principles	Criteria	Level
		Planting material imported from in vitro laboratories or nurseries in other countries shall be delivered with a certificate from the corresponding phytosanitary authorities and placed in quarantine before planting, according to national legislation.	
TR4 04.01.02	Planting material that is genetically modified (GM) or modified by gene editing complies with all applicable legislation in the country of production.	If banana or plantain crops are derived from genetic modification or gene editing, the producer shall comply with applicable legislation in the country of production. The producer shall keep records of the plots planted with GM material, and direct clients shall be informed of the genetically modified organism (GMO) status of the product.	Major Must
TR4 04.02	Soil management		
TR4 04.02.01	Soil management strategies are implemented to prevent the movement of soil.	Soil shall be managed strategically to prevent unnecessary movement, especially from/into farm areas. Prevention measures shall include, but are not limited to: <ul style="list-style-type: none"> • Reducing soil erosion • Preventing soil movement within the farm • Minimizing soil movement in water, air, etc. • Ensuring machinery and tools are soil free and disinfected prior to movement between different farm areas • Cleaning and disinfecting machinery prior to their movement between different farm areas • Fences to contain livestock and limit the movement of domestic animals (including farm dogs) 	Major Must

N°	Principles	Criteria	Level
TR4 04.02.02	The producer has taken into account soil biodiversity, the presence of beneficial microorganisms, and the nutritional contribution of fertilizer applications to soil management and root protection.	<p>Soil analysis and recognized standard values for nitrogen (N), phosphorus (P), and potassium (K) nutrients shall be used to determine the condition of the soil and its nutritional supply to the plants.</p> <p>The influence of soil biodiversity and the presence of beneficial microorganisms (e.g., <i>Trichoderma</i>, mycorrhiza), nutrients, and soil pH on the spread of Foc TR4 is known and shall be considered as part of suppression/containment measures (see the TR4 Biosecurity Standard guidelines, section 4, “Basic principles in the prevention of the spread of Foc TR4”).</p>	Major Must
TR4 04.02.03	Crop rotation for annual crops is implemented, where feasible.	<p>When rotations of annual crops to improve soil structure and minimize soil-borne pests and diseases are carried out, this shall be verifiable from planting dates or crop or field records. Crop rotation with plants that cannot act as a host for Foc TR4 shall be used to reduce Foc TR4 population in the soil.</p> <p>Rotation records from previous years shall be available (see the TR4 Biosecurity Standard guidelines, section 4, “Basic principles in the prevention of the spread of Foc TR4”).</p>	Major Must
TR4 04.03	Water management		
TR4 04.03.01	The risk assessment covers the presence of Foc TR4 in all water sources used on the farm and in nearby bodies of water.	<p>The risk assessment for the presence of Foc TR4 shall include all water sources used on the farm and those bodies of water that might unintentionally enter the farm (through the flooding of rivers, drainage, ditches, etc.).</p> <p>The risk assessment shall include irrigation water sources and equipment (irrigation channels for gravity irrigation, pumps,</p>	Major Must

N°	Principles	Criteria	Level
		<p>sprinklers, drip tape, and equipment), water sources for the packhouses, and wash-down facilities.</p> <p>The water section of the risk assessment may be used to address neighboring producers that are supplied from the same source, have similar practices, or use the same irrigation and drainage system. A form covering the potential risks may be developed and filled out by each producer during the certification body (CB)/verification body (VB) farm audit.</p>	
TR4 04.03.02	A water management plan is implemented.	<p>The water management plan shall aim to provide Foc TR4-free water. If necessary and/or if required by national or local legislation, water testing shall be performed.</p> <p>Any water used on disposal sites (e.g., in washing pits) shall be disposed of in an appropriate manner to prevent the further spread of Foc TR4 and/or negative environmental effects. Wastewater (either contaminated water or water containing decontamination agents) shall be treated accordingly before final disposal and in accordance with local legislation.</p> <p>Natural bodies of water on the farm shall be properly managed to prevent the introduction/spread of Foc TR4.</p>	Major Must

N°	Principles	Criteria	Level
TR4 04.03.03	Agricultural runoff from the farm and neighboring properties is managed.	The producer shall use soil erosion management practices (including grassed interrows, contouring, sediment traps, and/or wetlands) to minimize the movement of soil and water from their property towards adjacent properties, roads, and/or watercourses. Likewise, all runoff from neighboring properties shall be intercepted and managed using drainage and sediment traps to redirect the flow of water away from the planting area.	Major Must
TR4 04.04	Monitoring and identification of affected plants		
TR4 04.04.01	An Foc TR4 monitoring plan is implemented.	The farm shall be monitored for the presence of Foc TR4 by capable workers who can provide evidence of their expertise. The monitoring frequency shall be appropriate to the regional/farm risk.	Major Must
TR4 04.04.02	An identification protocol for affected plants has been developed and is implemented by the workers.	Farm workers shall be aware of the identification protocol and the measures specified in it and shall demonstrate competence during the certification body (CB)/verification body (VB) farm audit.	Major Must
TR4 04.04.03	An Foc TR4 suppression plan is in place.	An Foc TR4 suppression plan shall be in place (national or local legislation shall be complied with at all times). The plan shall include all the measures necessary to minimize the movement of Foc TR4 and to suppress it. The Foc TR4 suppression plan shall, at least, include protocols for the following: <ul style="list-style-type: none"> • Foc TR4 location monitoring on the farm (GIS coordinates of the affected area) • Measures to minimize soil disturbance 	Major Must

N°	Principles	Criteria	Level
		<ul style="list-style-type: none"> • Sample-taking specifications • Identifying and cordoning off (isolation) of affected areas (e.g., establishing a safety perimeter) • Evaluating other viable banana varieties (e.g., varieties that are less susceptible, such as somaclonal varieties) and resistance inductors on healthy plants (where feasible) • Foc TR4 suppression measures (crop rotation, intercropping strategies, agroforestry, promotion of healthy soils and soil biodiversity, etc.) • Stopping the harvesting and (re)planting of infected plants • A communication strategy involving relevant stakeholders • Records of the above measures <p>The plan for further action shall include, at least, detailed procedures that facilitate:</p> <ul style="list-style-type: none"> • The positive identification of Foc TR4 • Destruction measures • A communication strategy involving all relevant stakeholders 	
TR4 05	FOC TR4 SUPPRESSION (N/A IF NO FOC TR4 ON FARM)		
TR4 05.01	The Foc TR4 suppression plan is implemented.	<p>The Foc TR4 suppression plan (TR4 04.04.03) shall be implemented in a timely and efficient manner.</p> <p>Producer groups may present a general Foc TR4 suppression plan, but it shall be implemented at producer group member level and the plan shall be concretized with the particular data</p>	Major Must

N°	Principles	Criteria	Level
		of each farm, e.g., location, areas, and special production factors.	
TR4 05.02	Soil and water movement are controlled as far as possible.	The Foc TR4 suppression plan shall include physical barriers, e.g., ditches, roads, channels in order to fulfill its purpose.	Major Must
TR4 05.03	Foc TR4 suppression strategies are coordinated with local authorities (regional efforts).	Foc TR4 suppression strategies shall be developed under the guidance of local phytosanitary authorities and aim to minimize the spread of Foc TR4. Records of the strategy and efforts shall be available (see the TR4 Biosecurity Standard guidelines, section 7, “Communication with national/regional plant protection organizations” for further guidance).	Major Must
TR4 05.04	Foc TR4 presence is reported as required.	The producer shall report the presence of Foc TR4 in accordance with national legislation or regional guidelines (see the TR4 Biosecurity Standard guidelines, section 7, “Communication with national/regional plant protection organizations” for further guidance).	Major Must

VERSION/EDITION UPDATE REGISTER

New document	Replaced document	Date of publication	Description of modifications
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If you want to receive more information on the modifications in this document, please contact the GLOBALG.A.P. Secretariat: standard_support@globalgap.org.

When the changes do not introduce new requirements to the standard, the version will remain “5.0” and an edition update shall be indicated with “5.0-x”. When the changes do affect compliance with the standard, the version name will change to “5.x”. A new version e.g.: v6.0, v7., etc., will always affect the accreditation of the standard.

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