Table 1. Schematic description of the guidelines for the detection of the unintentional presence of transgenes in genebank accessions.

Operation	Definition and description of activity	Risk factors	Risk management according to level of risk
Collection	In-country contributions. Obtaining germplasm from collecting missions (farmer's fields, markets) or *in situ* wild habitats.	1. Existence and level of enforcement of country biosafety regulations 2. Existence of GM technologies, GM germplasm and varieties in crop or related species (globally, in-country and regionally) 3. If GM varieties exist, their prevalence in the country and region of collection 4. Markets in-country or regionally where GM varieties are available 5. Presence of GM in-country or regionally in grain, food, or seed provided as aid 6. Distance to the nearest GM field 7. Presence of "bridging species" (volunteer and feral GM plants) and viable descendents of past GM crops 8. Evidence of geneflow occurrence 9. Possibility of escape from nearby research and development facilities, field testing sites and biosafety facilities 10. Proximity to ports of entry or transportation arteries 11. Degree of informal seed exchange ("pocket breeding", among farmers) 12. Relevance of existing GM varieties to farmers 13. Availability of adequate screening methodologies	<u>If low:</u> no testing <u>If medium:</u> testing to the predetermined level of probability <u>If high:</u> a. no collection b. testing of all samples collected, with the option of reducing the sample size If test result is positive: see section "Testing"

Acquisition/ Introduction	Obtaining germplasm from *ex situ* sources (centers, genebanks, individuals scientists, private growers, seed companies, etc)	1. Ability of the provider to assess, manage and document the unintentional presence of transgenes 2. Availability of information from the provider on germplasm origin and testing for transgenes 3. Availability of adequate screening methodologies	As above except for action in case of positives: Append germplasm Acquisition agreements, or Need to draft an imported seed production declaration.
Regeneration	a. Multiplication in the field or in a confined environment (greenhouse, screenhouse, laboratory) b. Delivery back to genebank	1. Mixtures due to improper isolation from GM sources 2. Inadequate isolation of perennial field collections 3. Volunteer plants 4. Vandalism	1. Application of "best practices": preventive measures in the field or confined environment to avoid gene flow, volunteers and mixtures into the collection (including borders, barriers, pollination practices, and monitoring of experiment stations for unintentional GM presence) 2. Proper practices during delivery to the genebank (packing and transportation) 3. Maintenance of regeneration history 4. Maintenance of GMO identity if necessary
Characterization	Observation and registration of highly heritable physical, morphological and molecular characteristics	1. If characterization occurs during regeneration and the harvested propagule is returned to the bank, as for regeneration 2. If separate experimentation is carried out and the harvested propagule is returned to the bank, as for regeneration 3. For laboratory characterization, as for other laboratory procedures	As for regeneration

Conservation	a. Seed: physical cleaning, sorting, drying, packaging and storing b. Vegetative: cryo-conservation, in-vitro, field	1. Mixtures due to lack of physical separation during harvest and cleaning 2. Existing materials that have been conserved and regenerated without recognizing the possible presence of transgenes (i.e. without recognizing source) 3. Volunteer plants 4. Vandalism 5. Materials collected and introduced after the occurrence of the first transformation without following the procedures described in these guidelines 6. Materials collected before the occurrence of the first transformation but regenerated afterwards 7. Improper isolation from GM sources during conservation of *ex situ* field collections	1. Laboratory testing to provide quality assurance (including periodic blind testing) 2. Preventive measures to avoid gene flow, volunteers and mixtures into the collection 3. Use (distribution, regeneration, scientific purposes) of backup materials subjected to the procedures described in these guidelines before utilization
Testing (health, viability, GM)	a. Detection of relevant pathogens, pests, and parasitic and noxious weeds b. Testing of the extent to which a propagule is alive (germination, tetrazolium and other laboratory testing) c. Testing of the extent to which a propagule can establish a plant	If the material tested re-enters the bank: 1. Mixtures due to lack of physical separation 2. Level of quality standards for testing and procedures (errors in labeling samples etc) Destructive testing reduces risk.	1. Separation in time or space of GM and non-GM research facilities 2. Control and increase of quality standards In laboratory testing procedures
Curative treatment	Application of chemical, biological, and physical methods to eliminate pathogens and pests	As for testing Accuracy in maintenance and cleaning of the equipment used for treatment	As for testing
Evaluation	Assessment of performance	As for characterization	
Distribution	Extracting germplasm from the bank, re-packaging if required, shipment, and compliance with institutional, national and international requirements (phytosanitary, biosafety/GMO, customs, export, IP; WTO, FAO, Cartegena, ITPGRFA)	1. If re-packing is necessary and the residual material re-enters the bank: a. Mislabeling b. Mixtures 2. Undetected transgenes due to errors in the sampling procedures adopted for testing before conservation 3. Inadequate collation of up-to-date information	1. Quality management of bank procedures 2. Updated information for compliance

Documentation	The organized collection of records that describe genebank structure, purpose, operation, maintenance, and data requirements. It includes: a. Acquisition documentation (including MTA, IP) b. Accession maintenance documentation (including initial sample size) c. GMO status (including identification of specific constructs, if present) d. Data sharing, including confidential data management, relevant public data and organization in forms visible to others (field book, database, web site,	Registration of wrong information	Quality management of bank procedures