

## GUIDING PRINCIPLES FOR THE DEVELOPMENT OF FUTURE HARVEST CENTRES' POLICIES TO ADDRESS THE POSSIBILITY OF UNINTENTIONAL PRESENCE OF TRANSGENES IN EX SITU COLLECTIONS

### *Background*

1. In the management of germplasm, the Future Harvest Centres embrace the following overarching principles: ethics, transparency, accountability, risk analysis and quality control.
2. The purpose of genebanks is to collect, conserve and make genetic resources available. The maintenance of the genetic identity of the accessions is an overriding objective of genebanks. The Centres take proactive steps that aim to prevent the unintentional introgression of exotic genes, including transgenes, not already present into samples conserved in their genebanks. Proper germplasm management procedures and genebank practices and protocols to ensure quality and integrity of accessions must be followed.
3. Transgenes and conventional genes are subject to the same underlying biological processes of mutation, geneflow, introgression, recombination and natural selection. Therefore, best practices for preventing introgression of conventional genes provide an appropriate basis for preventing introgression of transgenes.
4. Germplasm management procedures and practices should conform to best practices. Best practices and appropriate technologies vary with the crop, influenced, for example, by its breeding system, pollination system, and whether it is an annual/perennial. These best practices include procedures and practices that aim to prevent the transfer of genes from sources other than the accession in question. Routes for transfer by other sources include admixture of seeds and pollination.
5. It is recognized that available technical means do not permit the complete exclusion of unintentional presence of exotic genes, including transgenes, in genebank accessions. It is also recognized that available testing techniques do not provide an absolute guarantee, without testing every single seed or plant that any given accession is free of transgenes. However, best practices in genebanks will achieve a high degree of statistical probability that an accession does not include unintentionally present transgenes.

### *Guiding Principles*

6. The Centres should take proactive steps to determine the risk of the unintentional presence of exotic genes, including transgenes, in their *ex situ* collections.
7. The Centres should develop, document and communicate crop-specific guidelines for best gene bank management practices. These guidelines should include crop-specific risk analysis procedures (i.e., risk assessment, management, and communication) addressing critical control points.
8. The major genebank operations that need to be evaluated are collecting, acquisition, regeneration, characterization, delivery, conservation, testing health and viability, evaluation and documentation (genebanks are most open to unintentional introduction of transgenes at the collecting and acquisition

stage, because germplasm may have been exposed to gene flow outside the control of the genebank).

The guidelines must aim to minimize gene flow at these stages, for transgenes and for conventional genes.

9. As part of their risk analysis, when collecting or acquiring new accessions by other means, Centres should consider the following regarding testing:
  - a. whether transgenic events (commercial and research) in the relevant taxa are likely to be present in the area of collecting or acquisition;
  - b. the distance between the collecting site and areas where transgenic events (commercial and research) are situated; or
  - c. whether germplasm providers can provide adequate documentation of their germplasm management practices with respect to the material in question.
10. With respect to existing accessions, Centres' testing procedures should be guided by the following criteria:
  - a. No testing would be required when:
    - i. there are no transgenic events (commercial or research) in the relevant taxa at the present time;
    - ii. there were no transgenic events (commercial or research) in the relevant taxa at the time of acquisition (e.g., maize prior to 1996);
    - iii. it is determined that, unless there are other factors, there is no presence of transgenic events within a distance that would allow for introgression; or
    - iv. there are transgenic events (commercial or research) present, however, proper management practices have been followed and documented in the management of the accession,
  - b. Tests should be undertaken when there are transgenic events (commercial or research) present and good management practices cannot be demonstrated.
  - c. Once an accession has been determined to either not require testing or has tested negative, the Centre will follow best practice regeneration and maintenance procedures to maintain the genetic integrity, as for all accessions.
11. If and when transgenes are detected in an accession, in following best practice management procedures, the Centres will take appropriate steps to prevent introgression of those transgenes to other accessions.
12. The Centres should establish and maintain a database on the global status of GM research and development for the crops within their collections in order to facilitate risk analysis. The database should be posted on a publicly accessible website.
13. The Centre should bear the costs of the procedures, including tests when necessary, set out above. Requests for additional assurances above those established by the Centre should be met through additional funds on a case-by-case basis from outside sources.
14. Upon request by the recipients of materials, the Centre will provide information describing procedures and tests that the Centre has followed for the accession concerned.

15. All data resulting from any testing should be properly documented and made publicly available as soon as it is considered scientifically reliable (e.g., by posting on the Centre's web site). All procedures and supporting information should be presented at the same time. The Centre will also inform the relevant authority of the country of collecting or acquisition of the material in question when transgenes are found; the Centre will also inform the relevant authority of the country in which the Centre is located.