

# CROP-SPECIFIC FIELD GENE BANK STANDARDS

Agreed by the *Prunus* Working Group

January 2016

Notes:

The “FAO Field genebank standards” listed in the first column correspond to Chapter 5, pp. 65-113 in: FAO. 2014. Genebank Standards for Plant Genetic Resources for Food and Agriculture. Rev. ed. Rome. ([www.fao.org/docrep/019/i3704e/i3704e.pdf](http://www.fao.org/docrep/019/i3704e/i3704e.pdf))

For genebank standards, see the document developed by the *Prunus* Working Group, [Prunus-specific standards \(PGS\) for genebank management](#)

FAO Field genebank standards	Crop-specific field genebank standards for <i>Prunus</i> spp.: Almond ( <i>P. dulcis</i> ), Apricot ( <i>P. armeniaca</i> ), European Plum ( <i>P. domestica</i> ), Japanese Plum ( <i>P. salicina</i> ), Peach ( <i>P. persica</i> ), Sweet Cherry ( <i>P. avium</i> ) and Sour Cherry ( <i>P. cerasus</i> )  <i>No comment in this column means agreement with FAO standard</i>	Remarks (reasons for deviating from FAO standards)
<b>5.1 Standards for choice of location of the field genebank</b>		
5.1.1 The agro-ecological conditions (climate, elevation, soil, drainage) of the field genebank site should be as similar as possible to the environment where the collected plant materials were normally grown or collected.		
5.1.2 The site of the field genebank should be located so as to minimize risks from natural and manmade disasters and hazards such as pests, diseases, animal damage, floods, droughts, fires, snow and freeze damage, volcanoes, hails, thefts or vandals.		

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5.1.3 For those species that are used to produce seeds for distribution, the site of the field genebank should be located so as, to minimize risks of geneflow and contamination from crops or wild populations of the same species to maintain genetic integrity.		The issue of maintaining genetic integrity, minimizing risks of geneflow and contamination from crops or wild populations does not apply to clonally propagated <i>Prunus</i> accessions.
5.1.4 The site of the field genebank should have a secured land tenure and should be large enough to allow for future expansion of the collection.		
5.1.5 The site of the field genebank should be easily accessible to staff and supplies deliveries and have easy access to water, and adequate facilities for propagation and quarantine.		
<b>5.2 Standards for acquisition of germplasm</b>		
5.2.1 All germplasm accessions added to the genebank should be legally acquired, with relevant technical documentation.		
5.2.2 All material should be accompanied by at least a minimum of associated data as detailed in the FAO/Biodiversity multi-crop passport descriptors.		
5.2.3 Propagating material should be collected from healthy growing plants whenever possible, and at an adequate maturity stage to be suitable for propagation.		
5.2.4 The period between collecting, shipping and processing and then transferring to the field genebank should be as short as possible to prevent loss and deterioration of the material.		

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5.2.5 Samples acquired from other countries or regions within the country should pass through the relevant quarantine process and meet the associated requirements before being incorporated into the field collection.		
<b>5.3 Standards for establishment of field collections</b>		
5.3.1 A sufficient number of plants should be maintained to capture the genetic diversity within the accession and to ensure the safety of the accession.		<i>Prunus</i> accessions are generally clones of an original variety, in other words they are identical to that original variety and capture the whole genetic diversity of that variety. At least 2 trees per accession should be planted and maintained in order to ensure the safety of the accession.
5.3.2 A field genebank should have a clear map showing the exact location of each accession in the plot.		

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5.3.3 The appropriate cultivation practices should be followed taking into account micro-environment, planting time, rootstock, watering regime, pest, disease and weed control.		Trees in the collection should be spaced widely enough to allow regular growth, vegetative renewal and cropping. The growth habit and the adult size of the tree need to be considered when calculating the spacing among the trees, taking into account the <i>Prunus</i> species, the rootstock used and the soil characteristics as well as the climatic situation.
<b>5.4 Standards for field management</b>		
5.4.1 Plants and soil should be regularly monitored for pests and diseases.		Trees in the collection should be inspected periodically during the year, to monitor the presence of most common pests and diseases of the specific area and <i>Prunus</i> species. The timing of inspections should match the moment of highest visibility of symptoms for the specific crop species. Phytosanitary treatments should be applied whenever needed.

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5.4.2 Appropriate cultivation practices such as fertilization, irrigation, pruning, trellising, rootstock and weeding should be performed to ensure satisfactory plant growth.		In the vegetative and productive phases, trees should be managed according to the standard cultivation practice appropriate for the specific pedo-climatic area and <i>Prunus</i> species; Pruning, thinning, watering, weeding, fertilizing should be applied whenever needed. A good standard practice should ensure not only tree survival but also reliable characterization and enough material available for distribution.
5.4.3 The genetic identity of each accession should be monitored by ensuring proper isolation of accessions wherever appropriate, avoiding inter-growth of accessions, proper labelling and field maps and periodic assessment of identity using morphological or molecular techniques.		The genetic identity of <i>Prunus</i> accessions should be assessed using morphological and/or molecular techniques. Proper plot management, labelling and field maps are required to avoid mistakes
<b>5.5 Standards for regeneration and propagation</b>		
5.5.1 Each accession in the field collection should be regenerated when the vigour and/or plant numbers have declined to critical levels in order to bring them to original levels and ensure the diversity and genetic integrity is maintained.		

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5.5.2 True-to-type healthy plant material should be used for propagation.		For perennial, clonally propagated species like <i>Prunus</i> spp., it is very difficult to ensure complete absence of viruses. Although in principle cleaning of propagation material from viruses is highly desirable, securing the material should have priority over phytosanitation in order not to lose the germplasm. Results of virus indexing need to be assessed against the impact a given virus might have on germplasm management and distribution. As detection methods steadily improve and more and more viruses are detected it is important to concentrate on the really harmful viruses.
5.5.3 Information regarding plant regeneration cycles and procedures including the date, authenticity of accessions, labels and location maps should be properly documented and included in the genebank information system.		
<b>5.6 Standards for characterization</b>		
5.6.1 All accessions should be characterized.		

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5.6.2 For each accession, a representative number of plants should be used for characterization.		
5.6.3 Accessions should be characterized morphologically using internationally used descriptor lists where available. Molecular tools are also important to confirm accession identity and trueness to type.		
5.6.4 Characterization is based on recording formats as provided in internationally used descriptors.		
<b>5.7 Standards for evaluation</b>		
5.7.1 Evaluation data on field genebank accessions should be obtained for traits of interest and in accordance with internationally used descriptor lists where available.		
5.7.2 The methods/protocols, formats and measurements for evaluation should be properly documented with citations. Data storage standards should be used to guide data collection.		

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5.7.3 Evaluation trials should be replicated (in time and location) as appropriate and based on a sound statistical design.		Evaluation records should be replicated on each tree composing the varietal plot for 2-3 years of regular bearing. Replicating such trials over different locations is generally outside the financial reach of genebanks.  Years with severe spring frost or hail episodes significantly reducing flower and/or fruit load should not be taken into consideration for evaluation purposes
<b>5.8 Standards for documentation</b>		
5.8.1 Passport data for all accessions should be documented using the FAO/Bioversity multi-crop passport descriptors. In addition, accession information should also include inventory, map and plot location, regeneration, characterization, evaluation, orders, distribution data and user feedback.		
5.8.2 Field management processes and cultural practices should be recorded and documented.		
5.8.3 Data from 5.8.1. and 5.8.2 should be stored and changes updated in an appropriate database system and international data standards adopted.		



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<b>5.9 Standards for distribution</b>		
5.9.1 All germplasm should be distributed in compliance with national laws and relevant international treaties and conventions		
5.9.2 All samples should be accompanied by all relevant documents required by the donor and the recipient country.		
5.9.3 Associated information should accompany any germplasm being distributed. The minimum information should include an itemized list, with accession identification, number and/or weights of samples, and key passport data.		
<b>5.10 Standards for security and safety duplication</b>		
5.10.1 A risk management strategy should be implemented and updated as required that addresses physical and biological risks identified in standards.		
5.10.2 A genebank should follow the local Occupational Safety and Health (OSH) requirements and protocols.		
5.10.3 A genebank should employ the requisite staff to fulfil all routine responsibilities to ensure that the genebank can acquire, conserve and distribute germplasm according to the standards.		

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5.10.4 Every field genebank accession should be safety duplicated at least in one more site and/or backed up by an alternative conservation method/strategy such as <i>in vitro</i> or cryopreservation where possible.		<p><i>Prunus</i> accessions should be maintained at a minimum of two distinct conservation sites in two different places, whenever possible at a significant distance from each other. These two sites could be managed by the same genebank, or preferably by two different genebanks (whenever possible in two different countries and continents).</p> <p>Given the high susceptibility of <i>Prunus</i> spp. to virus infections, infected pollen or aphids being common vectors, <i>Prunus</i> accessions that are included in the European Collections and flagged in EURISCO as AEGIS Accessions should be maintained under screenhouse, <i>in vitro</i> or cryopreservation even in areas with low risk pressure of viruses.</p>