6th Scientific Meeting for Landraces and Indigenous Varieties

The Thessaloniki Declaration

We Save Landraces – We Use Landraces

31 May-1 June 2022

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Preamble

At the beginning of the third millennium, humanity continues to face a range of fundamental problems that threaten to deepen the impacts of climatic change, poverty, hunger, and the loss of biodiversity. As a core problem, the degradation of agricultural biodiversity is increasing with serious and intensified implications for the availability, access, and use of landraces, which include indigenous varieties, native varieties, traditional varieties, local varieties, autochthonous varieties, folk varieties, heirloom varieties, local cultivars, and farmers' varieties.[1] As resources that have always been so crucial to food production, scientific research, plant breeding, crop innovation and environmental sustainability, landraces form an important basis for the realization of the Sustainable Development Goals of the United Nations.

Being concerned about the continuous neglect of landraces by modern and industrial agricultural, seed and intellectual property laws and policies, during the Sixth Scientific Meeting of Landraces and Indigenous Varieties [2] the Thessaloniki Declaration was adopted. As a global call to conserve and sustainably use landraces and to protect the interests of custodian farmers, peasants, indigenous communities and people all over the world, this Declaration represents the views, concerns and voices of the participants of the meeting and various like-minded individuals and institutions, including peasants' organizations, farmers' associations, indigenous peoples' organizations, scientists, academics, developmental practitioners, and governmental and non-governmental organizations from regions all over the world.

Left: Charred einkorn grains (*Triticum monococcum* L.) from Dikili Tash, 4300 BC (Photo: from Valamoti, Fyntikoglou, Symponis 2022)
Right: Grains of a free-threshing wheat concentration from Dion, Macedonia, northern Greece, 4th Century AD (Photo: Valamoti, Fyntikoglou, Symponis 2022)

[1]Adhikari 2019
[2]http://www.minagric.gr/index.php/el/events-gr/epistimonikes-synantiseis-gia-tis-topikes-kai-gigeneis-poikilies/2-uncategorised/13268-6h-epist-syn-poik-150722

Acknowledging that

Annual and perennial crop species emerged gradually with the onset of agriculture starting in the early Holocene.[3]

The identification, careful selection, and domestication of wild plant species by early farmers created the basis for the origin of agriculture and the first landraces.

Starting from the evolution of agriculture to now, farmers have always been interacting and experimenting with biological resources, shaping the selection, breeding and development of landraces for crop innovation, food security, biological diversity conservation, environmental sustainability, and climate change adaptation.

In addition to food, landraces provide animal feed and other materials (e.g. clothing, shelter, dying and ornamentation materials).

Farmers, especially small-scale farmers, peasants, and Indigenous peoples, cultivate and innovate a diverse range of landraces that adapt to local growing conditions with several farmer-preferred traits and features, including better agronomic performance, high culinary quality, and locally important socio-economic[4] and cultural values.[5]

Women farmers play a pivotal role in selecting, developing, and safeguarding landraces in their fields and home gardens.

The conservation, sustainable use, and development of landraces are the basis for the realization of the goals of farmers' rights.

Left: '*Naara*' an early millet (*Pennisetum glaucum* (L.) R. Br.) landrace which is widely cultivated in the northern parts of Ghana (Photo: D. A. Kotey)
Right: Farmer-saved seeds of Bambara groundnut (*Vigna subterranea* (L.) Verdcourt) showing the variation in seed coat colour (Photo: D. A. Kotey)

[3]Based on Lombardo et al. 2020
[4]Karanikolas et al. 2017
[5]Commission on Genetic Resources Food and Agriculture of FAO 2015

To protect farmers' rights, including the rights of peasants and Indigenous peoples, there is a dire need to conserve, sustainably use, and develop landraces, and at the same time, to prevent misappropriation of landraces through effective global, national, local, and Indigenous protocols and laws (e.g., protocols and laws governing intellectual property rights, and the access and use of crops, seeds, and traditional knowledge).[6]

Farmers, including peasants and Indigenous peoples all over the world, have the right to save, use, exchange and sell their farm-saved seeds, to maintain, control, protect and develop their own crops, seeds, and traditional knowledge,[7] and to realize the goals of food and seed sovereignty.[8]

"Farmers' varieties/landraces have multiple roles to play in ensuring food security, as a source of food and livelihoods, and by providing farmers with more options that can enhance their income generation and development".[9]

Vineyard (*Vitis vinifera* L.) with stony soil and traditional grapevine varieties in Karpathos Island, Greece (Photo: K. Biniari)

[6]Jefferson and Adhikari 2019

[7]United Nations 2019

[8]In accordance with Article 28 of the United Nations 2019 Declaration

[9]Commission on Genetic Resources, Food and Agriculture of FAO 2015

Affirming that

Landraces and farmers play a pivotal role in feeding humankind, especially in harsh environments.

Landraces frequently present adaptive traits to various abiotic stresses, such as water deficiency, salinity, and low chemical nutrient input, mainly because of their cultivation and growth in various climatic conditions and under specific cultivation practices for many centuries.[10]

Landraces are frequently cultivated in all world regions, especially in marginal areas and under organic and low chemical nutrient input systems contributing to the income of farmers who often work in areas where conventional agriculture cannot be carried out easily[11] and where cultivars[12] may not be suitable.[13]

Left: 'PokhreliJethobudho' (rice – *Oryza sativa* L.), which Nepali farmers developed through a Participatory Plant Breeding Programme for legal recognition and commercialisation (Photo: K. Adhikari) Right: Maize landraces that farmers improved in China for increased productivity and commercial benefits (Photo: K. Adhikari)

[10]Pinheiro de Carvalho et al. 2003; Pinheiro de Carvalho et al. 2004; Ganança et al. 2007; Ganança et al. 2015; Ganança et al. 2018; Gouveia et al. 2020
[11]Raggi et al. 2021
[12]Cultivated varieties: Improved scientifically bred varieties. When the same term is referred to traditional grapevine varieties this means one population of individuals that came from asexual propagation from more than one mother plant (pers. communication K. Biniari, AUA, 2022)
[13]Ceccarelli, 1994; Bencze et al. 2020

The dynamic management of landraces—for example, through their use in different production systems, environments, and farmers' seed selection and exchange systems—is the basis for rich and continuously evolving genetic variability and diversity.[14]

Farmers have been creating a rich diversity in human food resources through the selection and development of landraces and the use of a vast reservoir of associated traditional knowledge.

Farmers save, use, and maintain landraces in their fields for a variety of reasons, such as culture, food preference, avoidance of risk from improved cultivars, local adaptation, and market opportunities.[15]

Landraces are not only an irreplaceable source of valuable genes, but also bear a range of cultural, historic, environmental, socio-economic, and agricultural values.

Landraces are closely connected to the journeys of people, trade, migration, conquests, and colonization.

Landraces are strongly linked to languages, dialects, customs, ethnic values, traditional cultures[16] folksongs, religious practices, and other rituals, including Indigenous and local culinary traditions and recipes.[17]

Farmers, including peasants and Indigenous peoples, have the right to own, maintain, control, protect and develop their cultural heritage, traditional knowledge, and traditional cultural expressions, including their own crops, seeds, and genetic resources.[18]

The cultivation of landraces is expressed as part of intangible cultural heritage. The intangible cultural heritage of the landraces of Cyprus[19]and Greece[20] has already been registered in the National Catalogues of UNESCO.

Legislation, such as the European Directives[21] for the registration of landraces imposes the DUS (Distinctness, Uniformity, Stability) system which is inadequate for

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[14]Commission on Genetic Resources Food and Agriculture of FAO 2015
[15]Commission on Genetic Resources Food and Agriculture of FAO 2019
[16]Wang et al. 2016
[17]FAO 2019
[18]United Nations 2007, Article 31
[19]Knowledge and practices which are related with the cultivation and utilization and seeds' products of local traditional varieties of Cyprus "http://www.unesco.org.cy/Programmes-Gnoseis_kai_praktikes_poy_schetizontai_me_ti_kalliergeia_tis_chriseis_kai_ta_paragoga_ton_sporon_ton_ntopion_paradosiakon_poikilion_tis_;Kyproy,GR-PROGRAMMES-04-02-03-42,GR" (in Greek).
[20]https://www2.aua.gr/en/news-events/nea/agricultural-university-athens-has-undertaken-initiative-inscription-element-local

the registration of landraces with respect to the scale of Uniformity and Stability. Furthermore, this system does not cover all cultivated species[22] and consequently, not all known crop genetic resources.

The New Organic Regulation 2018/848/EU has opened the possibility to market seeds of "Organic Heterogeneous Material" (OHM), that is broadly defined as material with a high level of genetic diversity for which DUS criteria are not applicable.

The marketing of OHM (including landraces, dynamic populations, composite cross populations) within the organic sector may foster the on-site conservation and commercial use of landraces.[23]

Genebanks have been conserving *ex situ* thousands of landrace accessions as well as encouraging their on-farm conservation by highlighting their economic value.

The UN Sustainable Development Goal 2 of Zero Hunger requires all nations to address Target 2.5 by 2020, requesting them to "maintain the genetic diversity of seeds, cultivated plants […] and their related wild species".[24] This provides an opportunity to protect landraces all over the world and to "promote access to and the fair and equitable sharing of benefits arising from the utilization of genetic resources and associated traditional knowledge, as internationally agreed".[25]

Agrodiversity Fair in the State of Oaxaca, Mexico, 2018 (Photo: Rafael Ortega-Paczka)

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[21]EC Directives 2008/62 and 2009/145
[22]e.g., *Triticum dicoccon* Schrank*, Solanum aethiopicum* (Hammer et al. 2019)
[23]https://www.liveseed.eu/wp-content/uploads/2020/01/LIVESEED_D2.8_heterogeneous_material_toolbox.pdf
[24]The UN Sustainable Development Goal 2 of Zero Hunger
[25]The UN Sustainable Development Goal 2 of Zero Hunger

Alarmed by

The rapid extinction of landraces triggered by urban encroachment on farmland, unsustainable use of biological resources, the promotion of scientifically developed uniform commercial varieties, arising from new plant breeding techniques, including genetically modified, the introduction of alien invasive species, the absence of, or inappropriate legislation and policy, and climate and other environmental changes.[26]

The continuing genetic erosion of landraces[27,28] expressed by a dramatic reduction of variability, through the loss of landrace species[29], the loss of landraces within the same species, and the loss of populations within a landrace.

The reality that human diets worldwide are based mostly on nine crops[30] and three of them, rice, maize, and wheat, provide 60 percent of the world's food energy intake, whereas landraces remain an important source of dietary diversity.

The paradox that landraces, the outcome of centuries of crop selection and breeding by farmers, face the threat of extinction, mainly because of a formal legal system which only favors the registration and marketing of cultivars. Because this system does not consider the peculiarities of landraces for formal registration and commercialization, there is an unbalanced recognition of the cultivars that meet the criteria of DUS and intellectual property protection. This situation is one of the key reasons for the marginalization of landraces and their products.

Intra- and inter-specific diversity of Peruvian potatoes (Photo: Sebastian Davis)

[26]Commission on Genetic Resources Food and Agriculture of FAO 2015
[27]FAO 2001
[28]Khoury et al. 2021
[29]Such as *Vicia ervilia, Lathyrus cicera* (Hammer et al. 2019)
[30]Furman et al. 2022

The violence and war events that displace people from their own land and endanger landraces and crop production.

Urge

The UN and FAO, international and national organizations, governments, farmers' associations, institutions, and any person who is concerned with the survival of landraces as an integral active element of human civilization.

To Protect

The rights of farmers, including peasants and Indigenous peoples to obtain ownership and control over the access, use, distribution, and marketing of landraces.[31]

The rights of farmers, peasants, and Indigenous peoples to access their landraces from genebanks and other institutions without any legal or other restrictions, such as the Standard Material Transfer Agreement (SMTA).

Traditional fruit tree varieties from Parma (Italy). Left apples (*Malus domestica* Borkh), top: Dall' Olio, bottom: Musona. Right pears *Pyrus communis* L.), top: Nobile, bottom: S. Giovanni (Photos: Mauro Carboni and Enzo Melegari)

[31]FAO 2001

The rights of farmers, peasants, and Indigenous peoples to receive protection from biopiracy[32] of landraces and misappropriation of associated traditional knowledge.[33]

The rights of farmers, peasants, and Indigenous peoples to obtain protection and compensation from genetic contamination, especially in the regions of crop origin.

The rights of farmers, peasants, and Indigenous peoples to create develop and maintain the diversity and quality of diets that originate from their landraces.[34]

The rights of farmers, peasants, and Indigenous peoples to traditional knowledge associated with landraces, including the knowledge that is preserved in local and Indigenous languages.

Presentation of figs (*Ficus carica* L.) in the drying area distinguishing between the different varieties based on colour and size of the fig fruit in Morocco (Photo: Hmimsa Younes)

[32]Correa 1999
[33]FAO 2001
[34]Jones 2017

To Support

A separate and alternative legislative system that adequately considers the genetic structure and historical, socio-cultural, and economic role of landraces, including the denomination of landraces according to the language and tradition of farmers, peasants, and Indigenous peoples.

Research for better conservation, exploration, collection, characterization, evaluation, and documentation of landraces.

The creation of local and national catalogues for landraces, as for example, the catalogues of native potatoes in Peru.[35,36]

The improvement, use and marketing of landraces that adapt to local growing conditions, including conditions that have been rapidly changing due to climate change and other environmental factors.[37]

The development of adequate *in situ* and *ex situ* conservation measures for landraces, [38] including promotional and supportive measures for community seedbanks.

Cultivating maize *(Zea mays* L.) in Huexoculco, Valley of Mexico (Photo: Rafael Ortega-Paczka)

[35]Catálogo de variedades de papa nativa del sureste del departamento de Junin - Peru.
[36]Catálogo de variedades de papas nativas de Huancavelica - Peru.
[37]Commission on Genetic Resources Food and Agriculture of FAO, p. 47.
[38]Commission on Genetic Resources Food and Agriculture of FAO, p. 48

To implement “community-level initiatives for supporting the saving and exchange of seeds and protecting ecosystems in ways that enhance availability of and access to genetic resources, strengthens local food systems … in order to deliver safe and nutritious foods”.[39]

The development of policies that support on-farm conservation and development of landraces, for example, through the creation of community seed banks and farmer-led participatory plant breeding programmes.[40]

Predictable, transparent, and effective farmer-centered trade, intellectual property and marketing systems that allow for the continuous growth and circulation of landraces.

The development of educational programmes for landraces and their multiple values for humanity, including campaigns that raise public awareness about landraces.

The reorientation of markets and consumers to the advantages of landraces, including products that are sourced from landraces for better quality and low chemical nutrient inputs.

Pea landrace (*Pisum sativum* L.) harvesting in Schinousa Island, Greece (Photo: Ricos Thanopoulos)

[39]World Health Organization 2020
[40]Paudyal et al. 2012

Adequate and cost-effective phytosanitary measures for the marketing of landrace reproductive material, including scientific and financial support measures for farmers and small agricultural enterprises to address seed phytosanitary requirements.

The promotion of landraces through the use of underutilized, neglected[41] and orphan crops.

The development of ways to ensure the long-term sustainability of small farmers[42], who usually retain a rich reservoir of agricultural biodiversity and traditional knowledge, through the protection of land ownership and capacity building so that they can continue to take care of their landraces and traditional knowledge.

The creation of conditions that will enable landraces not only to continue being cultivated by existing communities but also to expand their adaptation and use by new communities.

Landraces need us for their survival, and we need them for our survival.

Harvesting, preparation and drying of spelled bunches of einkorn (*Triticum monococcum* L.) for seed separation and traditional use of straw in Morocco (Photo: Elfatehi Salama)

[41]Padulosi et al. 2013

[42]While the meaning of small farmer is different from country to country, they conserve, use, and develop most of the world's agricultural biodiversity.

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Back cover photograph. The future: Mexican children with Jala maize (Photo: Rafael Ortega-Paczka)

LANDRACES AND INDIGENOUS VARIETIES: USE THEM OR LOSE THEM