

Annex 3

Overview of the Main Provisions of the International Treaty on Plant Genetic Resources for Food and Agriculture

<i>Part</i>	<i>Main provisions</i>
Part I – Introduction	<ul style="list-style-type: none">• Article 1 sets out the objectives of the Treaty: the conservation and sustainable use of <i>Plant Genetic Resources for Food and Agriculture</i> (PGRFA) and the fair and equitable sharing of benefits arising from their use, in harmony with the Convention on Biological Diversity (CBD), for sustainable agriculture and food security.• Article 2 defines a number of key terms, such as 'genetic material', 'variety' and 'centre of origin'.• Article 3 expresses that the scope of the Treaty encompasses all PGRFA.
Part II – General Provisions on Conservation and Sustainable Use of PGRFA	<ul style="list-style-type: none">• Article 4 requires Contracting Parties to ensure that national laws, regulations and procedures be in conformity with their obligations under the Treaty.• Article 5 calls for the promotion of an integrated approach to the exploration, conservation and sustainable use of PGRFA, and establishes a list of the main tasks related to the conservation, exploration, collection, characterization, evaluation and documentation of PGRFA to be complied with by Contracting Parties.• Article 6 requires Contracting Parties to develop appropriate policy and legal measures that promote the sustainable use of PGRFA, providing a non-exhaustive list of possible measures.• Articles 7 and 8 deal with national commitments, international cooperation and technical assistance. Contracting Parties are invited to provide assistance to each other for the conservation and sustainable use of PGRFA, especially to developing countries.

Part III – Farmers’ Rights

- Article 9 recognizes the contribution that local and indigenous communities and farmers have made to the conservation and development of PGRFA, and encourages Contracting Parties to take measures to promote Farmers’ Rights. These include the protection and promotion of (i) traditional knowledge relevant to PGRFA; (ii) the right to equitably participate in the sharing of benefits arising from the utilization of PGRFA; and (iii) the right to participate in making decisions at the national level with respect to the conservation and sustainable use of PGRFA. The responsibility for realizing Farmers’ Rights rest with national governments. This article does not limit the right for farmers to save, use, exchange and sell farm-saved seed, subject to national law.

Part IV – The Multilateral System of Access and Benefit-sharing (MLS)

- Article 10 establishes the *Multilateral System of Access and Benefit-sharing* (the MLS). Contracting Parties, in the exercise of their sovereign rights over their own PGRFA, agree to grant each other facilitated access to the PGRFA they decide to include in the MLS, and to share, in a fair and equitable way, the benefits arising from the use of these resources.
- Article 11 defines the coverage of the MLS. 64 food and forage crops, selected according to the criteria of interdependence among countries and their importance for food security, form part of the MLS. The list of crops is set out in *Annex I* to the Treaty.
- The MLS also includes PGRFA listed in *Annex I* that are held by the CGIAR Centres or by other entities that have voluntarily included them in the MLS.
- Under Article 12, the Contracting Parties agree to take the necessary measures to provide each other, as well as legal and natural persons under their jurisdiction, facilitated access to their PGRFA through the MLS.
- Article 12 further states that recipients of material from the MLS must not claim Intellectual Property or other rights that limit the facilitated access to PGRFA in the form received from the MLS, including genetic parts or components thereof. Facilitated access is to be provided through the Standard Material Transfer Agreement (SMTA) of the Treaty.
- Article 13 sets out the agreed terms for benefit-sharing under the MLS. Recognizing that facilitated access to PGRFA itself constitutes a major benefit of the MLS, it enumerates other mechanisms for benefit-sharing, including the information exchange, technology transfer, capacity building, and the sharing of commercial benefits.

Part V – Supporting Components

- These are activities outside the institutional structure of the Treaty that provide essential support to the achievement of its objectives. They include promoting the effective implementation of the rolling Global Plan of Action (Article 14), the encouragement of international plant genetic resources networks (Article 16), and the development of a global information system on PGRFA, including a periodic assessment of the state of the world's PGRFA (Article 17).
- Article 15 deals with *ex-situ* collections of PGRFA held by the CGIAR Centres and other international institutions. The Treaty calls on the CGIAR Centres to sign agreements with the Governing Body to bring their collections under the Treaty. PGRFA listed in *Annex I* that are held by the CGIAR Centres are to be made available as part of the MLS.

Part VI – Financial Provisions

- In Article 18, Parties agree to implement a *Funding Strategy* (FS) to enhance the availability, transparency, efficiency and effectiveness of the provision of financial resources for the implementation of the Treaty. It includes the financial benefits arising from the commercialization of PGRFA under the MLS, as well as funds made available through other international mechanisms, funds and bodies, and voluntary contributions from Contracting Parties, the private sector, NGOs and others.

Part VII – Institutional Provisions

- Article 19 establishes a Governing Body composed of all Contracting Parties. This Governing Body acts as the supreme body for the Treaty and provides policy direction and guidance for the implementation of the Treaty and, in particular, the MLS. All decisions of the Governing Body are to be taken by consensus, although it is empowered to agree by consensus on another method of decision making for all matters other than amendments to the Treaty and to its annexes. The Governing Body is expected to maintain regular communication with other international organizations, especially the Convention on Biological Diversity, to reinforce institutional cooperation on issues related to genetic resources.
- The Treaty also provides for the appointment of a Secretary of the Governing Body (Article 20).
- Article 21 requires the Governing Body to approve procedures and mechanisms to promote compliance with the Treaty.
- Settlement of disputes is covered by Article 22, which also provides for a third party to mediate, in the case Parties cannot reach an agreement by negotiation.

- Articles 23–35 deal with amendments, annexes, signature, ratification, acceptance or approval, accession to and entry into force of the Treaty, relations with others, and provisions for withdrawals from or termination of the Treaty.
- *Annex I* lists the crops covered under the MLS, while *Annex II* deals with arbitration and conciliation.

Annexes

This table comes from the Secretariat of the Treaty. It has been elaborated for illustrative purposes and it is not meant as a substitute for professional legal advice. For more information contact:

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Annex 4

Country Case-study: Brazil – Actions and Reactions to the International Treaty on Plant Genetic Resources for Food and Agriculture

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During the last millennia, farmers have domesticated plant wild varieties and through breeding and selection, made these plants viable for agriculture. The enormous development of global agriculture always relied on the work of farmers (see Chapter 13 on Farmers' Communities) and more recently on the breeding skills of modern breeders (see Chapter 15 on the plant breeders) and hence on the continuous supply of genetic variability found in germplasm samples. More and more, the genetic variability has proven fundamental to enable humankind to confront new threats such as climatic changes.

According to the Food and Agriculture Organization of the United Nations (FAO), since the beginning of the agricultural history humankind has already used more than 10,000 plant species for feeding. However, today's food is based on 150 species only, and only about 12 species provide more than 80 per cent of the food calories consumed by humans. In fact, only four species (corn, wheat, rice and potato) provide more than half of the required calories (FAO, 2008). Nevertheless, local crops add to the food consumed by millions every day and help to improve their nutrition.

As described in this annex, FAO member countries went to the extent of developing a specific Treaty – the International Treaty for Plant Genetic Resources for Food and Agriculture (ITPGRFA) to provide guidance and awareness about the need for conservation and permanent exchange and research with genetic resources for food and agriculture, not forgetting the need to share benefits and

financial help with those farmers that have been developing and conserving these resources for generations.

The central pillar of the Treaty is the multilateral system of access and benefit-sharing (MLS), designed to provide facilitated access with pre-established, mutually agreed benefit-sharing provisions, in complementary bases and for mutual benefit. The reasoning behind this is that breeding programmes developed around the world need a constant flow of genetic material from different parts of the globe, as no country is entirely self-sufficient when looking at genetic resources for food and agriculture. Interdependency is a real fact and therefore parties to the Treaty recognize that the MLS is an enormous benefit for breeders and farmers. It is, however, worth clarifying that access to genetic resources, to be found in in situ conditions, must be acquired according to national legislation or, in its absence, according to rules to be established by the Governing Body of the Treaty. In the case of Brazil, who ratified the Treaty in 2006, the rules for in situ acquisition of genetic material are established by Law (Provisional Measure n° 2.186-16, 2001), in harmony with the CBD.

Taking note that the present Annex I of the Treaty includes only 64 crops representing 52 genera and 29 forage genera (www.planttreaty.org), which were defined basically in accordance with criteria related to (i) their importance for the production of food at global level and (ii) interdependency among nations regarding their utilization for food and agriculture, questions remain for those who were not so involved with the negotiations of the agreement as to why some other important crops for food and agriculture were not included and which are the rules for accession to those genetic materials?

The definition of the crops that were listed as the Annex I crops, required very skillful negotiations by countries' representatives. During the many meetings, countries had the opportunity to add or extract any species from the list (Moore and Tymowski, 2005). For Brazil, the final listing requires that the country provides genetic resources of cassava (*Manihot esculenta*), local varieties of rice (*Oryza sativa*), beans (*Phaseolus vulgaris*), maize (*Zea mays*) and sweet potato (*Ipomoea batatas*), as well as wild species of *Oryza* (*O. alta*, *O. glumepatula*, *O. grandiglumis* and *O. latifolia*), *Solanum* (*S. calvescens*, *S. chacoense* and *S. commersonii*) and *Dioscorea* (*D. altissima*, *D. dodecaneura* and *D. trifida*).

Genetic material of peanuts (*Arachis* spp.), initially included in the list, was later removed, together with some other crops, such as soybean. Cassava is a crop that has an enormous social value as it is used in most countries as a staple component of the diet, mostly in poor regions of the globe. Brazil, as a supplier of this germplasm, can promote an important impact in Latin America, Asia and Africa. On the other side of the coin, thinking of the food security of the Brazilian people, it is important for the country to access genetic resources of rice, banana, potato, carrot, citrus, coconut, peas, beans, barley, cowpea, sunflower, apple, maize, sorghum, wheat, strawberry and some of the forage species.

The MLS is therefore a unique opportunity for Brazil to increase the genetic variability of its gene banks and use the material in breeding programmes, already well known for its excellent outputs in tropical agriculture. It is important that

at the same time, Brazil makes a continuous effort to guarantee the equitable sharing of benefits derived from the use of those materials, to promote further their conservation, especially among farmers. According to de Jonge and Korthals (2006), the benefit sharing will not solve the world's hunger problem but it would be a mechanism to stimulate development and the distribution of basic needs that can contribute to social justice.

It is true that some other crops of global importance for food and agriculture were not included in the Annex I for lack of consensus. As a matter of fact, several other crops, even though agreed by many regions, were not included in the list. With the decision of not including soybean, some regions (Africa, Asia, Latin America and the Caribbean) decided to step back and removed some species already included in the list. These crops, some of major importance for Brazil, are: garlic and onion, peanut, oil palm, tomato, sugar-cane, minor millets, olive, pear, vine, fruit trees (*Prunus*), melon and cucumber, pumpkins and squashes and flax (see the first part of Chapter 6 by Modesto Fernandez). New solutions must be found for the exchange of these genetic materials, using the same collaborative spirit of the Treaty, in bilateral agreements which will have to consider national legislations, case by case. With time and hopefully with the success of the implementation of the MLS, the Annex I list could be increased, especially to incorporate the list of crops mentioned above which are also considered of primary importance. However, that can only be done by the consensus of all parties present at the meetings of the Governing Body of the Treaty. This was one of the contributions of Brazil to the ruling of the Treaty, because it worried that the Treaty should not have such an ample scope as to jeopardize the CBD. By ensuring that decisions to change the Treaty or its Annexes cannot be taken unless consensus is reached, Brazil wanted to guarantee equal opportunity for every country to have a voice, and therefore a better chance for total transparency in the decisions of the Governing Body. Also, because the parties of the Treaty are, in their great majority, parties of the CBD, an adequate balance should be present in the exercise of consensus.

Regarding the practical implementation at national level, the scope of the Treaty vis a vis that of the CBD still causes some discussions among policy makers. Questions refer mostly to non-Annex I plant genetic resources. Parties to the CBD (mostly the same as to the Treaty, as said above) have been discussing the text of a new binding protocol on access to genetic resources, associated traditional knowledge and benefit sharing. Due to its specific characteristics and problems, serious discussions are taking place on whether the genetic resources of primary importance used for food and agriculture, not only plants, but also domestic animals, microorganisms and aquatic species should receive a treatment similar to that, given to Annex I crops of the ITPGRFA.

There are legal constraints that must be resolved because under the CBD scope, there must be a guarantee of fair and equitable sharing of benefits arising from the use of all genetic resources. The Treaty only provides rules on how to deal with the issue of benefit sharing for the Annex I crops. Therefore, innovative solutions will have to be found during the implementation phase of the newly approved Nagoya–Cali Protocol on Access and Benefit Sharing (CBD, 2010).

Although relatively slow, national implementation of the Treaty is moving ahead. Regarding exchange of germplasm and the use of the MLS, Brazil has good collections of germplasm obtained from several sources and which were internalized during the 1980s, and therefore the entrance into force of the Treaty and the opportunities presented by the MLS have not yet raised much interest of breeders and research institutions. It could also be because Brazil still does not have a good and rapid quarantine service and delays in the introduction of material are often discouraging. The removal of this bottleneck in two years (new laboratories are being built) will probably boost the germplasm exchange, hence the impact of the Treaty and its MLS. Another boost will come from the perception that new genetic material, from regions that already face climate extremes, will be required by breeders devoting attention to these new challenges for the tropical agriculture.

Nonetheless, a major effort should be developed by countries, including Brazil, for the realization of Farmers' Rights, with the development of specific national policies. Informal discussions which took place in 2009/2010 have shown that it will not be a simple task to implement such policies because of the many stakeholders involved and the different views and concerns expressed by each group of participants. Brazil will continue to make its best efforts to discuss and implement these rights.

A more positive impact of the ratification of the Treaty by Brazil has been the need to provide better information about the accessions to be included in the MLS. This new responsibility has prompted the Brazilian Agriculture Research Corporation (Embrapa), holder of most of the public gene banks, to review its passport data and improve the characterization reports. The process has been relatively slow but with the necessary political will, the first results should be available in 2011. The new information system will be qualified to link with the new Germplasm Accession Portal Genesys (www.genesys-pgr.org), jointly funded by the CGIAR, the Global Crop Diversity Trust and the Treaty's Secretariat, to be also launched in 2011.

During recent years, several activities have been carried out in Brazil by the Ministry of the Environment in partnership with Embrapa and the National Institute for Amazonian Research (INPA) to make a complete inventory of landraces and wild relatives of some of the main crops cultivated in Brazil. These efforts encompass crops listed as Annex I crops, as the case of cassava, maize and rice, and non-Annex I, as it was the case of cotton, peanut, peach palm and pumpkin and squashes. These inventories will continue to cover other crops and their related gene pool, especially peppers, pineapple, passion fruit, beans, sweet potato and cashew. Activities include: (i) the definition of local landraces and wild relatives of each crop; (ii) mapping their geographical distribution; (iii) in situ, ex situ and on-farm conservation status; and (iv) major needs for the maintenance of landraces and wild relatives of each crop.

Another major effort to implement the Treaty is being launched in Brazil by the Ministry of the Environment in partnership with Embrapa, Federal Universities and non-governmental organizations for the identification of native plant species of actual or potential economic value used at local or regional level, also

known as Plants for the Future. The main goal of this project was to prioritize potential species, including food species, and promote their sustainable use to: (i) identify new options for direct use by family farming; (ii) broaden the opportunities for industry investment on the development of new products; (iii) evaluate the degree of use of, and the existing gaps in, the scientific knowledge; (iv) increase food security and contribute to minimizing the vulnerability of the Brazilian food system; and (v) to develop partnerships towards the characterization of the nutritional value of these native plant species. Some of the activities developed on this initiative include: (i) inventory of native plant species, commercially sub-utilized, with emphasis on their potential for social, environmental and cultural benefits; (ii) survey of scientific literature to evaluate the state of technical and scientific knowledge regarding the species considered on the inventory; (iii) definition of priority species, taking into account the opening of markets for new products at local, regional, national and international levels; and (iv) integration of all different sectors as a challenge and as a way out for opening new markets to promote the utilization of local food species.

In parallel, with the support of Brazil's Foreign Affairs Ministry, Embrapa has been increasing its presence in Africa and other developing countries in Latin America in the last four to five years, through technology transfer and capacity-building projects in the agriculture sector. These include the transfer of improved genetic material of Annex I crops (mostly in the form of commercial varieties). Training includes field trials and the appropriate use of the necessary inputs for better production and yield. Therefore, Brazil has been implementing the Treaty with its actions abroad, as they relate to one of its major objectives: the sharing of benefits derived from research and the use of plant genetic resources.

A practical ongoing example is the programme called Africa-Brazil Agricultural Innovation Marketplace (www.africa-brazil.org). The Africa-Brazil Agricultural Innovation Marketplace aims to benefit smallholder producers, by enabling innovation through collaborative partnerships between Africa and Brazil and is supported by many partners such as the African national and sub-regional agricultural research and development organizations such as: the Forum for Agricultural Research in Africa (FARA), Embrapa, the United Kingdom Department for International Development (DfID), the International Fund for Agricultural Development (IFAD) and the the World Bank (WB). In 2010, 61 pre-proposals were found to be eligible and 20 of those were invited to be developed to full proposals which should be funded in 2011. All projects involve one Embrapa Research Center as national counterpart. African countries involved in this first call are: Madagascar, Uganda, Mozambique, South Africa, Kenya, Nigeria, Ethiopia, Togo, Tanzania, Burkina Faso and Ghana.

Conclusion

As seen in this short summary of the Treaty implications for Brazil, the easier part seems to have been its extensive negotiation. Now that some years have passed

since its ratification, stakeholders are beginning to take stock of the need for action and implementation, as the issue of food security is receiving new attention due to food crises (high international prices), global availability versus demand, and mostly because of a better awareness about the impact of climate changes on the planet.

National policies are being reviewed to include more attention to genetic resources conservation, sustainable use and benefit sharing, as many new incentives are being discussed to advance Brazil's knowledge of its agricultural biodiversity, its implications for environmental services and the sustainability of the agricultural systems. The discussions regarding the Brazilian Government decision in 2009 to help with the reduction in greenhouse gases to mitigate global warming and the need to develop research to help farmers to adapt to the changing climate, have brought the issue of genetic resources for food and agriculture to the scientific and political screens. 2011–2012 should be special years to prepare and implement incentive policies, in preparation for the Rio plus 20 Conference on Sustainable Development, which will again take place in Rio de Janeiro, Brazil, in 2012.

References

- CBD (2010) Tenth ordinary meeting of the Conference of the Parties at the Convention on Biological Diversity (UNEP/CBD.COP/10), available at www.cbd.int/decisions/cop/?m=cop-10
- FAO (2008) *The International Treaty on Plant Genetic Resources for Food and Agriculture: Equity and Food for All*, Food and Agriculture Organization of the United Nations, Rome, Italy
- De Jonge, B. and Korthals, M. (2006) 'Vicissitudes of benefit sharing of crop genetic resources: Downstream and upstream', *Developing World Bioethics*, vol 6, no 3, pp144–157
- Moore, G. and Tymowsky, T. (2005) 'Explanatory guide to the International Treaty on Plant Genetic Resources for Food and Agriculture', Environmental Policy and Law Paper No. 57, International Union for Conservation of Nature, Gland, Switzerland and Cambridge, UK

Annex 5

Some Stories on the Inception of the
International Treaty on Plant Genetic
Resources for Food and Agriculture

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Available online at ftp://ftp.fao.org/ag/agp/planttreaty/articles/pgrfs_annex_5.pdf
and at www.biodiversityinternational.org/publications.html

Index

Note: page numbers followed by ‘n’ refer to end of chapter notes; ‘Treaty’ is used in index entries to refer to ITPGRFA

- access (facilitated) to genetic resources
 - impact of Treaty 17, 211–212
 - lack of clarity 194
 - see also* multilateral system of access and benefit-sharing (MLS); sovereign rights over PGRFA; SMTA
- adaptability and resilience 15, 103, 225
 - to climate change 88, 95–96, 123, 245–246
- Africa-Brazil Agricultural Innovation Marketplace 307
- African regional group (AG) 41–43
 - approach to revision of IU 43
 - approach to scope of multilateral system 50–51
 - challenges in implementation of Treaty 52–55,
 - constraints and negotiating strategy 44–45
 - ‘crop-based’ alternative payment option: the ‘African proposal’ 53, 76–77, 251–252
 - Farmers’ Rights 34, 46, 48–50
 - participation in negotiation meetings 45–46, 47
 - perspective on Treaty 51–52
- African Union (AU) 42
- agreed interpretations
 - of International Undertaking on Plant Genetic Resources 8, 154, 240
 - of Treaty 19
- agricultural biodiversity
 - consumer education on 224
 - importance for future generations 5, 103
 - maintenance and management of 13
 - Near East region 93–94
 - and pleasure 231
 - uniqueness compared with wild biodiversity 8–9
 - see also* genetic erosion
- Agricultural Research Information System (ARIS) 192
- Agriculture and Agri-Food Canada 115
- amendments to Treaty 305
- Andean Court of Justice 87
- Angola 46
- animal welfare 229
- Annex I list of crops 12, 34–35, 304, 305
 - review 205
 - role of IPGRI-Bioversity International 156
 - role of Near East group 97, 98
 - views of AG 50
 - views of Asian Group 62–65
 - views of ERG 62, 72–73
 - views of LAC 89
 - views of North American group 116
 - views of seed industry 166, 173
- Argentina 86
- Asian regional group
 - Annex I list 62–65
 - approach to negotiations 60–62
 - food and poverty 57–58
 - interdependence on PGRFA 58–59
 - participation in negotiation meetings 60
 - perspective on importance of Treaty 59–60
- ASSINSEL (International Association of Plant Breeders for the Protection of Plant Varieties, formerly ISF, *see also*) 34, 35

- Australia 123, 128
 Department of Agriculture, Fisheries and Forestry (DAFF) 125, 126
 AVRDC (World Vegetable Centre) 150
- benefit-sharing
 Near East group perspective 105, 106
 negotiations on 35
 ownership of genetic resources 112
 plant breeding sector perspective on negotiations 167–169
see also capacity-building; Global Crop Diversity Trust (GCDDT); multilateral system of access and benefit-sharing (MLS)
- Bennett, Erna 136, 137
- Bioversity International *see* International Board for Plant Genetic Resources (IBPGR); International Plant Genetics Research Institute (IPGRI, later Bioversity International)
- Biological Diversity Act (BDA) (India) 193, 194
- biopiracy 146, 207, 211
- biotechnology 73, 141, 163, 207
see also genetic modification (GM)
- Bioversity International (formerly, International Plant Genetics Research Institute (IPGRI)) 59
 role in Treaty negotiations 34–35, 156–157
 stakeholder consultation 215
see also International Board for Plant Genetic Resources (IBPGR)
- Block, John 140
- Borlaug, Norman 150
- Botanical Survey of India (BSI) 186
- botanic gardens, India 186, 191
- Brauer, Oscar 137
- Brazil 12, 46, 303–308
- Brazilian Agriculture Research Corporation (Embrapa) 150, 306–307
- breeders' exemption 166, 167–168, 173, 198–199, 200
- breeding programmes 15, 96, 103, 113
- bulk selection 197
- Canada
 perspective on farmers' rights 112, 113, 114
 stakeholder interactions 114–115
see also North American regional group
- Canadian Seed Trade Association 115
- capacity-building xxvii, 117, 244
 aspect of benefit-sharing 51, 114
 by Brazil 307
 European support for African region 45, 48, 56n, 70
 Near East region 104, 106
 needed in Southwest Pacific region 128
- Capacity Building Coordinating Mechanism xxvii
- CATIE 150
- CBD *see* Convention on Biological Diversity (CBD)
- Central and/or West Asia and North Africa Region (CWANA or WANA) *see* Near East regional group
- Centre for Pacific Crops and Trees (CePaCT) 124–125, 126, 128, 130
- CG Centres 28, 70, 149–152, 212
 agreements with Governing Body of Treaty 2, 158–159
 biopiracy 146
 concern over sovereign rights 154
 experience of Treaty implementation 159
 ex situ collections under the Treaty 157–158, 284
 In Trust agreements 153, 154–156
 negotiations for revised IU 144–145
 as part of MLS 33, 78
- CGIAR *see* CG Centres; Consultative Group on International Agricultural Research (CGIAR)
- CGN (Centre for Genetic Resources the Netherlands) 150, 170
Chairman's Elements 33, 38–39
see also Montreux meeting
- China 12
- CIAT (International Center for Tropical Agriculture) 147
- CIMMYT (International Maize and Wheat Improvement Centre) 115, 150, 212
- CIP (International Potato Centre) 130