IRELAND:

COUNTRY REPORT TO THE FAO INTERNATIONAL TECHNICAL CONFERENCE ON PLANT GENETIC RESOURCES

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Note by FAO

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Summary

- Indigenous plant genotypes unique to Ireland may exist due to its isolation and westerly location from mainland Europe.
- Some indigenous plant genetic resources have been collected and conserved but more collection, conservation, evaluation and utilisation need to be done.
- The development of a national programme to co-ordinate plant genetic resources activities will be undertaken.
- Ireland supports the current EU proposal to permit the marketing of old varieties in small seed lots.
- Ireland is a member of the FAO Commission on Plant Genetic Resources and a signatory to the FAO's International Undertaking on Plant Genetic Resources.
- Ireland is a signatory to the Convention on Biological Diversity.
- Ireland is a donor to the core funding of the Consultative Group on International Agricultural Research (CGIAR).
- Ireland is a member of the International Union for the Protection of New Varieties of Plants (UPOV).
- Ireland supports the recognition of the rights of farmers and local communities over their genetic resources.

CHAPTER 1
Ireland and its Agricultural Sector

Ireland is a small island country located 51.50 to 55.50 north latitude and 5.50 to 10.50 west longitude. The total area is slightly less than seven million hectares, the area under crops and pasture is 4.7 m hectares and 1m hectares is rough grazing. Total commercial forest land amounts to approximately 0.53 m hectares. Bogs, marshes, towns, etc make up the remaining 0.77 m hectares. The population is 3.5 million.

Ireland has a mild climate averaging about 60°C in Winter and 150°C in Summer, coupled with an evenly distributed rainfall, averaging about 1,000 mm per annum which provides good conditions for plant growth. The climate favours the growth of a wide range of crops - grass, cereals and roots, vegetables and fruit, as well as forest. Grass grows particularly well. Fertile soils have a long grazing season and livestock, fed on pasture, grow rapidly out of doors.

While there is great variation in farm size, the typical Irish farm is one of about 23 hectares. It is owner occupied and most of the farm is in grassland. It has two or more farm enterprises and in most cases it is operated by the farmer and his family.

Ireland is a major food producing country, particularly of meat and dairy products and has been a leading exporter of food to major world markets for several hundred years. Effective quality control results in products which command a premium on export markets. Access to world markets is favoured by the freedom of the country from many of the major diseases and pests of animals and plants.

The tillage area (0.44m ha) is mainly concentrated on good fertile soils in the South and East extending into the midlands. Uncertainty regarding weather is a major limiting factor in Irish crop production. The principal crops are cereals, sugar beet and potatoes. Exports of malt and malting barley, which is of very high quality, have been increasing in recent years. The development of high yielding malting varieties has encouraged these exports. The area of cereals has been declining slightly over the past several years primarily influenced by poor economic returns, but spring cereals still comprise almost 60% of the sown area.

There are 33,000 hectares of sugar beet grown in the country each year under contract.

Potatoes are grown for ware consumption, for processing and for seed. Ireland is particularly suitable for the production of seed potatoes. Because of its climate it has a relatively low population of aphids, the vectors of many virus diseases.

There are 10,000 hectares of commercial horticultural crops grown in Ireland. Field vegetables account for three quarters of this area. The area of field vegetables for processing has increased over the past five years. There has also been a small increase in the production of vegetables for the fresh market. Apples and soft fruit comprise the total area of fruit grown. Statutory quality, grading and packaging standards are laid down in EU and national legislation for a range of fresh fruit and vegetables at all stages of distribution.

Under European Union legislation only seed of varieties of agricultural and forest species which are registered in the Irish National Catalogues or in the EU Common Catalogues may be marketed in Ireland and all seed marketed, including grass seed mixtures, must be officially certified. Varieties to be included in the National Catalogues must be tested under official control and in accordance with EU requirements. The existing legislation (in common with other EU member states) is unfavourable to the conservation and use of landraces and old varieties. Ireland supports the current EU proposal being discussed at Council which will permit the marketing of such material in small seed lots.

Serious crop losses due to pest, disease or drought have not been recorded in Ireland in recent times. Unfavourable spring and summer weather conditions reduce the yield potential of crops in some years.

CHAPTER 2
Indigenous Plant Genetic Resources

2.1 AGRICULTURAL (OTHER THAN FOREST) SPECIES INCLUDING LANDRACES ("FARMER'S VARIETIES") AND OLD CULTIVARS

A large proportion of the agricultural land area is in grassland. Within these grasslands there are areas of old pasture/rough grazings which have never been re-seeded with bred cultivars. The conservation value of these pastures has been modified through the addition of fertilizer and grazing management. But they still represent a large resource of indigenous genetic variation useful as a source of breeding material for the development of cultivars of agriculturally-useful herbage species.

Old landraces of the principal herbage species are no longer used to reseed pastures, they have been replaced by modern bred cultivars. The landraces are no longer available commercially.

The genetic resources of potato consists of old cultivars. Some of these are unique to Ireland. Some of these old cultivars are used by farmers but on a very small scale.

Where an active breeding/research programme exists as for example in potatoes, ryegrass and white clover, there is generally more information on the extent and value of indigenous resources of those species. However, for many species which are not widely used in Irish agriculture there is little information on characterisation, evaluation or potential utility. There is little doubt that there are valuable resources for many herbage species (for example red clover, vetch, mustard species, *Vicia* etc.) in our old pastures and hedgerows.

Rye (*Secale cereale*) was once a commonly-cultivated crop in Ireland. Today, the practice is largely confined to the Aran Islands, where farmers grow rye primarily to thatch their outhouses and to provide fodder for cattle. Rye has been grown on the Aran Islands for generations, and there is evidence that some farmers on Inis Meain have handed down rye seed for a number of generations.

Bristle Oat (*Avena strigosa*) is now found in the wild in Ireland but was once cultivated as a crop mainly in Donegal, Kerry and the Aran Islands. Present populations therefore possibly contain landrace material.

There are reports of a six-row barley landrace which was cultivated in the Malin Head area of County Donegal until recent times.

Two Non Governmental Organisations (NGOs) in Ireland are involved in the active promotion of in-garden and also on-farm conservation of traditional plant varieties through their members voluntary seed saving activities. These are the Irish Seed Savers Association (ISSA) and the Irish Branch of the Henry Doubleday Research Association (IBHDRA). Both organisations maintain an annual seed catalogue and distribute seeds of old cultivars to the respective memberships who in return act as seed guardians by growing out old seed samples of the varieties and subsequently harvesting new seed samples, the further distribution of which is centrally co-ordinated by the two organisations. The ISSA is interested in building mutually beneficial links with the variety collections of the Department of Agriculture, Food and Forestry. The objective is to promote in-garden and on-farm conservation and utilisation of traditional varieties in low input agricultural contexts and also as a cultural exercise for interested community groups, schools, etc.

In a collaborative project between the ISSA (Irish Seed Savers Association) and the Department of Horticulture, University College, Dublin, efforts are being made to establish a reference collection of native Irish apple varieties no longer easily obtained in Ireland. This collection would then be available to any interested parties. The work is based on a survey carried out in the 1940's and 1950's by Dr. Keith Lamb which identified 75 native Irish varieties. About 40 of these varieties have been located to date for inclusion in the collection. The remainder are being sought in Ireland, in old orchards and corners of the countryside, drawing on the memories and knowledge of local people. Many of these old varieties were known for their disease resistant qualities and are therefore of scientific interest today.

2.2 FOREST SPECIES

Because glaciation removed most of the original vegetation, the present native trees were species able to recolonise the land during the 10,000 to 15,000 years since the last glacier retreated. Thus, our range of native species is quite limited

compared to Continental Europe. Annex I contains a list of native species in Ireland.

Scots pine (*Pinus sylvestris*) was originally the only native pine species which became extinct in Ireland sometime in the last 2,000 years, due to unknown reasons. It has, however, been re-introduced over the last 400 years, mainly with Scottish origin material.

None of these species is unique to Ireland, although during the 10 to 15,000 years undoubtedly some adaptation to local climatic conditions has taken place.

As a result of glaciation, a very limited species range with limited growth and productivity rates is available among truly "native" tree species. For this reason "exotic" species from Continental Europe and Western North America have become the major commercial species.

The definition of the Irish "natural" forest is difficult. It consists of broadleaf species as either "high" (mature) forest or scrub and could account for a maximum of 100,000 hectares nationally. It would probably consist of oak, ash or a mixture of oak and ash. Unfortunately it is not possible to accurately distinguish between planted broadleaf stands and "natural" forests from the data collected in past surveys of the forest estate. Undoubtedly the amount of truly "natural" forest land that remains in Ireland is quite small and has been estimated to be as little as between 20,000 and 50,000 hectares. This "natural" forest exists mainly in mountainous areas or on poor soils which are unsuitable for agriculture. Presently about 2,700 hectares of these "native" forests are protected in nature reserves or national parks in Ireland. Management of these mature or over-mature stands of "native" species is limited to removal of non-native species.

As mentioned earlier, although most of the major commercial species are non-native species, the genetic diversity of some of these species in their native habitat may be under threat. Material identified as best adapted to Irish conditions in provenance or seed origin trials is often no longer available from the original stand due to harvesting operations in the native species range.

2.3 INDIGENOUS SPECIES IN THE WILD

Little is known of the plant genetic resources which exist in Ireland, particularly with regard to indigenous species in the wild. Ireland maintains a notable geographical and climatological position in terms of European plant genetic resources. Its relative isolation and westerly location give rise to the existence of genotypical features which are known or suspected to differ from those in existence on mainland Europe.

Ideally, either the lack of information or future perspective we currently have should prompt the view that all indigenous Irish plant species should be regarded as potential resources. However, considering what is practically achievable, a number of species have been selected by the Irish Genetic Resources Conservation Trust (IGRCT) and the associated Irish Plant Genetic Resources Genebank (IPGRG) to represent an absolute minimum which should be targeted for conservation, characterisation and evaluation for the present. To this end Annex II contain a list of some of the indigenous plant species which are currently threatened in Ireland and which are identified to be of potential commercial value. The collection of these species is now underway under the first project in Ireland to comprehensively collect and store *ex situ* under standard genebank conditions, threatened indigenous Irish plant species. There are many other additional indigenous species which occur more commonly in Ireland which are also worth conserving as potentially useful PGRs.

Prior to the Convention on Biological Diversity *in situ* and *ex situ* collections were regarded as the "common heritage" of humankind. Any plants collected after the Convention of Biological Diversity came into effect in December 1993 are subject to national sovereignty. Hence under its commitments to the Convention, Ireland has a stated responsibility to ensure the long term conservation of such collections.

species that were formerly more widespread in Ireland have now declined due to increases in the extent and intensity of agricultural, industrial and urban development. Most of them are listed in the Irish Red Data Book of Vascular Plants (Curtis & McGough, 1988).

CHAPTER 3
National Conservation Activities

3.1 *IN SITU* CONSERVATION ACTIVITIES

Though *in situ* conservation may occur as an unplanned consequence of a wide programme for habitat conservation and agriculture, specific, state-supported measures for individual species have not to date been implemented in Ireland.

For Designated Areas, administration, legislation, conservation and management is carried out by the National Parks and Wildlife Services (NPWS) a state agency with responsibility for implementation of policy matters in relation to the natural heritage. NPWS is under the control of the Department of Arts, Culture and the Gaeltacht, a Government Department with responsibility, inter alia, for policy matters in relation to the heritage.

The only site-specific documentation on *in situ* plant genetic resources is held by the National Parks and Wildlife Service.

The most direct relevant legislation, in terms of *in situ* conservation of threatened plant species in Ireland, is the 1976 Wildlife Act and the consequent 1987 Flora Protection Order. Under the Order, 68 plant species are listed for protection in the Republic of Ireland.

Management of the semi natural Irish forest is limited at present to removal of non-native species. Most of these stands are mature to over-mature with little variation in their age class distribution.

Native oak and ash provenance trials have been established, but are just beginning to give the first results (9 year measurements). Some of the native seed sources appear capable of producing acceptable planting stock. The original stands could serve as an *in situ* seed supply for future use.

3.2 *EX SITU* CONSERVATION ACTIVITIES

Working germplasm collections of varying size and scope are maintained in association with the crop breeding and improvement projects being conducted by:

- Teagasc Oak Park, Carlow:- grasses, clovers and potatoes;
- University College Dublin (Faculty of Agriculture): spring wheat; field beans.
- Department of Agriculture, Food & Forestry/Guinness (Ireland) Ltd: Malting barley.
- Department of Agriculture, Food and Forestry: potatoes, fodder rape, ryegrass.

In general, the collections being maintained are quite small, the regeneration procedures are less than ideal and storage conditions are unsuited for long-term viability. The closing down of many of the breeding programmes conducted by the Department of Agriculture, Food and Forestry, Teagasc and Greencore has resulted in the loss of most of the germplasm collections associated with these breeding programmes. At University College Dublin the field bean germplasm collection is currently under threat since this programme was recently phased out.

Farmers are not actively involved with variety collections in Ireland.

The following conservation activities have been conducted by Teagasc in herbage and potatoes:

Herbage: Extensive collection from old pasture ecosystems has been made for a small number of species. The collection was concentrated on *Lolium perenne* and *Trifolium repens* plus some *Dactylis, Phleum* and *Festuca*. There are many other species (e.g. *Trifolium pratense, Lotus, Vicia, Lathyrus*) which were not collected and merit consideration. This material was propagated and samples stored at -200°C in sealed packets. Samples were also distributed to other EU countries. "Passport" data (using IBPGR descriptors) and agronomic evaluation is complete for most of this material. Information is computerised but agronomic data has not yet been updated. In addition to this indigenous collection there is a collection of old cultivars and breeder's lines and variants. Some of these are in long term storage and the remainder in medium-term storage.

Storage facilities are limited and are based largely on deep freeze cabinets and cold rooms.

Potatoes: Genetic stocks consist of old cultivars and breeders' lines. This material is a living collection and is maintained by propagation each year. Most of the stocks have virus infection. Regeneration of healthy stock is urgently required if losses are to be avoided. All these stocks have been documented and characterised (Inventory of Potato Variety Collections in EU Countries - H.W. Kehoe). These collections should be maintained *in vitro* as well as *in vivo*.

University College Dublin (Faculty of Agriculture) maintains a germplasm collection for its wheat breeding programme.

The Department of Agriculture, Food and Forestry in association with Guinness (Dublin) Ltd conduct a malting barley breeding programme at Ballinacurra Co. Cork. A germplasm collection of old varieties of Irish origin and breeder's lines is maintained there.

The Department of Agriculture, Food and Forestry also maintain a living collection of old potato varieties at its farm in Raphoe Co. Donegal.

Forestry: The following summarises the situation in relation to forestry:
An *ex situ* clone bank of native oak, ash and wild cherry has been established to preserve phenotypically selected material.
Although most of the major commercial species are non-native species, the genetic diversity of some of these species in their native habitat may be under threat. Material identified as best adapted to Irish conditions in provenance or seed origin trials is often no longer available from the original stand due to harvesting operations in the native species range. While there is no official gene bank set up for forest species and no active programme to regenerate material in most of the provenance trials there are seed orchards and registered seed stands used to produce seed. Such sites could in the future be managed in such a way as to ensure sustainable resources of this material for the future.

NGO Collections: There are small conservation programmes organised and promoted by NGOs with special interest in protecting genetic resources of endangered species.

An IPGRG project was begun in September 1994 and funded by a government heritage grant to IGRCT in order to set up IPGRG. The aims of the genebank are to collect seeds of rare and threatened indigenous plants from their wild habitats in Ireland, and to establish a seedbank in which to store these seeds, with a view to their conservation, characterisation and evaluation.

Sample collection began in 1994 and the genebank has been established at the Botanic Gardens of Trinity College Dublin. At present the long term funding for this collaborative venture (Trinity College, IGRCT and NPWS) is not secure.

The seedbank holds 60 Irish accessions, comprising 23 species. None of the accessions have been replicated in any other genebank. Seeds are stored in foil bags at -200°C in domestic deep freezers.

Each of the 60 IPGRG accessions to date are fully supported by passport data. Accession details will eventually be inputted onto a computerised database. As the number of accessions is built up, a catalogue will eventually be produced. No evaluation or characterisation has taken place so far. Likewise a regeneration protocol has not been developed because the genebank has just been established.

CHAPTER 4
In-Country Uses of Plant Genetic Resources

The herbage and potato breeding programmes conducted by Teagasc utilise the collection of both indigenous and introduced genetic resources. Introduced resources come principally from other breeders and genebanks. New cultivars based on some of the indigenous herbage collections have been released. This material has also been used in breeding programmes in the U.K., the Netherlands and Denmark.

In the wheat breeding programme at University College Dublin (UCD) the working collection comprises of advanced breeding lines, commercial (adapted) varieties of current and recent vintage, exotic (unadapted) wheats from several different sources, and a small number of accessions of related/wild species (*Triticum tauschii, T. monococcum*, etc.). The scope of the collection reflects the current and recent activities of the breeding programme rather than any attempt to anticipate future requirements.

The malting barley breeding programme at Ballinacurra Co. Cork is based on introducing desirable characteristics from exotic germplasm into advanced breeding lines. Most of this exotic germplasm is obtained from foreign genebanks.

Two NGOs with special interest in conserving old cultivars produce catalogues and exchange seeds of a range of species to try to maintain these sources of genetic diversity.

4.1 THE ROLE OF PLANT GENETIC RESOURCES IN BREEDING PROGRAMMES

Access to broad, but appropriate, genetic variability has long been recognised as an essential prerequisite for the attainment of breeding objectives. It is worth noting that more than 90% of the current wheat crop in Ireland is based on fewer than six varieties. Because of the genetic homogeneity of modern

varieties this is the equivalent of just six genotypes. In the UCD wheat breeding programme the breeder is attempting to acquire genetic variability by exploring wheat genepools originating from U.S., Mexican, Chinese and New Zealand collections in addition to those available in N.W. Europe. Similar appropriate criteria apply to the breeding programmes in the other institutions which are attempting to supply the market with new improved varieties. Such developments rely heavily on the availability of suitable genetic resources. Despite the fact that the State and Semi State sectors have scaled down the breeding of new varieties of crops, the commitment to conserve genetic resources must continue since it is a non renewable natural resource.

CHAPTER 5
National Needs, Policies, Programmes and Legislation

5.1 NATIONAL NEEDS

The problems that are readily identifiable in relation to plant genetic resources in Ireland are typical of the problems identified in many other countries. For example, the lack of coordination is immediately evident and many of the conservation activities could be improved. The involvement of all sectors of the community in conservation activities is a highly desirable goal. These could involve farmers, consumers, agribusiness, NGOs and the State. In the forestry sector there is also a need to conserve both native and imported species. The use of home collected seed especially of native species should be encouraged. Older species trials, even though they may no longer have commercial importance, should be maintained and evaluated if possible.

Considerable attention world-wide is now being devoted to plant genetic resources following the Rio conference of 1992. What is now required in Ireland is a long term commitment to ensure collections are properly stored and maintained either *in situ* or *ex situ* as appropriate.

5.2 POLICIES AND PROGRAMMES

Ireland is a member of the FAO Commission on Plant Genetic Resources and a signatory to the FAO's International Undertaking on Plant Genetic Resources.

Ireland is a member of the International Union for the Protection of New Varieties of Plants (UPOV) and is a signatory to the 1991 revised UPOV Convention. The EU Community Plant Variety Rights Regulation came into force on 1 September 1994 which will have direct and uniform effect throughout the Union.

Developments in WIPO, GATT and THRIPS as they impact on both intellectual property rights and national legislation will need to be considered in the future.

There is extensive phytosanitary legislation relating to the importation of PGR's into Ireland particularly if the plant germplasm is originating from areas where diseases not found in Ireland have been recorded.

5.3 LEGISLATION

At present there is no national legislation on plant genetic resources conservation and utilisation. The Department of Arts, Culture and the Gaeltacht are currently reviewing Ireland's position in relation to national requirements which are necessary to comply with the Rio Convention on Biological Diversity and to implement the practical actions outlined in Agenda 21.

5.4 TRAINING

While there is no specific graduate degree programme devoted entirely to conservation and utilisation of genetic resources in our universities, many of the science related, including agriculture, genetics and botany courses cover this subject in some depth. Consequently, there are excellent trained personnel available in Ireland capable of carrying out internationally recognised research and development activities at all levels related to PGR's.

CHAPTER 6
International Collaboration

Collaboration with other countries and commercial organisations in exchange of genetic stocks is an integral part of the current herbage, potato, malting barley and wheat breeding programmes. Collaboration with other EU countries is in progress on the establishment of a core collection project in *Lolium perenne*. This evaluation of genetic stocks of *Lolium* over a wide geographic range will help to define the extent of genetic variation within the collections of this species.

Several botanic gardens and arboreta within Ireland regularly exchange plant genetic resources with similar institutions worldwide via international seed exchange programmes.

Ireland participates in the European Co-operative Programme for Crop Genetic Resources Networks (ECP/GR). Ireland's presence in this programme's Technical Consultative Committee and active participation in several working groups provides Ireland with a means to influence the European genetic resources policies and activities at a more general and at a crop specific level.

Ireland participates in IUFRO (International Union of Forestry Research Organisations) provenance trials of potentially important species. In addition it has participated in a number of EU programmes including ECLAIR (European Community Linked Agro Industrial Research) and AIR (Agro Industrial Research) programmes involving forest genetics and tree improvement projects. As a result of contacts made in these formal projects, many informal visits and informal exchanges of genetic material have taken place.

Ireland signed the Resolution 2 of the Strasburg Ministerial Conference on the Protection of Forests in Europe which deals with the conservation of forest genetic resources. Ireland intends to join the European Forest Genetic Resources Programme (EUFORGEN) which is the implementation of Resolution 2.

6.1 UNITED NATIONS INITIATIVES

Ireland is a signatory to the Convention on Biological Diversity which commits participating countries to taking measures to prevent destruction of genetic species.

Ireland participated in the United Nations Conference on Sustainable Development (UNCED) in June 1992, which adopted a number of important measures, including the above-mentioned Convention, and Agenda 21, a practical action programme to be followed by countries in their environment and development policies towards the 21st century. In particular, Chapter 15 of Agenda 21: Conservation of Biological Diversity, outlines the measures that countries should adopt to conserve their biological diversity. A National Sustainable Development Strategy is now being prepared, and this will apply in a concrete way to Ireland the general principles, including those covered in Agenda 21, already agreed internationally. The establishment of the Irish Plant Genetic Resources Genebank (IPGRG) was a direct response to Ireland's commitment to Chapter 15.

CHAPTER 7
National Goals and Opportunities

7.1 NATIONAL GOALS

- The development of a National Programme on Plant Genetic Resources Conservation and Utilisation which has multilateral involvement of all interested parties in Ireland.
- Under this National Programme there should be a review of the collections which already exist to establish an inventory of what is available and under what conditions they are stored.
- Within the National Programme there should be a provision for a Government commitment to carry out research on National PGR, i.e. their conservation, characterisation, evaluation and utilisation.
- In the light of this review implement measures to fill gaps in the collections in accordance with a clearly and publicly defined national policy on genetic resources conservation and utilisation.
- Measures should be undertaken to ensure that what is already held is not lost or disposed of or allowed to deteriorate.
- Promotion of *in situ* conservation of threatened wild flora of economic significance should be undertaken.
- A review of legislative requirements for the protection and maintenance of genetic diversity should be undertaken.
- There should be formal encouragement and support for NGO's and others active in the field of genetic resources conservation.
- The National Programme should recognise the cultural importance of genetic resources.
- The National Programme should recognise the potential for on-farm conservation through utilisation of plant genetic resources as a different way of utilisation of PGR for centralised breeding purposes.
- Living collections of plant materials, both wild and cultivated should be established where appropriate in both privately and state-owned properties.

- Rare and traditional varieties should be re-introduced on to working farms in co-operation with interested individuals and farming organisations, e.g. the organic farming bodies in Ireland.
- To encourage the use of native agricultural, horticultural and forest seeds whenever possible.

7.2 NATIONAL OPPORTUNITIES

The consumer's current interest in purchasing organically-grown produce provides farmers and market gardeners with a new opportunity to produce and sell food products grown from old and rare varieties. Many of these may have genes or gene blocks that would be useful in breeding varieties for these conditions. Environmental and health concerns (both real and perceived) are likely to lead to constraints on the use of agrochemical inputs. In this scenario use of varieties that are fully adapted to the unique combination of physical and biological phenomena that characterise the Irish crop production environment may be the only survival strategy that will be open to Irish tillage farmers. Many of the old varieties may actually be suitable for these conditions.

CHAPTER 8
Proposals for a Global Plan of Action

8.1 IRELAND'S OBJECTIVES FOR INCLUSION IN THE GLOBAL PLAN

- Ireland will establish a co-ordinated National Programme on Plant Genetic Resources Conservation and Utilisation which will have multilateral involvement of all interested parties in Ireland including State, universities, farming bodies, NGO's, industry and cultural bodies.
- Under such a Programme there will be a review of the collections which already exist to establish an inventory of what is available and under what conditions it is stored.
- Measures will be undertaken to ensure that what is already held is not lost or disposed of or allowed to deteriorate.
- Within the National Programme there will be a commitment to carry out and encourage research on the conservation, characterisation, evaluation and utilisation of National plant genetic resources.
- The National Programme will recognise the potential for on-farm and in-garden conservation through utilisation of plant genetic resources as a different interpretation of utilisation of PGR for centralised breeding purposes and also that both could be complementary through participatory on-farm research projects. Ireland also recognises that on-farm and in-garden conservation through utilisation could be a cost effective manner in which to conserve some of its agricultural biodiversity.
- Ireland supports and encourages the global implementation of the 1989 FAO Conference resolution endorsing the concept of "Farmers' Rights" as "rights" arising from the past, present, and future contributions of farmers in conserving, improving, and making available plant genetic resources so as to allow farmers, their communities, and countries in all regions, to participate fully in the benefits derived at present and in the future, from the improved use of plant genetic resources, through plant breeding and other scientific methods.

8.2 INTERNATIONAL PRIORITIES FOR GLOBAL PLAN

- Each country has a responsibility to preserve/maintain its genetic resources in its own national interest and as a contribution to a global network. These responsibilities should be emphasised at official level where distribution of finances are determined.
- The Global Plan should provide for the recognition of the rights of farmers and local communities over their genetic resources and indigenous knowledge, and establish effective mechanism to implement these rights.
- The Global Plan should investigate the implementation of a global tariff on proprietary seed sales as a funding mechanism for implementation of the concept of Farmers' Rights.
- The implementation of the concept of Farmers' Rights should be from a public fund administered by both the formal and informal PGR sectors.
- The Global Plan should establish international rules for access to and benefit from the *ex situ* germplasm collections (4.35 million accessions) set up prior to the Convention on Biological Diversity.
- The FAO International Undertaking should be revised as a legally binding treaty and also to regard genetic resources as "national sovereignty" and not "common heritage" as is the case at present. This would also bring the Undertaking in line with the Biodiversity Convention.
- The revised FAO undertaking should become a protocol to the Biodiversity Convention dealing specifically with agricultural biodiversity.
- The concept of "country of origin" of collections held under *in-situ* or *ex-situ* conditions should be firmly linked to a mechanism for sharing the benefits from agricultural biodiversity which should be distributed in a decentralised fashion to agricultural and other relevant communities.
- While the Global Plan will develop a "Report on the State of the World's Plant Genetic Resources" the Global Plan should also develop a "Report on

the State of Characterisation and Evaluation of the Worlds Plant Genetic Resources" as a separate but linked tool to stimulate broader and more innovative uses of PGR.

- The Global Plan should recognise the stewardship role of communities in biodiversity management.
- The Global Plan should recognise, protect and support the future development of on-farm genetic resources management as a specific approach to conservation through utilisation in its own right.
- The Global Plan should recognise international commitment to help preserve indigenous cultures and the PGR that are associated with them.
- There should be international recognition of ownership of PGR at country, community and individual level.
- All countries should be encouraged to protect their plant genetic resources, whether or not, they are of immediate and apparent commercial value and there should be concerted global action for education (pamphlets, booklets etc.) for government agencies etc. to emphasise the importance of plant genetic resources.

ANNEX I

Native forest species in Ireland

sessile oak	*Quercus petraea*
pedunculate oak	*Quercus robor*
ash	*Fraxinus excelsior*
wild cherry	*Prunus avium*
bird cherry	*Prunus padus*
downy birch	*Betula pubescens*
silver birch	*Betula pendula*
common alder	*Alnus glutinosa*
wych elm	*Ulmus glabra*
juniper	*Juniperus communis*
crab apple	*Malus sylvestris*
rowan	*Sorbus aucuparia*
whitebeam	*Sorbus hibernica*
yew	*Taxus baccata*
holly	*Ilex aquifolium*
hazel	*Corylus avellana*
hawthorn	*Crategus monogyna*
bay willow	*Salix pentandra*
goat willow	*Salix caprea*
crack willow	*Salix fragilis*
white willow	*Salix alba*
sally	*Salix atrocinerea*
aspen	*Populus tremula*
strawberry tree	*Arbutus unedo*
field maple	*Acer campestre*

ANNEX II

Wild Species and Wild Relatives of Economic Plants which are currently threatened in Ireland+

Species *	Vernacular Name	Use
Allium schoenoprasum L.	Chives	HC
Asparagus officinalis L. *subsp. prostratus* (Dumort.) Corb	Wild Asparagus	HR
Avena strigosa Schreb. (also see Landraces section, below)	Bristle Oat	AR
Bromus racemosus L.	Smooth Brome	F
Colchicum autumnale L.	Meadow Saffron	P
Crambe maritima L.	Sea Kale	HC
Hordeum secalinum Schreb.	Meadow Barley	AR
Hyoscyamus niger L.	Henbane	P
Lathyrus japonicus Willd.	Sea Pea	FR
Ligusticum scoticum L.	Scot's Lovage	HC & P
Lolium temulentum L.	Darnel	FR & P

The following letters indicate in which area each species is of potential interest and use:

AR: Wild relative of an agricultural crop
HR: Wild relative of a horticultural crop
HC: Horticultural crop
HD: Horticultural decorative
F: Forage crop
FR: Wild relative of a forage crop
P: Contains substances of pharmaceutical use

\+ This list refers only to those species which were targeted for collection in 1994 by IPGRG. These species may have potential commercial value.

* Extracted from The Irish Red Data Book 1: Vascular Plants. Curtis and McGough, 1988.

Species	Vernacular Name	Use
Mentha pulegium L.	Pennyroyal mint	P & HD
Pyrola media Swartz.	Intermediate Wintergreen	P
P. *minor* L.	Common Wintergreen	P
P. *rotundifolia* L.	Round-leaved Wintergreen	P
Potentilla fruticosa L.	Shrubby Cinquefoil	HD
Salvia verbenaca L.	Wild Sage	HC
Trifolium glomeratum L.	Clustered Clover	FR
T. subterraneum L.	Subterranean Clover	FR
Trollius europaeus L.	Globe Flower	HD
Vicia lathyroides L.	Spring Vetch	HR
V. orobus DC.	Wood Bitter Vetch	HR

Reference

Curtis TGF and McGough HN, (1988). The Irish Red Data Book 1: Vascular Plants. Stationery Office, Dublin.

Acknowledgments

IGRCT Irish Genetic Resources Conservation Trust, a charitable non governmental organisation responsible for promoting the conservation of genetic diversity in animals and plants.

IPGRG Irish Plant Genetic Resources Genebank has been set up with the help of state funds and is located in Trinity College Dublin botanic gardens and is operated with input from IGRCT, the National Parks and Wildlife Services and the National Botanic Gardens.

ISSA Irish Seed Saver Association, a non governmental organisation set up to exchange seeds of endangered species among its membership.

IBHDRA Irish Branch of the Henry Doubleday Research Association, a non governmental organisation actively involved in the promotion of in-garden and on-farm conservation of non listed traditional plant varieties.

NPWS National Parks and Wildlife Services, Office of Public Works, Department of Arts, Culture and the Gaeltacht, a state agency responsible for species and habitat protection.

Teagasc State Authority responsible for research, advice and training in the agriculture and food industries.

Coillte Irish Forestry Board, a state agency responsible for the utilisation and development of the national timber resource.

WIPO World Intellectual Property Organisation.

GATT General Agreement on Tariffs and Trade.

TRIPS Trade Related Intellectual Property Systems.

IUFRO International Union of Forestry Research Organisations.