

COUNTRY REPORT ON THE STATE OF PLANT GENETIC RESOURCES FOR FOOD AND AGRICULTURE

IRELAND



State of Plant Genetic Resources for Food and Agriculture in Ireland

Second Irish National Report on Conservation and Sustainable Utilisation of Plant Genetic Resources for Food and Agriculture



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Note by FAO

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CONTENTS

LIST OF ABBREVIATIONS AND ACRONYMS	6
EXECUTIVE SUMMARY	8
AN INTRODUCTION TO THE COUNTRY AND AGRICULTURAL SECTOR	9
CHAPTER 1	
THE STATE OF DIVERSITY	11
1.1 The state of diversity and relative importance of all major crops for food security	11
1.2 The state of diversity of crop varieties	12
1.3 The state of diversity and relative importance of minor and under-utilised species for food security and agriculture	13
1.4 The state of diversity of wild plants harvested for food production	14
1.5 The main factors affecting the state of diversity	14
CHAPTER 2	
THE STATE OF <i>IN SITU</i> MANAGEMENT	15
2.1 Plant genetic resources inventories and surveys	15
2.2 Conservation of wild plant genetic resources for food and agriculture in protected areas	15
2.3 Ecosystem management for conservation of plant genetic resources for food and agriculture and crop associated biodiversity outside protected areas	17
2.4 On-farm management and improvement of plant genetic resources for food and agriculture	17
2.5 Assessment of major needs for <i>in situ</i> management of plant genetic resources for food and agriculture	17
CHAPTER 3	
THE STATE OF <i>EX SITU</i> MANAGEMENT	19
3.1 The state and types of collections (major and minor)	19
3.2 Collecting	20
3.3 Types of collections (major and minor crops)	21
3.4 Storage facilities	21
3.4.1 Security of stored material	21
3.5 Documentation and characterisation	22
3.6 Germplasm movement	22
3.7 Role of botanic gardens	22
3.8 An assessment of the major <i>ex situ</i> needs	22
CHAPTER 4	
THE STATE OF USE	24
4.1 The importance of utilisation	24
4.2 Utilisation activities and deployment of genetic diversity	24
4.2.1 Seed supply systems and the roles of markets	24

4.3 Utilisation of conserved plant genetic resources and major constraints to their use	25
4.4 Assessment of the needs to improve utilisation	25

CHAPTER 5

THE STATE OF NATIONAL PROGRAMMES, TRAINING AND LEGISLATION 26

5.1 National programmes for plant genetic resources	26
5.2 Education and training	27
5.3 National legislation	27
5.4 Public awareness	28
5.5 Assessment of major needs for national programme development, training and legislation	29

CHAPTER 6

THE STATE OF REGIONAL AND INTERNATIONAL COLLABORATION 30

6.1 Regional and sub-regional networks, international crop-specific networks and sub-regional collaboration for maintaining <i>ex situ</i> collections	30
6.2 International programmes	31
6.3 International agreements	31
6.4 Assessment of major needs to improve international collaboration	32

CHAPTER 7

ACCESS TO PLANT GENETIC RESOURCES FOR FOOD AND AGRICULTURE AND SHARING OF BENEFITS ARISING OUT OF THEIR USE, AND FARMERS' RIGHTS 33

7.1 Changes in the international legal and policy framework in relation to access and benefit sharing for genetic resources	33
7.2 The state of access to genetic resources	33
7.3 Benefit arising out of the utilisation of plant genetic resources for food and agriculture	34
7.4 Financing plant genetic resources activities	34
7.5 Implementation of Farmers' Rights	34

CHAPTER 8

THE CONTRIBUTION OF PLANT GENETIC RESOURCES FOR FOOD AND AGRICULTURE MANAGEMENT TO FOOD SECURITY AND SUSTAINABLE DEVELOPMENT 35

8.1 Contribution to agricultural sustainability	35
8.2 Contribution to food security	35
8.3 Contribution to economic development	35
8.4 Contribution to poverty alleviation	36

LIST OF ABBREVIATIONS AND ACRONYMS

AEGIS	A European Genebank Integrated Strategy
AEGRO	An Integrated European <i>In situ</i> Management Workplan: Implementing Genetic Reserves and On-Farm Concepts
Agri.	Agricultural
c.	about
CAP	Common Agricultural Policy
CBD	Convention on Biological Diversity
CGIAR	Consultative Group on International Agricultural Research
CGRFA	Commission on Genetic Resources for Food and Agriculture
CGN	Centre for Genetic Resources
CSO	Central Statistic Office, Ireland
CWR	Crop Wild Relative
DAFF	Department of Agriculture, Fisheries and Food
DUS	Distinctness, Uniformity and Stability
EAFRD	European Agricultural Fund for Rural Development
EC	European Commission
ECPGR	European Cooperative Programme for Plant Genetic Resources
EEC	European Economic Community
e.g.	for example
etc.	et cetera
EU	European Union
EURISCO	European Plant Genetic Resources Internet Search Catalogue
<i>ex situ</i>	out of its natural habitat
FAO	Food and Agriculture Organization of the United Nations
GCDT	Global Crop Diversity Trust
GDP	Gross Domestic Product
GHI	Genetic Heritage Ireland
GPA	Global Plan of Action
GSPC	Global Strategy for Plant Conservation
ha.	hectares
i.e.	that is
<i>in situ</i>	in its natural habitat
<i>inter alia</i>	among other things
<i>in vitro</i>	refers to technique of conserving plant material in a controlled environment outside of the living organism
<i>in vivo</i>	within the living
IPGRI	International Plant Genetic Resources Institute (now Bioversity International)
IUCN	International Union for Conservation of Nature
ISSA	Irish Seed Savers Association
MCPD	Multi-Crop Passport Descriptors
MLS	Multilateral System of the Treaty
NHA	Natural Heritage Area
NGO	Non-Governmental Organisation
NPWS	National Parks and Wildlife Service
NUIM	National University of Ireland, Maynooth
PGR	Plant Genetic Resources
PGRFA	Plant Genetic Resources for Food and Agriculture
pNHAs	proposed Natural Heritage Areas

REPS	Rural Environment Protection Scheme
SAC	Special Areas of Conservation
SFP	Single Farm Payment
SMTA	Standard Material Transfer Agreement
sq km	square kilometre
subsp.	subspecies
TCD	Trinity College Dublin
Treaty	International Treaty on Plant Genetic Resources for Food and Agriculture
UCD	University College Dublin
UPOV	International Union for the Protection of New Varieties of Plants
VCU	Value for Cultivation and Use



EXECUTIVE SUMMARY

The Second Irish National Report describes Ireland's Plant Genetic Resources for Food and Agriculture (PGRFA) including agricultural crops, pasture plants, vegetables, fruit crops and wild plants of potential use for food. The Report focuses, as far as was possible on the changes that occurred in Ireland's plant genetic resources in the ten year period 1996 to 2006, following the First Irish Report in 1995. The Report was prepared by the Department of Agriculture, Fisheries and Food (DAFF) and was submitted to the Food and Agriculture Organisation (FAO) as part of Ireland's contribution to the Second Report of the State of the World's Plant Genetic Resources for Food and Agriculture.

The entry into force of the International Treaty on Plant Genetic Resources for Food and Agriculture (the Treaty) was the most important international event in dealing with the conservation and sustainable use of PGRFA. Ireland ratified the Treaty in 2004 and is now engaged in implementing its objectives.

In Ireland a National Advisory Committee for Genetic Resources was set up in 1996. This was a major step in increasing efforts to conserve and promote the sustainable use of plant genetic resources at national level. The committee has an annual call for research and/or development projects that aim to conserve and promote the sustainable use of plant and animal genetic resources and allocate funds provided by the national exchequer to suitable projects.

In the area of *in situ* and on-farm conservation there remains a need for more coordinated measures in Ireland. While there had been a substantial increase in the last ten years of designated protected areas in Ireland, large knowledge gaps exist on the occurrence of wild plant genetic resources both inside and outside protected areas. To increase utilisation of agricultural crop landraces more efforts are needed to support a viable market for such material and to make any proposed legislative changes workable in practice.

With the reduction in breeding programmes over the last ten years some *ex situ* accessions have been lost. As a consequence there is now recognition in Ireland of the need to create a centralised national genebank facility and resources are being put in place to do this. It is intended that this facility will provide for the safety duplication of all valuable *ex situ* holdings in the country and act as a coordinating centre for plant conservation activities.

Ireland recognises the need to promote the utilisation of plant genetic resources as an effective method in achieving sustainable conservation of agro-biodiversity and is investigating potential utilisation outlets for PGRFA with various stakeholders. In the framework of international collaboration, Ireland has continued to support and has provided substantial financial contributions to the Food and Agriculture Organisation (FAO) of the United Nations, the Commission on Genetic Resources for Food and Agriculture (CGRFA), the Consultative Group on International Agricultural Research (CGIAR) and the Global Crop Diversity Trust (GCDT). At European level, Ireland is fully supportive and participates in the activities of the European Cooperative Programme for Plant Genetic Resources (ECPGR).

While there has been considerable progress made in some areas over the past ten years, much remains to be done in others, as can be seen in this report. What is clear is that further progress can only be made through the collective joint efforts of all the various parties interested in the area of PGRFA. It is hoped that actions highlighted as needing to be addressed in this report will provide a platform for further concentrated efforts from all the interested stakeholders in their collective common goal of achieving the conservation and sustainable use of PGRFA into the future.

AN INTRODUCTION TO THE COUNTRY AND AGRICULTURAL SECTOR



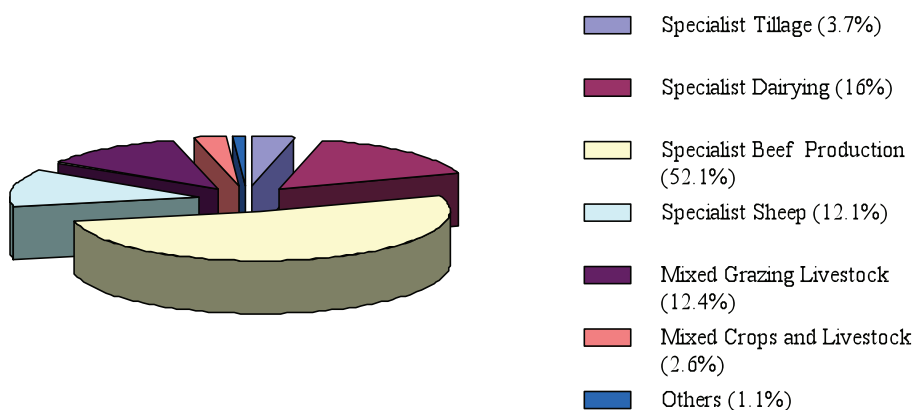
Ireland is a small island country located off the northwest of Europe between 51.5° and 55.5° North latitude and between 5.5° and 10.5° West longitude. The topography of Ireland varies from hilly, central lowland composed of limestone surrounded by a broken border of coastal mountains, which vary greatly in geological structure. Ireland's climate is influenced by the Atlantic Ocean's Gulf Stream current, which provides Ireland with mild all year round climatic conditions and contributes to the country's long grass growing season and in general to good crop growing conditions. Winter temperature ranges from 4° to 7° Celsius while summer ranges from 14° to 15° Celsius. Average annual rainfall is approximately 1 000 mm and is distributed fairly evenly throughout the year. Generally the climate on the east coast is drier and warmer than on the west.

Ireland had a population in 2006 of 4.24 million inhabitants, which is almost a 17 % increase over the previous ten years and indeed was the highest population recorded in Ireland since 1871. A substantial factor in the large population increase was strong inward migration to Ireland as a consequence of a boom in the overall economy in the ten-year period since 1996. Projections over the next ten years are for Ireland's population to increase to 5.1 million assuming immigration rates slow down due to an anticipated reduced increase in future economic growth. The overall population density in Ireland is 61 inhabitants per square km, which is relatively low, when compared to the EU average of 116/sq km. 40% of Ireland's population is defined as living in rural areas. Future population trends at national level are not anticipated to dictate the level of national agricultural output.

The total numbers of farmers in Ireland has dropped from 153 400 to 132 700 in the period 1995 to 2005 with farm size increasing from 28.2 ha. to 31.8 ha. in the same period. The number of large holdings in Ireland is small with only 3% of farms greater than 100 ha. in size in 2005 – this was also the case ten years previously. Land leasing has become more popular in Ireland due to rapid increases in the value of agricultural land with 33% of farmers leasing land in 2005 (almost 20% of the aggregate land area). Encouraging the early transfer of farms and attracting young people into Irish agriculture has been a major national policy objective for a number of years. However since 2000 the age profile has increased with 8% under 35 years and 24% over 65 in 2005, which is broadly in line with the EU average.

FIGURE 1

Number of Farms by Farming System in 2005 (Central Statistics Office – CSO)



As can be seen from Figure 1 the main farming enterprise in Ireland is beef production with over 52% specialist farmers in 2005. There are 3.7% of farmers in the country specialising in tillage production with a further 2.6% of the total engaging in mixed crop and livestock production. Despite the relatively low numbers of farmers engaged in crop production it accounted for 27% of agricultural output in 2006 in terms of producer sales (€1.4 billion out of a total agriculture output of €5.2 billion).

The agricultural sector in Ireland directly employed 5.7% of the Irish workforce in 2006 (compared to 10.6% ten years previously) with the wider agri-food sector making up 8.1% of the total Irish workforce. The downward trend in agricultural employment can be explained by the overall economic boom experienced by Ireland in this period and the attractive wage rates in other sections of the economy. There was also a decrease in real terms in agricultural commodity prices, which exacerbated this downward trend. In economic terms while the primary agriculture sector only made up 2.3% of Gross Domestic Product (GDP) in 2006 the overall agri-food sector made up 8.1% of total GDP output in Ireland.

In the major non-crop agricultural commodities in 2005 Ireland was 273% self sufficient in meat, 1 055% in butter and 354% in cheese.

As can be seen from Table 1 Ireland is largely self-sufficient for cereal production, with Ireland being a net exporter of barley and oats in 2005. Future trends in this area may be influenced by changes in national policy towards the production of energy crops in response to global demands in this emerging sector. However the economics of growing energy crops in Ireland remain a concern and additional incentives are being put in place to encourage farmers to sow such crops in future years. In 2006 sugar beet production in Ireland ceased following an extensive review at EU level, which led to the ending of subsidisation to that industry. This had a major financial impact on sugar beet farmers (primarily in the southeast of Ireland) who grew 31 000 ha. of the crop on contract for Irish Sugar. The future world demand for cereals is expected to offset somewhat this financial loss as it is anticipated that land areas historically sown to beet shall be transferred to cereal use.

TABLE 1
Cereal Supply Balance 2005 (CSO)

	Production	Domestic Uses	Self-sufficiency
	'000 tonnes	'000 tonnes	%
Total Cereals	2 501	2 785	90
Wheat	1 019	1 394	73
Barley	1 327	1 249	106
Oats	155	142	109

The other major change in agricultural policy over the last ten years in Ireland has been the change in the EU payment system to farmers. Direct payments were decoupled from production in January 2005 and since then Irish farmers have been paid a decoupled Single Farm Payment (SFP). It was initially feared that this policy change would lead to a major decrease in national crop output but this has not occurred as global demand for food crops continues to increase.

THE STATE OF DIVERSITY

Ireland has experienced huge losses in agricultural biodiversity due to the widespread commercialisation of agriculture in the 20th century, which led to the inevitable decline of local farmer landraces. The intensification of agriculture and the concentration on an ever smaller number of economically profitable higher-yielding varieties is expected to continue leading to a further narrowing of the genetic crop base. Actions taken now are critical in ensuring that diversity is maintained for future generations.

1.1 The state of diversity and relative importance of all major crops for food security

Due to the favourable grass growing climate that prevails in Ireland it is the nation's largest land use area with almost 3.9 million hectares which made up over 90% of agriculture land in 2005 (Table 1.1). Arable crops took up less than 10% of Ireland's agricultural land in 2005. Within the arable crops sown in 2005, cereals dominate and made up 69% of the total arable area.

TABLE 1.1

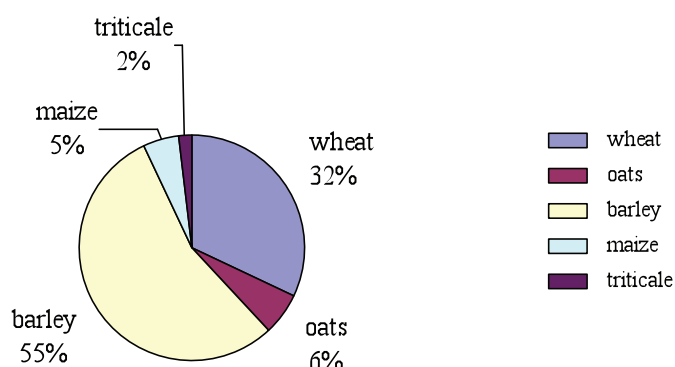
Land Use Area by main groups of crops in Ireland between 1995 and 2005 (CSO)

Land Use	Cultivation Area			
	1995		2005	
	Area (000 ha)	%	Area (000 ha)	%
Total Area Farmed	4 388.5	100	4 302	100
Grassland made up of	3 989.2	90.9	3 895.8	90.6
Pasture	2 238.9	51.0	1 988.7	46.3
Grass silage	933.6	21.3	1 193.3	27.7
Hay	357.2	8.1	242.3	5.6
Rough grazing	459.5	10.5	471.5	11
Arable land made up of	399.4	9.1	406.2	9.4
Cereals	273.9	6.3	282.0	6.6
Potatoes and Sugar Beet	57.5	1.3	42.8	0.9
Other Crops, Fruit and Horticulture	68.0	1.5	81.4	1.9

An analysis of the type of cereal crops grown can be seen below in Figure 1.1; barley and wheat are the dominant cereal crops grown in Ireland taking up more than 87% of the cereal area grown in Ireland in 2005.



FIGURE 1.1
Cultivation area by cereal type of the total Irish cereal cultivation area in 2005 (CSO)



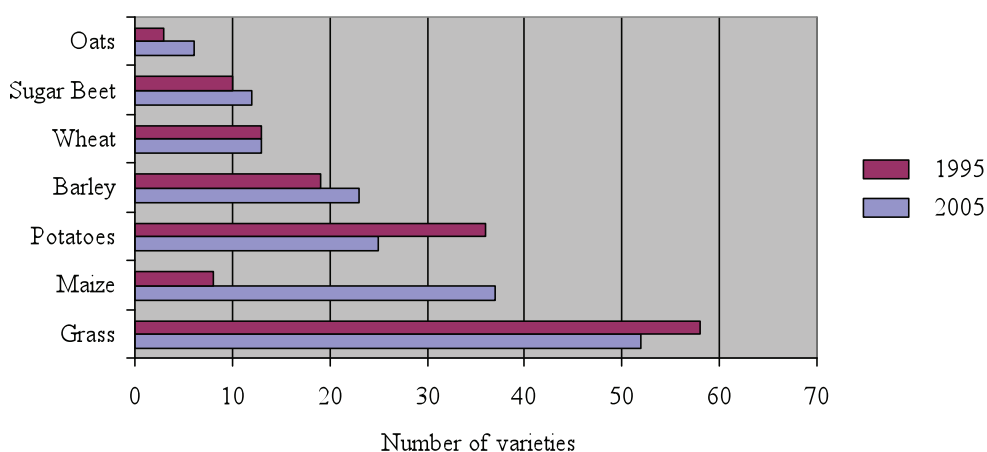
1.2 The state of diversity of crop varieties

There has been a substantial shift in amenity type grass varieties used in Ireland in the period 1995 to 2005. In 1995 there were 20 amenity varieties in use, which constituted 9% of the total grass seed market, however in 2005 this had changed to 118 varieties representing 37% of the total grass seed market. The overall grass seed market contracted slightly from 5 343 tonnes of seed to 5 158 tonnes in the ten-year period 1995 to 2005. While grassland covers the substantial part of the agricultural area in Ireland, only 3% of total grassland area (approx. 120 000 ha.) is re-seeded on an annual basis.

Most of the grass seed sown in Ireland is imported. The amount of native Irish seed sown has dropped from 15% in 1995 to 1% in 2005. The number of grass seed varieties in agricultural use in Ireland has fallen from 58 in 1995 to 52 varieties in 2005 (Figure 1.2), a drop of 10%. There was a big influx of new grass varieties in the ten-year period 1995 to 2005 and none of the top 5 important varieties used in 1995 remained in the top 5 category in 2005. Despite the high number of agriculture grass varieties in use in Ireland the top 5 varieties in 2005 accounted for 32% of the area sown.

For the two major cereal crops in Ireland wheat and barley, the diversity in terms of number of varieties in use (as per Figure 1.2) was relatively static over the ten-year period, however a closer examination of the information shows a high turnover of varieties. In the case of winter wheat and spring barley the top 3 varieties of both crops accounted for 73.4% and 63% of the areas sown respectively in 2005. However again reflecting the theme of high turnover of varieties within crops, none of these varieties were in the top 3 ten years previously.

FIGURE 1.2
Number of varieties of leading agricultural crops that were used in Ireland in 1995 and 2005 (DAFF certified seed sales)



As can be seen from Figure 1.2 the diversity in terms of varieties in production for the other major crops in Ireland over the ten-year period varies considerably between crops. For instance there was a 30% drop in potato varieties in production from 1995 to 2005, reflecting the lower area of potato sown nationally in that period and the emergence of one dominant variety, while there was a 360% increase in maize varieties in production in the same period, as the crop has grown in popularity.

1.3 The state of diversity and relative importance of minor and under-utilised species for food security and agriculture

The fruit and horticulture industry in Ireland is quite small with almost 4 300 ha. of commercial horticulture land sown in Ireland in 2005. While this figure shows little change from the previous ten years, there has been a large drop in the number of growers, primarily due to the downward pressure on prices applied by the supermarket multiples who control most of the Irish market. In 2005 there were only 238 commercial horticulture growers in Ireland, however 70% of the total output of the sector comes from the top 50 growers. Leafy brassica's account for almost half the field vegetable production in Ireland, with cabbage the most important brassica by area. Root crops account for 37% of horticultural area, with carrots being the largest root crop by area comprising 17% of total production area (see Table 1.2 below).

TABLE 1.2

Field vegetable production according to cultivated area in Ireland in 2005 (DAFF, Horticultural Division)

Crop Category	Crop Type	% of Total Area
Leafy Brassicas – 47%, broken down by:	Cabbage	19
	Cauliflowers	10
	Broccoli	13
	Other Leafy Brassicas	5
Root Crops – 37%, broken down by:	Carrots	17
	Swedes	11
	Parsnips	9
Other Crops – 16%, broken down by:	Alliums	7
	Out-door Lettuce and Other Salad crops	5
	Other Field Vegetables	4
Total Field Crop Production Area: 4 267 ha		

The varieties used by the commercial horticulture growers are dominated by modern high yielding varieties and are all imported with little or no landraces or farmers varieties grown. Due to the small size of the industry no official recommended lists of varieties are kept in this sector and therefore it is difficult to ascertain the exact state of diversity, nevertheless it is clear that the greatest diversity in horticulture crops are to be found in the various private gardens around the state in the form of home saved seed rather than in the commercial sector.

Despite its small size in percentage terms, the horticultural sector contributes significantly in economic terms as can be seen from Table 1.3 below, the total output of the horticultural sector in 2005 was almost €300 million or 5.7% out of a total agricultural output of €4.96 billion. In economic terms mushrooms are the most important horticulture crop in Ireland, however this sector has undergone huge rationalisation in the past ten years with the number of growers falling from a peak of 550 to 70 growers in 2006. Despite these falling numbers the mushroom output in economic terms over the ten-year periods has actually grown by 10% due to the increase in scale of operations by the remaining growers.



TABLE 1.3
Horticulture Industry in Ireland Farm Gate Production Value in 2005 (DAFF, Horticultural Division)

Crop Category	€ Million	% of Total Output
Field vegetables	60.8	20.4
Fruit (outdoor)	8.4	2.8
Mushrooms	110	36.9
Protected crops	58.2	19.5
Bulbs, outdoor flowers and foliage	3.4	1.1
Hardy nursery stock, Christmas trees and honey	57.1	19.2
Total	297.9	100

1.4 The state of diversity of wild plants harvested for food production

Little is known of the genetic resources of the indigenous species that occur in the wild in Ireland. Such diversity is at least potentially under threat from the factors, which degrade biodiversity generally and in particular from introductions of alien species and of exotic stock of native species. The issue of conservation and sustainable use of wild plant genetic diversity is very much in the initial stages of development.

In Ireland the issue of over-use of wild plants for food production is not a problem although there is very little published data in this area.

Detailed work has been carried out on the extent and of diversity of maritime sea beet (*Beta vulgaris* subsp. *maritima*) in Ireland in the past ten years (see Section 2.1) but similar eco-geographical surveys needs to be carried out for other crop wild relatives of relevance to food and agriculture in Ireland.

A number of projects have been undertaken at third level institutions in Ireland to assess the state of genetic diversity of selected spp. existing in the wild in Ireland. More recent activities include molecular analysis of the diversity of collected samples of wild oats (*Avena fatua*) and wild rape (*Brassica rapa* subsp. *campestris*) carried out in two separate studies by National University of Ireland Maynooth (NUIM). Trinity College Dublin (TCD) has also engaged in work in this area, with its study on the state of diversity of Irish populations of wild asparagus (*Asparagus officinalis* subsp. *prostratus*).

1.5 The main factors affecting the state of diversity

The structure and direction of the agricultural industry in Ireland is dictated by a number of variables, which include economic, political, cultural, historical and geographic factors. The combination of these variables has, and will continue to have, a profound effect on the state of genetic diversity in Irish agriculture.

The change in EU policy towards a market driven agricultural production system with the reform of the Common Agricultural Policy (CAP) in 2003/2004 may have an impact on the state of plant diversity as emphasis shifts to maximising production from existing land resources from the previous policies of supply constraint measures. Clear policy signals have been sent that indicate that existing varieties in use will have to improve further to maximise yield potential, which in turn may further narrow the agricultural crop genetic base in Ireland.

Ireland is conscious of the effects that climate change might have in the area of PGRFA and intends to reflect this concern in our future national conservation strategies.

THE STATE OF *IN SITU* MANAGEMENT



In situ conservation can be in a farmer's field, in rangelands and in national parks or other types of nature preserve. Many plant genetic resources of importance for food and agriculture are located outside "protected areas" such as sites designated for nature conservation or parks. Sometimes they are not just conserved but are also used as sources of food and income. A leading Irish NGO, Irish Seed Savers Association (ISSA), are the main promoters of *in situ* conservation activities. They also select seeds for various characteristics and save seed for replanting.

In Ireland the conservation of plant genetic resources has only played a minor role in the designation of protected areas or indeed in the continued management and maintenance of such areas. Little knowledge is available regarding the extent to which nature conservation measures contribute to the conservation of genetic resources, however *in situ* conservation in such protected areas seems to be the most feasible measure for protecting both plant wild species with a potential use for food as well as crop wild relatives.

2.1 Plant genetic resources inventories and surveys

The overall number of vascular plant species in Ireland is much less than in mainland Europe. This is due to the fact that almost all the flora migrated to the British Isles after the ice ages. The total number of vascular plant species in Ireland is thought to be c. 2 000 including 850 native species and many introduced species that are established in the wild. The European Crop Wild Relative Diversity Assessment and Conservation Forum have estimated the number of crop wild relative taxa in Ireland to be 1 200. Ireland has a relatively narrow flora but has a wide diversity of habitats in a European context consequently most conservation efforts have concentrated on protecting Irish natural and semi-natural habitats. However, conservation of plant genetic resources also needs addressing.

The Department of the Environment, Heritage & Local Government commenced a national survey of rare vascular plants in 1991 and this survey work has been carried out on a county-by-county basis. It is anticipated that this survey shall be completed in 2008. Detailed site and population information has been collected for each rare plant site visited. It is hoped valuable information on the existence and location of crop wild relatives can be gleaned from these comprehensive surveys when the results are eventually finalised.

Few national surveys have been carried out on either the existence of specific species of crop wild relatives or within the species variability of wild plants. However in 2002 a study was commissioned on the extent and state of diversity of sea beet (*Beta vulgaris* subsp. *maritima*) in Ireland.

Ireland's National Red List for vascular plants, which was compiled by Curtis and McGough (1988), is scheduled for revision in the near future. Native species that are crop wild relatives will be assessed using the standard International Union for Conservation of Nature - IUCN (2001) categories and criteria for Red List Assessment in the forthcoming revision.

2.2 Conservation of wild plant genetic resources for food and agriculture in protected areas

While there are no specific protected areas in Ireland designated for the purpose of conserving wild Plant Genetic Resources for Food and Agriculture (PGRFA), there has been significant developments in the last ten years in increasing the amount of protected areas in Ireland that also contain significant *in situ* stands of wild PGRFA.

The extent of protected areas in Ireland consists of: National Parks, Nature Reserves, Special Areas of Conservation (SACs), Special Protection Areas (SPAs), Natural Heritage Areas (NHAs). When aggregated these protected areas make up 11.5% of the total land area in Ireland.

The nature reserves are relatively small areas of importance to wildlife that are protected by Ministerial Order. The SACs and SPAs are prime wildlife conservation areas in the country, considered to be important on a European level as well as Irish level, while the NHAs are conservation areas of national importance.

The legal basis on which SACs are selected and designated is the EU Habitats Directive (Council Directive 92/43/EEC) transposed into Irish law in the European Union (Natural Habitats) Regulations, 1997 (SI 94/1997) as amended in 1998 (SI 233/1998) and 2005 (SI 378/2005). While the Directive does not require special measures with regard to genetic resources for food and agriculture, it is one of the key instruments in meeting the requirements of the Convention on Biological Diversity (CBD) with regard to *in situ* conservation of biological diversity. The areas chosen as SACs in Ireland cover an area of approximately 13 500 square kilometres. Roughly 53% is land, the remainder being marine areas or large lakes. Most of the SACs were established to protect habitats and only a few SACs were established for rare plant species (those listed in Annex II of the EU Habitats Directive). Work is ongoing in the preparation of conservation management plans for all SACs in Ireland. Such plans shall include site descriptive information and a management framework section, which outlines objectives and strategies.

While SPAs were designated to protect birds under the 1979 EU Birds Directive (Council Directive 79/409/EEC) they also afford protection to wild plants that occur in these areas. The SACs along with SPAs form part of Ireland's contribution to the Natura 2000 Network, which are a coherent European ecological network of protected areas hosting valuable habitat types and/or rare and endangered unique species. It should be noted that many SPAs overlap with SACs.

At national level the legal basis for nature conservation is provided for in The Wildlife Act, 1976, which amongst other things allows for the protection and conservation of wild fauna and flora and to conserve a representative sample of important ecosystems. The 1976 Act also included the establishment of The Flora (Protection) Order, which gave rare or endangered plants species-specific priority status and made it an offence to cut, uproot or damage such plants. The list of the plants on The Flora (Protection) Order has been updated twice on the statute books and was most recently amended in 1999. There are now 68 wild plants included in The Order some of which are crop wild relatives.

The basic designation for wildlife protection in Ireland is the Natural Heritage Area (NHA). This is an area considered important for the habitats present or which holds species of plants whose habitat needs protection. Statutory powers of protection were afforded to NHAs in the form of The Wildlife (Amendment) Act, 2000. A review of the original pNHAs (proposed Natural Heritage Areas) is currently underway. By 2006 148 NHAs had been formally designated under The Wildlife (Amendment) Act, 2000.

Additional benefits of The Wildlife (Amendment) Act, 2000, are that it gives the Government specific recognition to their responsibilities in regard to promoting the conservation of biological diversity, in the context of Ireland's commitment to the United Nations Convention on Biological Diversity (CBD). The Act also created additional Government powers to designate Refuges for Flora as well as Fauna (the original 1976 Act only gave Government powers to designate Refuges for Fauna). This allows, where necessary, the Government to impose protective measures to conserve both rare species and their habitats.

There are two scheme/projects in place on protected areas in Ireland that are of relevance to conservation of CWR for food and agriculture, which are:

1. National Parks and Wildlife Service (NPWS) Farm Plan Scheme – This Department of Environment Heritage and Local Government scheme, which was launched in 2006, is specifically targeted at managing biodiversity in protected areas by applying agreed prescriptive farm management measures on a limited number of habitats types in Ireland. The scheme operates on the basis of a 5-year management plan with compensation paid to landowners for losses incurred through restrictions caused by designation of their land as a protected area. As CWR are known to occur in many of the habitats in these protected areas, this scheme has the potential to provide targeted measures to enhance the *in situ* conservation status of many CWR spp. in a number of protected areas around Ireland, however it is too soon to establish how effective this scheme will be as much will depend on the level of participation and uptake of the scheme by the farming public in Ireland.
2. Burren Life Project: This 5-year project, which commenced in 2004, is co-financed with funding from both the national exchequer and the EU LIFE programme. This project was set up to establish a code of best farming practice in an internationally renowned site for plant diversity in the Burren district, Co. Clare in the West of Ireland. The project so far has been a success with detailed management plans and agreements having being drawn up on the lands targeted on this pilot project. As the Burren is a renowned *in situ* reserve for a broad spectrum of CWR this project is potentially of significant interest as a possible template for adopting management practises to conserve CWR on other genetic reserves throughout Ireland.



At the moment there are still neither protected areas designated specifically for crop wild relatives nor a national strategy for *in situ* conservation of crop wild relatives in Ireland. The European Commission (EC) has funded a project under Council Regulation (EC) No 870/2004; “An Integrated European *In situ* Management Workplan: Implementing Genetic Reserves and On-farm Concepts” (AEGRO) which it is hoped when completed shall provide Ireland with some useful strategies in this area.

2.3 Ecosystem management for conservation of plant genetic resources for food and agriculture and crop associated biodiversity outside protected areas

While there are no specific targeted measures of ecosystem management aiming at the conservation of PGRFA outside protected areas in Ireland, the national agri-environmental programme, the Rural Environment Protection Scheme (REPS) has a number of measures of relevance to plant genetic resources conservation. The REPS, which is co-funded by the EU, has been operational since 1994 and is a continually evolving scheme taking on additional targeted environmental measures. Its core structure has remained largely similar in that farmers sign a contract to farm in a more environmentally friendly manner as outlined in a five year plan drawn up by approved professional agri-environmental planners.

In 2006 there were 55 000 farmers in the REPS or 42% of all farmers, covering almost 2 million hectares, giving the REPS a penetration rate of 46% of all agricultural lands in Ireland. While the REPS in its current format is not a model for targeted plant genetic diversity conservation, it may, by virtue of its high penetration rate, provide a potential regulatory framework to preserve all types of plant diversity in areas which otherwise would have no protection in Ireland unless they were part of the national designated protected areas programme previously referred to in Section 2.2.

There is a need to incorporate more targeted PGRFA measures into the REPS in future revisions of the scheme as it provides the best template to preserve/conservate valuable plant genetic resources that exist in areas outside designated protected areas throughout Ireland.

2.4 On-farm management and improvement of plant genetic resources for food and agriculture

Traditional agricultural farming methods have virtually disappeared in Ireland and have been replaced with a more mechanised agricultural industry. This along with legislation on the marketing of seeds has led to the decline in the practice of retaining farm saved seed and the reduction in agricultural crop landraces. Nevertheless NGO's such as Irish Seed Savers Association (ISSA) continue to actively promote the on-farm growing and conservation of traditional crop varieties and local landraces through a number of initiatives with the assistance of government funding.

The national potato genebank which is maintained by DAFF also provides farmers and other interested stakeholders with old native Irish varieties of potatoes. The interest from farmers in old potato varieties has been consistently strong over the past number of years with an ever-growing interest in sourcing seed of these old cultivars. This can perhaps be attributed to Ireland's long traditional association with the potato crop, which goes back for centuries. Due to this historical interest in the potato farmers are more inclined to maintain home saved seed and therefore supporting the *in situ* conservation of old potato varieties and landraces. It should also be noted that a number of potato varieties which are over 100 years old still occupy an important role in commercial production.

Developing sustainable practices for other agricultural crop landraces remains a challenge. In an effort to address this problem an NGO, Genetic Heritage Ireland (GHI), are to receive state aid to conduct a feasibility study commencing in 2008 to allow for the more widespread on-farm conservation of threatened PGRFA.

2.5 Assessment of major needs for *in situ* management of plant genetic resources for food and agriculture

Clearly more concentrated efforts are required in Ireland to establish baseline inventory levels of crop wild relatives and food related biodiversity. These should perhaps be focused more particularly within protected areas where appropriate management plans can be then applied. More co-operation and co-ordination of work activities and the sharing of information of common interest between Government Departments are required if goals are to be attained in this area.

While it is unlikely that there are significant home-saving of seeds of agricultural crop landraces occurring in Ireland there is a need to investigate the possible existence of any such activities so that support systems to encourage these practices can be put in place.

To increase the utilisation of agricultural crop landraces a legislative framework is required for the production and marketing of such seed (see Section 5.3). However support systems to encourage a viable market for such landraces is required to make any proposed legislative framework workable in practice. At the moment the REPS seems to be the only viable programme in Ireland into which sustainable outlets for local landraces could work in practice and a concerted effort will take place before the next review of the scheme to attempt to introduce a new supplementary measure supporting such landraces.

THE STATE OF *EX SITU* MANAGEMENT

Ex situ conservation in Ireland is carried out by genebanks and botanic gardens. The botanic gardens collections focus on global species diversity, as their remit is one of training and research, while the genebanks give priority to intra-specific variability of crop species. There has been a loss of some *ex situ* accessions in Ireland in the last ten years as a result of the closing down of breeding programmes in University College Dublin and the Department of Agriculture, Fisheries and Food (DAFF).

In the past there were both wheat and field beans breeding programmes carried out by the Faculty of Agriculture in University College Dublin. Both programmes closed in 1998 and while some of the wheat germplasm was transferred to the DAFF's genebank in Backweston, the field beans germplasm was not conserved. In 2002 the DAFF's malting barley breeding programme in Ballinacurra, Co. Cork was ended, however the most promising breeding lines were transferred to the DAFF genebank in Backweston, Co. Kildare.

The crop categories with the most comprehensive *ex situ* collections in Ireland are those with active breeding programmes, i.e. potatoes, white clover and perennial ryegrass.

3.1 The state and types of collections (major and minor)

a) Crops Research Centre, Teagasc, Oakpark, Co. Carlow.

Teagasc is a semi-state body and holds the national forage collection at their headquarters in Oakpark, Co. Carlow. The collection, which comprises approximately 600 different accessions, is primarily made up of lolium and trifolium semi-wild species as well as other forage species. These were gathered throughout Ireland in various collecting missions over a thirty-year period. The collection is held in long term storage at -40°Celsius. The majority of the morphological evaluation work on the forage collection held here was conducted in the 1980's after they were initially collected, however there has been some additional work conducted on the ecotypes both at a morphological and molecular level more recently (see Section 3.5).

The national potato-breeding programme, which is also located in Oakpark, maintains an *in vivo* collection of potato varieties. The collection is mainly used to provide primary crossing material for use in the development of new varieties in the breeding programme. As the varieties held here are duplicated in the genebank in the Tops Centre DAFF, Raphoe (listed in "b" below) no routine distribution of germplasm takes place from this collection.

b) Department of Agriculture Fisheries and Food, Tops Potato Centre, Raphoe, Co. Donegal

There is a collection of almost 400 potato varieties held here both *in vitro* and *in vivo*. This genebank collaborates closely with the national potato-breeding programme based in Teagasc Oakpark who receive additional germplasm from the Tops Potato Centre on an ongoing basis for use in their breeding programme activities. Germplasm is distributed regularly from the Tops Centre to other institutions, voluntary organisations and interested local farmer heritage growers.

c) Department of Agriculture Fisheries and Food, National Crop Evaluation Centre, Backweston, Leixlip, Co. Kildare.

A collection of old Irish cereal varieties is maintained here including the additional wheat and barley germplasm received from UCD and Ballinacurra, Co. Cork respectively following the closing of the breeding programmes there as referred to previously. The collection of about 150 accessions is held in long-term storage freezers at -30° Celsius.

d) University College Dublin, Belfield, Dublin 4

A collection of around 90 native Irish apple varieties is maintained *in situ* on UCD's campus in Belfield, Dublin. Due to increased expansion of the facilities in UCD, the long-term future for the valuable orchard collection is in doubt. Duplicates of this collection are held in Ireland by ISSA (see "g" below) and overseas, by the National Fruit Collection,



Brogdale Horticultural Trust, Kent, United Kingdom. The latter body provided the source material to re-establish the UCD orchard, as the original Irish collection was lost in the campus re-location in the 1970's

The Irish Threatened Plants genebank was established in the mid 1990's by the NGO, Genetic Heritage Ireland (GHI) with the assistance of state funding and is located in Trinity College Dublin (TCD). Included in the collection, which is held in a long-term storage freezer at -18°Celsius, are 59 species of rare plants including some crop wild relative species along with a number of old Irish cereal varieties and landraces. Other facilities of note at the Botanic Gardens in TCD include a living collection of crop wild relatives and a reference herbarium containing over 250 000 plant specimens, which includes plant material sourced from all over world.

e) National Botanic Gardens, Glasnevin, Dublin 9

The National Botanic Gardens in Glasnevin houses the national herbarium, which contains a collection of more than half a million dried and documented plant specimens from Ireland and the rest of the world. The herbarium serves as a reference centre, a documentation facility, a data storehouse and a research institution for the study of Irish and international botany. Associated with the herbarium is a library with extensive archives relating to the history of horticulture in Ireland, and the distribution and taxonomy of the flora of Ireland. The museum collection contains some 20 000 samples of plant products, including fruits, seeds, wood, fibres, plant extracts and artefacts. There is also a living collection of crop wild relatives and grasses held in the grounds of the Botanic Garden in Glasnevin.

f) The Irish Threatened Genebank, Botany Department, Trinity College Botanic Gardens, Palmerstown Park, Dartry, Dublin 6

The Irish Threatened Plants genebank was established in the mid 1990's by the NGO, Genetic Heritage Ireland (GHI) with the assistance of state funding and is located in Trinity College Dublin (TCD). Included in the collection, which is held in a long-term storage freezer at -18°Celsius, are 59 species of rare plants including some crop wild relative species along with a number of old Irish cereal varieties and landraces. Other facilities of note at the Botanic Gardens in TCD include a living collection of crop wild relatives and a reference herbarium containing over 250,000 plant specimens, which includes plant material sourced from all over world.

g) Irish Seed Savers Association (ISSA), Capparoo, Feakle, Scariff, Co. Clare

ISSA, a NGO based in the West of Ireland, has established a collection of approximately 600 rare and endangered agricultural varieties and landraces including a valuable collection of old Irish vegetables. It operates from both membership fees and state funding and has limited storage and viability testing facilities. The national native apple collection in UCD (outlined in "d" above) is duplicated on this site and the collection has been expanded to include some additional native apple varieties, of which 17 are native crab apples trees. There are now a total of 526 trees conserved *in situ* here. ISSA has received funding from the state since 2002, initially to replicate this apple collection, and is in receipt of further ongoing funding for its maintenance requirements.

3.2 Collecting

There have been three collecting missions of note for PGRFA in Ireland in the recent past:

- GHI conducted state funded collecting missions from 1994-1998 in order to establish the *ex situ* collection of rare plants (including some crop wild relatives) held in TCD referred to in section 3.1 f) above. This collecting activity focused on collecting plants listed as threatened in Ireland on the Irish Red Data Book: 1 Vascular Plants (1988). It is the only *ex situ* collection of crop wild relatives held in Ireland.
- In 2002 a joint German/Irish forage collecting mission was undertaken focusing on grass species, which were used as forage crops or had the potential to contribute to the genetic improvement of forage crops in northwestern Europe.
- In 2002/2003 NUIM engaged in a collecting activity of *Lolium perenne* throughout Ireland to assess their genetic diversity at a molecular level with outgroup material from Europe and the Middle East.



3.3 Types of collections (major and minor crops)

The majority of accessions held in Irish genebanks comprise material from the major crops species with over 87% of all *ex situ* accessions held in the public domain in Ireland belonging to the major crops species. Minor crops and CWR are represented in most cases by only one accession per species.

3.4 Storage facilities

As previously referred to, the storage facilities used in Ireland are decentralised in a number of different locations. Due to the comparatively small amount of accessions of plant genetic resources held in *ex situ* locations in Ireland, lack of capacity is not a major problem. Almost all the long term *ex situ* seed collections are stored in upright or chest freezers with temperatures ranging from -18°Celsius to -40°Celsius. Due to an absence in demand for access to material in the mainstream agricultural seeds (i.e. cereals and grasses) held in Irish genebanks, there are no defined active and base collections in place for any of genebanks in state control in Ireland.

In almost all genebanks the accessions are stored in sealed laminated aluminium foil packs. The potato collection is maintained both *in vivo* and also *in vitro*. A virus cleaning programme is in place at the Potato Centre, Tops, Raphoe for old varieties infected by virus.

3.4.1 Security of stored material

There remains much work to do in the area of safety duplication in Ireland. Many of the cereal accessions in Backweston have already been safety duplicated (by breeders in Ireland decades ago) in international genebanks, but there is a need to establish a safety duplicate location nationally for the entire cereal collection.

Only a very small proportion of the national forage collection in Teagasc is safety duplicated whilst the Irish Threatened Genebank has no level of safety duplication. Arrangements are being put in place to address the lack of safety duplication in these genebanks.

Ireland welcomes the development in recent years of an outline strategic framework for A European Genebank Integrated System (AEGIS), whose overall goal is to ensure conservation and continuing use of existing crop genetic diversity in Europe. The AEGIS model, which is expected to be agreed by the ECPGR networks in the near future, may well provide a useful tool in assisting Ireland in meeting some of the problems identified above.

Ireland welcomes the construction of the Arctic Global Seed Vault by the Global Crop Diversity Trust and intends to use this facility to meet the requirements of having an international *ex situ* safety duplicate storage location.

3.5 Documentation and characterisation

The Multi-Crop Passport Descriptors (MCPD), which were jointly developed, by Bioversity International and the FAO in 2001 has provided a workable template for all genebanks on which to supply a set of minimum passport descriptors for their germplasm collections. Progress in Ireland on this matter has been slow due to the lack of resources dedicated towards personnel in the documentation of such information, but it is envisaged that by 2008 all *ex situ* plant genetic resources in the public domain will be fully updated to the MCPD format.

More detailed documentation, characterisation and evaluation had also been carried out on some genebanks as listed below:

a) Department of Agriculture, Tops Potato Centre, Raphoe, Co. Donegal.

In 2004 a catalogue was completed documenting the unique Irish cultivars (from both a historical and cultural perspective) contained within the potato collection in the Tops Potato Centre. The catalogue, which documented approx. 50 such cultivars, includes descriptors using the UPOV guidelines and reference cultivars.

b) Teagasc Crops Research Centre, Oakpark, Co. Carlow

Teagasc has evaluated about 65% of the *Lolium perenne* and 36% of the *Trifolium repens* from the national forage collection. Evaluations completed concentrated on important morphological traits such as heading date, growth rate etc. Passport data that was recorded at the time of the collection of the semi-wild material is also available. Funding has

also been provided to Teagasc since 2003 to carry out detailed analysis on the genetic diversity of some of the *Lolium* accessions held in this collection at a morphological, biochemical and molecular level.

c) National Botanic Gardens, Glasnevin, Dublin 17

An online internet based interactive database is available for the living collection in the National Botanic Gardens. There is also a huge volume of documented material for the extensive herbarium held in hardcopy here.

d) National Apple collection in UCD

The national apple collection held in this orchard have been fully characterised according to the agreed IPGRI (International Plant Genetic Resources Institute) descriptors for *Malus* for cultivar classification.

e) Genebank in the Department of Agriculture Fisheries and Food, National Crop Evaluation Centre, Backweston, Leixlip, Co. Kildare.

Preliminary characterisation work has been completed for most of the cereal collection held in the Backweston genebank including a limited amount of morphological and phenological data along with background/historical data on origin and vintage of most of the old varieties included in the collection.

3.6 Germplasm movement

Not surprisingly because of the relatively small amount of germplasm held *ex situ* in Ireland, when compared with other countries, the volume of germplasm distributed has been quite small over the last ten years. The only genebanks that have distributed significant amounts of germplasm are the National Potato Collection in Raphoe and ISSA from their genebank in Scariff. Typically there would be 60-70 samples distributed annually from the National Potato collection to institutes and heritage growers around the country.

3.7 Role of botanic gardens

The roles of the botanic gardens are to explore, understand conserve and share the importance of plants. Collection, storage, description and documentation of agricultural and horticultural plants are also performed at the botanic gardens. Teagasc, the state agriculture research and educational authority, houses its college of amenity horticulture in the National Botanic Gardens in Glasnevin, which has close linkages with universities and plays a major role in teaching and research in particular taxonomic research and training. The botanic gardens in Trinity College Dublin supports that institutes activities in botanical teaching and research by providing living plant material, controlled growth environments, glasshouses and other experimental facilities.

3.8 An assessment of the major *ex situ* needs

The last ten years has seen a reduction in the number of state bodies actively involved in *ex situ* holdings of plant genetic resource due to reduced funding in this area, but there is now a realisation in Ireland that with a reduced number of bodies involved in *ex situ* holdings an opportunity to rationalise existing resources to optimal effect now exists. The need to have a centralised national genebank with dedicated personnel to address the lack of co-ordination in *ex situ* holdings of PGRFA has been recognised. It is proposed to establish a national genebank at the Department of Agriculture, Fisheries and Food's facility in the National Crop Variety Testing Centre, Backweston, Leixlip, Co. Kildare. In future PGRFA activities in Ireland shall be coordinated from the Backweston base. All valuable *ex situ* accessions held in other genebanks in the state will be duplicated in the national genebank in Backweston. The curator of the national genebank shall complete the MCPD for relevant Irish PGRFA.

Of some concern is the long-term future of the site of the national apple collection in UCD due to expansion of the college there. It is hoped that discussions shall take place in the future on the moving of the entire collection to a location on state owned lands where its long-term safety would be assured. Concern has to be expressed also over the future of GHI's Irish Threatened Genebank in Trinity Botanic Gardens, due to the lack of regeneration and necessary genebank associated laboratory facilities there. As this facility houses Ireland's only *ex situ* collection of crop wild relatives the long-

term suitability of this location needs to be addressed.

Much work also needs to be completed in addressing the gaps that currently exist in Ireland on the *ex situ* conservation of minor and under-utilised crops along with crop wild relatives. Stronger links must be forged between government departments, state research bodies and third level institutions that share responsibility for activities in this area so that a more coordinated effort on filling the knowledge gaps and organising further collecting activities can be achieved.



THE STATE OF USE

The utilisation of plant genetic resources is a crucial factor in the creation of sustainable agricultural production systems. In Ireland modern cultivars dominate within the commercial agricultural sector and very few old traditional varieties are used.

4.1 The importance of utilisation

An effective utilisation programme for PGRFA is needed to underpin a successful conservation programme. Good characterisation and evaluation of PGRFA, preferably at locations similar to their centres of origin, can provide breeders with valuable information and help create an effective utilisation programme. While there have been some activities in characterising and evaluating PGRFA accessions in Ireland more needs to be done to further enhance their utilisation in the future.

4.2 Utilisation activities and deployment of genetic diversity

Teagasc, is charged with the running of the potato and forage breeding programmes, the only active breeding programmes remaining in Ireland. The exploitation of genetic resources for greater sustainability is one of the core goals of the Teagasc breeding programmes. With the exception of some selected native white clover ecotypes and some selected old potato varieties, PGRFA conserved in genebanks have not been used in Irish breeding programmes. However it is believed that such conserved material constitutes a valuable genetic resource for such programmes in the future. To fully exploit the potential of these ecotypes and increase their utilisation in future, there is a need to fully document and evaluate them and make this characterisation and evaluation data publicly available.

4.2.1 Seed supply systems and the roles of markets

In Ireland all seed varieties for marketing must be registered on the National Catalogue or the EU Common Catalogue of Agricultural Plant Varieties. Registered varieties must meet the requirements of Distinctness, Uniformity and Stability (DUS), have a Value for Cultivation and Use (VCU), and an approved name. Under EU Council Directive 2002/53/EC [transposed into National Legislation by S.I. 525 of 2002], the Department of Agriculture, Fisheries and Food (DAFF) is the competent authority in Ireland to carry out VCU testing of agricultural crop varieties. Vegetable and amenity grass varieties do not undergo VCU trials in Ireland. DAFF, through the VCU testing programme, provides an independent evaluation of the relative merits of varieties for Irish growers. Varieties are evaluated, at a number of national sites, for suitability and performance under Irish growing conditions. The better-performing varieties are listed in the National Catalogue of Agricultural Plant Varieties. Based on these trials further testing is carried out in non-statutory Recommended List trials following which, Recommended Lists of varieties are drawn up. There is widespread usage of the Recommended Lists. Usage in 2005 was estimated at 95% for cereals, 90% for herbage and 80% for forage maize.

Ireland is a member of the International Union for the Protection of New Varieties of Plants (UPOV) and upholds the UPOV system of Plant Variety Protection. Ireland introduced amending legislation in the form of The Plant Varieties (Proprietary Rights) (Amendment) Bill, 1997. The Bill incorporated the principles of The 1991 Act of the UPOV Convention including legitimising the practice home saving of seed by small farmers. In practice a small number of seed assemblers act as agents for the breeders of protected varieties and oversee their propagation and protection of royalties. These agents control the propagation of those varieties. Many of popular potato varieties in Ireland are not controlled by Plant Variety Rights and can be marketed freely.



As a member of the EU, Ireland is obliged to implement the EU Seeds Directives. These ensure that seed is produced, multiplied and marketed according to predetermined standards and systems while maintaining the genetic integrity of the product and providing for the free movement of certified seed. Under EU and Irish law, it is illegal to market non-certified seed (see Section 5.3).

In Ireland whilst most of the potato seed and some of the grass seed certified are Irish bred, seed from all other species certified originates from other European breeders. In the case of cereals small quantity of European Breeder's Seed enters the DAFF Seed Certification Scheme, and is "bulked up" by a number of multiplications over a few years until commercial quantities of the seed are produced. DAFF field inspectors ensure that minimum levels of varietal purity and plant health standards are met in these processes. The seed and propagating material is distributed in a decentralised way via agriculture merchants and cooperatives.

4.3 Utilisation of conserved plant genetic resources and major constraints to their use

Of the three main crop types (potatoes, grass and cereals), potatoes garner the most interest from farmers and in terms of germplasm distributions it is the only PGRFA conserved in Irish genebanks that is actually distributed to interested parties. The ease of growing home saved potatoes and Ireland's long traditional association with this crop are obviously major factors in why this is the case. Measures to increase the existing farmer interest in the potato crop should be encouraged to create long term sustainable uses at local level for older varieties. The marketing of old potato varieties in local farmer markets is one such outlet currently being pursued. Looking forward, 2008 has been designated the International Year of the Potato and hence presents an opportunity to highlight Ireland's unique diversity in this crop with the profile such an event will inevitably attract.

Due to the labour intensity associated with the home saving of small cereal plots it is not surprising that this presents greater challenges in achieving a sustainable use for old varieties of Irish interest held in genebanks in the state and heretofore there has been very limited farmer interest in accessing such material.

Possible outlets proposed for cereals are to investigate the prospect of introducing a new supplementary measure to REPS when its next review is negotiated. This proposed measure would incorporate the use of rare and threatened cereal PGR into REPS and it is hoped would encourage more farmer interest in this area (see proposed GHI study in Section 2.4).

4.4 Assessment of the needs to improve utilisation

While progress has been made in Ireland in the area of conservation of PGRFA there has been limited activities in the area of utilisation of such material. Future policy in Ireland needs to focus on the fact that the activities of conservation and utilisation are not unrelated and for them to work in tandem progress in the following policy areas is seen as crucial in improving the utilisation of PGRFA:

- Ensuring that PGRFA issues are incorporated into the formal educational curriculum at all levels and in informal education and national awareness programmes in order to increase their use.
- Implementation of corresponding national legislation upon finalisation by the European Commission of the current draft EU Directives that propose derogations for the trading of agricultural landrace seed and propagating material other than seed.
- Provision of further funding to research institutes to advance their ongoing investigations in the area of PGRFA. The findings of such research may provide valuable primary information to plant breeders in finding solutions to the problems agriculture may face due to future climate change.

THE STATE OF NATIONAL PROGRAMMES, TRAINING AND LEGISLATION

The Department of Agriculture, Fisheries and Food (DAFF) is the lead Government Department charged with responsibility for the co-ordination and promotion of measures aimed at conserving and utilising PGRFA. While at the moment there is no formal national programme in plant genetic resources, in 1996 an Advisory Committee was set up under the chairmanship of a senior DAFF official to help identify and advise on agricultural genetic resources conservation and utilisation activities. Outside of DAFF other government bodies have included plant genetic resources conservation strategies in their plans. These include the National Biodiversity Plan and a National Plant Conservation Strategy both of which were completed to meet Ireland's obligations under the CBD.

5.1 National Programmes for Plant Genetic Resources

a) National Advisory Committee for Genetic Resources

The remit of the Advisory Committee is to advise and aid in the development and implementation of plans aimed at achieving the following objectives:

- The development and utilisation of genetic resources to increase national food security;
- The identification, evaluation and conservation of unique genetic resources whose survival is being threatened or endangered;
- The promotion of public awareness and support for genetic resource conservation management strategies;
- The participation in international and EU programmes aimed at co-ordinated management of genetic resources.

It should be noted that the national grant programme for genetic resources in Ireland covers plants, forestry and animals. Grant funding provided by this programme has contributed to the many positive actions taken in plant genetic resources referred to in this document over the past ten years. The advisory committee is made up of stakeholders from the wider genetic resources community in Ireland. It includes DAFF officials, representatives from universities, state research bodies, NGO's and a farmer's representative.

Since its inception in 1996 the annual funding towards projects approved by the genetic resources committee has increased by 18% to a level of €150 000 per annum in 2006. On the basis of funding received for grant-aided projects over the initial ten years of the scheme's operation there has been a bias towards the animal projects. The reason of more funding being distributed to the animal projects is probably explained by the existence of stronger groups and interested parties in that sector. In the ten years up to 2006 almost €400 000 has been spent on PGR related projects from the national grant programme. In PGR there are only two active NGO's competing for funding along with the interested third level institutions and research bodies. It is hoped that additional funding shall be made available to the annual genetic resources budget in the years ahead.

b) National Biodiversity Plan

The publication by Ireland in 2002 of the National Biodiversity Plan was in response to Article 6 of the CBD to develop national strategies for the conservation of biological diversity and the sustainable use of biological resources. The plan sets out the framework through which Ireland will provide for the conservation and sustainable use of biodiversity over a five-year period. Under fifteen themes and sectors, it details 91 actions that will be pursued to achieve this objective. Ireland's commitments in conservation and sustainable use of plant genetic resources were outlined in actions 35 – 37 of the plan. An Interim Review of Implementation of the National Biodiversity Plan took place in November 2005 and it outlined the level of progress Ireland has made in implementing the 91 actions of the National Biodiversity Plan and has identified the areas where further efforts are required including in the area of plant genetic resources.



c) A National Plant Conservation Strategy for Ireland

A National Strategy for Plant Conservation in Ireland was developed in September 2005 as a response to the Global Strategy for Plant Conservation (GSPC), adopted by the Conference of the Parties of the Convention on Biological Diversity in 2002. The 16 targets to be met by 2010 have been developed from the GSPC and were adopted into an Irish context in the National Strategy document following stakeholder meetings. The document focuses on records, important areas of plant diversity, invasive alien species, and public awareness. While the primary focus of the strategy was on wild plants a number of the targets provide for a series of actions to be undertaken in order to achieve progress in the area of plant genetic resources conservation for food and agriculture.

5.2 Education and training

Long-term protection and sustainable use of PGRFA requires an understanding of the importance of plant genetic resources for food and agriculture and well trained specialists with a broad knowledge base in research, agriculture and breeding. In Ireland, there are very few specialist personnel working in front line involvement with PGRFA. There are no specialist modules or courses providing targeted training in this area, however the third level institutions mentioned below have expertise in some areas closely related to PGRFA conservation.

The Faculty of Agriculture and Food Science in University College Dublin offers an agriculture science degree. The content of this programme has become more stratified in recent years with students now able to get their primary degree in areas as diverse as Environmental Science to Horticultural Landscape Management. This change in content had the inevitable effect of a reduction in emphasis into some of the college's primary agricultural areas, for example the wheat and field bean breeding programme closed in UCD in 1998. The failure by the Faculty of Agriculture and Food Science in UCD to replace a key position in crop breeding following the retirement of a senior staff member there in 2005 is of concern. It is feared that this will lead to a lack of emphasis on the importance of plant breeding in general crop agronomy, which is a worrying trend in the longer term as it will lessen student interest in PGRFA related issues. Nevertheless there still remains a strong emphasis in the Faculty of Agriculture and Food Science in UCD in the areas of plant taxonomy, agro-botany and agri-biodiversity related matters. The Plant Science Department, which is part of the School of Biology and Science in UCD are also engaged in work activities of relevance which include acquiring a greater understanding of plant responses to reduced resource availability and the utilisation of this information for the future development of agronomically-important plants with an increased tolerance to multiple environmental stresses.

The institutions referred to below are also involved in the areas of plant research, environmental management and molecular studies of relevance to PGRFA:

- National University of Ireland, Maynooth - Department of Biology, Molecular Ecology Laboratory.
- Trinity College Dublin - Botany Department, Plant Molecular Systematics.
- University College Cork – Department of Biochemistry, Plant Biotechnology and Integrative Genomics.
- University College Galway – Department of Botany, Terrestrial and Aquatic plant ecology.

The National Botanic Gardens in Glasnevin also has linkages with a number of third level institutions and provides students with an opportunity to work in a practical way alongside skilled horticulturalists as part of their training in the principles of plant taxonomy and identification.

There is no post graduate course specifically in plant genetic resources in Ireland. However a Master of Science in Conservation and Utilisation of Plant Genetic Resources programme offered by the School of Biosciences in the University of Birmingham, United Kingdom offers options for Irish students interested in this area. It is disappointing that despite government policy to create a science based "knowledge economy" in Ireland that none of the universities offer specialist programmes/activities in PGRFA.

5.3 National legislation

At present in Ireland there is no specific legislation that provides a legal basis for the conservation of PGRFA. National obligations arising from the International Treaty in Plant Genetic Resources for Food and Agriculture (2003) and the Convention in Biodiversity (1992) are fulfilled from within our existing legislative framework. The Wildlife (Amendment) Act (2000) gave the Government specific recognition to their responsibilities in regard to promoting the conservation of biological diversity, in the context of Ireland's commitment to the Convention on Biological Diversity.

Seed and Variety Protection Legislation

Ireland complies with EU seed and variety production legislation, which also has importance for the conservation and use of plant genetic resources. The following crop-specific EU seed directives govern the marketing of seed in Ireland:

- 66/401/EC – Fodder plants
- 66/402/EC – Cereals
- 2002/53/EC – Common Catalogue of varieties of agricultural plants
- 2002/54/EC – Beet
- 2002/55/EC – Vegetables
- 2002/56/EC – Potatoes
- 2002/57/EC – Oils and Fibres

All of the above quoted EU seed directives have been transposed into national legislation. Seed of agricultural plant species may generally only be marketed on a commercial basis as certified seed. Seed certification requires official approval of the plant variety and compliance with certain standards of seed quality and production. Varieties are only approved if they are distinct, uniform, and stable and, in the case of agricultural species, if they are of specific value for cropping and further use. EU Council Directive 98/95/EC amending the seeds directives provide, amongst other things, for specific rules on the marketing of seeds of genetic resources. At present the EU is drafting four amending directives providing for certain derogations to allow the marketing of seed and propagating plant material of value for plant genetic resources conservation (including varieties and landraces naturally adapted to local and regional conditions and threatened by genetic erosion), in the areas of:

- Acceptance of agricultural landraces and varieties
- Seed of vegetable landraces and varieties
- Vegetable propagating and planting material other than seed
- Fodder plant seed mixtures

It is anticipated that the above draft directives shall be finalised by the EU in 2008/2009 and, on their completion, Ireland shall take the appropriate action necessary to transpose them into Irish law.

5.4 Public awareness

The awareness of the general public on the potential negative impact of continued loss of plant biodiversity has been greatly heightened in recent years. The media now pay more attention to these issues as the long-term effects of climate change and human activity on our environment become more apparent, however there is still a need to further educate the general public on the importance in conserving PGRFA.

There are no formal public awareness programmes for plant genetic resources in Ireland. However a number of initiatives have been carried out in recent years and are planned for the future to raise public interest in these matters. Most of these involve participation by the State institutes, DAFF and Teagasc in major national events and open days where the opportunity is taken to inform and educate the public on the activities that take place in Ireland relating to PGRFA. There is also assistance from NGO's in promoting public awareness and ISSA have been involved in a number of initiatives recently with the assistance of state funding, which include the education of school children on the importance of biodiversity and engaging with them at a practical level in workshops. ISSA also offer adult training courses in a number of areas all with the similar aim of promoting wider interest in biodiversity related issues.

It is hoped that the International Year of the Potato in 2008 will provide a springboard to engage with the public on specific PGRFA related matters and a number of public events are planned. The anticipated launch in the near future of the Svalbard Global Seed Vault in Norway has also potential to heighten public awareness as it is anticipated that there will be much media interest in the facility and the opportunity to engage with the general public on PGRFA issues at that time should not be missed.

5.5 Assessment of major needs for national programme development, training and legislation

Increasing the quality of plant projects submitted through the National Genetic Resources grant programme in Ireland is one of the objectives to be met for the future. Progress can only be achieved by improved coordination at national level between breeding programme's, research institutes, DAFF and the other stakeholders in this area to work together in formulating effective strategies to implement the common policy aspirations.

There is also an onus on third level institutes to offer more targeted courses relating to PGRFA at both undergraduate and postgraduate level. Policy makers particularly in the area of education need to place more emphasis on the importance of incorporating PGRFA activities into their education programmes so as to engage young people in this area.

The adequacy of the existing national legislative framework relating to the conservation and sustainable use of PGRFA should be reviewed whilst at the same time taking cognisance of all relevant EU directives.

Improved communication with the public on the conservation and use of PGRFA is needed to create greater awareness on the importance of national activities taking place in this area.



THE STATE OF REGIONAL AND INTERNATIONAL COLLABORATION

The benefits of collaborating on plant genetic resources conservation and use have brought many countries and regions together in partnership over the years. Ireland has benefited from its participation in PGRFA networks and has gained valuable information on activities for the country to adopt at a practical level.

6.1 Regional and sub-regional networks, international crop-specific networks and sub-regional collaboration for maintaining *ex situ* collections

With regard to regional and sub-regional cooperation concerning PGRFA the following regional programmes are of particular importance:

a) European Council Regulations (EC) No 1467/94 and No 870/2004

The European Community programme on the conservation, characterisation, collection and utilisation of genetic resources in agriculture promotes genetic diversity and the exchange of information including close coordination between Member States and between the Member States and the European Commission. It also facilitates coordination in the field of international undertakings on genetic resources.

A first European Community programme on the conservation, characterisation, collection and utilisation of genetic resources in agriculture, based on Council Regulation (EC) No 1467/1994, covered the period 1994-1999. 20 projects were funded across the EU of which 16 were plant related. One of the plant projects included a potato project: Genetic Resources of Potato, including conservation, characterisation and utilisation of secondary potato varieties for ecological production systems in Europe (GENRES CT95 Nos34-45). While co-ordinated by the Centre for Genetic Resources (CGN) in Wageningen, The Netherlands; Ireland participated in this project through the Potato breeding programme in Teagasc, Oakpark, Co. Carlow.

In order to support the ongoing maintenance of biological and genetic diversity further, a second EU programme was established by Council Regulation (EC) No 870/2004 to facilitate co-ordination in the field of international undertakings on genetic resources, in particular within the Convention on Biological Diversity, the International Treaty on Plant Genetic Resources for Food and Agriculture and the FAO's Global Plan of Action for the Conservation and Sustainable Utilisation of PGRFA.

b) European Agricultural Fund for Rural Development (EAFRD)

The Council Regulation (EC) No 1698/2005 of 20 September 2005 on support for rural development by the European Agricultural Fund for Rural Development (EAFRD) created a single instrument to finance rural development policy. EAFRD introduced for the first time the conservation and sustainable use of genetic resources for food and agriculture as part of rural development plans and provides co-funding from the EU for activities carried out by Member States. As the REPS (see Section 2.3) is co-funded from this regulation there is now scope to broaden out the scheme into more targeted measures that can enhance Ireland's objectives in conservation and sustainable of PGRFA. As the next review of the REPS is not due for a few years it may be some time before practical new measures can be proposed.

c) European Cooperative Programme for Plant Genetic Resources (ECPGR)

Ireland is actively involved in the ECPGR, which is a collaborative programme for PGRFA among most European countries. It aims to facilitate the long term *ex situ* and *in situ* conservation of PGRFA on a cooperative basis as well as improving its utilisation in Europe. Ireland's participation in ECPGR is coordinated by DAFF who attend or nominate experts to attend ECPGR meetings.

ECPGR is the collaborating body for the implementation and further development of the European Search Catalogue for Plant Genetic Resources (EURISCO), which Ireland strongly supports. EURISCO is a web-based catalogue that provides information about *ex situ* plant collections across Europe. One of the key elements of EURISCO is the network of National Focal Points responsible for their respective National Inventory's and the data flow between the National Inventory's and EURISCO. Each country has full responsibility and sovereign rights on the data availability, accuracy and upload of its National Inventory. The conditions for the collaboration are laid down in a Memorandum of Understanding between Bioversity International and the National Focal Point for the National Inventory, which in Ireland, is a nominee from DAFF. The last update of the Irish National Inventory data in EURISCO took place in 2004 and a further update is planned in 2008.

ECPGR are also involved in the implementation of a strategic framework for the implementation of A European Genebank Integrated System (AEGIS) whose overall goal is to ensure conservation and continuing use of existing crop genetic diversity. The AEGIS programme, which commenced in 2004 with a feasibility study on four pilot crop working groups, is expected when eventually finalised, to have an agreed framework to establish a European collection of the most important PGRFA germplasm material. Ireland fully supports the implementation of AEGIS.

6.2 International programmes

The Food and Agriculture Organisation (FAO) of the United Nations deals with issues relating to PGRFA policy at international level. Ireland acknowledges the importance of the International Treaty on Plant Genetic Resources for Food and Agriculture (Treaty) in the governance of biological diversity. Ireland also recognises the importance of the FAO's Global Plan of Action for the Conservation and Sustainable Use of Plant Genetic Resources for Food and Agriculture (GPA) and has adopted similar priority actions in our national conservation programme.

Furthermore Ireland supports the following international programmes and organisations focused on genetic resources:

a) Global Crop Diversity Trust (GCDT)

The GCDT's mission is to ensure the conservation and availability of crop diversity for food security worldwide.

The GCDT forms one element of the funding strategy of the Treaty in relation to the *ex situ* conservation and availability of PGRFA. The construction of the Global Seed Vault in Svalbard, Norway which has been in receipt of funding by the GCDT, will play a major role in fulfilling the European and indeed global requirements for safety duplication of *ex situ* germplasm of value for food and agriculture. Ireland fully supports the work of the GCDT and has given a future commitment to contribute €3 million to the Trust from 2007-2009, through the Irish Government's programme for supporting overseas work; Irish Aid.

b) Consultative Group of International Agricultural Research (CGIAR)

The mission of the CGIAR is to achieve sustainable food security and reduce poverty in developing countries through scientific research and research-related activities in the fields of agriculture, forestry, fisheries, policy, and environment. The membership of the CGIAR includes 25 developing and 22 industrialized countries, 4 private foundations, and 13 regional and international organisations that provide financing, technical support, and strategic direction. The CGIAR have built up the world's largest collection of plant genetic resources with eleven centres together maintaining over 650 000 samples of crop, forage and agroforestry genetic resources in the public domain. Ireland has been a member of the CGIAR since 1979 and in 2006 contributed \$5 million to the research centres supported by CGIAR. Funding is provided through the Irish Aid programme.

6.3 International agreements

Ireland ratified the Convention on Biological Diversity in 1996. In the last ten years the most important agreement has been the International Treaty on Plant Genetic Resources for Food and Agriculture (The Treaty). The Treaty was adopted by the thirty-first session of the FAO conference on 3 November 2001 and entered into force on 29 June 2004. Ireland ratified the Treaty on 31 March 2004 and is fully supportive of its objectives. The Treaty is a legally binding global framework for conservation of plant genetic resources. Activities to implement the Treaty are currently being established in Ireland.



6.4 Assessment of major needs to improve international collaboration

Due to the small amount of *ex situ* PGRFA collections and the absence of major plant breeding programmes in Ireland there has been limited collaboration with other countries. Nevertheless Ireland supports the following policy aspirations to improve overall international collaboration between countries:

- The efficient conservation under high quality standards and collaboration in the sharing of conservation responsibilities for Annex 1 crops of the Treaty and further crop plants needs to be improved. It should build on the global crop conservation strategies developed by the GCDT and AEGIS.
- The involvement of crop experts, crop working groups and centres of excellence in the development of information systems for plant genetic resources. The linkages between such information networks and crop networks should be reinforced. Evolving crop portals may provide tools in the development of crop conservation strategies and in the management of characterisation, evaluation and collecting activities.
- The rolling GPA provides the structure and the operational framework for the conservation and sustainable utilisation of PGRFA. As there is a strong link between the implementation of the GPA and the Treaty, the GPA needs to be updated as soon as possible as foreseen by the CGRFA in its multi-year programme of work.
- The concentration of agricultural research on PGRFA in order to promote utilisation and ensure food security needs to be strengthened.

ACCESS TO PLANT GENETIC RESOURCES FOR FOOD AND AGRICULTURE AND SHARING OF BENEFITS ARISING OUT OF THEIR USE, AND FARMERS' RIGHTS



Ireland does not have specific regulations on access to genetic resources within its territory. In Ireland anybody is allowed to collect plants growing *in situ* while respecting nature conservation, species and other special protection, ownership and phytosanitary regulations.

7.1 Changes in the international legal and policy framework in relation to access and benefit sharing for genetic resources

The Convention on Biological Diversity (CBD), which entered into force on 29 December 1993 and which Ireland ratified in 1996, contains several provisions on access to genetic resources and the sharing of benefits arising out of the utilisation of these resources. Article 15 of the CBD addresses the terms and conditions for access to genetic resources and benefit sharing. It recognises the sovereignty of States over their natural resources and provides that access to these resources shall be subject to the prior informed consent of the Contracting Party providing such resources. Ireland agrees with the process outlined in the 2002 Bonn Guidelines to facilitate access to genetic resources under the CBD and to ensure the fair and equitable sharing of the benefits. For PGRFA, Ireland agrees with the “Multilateral System of Access and Benefit Sharing” (MLS) and Standard Material Transfer Agreement (SMTA) as provided for within the scope of the International Treaty on Plant Genetic Resources for Food and Agriculture (the Treaty), which Ireland ratified in 2004 (see Section 6.3). The CBD requires bilateral negotiations to grant access to genetic resources based on prior informed consent and mutually agreed terms, while within the framework of the Treaty, Contracting Parties grant facilitated access according to mutually agreed terms as defined in the SMTA to the PGRFA in the MLS.

7.2 The state of access to genetic resources

The Treaty, has established an efficient and transparent process to facilitate access to important food crops in Ireland. Material under direct control of the Government shall be made available to the MLS and transfers of crop germplasm listed in Annex 1 of the Treaty will be via the SMTA.

While Irish farmers have access to seed and propagating material held in Irish genebanks it is not envisaged that demand for such material will be high. Most Irish farmers use modern commercial varieties although a small number retain their own seed for re-planting. Farmers in Ireland rarely grow agricultural crop landraces.

For the main agricultural crops small-scale farmers are allowed to freely save and re-use seed or propagating material from their harvests. Under EU legislation, small farmers are defined as those whose cereal and fodder plant production do not exceed 15.13 hectares, excluding permanent pasture established for more than five years. In the case of potatoes, farm saved seed can be retained for one year only. Small potato farmers are defined as those whose production area does not exceed 6.3 hectares. Farm saved seed crops must be entered for certification and royalties are payable in the case of protected varieties. Generally seed supply is not a problem in Ireland. The marketing of seed and propagating material of agricultural products is subject to national legislation, which in turn implements the corresponding EU directives (see Section 5.3). The Seed Trade Act of the European Union aims to ensure the supply of high quality seed and propagating material. Only seeds that have been controlled, certified and authorised may be marketed.

7.3 Benefit arising out of the utilisation of plant genetic resources for food and agriculture

While the CBD specified that results of research and development should be shared as well as the benefits arising from the commercial and other utilisation of genetic resources, the Treaty has provided for a multilateral system of benefit sharing. This concept is complementary to the multilateral system of facilitated access, which the Treaty acknowledges to be a “benefit” in its own right. The fair and equitable sharing of the benefits arising from the use of PGRFA is fundamental to the multilateral system provided for in the Treaty.

7.4 Financing plant genetic resources activities

The activities in Ireland regarding examples of programmes funding the utilisation of plant genetic resources and financing plant genetic resources activities have been described previously in Sections 2.4 and 5.3 respectively.

7.5 Implementation of Farmers’ Rights

The Treaty introduced Farmers’ Rights as recognition of the contribution of local and indigenous communities and farmers in the past, present and future. The Treaty emphasises the sovereignty of all countries over their local genetic resources, their commitment to protect traditional knowledge relevant to these resources as well as the balanced and equitable sharing of benefits arising from the utilisation of these resources.

Ireland recognises the enormous contribution that farmers, particularly those in the centres of origin of crop diversity, have made to modern agriculture. Ireland also takes the view that the realisation of Farmers’ Rights rests with national governments. Due to the present high usage of modern cultivars and the general absence by Irish farmers in the breeding and improving of varieties, Ireland heretofore has not seen the need to take legal measure to protect Farmers’ Rights.

Farmers in Ireland can retain seed for re-planting subject to the provisions in Section 7.2). Farmers also have an opportunity to participate in the decision-making processes on the conservation and use of plant genetic resources in Ireland through the farmer representative nominee on the Irish National Advisory Committee for Genetic Resources. DAFF has supported and will continue to support into the future the further implementation of Farmers Rights *inter alia* in the projects it finances through the national grant scheme for genetic resources (and other relevant funding outlets) in areas such as:

- Research in PGRFA
- Base broadening and bulking up of old agricultural landraces
- Enhancing utilisation of farmer varieties/landraces including market access
- Access to seed and propagating material

In addition to the above Ireland is committed to adopting into national legislation - when formally agreed at EU level - the EU directives referred to in Section 5.3 that will provide for derogations to allow the marketing of seed and propagating plant material of value for plant genetic resources conservation (including varieties and landraces naturally adapted to local and regional conditions and threatened by genetic erosion). This will further strengthen Farmers Rights in Ireland as provided for in Article 9 (a) of the Treaty.

THE CONTRIBUTION OF PLANT GENETIC RESOURCES FOR FOOD AND AGRICULTURE MANAGEMENT TO FOOD SECURITY AND SUSTAINABLE DEVELOPMENT

Some 75% of world's plant genetic diversity has been lost since the 1900's as farmers have left their multiple local varieties and "landraces" for genetically uniform, high yielding varieties. The erosion of biodiversity for food and agriculture severely compromises global food security. Efforts must be strengthened to protect and wisely manage biodiversity for food security. Its sustainable use is central to achieving a secure and sustainable food supply system.

8.1 Contribution to agricultural sustainability

The sustainability of agriculture has emerged as one of the most relevant global issues. Seeds are seen as material ripe for manipulation to enhance yield, adaptability, or nutritional value and as the stores of valuable genetic information. It is the use of this material in future that will play a key role in meeting the challenges of climate change, demand, disease and pests. Ireland sees the establishment of a conservation infrastructure and the enhancement of utilisation systems for plant genetic resources as critical to meeting these challenges.

8.2 Contribution to food security

PGRFA are of critical importance to the food security of the present and future generations. They are one of the most fundamental of all resources on earth. The majority of the threats to PGRFA have emerged as a result of development for overall progress and food security. Erosion of genetic diversity including that of ecosystems down to species level started with evolution of agriculture and became enhanced with formal plant breeding and the advent of high-yielding varieties. Ireland realises that a balance is required between overall progress and environmental protection and conservation and sustainable utilisation of PGRFA is required to ensure food security of the present generation and for the future.

Concerns regarding food security is not a major issue in Ireland as it is an export nation for the major non-crop agricultural commodities, while in the case of the main agricultural crops it is largely self sufficient (see Table 1 in Introduction Section), however policies shall remain in place for the continued conservation of important plant genetic resources in terms of risk management in order to have them available in case of need under future changed conditions.

8.3 Contribution to economic development

The conservation of plant genetic resources does not contribute significantly to overall economic development in Ireland. The conservation of the genetic diversity of crops is a resource for future agricultural sustainability however and is thus a potential aid to agricultural economic development in the context of unforeseen challenges that may lay ahead in agriculture.



8.4 Contribution to poverty alleviation

The reduction of poverty is a complex, challenging and controversial matter, requiring a strategic, multi-faceted and sophisticated approach. Anti-poverty strategies should seek to break the vicious circle of poverty through support for sustainable development. Ireland recognises the vital role of agriculture as part of the solution to hunger and poverty in developing countries and as part of national measures to address this a Hunger Task Force has been established to draft a report to identify contributions that Ireland can make to international efforts to reduce hunger.

Ireland supports the strengthening of international collaboration in order to reach an equitable global management of agri-biodiversity, which was included in the aspirations of the Millennium Summit. At the Millennium Summit in September 2000 the largest gathering of world leaders in history adopted the UN Millennium Declaration, committing their nations to a new global partnership to reduce extreme poverty and setting out a series of time-bound targets, with a deadline of 2015, known as the Millennium Development Goals, which were finalised in 2005. Ireland plays its role in achieving the aspirations listed in the goals through the Irish Aid programme, which provides funding for a range of development aid measures including agriculture assistance in developing countries. In the broader context however, higher priority must be given in international collaboration both at a bilateral and multilateral level to strengthening the management of biodiversity as a resource for food and agriculture.

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