LATVIA:

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

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Prepared by:

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Note by FAO

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CHAPTER 1
Introduction to Latvia and its Agricultural Sector

1.1 GEOGRAPHY AND CLIMATE

Latvia is located between 55° and 58° North and 20° and 28° East. The longest distance from North to South is 210 km and from East to West 450 km. The total area of the country is 64,589 sq. km out of which 40% is considered as agricultural land. Almost half of land surface (43%) is covered by forest. Lot of lakes and rivers (3.9%) do the countryside, which is relatively flat. The highest point of so cold Vidzeme Upland is 312 m above s.l.

The landscape, except for coastal regions, was formed during the last glacial period, when sandstone, dolomite and limestone formations were covered by glacial deposits. Moraines are typical for the Latvian landscape.

The climate is temperate and maritime. The average annual temperature is 5.5°C with a maximum in July of 16°-18°C and a minimum in January of -2° to -7°C. The average annual rainfall is 600 - 700 mm. The are four distinct seasons. In spite of Latvia small land area there are important differences in climatic conditions between following four zones:

1) North Eastern

2) South Eastern

3) Central

4) Western

Thus, the growing season, when the average temperature during 24 hours is over 5°C, differs between four zones in the following way:

1) North Eastern	175 - 185 days
2) South Eastern	180 - 185 days
3) Central	185 - 190 days
4) Western	190 - 195 days

1.2 THE LAND USE

	ha	%
1. Agricultural land	2,567.8	39.4
2. Actual Forest Land	2,802.4	43.4
3. Shrubland	111.7	1.7
4. Bogs, swamps	315.9	4.9
5. Peat output land	47.9	0.7
6. Inland waters	254.4	3.9
7. Roads, building sites	263.3	4.1
8. Waste land	10.7	0.2
9. Other	84.8	1.3
Total area	***6,458.9 th***	***100.0***

The main part of 2.6 million hectares used for agricultural purposes is arable land totalling 1.6 million hectares. Pastures cover about 0.6 million and meadows 0.25 million hectares. The land use has been relatively constant during the last decade which can be seen in the following table in 1000 ha

Year	Total	Agricultural land	Arable land	Meadows	Pastures
1935	6,579	3,666	1,948	890	828
1980	6,459	2,479	1,699	207	537
1990	6,459	2,567	1,687	246	598

The land used for agricultural purposes in percent of total land area has decreased during the period 1935 to 1980 from 56% to 39% while on the other hand the arable part of the agricultural land has increased during the same period from 53% to 68%.

1.3 FACTS ABOUT AGRICULTURE

Before second world war Latvia had a very well developed agriculture and was even exporting agriculture products. During the Soviet time the old family farming system was broken down, and all land was taken over by state farms or collective farms. Emphasis was given to animal production. In this system it was considered, that the agriculture climate in Latvia was not suitable for production of high quality bread wheat, it should instead be imported from other part of the Soviet Union. The breeding work on wheat was concentrated to fodder wheat without any consideration of baking quality.

The Latvian agriculture is now once again in the process of a complete reorganization The central planned production system, which had been prevailing for the last 50 years or so is collapsing. Collective farms and the present situation is difficult to describe as the agricultural reform is in a critical stage, during the privatization of real estate land as well as other means of production. Different kinds of ownership are established as: private farms, rural share-holding companies, stock-holding companies, co-operative farms and specialized state farms.

1.3.1 Sown areas of different crops

The sown areas of the most important crops by all categories of farms during the last 3 years follows in 1,000 ha:

	1991	1992	1993
Cereal crops and legumes	657	703	704
Of which winter cereals	143	261	355
wheat	70	123	154
rye	69	131	189
barley	1	3	5
triticale	3	3	7
Spring cereals	515	442	348
wheat	2	6	16
barley	397	347	273
oats	93	69	49
mixed cereals	14	14	9
Legumes	16	12	3
Sugar beets	15	25	12
Potatoes	82	97	90
Fodder crops	843	718	593
Sown are in total	**1,621**	**1,572**	**1,419**

1.3.2 Yields (quintal/ha) of important crops

Years	Wheat	Rye	Barley	Oats	Potatoes
1937	13	15	12	12	140
1988	26	24	14	14	127
1989	31	26	22	20	155
1990	26	25	23	21	127

The hectare yields are relatively low and has not increased significantly during the last years but can still be increased substantially by use of improved varieties and technology.

1.3.3 Production (1,000 ton) of important crops

Years	Wheat	Rye	Barley	Oats	Potatoes
1937	172	421	218	405	1,782
1988	270	239	500	90	1,100
1989	360	337	700	149	1,315
1990	370	324	693	176	1,016

CHAPTER 2
Indigenous Plant Genetic Resources

2.1 WILD SPECIES AND WILD RELATIVES

Between Latvian wild species most importance for practical breeding have pastoral plants. Following are the list of species, which were used to improvement of the cultivated varieties:

Phleum pratense
Dactylis glomerata
Arrhenatherum elatius
Alopecurus pratensis
Lolium perenne
Poa pratensis
Poa palustris
Festuca rubra
Trifolium pratense
Trifolium hybridum

The uniqueness of Latvian wild pastoral species is related with their adaptability to local maritime environments with often thaws during winter period. There are maintained big diversity of wild populations, including those in protected areas with limitation of agriculture activities. Areas of contact between wild and artificial populations are also especially interest since natural hybridization and selection. Nevertheless no any expeditions are organized about last 10 years to investigation and collection of samples from populations mentioned above because limitations of foundation and relevant specialists.

There are also many wild medical and horticultural species with potential value for practical breeding but specially expeditions and investigation are needed to collect more detailed data about them.

2.2 LANDRACES AND OLD CULTIVARS

In 20 years of this century, when first plant breeding station really start work in Latvia, some local varieties and landraces were collected which are used in breeding. Most of then collection were lost during Second World War. In

most important agriculture plants there are not landraces or old cultivars in commercial use in nowadays. Some landraces and old cultivars including those of Latvian origin are cultivated in small farms and home garden (vegetable, potato, horticulture). Between those can be ones good adopted to Latvia environment. It is not special investigations of resources of such plants but it importance are without doubt.

2.3 PROTECTION

According the Law of Environment Protection in Latvia, adopted in 1991, the one of main goals of the establish of protected areas is the maintenance of natural genetic resources.

CHAPTER 3
National Conservation Activities

3.1 *IN SITU* CONSERVATION ACTIVITIES

In situ PGR conservation in Latvia is organized for forest genetic resources (see appendix).

3.2 *EX SITU* COLLECTIONS

There is not a national genebank in Latvia until now. During the soviet period, as in most soviet republic of former USSR, for the purpose of conservation and utilization of Latvian PGR have been used the collection of N. Vavilov All-Union Institute (VIR) in St. Petersburg. In this time in Latvia there was only working collections for breeding, researching and teaching purposes comprising accessions with origin from different countries. Corresponding institutions did not have appropriate facilities for long-term safety storage. Therefore most part of cultivated PGR, especially unique material of Latvian origin, was under the threat of loss. In 1993 Latvian Society of Geneticists and Breeders organized the Working Board for Cultivated Plant Genetic Resources and Working Groups for different plant groups included representatives from plant breeding, research and teaching institutions. Since second half this bodies are supported from Latvian Council of Sciences and Ministry of Agriculture on short-term grants basis trough Latvian Academy of Agricultural and Forestry Sciences as two independent PGR project for agricultural plants and forest. In 1995 the forest PGR project was stooped because limitations in Latvian science founding.

As main objectives of the agricultural plant PGR project is considered:

- establish an extensive inventory of the origins and conditions of PGR exist in the different Latvian collections;
- create computerized data base on PGR in Latvian collections;
- develop criteria to include accessions in Latvian PGR collection;
- evaluation of most important features for accessions included in Latvian PGR collection;
- organize long-term safety storage system for Latvian PGR collections;

- realize expeditions for collecting wild relatives of cultivated plants and accessions from individual farms and small garden.

The computerized PGR information centre is established in Institute of Biology of Latvian Academy of Sciences in 1994. At present database consist 7,019 records which include 78 species. 1,935 records correspond to accessions of Latvian origin. They represent cereals (169), forage (843), potato (137), fruit and berries (614), and others. The database reflect accessions from collections of different Latvian institutions and included now only passport data.

It is make decision to develop a national genebank with active collection in Institute of Biology. Some founds are allocated from co-operative Nordic-Baltic project for long-time storage facilities.

It is considered a possibility to maintain the accessions of Latvian origin in Nordic Gene Bank as basic collection.

Some evaluation and observation data for accessions of Latvian origin are collecting during the vegetation period in 1995, but more widely it will be done in next years after making decision about a contents of descriptor list for each species group.

CHAPTER 4
In-Country Uses of Plant Genetic Resources

4.1 USE PGR COLLECTIONS

Until now Latvian plant breeder have a possibility to use mainly only the VIR collection (St.-Petersburg). Now Latvian PGR information centre tray to collect and provide plant breeders with information about other PGR collections. The Information centre also distribute a information about Latvian collections to institutions interested and few requests for are received.

4.2 CROP IMPROVEMENT PROGRAMME

Agriculture plants breeding is doing in Latvia only in State plant breeding stations. As main breeding goal in Latvia is considered developing varieties suitable for Latvian agricultural climatic conditions, which are high yielding with good resistance to pests and diseases and have good quality.

State plant breeding stations have some support from Latvian Council of Science by short-term (3 years) projects. There are some additionally one year supports from Ministry of Agriculture. Such short-term finalization can not provide the long-term needs of plant breeding work. Probably a plant breeding financing system will be changed after 1-2 years.

CHAPTER 5
National Goals, Policies Programme and Legislation

It is not a global national PGR programme in Latvia. Nevertheless in frame of the project of Agriculture PGR the network of institutions dealing with PGR is established. Until now in this network is included only governmental organizations: plant breeding stations, researching institutes and universities.

Until now there are not enough personnel good trained in different aspects of PGR work. Latvian participants take part in special workshops which are organized for Baltic countries by Nordic Gene Bank. There are also possibilities for few people to training directly in Nordic Gene Bank.

There are not in Latvia any legislation regarding import/export PGR.

In 1993 a law "The protection of Plant varieties" was adopted in according with UPOV rules. The law regulates the sale and distribution of seeds. According the low all questions about certification, marketing and import of seeds are in the competence of the National Plant Variety Council.

CHAPTER 6
International Collaboration

Latvia is member of FAO Plant Genetic Resources Commission. The officials of Ministry of Agriculture have made decision about joining to IPGRI programme but it is stooped now since lacking relevant founds. Founds needed for joining is included in a Ministry budget project for 1996.

Latvia together with other Baltic countries Estonia and Lithuania, have initiated a co-operative programme for the conservation and utilization of plant genetic resources. Because the Nordic and Baltic countries are geographically, climatological and historically closely linked to each other, the initial phase of the programme is supported by the Nordic Council of Ministers, which will allocate approximately US$ 200,000 to the program from 1994 to 1996. In this initial phase the program will be coordinated by the Nordic Gene Bank (NGB) who will also provide technical support and training.

During this initial phase, a network of Baltic institutes holding collections will be established. A Plant Genetic Resources Coordinator has already been appointed in each Baltic country and at NGB an overall coordinator has been appointed.

During this period, information about valuable plant genetic resources of Baltic origin will be collected and computerized by the coordinators and their assistants in each country. The information will then be sent to a common Baltic Information Centre for Plant Genetic Resources, to be established in Latvia by the Latvian coordinator. The extent and condition of PGR of Baltic origin existing at VIR and IPK (Gatersleben) will also be checked.

Computers and software for database management have already been provided by NGB and staff training will be organized in 1995 both at NGB and in the Baltic countries.

Thanks to Estonian, Latvian and Lithuanian funding the urgent task of rejuvenating accessions with low viability in these countries is already being tackled. Funds will now be sought in the individual Nordic countries to provide seed drying and packaging equipment and increase the training component of the programme. In the near future, measures must also be taken to collect old landraces, mainly of vegetables, which it is thought are still cultivated in these countries. Raising funds to safeguard the large collections of fruit trees is also urgently needed.

Good contacts are established between Latvian PGR network and Gene Banks of Institute of Plant Genetics and Crop Plant Research (Gatersleben, Germany), Institute of Plant Industry (St.-Petersburg, Russia), and Research Institute of Crop Production (Prague, Czech Republic). Latvian representative had possibility to visit this genebank for learn they experience in PGR storage and documentation. Last time some wheat, oat, buckwheat, peas and flax accessions of Latvian origin are repatriated from Gene Banks mentioned above.

CHAPTER 7
National Needs and Opportunities

- To establish National programme
- To establish National gene bank
- To train staff
- To join IPGRI programme
- To receive additional founds
- To evaluate and collect wild populations of PGR.

ANNEX
Latvia National Report on Forest Genetic Resources

1 INTRODUCTION TO COUNTRY AND ITS FORESTRY SECTOR

1.1 Position and climate

Republic of Latvia - small Baltic country situates at the East coast of Baltic see and Gulf of Riga between 55°40'- 58°07' North latitude and 21°00' - 28°15' East longitude. Latvia has an area of 64,589 sq. km - similar to other Baltic countries: Lithuania (65,200 and Estonia 45,100), almost half of land surface (43%) is covered by forest. Lot of lakes and rivers (3.9%) do the countryside, which is relatively flat. The highest point of so cold Vidzeme Upland is 312 m above s.l. The warm Gulf Stream in the Atlantic gives Latvia a milder climate than other areas equally far north. The climate of Latvia belongs to transition from temperate humid to atlantic continental - i.e. between the East Europe continental and West Europe maritime climate. The growing season lasts from 175 in the East to 200 days at the Baltic see Mean temperatures range from 16 - 18°C in July to -4 and -7.5°C in January - February. The sum of active temperatures (above 5°C) are 2,020° - 2,460°. The cold period (t °C below 0) lasts from 100 days in the coastal regions to 145 - on Uplands. Annual precipitation ranges from 500 mm to 800 mm. Evaporation is relatively low - about 40% - 70%, which contributes to the abundance of wetlands, lakes and waterways. All above climate characteristics determine the high variability of growing conditions and the extent of forest cover. According to forest tree species composition and climate conditions Latvia forests belong to hemiboreal zone, where indigenous boreal conifer tree species predominate.

1.2 The Land Use in Latvia

	th ha	%
1. Agricultural land	2,567.8	39.4
2. Actual Forest Land	2,802.4	43.4
3. Shrubland	111.7	1.7
4. Bogs, swamps	315.9	4.9
5. Peat output land	47.9	0.7
6. Inland waters	254.4	3.9
7. Roads, building sites	263.3	4.1
8. Waste land	10.7	0.2
9. Other	84.8	1.3
Total area	***6,458.9***	***100.0***

1.3 Forestry Sector

The forest is one of Latvia's major assets, most important and valuable natural resource, covering 2.82 million ha or about 44% of total land area. This illustrates the great importance of the forest for economy, landscape, environment, flora and fauna of Latvia. For many the forest also means the place for leisure activities, recreation and hunting. During the last 70 years the forest cover percentage has stabile trend of growth - from 25% in year 1923 to 44% in 1994. Although there are significant regional variations; for example the higher forest coverage is in Central part, in the North East area as well as in Western part, where forests cover 50 - 60% of land area. The lowest percent in Latvia is 25.8%. The growing stock of Latvia forests have been increased from 176 mill. m^3 in 1935 to 489 mill. m^3 in 1994. The net annual increment is 16.5 mill. m^3 but annual allowable cut for next five years accepted by Parliament is 8.4 mill. m^3 or 51% of increment. The above numbers testify the sustainable management approach.

1.4 Forest land type classification

Forest land type classification describes and organizes forested areas using complex indicators, with particular attention to major soils, water regime, stand and vegetation characteristics. The land type classification units form a biological foundation for forest management and practice.

Forest land type classification

Natural ecosystems	**80.5%**
Upland forests	**58.2%**
Cladinoso-callunosa	1.7%
Vacciniosa	4.5%
Myrtillosa	8.2%
Hylocomiosa	21.0%
Oxalidosa	19.3%
Aegopodiosa	3.5%

Forests on swamp mineral soils	**10.5%**
Callunoso-sphagnosa	0.2%
Vaccinioso-sphagnosa	1.8%
Myrtilloso-sphagnosa	5.0%
Myrtilloso-polytrichosa	2.7%
Dryopteriosa	0.8%

Forests on wet peatlands	**11.8%**
Sphagnosa	1.5%
Caricoso-phragmitosa	6.3%
Dryopterioso-cariosa	3.6%
Filipendulosa	0.4%

Forests on drained wetlands	**23.3 %**
Drained swamps	9.8%
Callunosa mel.	0.3%
Vacciniosa mel.	1.7%
Myrtillosa mel.	4.7%
Mercuriarilosa mel.	3.1%

Drained bogs	**9.9%**
Callunosa turf. mel.	0.8%
Vacciniosa turf. mel.	1.0%
Myrtillosa turf. mel.	4.5%
Oxalidosa turf. mel.	3.6%

1.5 Species composition

According to species composition and climate conditions Latvia forests belong to hemiboreal zone, where indigenous boreal conifer tree species.

The distribution of native (commercial) forest tree species

Scots pine (*Pinus silvestris L.*)	40.1%
Norway spruce (*Picea abie* (*L.*) *Karst*)	20.4%
Birch (*Betula pendula Roth.,Betula pubescens Ehrh*)	28.2%
Poplar (*Populus tremulae L.*)	2.5%
Alder (*Alnus glutinosa L.,Alnus incana L.*)	7.6%
Oak (*Quercus robur*)	0.4%
Ash (*Fraxinus excelsior*)	0.6%

Native (noncommercial) tree species (less than 1.0%)

Tilia cordata,
Acer platanoides,
Ulmus glabra,
Ulmus Laevis,
Sorbus aucuparia,
Salix sp.,
Juniperus communis,
Taxus boccata

Exotic tree species(of non-commercial value)

Larix sp. (L. decidua, L.sukaczewii, L.leptolepis),
Pinus sp. (P.contorta, P.strobus, P.sibirica, P.mugo, P.nigra),
Pseudotsuga menziesii,
Abies sp. (A.alba, A.Balsamea),
Quercus rubra,
Fagus sylvatica,
Populus sp.

1.6 Short characteristic of indigenous commercial tree species

Scots pine (*Pinus silvestris L.*)

Scots pine is one of the Latvia's principal forest tree species, taking up more than one million ha. It is encountered over a wide spectrum of site conditions, starting from lean sandy sites (*Cladinoso-callunosa, Vacciniosa,*

Myrtilosa and *Hylocomiosa*) up to wet peatlands (*Sphagnosa, Callunosa mel.* and *Callunosa turf. mel.*). The northern and central parts of Western Kurzeme with the area under pine about 250,000 ha (53-70% of total forest cover in that region) are among the Latvia's most significant regions where pine is predominating, followed by the North Latvia plains (66,000 ha or 56%, respectively), and the environs of Riga (85,000 ha or 60%). Last 20 years forest practice has lead to the small share of juvenile age pine forests. Mature and overmature pine stands are mostly naturally regenerated and at present take-up about 200,000 ha. These areas are place where pine gene reserves are find out. The rotation period of pine in Latvia's commercial forests is 100 years. Annual increment of Scots pine is 5.5 m^3/ha Starting with 1820 (Vilmorin, France), theLatvia's pine has been represented and ranked among the best at that,in a number of international geographical provenance trials in Europe and America. It may be placed among the northern origin provenances with its progeny distinguished by a nearly universal adaptability, a high degree of survival, excellent characteristics of stem and wood, resistance to diseases (needle cast). On all sample plots in national geographical trials, the Latvia's pine has shown much higher survival, better stem characteristics than progeny of foreign-origin provenances. Pine seed orchards were started in 1960, with their, total area 697 ha by 1980. The average seed crops amount to 2 to 4 kg/ha (the bumper crops have been 12 to 14 kg/ha).The second generation Scots pine seed orchards lied out on 160 ha starting from 1986. The annual demand for seed is predicted to be 1,000 - 1,800 kg. Starting with 1998, about one third of this demand will be covered by the second generation orchard crops, the rest - by the tested local origin seed orchards which are to be gradually renovated.

Norway spruce (*Picea abie* (L.) Karst)

Norway spruce in the Latvia's flora - is consistent since the postglacial era. As evidenced by pollen analyses and the data for forest resources today, the given species covers about 530,000 ha In accordance with forestry development program for 1992 - 2000 and 2030 the optimal share of Norway spruce is estimated to be about 24%. It means that present occurrence of spruce in Latvia is close to ecological optimum: on dry mineral soils with fair productivity potential - oxalidosa site type, on wet mineral soils - myrtiloso-politrichosa site type, on drained mineral soil - myrtilosa mel and on drained peat soil - myrtilosa turf.mel.site type. The asymmetric age classes distribution is caused by animal damage in pine reforestations. Young spruce stands were damaged in lesser extent. Today almost 30% of all spruce covered area are (about 90,000 ha) are new reforestations sometime with unknown origin planting material. This will serve as serious factor for genetic pollution of native Norway spruce forests. The annual increment of Norway spruce is 8.8 m^3/ha Norway spruce seed orchard were started in the beginning of 60' at present covering 170 ha. The first significant seed crop was obtained in 1992 - about 10-15 kg per ha.

Birch (*Betula pendula Roth.,Betula pubescens Ehrh.*)

The Latvia's birch stands, cover more than 700,000 ha are and all are of natural origin, with no man-made plantations. So, there are ample opportunities for breeding, with a focus on genetically enhanced and adopted to local conditions seed. Last years forest management practice did not accept Birch as species. This is why birch was weeded out from naturally regenerated areas. As consequence - the share of young reforestations are about 15%. B. pendula forests dominate on dry mineral soils: Oxalidasa and Aegopodiosa, while B. pubescens is growing on wet mineral and peat soils: Mercuriarilosa mel. and Oxalidosa turf. mel. as well as on Dryopterioso- caricosa and Filipendulosa. The commercial and ecological role of birch as pioneer species is increasing due to increased demand for pulpwood and afforestation of abandoned farmland. A seed orchard for birch, based on conventional phenotypical selection, has been laid in Limbazi (Vidzeme Upland) during the 70's and is now bearing seed.

Aspen (*Populus tremulae L.*)

Aspen comprises 2.5% of all Latvia's forest area. Higher share of aspen stands occurs in middle, premature, mature and overage age classes in eastern part of Latvia. Initially best stands and elite trees were selected for following criteria:

- resistance against stem rot and good regeneration of wounds;
- good increments in height and diameter;
- straight stem form;
- thin branches and wide branching angle;
- narrow crown and with single dominating top;

as the additional criteria bark colour was selected because of previously established positive correlation between green and light-pale bark colour and stem rot resistance. Aspen seed orchards were created after best stand analysis on area of 11 her. In eastern region of Latvia (forest Research Station Kalsnava) basic research complex was created comprising seed orchards and experimental plantations of seed orchard progeny and obtained hybrids. Also clonal archive was created starting from year 1964 to 1981. This include 1,952 specimens: 72% clones, 21% hybrids and 7% obtained from free pollination. Archive plantations are used for phenology studies and as a basis for hybridization experiments. From year 1964 to year 1974 controlled hybridization was made using Populus tremuloides as mother tree and using pollen from plus trees of Latvian origin. Also hybrids using Latvian origin mother trees were made. Four series of hybrids, each comprising of 40 combinations were established using pollen from Nicgale, Svirlauka, Jumprava and Gulbene Origins. As follows from analysis in age 25 years hybrids with

P. tremuloides as mother tree show essentially better growth performance as those with mother trees from local origin.

Alder (*Alnus glutinosa* L., *Alnus incana L.*)

Alder species in Latvia are growing on different landtypes: white alder Alnus incana L. as pioneer species have occupied formers collective farm's arable lands, this is why the species percentage is too high. Black alder (*Alnus glutinosa*) optimum growing conditions are wet mineral soils. Species has good stem and timber quality.

2 MANAGEMENT AND CONSERVATION OF TREE GENETIC RESOURCES

2.1 Policies, programs and legislation

Latvia has no laws or regulations specifically dealing with conservation of the forest genetic resources. However:

1). according the Law of Environment Protection in Latvia (since 06.08.1991) the one of main goals of law is to ensure the maintenance of Nature genetic resources;

2). the Latvian Forestry Act (Law of Forest Management and Utilization) provides general measures for the long term maintenance and sustainable use of Latvia forests;

3). all forests in Latvia are divided into three categories according to their functions, ecological and economical importance:

Protected forests

Forest subcategory	Number	Forest area (th.ha)	% of total
nature reserves	5	38.7	1.2
national park forests	1	51.6	1.6
nature park forests	11	15.0	0.5
nature preserve forests	180	87.6	2.7
anti-erosion forests	28	44.4	1.4
green zone parks	76	72.5	2.2
Total		**309.3**	**9.6**

Restricted management forests

Forest subcategory	Number	Forest area (th.ha)	% of total
protected landscape forests	6	55.2	1.7
green zone forests	15	244.0	7.6
forests of environment protection 31	224.4	6.9	
Total		**523.6**	**16.2**

Exploitable forests

Forest subcategory	Number	Forest area (th.ha)	% of total
		2,394.1	74.1

Specially protected forest areas cowering 248.2 th.ha or 7.7% of total forest area are designated within restricted management and exploitable forest with special management regulations. Most important of them are:

	th.ha
Forests along rivers and lakes	138.0
Forests along roads and railways	44.4
forests around cock-capercaile rut places	20.5
specially preserved forest compartments	11.8
forests of culture monuments	5.4
genetic reserves	4.5
protected landscape forests	4.3
forests around protected water reservoirs	3.8
Forests of scientific research and monitoring	3.8
Parks and arboretums	3.6
protected margins and edges	3.4

The above mentioned data shows that 23.9% of all productive forests are conserved with different management on non-management regimes.

2.2 Forest genetic resources conservation

According the existing status of the State Forest Service (SFS) of the Ministry of Agriculture, SFS is responsible for maintenance and conservation of biological diversity in Latvia's forests. Until now officially established genetic reserves are:

Species	District	Area, ha
Scots pine	Valka	315
Scots pine	Cesis	476
Scots pine	Ogre	499
Scots pine	Kraslava	747
Scots pine	Jelgava	1,266
Norway spruce	Tukums	197
Norway spruce	Rezekne	493
Aspen	Limbazi	170
Aspen	Balvi	37
Oak	Cesis	65
Oak	Madona	203
Black alder	Aluksne	35
Linden	Balvi	33
Total		***4,536***

Initially, the Forest tree genetic resources conservation was initiated by tree breeding researchers in 1985. The above list shows the minimum of area to ensure the species continuity. The climate zones and species adaptability are not taken into account. This was the reason why intensive forest genetic resources conservation activities are under the way. The exploration of forest resources in Latvia is under the way and the list of forest tree genetic reserves is to be completed by the end of 1995.

The institutions dealing with genetic resources exploration are:

- Latvian Forestry Research Institute "Silava"
- Forest Research Station "Kalsnava"
- Forest Tree Breeding and Seed Production Centres (East and West)

3. NATIONAL NEEDS AND OPPORTUNITIES

3.1. International collaboration

Since 1993 Latvia have started to participate in the international activities concerning forest genetic resources of forest trees. Country has joined the European Forest Genetics Resources Program (EUFORGEN), which is follow-up action of the Ministerial Conference on the Protection of Forests in Europe (Strasbourg Resolution S-2).