Gozdarski inštitut Slovenije
Slovenian Forestry Institute

European Forest Information Scenario Model
Forest Inventory Data for Slovenia

Dr. Milan Hočevar

Ljubljana, 15.2.2002

1. SPLOŠNO

Naslov projekta: European Forest Information Scenario Model,
Forest Inventory Data for Slovenia

Zahtevek za študijo: UNECE/FAO secretariat in Geneva, Trade Division.

Izvajalec: dr. Milan Hočevar, GIS
Tehnična podpora: Andrej Hren, GIS

2. NAMEN IN CILJI :

- Na podlagi vzorčnega popisa zdravstvenega stanja gozdov v letu 2000 izdelati oceno lesne zaloge, prirastka lesne zaloge in zgradbe gozdov v Slovenije po starosti, lastništvu in mešanosti
- Izdelati oceno razvoja gozdnih površin

3 PRILOGE

- Pregledne tabele: Lesna zaloga, prirastek lesne zaloge in zgradba gozdov v Slovenije po starosti, lastništvu in mešanosti
- Dopisi
- Obračun in statistična analiza

PREDSTAVITEV PROJEKTA:

EUROPEAN FOREST SECTOR OUTLOOK STUDIES (EFSOS)

ETUDES DES PERSPECTIVES DU SECTEUR FORESTIER EN EUROPE

ИССЛЕДОВАНИЯ ПЕРСПЕКТИВ ЛЕСНОГО СЕКТОРА ЕВРОПЫ

In the past decades the Timber Committee at the UN-ECE in Geneva and the European Forestry Commission have made various outlook studies for the development of the European Forest sector. Considering the recent fast developments in forestry and the forest sector (e.g. opening up of Central and Eastern Europe, bio-energy discussions, nature-oriented forest management) it was decided to produce a new outlook study by the end of 2002. This is part of the EFSOS programme. See for more information on EFSOS http//www.unece.org/trade/timber/efsos.

For the projection of the forest resource in Europe the EFSOS specialists and national correspondents suggested applying the European Forest Information Scenario Model (EFISCEN) in co-operation with the European Forest Institute in Joensuu, Finland. The objective of the EFISCEN model in the framework of EFSOS is to analyse the consequences of certain roundwood demand scenarios for the sustainability of forest management, simulating the long-term development of the forest resources of European countries. The results of this work will be firstly discussed with you as the national correspondent, later discussed in a common meeting of all correspondents and published afterwards in the framework of EFSOS programme.

To successfully implement this task, the currently available European Forest Resource Database that underlies the EFISCEN model will need to be updated and expanded.

In 1996, the EFISCEN team contacted you directly in order to build a European Forest Resource Database. You supplied the latest inventory data of that time. Details of (in some cases one region) what they received in 1996 are included here to this letter on floppy disc. See also http://www.efi.fi/projects/eefr. Several projects have been implemented and published, or are presently underway with these data.

Further in 1997/98 UN-ECE/FAO collected the Temperate and Boreal Forest Resource Assessment data. A big effort was made to apply common definitions for various forest parameters. Now this data presents a comprehensive and consistent overview on forest resources in the region (http://www.unece.org/trade/timber/fra). The results are approved by the countries and have an official status. However, the structure of this data set is not detailed enough to serve as input data for EFISCEN.

The goal of the current inquiry is to update the EFISCEN dataset based on latest National Forest Inventory, while maintaining the TBFRA 2000 definitions.

To run EFISCEN, the main parameters (area, growing stock, increment) need to be **cross** structured by age classes, tree species groups, ownership classes, site classes and regions. The cross-structure of parameters by age classes and species groups is essential for running the EFISCEN model, whereas the additional cross-structure by ownership classes, site classes and regions gives additional opportunities for creating deeper structured model results.

The goal is to avoid differences between totals in TBFRA 2000 and in the EFISCEN dataset, which means that the totals from the dataset to be used in EFSOS should be equal to the totals in TBFRA 2000. If you dispose of newer inventories (published after TBFRA 2000 report) please provide the newer dataset, but also in the framework of TBFRA 2000 definitions.

We leave to your choice the organisation of data. You can send us either an excel sheet with tables as organised in the attached "old" EFISCEN data set, or a more proper database format (e.g. MS Access) or as hard copy.

The attached questionnaire explains the requested information.

In the questionnaire (Item 4 Additional information and country-specific model parameters) we also ask you about some country-specific model parameters, which will be used for steering the model. This allows you to bring in particular aspects of forest resource development in your country into the European outlook study. As for your response you could use the prepared tables and enter your figures just right to the examples and send us back the questionnaire.

PRILOGA 1

Slovenian Forestry Institute
Milan.hocevar@gozdis.si

Questionnaire
for the collection of forest inventory data of Slovenia as input to the European Forest Information Scenario Model

Data: forest inventory 2000; sampling on grid: 4 x 4km, 712 permanent plots (2/5 ar)

- area (ha),
- growing stock volume (m3 overbark / ha), and
- net annual increment (m3 overbark /ha/year)

cross structured by

- Slovenia,
- ownership classes: public and private,
- tree species groups,(Coniferous>75%. Deciduous>75%, Mix)
- age classes and unevenaged

REGION:		Slovenia	
OWNER SHIP CLASS:		Not distinguished	
SITE CLASS:		all	
TREE SPECIES GROUP:		all	
AGE CLASSES	AREA Trakt X 1600=ha ha	GROWING STOCK VOLUME Lesna zaloga m3 overbark/ha	INCREMENT Prirastek m3 overbark/ha/year
0-19	14400	42,6222	3,26667
20-39	52800	95,3909	5,07879
40-59	110400	188,677	5,5942
60-79	108800	268,46	5,90147
80-99	121600	357,334	7,12237
100-119	102400	356,852	6,82031
120-139	54400	422,862	6,84412
140-159	16000	442,9	5,82
> 160	6400	547,25	6,325
Uneven-aged	552000	277,303	7,16232
total	1139200	282,95	6,67037

REGION:		Slovenia	
OWNER SHIP CLASS:		Not distinguished	
SITE CLASS:		all	
TREE SPECIES GROUP:		Conifers	
AGE CLASSES	AREA Trakt X 1600=ha ha	GROWING STOCK VOLUME Lesna zaloga m3 overbark/ha	INCREMENT prirastek m3 overbark/ha/year
0-19	3200	17,9	9,1
20-39	9600	141,833	6,81667
40-59	35200	261,309	7,30455
60-79	27200	359,024	7,11176
80-99	62400	416,654	8,96154
100-119	27200	457,241	7,02941
120-139	20800	491,569	7,33077
140-159	8000	595,7	7,4
> 160	3200	761,9	9,9
Uneven-aged	142400	294,319	8,06629
total	339200	348,343	7,92311

REGION:		Slovenia	
OWNER SHIP CLASS:		Not distinguished	
SITE CLASS:		all	
TREE SPECIES GROUP:		Broad leaves	
AGE CLASSES	AREA Trakt X 1600=ha ha	GROWING STOCK VOLUME Lesna zaloga m3 overbark/ha	INCREMENT prirastek m3 overbark/ha/year
0-19	4800	4,9	2,2
20-39	24000	71,5	4,72667
40-59	49600	170,826	5,36129
60-79	54400	238,841	5,70294
80-99	35200	271,309	4,43182
100-119	46400	328,297	7,10345
120-139	12800	365,475	6,9875
140-159	6400	264,875	3,4
> 160	3200	332,6	2,75
Uneven-aged	195200	253,885	6,32459
total	432000	243,02	5,88037

REGION:		Slovenia	
OWNER SHIP CLASS:		Not distinguished	
SITE CLASS:		all	
TREE SPECIES GROUP:		Mixed forests	
AGE CLASSES	AREA Trakt X 1600=ha ha	GROWING STOCK VOLUME Lesna zaloga m3 overbark/ha	INCREMENT prirastek m3 overbark/ha/year
0-19	6400	83,275	1,15
20-39	19200	102,033	4,65
40-59	27200	120,441	3,70588
60-79	28800	243,644	5,28889
80-99	25600	328,881	6,6875
100-119	28800	308,044	6,16667
120-139	22400	390,029	6,68571
140-159	3200	446,85	6,5
Uneven-aged	219200	285,224	7,35766
total	380800	269,863	6,51765

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REGION:		Slovenia	
OWNER SHIP CLASS:		Public	
SITE CLASS:		all	
TREE SPECIES GROUP:		all	
AGE CLASSES	AREA Trakt X 1600=ha ha	GROWING STOCK VOLUME Lesna zaloga m3 overbark/ha	INCREMENT prirastek m3 overbark/ha/year
0-19	8000	10,1	3,76
20-39	14400	139,578	4,94444
40-59	33600	185,124	5,75714
60-79	32000	302,62	7,165
80-99	32000	333,655	10,03
100-119	36800	319,704	6,04348
120-139	33600	425,319	7,46667
140-159	14400	454,689	5,67778
> 160	4800	584,933	7,56667
Uneven-aged	136000	321,854	7,00706
total	345600	312,08	6,91343

REGION:		Slovenia	
OWNER SHIP CLASS:		Public	
SITE CLASS:		all	
TREE SPECIES GROUP:		Conifers	
AGE CLASSES	AREA Trakt X 1600=ha ha	GROWING STOCK VOLUME Lesna zaloga m3 overbark/ha	INCREMENT prirastek m3 overbark/ha/year
0-19	3200	17,9	9,1
20-39	4800	157,3	7,2
40-59	8000	299,02	9,24
60-79	12800	485,9	9,675
80-99	24000	340,693	10,44
100-119	8000	368,92	7,6
120-139	8000	488,36	8,2
140-159	8000	595,7	7,4
> 160	3200	761,9	9,9
Uneven-aged	36800	391,117	7,81304
total	116800	394,312	8,70548

REGION:		Slovenia	
OWNER SHIP CLASS:		Public	
SITE CLASS:		all	
TREE SPECIES GROUP:		Broadleaves	
AGE CLASSES	AREA Trakt X 1600=ha ha	GROWING STOCK VOLUME Lesna zaloga m3 overbark/ha	INCREMENT prirastek m3 overbark/ha/year
0-19	1600	14,7	0,6
20-39	3200	48,55	2,5
40-59	16000	177,58	5,25
60-79	8000	203,0	8,42
80-99	6400	320,175	4,85
100-119	20800	266,592	6,04615
120-139	11200	359,257	6,91429
140-159	4800	240,9	2,16667
> 160	1600	231,0	2,9
Uneven-aged	48000	283,58	7,4
total	121600	258,222	6,28947

REGION:		Slovenia	
OWNER SHIP CLASS:		Public	
SITE CLASS:		all	
TREE SPECIES GROUP:		Mixed forests	
AGE CLASSES	AREA Trakt X 1600=ha ha	GROWING STOCK VOLUME Lesna zaloga m3 overbark/ha	INCREMENT prirastek m3 overbark/ha/year
0-19	3200	0,0	0,0
20-39	6400	171,8	4,475
40-59	9600	102,783	3,7
60-79	12800	188,063	4,0625
80-99	1600	282,0	24,6
100-119	8000	408,58	4,48
120-139	14400	441,678	7,48889
140-159	3200	446,85	6,5
Uneven-aged	51200	307,953	6,05938
total	110400	287,777	5,7087

REGION:		Slovenia	
OWNER SHIP CLASS:		Private	
SITE CLASS:		all	
TREE SPECIES GROUP:		all	
AGE CLASSES	AREA Trakt X 1600=ha ha	GROWING STOCK VOLUME Lesna zaloga m3 overbark/ha	INCREMENT prirastek m3 overbark/ha/year
0-19	6400	83,275	2,65
20-39	38400	78,8208	5,12917
40-59	76800	190,231	5,52292
60-79	76800	254,227	5,375
80-99	89600	365,791	6,08393
100-119	65600	377,69	7,2561
120-139	20800	418,892	5,83846
140-159	1600	336,8	7,1
> 160	1600	434,2	2,6
Uneven-aged	417600	262,794	7,21308
total	795200	270,29	6,56452

REGION:		Slovenia	
OWNER SHIP CLASS:		Private	
SITE CLASS:		all	
TREE SPECIES GROUP:		Conifers	
AGE CLASSES	AREA Trakt X 1600=ha ha	GROWING STOCK VOLUME Lesna zaloga m3 overbark/ha	INCREMENT prirastek m3 overbark/ha/year
20-39	4800	126,367	6,43333
40-59	27200	250,218	6,73529
60-79	14400	246,244	4,83333
80-99	38400	464,129	8,0375
100-119	19200	494,042	6,79167
120-139	12800	493,575	6,7875
Uneven-aged	105600	260,586	8,15455
total	222400	324,201	7,51223

REGION:		Slovenia	
OWNER SHIP CLASS:		Private	
SITE CLASS:		all	
TREE SPECIES GROUP:		Broadleaves	
AGE CLASSES	AREA Trakt X 1600=ha ha	GROWING STOCK VOLUME Lesna zaloga m3 overbark/ha	INCREMENT prirastek m3 overbark/ha/year
0-19	3200	1.E-8	3,0
20-39	20800	75,0308	5,06923
40-59	33600	167,61	5,41429
60-79	46400	245,021	5,23448
80-99	28800	260,45	4,33889
100-119	25600	378,431	7,9625
120-139	1600	409,0	7,5
140-159	1600	336,8	7,1
> 160	1600	434,2	2,6
Uneven-aged	147200	244,202	5,97391
total	310400	237,064	5,7201

REGION:		Slovenia	
OWNER SHIP CLASS:		Private	
SITE CLASS:		all	
TREE SPECIES GROUP:		Mixed forests	
AGE CLASSES	AREA Trakt X 1600=ha ha	GROWING STOCK VOLUME Lesna zaloga m3 overbark/ha	INCREMENT prirastek m3 overbark/ha/year
0-19	3200	166,55	2,3
20-39	12800	67,15	4,7375
40-59	17600	130,073	3,70909
60-79	16000	288,11	6,27
80-99	24000	332,007	5,49333
100-119	20800	269,377	6,81538
120-139	8000	297,06	5,24
Uneven-aged	168000	278,297	7,75333
total	270400	262,549	6,8793

Additional information and country-specific model parameters for Slovenia

4.1 Changes in tree species distribution for the region/country Slovenia:

Tree species group	2000 (from inventory)	2050 (your expectation)
Group 1 Conifers	*30 %*	*25 %*
Group 2 Broad leaves	*38 %*	*40 %*
Group 3 Mixed forests	*32 %*	*35 %*
...		
Total	*100 %*	*100 %*

4.2 Changes in total 'Forest area available for wood supply'

Indicate in relative terms what you expect as area change in your country for the time span 2000-2050. (this may also include loss of FAWS due to establishment of e.g. forest reserves)

Slovenia:

Year	Index 2000 = 100 %	Comment
2000 (from inventory)	*100 %*	*Slovenia has 57% of forest!*
2010 (your expectation)	*104 %*	
2020 (your expectation)	*105 %*	
2050 (your expectation)	*108 %*	

4.3. Management regimes

Rotation length (clear cutting regimes): Specify commonly used average rotation lengths per tree species in your country.

Slovenia:
Clear cutting: not allowed in Slovenia
Average rotation lengths: 110 – 160

4.4. Background information

Year of forestry inventory
Please indicate the period to which the data refer: .....2000.....
Sampling Inventory on 4x4 km grid with 712 permanent plots, total10 275 trees.

New developments in forest inventory activities
When new inventories will be completed in the near future and when will the data become available?
New inventory in 2010.

DODATNE PRILOGE

UNECE/Trade Division/Timber Section
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CH-1211 Geneva 10, Switzerland,

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Email: Volker.Sasse@unece.org

Before starting the actual work on data collection, could you please confirm, ***by 10 July 2001***, if you have received this request and if you are ready to carry out the work. Please inform us also about any problems, which could lead to serious delays or inability to complete the data collection for your country in general.

Further we would be interested in information, probably results, of recent national outlooks on forest resources for your country or national forest programmes, if any is available. These national outlooks could be useful for a verification of EFISCEN model results.

We would like to thank you in advance for your co-operation. We understand that this request is a time consuming contribution by your country to the EFSOS programme. Therefore, we would like to assure you that we will assist you as much as we can in this exercise. For any questions and possible further support, please contact Andreas Schuck, EFI or Volker Sasse, Timber Section (see above for address).

Yours sincerely,

Volker Sasse
Forestry Officer

Kit Prins
Chief of Section

Dear Mr. Hocevar,

Thank you for your readiness to contribute to the EFSOS outlook on European forest resources. The success of this project depends on the participation of all countries in order to reach an overall forecast of forest resources in European as a whole.
Of course we will mention about all contributors to the project in the study results publication, which is planned for 2002.

Unfortunately, there is no budget planned for the data collection in the framework of the current project. The other countries provide the data so far based on their expectations on the study results.

If you need additional resources for the expected special data I would see two ways to help: (1) If you would draft a proposal and ask wherever for funds, we would support such request from our side actively. (2) We could think about how to support the project with manpower, doing the analysis within our resources based on your published data and your supervision.

Kind regards Volker Sasse

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_____Reply Separator_____
Subject: EFISCEN Input data
Author: Milan Hocevar <milan.hocevar@gozdis.si>
Date: 12/07/01 09:02
Sehr geehrter Herr,

Ihren E-Mail mit der Bitte zur Mitarbeit, zur Datenlieferung, für das Projekt EFISCEN erhielt ich nach meiner Rückkehr aus Ferien.

Wir haben neue Daten aus der Inventur im Jahr 2000, die wir für sie bereitstellen könnten. Wie ich das voll finanzieren kann, muß ich noch mit dem Ministerium abklären. Bei Ihrer Anfrage geht es um eine spezielle Datenanalyse, die wir ansonsten nicht machen.

Die Zeiten in der Forschung sind auch bei uns härter geworden und wir müssen unsere Arbeit und Zeitverwendung auf alle Seiten rechtfertigen. Auf einer Seite geht es um die Referenzen (im Falle der Mitarbeit erwarten wir daß wir explizite aufgeführt werden), auf der anderen Seite um die Geldmittel. Es muß nicht eine große Summe sein, aber mit einer Einzahlung ist das Projekt zumindest auch offiziell registriert. Das brauche ich.

Wenn wir oben aufgeführte Fragen zufriedenstellend lösen können bin ich bereit beim Projekt EFISCEN mitzuarbeiten.

Mit besten Grüßen.

Prof. Dr. Milan Hočevar

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Sehr geehrter Herr,

In der Beilage erhalten Sie die gewuenschten Daten ueber die slowenischen Waelder die ich speziell fuer dieses Projekt aufgearbeitet habe. Bei uns ist eine solche Strukturierung der Daten ansonsten nicht ueblich, da wir vom Schlagwaldmodell abgekommen sind.

Die Daten stammen aus einer nationalen Stichprobeninventur mit 712 permanenten SP-Flaechen und sind nicht ausgegliechen. Auf nationaler Ebene betraegt det SP-Faehler nur 3.9%, steigt aber mit zunehmender Aufteilung erheblich. Auf diese Tatsache muessen sie bei der Analyse acht geben.

Mit besten Grüßen.

Prof. Dr. Milan Hočevar

INSTRUCTION:
Questionnaire for the collection of forest inventory data of Slovenia as input to the European Forest Information Scenario Model

1. Introduction

Firstly, we are looking for detailed data representing your national 'forest available for wood supply' (FAWS) on

- area (ha),
- growing stock volume (m3 overbark / ha), and
- net annual increment (m3 overbark /ha/year)

cross structured by
- regions,
- ownership classes,
- site classes,
- tree species groups, and
- age classes/clearcut area

Secondly, at the end of this questionnaire (under section 4) you find requests for general information and country specific model parameters.

An example of the data required under the first item (one of such a set of data we call a SEDS: Single Entity Data Set) is given in the following table:

REGION:		Southern Finland	
OWNER SHIP CLASS:		Not distinguished	
SITE CLASS:		Rich site, mineral soil	
TREE SPECIES GROUP:		Scots pine	Pinus sylvestris
AGE CLASSES	AREA	GROWING STOCK VOLUME	INCREMENT
	ha	m3 overbark/ha	m3 overbark/ha/year
10	110151	20	2.37
30	74586	107	7.23
50	66139	197	7.96
70	74203	240	7.3
90	66980	256	6.34
110	27967	269	5.53
130	4800	212	3.53
150	3180	240	2.92
170			
...			

2. Structure of SEDS

To run EFISCEN, the main parameters (area, growing stock, increment) need to be cross structured by age classes, tree species groups, owner ship classes, site classes and regions.

SEDS are to be distinguished in a detailed way for your national forest available for wood supply, but the number of SEDS you distinguish depends on your data availability.

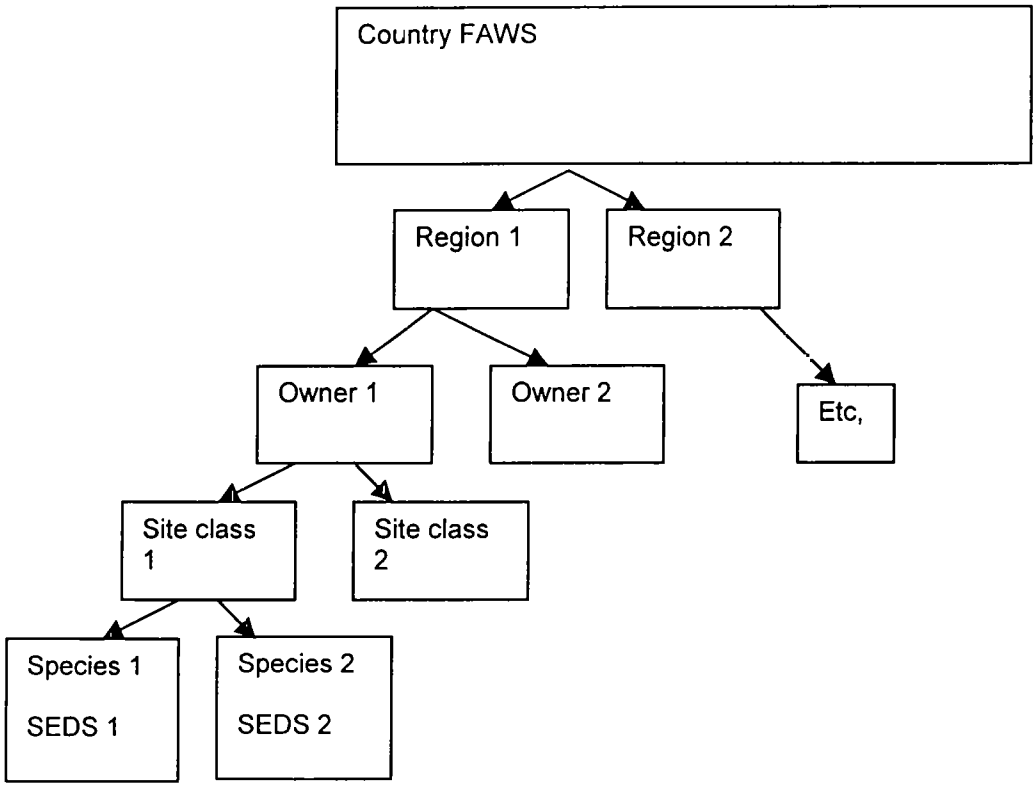

Figure 1. Example of hierarchy of distinguishing SEDS. In this case it was assumed that in each level, two types can be distinguished. For th s particular example FAWS area you would have 16 SEDS.

The structure of the data you provide for your country determines the smallest unit for which results are available. In order to produce detailed results from modelling, the input data should be compiled as detailed as possible. The cross-structure of parameters by age classes and species groups is essential for running the EFISCEN model, whereas the additional cross-structure by owner ship classes, site classes and regions gives additional opportunities for creating deeper structured model results. Of course some data tables may contain no data as, for example if there is no tree species "Aspen" on a "poor site", the table will be empty.

3 Explanatory Notes

3.1. Parameters

Area
area per age class, ha

Growing stock
mean stemwood volume of the age class, m^3/ha overbark

Increment
net current annual increment (CAI) of the age class, m^3/ha/year overbark

Please be consistent with TBFRA 2000 definitions. If you cannot assure that, then please indicate in your reply the definition, which you applied.

3.2. SEDS Indices

Region
For more detailed georeferenced presentation of forest resources, a structure by regions would be highly needed and appreciated. The region could represent administrative units e.g. provinces or counties. Please provide or refer to a corresponding map.

Ownership classes
Distinguish owners by appropriate groups valid for your country. A short description of the individual ownership classes should be provided.

Site classes
Distinguish site classes by appropriate groups that are valid/in-use for your country. A short description of the site classes should be provided.

Tree species (groups)
The main tree species should be distinguished. The remaining tree species may be provided individually but can also be added to a species groups, e.g. other broadleaves, other coniferous. Where appropriate the scientific names of all species in that group should be given in order to allow clear distinction.

Age classes and clearcut areas
Age classes are preferably to be given by 5 years classes. If this is not possible by 10, or 20 year classes. Also the number of age classes may vary between tables depending on the forest structure.
Clearcut areas (gap area) can usually not be assigned to a specific SEDS, and should therefore be provided separately as one number for each combination of distinguished region and owner.

4. Additional information and country-specific model parameters

4.1 Changes in tree species distribution for the region/country

Indicate in relative terms what you expect as tree species composition changes in your country for the time span 2000-2050.

Example for a country where only three species groups (1,2,3) were distinguished.

Tree species group	2000 (from inventory)	2050 (your expectation)
Group 1	*10 %*	*25 %*
Group 2	*60 %*	*40 %*
Group 3	*30 %*	*35 %*
...		
...		
Total	*100 %*	*100 %*

4.2 Changes in total 'Forest area available for wood supply'

Indicate in relative terms what you expect as area change in your country for the time span 2000-2050. (this may also include loss of FAWS due to establishment of e.g. forest reserves)

Example for a country with 17 % increasing 'Forest area available for wood supply' by 2050.

Year	Index 2000 = 100 %	Comment
2000 (from inventory)	*100 %*	*Xxx*
2010 (your expectation)	*105 %*	*Xxx*
2020 (your expectation)	*108 %*	*Xxx*
2030 (your expectation)	*110 %*	*Xxx*
2040 (your expectation)	*115 %*	*Xxx*
2050 (your expectation)	*117 %*	*Xxx*

4.3. Management regimes

Rotation length (clear cutting regimes): Specify commonly used average rotation lengths per tree species in your country.

Example for a country where only three species groups (1,2,3) were distinguished.

Tree species group	Rotation length (year)
Group 1	*110*
Group 2	*80*
Group 3	*90*
...	
...	

Thinning regimes: Specify commonly used thinning regimes per tree species in your country.

Example for a country where only three species groups (1,2,3) were distinguished.

Tree species group	Age of earliest thinning	Periodicity (e.g. every 5, 10, etc. years)
Group 1	*30*	*5*
Group 2	*40*	*10*
Group 3	*40*	*10*
...		
...		

Share in total national fellings coming from thinnings

Example for a specific country.

Tree species group	Share from thinnings	Share from clear cuts	Sum
Coniferous	*40*	*60*	100
Deciduous	*45*	*55*	100

4.4. Background information

Year of forestry inventory
Please indicate the period to which the data refer: .....

New developments in forest inventory activities
When new inventories will be completed in the near future and when will the data become available?

.....
.....

PRILOGA: metoda obračuna in statistična analiza

Analiza EFISCEN - 2002

Vir : podatki POPIS2000
(datoteka: Popis2000efiscen2_kurz.sf)

Starostni razredi:
1 0 -19 let
2 20 - 39 let
3 40 -59 let
4 60 - 79 let
5 80 - 99 let
6 100 - 119
7 120 - 139 let
8 140 - 159 let
9 > 160 let
99 raznodobni gozdovi
(1-prebiralni, 2-kmečki prebiralni, 4 raznodobno, malopovršinski)

1 Lesne zaloge_vsi gozdovi

Analysis Summary
Dependent variable: LZ2000_VHA
Factor: str_razred
Number of observations: 713
Number of levels: 10

Table of Means for LZ2000_VHA by str_razred
with 95.0 percent LSD intervals

str_razred	Count	Mean	Stnd. error (pooled s)	Lower limit	Upper limit
1	9	42.6222	53.851	-32.3389	117.383
2	33	95.3909	28.1228	56.3482	134.434
3	69	188.677	19.4487	161.676	215.677
4	68	268.46	19.5912	241.262	295.659
5	76	357.334	18.5314	331.607	383.061
6	64	356.852	20.1941	328.816	384.887
7	34	422.862	27.7061	384.397	461.326
8	10	442.9	51.0875	371.975	513.825
9	4	547.25	80.7765	435.108	659.392
99	346	277.303	8.68514	265.245	289.36
Total	713	282.95			

Table of Means for Iv_IVha4T by str_razred
with 95.0 percent LSD intervals

str_razred	Count	Mean	Stnd. error (pooled s)	Lower limit	Upper limit
1	9	3.26667	1.53197	1.13984	5.39349
2	33	5.07879	0.800043	3.96809	6.18949
3	69	5.5942	0.553281	4.82608	6.36232
4	68	5.90147	0.557334	5.12772	6.67522
5	76	7.12237	0.527186	6.39048	7.85426
6	64	6.82031	0.574487	6.02275	7.61787
7	34	6.84412	0.78819	5.74987	7.93836
8	10	5.82	1.45335	3.80231	7.83769
9	4	6.325	2.29795	3.13476	9.51524
99	345	7.16232	0.247435	6.81881	7.50583
Total	712	6.67037			

<<<<<<<<<<<<<<<<vsi gozdovi ---- po mešanosti

Dependent variable: LZ2000_VHA<<<<<<<<<<<<<<<<<<<<iglavci

Factor: str_razred
Selection variable: DELIGL>75
Number of observations: 212
Number of levels: 10
Table of Means for LZ2000_VHA by str_razred
with 95.0 percent LSD intervals

str_razred	Count	Mean	Stnd. error (pooled s)	Lower limit	Upper limit
1	2	17.9	127.327	-159.628	195.428
2	6	141.833	73.5125	39.3378	244.329
3	22	261.309	38.3907	207.783	314.836
4	17	359.024	43.6729	298.132	419.915
5	39	416.654	28.834	376.452	456.856
6	17	457.241	43.6729	396.35	518.133
7	13	491.569	49.9419	421.937	561.201
8	5	595.7	80.5289	483.422	707.978
9	2	761.9	127.327	584.372	939.428
99	89	294.319	19.0872	267.707	320.932
Total	212	348.343			

Table of Means for Iv_IVha4T by str_razred
with 95.0 percent LSD intervals

str_razred	Count	Mean	Stnd. error (pooled s)	Lower limit	Upper limit
1	2	9.1	3.02726	4.87922	13.3208
2	6	6.81667	1.74779	4.3798	9.25354
3	22	7.30455	0.912752	6.03193	8.57716
4	17	7.11176	1.03834	5.66405	8.55948
5	39	8.96154	0.685539	8.00572	9.91736
6	17	7.02941	1.03834	5.5817	8.47713
7	13	7.33077	1.18739	5.67524	8.9863
8	5	7.4	1.91461	4.73054	10.0695
9	2	9.9	3.02726	5.67922	14.1208
99	89	8.06629	0.453805	7.43357	8.69901
Total	212	7.92311			

Dependent variable: LZ2000_VHA<<<<<<<<<<<<listavci

Factor: str_razred
Selection variable: DELLI>75
Number of observations: 270
Number of levels: 10

Table of Means for LZ2000_VHA by str_razred
with 95.0 percent LSD intervals

str_razred	Count	Mean	Stnd. error (pooled s)	Lower limit	Upper limit
1	3	4.9	73.3852	-97.2806	107.081
2	15	71.5	32.8188	25.3034	117.197
3	31	170.826	22.8291	139.039	202.613
4	34	238.841	21.7986	208.489	269.193
5	22	271.309	27.0993	233.576	309.042
6	29	328.297	23.6031	295.432	361.161
7	8	365.475	44.9391	302.902	428.048
8	4	264.875	63.5534	176.384	353.366
9	2	332.6	89.8781	207.455	457.745
99	122	253.885	11.5077	237.862	269.908
Total	270	243.02			

Table of Means for Iv_IVha4T by str_razred
with 95.0 percent LSD intervals

str_razred	Count	Mean	Stnd. error (pooled s)	Lower limit	Upper limit
1	3	2.2	2.07703	-0.692035	5.09203
2	15	4.72667	0.928877	3.43331	6.02002
3	31	5.36129	0.646135	4.46162	6.26096
4	34	5.70294	0.616971	4.84388	6.562
5	22	4.43182	0.766995	3.36386	5.49977
6	29	7.10345	0.668044	6.17327	8.03362
7	8	6.9875	1.27192	5.2165	8.7585
8	4	3.4	1.79876	0.895424	5.90458
9	2	2.75	2.54383	-0.792005	6.292
99	122	6.32459	0.325705	5.87108	6.7781
Total	270	5.88037			

Dependent variable: LZ2000_VHA <<<<<<MEŠANI GOZDOVI

Factor: str_razred
Selection variable: DELLI<76&DELIGL<76
Number of observations: 238
Number of levels: 9

Table of Means for LZ2000_VHA by str_razred
with 95.0 percent LSD intervals

str_razred	Count	Mean	Stnd. error (pooled s)	Lower limit	Upper limit
1	4	83.275	81.4549	-30.2136	196.764
2	12	102.033	47.028	36.5107	167.556
3	17	120.441	39.5114	65.3911	175.491
4	18	243.644	38.3982	190.145	297.143
5	16	328.881	40.7274	272.137	385.626
6	18	308.044	38.3982	254.545	361.543
7	14	390.029	43.5395	329.366	450.691
8	2	446.85	115.195	286.353	607.347
99	137	285.224	13.9183	265.832	304.616
Total	238	269.863			

Table of Means for Iv_IVha4T by str_razred
with 95.0 percent LSD intervals

str_razred	Count	Mean	Stnd. error (pooled s)	Lower limit	Upper limit
1	4	1.15	2.76683	-2.70495	5.00495
2	12	4.65	1.59743	2.42435	6.87565
3	17	3.70588	1.34211	1.83596	5.57581
4	18	5.28889	1.3043	3.47165	7.10613
5	16	6.6875	1.38342	4.76003	8.61497
6	18	6.16667	1.3043	4.34943	7.98391
7	14	6.68571	1.47893	4.62516	8.74627
8	2	6.5	3.91289	1.04828	11.9517
99	137	7.35766	0.472773	6.69896	8.01636
Total	238	6.51765			

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samo javni gozdovi: last 1 in 3 (državni in občinski)

Analysis Summary

Dependent variable: LZ2000_VHA<<<<<<<<vse drevesne vrste

Factor: str_razred
Selection variable: lasnist=1|lasnist=3
Number of observations: 216
Number of levels: 10

Table of Means for LZ2000_VHA by str_razred
with 95.0 percent LSD intervals

str_razred	Count	Mean	Stnd. error (pooled s)	Lower limit	Upper limit
1	5	10.1	77.2318	-97.5686	117.769
2	9	139.578	57.5652	59.3263	219.829
3	21	185.124	37.6853	132 537	237.661
4	20	302.62	38.6159	248 786	356.454
5	20	333.655	38.6159	279 821	387.489
6	23	319.704	36.0095	269 504	369.905
7	21	425.319	37.6853	372.782	477.856
8	9	454.689	57.5652	374.437	534.94
9	3	584.933	99.7058	445.934	723.933
99	85	321.854	18.7315	295.741	347.968
Total	216	312.08			

Table of Means for Iv_IVha4T by str_razred
with 95.0 percent LSD intervals

str_razred	Count	Mean	Stnd. error (pooled s)	Lower limit	Upper limit
1	5	3.76	2.06184	0.885591	6.63441
2	9	4.94444	1.53681	2.80199	7.0869
3	21	5.75714	1.00608	4.35457	7.15971
4	20	7.165	1.03092	5.7278	8.6022
5	20	10.03	1.03092	8.5928	11.4672
6	23	6.04348	0.961339	4.70328	7.38368
7	21	7.46667	1.00608	6.0641	8.86923
8	9	5.67778	1.53681	3.53532	7.82024
9	3	7.56667	2.66183	3.85582	11.2775
99	85	7.00706	0.50007	6.30991	7.70421
Total	216	6.91343			

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Analysis Summary
Dependent variable: LZ2000_VHA
Factor: str_razred
Selection variable: lasnist=1|lasnist=3&DELIGL>75
Number of observations: 73
Number of levels: 10

Table of Means for LZ2000_VHA by str_razred
with 95.0 percent LSD intervals

str_razred	Count	Mean	Stnd. error (pooled s)	Lower limit	Upper limit
1	2	17.9	137.708	-176.688	212.488
2	3	157.3	112.438	-1.58027	316.18
3	5	299.02	87.0944	175.952	422.088
4	8	485.9	68.8542	388.606	583.194
5	15	340.693	50.284	269.64	411.747
6	5	368.92	87.0944	245.852	491.988
7	5	488.36	87.0944	365.292	611.428
8	5	595.7	87.0944	472.632	718.768
9	2	761.9	137.708	567.312	956.488
99	23	391.117	40.608	333.737	448.498
Total	73	394.312			

Table of Means for Iv_IVha4T by str_razred
with 95.0 percent LSD intervals

str_razred	Count	Mean	Stnd. error (pooled s)	Lower limit	Upper limit
1	2	9.1	3.30669	4.4275	13.7725
2	3	7.2	2.6999	3.38492	11.0151
3	5	9.24	2.09133	6.28485	12.1951
4	8	9.675	1.65335	7.33875	12.0112
5	15	10.44	1.20743	8.73385	12.1462
6	5	7.6	2.09133	4.64485	10.5551
7	5	8.2	2.09133	5.24485	11.1551
8	5	7.4	2.09133	4.44485	10.3551
9	2	9.9	3.30669	5.2275	14.5725
99	23	7.81304	0.97509	6.4352	9.19089
Total	73	8.70548			

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Analysis Summary
Dependent variable: LZ2000_VHA
Factor: str_razred
Selection variable: lasnist=1|lasnist=3&DELLI>75
Number of observations: 76
Number of levels: 10

Table of Means for LZ2000_VHA by str_razred
with 95.0 percent LSD intervals

str_razred	Count	Mean	Stnd. error (pooled s)	Lower limit	Upper limit
1	1	14.7	132.968	-173.022	202.422
2	2	48.55	94.0223	-84.1895	181.289
3	10	177.58	42.0481	118.217	236.943
4	5	203.0	59.4649	119.048	286.952
5	4	320.175	66.4838	226.314	414.036
6	13	266.592	36.8786	214.528	318.657
7	7	359.257	50.257	288.305	430.209
8	3	240.9	76.7689	132.519	349.281
9	1	231.0	132.968	43.278	418.722
99	30	283.58	24.2765	249.307	317.853
Total	76	258.222			

Table of Means for Iv_IVha4T by str_razred
with 95.0 percent LSD intervals

str_razred	Count	Mean	Stnd. error (pooled s)	Lower limit	Upper limit
1	1	0.6	4.19229	-5.31862	6.51862
2	2	2.5	2.9644	-1.6851	6.6851
3	10	5.25	1.32572	3.31837	7.12163
4	5	8.42	1.87485	5.77311	11.0669
5	4	4.85	2.09615	1.89069	7.80931
6	13	6.04615	1.16273	4.40462	7.68768
7	7	6.91429	1.58454	4.67726	9.15132
8	3	2.16667	2.42042	-1.25045	5.58379
9	1	2.9	4.19229	-3.01862	8.81362
99	30	7.4	0.765404	6.31941	8.48059
Total	76	6.28947			

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Analysis Summary
Dependent variable: LZ2000_VHA
Factor: str_razred
Selection variable: lasnist=1|lasnist=3&DELLI<76&DELIGL<76
Number of observations: 69
Number of levels: 9

Table of Means for LZ2000_VHA by str_razred
with 95.0 percent LSD intervals

str_razred	Count	Mean	Stnd. error (pooled s)	Lower limit	Upper limit
1	2	0.0	104.507	-147.818	147.818
2	4	171.8	73.8976	67.2772	276.323
3	6	102.783	60.3372	17.4408	188.126
4	8	188.063	52.2535	114.154	261.971
5	1	282.0	147.795	72.9544	491.046
6	5	408.58	66.0961	315.092	502.068
7	9	441.678	49.2651	371.996	511.36
8	2	446.85	104.507	299.032	594.668
99	32	307.953	26.1268	270.999	344.908
Total	69	287.777			

Table of Means for Iv_IVha4T by str_razred
with 95.0 percent LSD intervals

str_razred	Count	Mean	Stnd. error (pooled s)	Lower limit	Upper limit
1	2	0.0	2.90224	-4.10501	4.10501
2	4	4.475	2.05219	1.57232	7.37768
3	6	3.7	1.67561	1.32997	6.07003
4	8	4.0625	1.45112	2.01	6.115
5	1	24.6	4.10439	18.7946	30.4054
6	5	4.48	1.83554	1.88377	7.07623
7	9	7.48889	1.36813	5.55377	9.42401
8	2	6.5	2.90224	2.39499	10.605
99	32	6.05938	0.72556	5.03312	7.08563
Total	69	5.7087			

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zasebni gozdovi

Analysis Summary

Dependent variable: LZ2000_VHA vse drevesne vrste

Factor: str_razred
Selection variable: lasnist=2|lasnist=2
Number of observations: 497
Number of levels: 10

Table of Means for LZ2000_VHA by str_razred
with 95.0 percent LSD intervals

str_razred	Count	Mean	Stnd. error (pooled s)	Lower limit	Upper limit
1	4	83.275	77.8838	-24.9336	191.484
2	24	78.8208	31.7959	34.6448	122.997
3	48	190.231	22.4831	158.994	221.468
4	48	254.227	22.4831	222.99	285.464
5	56	365.791	20.8153	336.871	394.711
6	41	377.69	24.3268	343.892	411.489
7	13	418.892	43.2022	358.869	478.916
8	1	336.8	155.768	120.383	553.217
9	1	434.2	155.768	217.783	650.617
99	261	262.794	9.64178	249.398	276.19
Total	497	270.29			

Table of Means for Iv_IVha4T by str_razred
with 95.0 percent LSD intervals

str_razred	Count	Mean	Stnd. error (pocled s)	Lower limit	Upper limit
1	4	2.65	2.27988	-0.517591	5.81759
2	24	5.12917	0.930758	3.836	6.42233
3	48	5.52292	0.658145	4.60851	6.43732
4	48	5.375	0.658145	4.4606	6.2894
5	56	6.08393	0.609324	5.28735	6.9305
6	41	7.2561	0.712115	6.26671	8.24549
7	13	5.83846	1.26465	4.0814	7.59552
8	1	7.1	4.55976	0.764819	13.4352
9	1	2.6	4.55976	-3.73518	8.93518
99	260	7.21308	0.282784	6.82019	7.60597
Total	496	6.56452			

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Analysis Summary

Dependent variable: LZ2000_VHA
Factor: str_razred
Selection variable: lasnist=2&DELIGL>75
Number of observations: 139
Number of levels: 7

Table of Means for LZ2000_VHA by str_razred
with 95.0 percent LSD intervals

str_razred	Count	Mean	Stnd. error (pooled s)	Lower limit	Upper limit
2	3	126.367	92.9302	-3.61758	256.351
3	17	250.218	39.0385	195.613	304.822
4	9	246.244	53.6533	171.198	321.291
5	24	464.129	32.8558	418.173	510.086
6	12	494.042	46.4651	429.05	559.034
7	8	493.575	56.9079	413.976	573.174
99	66	260.586	19.8128	232.874	288.299
Total	139	324.201			

Table of Means for Iv_IVha4T by str_razred
with 95.0 percent LSD intervals

str_razred	Count	Mean	Stnd. error (pooled s)	Lower limit	Upper limit
2	3	6.43333	2.32278	3.18439	9.68228
3	17	6.73529	0.975763	5.37047	8.10012
4	9	4.83333	1.34106	2.95756	6.70911
5	24	8.0375	0.821227	6.88883	9.18617
6	12	6.79167	1.16139	5.1672	8.41614
7	8	6.7875	1.42241	4.79794	8.77706
99	66	8.15455	0.495219	7.46187	8.84722
Total	139	7.51223			

XXXXXXXXXXXXXXX LISTAVCI

Analysis Summary
Dependent variable: LZ2000_VHA
Factor: str_razred
Selection variable: lasnist=2&DELLI>75
Number of observations: 194
Number of levels: 10

Table of Means for LZ2000_VHA by str_razred
with 95.0 percent LSD intervals

str_razred	Count	Mean	Stnd. error (pooled s)	Lower limit	Upper limit
1	2	1.E-8	88.126	-122.943	122.943
2	13	75.0308	34.5659	26.8086	123.253
3	21	167.61	27.1963	129.668	205.551
4	29	245.021	23.143	212.734	277.307
5	18	260.45	29.3753	219.469	301.431
6	16	378.431	31.1572	334.964	421.898
7	1	409.0	124.629	235.132	582.868
8	1	336.8	124.629	162.932	510.668
9	1	434.2	124.629	260.332	608.068
99	92	244.202	12.9935	226.075	262.329
Total	194	237.064			

Table of Means for Iv_IVha4T by str_razred
with 95.0 percent LSD intervals

str_razred	Count	Mean	Stnd. error (pooled s)	Lower limit	Upper limit
1	2	3.0	2.36279	-0.296282	6.29628
2	13	5.06923	0.926761	3.77632	6.36214
3	21	5.41429	0.729172	4.39703	6.43154
4	29	5.23448	0.620498	4.35884	6.10013
5	18	4.33889	0.787596	3.24013	5.43765
6	16	7.9625	0.835371	6.79709	9.12791
7	1	7.5	3.34149	2.83835	12.1616
8	1	7.1	3.34149	2.43835	11.7616
9	1	2.6	3.34149	-2.06165	7.26165
99	92	5.97391	0.348374	5.4879	6.45992
Total	194	5.7201			

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Analysis Summary
Dependent variable: LZ2000_VHA
Factor: str_razred
Selection variable: lasnist=2&DELLI<76&DELIGL<76
Number of observations: 169
Number of levels: 8

Table of Means for LZ2000_VHA by str_razred
with 95.0 percent LSD intervals

str_razred	Count	Mean	Stnd. error (pooled s)	Lower limit	Upper limit
1	2	166.55	118.237	1.44415	331.656
2	8	67.15	59.1183	-15.4029	149.703
3	11	130.073	50.4162	59.6714	200.474
4	10	288.11	52.877	214.272	361.948
5	15	332.007	43.1739	271.719	392.295
6	13	269.377	46.3762	204.617	334.137
7	5	297.06	74.7794	192.638	401.482
99	105	278.297	16.3182	255.51	301.084
Total	169	262.549			

Table of Means for Iv_IVha4T by str_razred
with 95.0 percent LSD intervals

str_razred	Count	Mean	Stnd. error (pooled s)	Lower limit	Upper limit
1	2	2.3	4.14259	-3.48472	8.08472
2	8	4.7375	2.07129	1.84514	7.62986
3	11	3.70909	1.7664	1.24248	6.1757
4	10	6.27	1.85262	3.68299	8.85701
5	15	5.49333	1.51266	3.38105	7.60561
6	13	6.81538	1.62486	4.54643	9.08434
7	5	5.24	2.62	1.58142	8.89858
99	105	7.75333	0.571731	6.95497	8.5517
Total	169	6.84793			

DR. Milan Hočevar

Ljubljana, 15.12.2001

Splošna analiza gozdov po lastništvu:

Vir : podatki POPIS2000
(datoteka: Popis2000efiscen2_kurz.sf)

vsi gozdovi:

Analysis Summary
Dependent variable: **LZ2000_VHA**
Factor: javni_priv
Number of observations: 713
Number of levels: 2

ANOVA Table for LZ2000_VHA by javni_priv

Analysis of Variance

Source	Sum of Squares	Df	Mean Square	F-Ratio	P-Value
Between groups	262945.0	1	262945.0	8.36	0.0040
Within groups	2.2375E7	711	31469.8		
Total (Corr.)	2.2638E7	712			

Table of Means for LZ2000_VHA by javni_priv
with 95.0 percent LSD intervals

javni_priv	Count	Mean	Stnd. error (pooled s)	Lower limit	Upper limit
1 javni	216	312.08	12.0704	295.323	328.837
2 privatni	497	270.29	7.95735	259.243	281.337
Total	713	282.95			

The StatAdvisor

This table shows the mean LZ2000_VHA for each level of javni_priv. It also shows the standard error of each mean, which is a measure of its sampling variability. The standard error is formed by dividing the pooled standard deviation by the square root of the number of observations at each level. The table also displays an interval around each mean. The intervals currently displayed are based on Fisher's least significant difference (LSD) procedure. They are constructed in such a way that if two means are the same, their intervals will overlap 95.0% of the time. You can display the intervals graphically by selecting Means Plot from the list of Graphical Options. In the Multiple Range Tests, these intervals are used to determine which means are significantly different from which others.

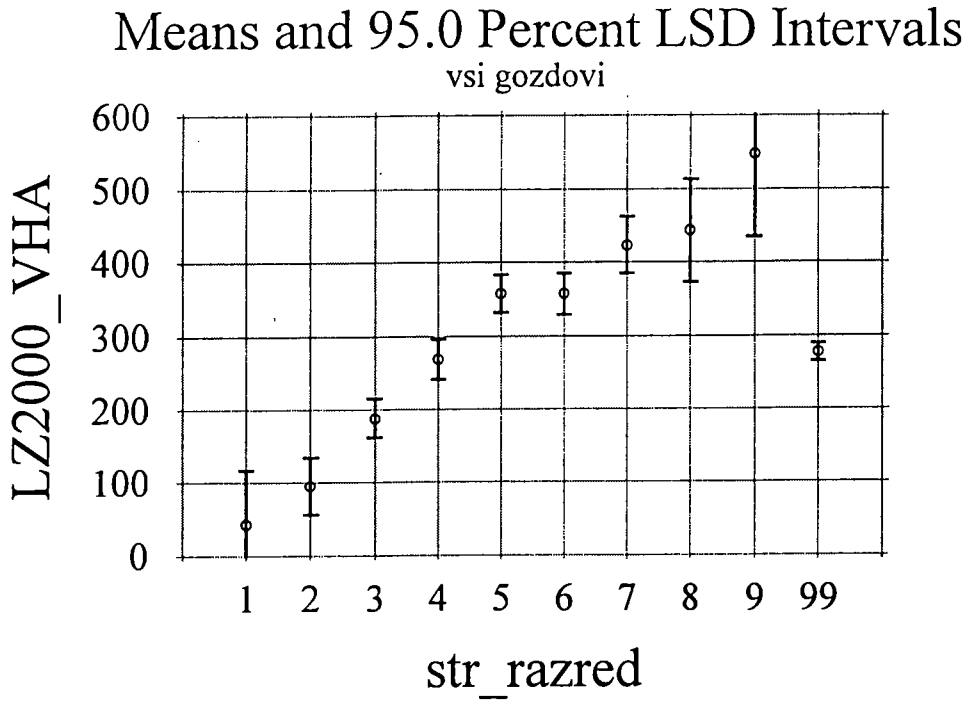
ANOVA Table for Iv_IVha4T by javni_priv

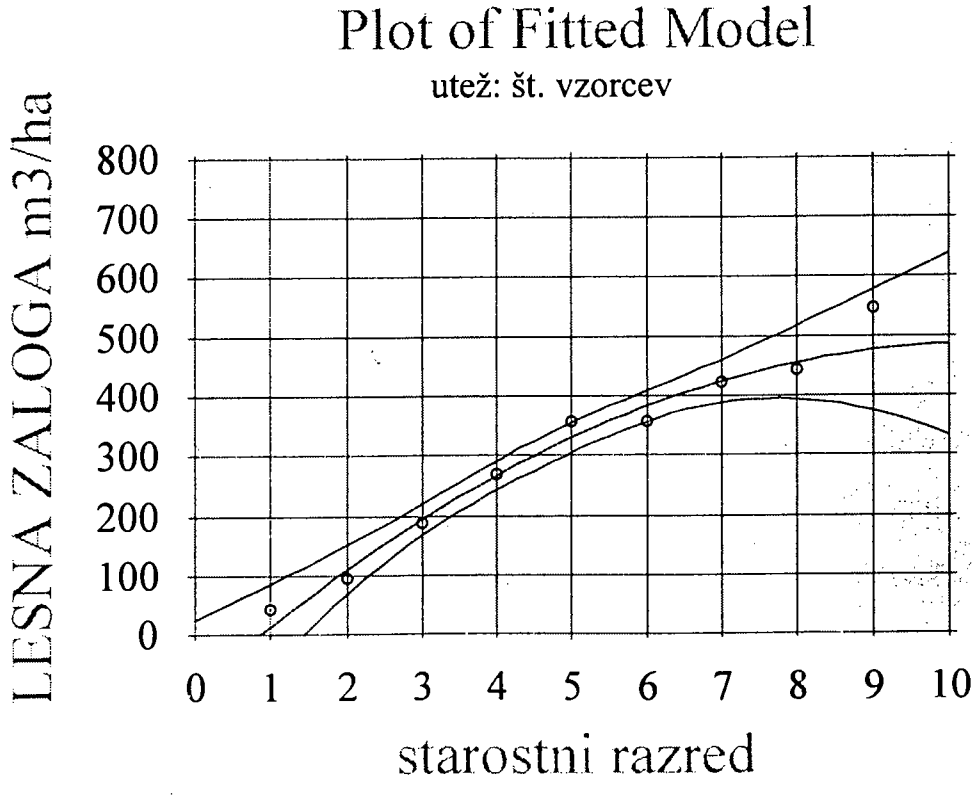
Analysis of Variance

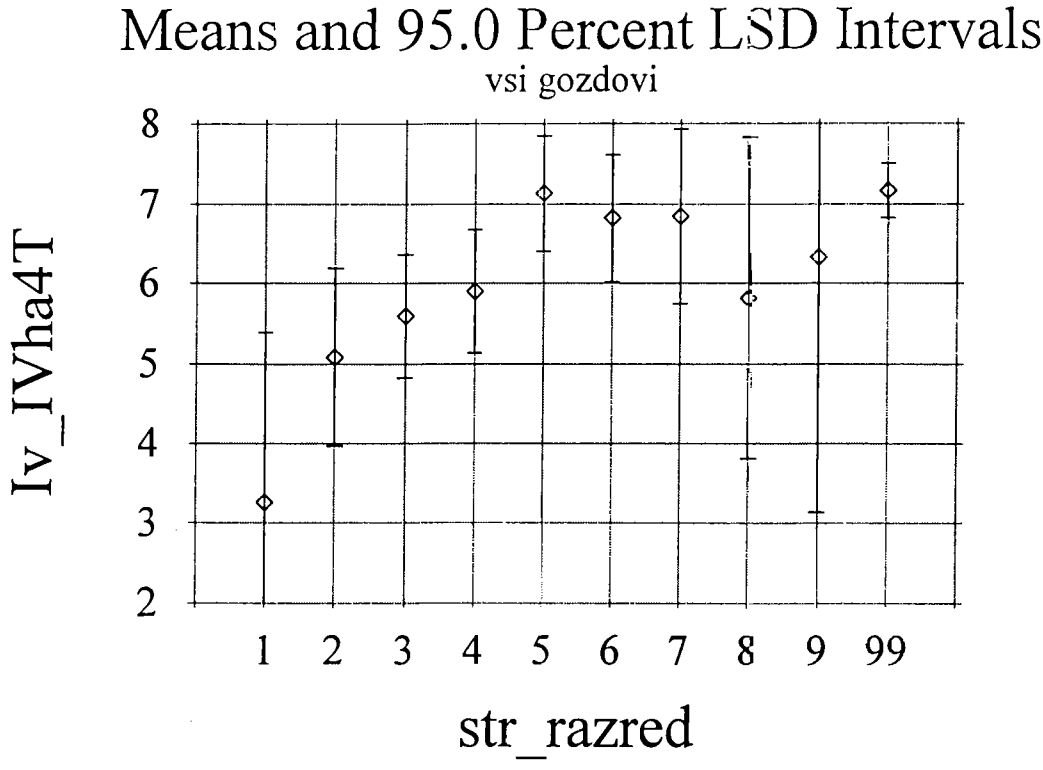
Source	Sum of Squares	Df	Mean Square	F-Ratio	P-Value
Between groups	18.3182	1	18.3182	0.85	0.3557
Within groups	15226.7	710	21.446		
Total (Corr.)	15245.0	711			

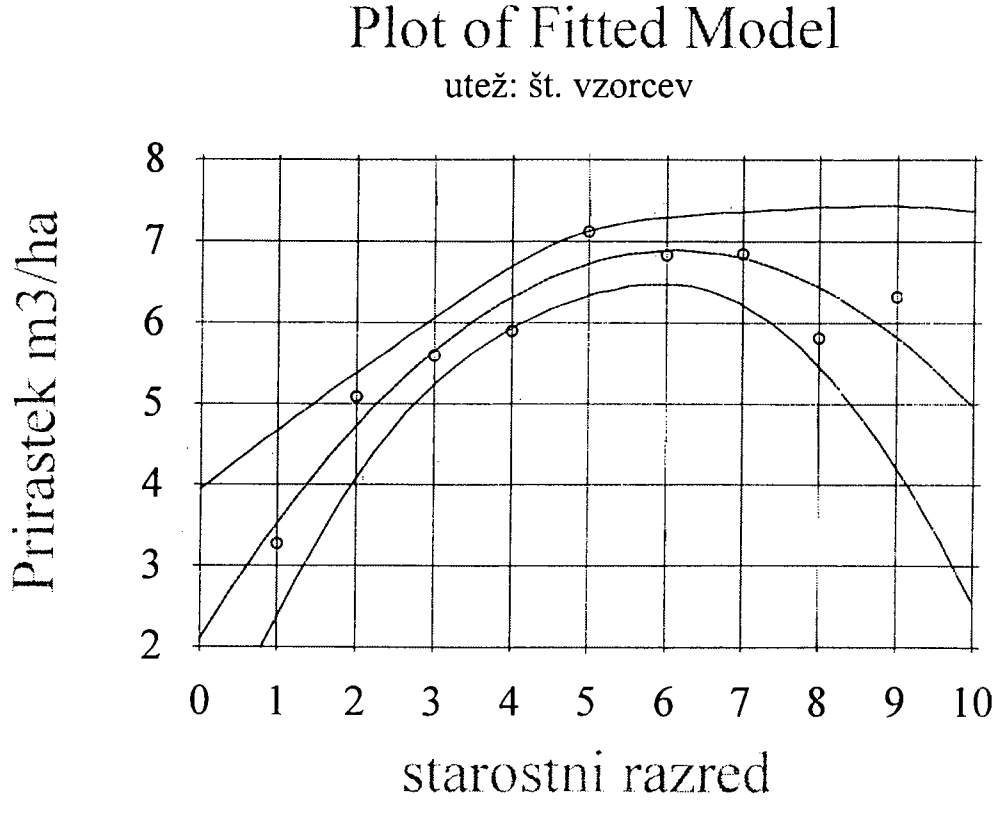
Table of Means for Iv_IVha4T by javni_priv
with 95.0 percent LSD intervals

javni_priv	Count	Mean	Stnd. error (pooled s)	Lower limit	Upper limit
1 javni	216	6.91343	0.315099	6.47598	7.35087
2 privatni	496	6.56452	0.207937	6.27584	6.85319
Total	712	6.67037			


Means and 95.0 Percent LSD Intervals
vsi gozdovi
LZ2000_VHA
600
500
400
300
200
100
0
1 2 3 4 5 6 7 8 9 99
str_razred


Plot of Fitted Model
utež: št. vzorcev
LESNA ZALOGA m3/ha
800
700
600
500
400
300
200
100
0
0 1 2 3 4 5 6 7 8 9 10
starostni razred


Means and 95.0 Percent LSD Intervals
vsi gozdovi
Iv_IVha4T
8
7
6
5
4
3
2
1 2 3 4 5 6 7 8 9 99
str_razred


Plot of Fitted Model
utež: št. vzorcev
Prirastek m3/ha
8
7
6
5
4
3
2
0 1 2 3 4 5 6 7 8 9 10
starostni razred