GROWTH TABLE FOR CORSICAN PINE IN FLANDERS (BELGIUM)*

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ABSTRACT

After its introduction at the start of this century, the Corsican pine has become an important forest tree in Flanders (Belgium). The total area covered by Corsican pine is about 11.000 ha. Due to climatological factors it is virtually absent from the Wallone part of Belgium. Despite the crisis in 1984 - 1986, practical experiences with its vitality and disease resistance are generally positive. Compared to Scotch pine which is native to Belgium, its productivity and insensitivity for insect pests is large.

To quantify the productivity of Corsican pine, a growth table was constructed using a method developed by PALM and DAGNELIE. It was base on data from 321 temporarily and 80 permanent plots distributed over Flanders. Five yield classes were distinguished according to dominant height at 50 years. For each yield class, a series of tables as a function of treatment was constructed. Treatments were characterized by the mean annual circumference increment.
These tables allow to predict the growth of Corsican pines. Such predictions for the whole range of species are necessary for the development of a good forestry policy and for timber industries. The tables also provide information for any given Corsican pine stand that is helpful in practice: expected productivity, stand density, determination of the felling quantum.

The data show that the productivity of Corsican pine is very high. The very early culmination of the current annual volume increment and the rather constant level of the mean annual volume increment after culmination are interesting new findings. It is also shown that it is possible to work with long rotation periods. This offers good opportunities for the production of high quality wood and is also important for the social and ecological role of the forest.

Productivity is lowest on very dry and sandy soils. A high productivity on moderately dry sand and loamy sand soils and loamy soils make the Corsican pine one of the most valuable tree species for the Kempen in Flanders. Although

productivity is very high on well drained sandy loam and loam soils, plantation of Corsican pine on these locations is not advised.

CONTENTS

PREFACE

Today forests have to serve multiple purposes. The new Flemish forestry legislation explicitly pays attention to the economical, social, ecological and scientific function of forests. In regions with a low forest index like Flanders (8 %) these

three function always have to be present at the same time. Nevertheless a dynamic forest policy should allow that some of the emphasis can be changed, depending on the type of the forest owner.
As a consequence, in public forests the emphasis may be on the social and ecological function. In private forests however, the owner will, primary, search for an acceptable financial revenue.
In the sandy lowlands of the Kempen, with a forest index of 29%, the needs differ strongly from those in Western Flanders with a forest index of 2.5%. This means that the emphasis laid on the three basic functions may change strongly between forests. Even in the Kempen, on places where traces of loam or organic material occur mixed in the topsoil, more varied and mixed forests can be obtained by means of a guided natural evolution. Where possible, this must be pursued. Since most forest soils in the Kempen belong to the poorest of Western Europe, the possibilities are rather limited. The choice of forest species adapted to these soils is very limited. Today only Scotch pine, Black cherry and Birch grow naturally on these locations. Forests based on these pioneer species evolve only after several generations into mixed forests. This means that for many forest owners, Scotch pine and Corsican pine are the only realistic alternatives.
Scotch pine is considered a native species in Flanders. The Corsican pine however was introduced around the turn of the century. Based on the good growth results of the early plantations the species became widespread in the Kempen after 1950. Today 5.238 ha of Corsican pine forests exist in the Kempen of Limburg, this is 9.8% of the forests in the province of Limburg.
It is known that the Corsican pine is a fastgrowing species, with a yield of twice that of Scotch pine. These figures have never been exactly quantified.
The first growth tables for Corsican pine in Flanders were made in 1976 by R. GOOSSENS and F. DUFRANE. Between 1984 en 1990 more data have been collected so more detailed and complete tables can be presented in this paper.
Because of the largely positive experiences, the Corsican pine can be classified as a species well adapted to Flanders. As a consequence the plantation of Corsican pine forests is stimulated by a financial aid of 40.000 BF/ha by the government. If planted on suited soils and with the use of the new management perceptions given in this paper the Corsican pine can continue to play an important role in multiple use forests in Flanders. Therefore these growth tables serve both a scientific and a practical purpose.

1. INTRODUCTION

The Corsican pine (*Pinus nigra* Arn. var *Corsicana*) is native in the Mediterranean area. Since the turn of the century and especially after 1940, the Corsican pine has been intensively planted in Flanders as an alternative for Scotch pine. In the scientific work that was carried out by LISEC in the previous decades the emphasis was on Corsican pine with as most important topics:

- integrated afforestation with studies of the Root Growth Potential, inoculation with growth stimulating ectomycorrhiza, planting density, ground tillage and fertilization;
- genetical improvement;
- study of the vitality of trees and forests;
- entomology;
- thinning;
- matching species to soil;
- management tables.

In this article some of the most important results of this research will be cited and situated in the traditional management of Corsican pine forests in Flanders.

2. MANAGEMENT OF CORSICAN PINE FORESTS IN FLANDERS

2.1. Distribution

Most Corsican pine forests were planted on dry sandy soils in the provinces of Antwerp and Limburg. Soil studies carried out by LISEC in the seventies (BAYENS, 1984) revealed that in Flanders, Corsican pine grows best on not too wet soils (class b) irrespective of texture. On sand, loamy sand and sand loam, the wetter classes c and d are also very suitable for Corsican pine (see also chapter 5).
Growth of Corsican pine in the Netherlands differs strongly from the growth in Flanders because of the more windy and colder climate. These climatic conditions are the reason why Corsican pine is not so widespread in the Netherlands. Also the Belgian Ardennes are too cold for the growth of this species. The forest statistics of 1970 (NIS, 1970) reports 10.000 ha Corsican pine in Belgium, 89% of which is found in Flanders. More recent data are not available. Based on infra-red-photo analyses of the province of Limburg F. DUFRANE (1990) has calculated that the area covered by Corsican pine forests in Limburg has increased with ca. 8% between 1970 and 1990. If this can be extrapolated for Belgium the total surface today is 11.000 ha and each year 300 ha of Corsican pine forests are planted. Between 1985 and 1987 the reforestation diminished strongly because of distrust based on the vitality-crises in the Corsican pine forests. Research carried out by LISEC (ECTORS en MEULEMAN, 1989), F. DUFRANE (1990) and the RUG (ROSKAMS, 1989) revealed this crisis was primarily due to the extreme low winter temperatures in '83-'84, '85-'86 and '86-'87. Today the confidence of most foresters in Corsican pine is restored.

2.2. Afforestation

The first afforestations were carried out with 2 or 3-year old planting stock of different provenances of Corsica and with the Flemish 'provenance' Koekelare. Most planting in Flanders and increasingly more in the Netherlands is done with Koekelare. Provenance tests carried out by LISEC revealed that the English 'provenances' Ampthill and Sherwood are promising (MEULEMAN, 1987). Since widening the genetical potential is desirable, prolonged research of this topic is necessary.
At first the planting density was very high, 8 - 10.000 plants/ha. More recently stockings of 4 to 6.000 plants/ha are more common. LISEC-tests revealed that production after 19 years was at a maximum with the even lower planting density of 2.700 plants/ha (BERBEN, 1978). Extremely low planting densities (ca. 1.500 plants/ha) tested by LISEC in cooperation with the "Dienst Waters en Bossen", gave very promising results. Until now such plantings are prohibited by high mortality after planting and by higher fire risks when the grass-vegetation stays too long. The research programme 'integrated afforestation', which was started by LISEC in 1984, aims to develop new nursery-technics to reduce mortality and speed up canopy closure. By using these technics forestry rentability but also the ecological value of new plantings can be improved (LISEC, 1989). The ecological value of low density-plantations is primarily due to a better humification because of an increased development of the shrublayer. This shrublayer does not exist in traditional Corsican pine plantations younger than 40 to 50 year, due to shading. As a matter of fact for these low density plantations carefully selected seeds are required.
Reforestation results are best when a complete ploughing of the soil is carried out. The very expensive destumping can be avoided if the former forest was established with a low density plantation, especially when the distance between the rows was ca. 3 m. Planting after partial ground tillage (local stirring of the ground, row-ploughing etc.) is only useful if their are no grasses or ferns or other harming vegetation.
Corsican pine seems to have regeneration problems in our regions. Good natural regeneration was found only in the Antwerp Kempen (VANDENBROUCKE, 1991). In contrast Scotch pine gives an uncountable number of offspring even in rather young stands. These seedlings are not seldom a threat for Corsican pine plantations as young Scotch pine (< 30 years), even the bad provenances, grows faster.

2.3. Thinning and clearcut

Thinning is one of the most important management tools of today's forestry. Immediately after planting, with e.g. 2.700 plants/ha, the trees do not touch each other, nor with their crowns, nor with their roots. The trees start to compete for light after canopy closure with the following result:

- natural pruning of the lower branches because of the heavy shade. This does not improve wood quality because death branches remain on the tree without breaking for many decades;

- some trees overdominate other trees, these so called 'sprinters' are not always the best shaped or most resistant. Many overdominated trees die in the end;

- the remaining trees keep competing for light and space, so the stand becomes very dense. In these circumstances harmful fungi (e.g. Brunchorstia) can proliferate freely. Another consequence is the development of very small living crowns, which leads to instable stands which are easily damaged by wind, snow and ice. These stands also make inefficient use of the production factors light and carbondioxide;

- because of the high density of the stand, a deep shade reigns under the crowns so litter decomposition and development of a shrublayer is obstructed.

Traditionally the first thinning does not take place before the stand is 25 or even 30 years. Sometimes this first thinning is preceded by a clearing intervention by which only the dying or overdominated trees are taken away. In the meantime the branches of the remaining trees are pruned to a height of 2 m to make the stand accessible. Until the stand reaches the age of 40 thinning takes place every 3 years. Later the periodicity of thinning becomes 6 years. Although the first thinning eliminates heavily deformed or forked trees, even when they belong to the upper layer, most thinnings are very conservative and only the dominated trees are felled (DUFRANE, 1989). Research carried out by LISEC in cooperation with the "Dienst Waters en Bossen" revealed that thinning early and strongly can highly improve the quality of the later thinned products (BERBEN en GEEBELEN, 1977).
The act of thinning is often called an art. Although this statement may be partially true, we believe it is more important to give the manager unbiased criteria on which the thinning activity can be based. It should be clear that thinning prescriptions are directly related to the management goal. Our advise holds true for a management based on the production of quality wood and a long revolution:

- stand density should be compared to the data in the growth tables;

- on rich locations thinnings have to start at the stand's age of 18 year, on the poorer locations at 24 years. At this occasion the surface has to be reduced from 35 m^2 (at maximum) to 25 m^2. This may be done selective by or systematic by since the genetic quality of the stands is generally good and homogeneous. The next thinnings (until the age of 40) have to reduce the surface at intervals of three years to 25 - 30 m^2. Later this can be increased to 35 m^2. In general each thinning may take away up to 30% of the surface without causing any problems for the stability (BERBEN, 1989; FABER, 1971). Such strong thinnings do not reduce timber quality since the wood density (g/cm^3) is but very slightly influenced by the width of the growth rings (SCHALCK, 1967);

- the height/diameter - ratio should always be kept below 75 - 80 for older stands, and below 80 - 100 for younger stands (MEULEMAN, 1990);

- in unstable stands thinnings have to be done very carefully, e.g. with an interval of 2 years instead of 3. After the stand has regained its stability thinnings may become increasingly strong. Most coniferous trees have crowns reacting by an increase in vertical growth (more living crowns) after thinning, opposite to most deciduous trees who react by a more horizontal growth (longer branches) (ZEIDE, 1991).

Corsican pine stands older than 70 years are hard to find in Flanders because of:

- the species has only recently been introduced in Flanders;
- on better soils the trees are of good commercial dimensions after 70 years, so the manager often wants to sell them then.

After clearcutting a second generation of Corsican pine is often planted. This is done because of the lack of valuable alternatives for economically inspired forestry, but also because of the high ecological and recreational value of older Corsican pine stands. In fact both the economical, ecological and recreational value of these stands can be optimised by prolonging the revolution time and by the production of heavy timber logs. Meanwhile these stands can progressively be transformed into more complex and mixed stands. Attention has to be given to the following points :

- valuable seed carriers should be present in the immediate vicinity;
- the stand should be of good quality and stability (see also chapter 5);
- highly skilled managers are a necessity because managing these stands is more difficult than managing even aged and homogeneous stands;
- the exploitation has to be done very carefully without damaging the seedlings;
- no harmful species (e.g. Prunus serotina) may be present in high quantities;
- even in these progressively transformed stands pioneer species like Corsican and Scotch pine will disappear because of the shady conditions. If the presence of these species is desired, regeneration in homogeneous blocks of 0.3 to 0.5 ha is necessary.

3. WHY GROWTH TABLES ?

The most important aims of growth tables are the following :

- providing test criteria for existing stands;
- using the tables as the bases for stearing schemes;
- rentability studies for a single stand or for a whole region;
- choice of species;
- stating felling quantities as imperative by the legislation;
- gaining insight in the actual management practice. Answering questions like: where are Corsican pine stands found? What is the initial stocking after planting? What are the thinning characteristics? How long is the revolution time?

Growth tables are a model for the reality of a specific stand. So the tables will seldom be 100% accurate.

4. METHODOLOGY

In 1985 J.BERBEN started the collection of data for this growth table. In 1989 the work was taken over by B. MEULEMAN and collaborators. The data were complemented by F. DUFRANE, part of the computing was done at the Centre de Biometrie, Gembloux (G. CARLETTI and R. PALM).

4.1. Classical method

Most existing growth tables are based upon long term observations of stands growing under different growing conditions. These data were only partially available.

4.2. Applied method

These growth tables are based on a method developed by R. PALM (DAGNELIE et al., 1988). Test stands were chosen carefully to guarantee that all soil types and age classes are present. A once only inventory was made in each stand. This was done by measuring each tree in circular plots of 0.04 ha (see figure 1) at a rate of 1 plot/ha.

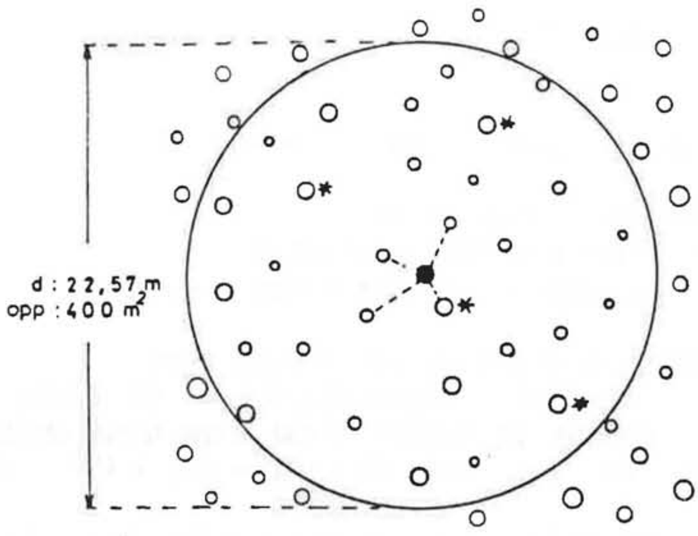

Figure 1: plot

● *central point*

O-- *4 trees nearest to the central point*

O* *4 biggest trees*

In each plot the following parameters were measured:

- stand age;
- dominant height (mean height of the 4 biggest trees);
- mean breast circumference (mean circumference of the 4 trees nearest to the central point);
- each individual circumference;
- diameter increase in the previous 5 years (mean of 4 cores taken with the Pressler device);
- data on the localization of the stand (soiltype, height above sealevel ...).

Since some stands were measured before the thinning, others after the thinning and others just between two thinnings, the average result is considered to describe the situation just between two thinnings.
Based on these measured parameters some secondary parameters were derived and a set of relations for a theoretical stand were calculated. The first and most important one was the relation between age and dominant height. Based on this function the plots were divided into 5 production classes, characterized by their dominant height at the age of 50 years. This was done because the dominant height at a certain age is known to be determined by the species and the characte-

ristics of the location (including soiltype and climate) and not by the management. Subsequently a set of functions was calculated in order to predict the other stand characteristics based on circumference, age and dominant height.

4.2.1. Number of plots

321 plots were treated as mentioned above. These plots were distributed over Flanders (see figure 2). We tried to take them in different age classes (see figure 3) and on different soiltypes (see figure 4). Probably most of the testplots were of the provenance Koekelare. These data were complemented with the data of 60 permanent testplots in the province of Limburg.
Thus, the growth tables are based on 381 plots, ca. 2.000 random samples for the diameter growth and ca. 700 random samples for the other parameters.

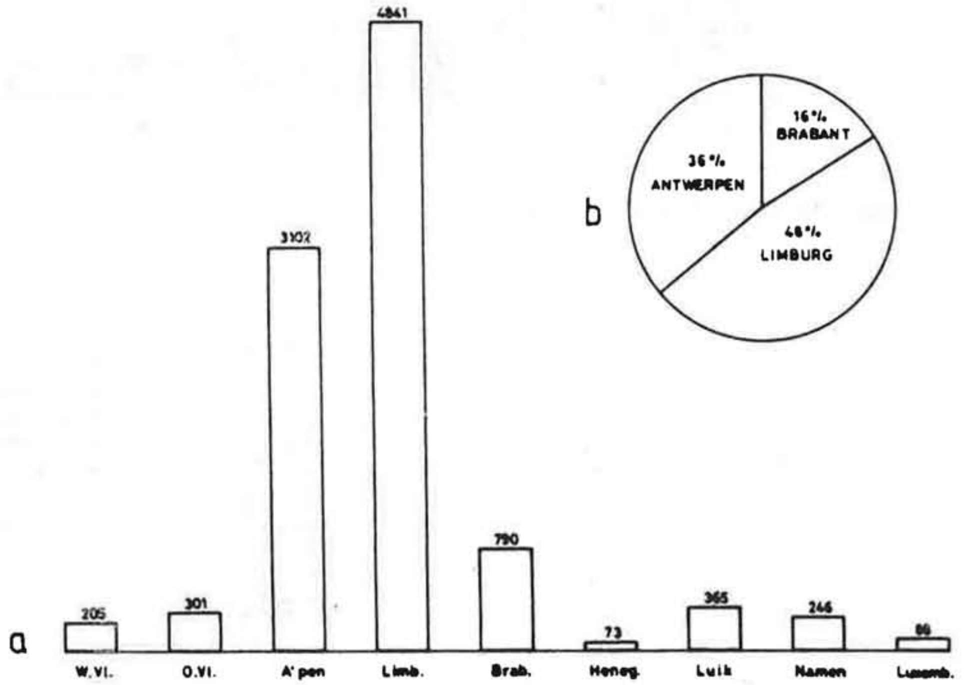

Figure 2 : a) occurrence of Corsican pine stands in Flanders
b) plots used for these growth tables

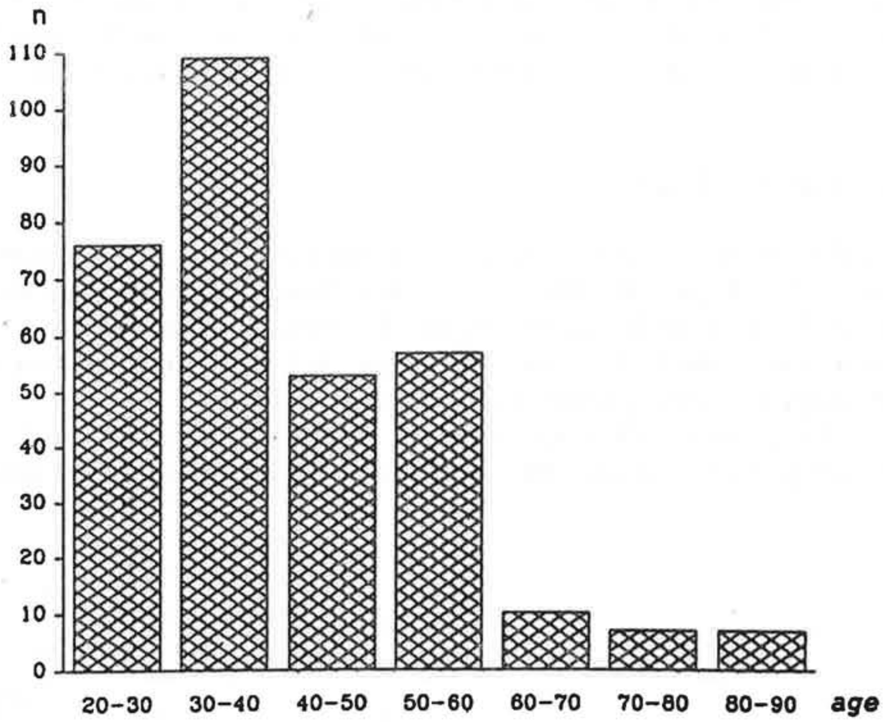

Figure 3 : age distribution of the plots

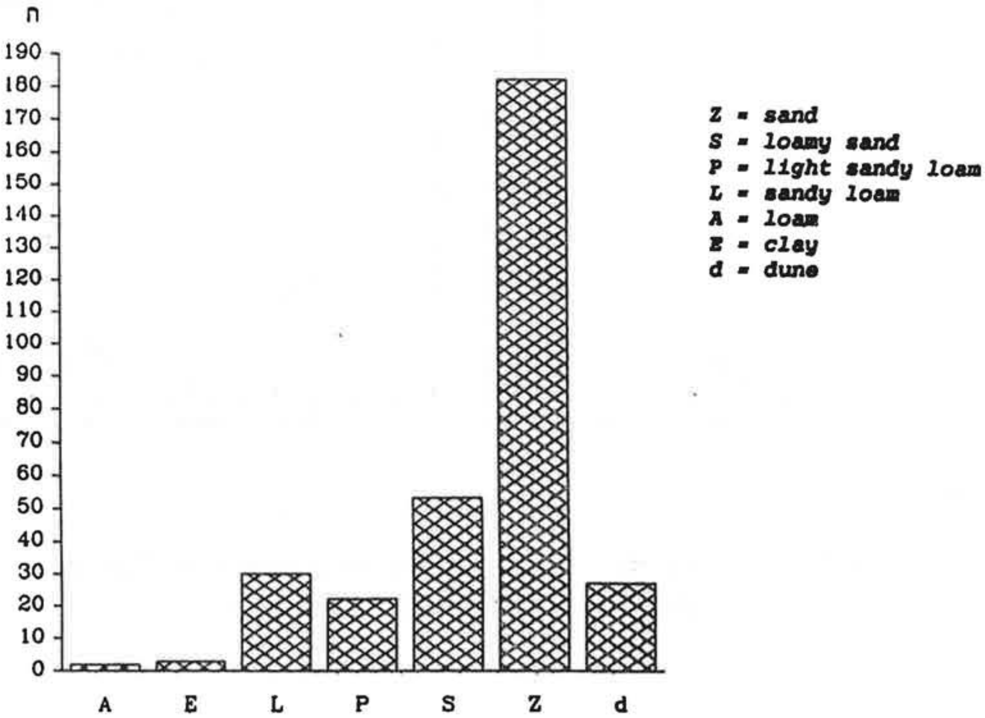

Figure 4 : distribution of the plots over the texture classes

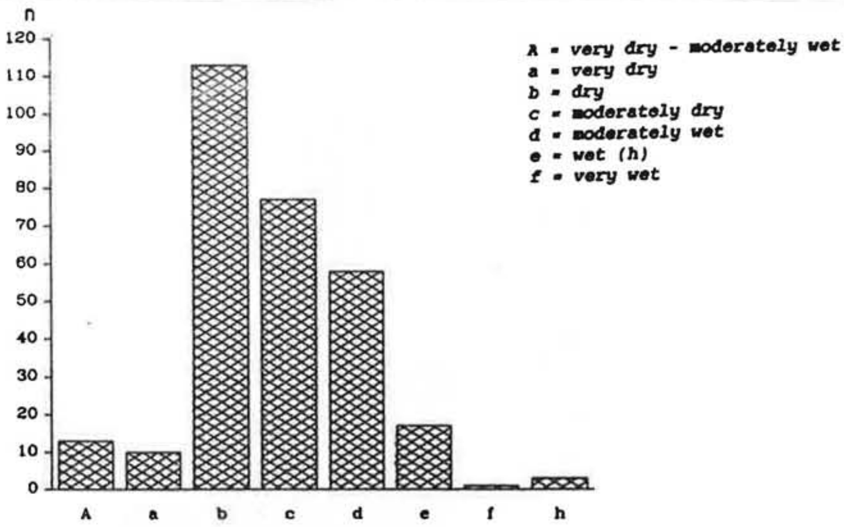

Figure 5 : distribution of the plots over the drainage classes.

4.2.2 Height

* height function for all yield classes

Several functions were fitted to the data. In the end we chose for a linear relation:

HD = 0.3388 x L + 4.84

with : HD = dominant height (m)
L = age (year)
($R^2 = 0.74$)

Five yield classes characterized by their dominant height at the age of 5 years were defined i.e. 15, 18, 21, 24 and 27 m (see figure 6). For each plot the exact yield class was calculated as follows :

$$I_o = \frac{H_a}{H_{a\ gem}} x\, I_{o\ gem} \qquad \text{(function 1)}$$

with : I0 = yield class of the stand;
Ha = current dominant height of the stand at the current age
I0gem = mean yield class of all the stands (actually 21.78 m)
Hagem = mean dominant height at the current age

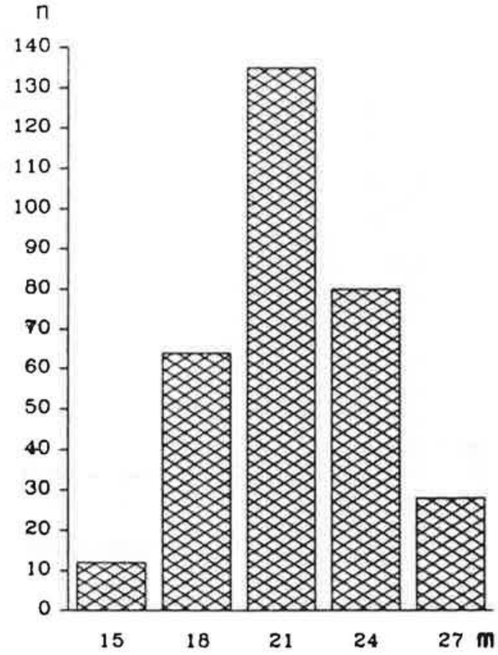

Figure 6 : Distribution of the plots over yield class

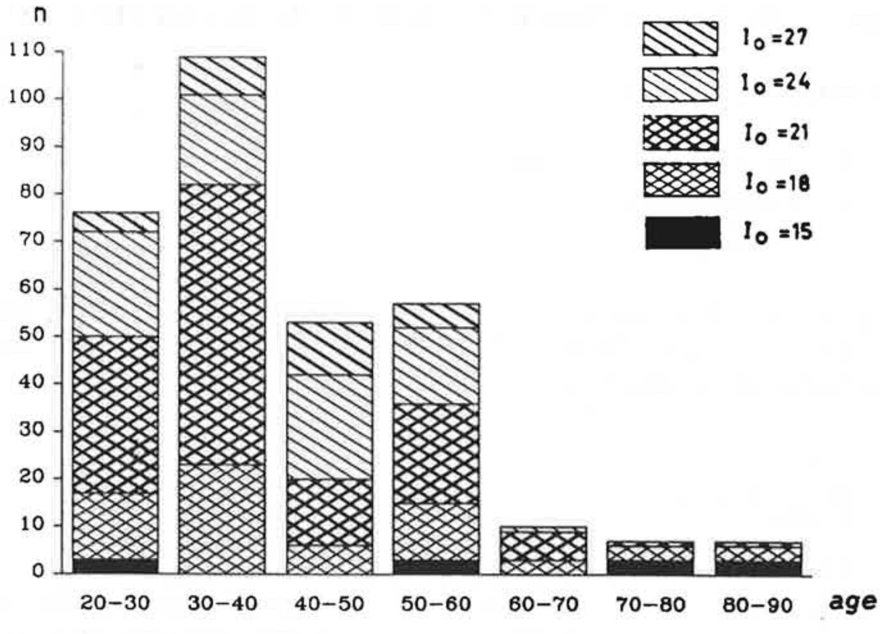

Figure 7 : distribution of the stands over yield class per age class.

It should be clear that this linear relation is only applicable in a restricted age interval (between age 25 and 65). Since we found no older stands on the best soils we decided to use this relation for the yield class 24 and 27 m.

* height function for the lower yield classes

For the yield classes 15, 18 and 21 m a non linear relation was calculated:

$$H_D = b_0 \left[1 - exp[- (\frac{L - b_2}{b_1})^2] \right] \qquad \text{(function 2)}$$

with the following coefficients :

I_0	b_0	b_1	b_2
15 m	24.796	74.615	- 21.902
18 m	28.044	74.615	- 25.608
21 m	31.290	74.615	- 28.686

Figure 8 gives the change of the dominant height with age for each yield class.

4.2.3. Circumference

To be able to predict the mean circumference of a stand from its age and the dominant height, the following relation was calculated:

$$MC_{130} = - 18.461 + 3.01809 \, x \, H_D + 0.88154 \, x \, L \; \left(R^2 = 0.90 \right) \qquad \text{(function 3)}$$

with : MC130 = mean circumference at breast height (1.30 m)

Figure 9 gives the distribution of the testplots according to their mean circumference.

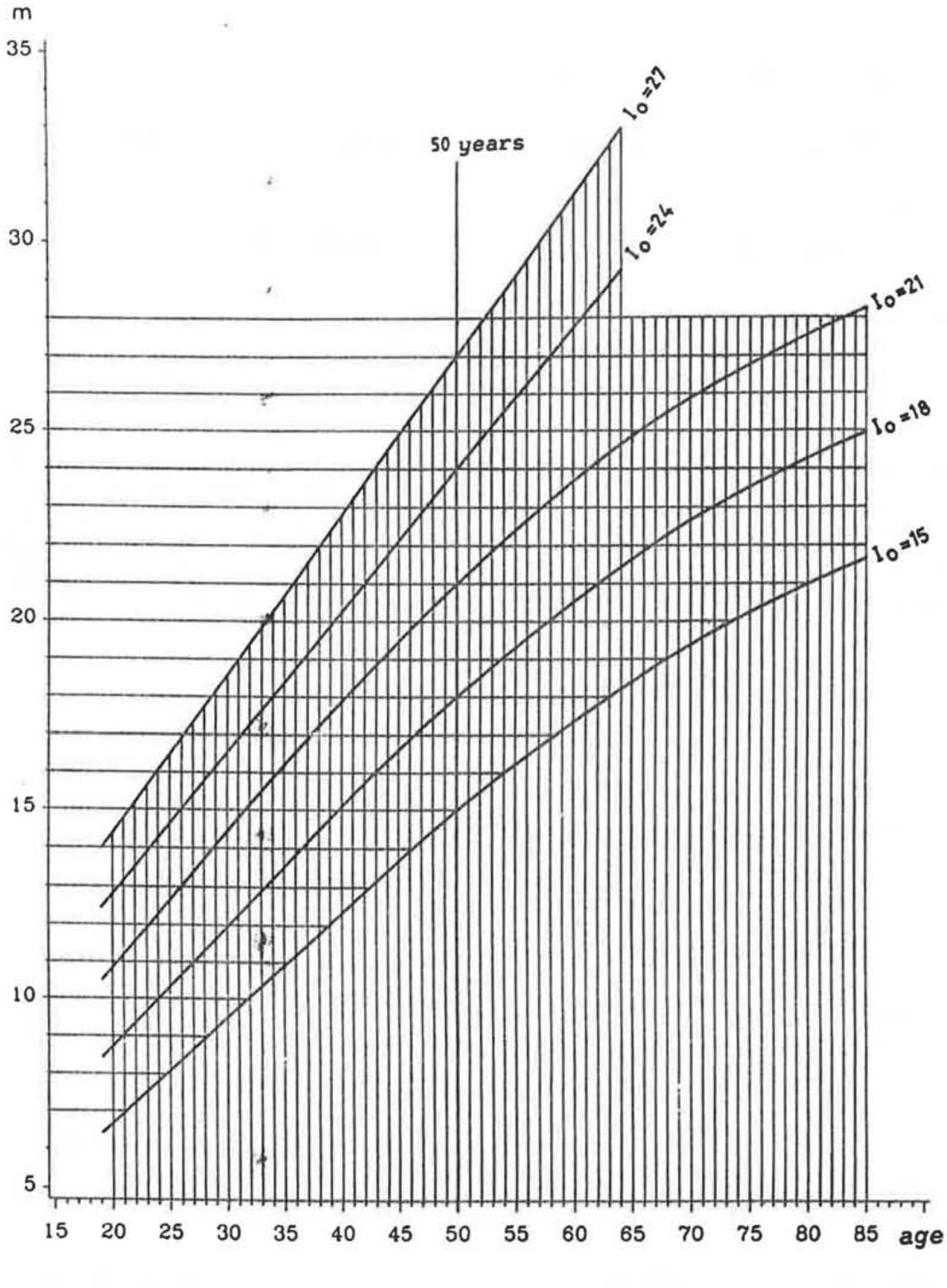

Figure 8 : dominant height as a function of the age.

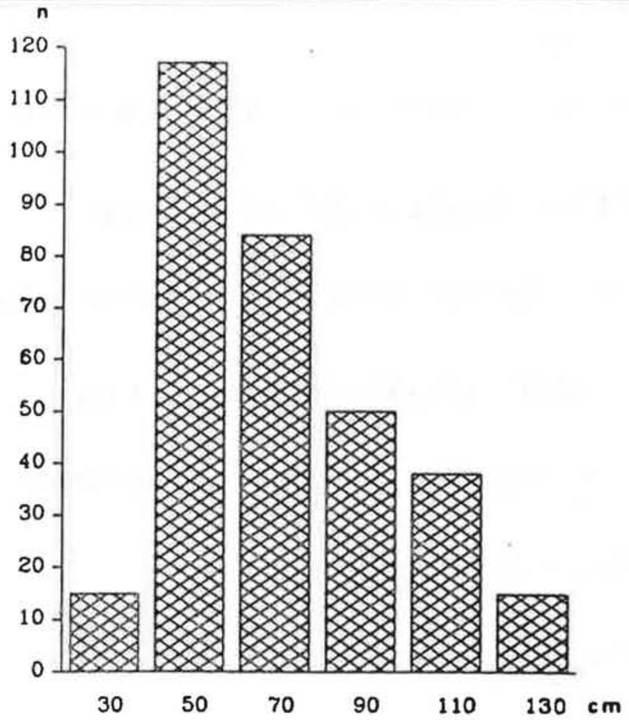

Figure 9 : distribution of the test plots according to their circumference at breast height (1.30m)

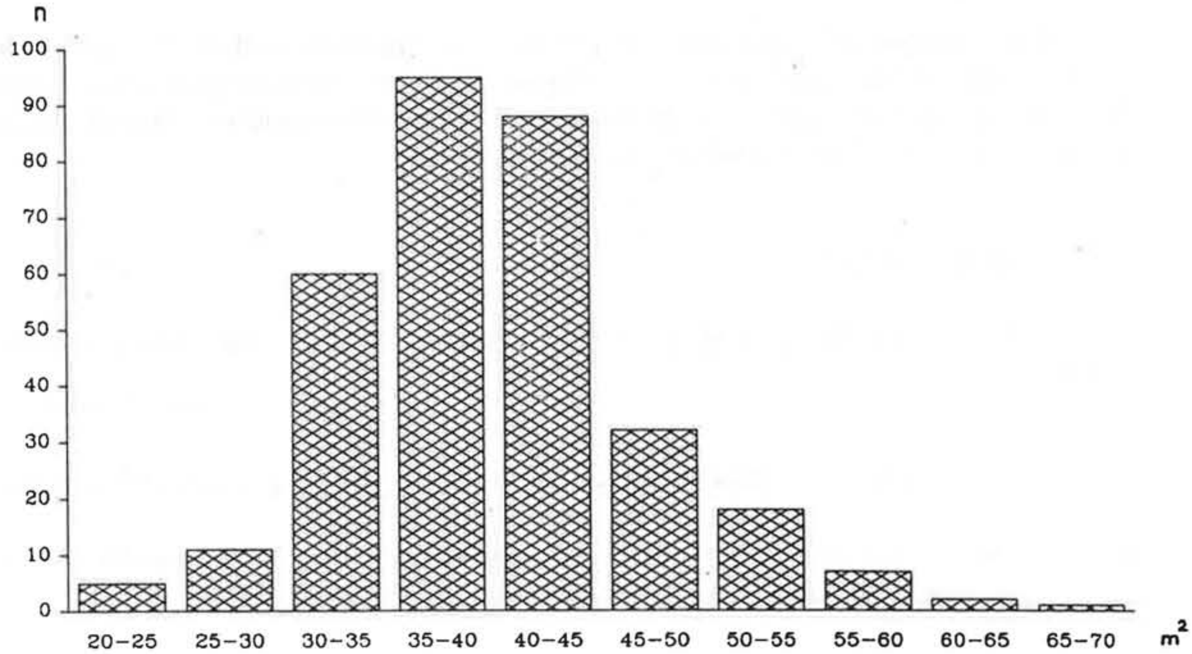

Figure 10 : distribution of the plots according to their mean surface/ha

4.2.4. trees per hectare

The number of trees per hectare was calculated as follows :

$$log_e NT = 14.726 - 1.83601 x\, log_e MC_{130} \left(R^2 = 0.93\right)$$ (function 4)

The distribution of the circumferences was characterized as follows:

$$log_e ECT_{130} = 0.4863 + 0.5116\, log_e MC_{130}\, (R^2 = 0.50)$$ (function 5)

with : ECT130 = standard deviation of the circumference.

$$G1C_{130} = -1.8661 + 0.302677\, log_e NT\, (R^2 = 0.22)$$ (function 6)

with : G1C130 = coefficient of asymmetry

$$B2C130 = 2.8888$$ (function 7)

with : B2C130 = coefficient of flattening.

With the number of trees per hectare and functions 6 and 7 it is possible to calculate the surface per hectare. As figure 10 shows we generally observed very high surfaces per hectare. We checked these observations and concluded that most Corsican pine stands in Flanders are poorly thinned .

4.2.5. Diameter growth

The diameter growth of a single tree in the previous 5 year was predicted as follows :

(function 8)

$$E_{130} = -0.012661 x L + 0.010421 x C_{130} - 0.37216 x\, log_e MC_{130} + 2.5282\, (R^2 = 0.16)$$

with : E130 = diameter growth in 5 years (radius in mm) of the model tree with circumference MC130 in a stand with mean circumference MC130.

Figure 11 shows the diameter growth classes which were actually observed.

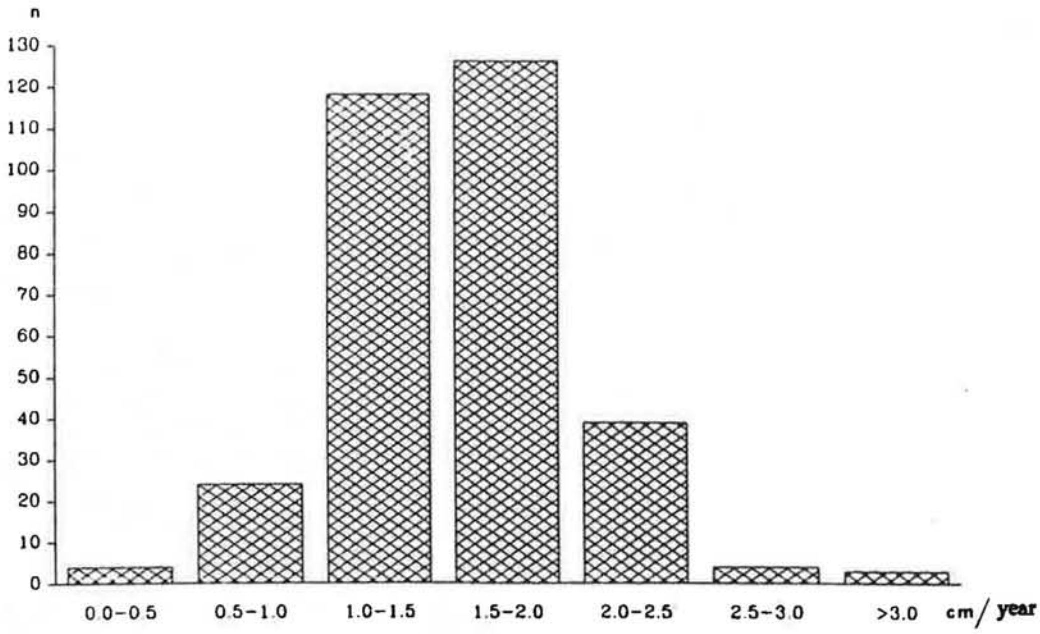

Figure 11 : distribution of the testplots according to their mean annual diameter growth.

4.2.6. Cubing

To be able to calculate the volume of a stand we used a function with dominant height of the stand and diameter at breast height as input (1.30 m) (J.BERBEN et al., 1983).

(function 9)

$$VC_{22} = -0.80282 \times 10^{-3} + 0.27264 \times 10^{-4} \times C_{130}^2 - 0.15316 \times 10^{-2} \times H_D + 0.24858\ 10^{-5} \times C_{130}^2 \times H_D$$

$$(R^2 = 0.9577)$$

Table 1 gives the volume according to this formula, tables 2, 3 and 4 give other types of volume tables.

Table 1 : Timber volume under circumference 22 cm based on circumference at breast height (C130) and the dominant height (HDOM) (BERBEN et al, 1983).

CIRCUMFERENCE (cm)	Dominant height (m) → 7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
20	6	6																								
25	16	16	16	16	16	17																				
30	29	29	30	31	31	32	33	34	34															dm^3		
35	43	45	46	48	49	51	52	54	55	57	58	60														
40	60	62	65	67	70	72	75	77	80	82	84	87														
45				89	93	96	100	103	107	110	114	117	121	124	128											
50							128	133	138	142	147	152	156	161	166											
55							160	166	171	177	183	189	195	201	207	213	219	225								
60							194	201	209	216	223	231	238	246	253	261	268	275								
65									249	258	267	276	285	294	303	312	321	330								
70									293	303	314	324	335	346	356	367	378	388	399	410	420					
75									339	352	364	377	389	402	414	426	439	451	464	476	489					
80									389	404	418	432	447	461	476	490	504	519	533	548	562					
85											475	492	508	525	541	558	574	590	607	623	640					
90											536	555	573	592	611	629	648	667	685	704	722	741	760	778		
95											601	622	642	663	684	705	726	747	768	789	810	831	851	872		
100											668	692	715	738	762	785	808	832	855	878	902	925	948	972		
105											740	766	791	817	843	869	895	921	947	973	998	1024	1050	1076		
110													871	900	929	957	986	1014	1043	1071	1100	1128	1157	1185		
115													955	987	1018	1049	1081	1112	1143	1175	1206	1237	1269	1300	1331	1363
120													1043	1077	1111	1146	1180	1214	1248	1283	1317	1351	1385	1420	1454	1488
125													1134	1171	1209	1246	1283	1321	1358	1395	1433	1470	1507	1544	1582	1619
130															1310	1350	1391	1431	1472	1512	1553	1593	1634	1674	1715	1755
135															1415	1459	1503	1547	1590	1634	1678	1722	1765	1809	1853	1897
140															1525	1572	1619	1666	1713	1761	1808	1855	1902	1949	1996	2044
145															1638	1689	1739	1790	1841	1891	1942	1993	2044	2094	2145	2196
150																	1864	1918	1973	2027	2081	2136	2190	2245	2299	2353

Table 2 : Timber volume under circumference 22 cm based on circumference at breast height (C150) and the dominant height (HDOM) (BERBEN et al, 1983).

dm³

CIRCUMFERENCE (cm)	Dominant height (m) 7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
20	5	5	5																							
25	16	17	17	18	19	19																				
30	29	31	32	33	34	36	37	38	40																	
35	45	47	49	51	53	55	57	60	62	64	66	68														
40	63	66	69	72	75	78	81	84	87	90	93	96														
45				96	100	104	108	112	116	120	124	128	132	136	140											
50							138	143	148	153	158	163	169	174	179											
55							170	177	183	190	196	203	209	216	222	229	235	242								
60							207	214	222	230	238	246	254	262	269	277	285	293								
65									265	274	283	293	302	311	321	330	340	349								
70									310	321	332	343	354	365	376	387	398	409	420	431	442					
75									359	372	385	398	410	423	436	449	462	474	487	500	513					
80									412	426	441	456	470	485	500	514	529	544	558	573	588					
85											501	518	534	551	568	584	601	618	634	651	668					
90											564	583	602	621	640	658	677	696	715	734	752	771	790	809		
95											631	653	674	695	716	737	758	779	800	821	842	863	884	905		
100											702	726	749	772	796	819	843	866	890	913	936	960	983	1007		
105											777	802	828	854	880	906	932	958	984	1010	1036	1062	1087	1113		
110													912	940	969	997	1026	1054	1083	1111	1140	1168	1197	1225		
115													999	1030	1061	1092	1124	1155	1186	1217	1249	1280	1311	1342	1374	1405
120													1090	1124	1158	1192	1226	1260	1294	1328	1362	1397	1431	1465	1499	1533
125													1184	1221	1259	1296	1333	1370	1407	1444	1481	1518	1555	1592	1629	1667
130															1363	1404	1444	1484	1524	1564	1605	1645	1685	1725	1765	1806
135															1472	1516	1559	1603	1646	1689	1733	1776	1820	1863	1907	1950
140															1585	1632	1679	1726	1773	1819	1866	1913	1960	2006	2053	2100
145															1703	1753	1803	1853	1904	1954	2004	2054	2104	2155	2205	2255
150																	1932	1985	2039	2093	2147	2201	2254	2308	2362	2416

Table 3 : Timber volume under circumference 22 cm based on circumference at breast height (C130) and total height (BERBEN et al, 1983).

CIRCUMFERENCE (cm)	Total height (m) 7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
20	6	8	9																							
25	12	15	17	19	21	23																				
30	20	23	26	30	33	36	39	43	46															dm^3		
35	29	33	38	42	47	51	56	60	65	70	74	79														
40	39	45	51	57	63	69	75	81	87	93	99	105														
45				73	81	89	96	104	112	119	127	135	142	150	158											
50							120	130	139	149	158	168	178	187	197											
55							147	159	170	182	193	205	216	228	240	251	263	274								
60							176	190	204	217	231	245	259	273	287	300	314	328								
65									240	256	273	289	305	321	338	354	370	387								
70									280	298	317	336	355	374	393	412	431	450	469	488	506					
75									322	344	365	387	409	431	452	474	496	518	539	561	583					
80									367	392	417	441	466	491	516	541	565	590	615	640	664					
85											471	499	527	555	583	611	639	667	695	723	751					
90											529	561	592	623	655	686	718	749	781	812	843	875	906	938		
95											591	626	661	696	731	766	801	836	871	906	941	976	1011	1046		
100											655	694	733	772	810	849	888	927	966	1005	1043	1082	1121	1160		
105											723	766	809	851	894	937	980	1023	1066	1108	1151	1194	1237	1280		
110													888	935	982	1029	1076	1123	1170	1217	1265	1312	1359	1406		
115													971	1023	1074	1126	1177	1229	1280	1332	1383	1434	1486	1537	1589	1640
120													1058	1114	1171	1227	1283	1339	1395	1451	1507	1563	1619	1675	1731	1787
125													1149	1210	1271	1332	1392	1453	1514	1575	1636	1696	1757	1818	1879	1940
130															1375	1441	1507	1573	1638	1704	1770	1836	1902	1967	2033	2099
135															1484	1555	1626	1697	1767	1838	1909	1980	2051	2122	2193	2264
140															1596	1672	1749	1825	1902	1978	2054	2131	2207	2283	2360	2436
145															1713	1795	1877	1958	2040	2122	2204	2286	2368	2450	2532	2614
150																	2009	2097	2184	2272	2360	2447	2535	2623	2710	2798

Table 4 : Timber volume under circumference 22 cm based on circumference at breast height (C150) and total height (BERBEN et al, 1983).

CIRCUMFERENCE (cm)	Total height (m) 7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
20	8	11	13																							
25	15	18	22	25	28	31																				
30	23	28	32	36	41	45	49	54	58															dm^3		
35	33	39	45	50	56	61	67	72	78	83	89	95														
40	45	52	59	66	73	80	87	94	101	108	115	122														
45				84	92	101	110	118	127	136	144	153	162	170	179											
50							135	146	156	167	177	188	198	209	219											
55							163	176	188	201	213	226	238	251	263	276	288	301								
60							194	209	224	238	253	268	283	297	312	327	341	356								
65									262	279	296	313	330	348	365	382	399	416								
70									304	323	343	363	382	402	422	441	461	481	500	520	540					
75									348	371	393	415	438	460	483	505	528	550	573	595	618					
80									396	421	447	472	497	523	548	574	599	625	650	676	701					
85											504	532	561	589	618	647	675	704	733	761	790					
90											564	596	628	660	692	724	756	788	820	852	884	916	948	980		
95											628	663	699	735	770	806	841	877	912	948	984	1019	1055	1090		
100											695	735	774	813	853	892	931	970	1010	1049	1088	1128	1167	1206		
105											766	809	853	896	939	982	1026	1069	1112	1155	1199	1242	1285	1328		
110													935	983	1030	1077	1125	1172	1219	1267	1314	1362	1409	1456		
115													1022	1073	1125	1177	1228	1280	1332	1384	1435	1487	1539	1590	1642	1694
120													1112	1168	1224	1280	1337	1393	1449	1505	1562	1618	1674	1730	1787	1843
125													1206	1267	1328	1389	1450	1511	1571	1632	1693	1754	1815	1876	1937	1998
130															1435	1501	1567	1633	1699	1765	1830	1896	1962	2028	2094	2160
135															1547	1618	1689	1760	1831	1902	1973	2044	2115	2186	2257	2328
140															1663	1740	1816	1892	1968	2045	2121	2197	2273	2350	2426	2502
145															1784	1866	1947	2029	2111	2192	2274	2356	2438	2519	2601	2683
150																	2083	2171	2258	2345	2433	2520	2608	2695	2782	2870

4.2.7. Set up of the growth table

The formulas 1 to 9 were used to make the growth tables. For the lower yield classes (15, 18 and 21 m) the non-linear function was used. For the yield classes 24 and 27 we used the linear function, so we had to stop the calculations at the age of 65 as the estimation becomes biased.
For each yield class a set of tables was calculated according to different fixed annual diameter growth levels. The fixed diameter growth corresponds to the management goal. A low annual diameter increment corresponds with the production of a great number of small stems and short rotations. For the production of heavy sawlogs a greater annual diameter increment is necessary with longer rotations. The level of the annual diameter increment can, between certain limits (see table 6), be guided by the type of thinning. The total annual volume production is not affected by the level of the annual diameter increment.

Table 5 : Realistic diameter increment classes for Corsican pine. For each of these combinations a different growth table was constructed.

	mean annual in crement of cirumference (cm)						
yield class	1,25	1,50	1,75	2,00	2,25	2,50	2,75
15	*	*	*				
18	*	*	*	*			
21		*	*	*	*		
24		*	*	*	*	*	
27			*	*	*	*	*

The tables start at the age of 25 years, except for the lowest yield classes were this would lead to inconsistences. For the younger stands the tables give data each 3 years. After the age of 40 data are given only each 6 years. This corresponds with the thinning periodicity. In some tables this change of periodicity may lead to irregularities.

a) stand characteristics at age 23.5

To build up a table the stand characteristics are calculated at the age of 23.5 years. The yield class is calculated with function 1 (for the highest yield classes) or with function 2 (for the lower yield classes). Subsequently function 3 was used to calculate the mean circumference and function 4 to calculate the number of trees/ha. Using functions 4, 5 and 6 the diameter class distribution of the hypothetical stand is calculated.

b) growth in the next 1.5 years

For each individual tree in the diameter class distribution the diameter increment in the next 5 years can be calculated by means of function 8. We assume the growth in the next 1.5 years to be 1.5/5 or 30 % of the growth in the next 5 years. The height increment is calculated with function 1 or 2. We assume the number of trees/ha is constant in the next 1.5 years, i.e. no thinning. Also the surface/ha and the volume/ha are calculated (function 8).

c) stand characteristics at age 25 before thinning

Based on the calculations in b), the number of the trees/ha, the circumference, the dominant height, the surface/ha and the volume/ha are calculated.

d) stand characteristics at age 26.5

In the same way as for the stand characteristics at the age of 23.5 years -see a)- the stand characteristics at the age of 25 years can be calculated. An exception must be made for the mean circumference. The mean circumference is calculated by adding 3 times the mean annual diameter increment which was chosen depending on the management goal. This increment is realized partially by the biological increment (the standing trees grow thicker) and partially by the technical increment. The technical increment is the increment due to thinning. This increment can be positive or negative. If thinning only takes away dominated trees, the technical increment is positive. If also dominant or subdominant trees are felled the technical increment can become negative. It is important to mention the number of trees/ ha is smaller at the age of 26.5 compared to the situation at the age of 23.5. The difference is made by the thinning.

e) growth in the previous 1.5 year : See b)

f) stand characteristics at age 25, after thinning

In the same way as in c) the stand characteristics at the age of 25 years can be calculated using data in d) and e). The stand characteristics differ from these calculated in c). Most striking is the smaller number of trees/ha in d). The difference in number between c) and f) is the number of trees removed by thinning.

To build up the table for the age of 28 an analogous reasoning as above can be made. This has to be done for each yield class and for each fixed diameter increment.

5. DISCUSSION

The following observations made during this research were most striking :

- **The high surfaces/ha.** After verification we can state without any doubt that many stands have surfaces of $50m^2$ and more. We doubt this is favorable for a good and sane growth but it also reveals that Corsican pine tolerate high densities better than Scotch pine;

- **The high volumes/ ha.** Several stands had a standing volume of over 500 m^3;

- **The early culminating current annual increment (CAI).** This observation was verified too. Figure 12 gives the actual observed data for a non-thinned stand at the age of 32 years. The data were obtained by taking cores of every tree and measuring the annual rings till the pith and by measuring the length of the internodes (height increment).

- The culmination point of the mean annual volume increment (MAVI) is specific for the different yield classes :

yield class	maximal MAVI
15	76 years
18	70 years
21	64 years

  After this culmination point the MAVI remains rather constant for a long period . For I0 = 21 m the MAVI culminates at the age of 64 years, at the age of 88 years the MAVI is only 3 % lower. Hence long revolution periods seem to be acceptable if the vitality of the stand is good. This means that the production of heavy saw logs (C130 1.50 to 2.00 m) and the guided natural transformation of the stands is possible in Flanders. The age of culmination of the MAVI is not affected by the thinning regime;

- The **fixed annual diameter increment levels** correspond to different treatments. But one can not say the lower increments correspond with low thinning and the

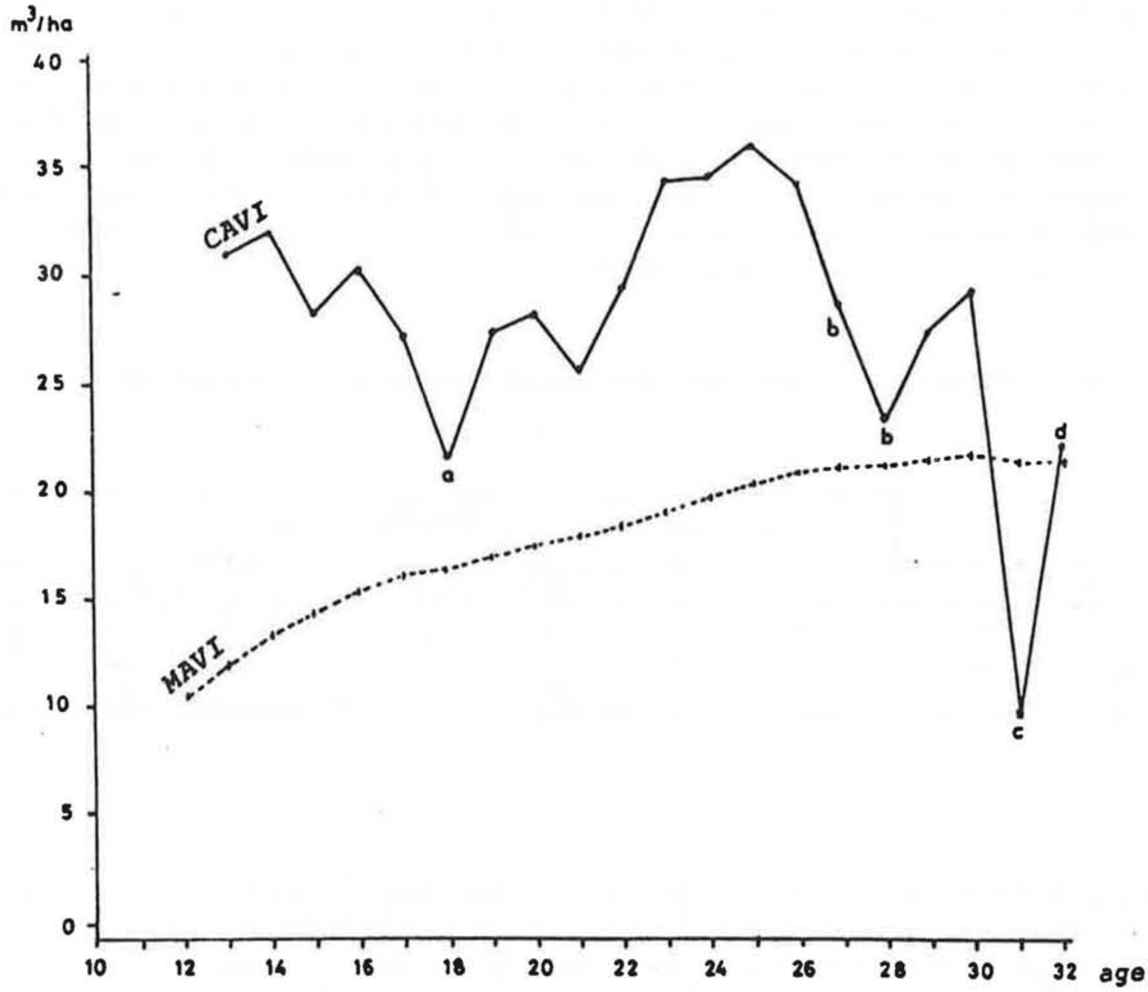

Figure 12:

Evolution of the current (CAVI) and mean (MAVI) annual volume increment in a teststand which was never thinned.

a) The extraordinary dry summer of 1976 with 214 mm precipitation during the vegetation season while 450 mm is normal;
b) The extraordinary cold winters of '84, '85 and '86 with minimal temperatures of -22°;
c) The 3 dry summers of '89 (290 mm), '90 (276 mm) and '91 (259 mm);
d) The CAVI is always difficult to measure in the last year.

higher increments with heavy thinning. Each increment level corresponds to the type of management keeping the increment constant during the whole live of the stand. To realize this, the thinning regimes have to change as the stand grows older. To be able to realize the lowest annual diameter increment the young stand has to be thinned so that only a small proportion of trees with big dimensions are felled. To realize the biggest increment in the young stand a great number of small trees are to be felled. This changes completely as the stand gets older. Table 6 illustrates this.

Table 6 : Nature of the thinning under different management regimes (I0 = 15m)

	thinning			
	1.25cm		1.75cm	
age	n	circumference (cm)	n	circumference (cm)
31 jaar	582	40	773	34
52 jaar	240	64	209	66
76 jaar	83	87	61	100

In table 6 one can see that the two most extreme management types use the same type of thinning at the age of 52 year. The age at which the type of thinning has to change to realize the fixed management goal depends on the yield class. The better the yield class, the sooner the thinning type has to be changed. The ranking is shown below :

yield class	age
15 m	52
18 m	43
21 m	40
24 m	39
27 m	37

One can call a stand young before the age at which the thinning type has to change and adult after this point.

- The change in thinning type is more pronounced for the lowest annual increment levels (see table 7).

Table 7 : Thinning characteristics for the most extreme annual diameter increment levels (ADIL)

	young stand ADIL		adult stand ADIL	
thinning characteristics	low	high	low	high
number felled trees/ha	17%	24%	13%	15%
felled surface/ha	18%	17%	12%	11%
circumference felled trees*	104%	85%	94%	88%

* as % of the mean circumference before thinning.

- Table 8 shows clearly that the principal stand is heavily pillaged if in the young stand most of the dominant trees are felled.

Table 8 : Characteristics of the principal stand at age 88, different treatments yield class.

	yield class					
	15 m ADIL		18 m ADIL		21 m ADIL	
principal stand	1.25	1.75	1.25	2.00	1.50	2.25
number trees/ha	412	264	378	201	277	157
C130 (cm)	109	139	114	161	135	184
volume/ha (m3)	416	436	462	493	520	550

- Figure 13, 14 and 15 give a view of the preferences of Corsican pine for the available soil conditions.

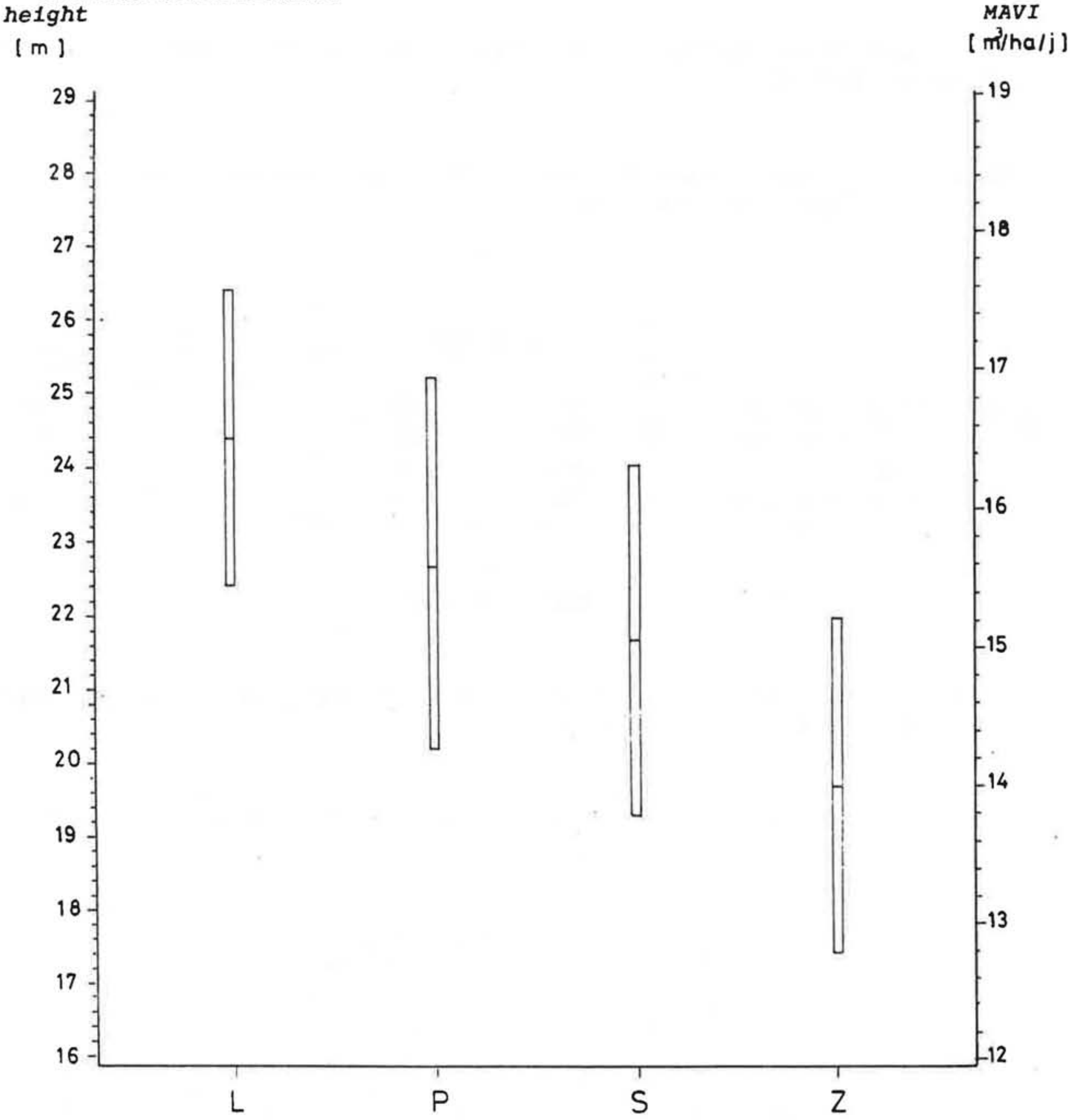

Figure 13:
influence of soil texture on yield level dominant height). The centre of the block is the mean value, the edges of the block show a 68% confidence interval.

Z = sand S = loamy sand
P = light sandy loam L = sandy loam

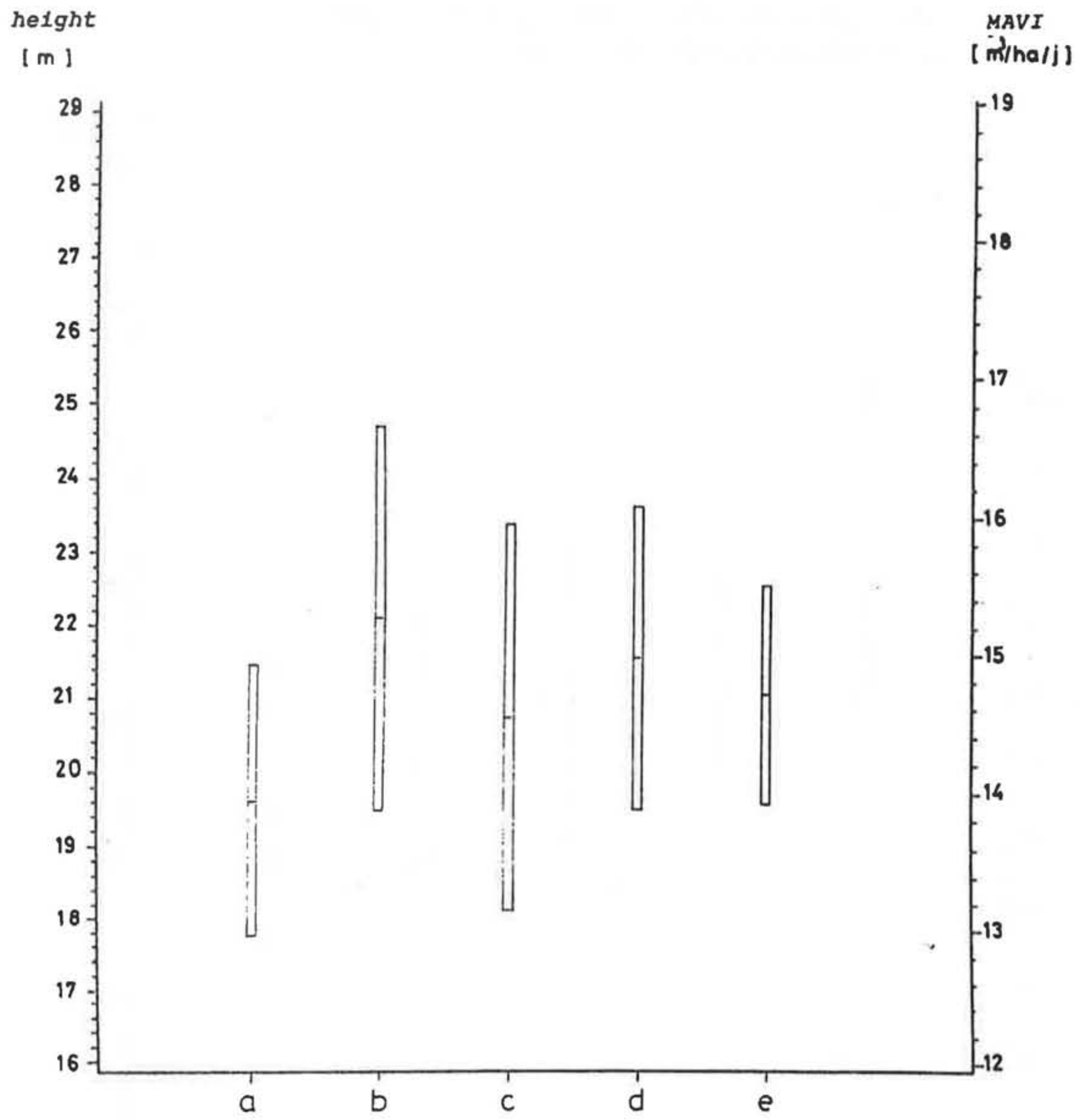

Figure 14:
influence of drainage class on yield level. The centre of the block is the mean value, the edges of the block show a 68% confidence interval.

a = very dry b = dry c = moderately dry

d = moderately wet e = wet

Due to recent drought some of the results may be biased since the recent drying out is not visible in the oxido-reduction phenomena.

Due to recent drought some of the results may be biased since the recent drying out is not visible in the oxido-reduction phenomena.

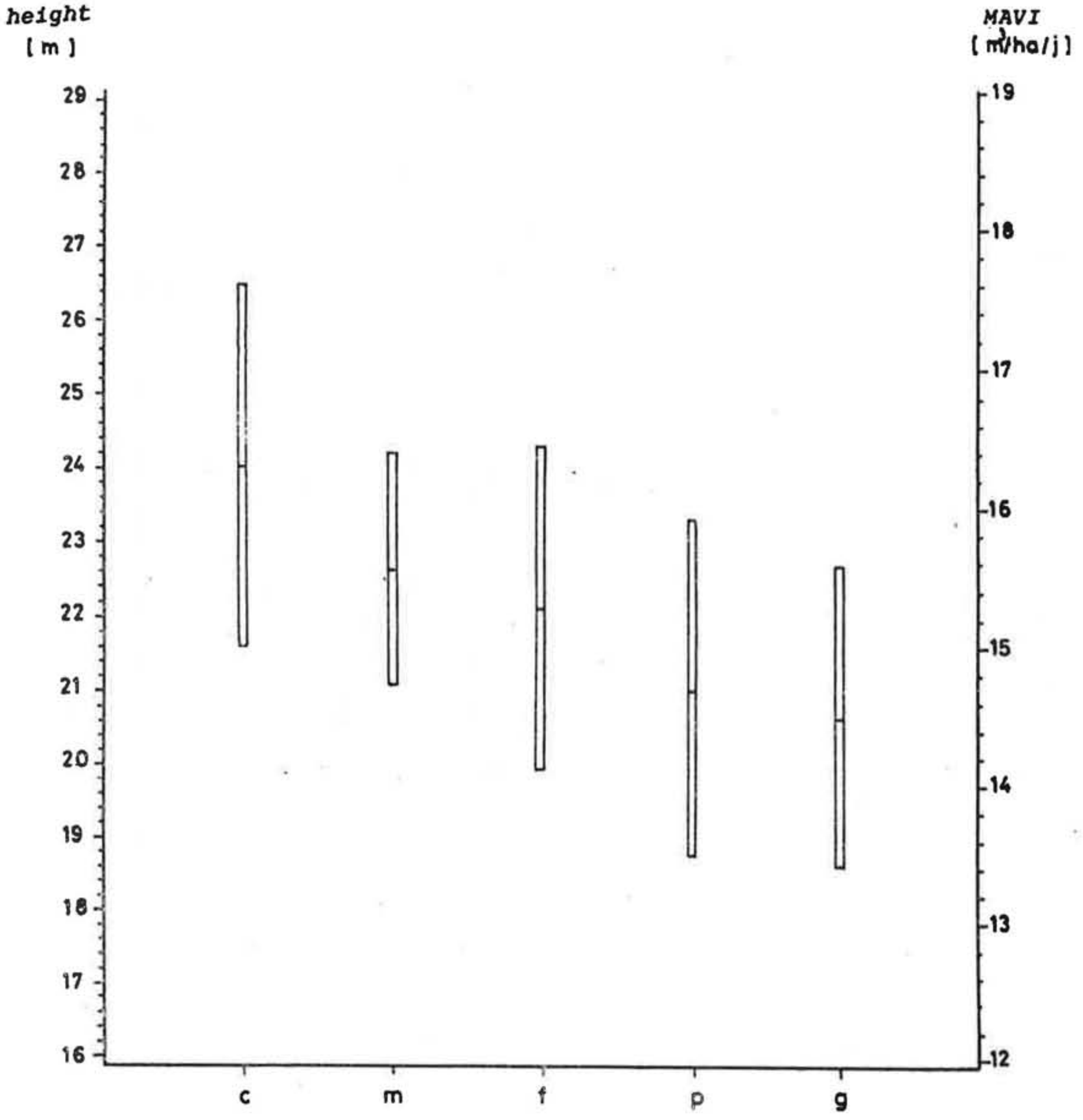

Figure 15:
influence of profile developement on yield level. The centre of the block is the mean value, the edges of the block show a 68% confidence interval.
The results for the soils without profile developement are biased. In principle Corsican pine grows well on soils without profile developement. In our samples however most of these soils were too wet.

- Some of the results of these study and also the tables disagree with the publications of FABER (1987) and HAMILTON and CHRISTIE (1971). This might be due to differences in climatic conditions or in the observed provenances.

6. GROWTH TABLE FOR CORSICAN PINE IN FLANDERS (BELGIUM)

For each yield class different tables are given depending on the treatment (annual diameter increment levels).

Abbreviations:

L	age
HDOM	dominant height
I0	yield level (dominant height at age 50)
N	number of trees/ha
OMTR	circumference at 1.50m (cm)
G	surface (m^2/ha)
V	volume/ha (m3)
LJGA	current annual surface increment/ha (m^2/ha/year)
GJGA	mean annual surface increment/ha (m^2/ha/year)
LJVA	current annual volume increment/ha (m3/ha/year)
GJVA	mean annual volume increment/ha (m3/ha/year)
VTOT	total produced volume (m3/ha)

Yield table for CORSICAN PINE (Pinus nigra corsicana) in Flanders (Belgium)

Yield table 15/1.25

yield class 15m - diameter increment 1.25cm

L	HDOM	Pre-thinning				Thinning				After thinning				Increment					L
		N	OMTR	G	V	N	OMTR	G	V	N	OMTR	G	V	LJGA	GJGA	LJVA	GJVA	VTOT	
31	9.8	3483	37	41.1	224	582	40	7.9	44	2901	37	33.2	180	2.89	1.33	21.19	7.24	224	31
34	10.7	2901	41	41.0	240	444	44	7.1	42	2457	40	33.9	198	2.59	1.44	20.16	8.38	285	34
37	11.5	2457	44	40.9	256	347	47	6.4	41	2110	44	34.5	215	2.34	1.51	19.26	9.26	343	37
40	12.3	2110	48	40.9	271	502	43	7.9	51	1608	49	33.0	220	2.13	1.56	18.47	9.95	398	40
46	14.0	1608	57	43.9	322	338	58	9.6	70	1270	57	34.3	252	1.81	1.59	17.06	10.88	500	46
52	15.5	1270	64	43.7	347	240	64	8.3	65	1030	64	35.4	282	1.56	1.59	15.91	11.46	596	52
58	16.9	1030	72	43.6	371	177	70	7.2	62	853	72	36.4	309	1.37	1.56	14.84	11.81	685	58
64	18.2	853	79	43.6	392	134	76	6.4	57	719	79	37.2	335	1.21	1.53	13.82	12.00	768	64
70	19.4	719	86	43.7	412	103	81	5.7	53	616	87	38.0	359	1.08	1.49	12.86	12.07	845	70
76	20.4	616	93	43.9	430	83	87	5.2	50	533	94	38.7	380	0.98	1.45	11.95	12.06	917	76
82	21.2	533	100	44.0	446	66	92	4.6	47	467	102	39.4	399	0.89	1.41	11.06	11.99	983	82
88	22.0	467	108	44.3	461	55	97	4.4	45	412	109	39.9	416	0.81	1.37	10.25	11.87	1045	88

LISEC, 1991

Yield table for CORSICAN PINE (Pinus nigra corsicana) in Flanders (Belgium)

Yield table 15/1.50

yield class 15m - diameter increment 1.50cm

L	HDOM	Pre-thinning				Thinning				After thinning				Increment					L
		N	OMTR	G	V	N	OMTR	G	V	N	OMTR	G	V	LJGA	GJGA	LJVA	GJVA	VTOT	
31	9.8	3483	37	41.1	224	680	37	7.8	42	2803	37	33.3	182	2.89	1.33	21.19	7.24	224	31
34	10.7	2803	41	41.0	242	495	41	6.9	40	2308	42	34.1	202	2.55	1.43	19.94	8.36	284	34
37	11.5	2308	46	41.0	259	372	44	6.2	39	1936	46	34.8	220	2.28	1.50	18.91	9.21	341	37
40	12.3	1936	50	41.0	275	513	42	7.5	47	1423	53	33.5	228	2.06	1.54	18.03	9.88	395	40
46	14.0	1423	61	44.0	327	329	57	9.1	67	1094	62	34.9	260	1.74	1.57	16.58	10.75	494	46
52	15.5	1094	70	43.9	353	225	65	7.8	62	869	71	36.1	291	1.50	1.56	15.45	11.29	587	52
58	16.9	869	78	43.9	378	161	72	6.9	59	708	80	37.0	319	1.31	1.54	14.45	11.62	674	58
64	18.2	708	87	44.1	400	119	79	6.2	55	589	89	37.9	345	1.17	1.50	13.53	11.80	755	64
70	19.4	589	96	44.3	421	91	86	5.6	52	498	97	38.7	369	1.06	1.46	12.67	11.87	831	70
76	20.4	498	104	44.5	440	71	93	5.1	50	427	106	39.4	390	0.96	1.42	11.85	11.87	902	76
82	21.2	427	113	44.7	456	56	100	4.6	46	371	115	40.1	410	0.88	1.38	11.08	11.81	969	82
88	22.0	371	122	45.0	472	46	108	4.4	46	325	124	40.6	426	0.82	1.35	10.38	11.72	1031	88

LISEC, 1991

Yield table for CORSICAN PINE (Pinus nigra corsicana) in Flanders (Belgium)

Yield table 15/1.75

yield class 15m - diameter increment 1.75cm

L	HDOM	Pre-thinning				Thinning				After thinning				Increment					L
		N	OMTR	G	V	N	OMTR	G	V	N	OMTR	G	V	LJGA	GJGA	LJVA	GJVA	VTOT	
31	9.8	3483	37	41.1	224	773	34	7.6	39	2710	38	33.5	185	2.89	1.33	21.19	7.24	224	31
34	10.7	2710	42	41.0	244	537	38	6.7	38	2173	43	34.3	206	2.52	1.43	19.74	8.34	284	34
37	11.5	2173	47	41.0	262	389	43	5.9	37	1784	48	35.1	225	2.22	1.50	18.59	9.17	339	37
40	12.3	1784	52	41.1	278	514	42	7.1	44	1270	57	34.0	234	1.99	1.53	17.65	9.81	392	40
46	14.0	1270	65	44.1	331	317	58	8.7	63	953	67	35.4	268	1.68	1.55	16.18	10.64	489	46
52	15.5	953	75	44.1	358	209	66	7.5	59	744	77	36.6	299	1.44	1.54	15.08	11.15	580	52
58	16.9	744	85	44.3	384	146	74	6.6	56	598	88	37.7	328	1.27	1.51	14.16	11.46	665	58
64	18.2	598	95	44.5	408	106	83	5.9	54	492	98	38.6	354	1.14	1.48	13.33	11.64	745	64
70	19.4	492	105	44.8	429	80	92	5.5	51	412	108	39.3	378	1.04	1.44	12.57	11.72	820	70
76	20.4	412	116	45.1	449	61	100	5.0	50	351	118	40.1	399	0.96	1.40	11.84	11.73	891	76
82	21.2	351	126	45.4	467	48	109	4.6	48	303	129	40.8	419	0.89	1.36	11.18	11.69	958	82
88	22.0	303	136	45.8	483	39	119	4.5	47	264	139	41.3	436	0.84	1.33	10.57	11.61	1022	88

LISEC, 1991

Yield table for CORSICAN PINE (Pinus nigra corsicana) in Flanders (Belgium)

Yield table 18/1.25

yield class 18m - diameter increment 1.25cm

L	HDOM	Pre-thinning				Thinning				After thinning				Increment					L
		N	OMTR	G	V	N	OMTR	G	V	N	OMTR	G	V	LJGA	GJGA	LJVA	GJVA	VTOT	
28	11.3	3192	39	41.2	243	512	43	7.8	48	2680	38	33.4	195	2.87	1.47	22.82	8.67	243	28
31	12.3	2680	43	41.1	260	395	46	7.0	46	2285	42	34.1	214	2.58	1.58	21.85	9.95	308	31
34	13.2	2285	46	41.1	277	312	50	6.4	44	1973	46	34.7	233	2.34	1.65	21.00	10.92	371	34
37	14.2	1973	50	41.1	294	250	53	5.9	43	1723	49	35.2	251	2.14	1.69	20.23	11.68	432	37
40	15.1	1723	53	41.2	310	375	49	7.5	54	1348	55	33.7	256	1.97	1.71	19.54	12.27	491	40
46	16.9	1348	63	44.0	365	262	64	9.1	76	1086	62	34.9	289	1.71	1.71	18.24	13.05	600	46
52	18.5	1086	70	43.9	392	190	71	7.9	71	896	70	36.0	321	1.49	1.68	17.11	13.52	703	52
58	20.1	896	77	43.9	417	144	77	7.1	67	752	77	36.8	350	1.32	1.65	16.04	13.78	799	58
64	21.4	752	84	43.9	440	111	82	6.3	63	641	85	37.6	377	1.18	1.60	14.99	13.89	889	64
70	22.6	641	91	44.0	461	88	88	5.7	59	553	92	38.3	402	1.07	1.56	13.97	13.90	973	70
76	23.7	553	99	44.1	479	70	94	5.1	55	483	99	39.0	424	0.97	1.51	12.99	13.83	1051	76
82	24.5	483	106	44.3	496	57	99	4.6	52	426	107	39.7	444	0.89	1.46	12.07	13.70	1123	82
88	25.3	426	113	44.6	512	48	105	4.4	50	378	114	40.2	462	0.82	1.42	11.20	13.53	1190	88

LISEC, 1991

Yield table for CORSICAN PINE (Pinus nigra corsicana) in Flanders (Belgium)

Yield table 18/1.50

yield class 18m - diameter increment 1.50cm

L	HDOM	Pre-thinning				Thinning				After thinning				Increment					L
		N	OMTR	G	V	N	OMTR	G	V	N	OMTR	G	V	LJGA	GJGA	LJVA	GJVA	VTOT	
28	11.3	3192	39	41.2	243	599	39	7.7	46	2593	39	33.5	197	2.87	1.47	22.82	8.67	243	28
31	12.3	2593	43	41.1	262	441	43	6.8	43	2152	43	34.3	219	2.55	1.58	21.63	9.93	308	31
34	13.2	2152	48	41.1	280	335	47	6.1	41	1817	48	35.0	239	2.29	1.64	20.65	10.87	370	34
37	14.2	1817	52	41.2	298	261	51	5.6	40	1556	52	35.6	258	2.08	1.68	19.80	11.60	429	37
40	15.1	1556	56	41.3	315	375	48	7.0	51	1181	59	34.3	264	1.90	1.69	19.05	12.16	486	40
46	16.9	1181	67	44.1	371	252	64	8.6	72	929	68	35.5	299	1.64	1.69	17.74	12.88	593	46
52	18.5	929	76	44.1	399	177	71	7.5	68	752	77	36.6	331	1.43	1.66	16.64	13.32	693	52
58	20.1	752	84	44.2	425	130	79	6.7	64	622	86	37.5	361	1.27	1.62	15.65	13.56	786	58
64	21.4	622	93	44.4	449	99	86	6.1	61	523	95	38.3	388	1.15	1.57	14.70	13.67	875	64
70	22.6	523	102	44.5	471	76	94	5.5	58	447	103	39.0	413	1.04	1.53	13.79	13.68	957	70
76	23.7	447	111	44.8	491	60	101	5.1	55	387	112	39.7	436	0.96	1.48	12.93	13.62	1035	76
82	24.5	387	119	45.1	509	49	108	4.8	54	338	121	40.3	455	0.89	1.44	12.14	13.51	1108	82
88	25.3	338	128	45.3	523	40	116	4.4	50	298	130	40.9	473	0.83	1.40	11.36	13.36	1176	88

LISEC, 1991

Yield table for CORSICAN PINE (Pinus nigra corsicana) in Flanders (Belgium)

Yield table 18/1.75

yield class 18m - diameter increment 1.75cm

L	HDOM	Pre-thinning				Thinning				After thinning				Increment					L
		N	OMTR	G	V	N	OMTR	G	V	N	OMTR	G	V	LJGA	GJGA	LJVA	GJVA	VTOT	
28	11.3	3192	39	41.2	243	682	36	7.6	43	2510	40	33.6	200	2.87	1.47	22.82	8.67	243	28
31	12.3	2510	44	41.1	264	480	41	6.6	42	2030	45	34.5	222	2.51	1.57	21.42	9.91	307	31
34	13.2	2030	49	41.2	283	352	45	6.0	39	1678	50	35.2	244	2.24	1.63	20.31	10.83	368	34
37	14.2	1678	54	41.3	302	266	49	5.4	38	1412	55	35.9	264	2.02	1.66	19.39	11.52	426	37
40	15.1	1412	59	41.4	319	369	48	6.6	47	1043	63	34.8	272	1.83	1.68	18.60	12.05	482	40
46	16.9	1043	72	44.3	375	238	65	8.2	68	805	74	36.1	307	1.58	1.66	17.31	12.74	586	46
52	18.5	805	82	44.4	405	164	73	7.2	65	641	84	37.2	340	1.38	1.63	16.29	13.15	684	52
58	20.1	641	92	44.6	432	118	82	6.5	62	523	94	38.1	370	1.24	1.59	15.36	13.38	776	58
64	21.4	523	102	44.8	457	87	91	5.9	59	436	105	38.9	398	1.12	1.55	14.49	13.48	863	64
70	22.6	436	112	45.1	480	66	100	5.4	57	370	115	39.7	423	1.03	1.50	13.70	13.50	945	70
76	23.7	370	123	45.5	501	53	109	5.2	56	317	125	40.3	445	0.95	1.46	12.97	13.46	1023	76
82	24.5	317	133	45.7	518	41	118	4.7	52	276	135	41.0	466	0.89	1.42	12.23	13.37	1096	82
88	25.3	276	143	46.1	535	34	128	4.5	52	242	146	41.6	483	0.84	1.38	11.59	13.25	1166	88

LISEC, 1991

Yield table for CORSICAN PINE (Pinus nigra corsicana) in Flanders (Belgium)

Yield table 18/2.00
yield class 18m - diameter increment 2.00cm

L	HDOM	Pre-thinning				Thinning				After thinning				Increment					L
		N	OMTR	G	V	N	OMTR	G	V	N	OMTR	G	V	LJGA	GJGA	LJVA	GJVA	VTOT	
28	11.3	3192	39	41.2	243	760	34	7.5	41	2432	40	33.7	202	2.87	1.47	22.82	8.67	243	28
31	12.3	2432	45	41.2	266	513	39	6.5	40	1919	46	34.7	226	2.48	1.57	21.23	9.89	307	31
34	13.2	1919	51	41.2	286	363	44	5.7	38	1556	52	35.5	248	2.19	1.63	20.01	10.78	367	34
37	14.2	1556	56	41.4	305	267	49	5.2	36	1289	58	36.2	269	1.96	1.65	19.04	11.45	424	37
40	15.1	1289	62	41.6	324	360	48	6.4	46	929	68	35.2	278	1.78	1.66	18.23	11.96	478	40
46	16.9	929	76	44.4	380	225	66	7.8	66	704	79	36.6	314	1.53	1.65	16.96	12.61	580	46
52	18.5	704	88	44.6	410	151	76	6.9	63	553	91	37.7	347	1.34	1.61	15.99	13.00	676	52
58	20.1	553	100	44.9	438	106	86	6.3	60	447	103	38.6	378	1.21	1.57	15.14	13.22	767	58
64	21.4	447	111	45.2	464	77	96	5.7	58	370	115	39.5	406	1.10	1.52	14.38	13.33	853	64
70	22.6	370	123	45.7	489	59	106	5.4	58	311	126	40.3	431	1.02	1.48	13.69	13.36	935	70
76	23.7	311	135	46.0	510	46	117	5.1	57	265	138	40.9	453	0.96	1.44	13.02	13.33	1013	76
82	24.5	265	147	46.3	527	35	128	4.6	52	230	150	41.7	475	0.90	1.40	12.37	13.26	1088	82
88	25.3	230	158	46.8	546	29	140	4.5	53	201	161	42.3	493	0.86	1.36	11.84	13.17	1159	88

LISEC, 1991

Yield table for CORSICAN PINE (Pinus nigra corsicana) in Flanders (Belgium)

Yield table 21/1.50
yield class 21m - diameter increment 1.50cm

L	HDOM	Pre-thinning				Thinning				After thinning				Increment					L
		N	OMTR	G	V	N	OMTR	G	V	N	OMTR	G	V	LJGA	GJGA	LJVA	GJVA	VTOT	
25	12.6	3010	40	41.4	259	550	41	7.8	49	2460	40	33.6	210	2.88	1.66	24.49	10.36	259	25
28	13.7	2460	45	41.3	280	408	45	7.0	47	2052	44	34.3	233	2.57	1.75	23.36	11.76	329	28
31	14.8	2052	49	41.3	300	313	49	6.3	46	1739	49	35.0	254	2.32	1.81	22.41	12.79	396	31
34	15.8	1739	53	41.3	319	244	53	5.7	44	1495	53	35.6	275	2.11	1.83	21.57	13.56	461	34
37	16.9	1495	58	41.4	338	196	57	5.2	43	1299	58	36.2	295	1.93	1.84	20.84	14.15	524	37
40	17.9	1299	62	41.5	356	289	53	6.6	55	1010	65	34.9	301	1.78	1.84	20.15	14.60	584	40
46	19.8	1010	73	44.3	415	200	70	8.3	77	810	73	36.0	338	1.57	1.80	18.94	15.17	698	46
52	21.6	810	81	44.4	445	145	78	7.4	73	665	82	37.0	372	1.39	1.75	17.87	15.48	805	52
58	23.2	665	90	44.5	473	109	86	6.6	70	556	91	37.9	403	1.24	1.70	16.86	15.62	906	58
64	24.6	556	99	44.6	498	83	93	5.9	66	473	100	38.7	432	1.13	1.65	15.86	15.64	1001	64
70	25.8	473	108	44.9	521	66	101	5.6	64	407	109	39.3	457	1.03	1.60	14.93	15.58	1091	70
76	26.9	407	116	45.1	541	52	108	5.1	60	355	118	40.0	481	0.95	1.54	14.01	15.46	1175	76
82	27.8	355	125	45.4	560	43	116	4.8	58	312	126	40.6	502	0.89	1.50	13.18	15.29	1254	82
88	28.6	312	134	45.6	576	35	123	4.4	56	277	135	41.2	520	0.83	1.45	12.37	15.09	1328	88

LISEC, 1991

Yield table for CORSICAN PINE (Pinus nigra corsicana) in Flanders (Belgium)

Yield table 21/1.75

yield class 21m - diameter increment 1.75cm

L	HDOM	Pre-thinning				Thinning				After thinning				Increment					L
		N	OMTR	G	V	N	OMTR	G	V	N	OMTR	G	V	LJGA	GJGA	LJVA	GJVA	VTOT	
25	12.6	3010	40	41.4	259	626	38	7.7	47	2384	41	33.7	212	2.88	1.66	24.49	10.36	259	25
28	13.7	2384	45	41.3	282	445	43	6.8	45	1939	46	34.5	237	2.54	1.75	23.15	11.73	329	28
31	14.8	1939	50	41.3	303	329	47	6.0	43	1610	51	35.3	260	2.27	1.80	22.07	12.73	395	31
34	15.8	1610	55	41.4	323	250	51	5.4	42	1360	56	36.0	281	2.05	1.82	21.16	13.48	458	34
37	16.9	1360	61	41.6	343	195	56	5.0	41	1165	61	36.6	302	1.87	1.83	20.38	14.04	519	37
40	17.9	1165	66	41.7	361	280	54	6.3	52	885	70	35.4	309	1.72	1.82	19.68	14.46	578	40
46	19.8	885	78	44.5	420	188	71	7.9	73	697	80	36.6	347	1.51	1.78	18.51	14.99	689	46
52	21.6	697	88	44.6	452	133	80	7.0	71	564	90	37.6	381	1.34	1.73	17.50	15.28	794	52
58	23.2	564	98	44.9	481	97	89	6.4	68	467	100	38.5	413	1.21	1.67	16.57	15.41	894	58
64	24.6	467	109	45.2	507	74	98	5.9	65	393	111	39.3	442	1.11	1.62	15.70	15.44	988	64
70	25.8	393	119	45.4	531	57	107	5.4	63	336	121	40.0	468	1.02	1.57	14.85	15.39	1077	70
76	26.9	336	129	45.7	553	45	117	5.0	61	291	131	40.7	492	0.95	1.52	14.07	15.28	1162	76
82	27.8	291	140	46.1	572	37	127	4.9	60	254	141	41.2	512	0.90	1.48	13.33	15.14	1242	82
88	28.6	254	150	46.3	588	30	136	4.5	58	224	152	41.8	530	0.85	1.43	12.61	14.97	1317	88

LISEC, 1991

Yield table for CORSICAN PINE (Pinus nigra corsicana) in Flanders (Belgium)

Yield table 21/2.00

yield class 21m - diameter increment 2.00cm

L	HDOM	Pre-thinning				Thinning				After thinning				Increment					L
		N	OMTR	G	V	N	OMTR	G	V	N	OMTR	G	V	LJGA	GJGA	LJVA	GJVA	VTOT	
25	12.6	3010	40	41.4	259	699	36	7.6	44	2311	41	33.8	215	2.88	1.66	24.49	10.36	259	25
28	13.7	2311	46	41.3	283	476	41	6.6	42	1835	47	34.7	241	2.51	1.75	22.94	11.71	328	28
31	14.8	1835	52	41.4	306	340	46	5.8	41	1495	53	35.6	265	2.22	1.79	21.74	12.68	393	31
34	15.8	1495	58	41.5	327	252	50	5.2	40	1243	59	36.3	287	2.00	1.81	20.78	13.40	455	34
37	16.9	1243	64	41.7	347	192	55	4.8	39	1051	65	36.9	308	1.82	1.81	19.97	13.93	515	37
40	17.9	1051	69	41.9	366	268	54	6.0	49	783	75	35.9	317	1.67	1.80	19.28	14.33	573	40
46	19.8	783	83	44.7	426	176	73	7.6	71	607	86	37.1	355	1.47	1.76	18.17	14.83	682	46
52	21.6	607	95	45.0	458	122	83	6.9	69	485	98	38.1	389	1.31	1.70	17.23	15.11	786	52
58	23.2	485	107	45.2	488	87	93	6.1	66	398	110	39.1	422	1.18	1.65	16.36	15.24	884	58
64	24.6	398	119	45.6	516	66	104	5.8	66	332	121	39.8	450	1.09	1.60	15.60	15.27	977	64
70	25.8	332	130	45.9	539	50	115	5.3	62	282	133	40.6	477	1.02	1.55	14.83	15.23	1066	70
76	26.9	282	142	46.3	562	39	126	5.0	61	243	145	41.3	501	0.96	1.50	14.14	15.15	1151	76
82	27.8	243	154	46.7	582	32	138	4.9	61	211	156	41.8	521	0.91	1.46	13.50	15.03	1232	82
88	28.6	211	166	47.0	598	25	149	4.5	57	186	168	42.5	541	0.86	1.42	12.86	14.88	1309	88

LISEC, 1991

Yield table for CORSICAN PINE (Pinus nigra corsicana) in Flanders (Belgium)

Yield table 21/2.25

yield class 21m - diameter increment 2.25cm

L	HDOM	Pre-thinning				Thinning				After thinning				Increment					L
		N	OMTR	G	V	N	OMTR	G	V	N	OMTR	G	V	LJGA	GJGA	LJVA	GJVA	VTOT	
25	12.6	3010	40	41.4	259	768	34	7.5	42	2242	42	33.9	217	2.88	1.66	24.49	10.36	259	25
28	13.7	2242	47	41.3	285	503	40	6.4	41	1739	49	34.9	244	2.48	1.74	22.75	11.69	327	28
31	14.8	1739	53	41.4	308	347	45	5.6	39	1392	55	35.8	269	2.17	1.78	21.44	12.63	392	31
34	15.8	1392	60	41.6	330	251	50	5.0	38	1141	62	36.6	292	1.95	1.80	20.43	13.32	453	34
37	16.9	1141	66	41.9	351	187	55	4.6	37	954	69	37.3	314	1.77	1.80	19.61	13.83	512	37
40	17.9	954	73	42.1	371	257	55	5.8	48	697	80	36.3	323	1.63	1.78	18.94	14.21	569	40
46	19.8	697	89	44.9	431	164	75	7.3	70	533	93	37.6	361	1.43	1.74	17.86	14.69	676	46
52	21.6	533	102	45.2	463	111	86	6.6	66	422	106	38.6	397	1.28	1.68	16.98	14.95	778	52
58	23.2	422	115	45.6	494	79	98	6.1	65	343	119	39.5	429	1.17	1.63	16.22	15.09	875	58
64	24.6	343	128	46.0	522	58	110	5.6	63	285	132	40.4	459	1.08	1.58	15.52	15.13	968	64
70	25.8	285	142	46.5	548	44	122	5.3	62	241	145	41.2	486	1.02	1.53	14.88	15.11	1057	70
76	26.9	241	155	47.0	572	35	136	5.2	63	206	158	41.8	509	0.96	1.49	14.28	15.04	1143	76
82	27.8	206	168	47.3	591	27	148	4.8	60	179	171	42.5	531	0.92	1.44	13.67	14.94	1225	82
88	28.6	179	182	47.8	610	22	162	4.7	60	157	184	43.1	550	0.89	1.41	13.17	14.82	1304	88

LISEC, 1991

Yield table for CORSICAN PINE (Pinus nigra corsicana) in Flanders (Belgium)

Yield table 24/1.50

yield class 24m - diameter increment 1.50cm

L	HDOM	Pre-thinning				Thinning				After thinning				Increment					L
		N	OMTR	G	V	N	OMTR	G	V	N	OMTR	G	V	LJGA	GJGA	LJVA	GJVA	VTOT	
25	14.7	2307	46	41.4	294	371	47	7.0	50	1936	46	34.4	244	2.58	1.66	24.43	11.76	294	25
28	15.8	1936	50	41.5	315	287	51	6.4	49	1649	50	35.1	266	2.33	1.73	23.54	13.02	365	28
31	16.9	1649	55	41.5	335	226	55	5.8	47	1423	55	35.7	288	2.13	1.77	22.78	13.96	433	31
34	18.0	1423	59	41.6	354	181	59	5.3	45	1242	59	36.3	309	1.96	1.79	22.15	14.69	499	34
37	19.1	1242	64	41.7	374	149	63	4.9	45	1093	64	36.8	329	1.82	1.79	21.61	15.25	564	37
40	20.3	1093	68	41.8	393	224	59	6.3	58	869	70	35.5	335	1.69	1.78	21.13	15.69	628	40
46	22.5	869	79	44.6	457	161	77	8.0	82	708	79	36.6	375	1.51	1.75	20.35	16.30	750	46
52	24.7	708	88	44.6	494	119	85	7.1	79	589	88	37.5	415	1.35	1.70	19.79	16.70	868	52
58	27.0	589	96	44.8	531	91	93	6.5	77	498	97	38.3	454	1.22	1.65	19.37	16.98	985	58
64	29.2	498	105	45.0	568	71	101	6.0	75	427	106	39.0	493	1.11	1.60	19.03	17.17	1099	64

LISEC, 1991

Yield table for CORSICAN PINE (Pinus nigra corsicana) in Flanders (Belgium)

Yield table 24/1.75

yield class 24m - diameter increment 1.75cm

L	HDOM	Pre-thinning				Thinning				After thinning				Increment					L
		N	OMTR	G	V	N	OMTR	G	V	N	OMTR	G	V	LJGA	GJGA	LJVA	GJVA	VTOT	
25	14.7	2307	46	41.4	294	424	44	6.9	48	1883	47	34.5	246	2.58	1.66	24.43	11.76	294	25
28	15.8	1883	51	41.5	316	315	48	6.2	46	1568	52	35.3	270	2.31	1.73	23.36	13.00	364	28
31	16.9	1568	56	41.6	337	240	53	5.6	44	1328	57	36.0	293	2.09	1.76	22.50	13.92	432	31
34	18.0	1328	61	41.7	358	188	57	5.1	43	1140	62	36.6	315	1.92	1.78	21.80	14.62	497	34
37	19.1	1140	67	41.9	378	150	62	4.8	42	990	67	37.1	336	1.77	1.78	21.23	15.15	561	37
40	20.3	990	72	42.1	398	221	59	6.1	55	769	75	36.0	343	1.64	1.77	20.75	15.57	623	40
46	22.5	769	84	44.8	463	154	78	7.8	79	615	86	37.0	384	1.46	1.73	19.98	16.15	743	46
52	24.7	615	94	44.9	501	110	87	6.9	76	505	96	38.0	425	1.31	1.68	19.47	16.53	860	52
58	27.0	505	105	45.2	540	83	96	6.4	76	422	106	38.8	464	1.19	1.63	19.15	16.80	974	58
64	29.2	422	115	45.4	578	63	106	5.8	73	359	116	39.6	505	1.10	1.58	18.91	17.00	1088	64

LISEC, 1991

Yield table for CORSICAN PINE (Pinus nigra corsicana) in Flanders (Belgium)

Yield table 24/2.00
yield class 24m - diameter increment 2.00cm

L	HDOM	Pre-thinning				Thinning				After thinning				Increment					L
		N	OMTR	G	V	N	OMTR	G	V	N	OMTR	G	V	LJGA	GJGA	LJVA	GJVA	VTOT	
25	14.7	2307	46	41.4	294	475	41	6.8	46	1832	47	34.6	248	2.58	1.66	24.43	11.76	294	25
28	15.8	1832	52	41.5	318	339	46	6.0	45	1493	53	35.5	273	2.28	1.72	23.18	12.98	363	28
31	16.9	1493	58	41.6	340	251	51	5.4	43	1242	59	36.2	297	2.06	1.76	22.23	13.88	430	31
34	18.0	1242	64	41.8	361	192	56	5.0	41	1050	65	36.8	320	1.87	1.77	21.48	14.55	495	34
37	19.1	1050	69	42.0	382	149	61	4.5	40	901	71	37.5	342	1.72	1.76	20.87	15.06	557	37
40	20.3	901	75	42.3	403	216	60	5.9	53	685	80	36.4	350	1.60	1.75	20.40	15.46	618	40
46	22.5	685	89	44.9	468	145	79	7.4	76	540	92	37.5	392	1.42	1.71	19.65	16.01	736	46
52	24.7	540	101	45.2	507	102	90	6.7	74	438	104	38.5	433	1.28	1.66	19.23	16.38	852	52
58	27.0	438	113	45.6	547	75	100	6.2	73	363	115	39.4	474	1.17	1.61	19.00	16.65	966	58
64	29.2	363	125	45.9	587	57	111	5.7	72	306	127	40.2	515	1.09	1.56	18.88	16.86	1079	64

LISEC, 1991

Yield table for CORSICAN PINE (Pinus nigra corsicana) in Flanders (Belgium)

Yield table 24/2.25

yield class 24m - diameter increment 2.25cm

L	HDOM	Pre-thinning				Thinning				After thinning				Increment					L
		N	OMTR	G	V	N	OMTR	G	V	N	OMTR	G	V	LJGA	GJGA	LJVA	GJVA	VTOT	
25	14.7	2307	46	41.4	294	523	40	6.7	44	1784	48	34.7	250	2.58	1.66	24.43	11.76	294	25
28	15.8	1784	53	41.5	319	361	45	5.9	43	1423	55	35.6	276	2.26	1.72	23.03	12.97	363	28
31	16.9	1423	59	41.7	342	259	50	5.3	41	1164	61	36.4	301	2.02	1.75	21.97	13.84	429	31
34	18.0	1164	66	41.9	365	193	56	4.8	40	971	68	37.1	325	1.83	1.76	21.18	14.48	492	34
37	19.1	971	72	42.2	386	148	61	4.5	39	823	75	37.7	347	1.68	1.75	20.56	14.98	554	37
40	20.3	823	79	42.4	407	208	60	5.6	51	615	85	36.8	356	1.56	1.74	20.08	15.36	614	40
46	22.5	615	95	45.2	473	136	81	7.2	74	479	98	38.0	399	1.39	1.69	19.39	15.89	731	46
52	24.7	479	108	45.6	514	95	93	6.6	73	384	112	39.0	441	1.26	1.64	19.07	16.25	845	52
58	27.0	384	121	45.9	554	69	105	6.1	73	315	125	39.8	481	1.16	1.59	18.90	16.53	959	58
64	29.2	315	134	46.3	594	51	117	5.6	71	264	138	40.7	523	1.08	1.54	18.85	16.74	1072	64

LISEC, 1991

Yield table for CORSICAN PINE (Pinus nigra corsicana) in Flanders (Belgium)

Yield table 24/2.50

yield class 24m - diameter increment 2.50cm

L	HDOM	Pre-thinning				Thinning				After thinning				Increment					L
		N	OMTR	G	V	N	OMTR	G	V	N	OMTR	G	V	LJGA	GJGA	LJVA	GJVA	VTOT	
25	14.7	2307	46	41.4	294	570	38	6.6	42	1737	49	34.8	252	2.58	1.66	24.43	11.76	294	25
28	15.8	1737	53	41.6	320	379	44	5.8	41	1358	56	35.8	279	2.24	1.72	22.86	12.95	363	28
31	16.9	1358	61	41.8	345	265	49	5.2	40	1093	63	36.6	305	1.99	1.75	21.73	13.80	428	31
34	18.0	1093	68	42.0	367	192	55	4.6	38	901	71	37.4	329	1.80	1.75	20.89	14.42	490	34
37	19.1	901	75	42.3	390	145	61	4.2	38	756	78	38.1	352	1.65	1.74	20.29	14.90	551	37
40	20.3	756	83	42.6	412	200	62	5.4	49	556	90	37.2	363	1.53	1.73	19.83	15.27	611	40
46	22.5	556	100	45.4	478	129	83	7.0	73	427	105	38.4	405	1.37	1.68	19.20	15.78	726	46
52	24.7	427	115	45.8	519	88	96	6.4	72	339	119	39.4	447	1.24	1.63	18.91	16.14	839	52
58	27.0	339	129	46.2	560	62	109	5.8	70	277	134	40.4	490	1.14	1.58	18.81	16.42	952	58
64	29.2	277	144	46.8	603	47	124	5.7	73	230	148	41.1	530	1.07	1.53	18.90	16.65	1066	64

LISEC, 1991

Yield table for CORSICAN PINE (Pinus nigra corsicana) in Flanders (Belgium)

Yield table 27/1.75

yield class 27m - diameter increment 1.75cm

L	HDOM	Pre-thinning				Thinning				After thinning				Increment					L
		N	OMTR	G	V	N	OMTR	G	V	N	OMTR	G	V	LJGA	GJGA	LJVA	GJVA	VTOT	
25	16.5	1878	51	41.6	325	314	49	6.4	49	1564	52	35.2	276	2.38	1.66	24.88	12.99	325	25
28	17.8	1564	56	41.7	348	239	54	5.8	48	1325	57	35.9	300	2.15	1.72	24.07	14.18	397	28
31	19.0	1325	62	41.8	371	188	58	5.3	47	1137	62	36.5	324	1.97	1.74	23.43	15.08	467	31
34	20.3	1137	67	41.9	393	149	63	4.8	46	988	67	37.1	347	1.82	1.75	22.88	15.76	536	34
37	21.5	988	72	42.1	415	121	67	4.5	45	867	72	37.6	370	1.69	1.74	22.45	16.31	603	37
40	22.8	867	77	42.3	437	183	64	5.9	59	684	80	36.4	378	1.58	1.73	22.09	16.74	670	40
46	25.3	684	89	44.9	506	129	84	7.5	84	555	91	37.4	422	1.42	1.69	21.46	17.36	798	46
52	27.8	555	100	45.2	549	95	93	6.9	82	460	101	38.3	467	1.29	1.64	21.12	17.79	925	52
58	30.4	460	110	45.4	592	72	103	6.2	81	388	111	39.2	511	1.18	1.60	20.89	18.11	1050	58
64	32.9	388	120	45.7	636	56	112	5.8	81	332	121	39.9	555	1.09	1.55	20.76	18.36	1175	64

LISEC, 1991

Yield table for CORSICAN PINE (Pinus nigra corsicana) in Flanders (Belgium)

Yield table 27/2.00

yield class 27m - diameter increment 2.00cm

L	HDOM	Pre-thinning				Thinning				After thinning				Increment					L
		N	OMTR	G	V	N	OMTR	G	V	N	OMTR	G	V	LJGA	GJGA	LJVA	GJVA	VTOT	
25	16.5	1878	51	41.6	325	352	46	6.3	48	1526	53	35.3	277	2.38	1.66	24.88	12.99	325	25
28	17.8	1526	57	41.7	349	259	51	5.6	46	1267	58	36.1	303	2.13	1.71	23.93	14.16	397	28
31	19.0	1267	63	41.9	373	198	56	5.2	45	1069	64	36.7	328	1.94	1.74	23.20	15.04	466	31
34	20.3	1069	69	42.0	396	153	61	4.7	44	916	70	37.3	352	1.78	1.74	22.60	15.71	534	34
37	21.5	916	75	42.3	419	122	66	4.4	43	794	76	37.9	376	1.66	1.73	22.15	16.23	600	37
40	22.8	794	81	42.5	441	179	64	5.6	56	615	85	36.9	385	1.55	1.72	21.78	16.64	666	40
46	25.3	615	95	45.2	513	124	85	7.3	82	491	97	37.9	431	1.39	1.68	21.22	17.24	793	46
52	27.8	491	106	45.5	556	89	96	6.7	80	402	109	38.8	476	1.26	1.63	20.92	17.67	919	52
58	30.4	402	118	45.8	600	67	107	6.2	81	335	120	39.6	519	1.16	1.58	20.78	17.99	1043	58
64	32.9	335	130	46.1	644	50	117	5.7	78	285	132	40.4	566	1.08	1.53	20.70	18.24	1168	64

LISEC, 1991

Yield table for CORSICAN PINE (Pinus nigra corsicana) in Flanders (Belgium)

Yield table 27/2.25

yield class 27m - diameter increment 2.25cm

L	HDOM	Pre-thinning				Thinning				After thinning				Increment					L
		N	OMTR	G	V	N	OMTR	G	V	N	OMTR	G	V	LJGA	GJGA	LJVA	GJVA	VTOT	
25	16.5	1878	51	41.6	325	389	44	6.2	46	1489	53	35.4	279	2.38	1.66	24.88	12.99	325	25
28	17.8	1489	58	41.7	350	277	50	5.5	44	1212	60	36.2	306	2.12	1.71	23.78	14.15	396	28
31	19.0	1212	65	41.9	375	205	55	5.0	43	1007	66	36.9	332	1.91	1.73	22.97	15.00	465	31
34	20.3	1007	71	42.2	399	155	60	4.6	42	852	73	37.6	357	1.75	1.73	22.34	15.65	532	34
37	21.5	852	78	42.5	423	122	66	4.3	42	730	80	38.2	381	1.62	1.72	21.88	16.16	598	37
40	22.8	730	84	42.7	446	175	65	5.5	55	555	90	37.2	391	1.52	1.71	21.51	16.56	662	40
46	25.3	555	100	45.4	517	118	87	7.1	80	437	104	38.3	437	1.37	1.66	20.97	17.13	788	46
52	27.8	437	113	45.7	562	83	98	6.5	79	354	117	39.2	483	1.24	1.62	20.74	17.55	913	52
58	30.4	354	126	46.1	607	61	111	6.0	79	293	130	40.1	528	1.15	1.57	20.68	17.87	1037	58
64	32.9	293	140	46.5	652	46	123	5.6	78	247	143	40.9	574	1.07	1.52	20.73	18.14	1161	64

LISEC, 1991

Yield table for CORSICAN PINE (Pinus nigra corsicana) in Flanders (Belgium)

Yield table 27/2.50

yield class 27m - diameter increment 2.50cm

L	HDOM	Pre-thinning				Thinning				After thinning				Increment					L
		N	OMTR	G	V	N	OMTR	G	V	N	OMTR	G	V	LJGA	GJGA	LJVA	GJVA	VTOT	
25	16.5	1878	51	41.6	325	424	42	6.1	44	1454	54	35.5	281	2.38	1.66	24.88	12.99	325	25
28	17.8	1454	59	41.8	352	292	48	5.4	43	1162	61	36.4	309	2.10	1.71	23.65	14.14	396	28
31	19.0	1162	66	42.0	378	211	54	4.9	42	951	69	37.1	336	1.89	1.73	22.77	14.97	464	31
34	20.3	951	73	42.3	402	157	60	4.5	41	794	76	37.8	361	1.72	1.73	22.11	15.60	530	34
37	21.5	794	81	42.6	426	120	66	4.1	40	674	83	38.5	386	1.59	1.72	21.62	16.09	595	37
40	22.8	674	88	42.9	450	170	66	5.3	53	504	95	37.6	397	1.49	1.70	21.28	16.48	659	40
46	25.3	504	105	45.6	522	112	89	6.9	78	392	110	38.7	444	1.34	1.65	20.78	17.04	784	46
52	27.8	392	120	46.0	567	77	102	6.3	77	315	124	39.7	490	1.23	1.60	20.61	17.45	908	52
58	30.4	315	135	46.6	614	56	115	6.0	77	259	139	40.6	537	1.14	1.56	20.66	17.78	1031	58
64	32.9	259	150	47.1	662	42	129	5.7	79	217	154	41.4	583	1.07	1.51	20.81	18.07	1156	64

LISEC, 1991

Yield table for CORSICAN PINE (Pinus nigra corsicana) in Flanders (Belgium)

Yield table 27/2.75

yield class 27m - diameter increment 2.75cm

L	HDOM	Pre-thinning				Thinning				After thinning				Increment					L
		N	OMTR	G	V	N	OMTR	G	V	N	OMTR	G	V	LJGA	GJGA	LJVA	GJVA	VTOT	
25	16.5	1878	51	41.6	325	458	41	6.0	42	1420	55	35.6	283	2.38	1.66	24.88	12.99	325	25
28	17.8	1420	59	41.8	353	306	47	5.3	41	1114	63	36.5	312	2.08	1.71	23.53	14.12	395	28
31	19.0	1114	67	42.1	380	215	54	4.8	41	899	71	37.3	339	1.86	1.72	22.57	14.94	463	31
34	20.3	899	76	42.4	405	157	60	4.4	40	742	79	38.0	365	1.70	1.72	21.88	15.55	529	34
37	21.5	742	84	42.7	429	118	66	4.0	38	624	87	38.7	391	1.57	1.71	21.40	16.03	593	37
40	22.8	624	92	43.1	454	164	67	5.2	51	460	100	37.9	403	1.46	1.69	21.07	16.40	656	40
46	25.3	460	110	45.9	526	106	91	6.8	76	354	116	39.1	450	1.32	1.64	20.63	16.96	780	46
52	27.8	354	127	46.3	573	72	105	6.2	76	282	132	40.1	497	1.21	1.59	20.53	17.37	903	52
58	30.4	282	143	46.9	621	52	120	5.9	78	230	148	41.0	543	1.13	1.54	20.65	17.71	1027	58
64	32.9	230	159	47.4	668	38	136	5.5	77	192	164	41.9	591	1.07	1.50	20.85	18.00	1152	64

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