

CHARACTERISTICS OF TREE CROWN VOLUME AND ELEMENTS OF STRUCTURE COMPONENTS AS INDICATORS OF DAMAGE TO NARROW- LEAVED ASH (FRAXINUS ANGUSTIFOLIA VAHL) IN LOWLAND FORESTS OF CROATIA

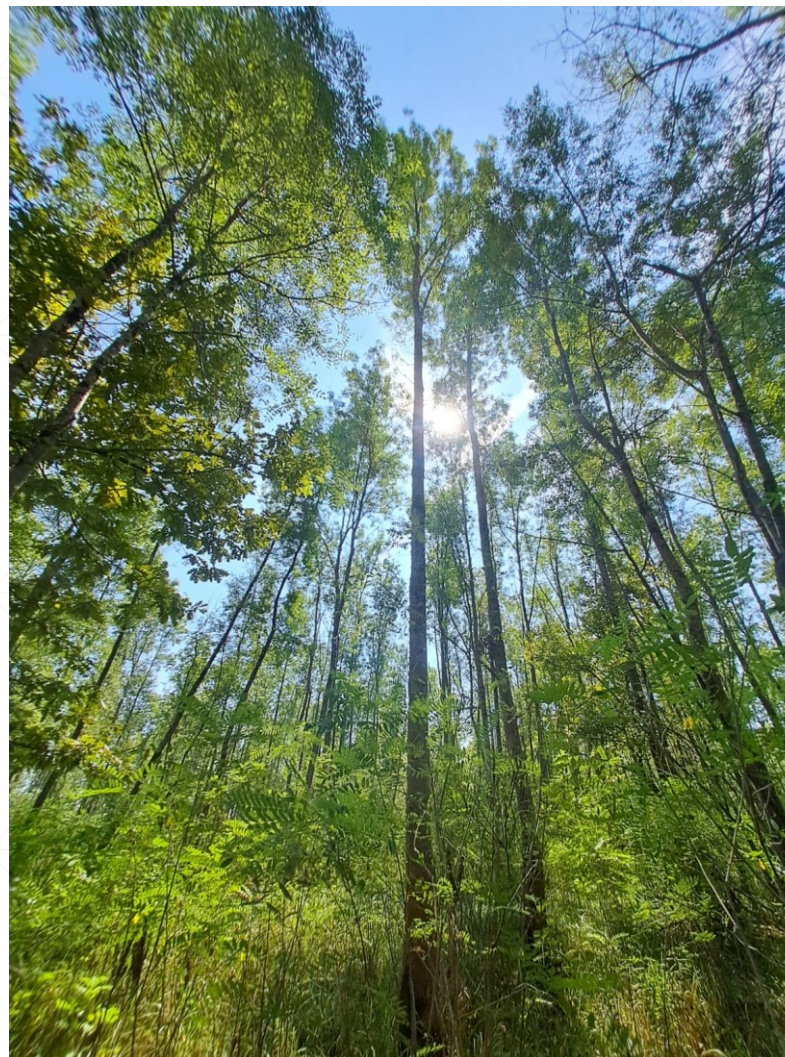
DANI
DOKTORATA
BIOTEHNIČKOG
PODRUČJA

12. i 13. rujna 2024.



*Tomislav Čavlović¹, Mislav Vedriš¹ Krunoslav Teslak¹
Fakultet Šumarstva i drvne tehnologije Sveučilišta u Zagrebu
Svetošimunska cesta 23, 10000 Zagreb, kteslak@sumfak.unizg.hr*

- 1. Introduction
- 2. Aim of research
- 3. Material and Methods
- 4. Research results
- 5. Conslusions



Introduction

- - Climate change
- - Lowland Forest
- - Low Resistance
- - Forest degradation
- - Ash dieback
- - Stability and health condition of the forest
- - Adaptive forest management



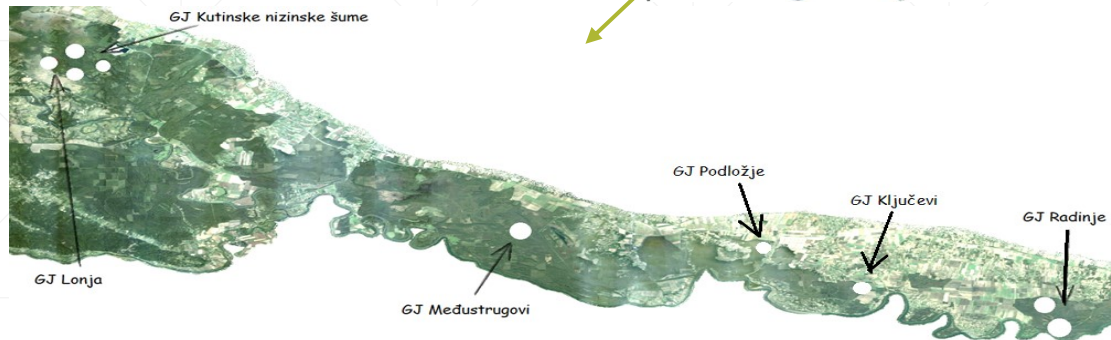
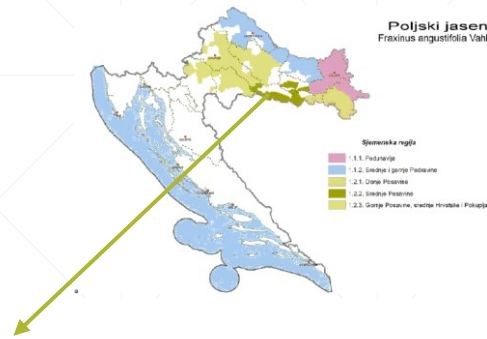
Aim of research

- - The relationship between tree characteristics and the degree of tree damage
- -The connection between the characteristics of forest stands and the degree of damage to trees



Material and Methods

- - systematic area measurements
- - marking trees
- - x,y coordinates
- age of trees



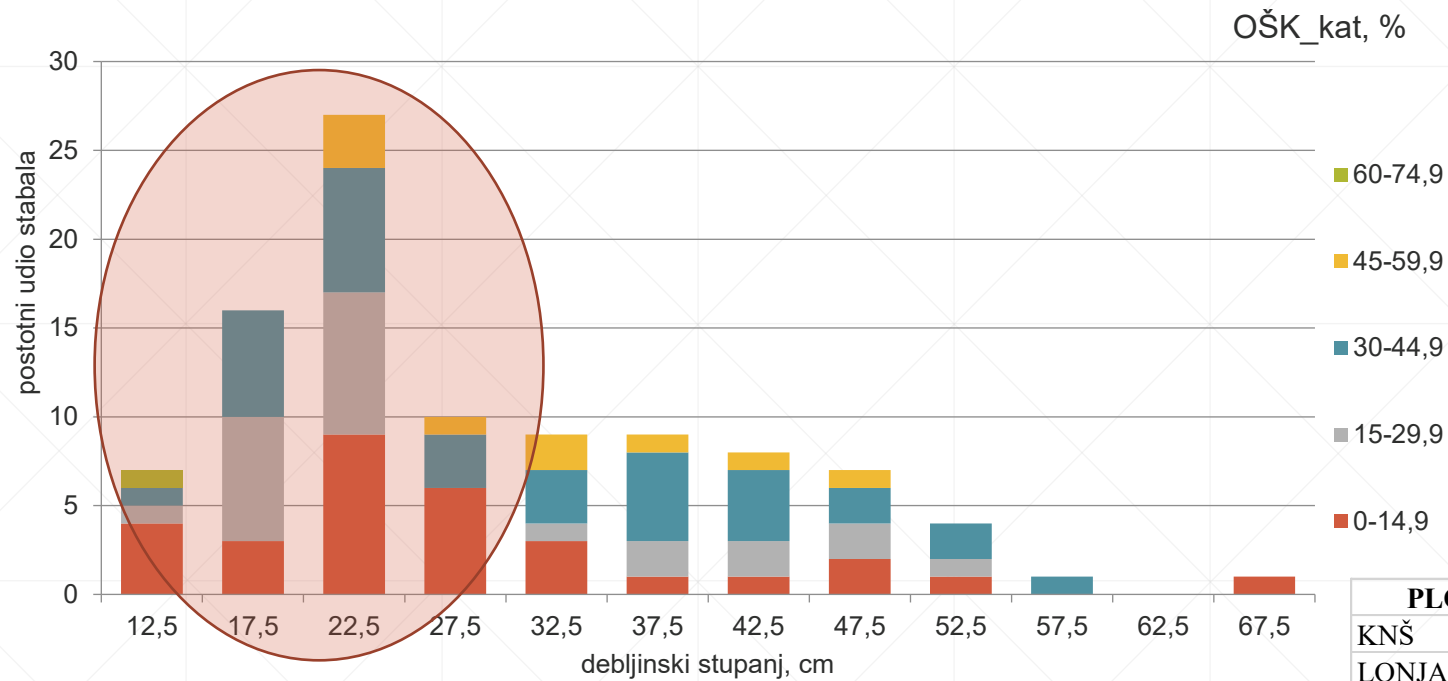
Material and Methods

- - top height od tree (m)
- - height of the widest part of the tree crown (m)
- - the height of the beginning of the tree crown (m)
- - crown damage assessment (%)
- - tree diameter (cm)



Research results

- the degree of crown damage in relation to the number of trees in the area



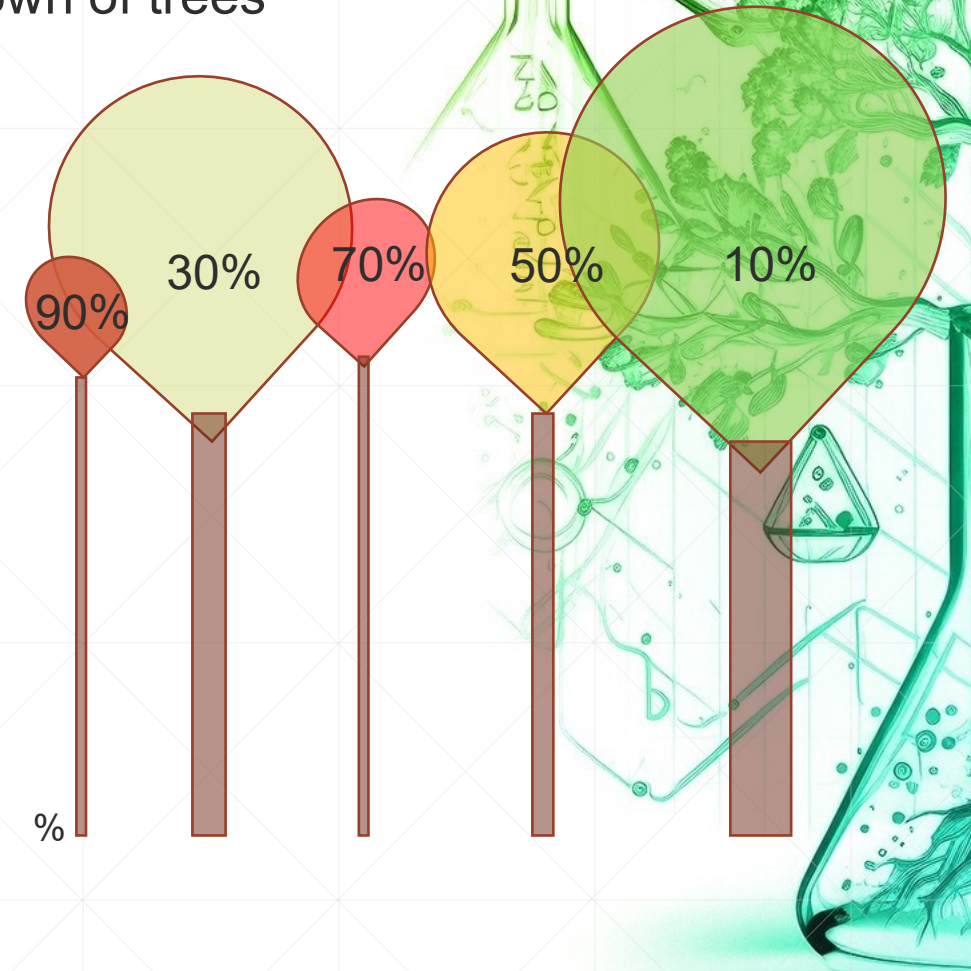
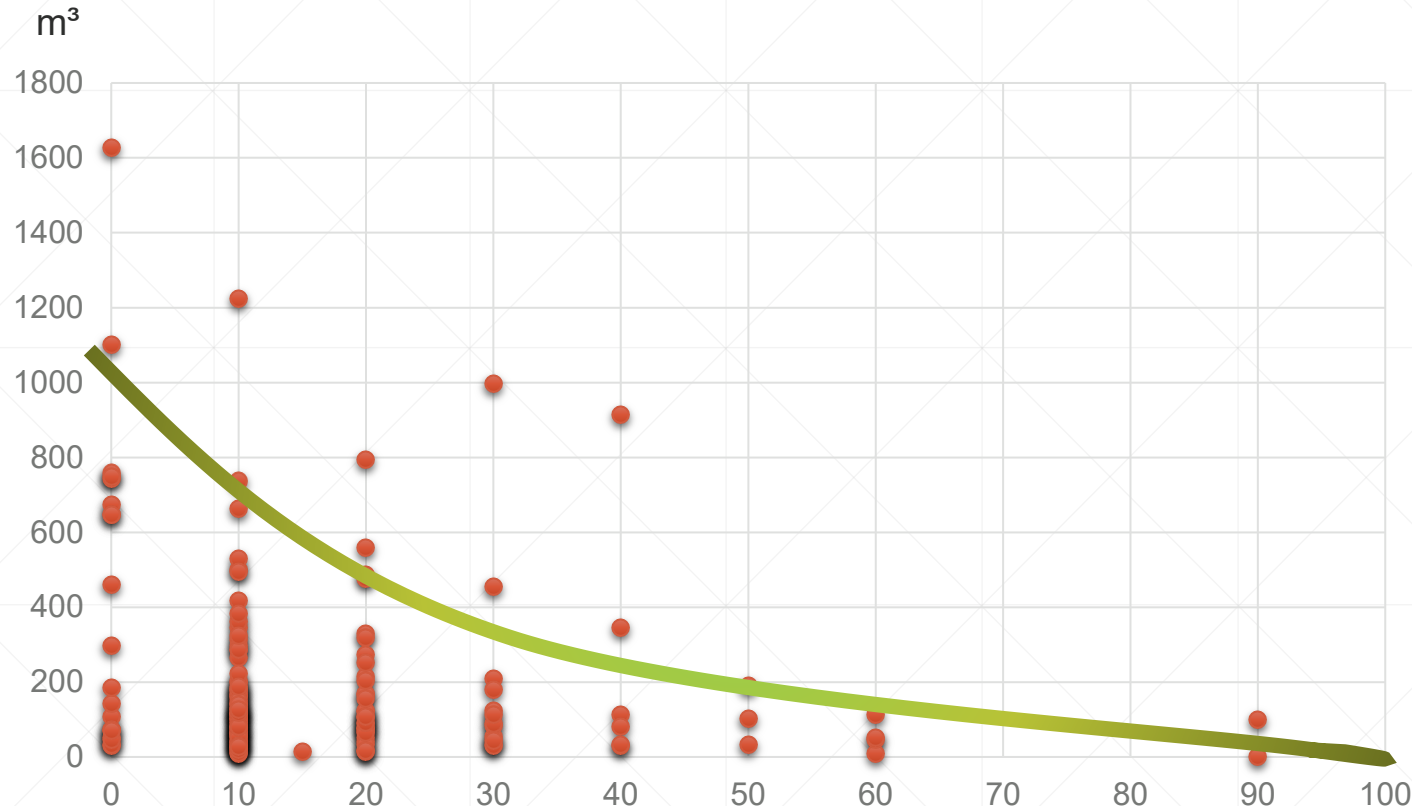
Dobni razred	I		II		III		IV		V	
Dob	0-19	20	30	40	50	60	70	80	90	100
Intenzitet (%)	čišćenje	50	33,33	25	20	16,67	14,29	12,5	11,11	10
N/ha	1500	750	500	375	300	250	214,3	187,5	166,7	150

PLOHE GJ	N/ha
KNŠ	1418
LONJA	1480
MEĐUSTRUGOVI	1093
MEĐUSTRUGOVI	1800
RADINJE	1940
AVERAGE:	1546



Research results

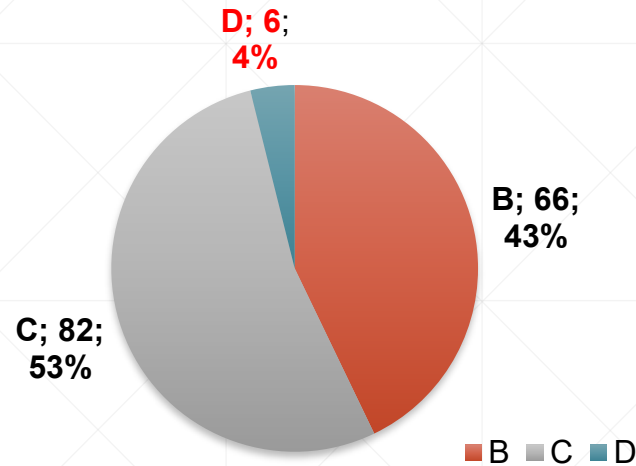
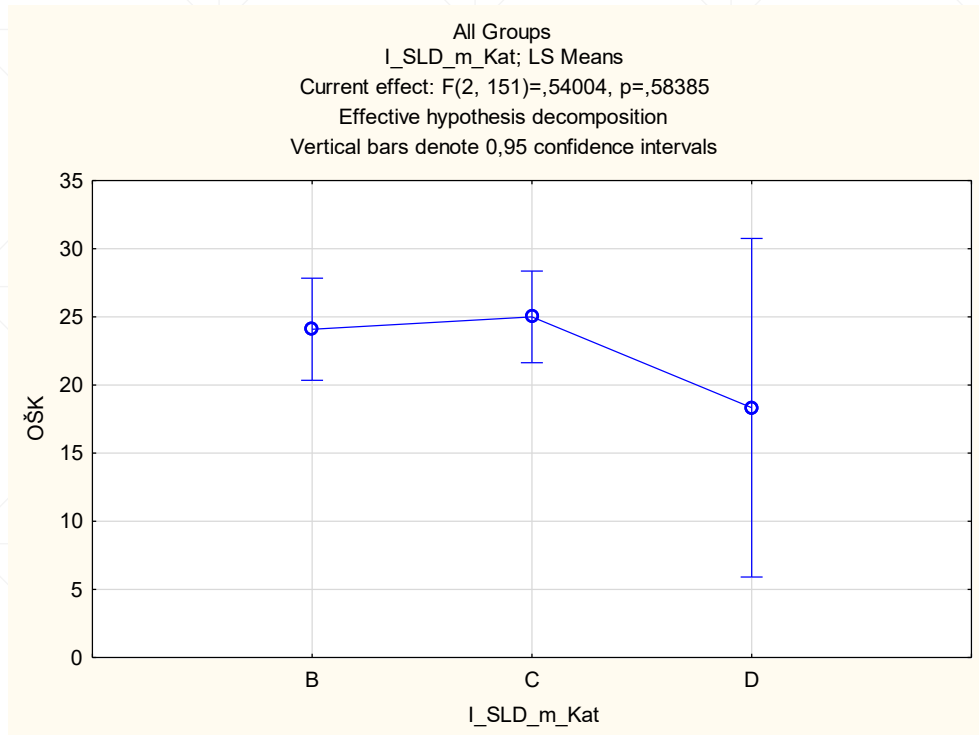
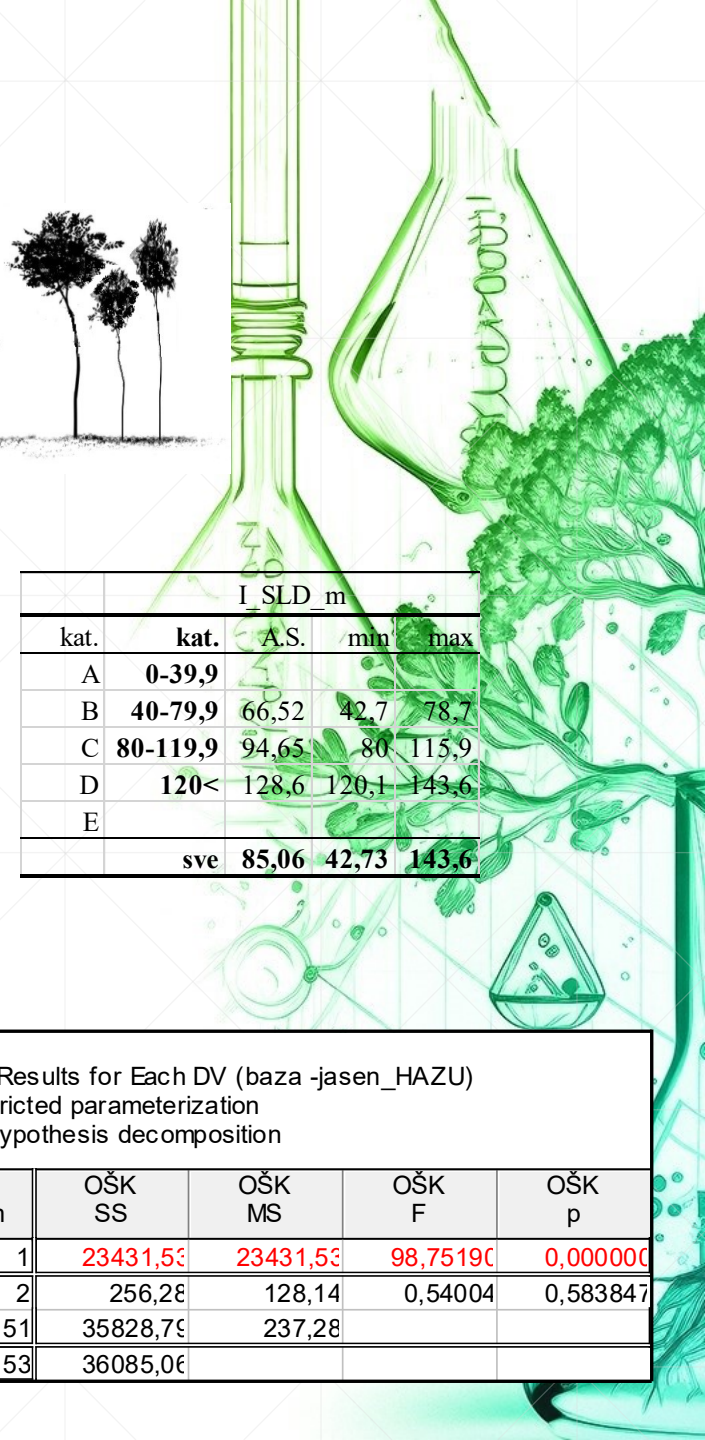
- the degree of crown damage in relation to the volumen crown of trees



Research results

the relationship between tree height and diameter

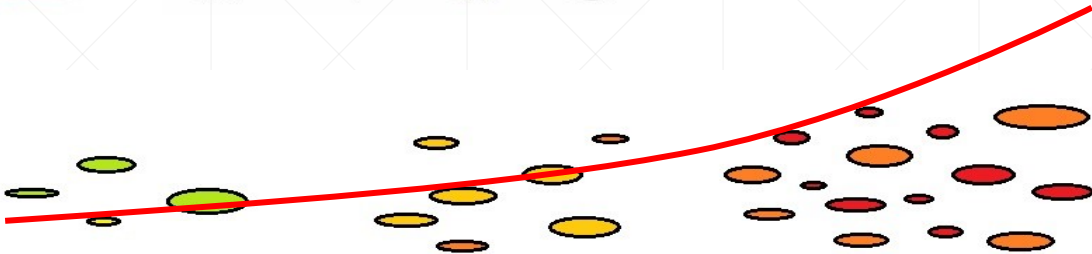
$$I_SLD(m)=h \text{ (stabla)}/d1,30 \times 100$$



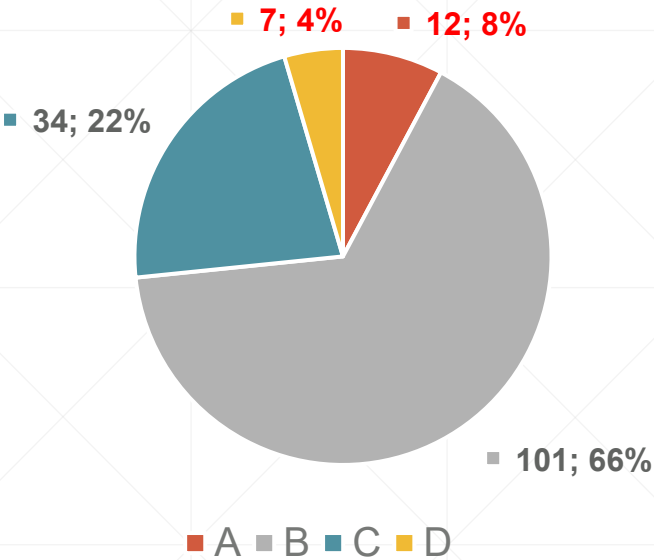
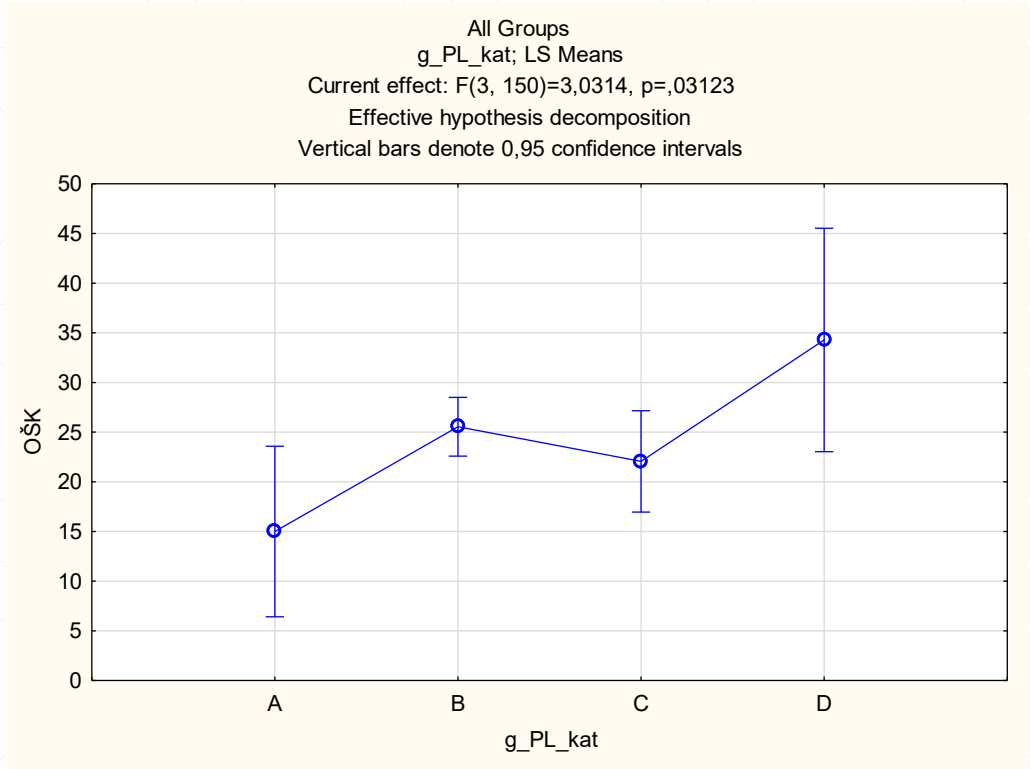
		I_SLD_m		
kat.	kat.	A.S.	min	max
A	0-39,9			
B	40-79,9	66,52	42,7	78,7
C	80-119,9	94,65	80	115,9
D	120<	128,6	120,1	143,6
E				
sve		85,06	42,73	143,6

All Groups Univariate Results for Each DV (baza -jasen_HAZU) Sigma-restricted parameterization Effective hypothesis decomposition					
Effect	Degr. of Freedom	OŠK SS	OŠK MS	OŠK F	OŠK p
Intercept	1	23431,53	23431,53	98,75190	0,000000
I_SLD_m_Kat	2	256,28	128,14	0,54004	0,583847
Error	151	35828,79	237,28		
Total	153	36085,06			

Research results



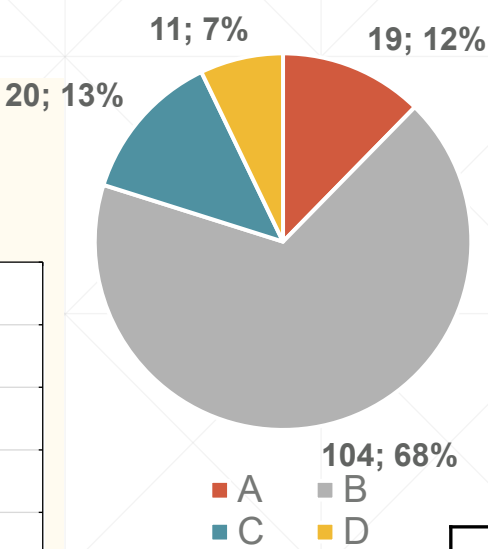
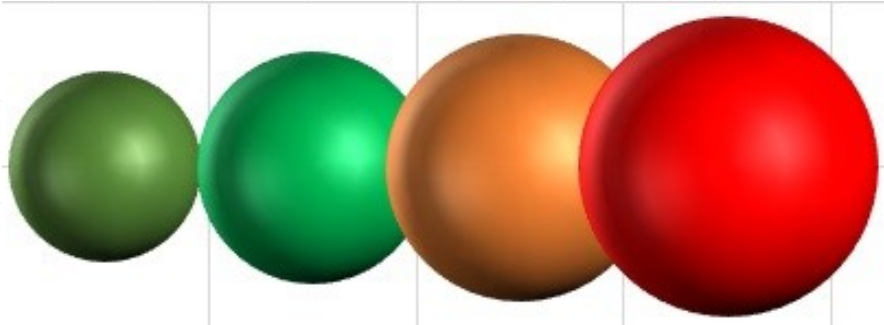
g PL, m ² /ha				
kat.	kat.	A.S.	min	max
A	0-14,9	12,1	10,3	13,6
B	15-29,9	24,1	16,4	29,1
C	30-44,9	34,5	30,7	41,3
D	45<	54,3	53,1	55,4
E				



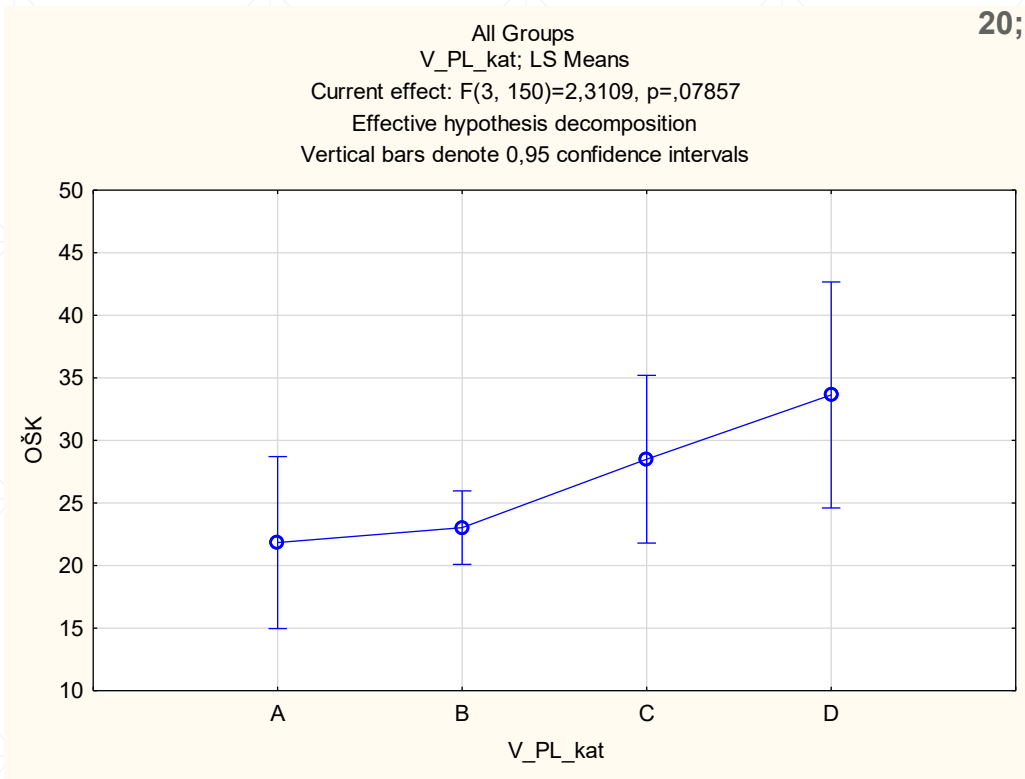
All Groups Univariate Results for Each DV (baza -jasen_HAZU) Sigma-restricted parameterization Effective hypothesis decomposition					
Effect	Degr. of Freedom	OŠK SS	OŠK MS	OŠK F	OŠK p
Intercept	1	35357,37	35357,37	155,8859	0,000000
g_PL_kat	3	2062,70	687,57	3,0314	0,031234
Error	150	34022,36	226,82		
Total	153	36085,06			



Research results



V PL, m3/ha				
kat.	kat.	A.S.	min	max
A	0-149,	109,6	76,7	140,9
B	150-29	202,7	154,9	254,6
C	300-44	336,4	249,3	414,7
D	450<	623,8	501,1	699,3



All Groups Univariate Results for Each DV (baza -jasen_HAZU) Sigma-restricted parameterization Effective hypothesis decomposition					
Effect	Degr. of Freedom	OŠK SS	OŠK MS	OŠK F	OŠK p
Intercept	1	56363,40	56363,40	245,1223	0,000000
V_PL_kat	3	1594,08	531,36	2,3109	0,078567
Error	150	34490,99	229,94		
Total	153	36085,06			

Forest management at the right time

Support larger tree crowns

Maintain the health and stability of the forest

