



INTEGRATED CRITERIA TO ENHANCE FORESTRY ACTIVITIES IN MEDITERRANEAN REGION

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Outline

- Introduction
- Materials and method
- Results
- Conclusion



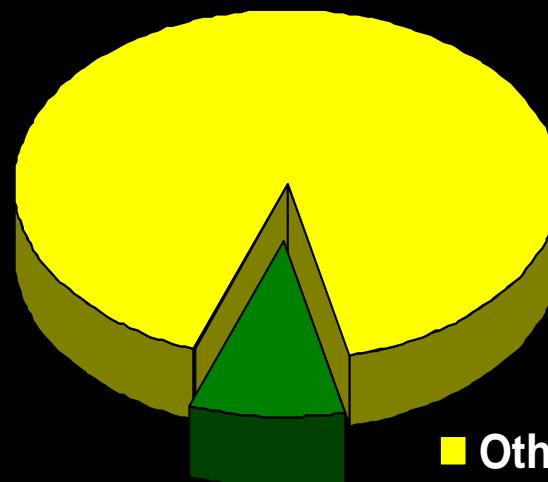
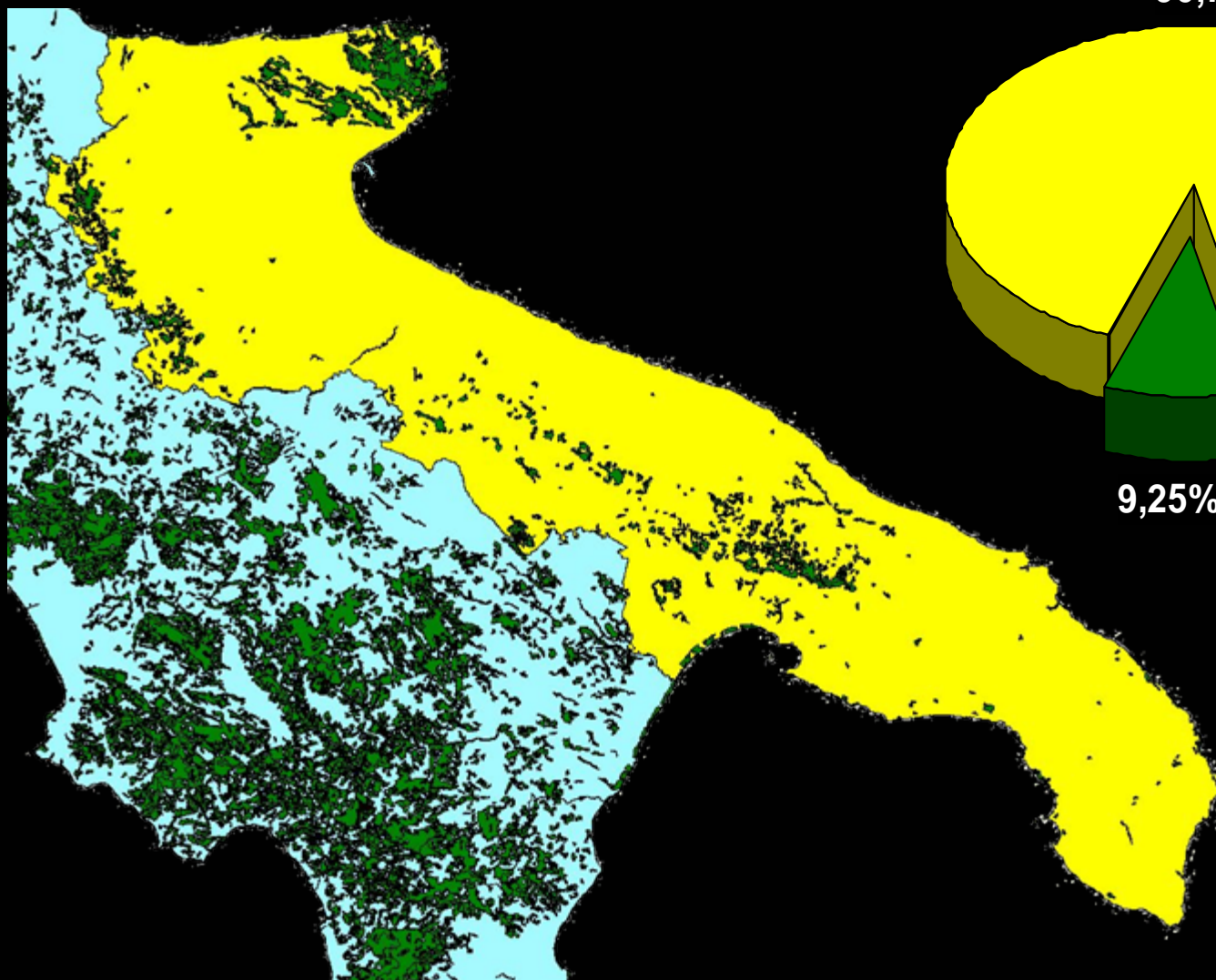
Introduction

Aims of the study:

- *To identify species and areas suitable for forest plantations*
- *To develop a model for managing and planning forest resources*



Land use percentage 90,75%



■ Other land uses
■ Forests

9,25%



WP1	Data collection on woods and plantations	Acquisition of quantitative and qualitative data to create a database related to different species used in the last decade for forest plantations
WP2	Statistical data analysis	<p>Statistical analysis on data collected in WP1 finalized to assess:</p> <ul style="list-style-type: none"> ▪ trees growing rates ▪ climate and soil characteristics ▪ management choices and other related aspects
WP3	Theoretical background and applicative case studies	<p>Acquisition of an updated knowledge background on the methodologies available to build a management model based on defined and weighted variables.</p> <p>“Tranquillity” based approach for urban and periurban areas</p>
WP4	Setting and development of the methodology on a regional scale	<p>Analysis of positive and negative features that affect perception of tranquillity.</p> <p>Modelling and application of planning tool.</p> <p>Crossing of findings with database of species to define new assessment choices</p>

Qualities

Quality



Materials and Method (WP1 and WP2)

Monitoring activities concerned a representative sample

The monitored surface can be assumed as 1 - 2% of 50% of the entire area

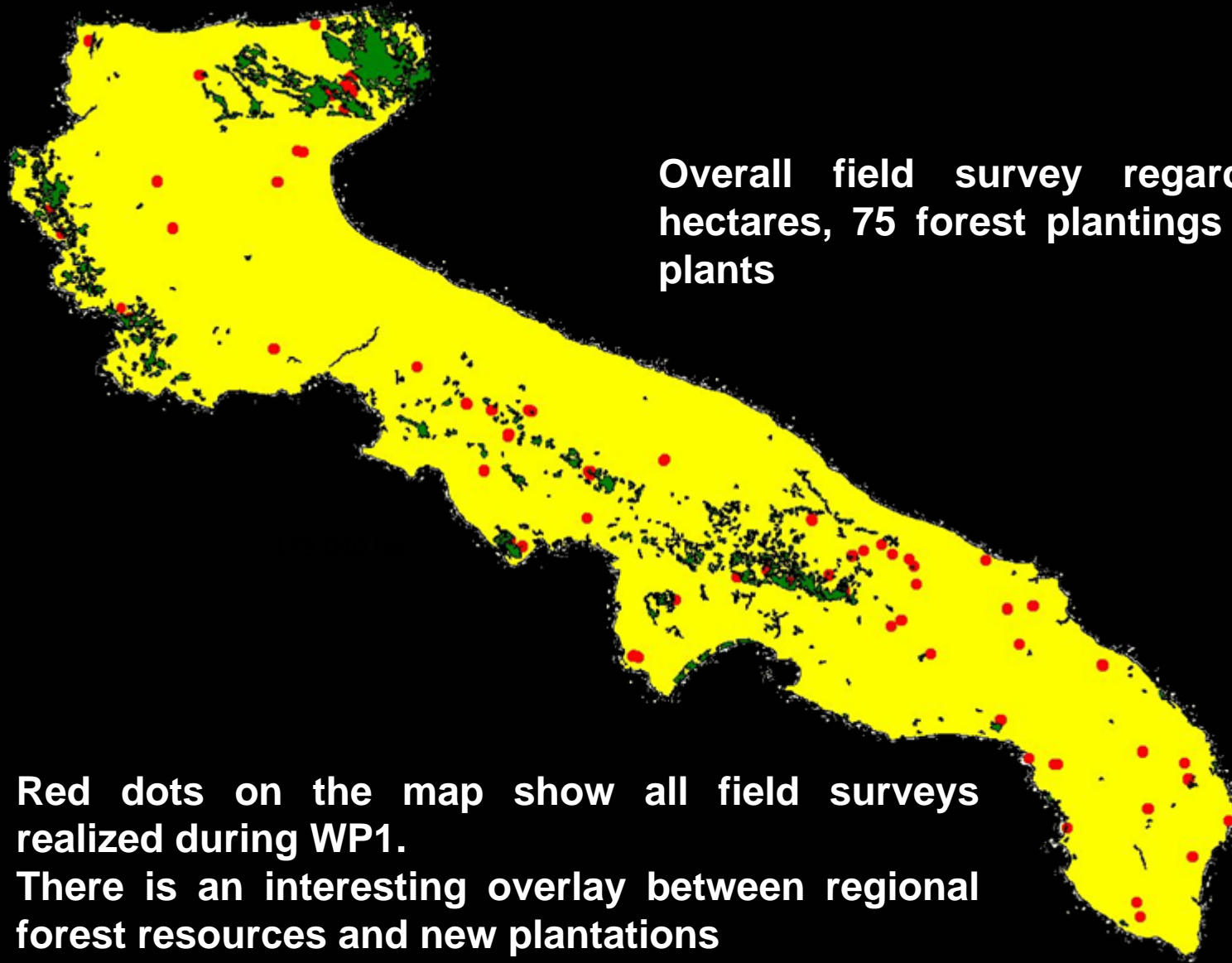
In the preliminary phase of the monitoring were acquired information concerning

- ✓ Location
- ✓ Used Species
- ✓ Topographical Features

In every area have been monitored:

- ✓ Environmental features of the surrounding area
- ✓ Cultivating practices
- ✓ Dendrometric parameters of each single plant
(height, diameter, canopy height, crown cover, ecc.)
- ✓ Phytopathological conditions
- ✓ Geographical position of each tree

Every monitored tree can be considered as a permanent sample area



Overall field survey regarded 1610 hectares, 75 forest plantings and 7340 plants

**Red dots on the map show all field surveys realized during WP1.
There is an interesting overlay between regional forest resources and new plantations**



Sylvicultural aspects

Valori medi		Species			
		Ac. camp.	Farnia	Frass. oss.	Leccio
Monitored trees	n°	7	33	10	1
H	m±D.S.		5,17±1,17	5,07±1,47	
D _{1,30}	cm±D.S.		7,22±2,40	7,27±2,7	
Crown cover area	m ² ±D.S.		10,90±5,1	7,47±5,28	
H Canopy height	m±D.S.		1,29±0,36	1,19±0,17	

Phytopathological aspects

id	Patology	Biotic ag	Intensity
1	mosaico_f		0.1 < x < 20
2	mosaico_f	fum	0.1 < x < 20
3	mosaico_f	fum morib	0.1 < x < 20
4	mosaico_f	fum forte def	>50.1
5	mosaico_f	fum	0.1 < x < 20
6	mosaico_f	fum	0.1 < x < 20
7	mosaico_f	fum	0.1 < x < 20
8	mosaico_f	fum	0.1 < x < 20
9	mosaico_f	fum	0.1 < x < 20
10	clorosi,laciniat_f		0.1 < x < 20
11	mosaico_f	fum	0.1 < x < 20
12	mosaico_f	fum	0.1 < x < 20
13	mosaico_f	morib	0.1 < x < 20
14	necrosi_f		0.1 < x < 20
15	clorosi,laciniat_f		0.1 < x < 20
16	disseccamento fogl		0.1 < x < 20
17	disseccamento fogl		0.1 < x < 20
18	disseccamento fogl		0.1 < x < 20
19			
20			
21			
22			
23			
24			
25			
26	disseccamento fogl		>50.1
27	disseccamento fogl		20.1 < x < 50
28	fill		0.1 < x < 20
29			
30	dissecc fogl		20.1 < x < 50
31	dissecc fogl		>50.1
32	dissecc fogl		>50.1
33	dissecc fogl		0.1 < x < 20
34	dissecc fogl acclitidi		0.1 < x < 20





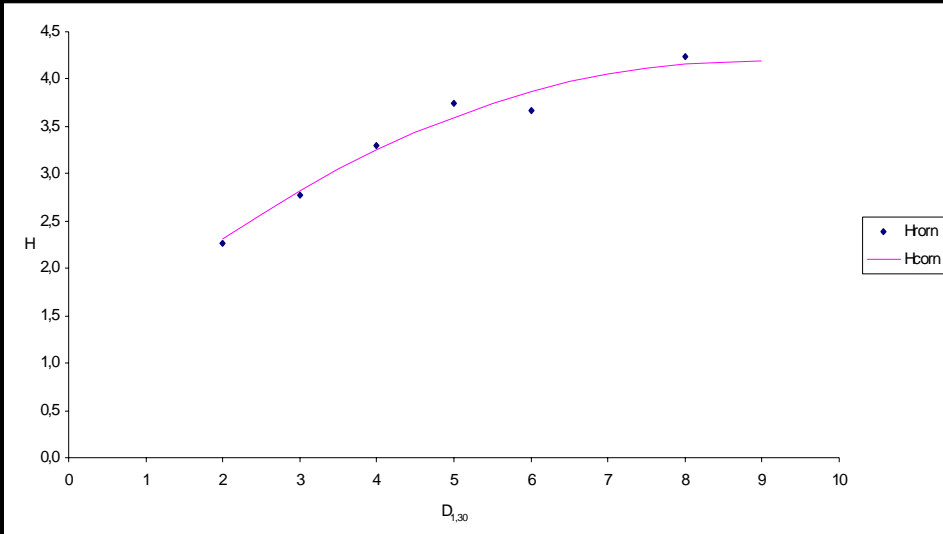
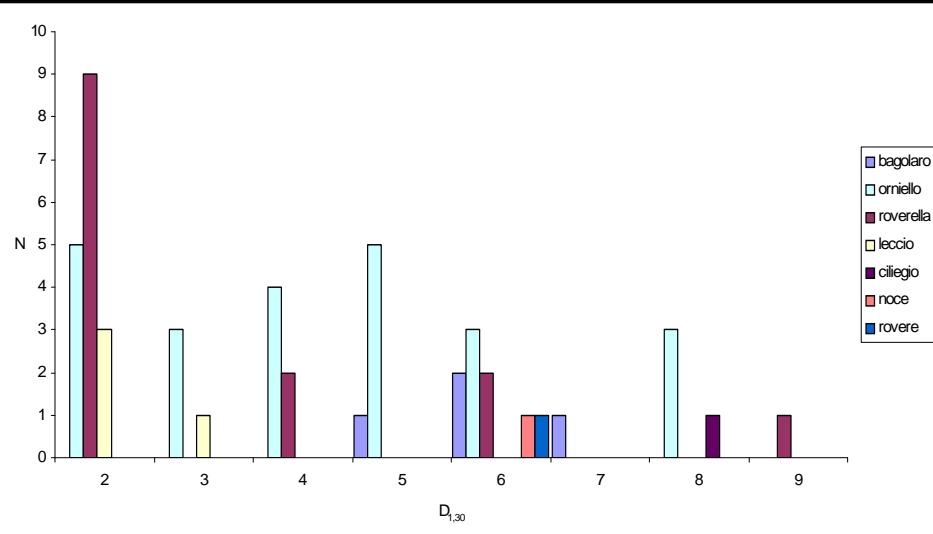
Results (WP1 and WP2)

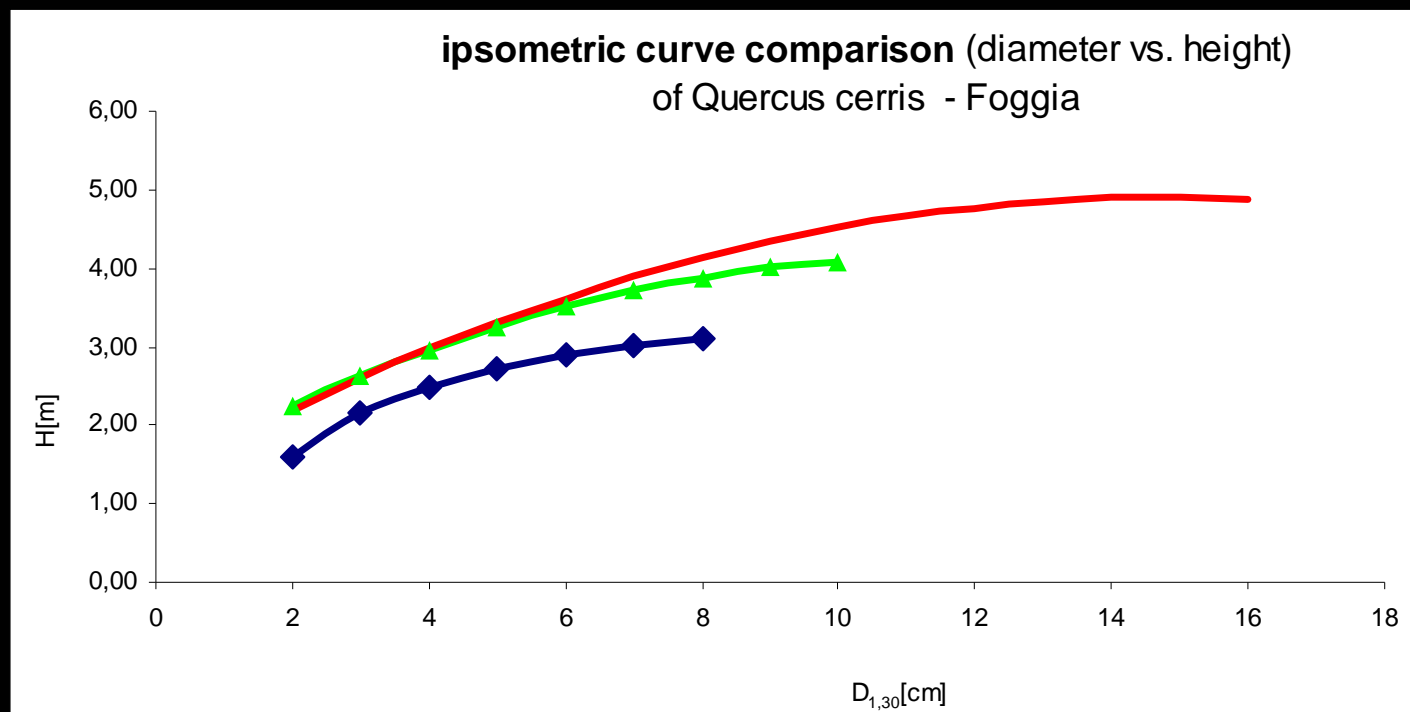
Plantation n. I_103_7

Tipology: Prevalent broad leaves plantation

Year of plantation: 1995

Mean values		Species			
		Celtis australis	Fraxinus ornus	Quercus pubescens	Quercus ilex
Misured trees	n°	4	23	14	4
Height	m±D.S.		2,87±0,83		
Diametre _{1,30}	cm±D.S.		3,10±1,93		
Crown cover area	m ² ±D.S.		5,14±2,59		
Canopy height	m±D.S.		0,46±0,37		



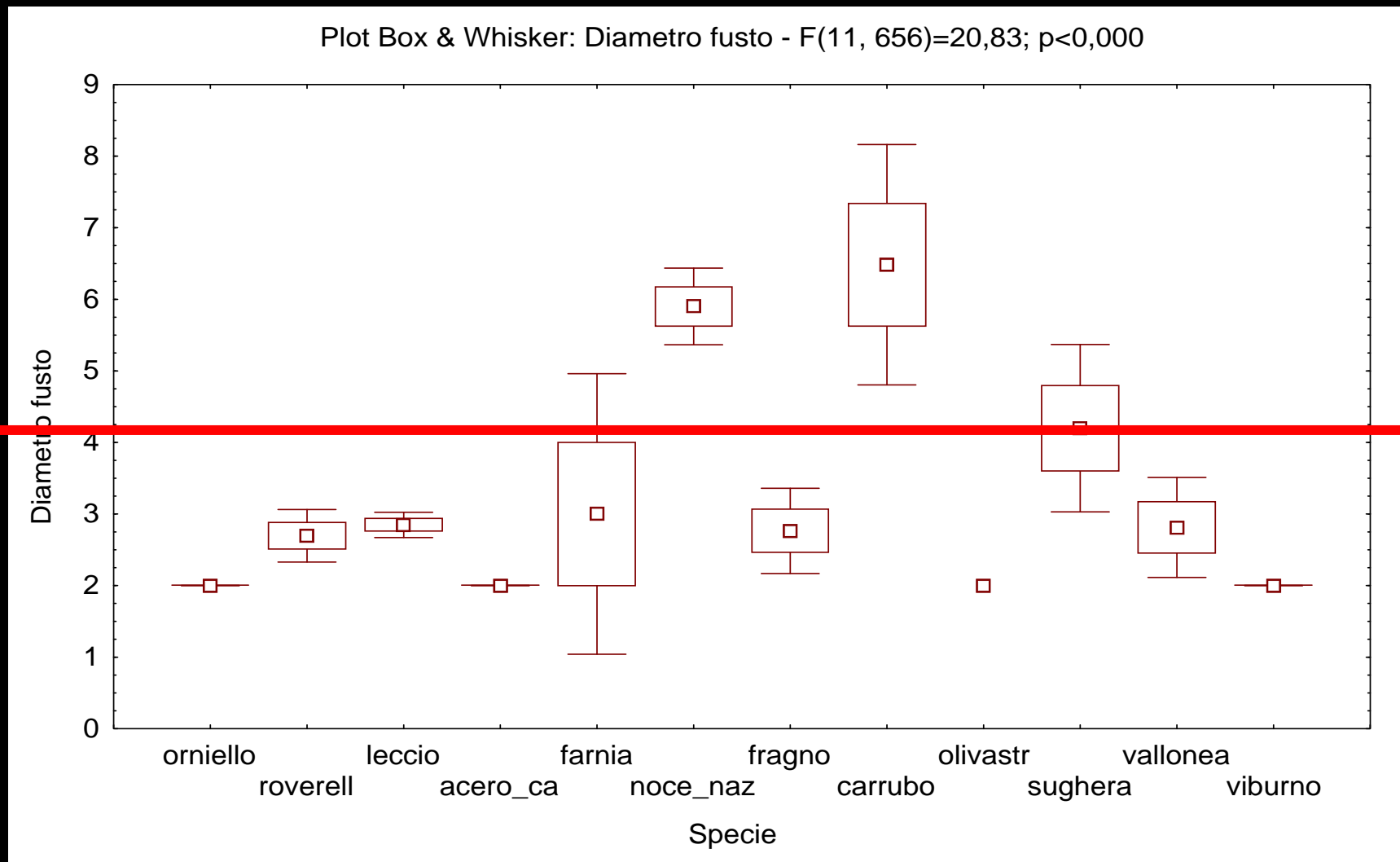


plantation	Soil texture	H _m	H _{mi}	D _m	A _i
3_305_4	Sandy, clay and thin soils, 0 - 10 % slope	4,58	0,01	10,39	11,09
3_310_2	Sandy and very thin soils, 0 - 5% slope	3,51	1,04	6,02	3,85
3_301_1	Sandy and very thin soils, 10 - 30 % slope	1,82	0	2,33	1,83



Variables correlations

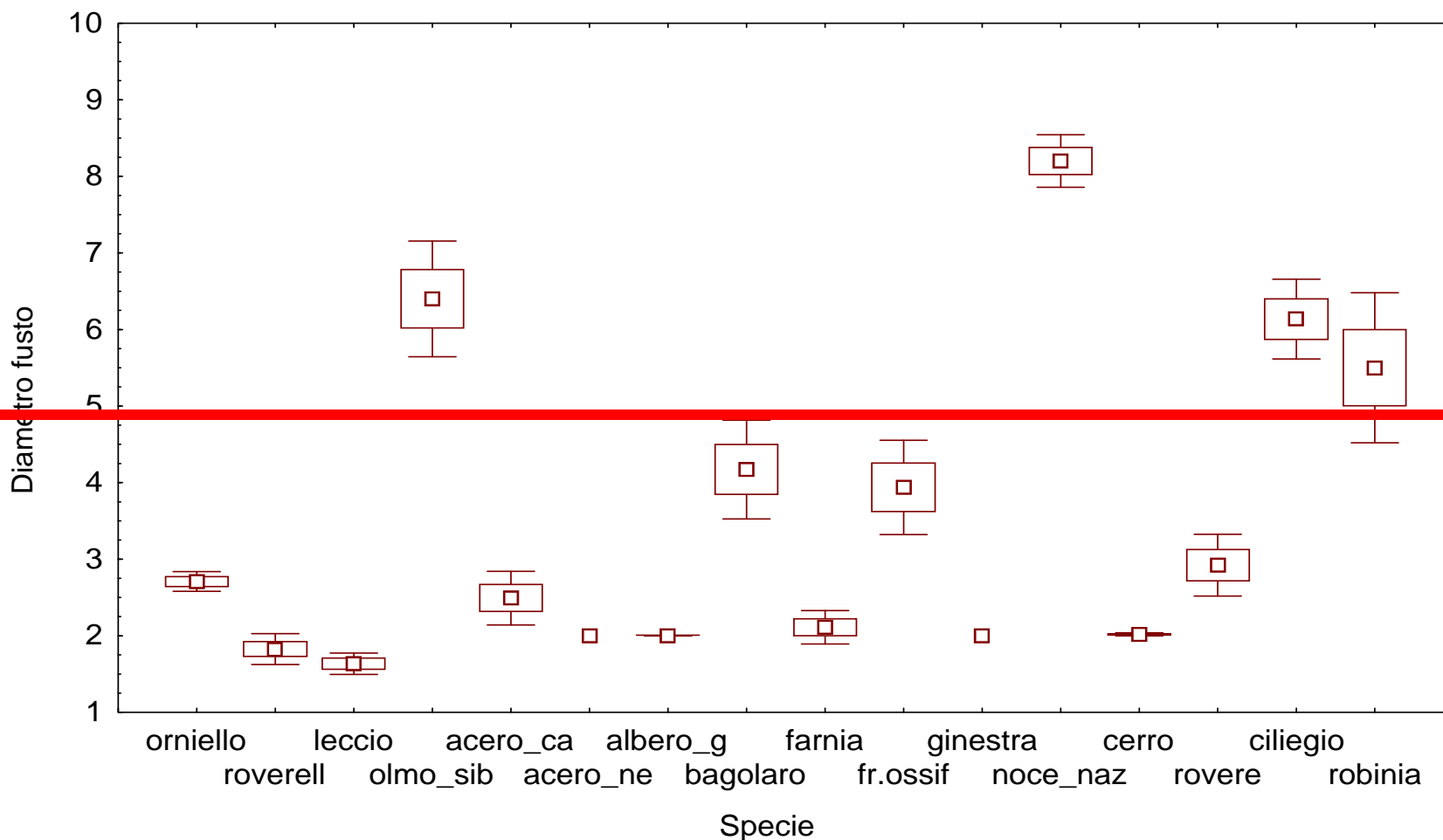
	<i>Diameter</i>	<i>Height</i>	<i>Canopy height</i>	<i>Crown cover</i>
Diameter	1,00			
Height	0,73	1,00		
Canopy height	0,56	0,64	1,00	
Crown cover	0,76	0,74	0,47	1,00



Diameters distributed for species _ Brindisi province



Plot Box & Whisker: Diametro fusto - $F(15, 1473)=145,04$; $p<0,000$



Diameters distributed for species _ Bari province



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Materials and Method (WP3 e WP4)

Theoretical background

Quality of lands has a strong and direct influence on
quality of life

The quality analysis is correlated to:

- concrete attributes and features
- abstract dimensions like fitness for use or perception
quality



Experiential indicators	Tranquillity
	Remoteness
	Perceived naturalness
	Landscape quality
Performance indicators	Noise
	Light pollution
	Air quality
	Cleanliness of public spaces
	Water quality
	Biodiversity

In urban and periurban areas management efforts must reach the goal to transform holistic terms in technical values by which changes, developments, gains and losses may be identified and managed



Tranquillity is a key concept of quality of life

“ a state of mind when you are in nice surrounding”

Through the use of tranquillity maps is possible to add or subtract woodland and test the effect of planned areas on tranquillity

Locate new woodland where increases in tranquillity are to be gained (i.e. most disturbed areas near urban infrastructures)



Tranquil areas are defined like places which are enough far away from visual or noise intrusion of human impacts on tranquillity (ref. Simon Rendel)

Are considered factors such as:

- Noise from transport infrastructures and industrial sites
- Visual intrusion from built-up areas, power stations, etc
- Recreational use: number of visitors, facilities, car parking, etc



Tranquillity based approach allows to weight positive and negative factors according to how important people think they are in determining how tranquil a green area is

In order to validate this approach the methodology has to be based on detailed and extensive survey work about people's experience of tranquillity

Involving people and improving the participatory approach



Conclusions

- Applied methodologies and tools in monitoring trees give the chance to update database and to analyze in a deeper way growing rates of plantations
- GIS based approach combines results of people's perception analysis with concrete spatial and geographical attributes



Conclusions

- The potential application of tranquillity approach present some useful possibilities for analysis and testing different woodland locations
- There are different ways in which the forest can contribute to recreational activities: this aspect depends on different cultural and social approach to natural resources (ref. Simon Bell)