



SelPiBioLife

Monitoring areas and experimental scheme

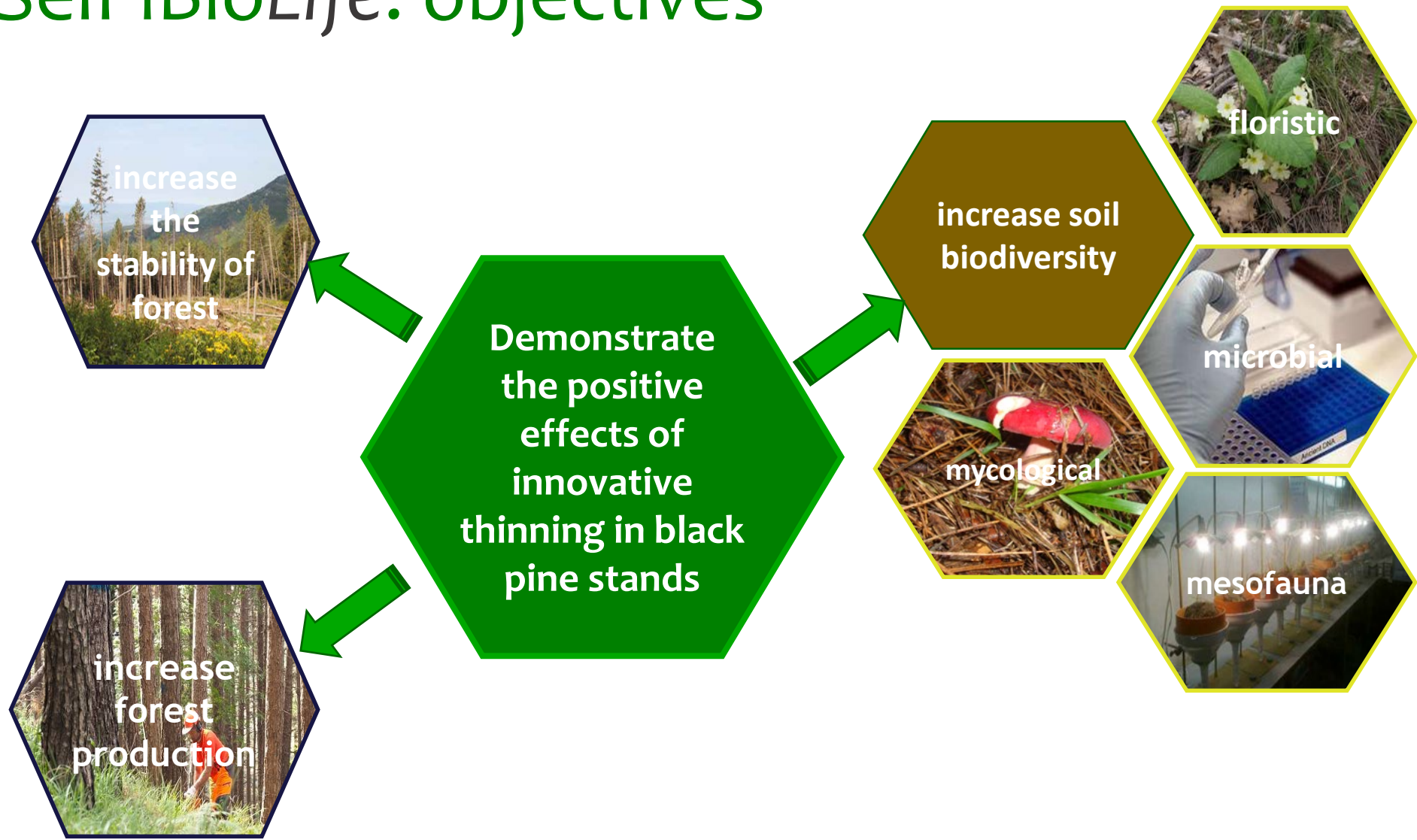
Umberto Di Salvatore

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**NUOVI APPROCCI PER LA GESTIONE
SOSTENIBILE DEL PINO NERO:**
biodiversità e mitigazione

MARTEDÌ 14 MAGGIO 2019 | 9.30 - 16.30
Firenze, Sala Giordano - Palazzo Medici-Riccardi

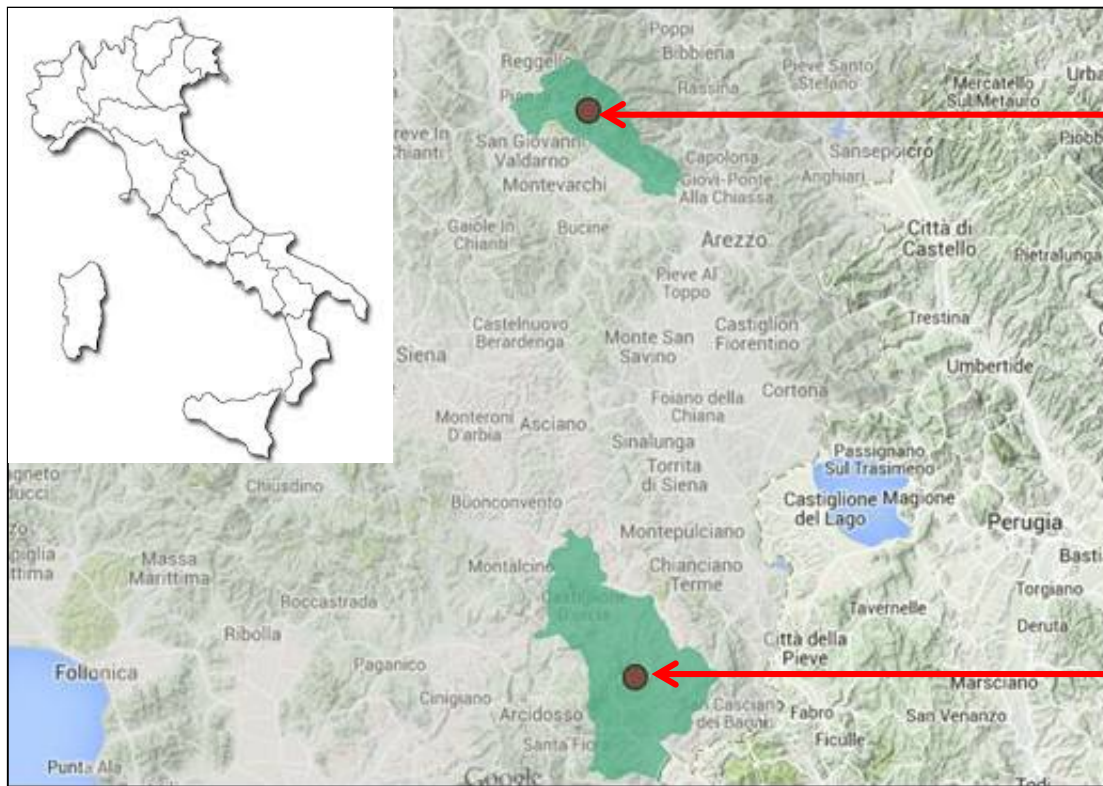
SelPiBioLife: objectives



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Monitoring areas



“Pratomagno-
Valdarno”- “Pian della
cucina” Municipality:
Loro Ciuffenna (AR)
PRATOMAGNO

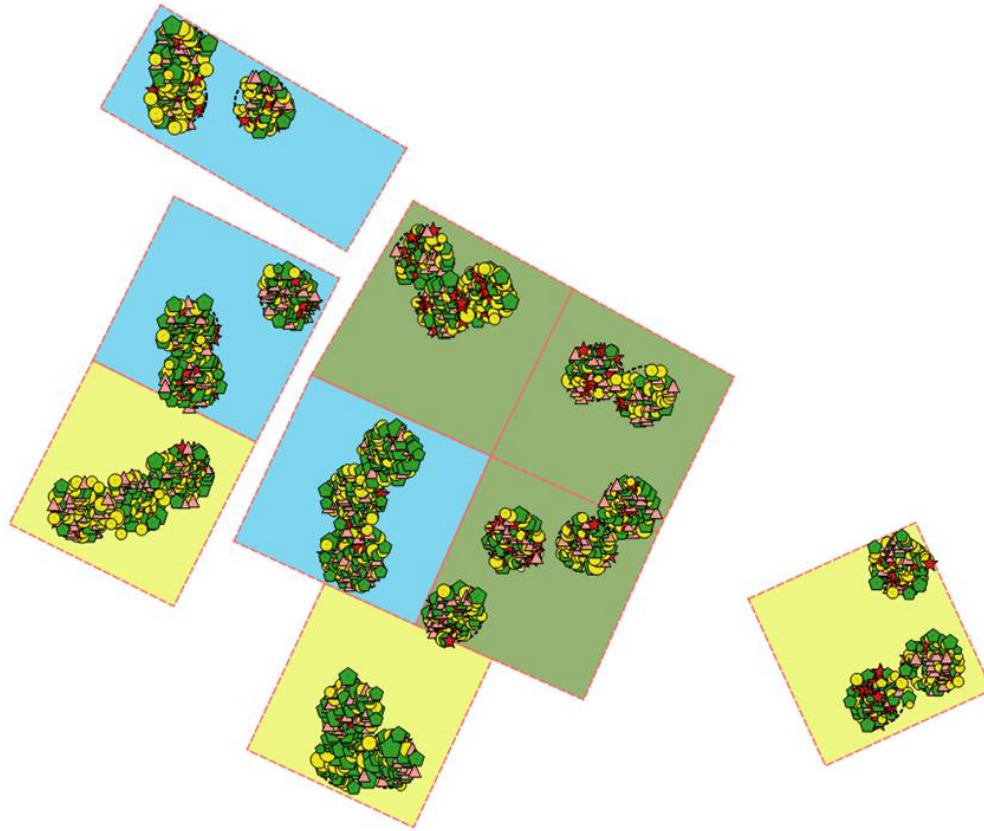
“Madonna delle Querce”
– “Il Lago” Municipality:
Castiglione d’Orcia (SI)
AMIATA



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Experimental scheme



9 areas (1 ha each) for each experimental site, with 3 replicates of each silvicultural thesis

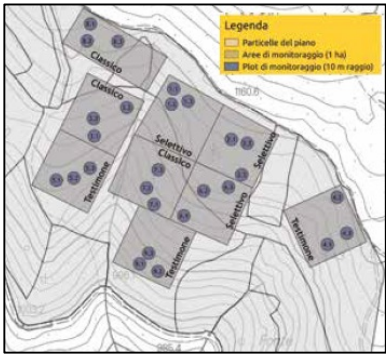


3 plots for each area were selected for sampling and three thesis applied

- ✓ selective thinning
- ✓ traditional thinning
- ✓ control

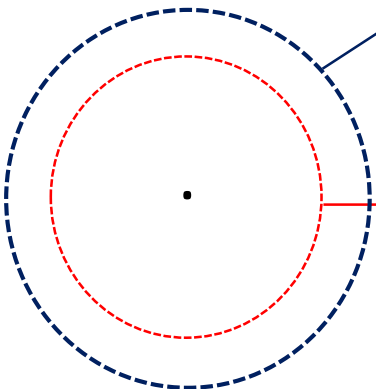
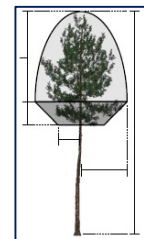
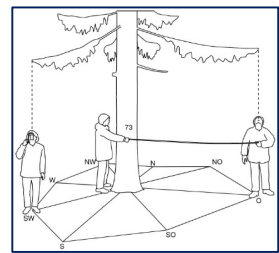
A total of 27 plots for each site

Experimental scheme – survey plots



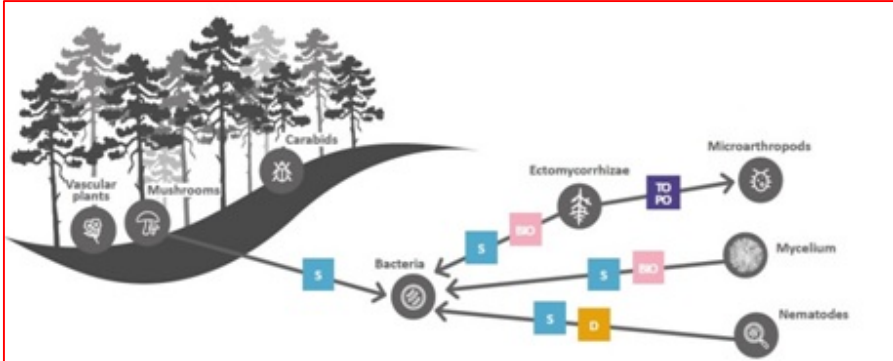
Dendrometric and structural aspects

15 m diameter



10 m diameter

Biodiversity aspects



Before and after silvicultural treatments

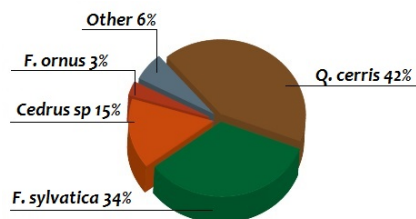
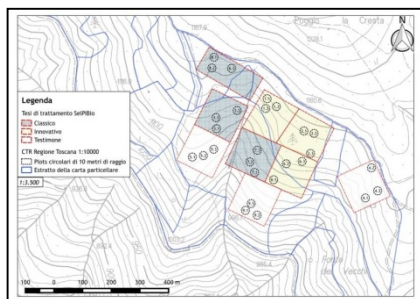
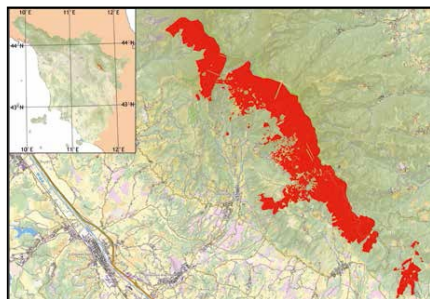


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Monitoring areas – General description

Pratomagno

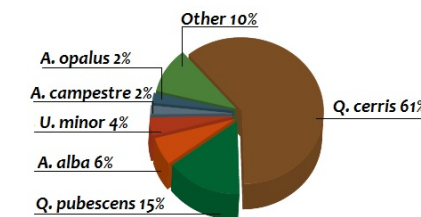
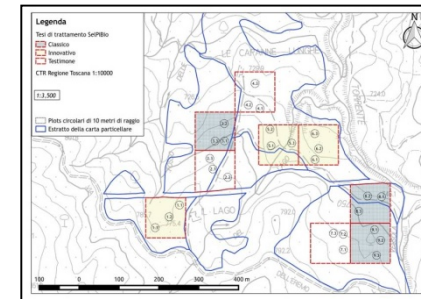
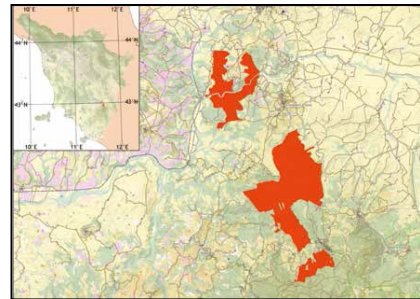


- Age: 59 yrs - Alt: 1.150 m a.s.l.

- Exp: SO - Slope: 40 %

Species	Tree density	DBH	Mean height	Basal Area	Standing Volume
	n ha ⁻¹	cm	M	m ² ha ⁻¹	m ³ ha ⁻¹
Pinus nigra	889	29,5	19,2	59,1	538,4
Other	188	20,5	15,5	9,5	
Total	1077	28,7	18,8	68,6	632,6

Amiata



- Age: 44 yrs - Alt: 780 m a.s.l.

- Exp: NE - Slope: 15 %

Species	Tree density	DBH	Mean height	Basal Area	Standing volume
	n ha ⁻¹	cm	m	m ² ha ⁻¹	m ³ ha ⁻¹
Pinus nigra	959	24,3	18,1	43,6	386,4
Other	91	16,7	12,8	1,2	
Total	1050	23,7	17,8	44,8	394,1

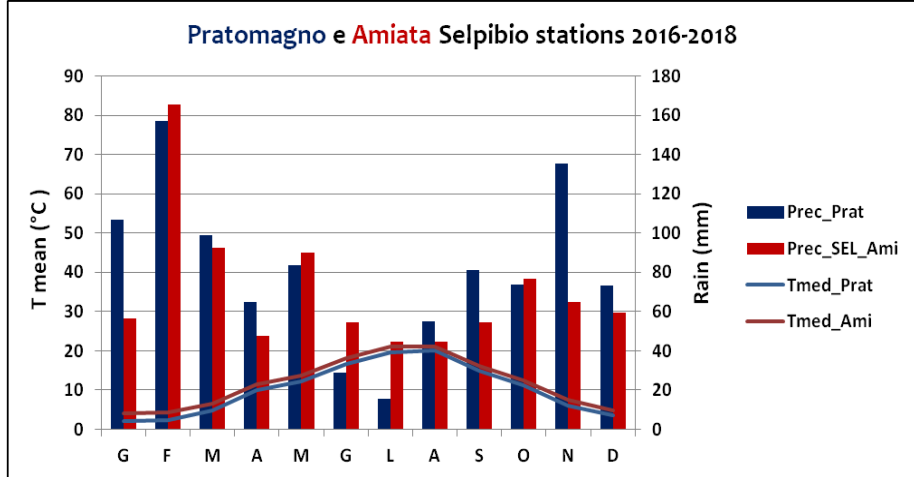
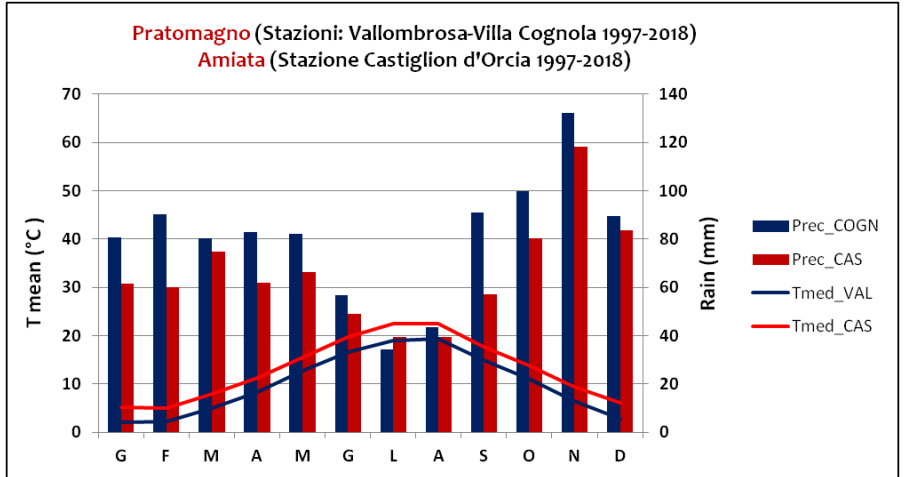


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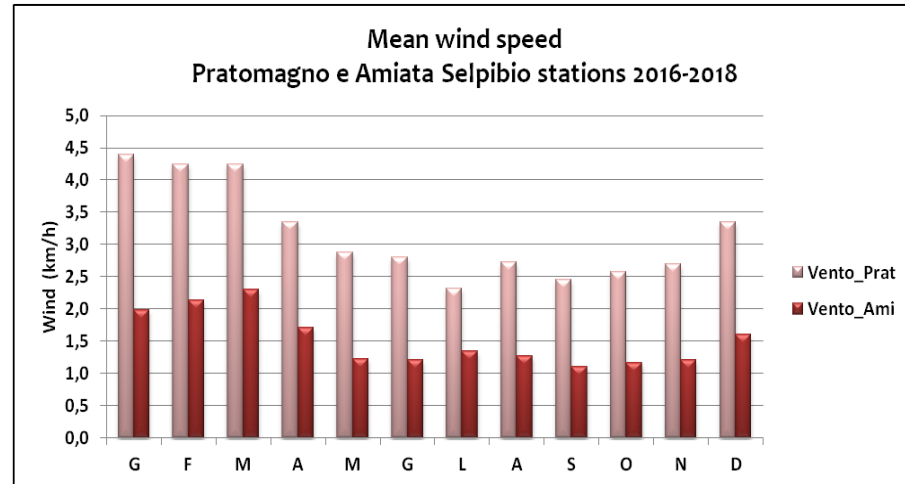
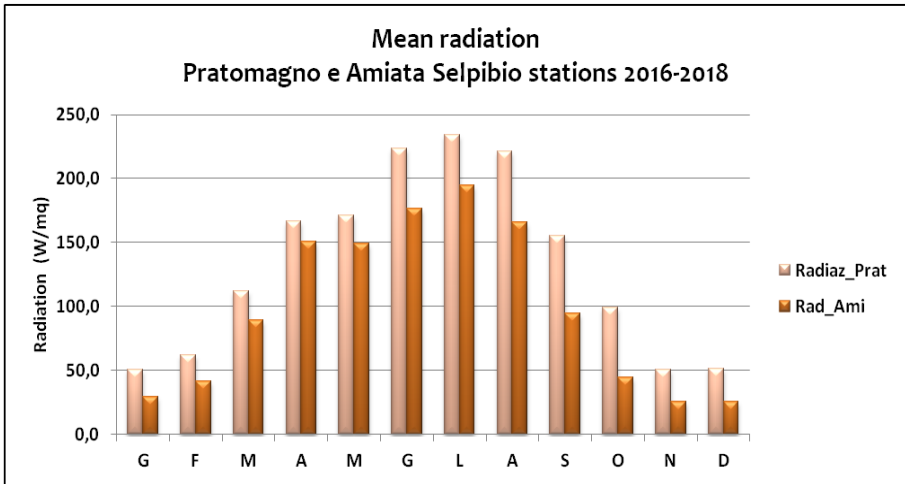
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Monitoring areas – Meteo climate characterization

Temperature and Precipitation



Radiation and Wind speed

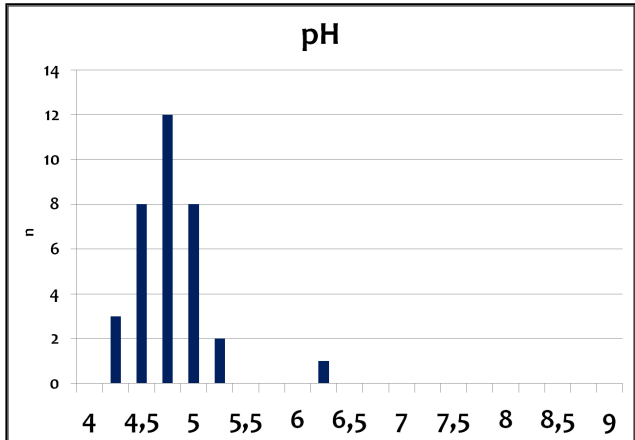
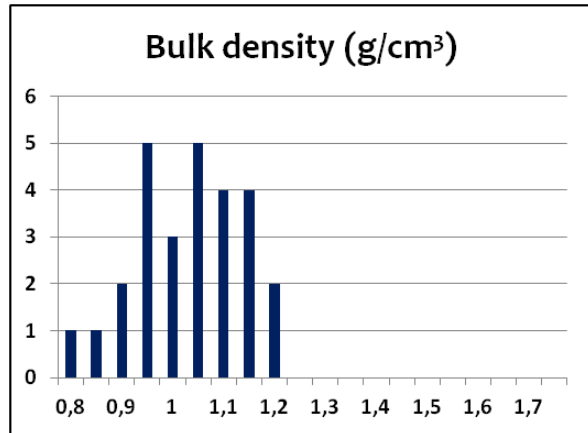
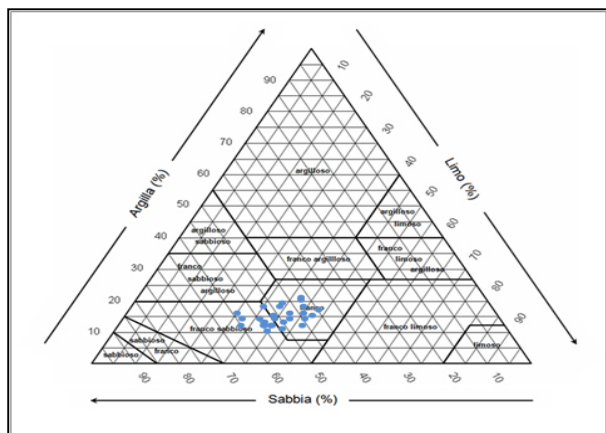


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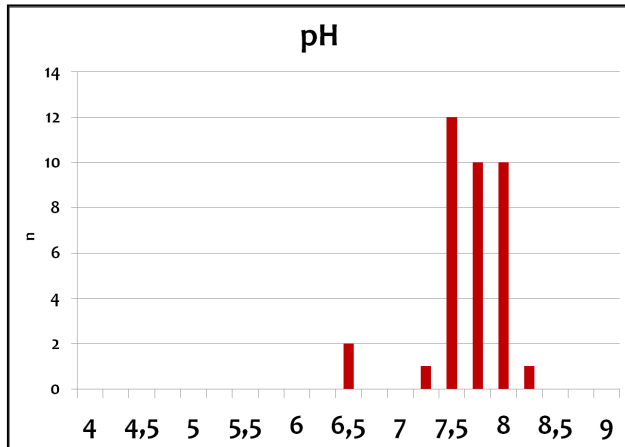
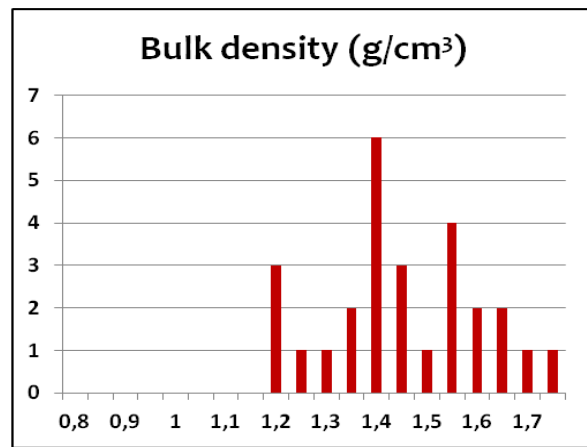
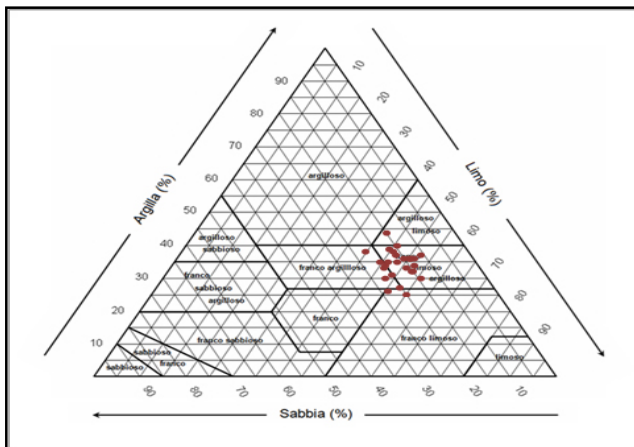
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Monitoring areas – Particle size, bulk density and pH

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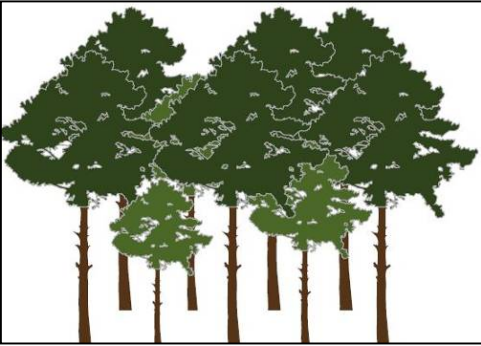
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Research hypotheses: 3 silvicultural treatments

control



No intervention is realized



traditional



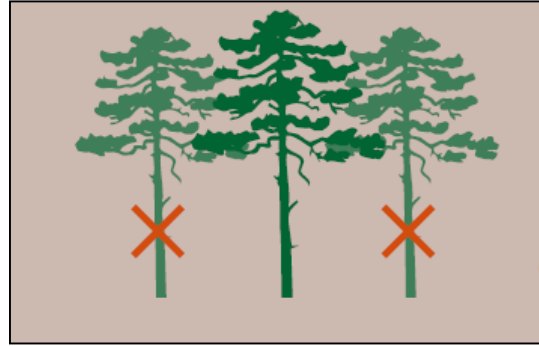
Dominated trees are removed. No significant effect on canopy cover.



selective



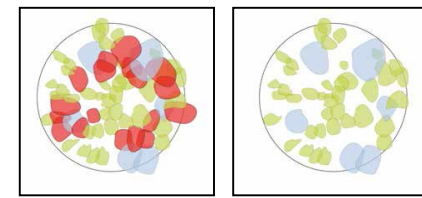
Selection of 100 "candidate" trees per hectare and removal of direct competitors.



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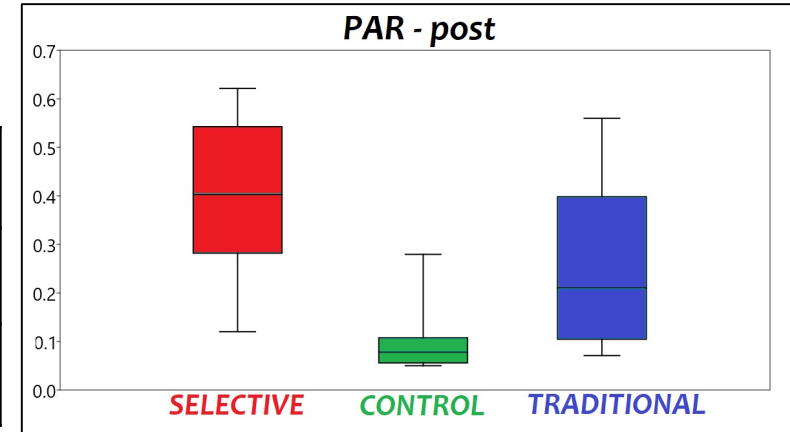
Selvicultural treatments vs Canopy cover



PAR (Photosynthetically Active Radiation)

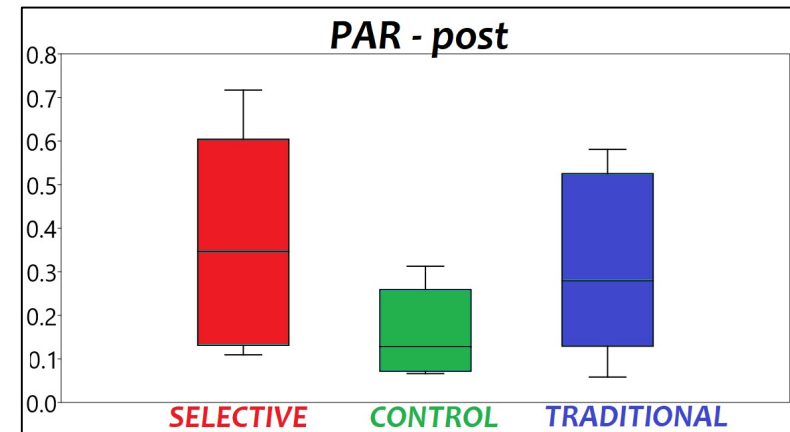
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	N ha ⁻¹	G ha ⁻¹	Vol ha ⁻¹	Crown vol ha ⁻¹	PAR
Traditional	- 36 %	- 23 %	- 19 %	- 12 %	+ 96%
Selective	- 31 %	- 29 %	- 30 %	- 21 %	+ 336%



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	N ha ⁻¹	G ha ⁻¹	Vol ha ⁻¹	Crown vol ha ⁻¹	PAR
Traditional	- 31 %	- 20 %	- 19 %	- 11 %	+ 85%
Selective	- 34 %	- 32 %	- 31 %	- 24 %	+ 222%

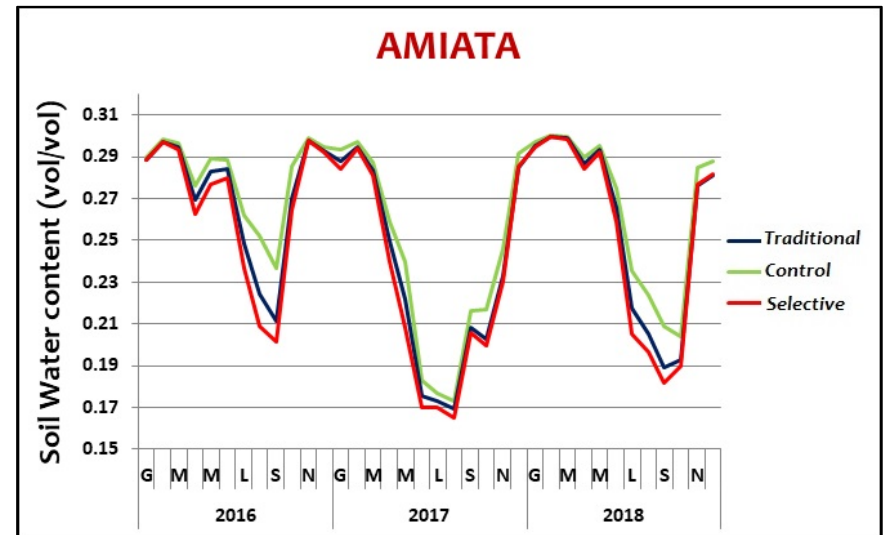
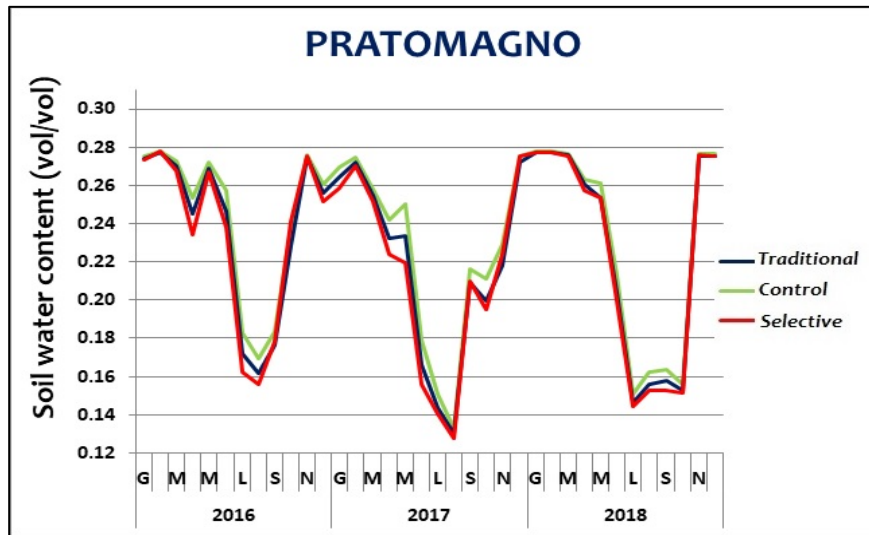


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Selvicultural treatments vs Pedoclimatic characterization

Soil water content

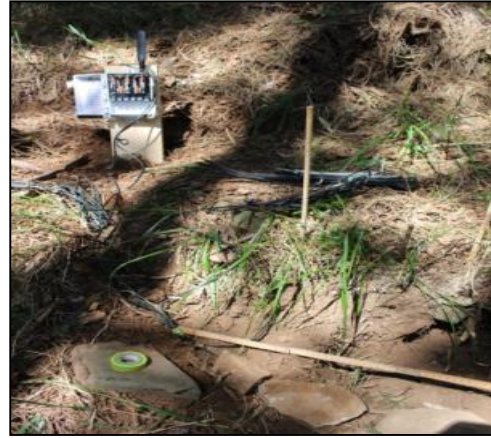


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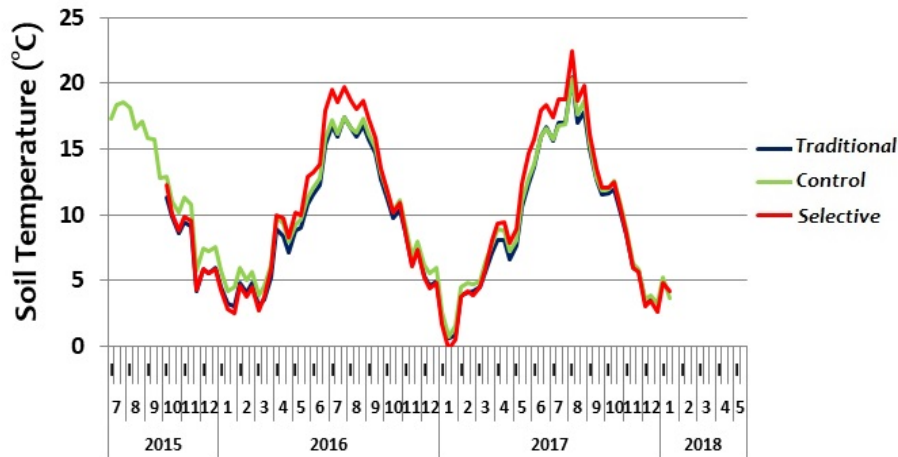
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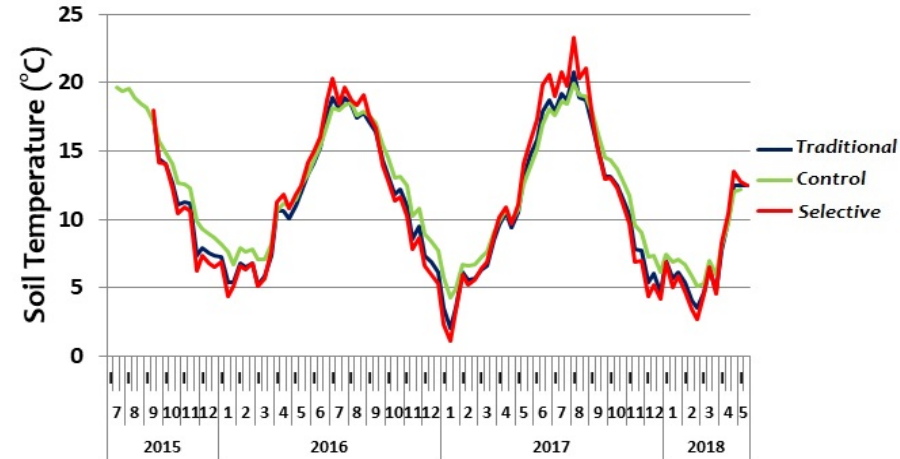
Soil temperature



PRATOMAGNO



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Messages...



- ✓ The two experimental sites have quite different dendrometric and pedoclimatic characteristics
- ✓ Silvicultural treatments affect forests climate parameters (radiation, temperature, rainfall, soil water content, etc.)
- ✓ **Effects on biodiversity levels**



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