The effect of harvesting on stump mortality and re-sprouting in aged oak coppice forests

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introduction

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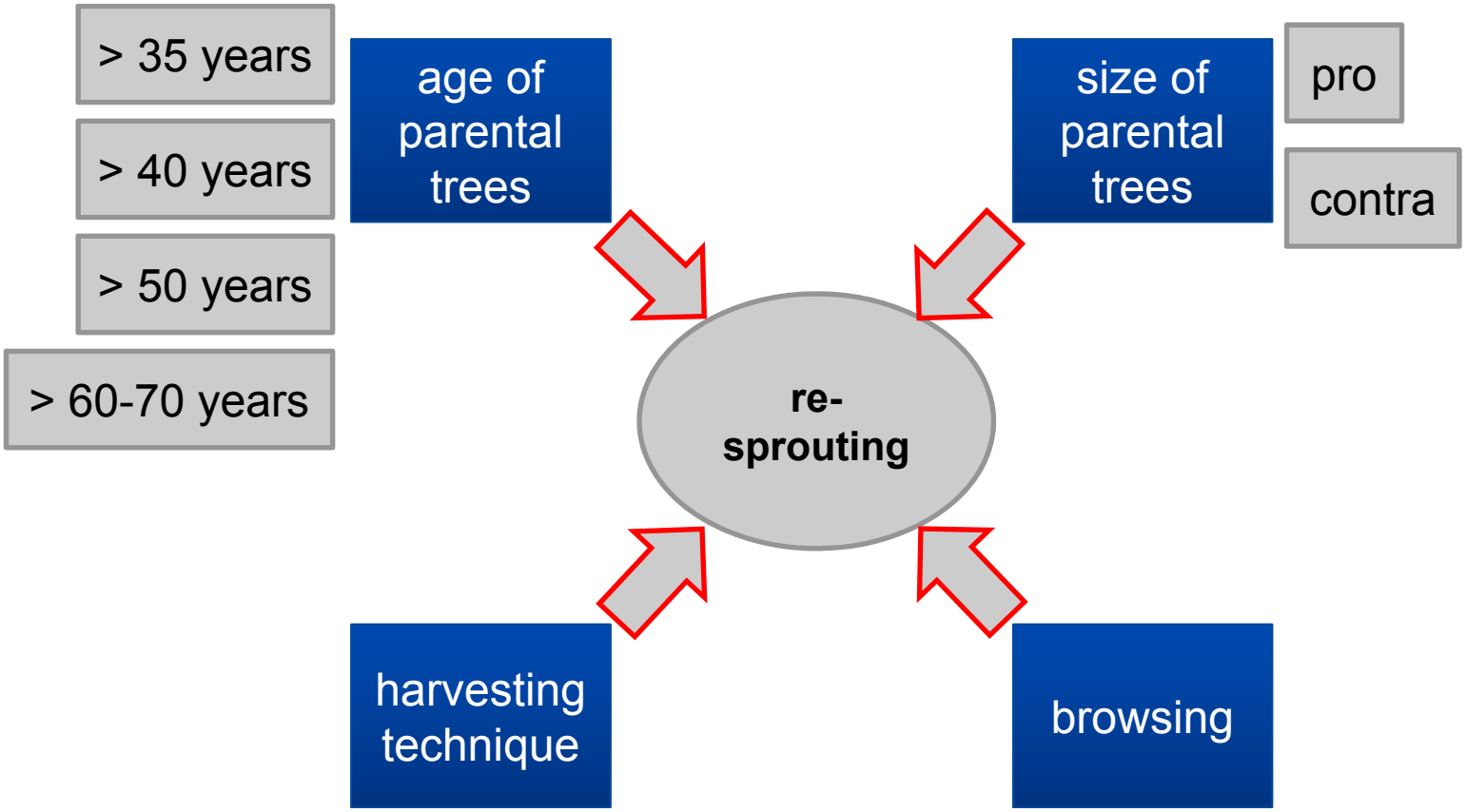
Why bother?

By re-activation of aged coppice forests:

- preserve historical landscape elements
- support biodiversity
- use of „unexploited“ timber resources

! sprouting ability ???

background


> 35 years
> 40 years
> 50 years
> 60-70 years
age of parental trees
size of parental trees
pro
contra
re-sprouting
harvesting technique
browsing

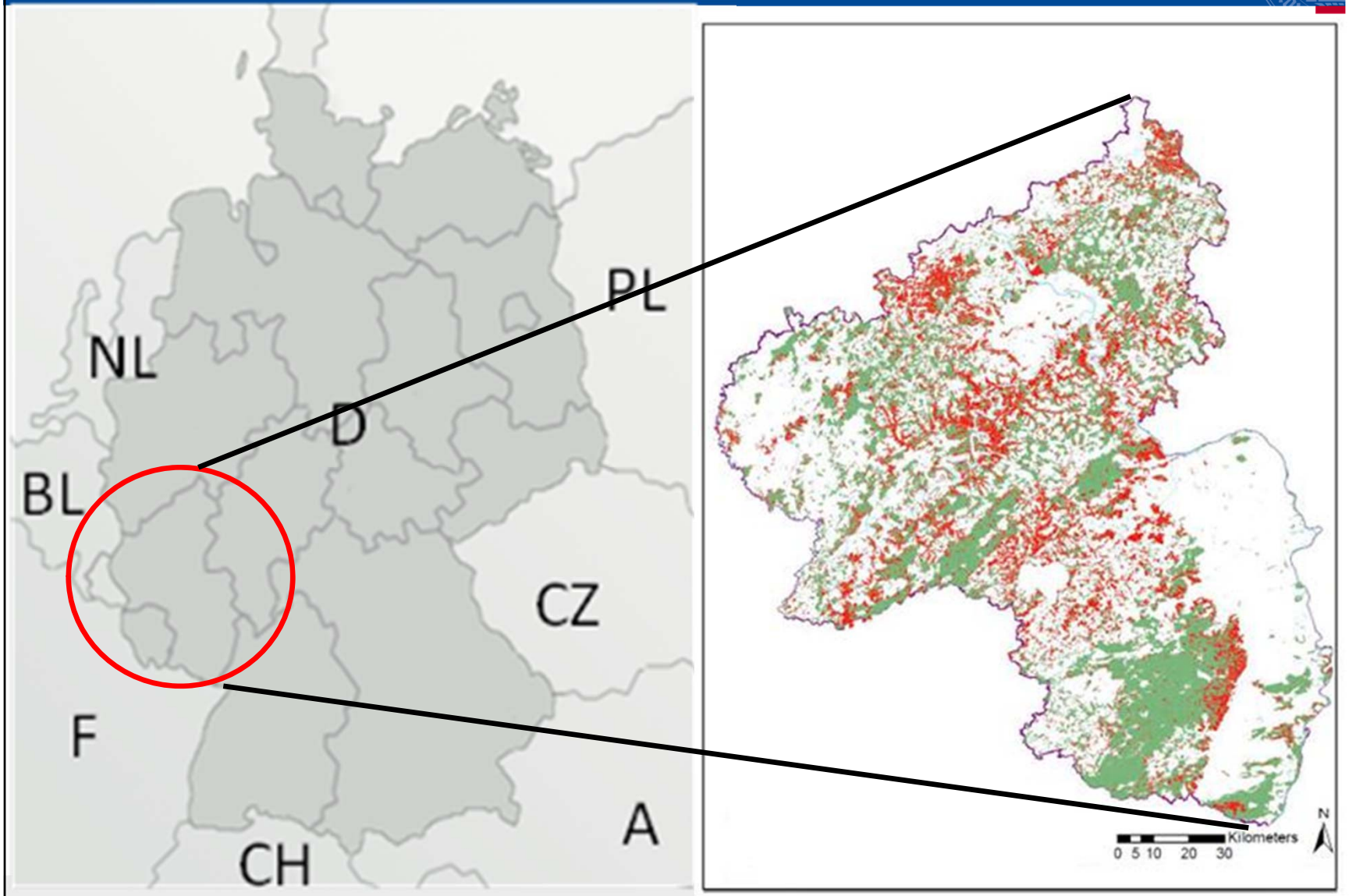
objectives and research questions

1) Do *Q. petraea* stumps in aged coppice forests develop enough sprouts to guarantee a subsequent crop?

2) Is the re-sprouting intensity of *Q. petraea* stumps depending on harvesting method and/or stool characteristics?

3) How strong is the influence of browsing on stump survival and sprout growth?

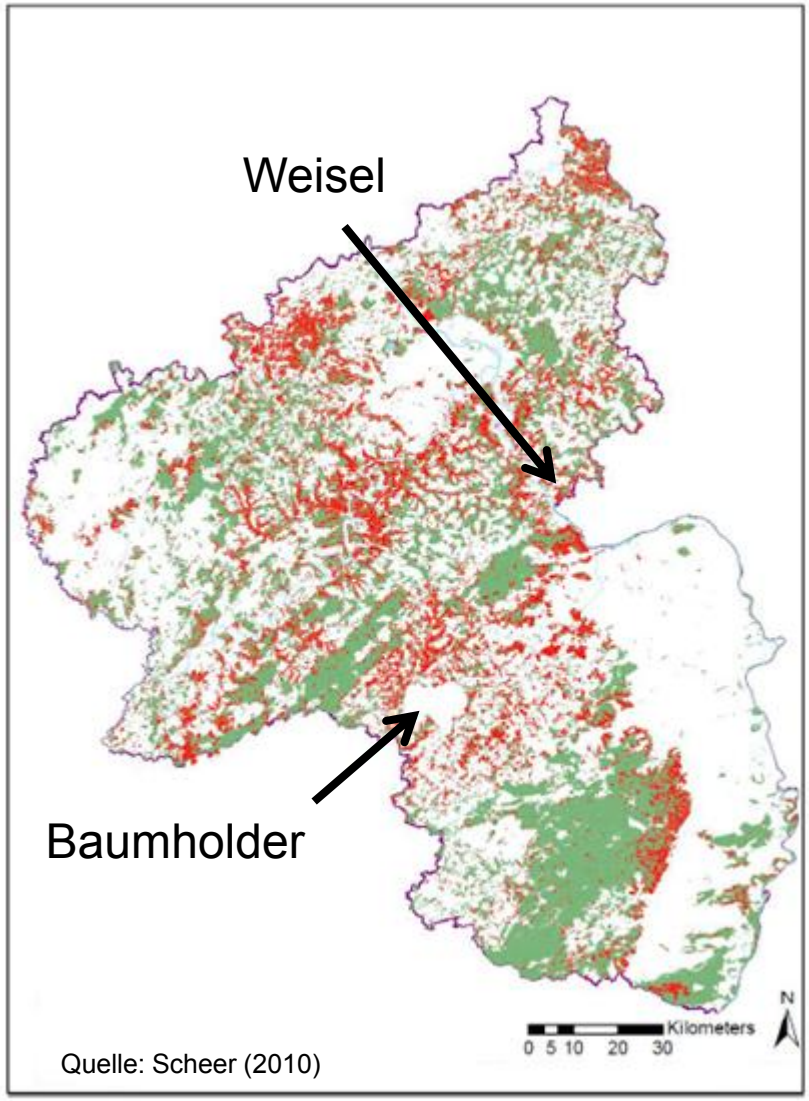
research area



research area

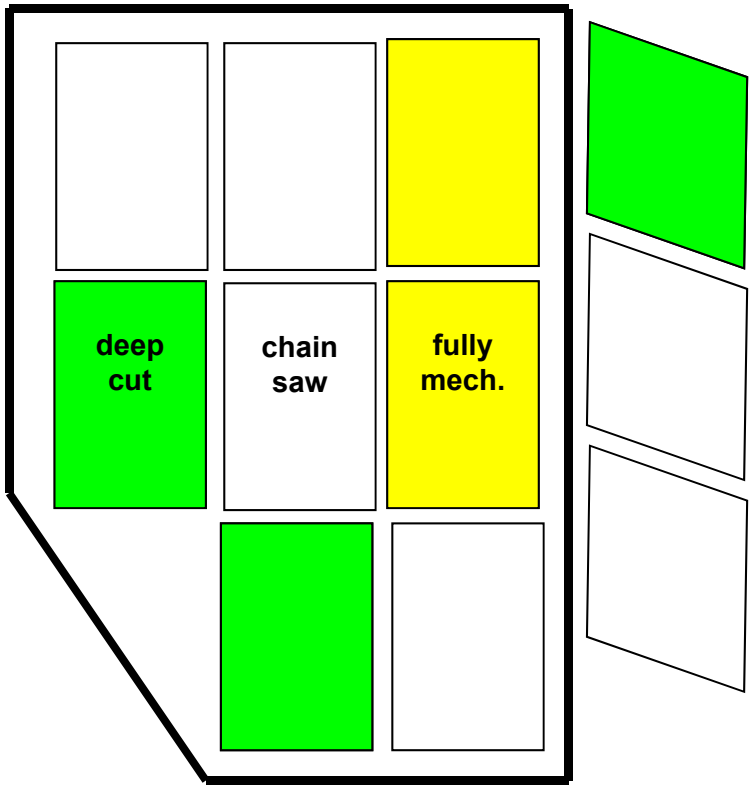
Selection criteria:

- former/aged oak coppice (*Quercus petraea*)
- stand age ≈ 90 years
- no silvicultural measures since last coppicing
- trafficability

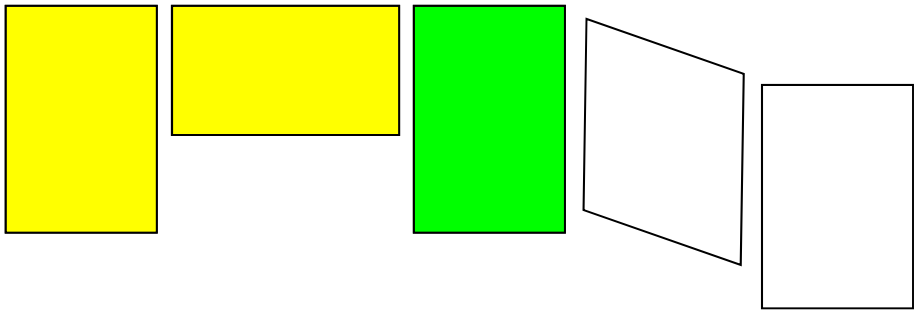


Quelle: Scheer (2010)

experimental design



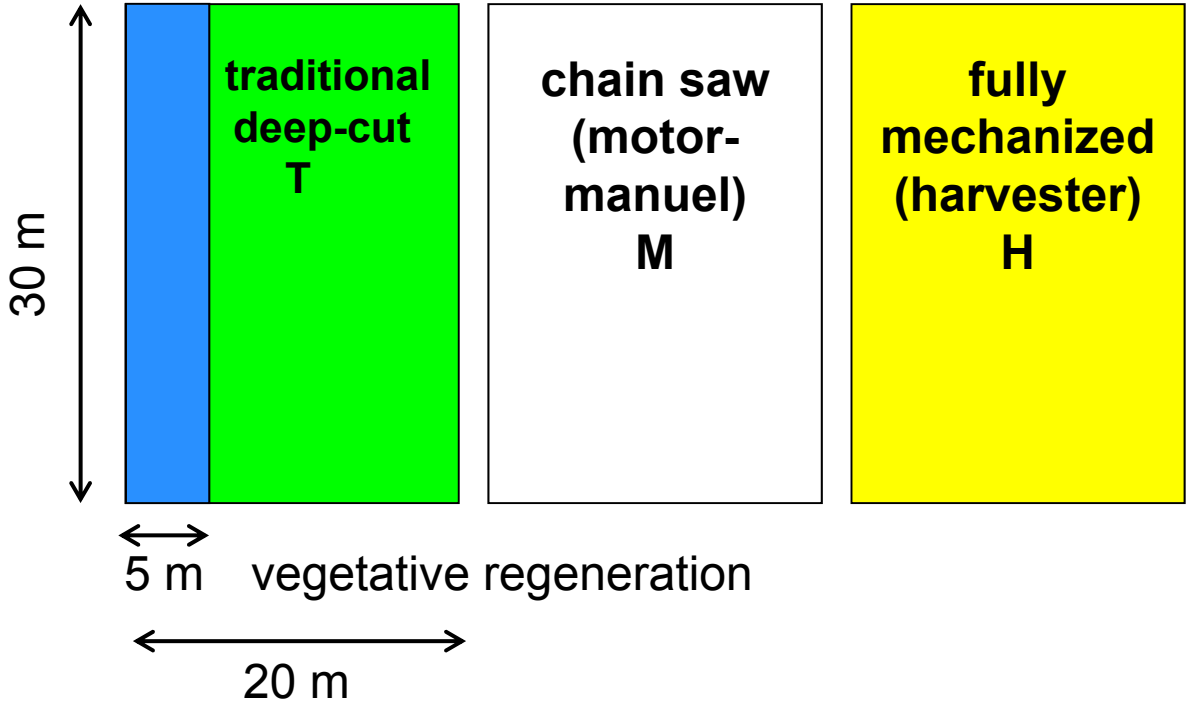
Baumholder Dist. 50



- 16 treatment plots á 600 m² (area= 0,96 ha, total area = 2,9 ha)
- inventory (N=1550, N∑=>5000)
- drawing harvesting method
- fencing

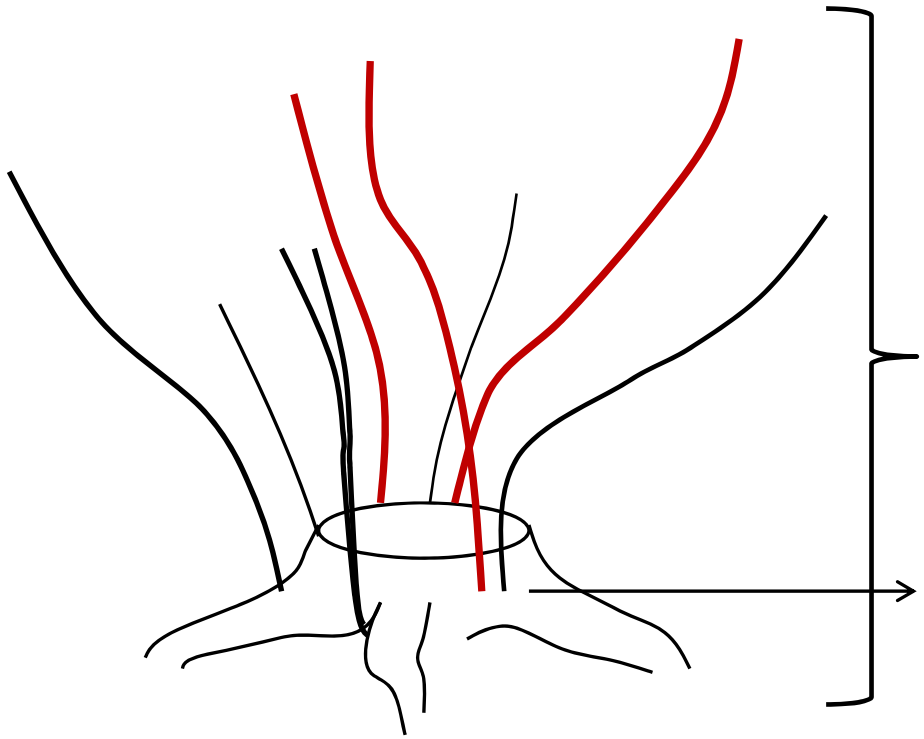
regenration

- measurments after two vegetaion periods



„traditional deep-cut“

resprouting

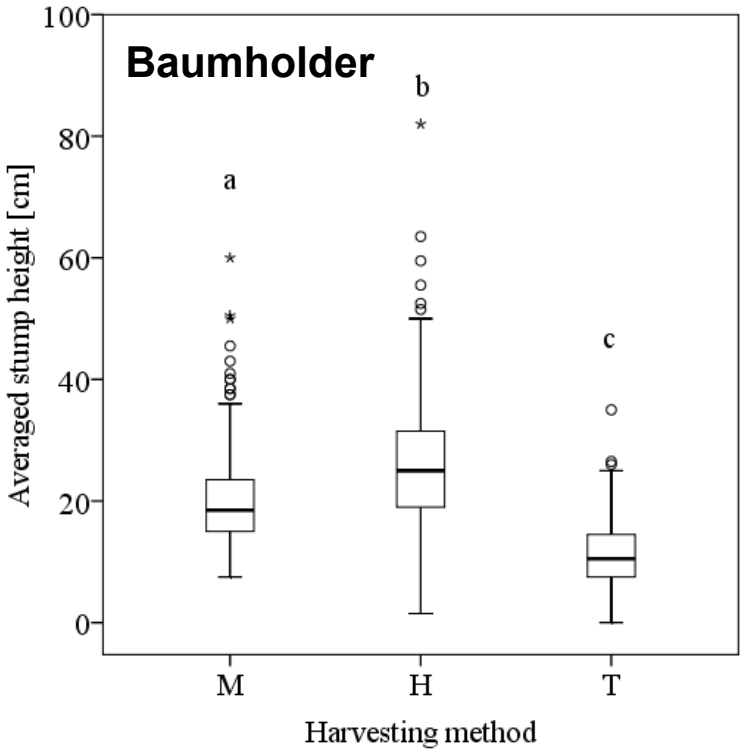


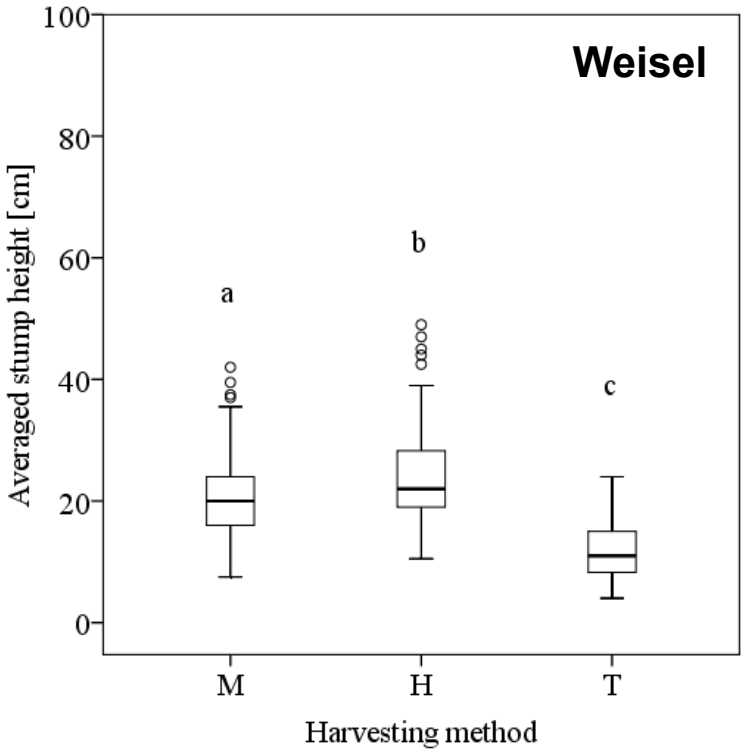
recording of in total
1200 stumps in
720 stools

- maximum sprout hight
- average hight of the three highest sprouts
- sump/stool mortality

vegetative regeneration

stump hight

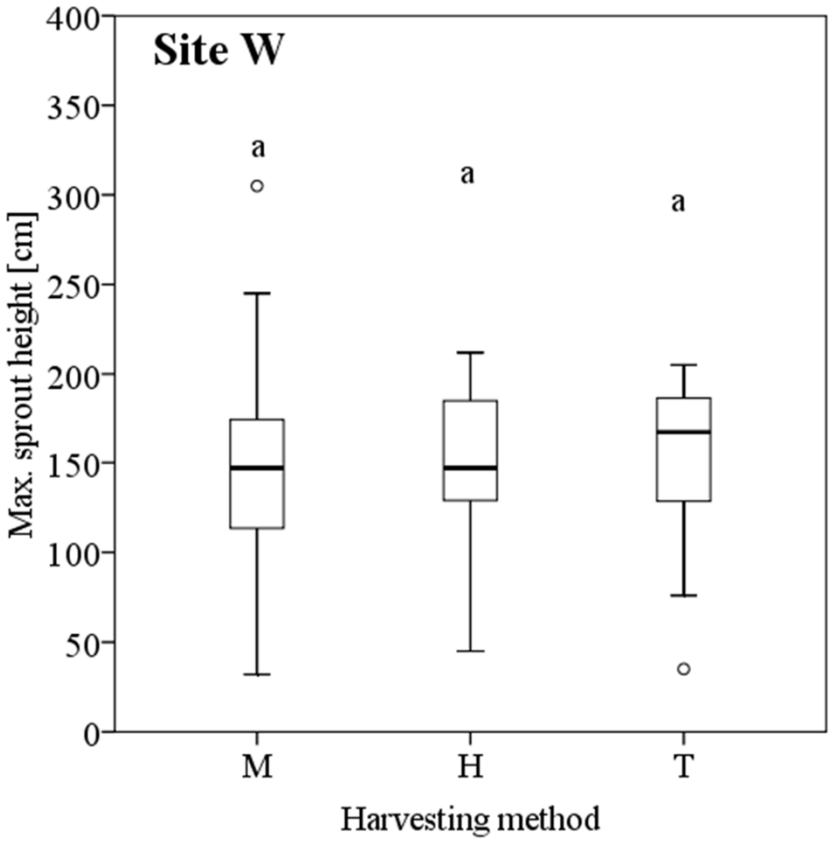


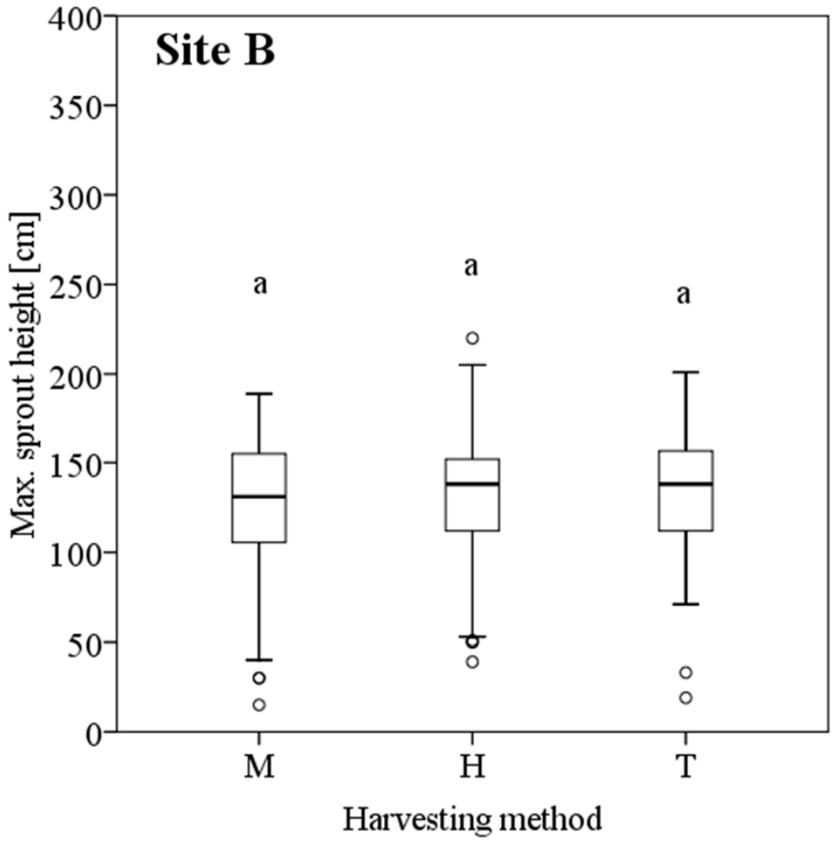


H = 26 cm
M = 20 cm
T = 12 cm

N = 1163

sprout growth (undisturbed)



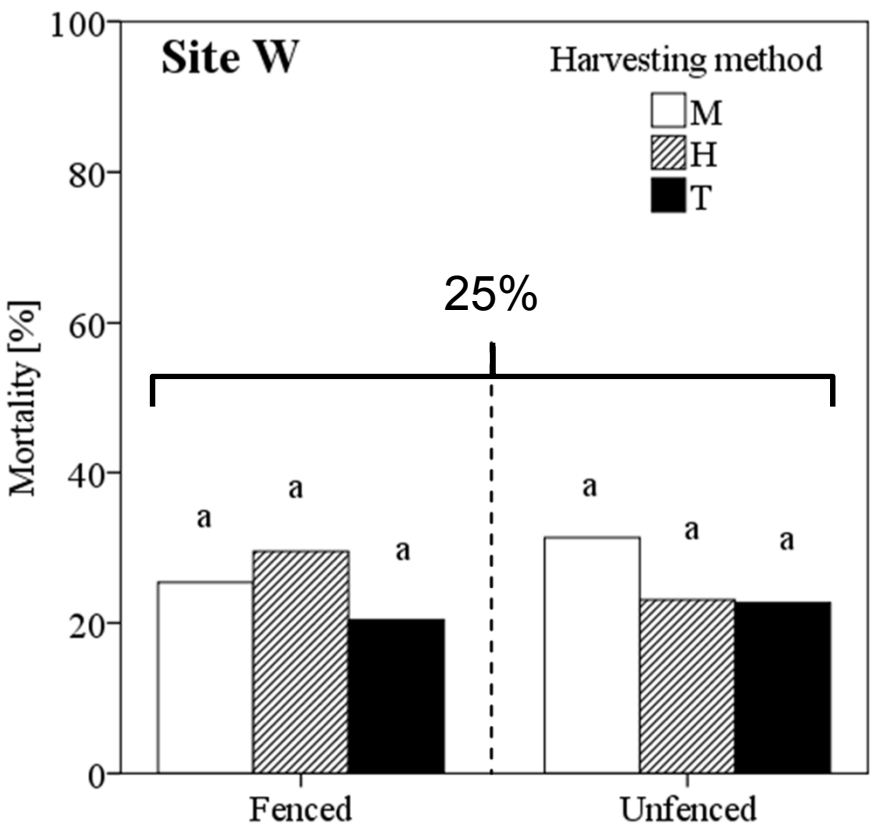


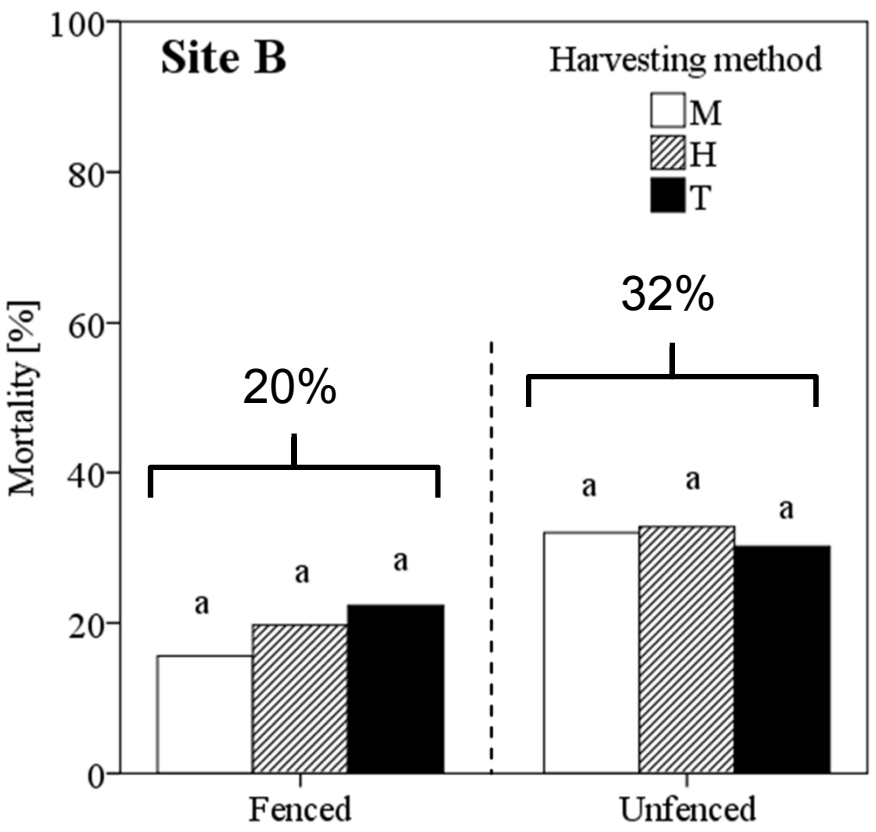
B = 118 cm
W = 135 cm

N=473

sprout growth

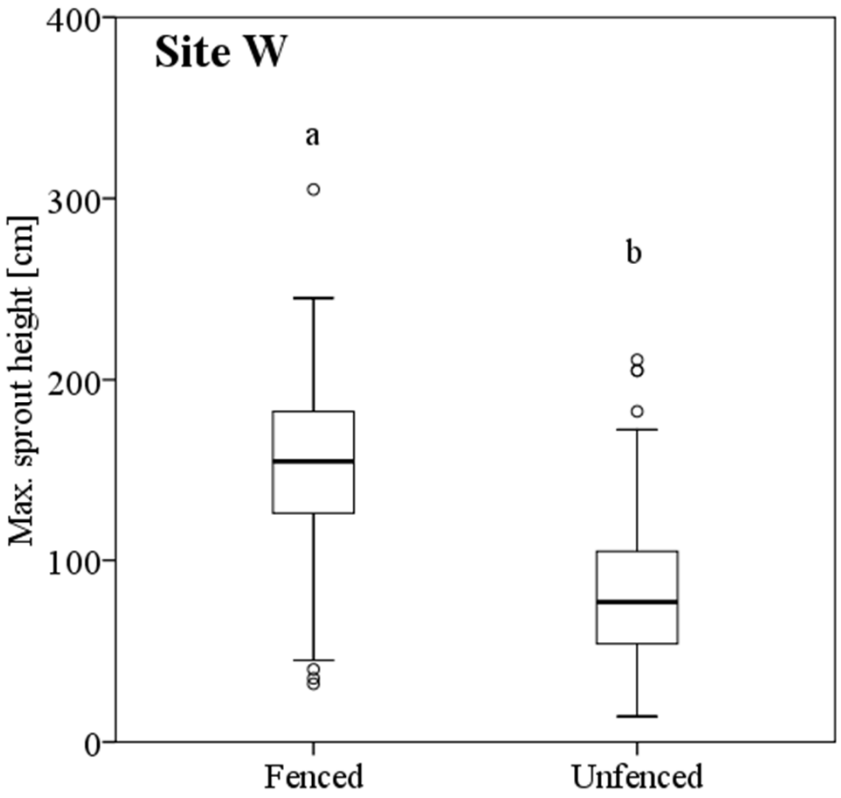
mortality

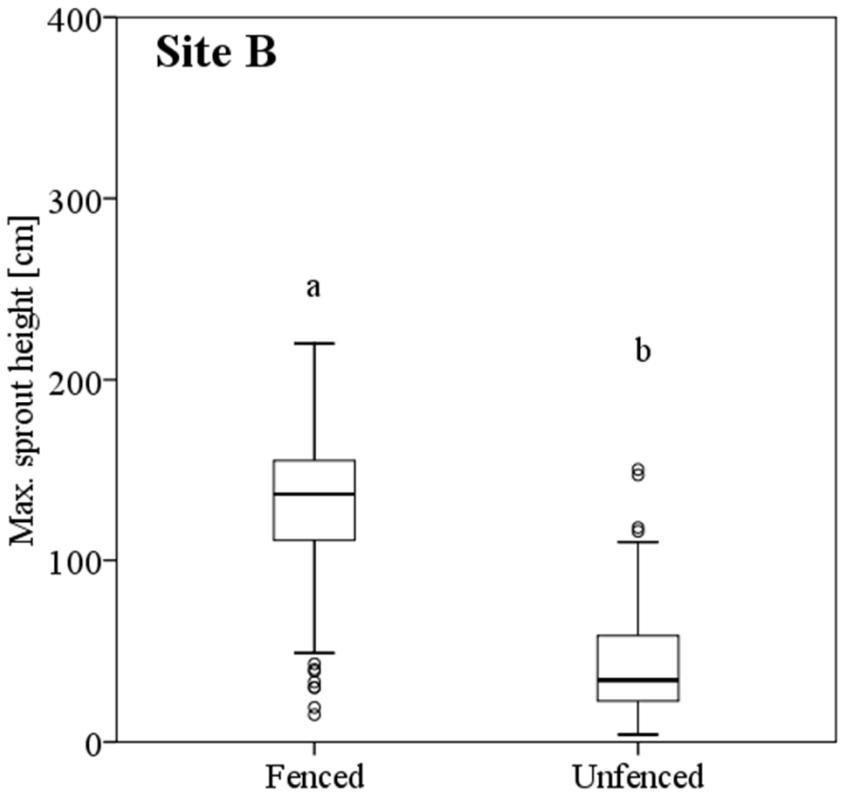




N	= 1215 stumps
mortality stumps	= 24%
mortality stools	= 15%

effect of browsing





N=861

Baumholder fenced = 130 cm (-70% outside fence)

Weisel fenced = 152 cm (-50% outside fence)

effect of browsing

Conclusions

- On average 16% of all *Q. petraea* stools died within two vegetation periods after coppicing. Stump mortality was higher in unfenced areas.
- Two vegetation periods after coppicing, numerous new stump sprouts were recorded. Growth of the new sprouts was mainly influenced by browsing.
- Our results indicate that the re-sprouting ability of 80-100 year old oak trees originating from former coppice management is still high and little influenced by harvesting methods.

Thank you for listening!

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This presentation was supported by:

Read the whole story:

Pyttel, P., Fischer, U., Suchomel, C., Gärtner, S., Bauhus, J. (2012): The effect of harvesting on stump mortality and re-sprouting in aged oak coppice forests. *Forest Ecology and Management*, 289, 18–27.