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A survey on rope-based ascending techniques and materials of professional arborists in Italy

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Urban forestry and green areas are increasingly important but require workforce and professionalism to manage trees.

Tree-climbing (rope-based access methods):

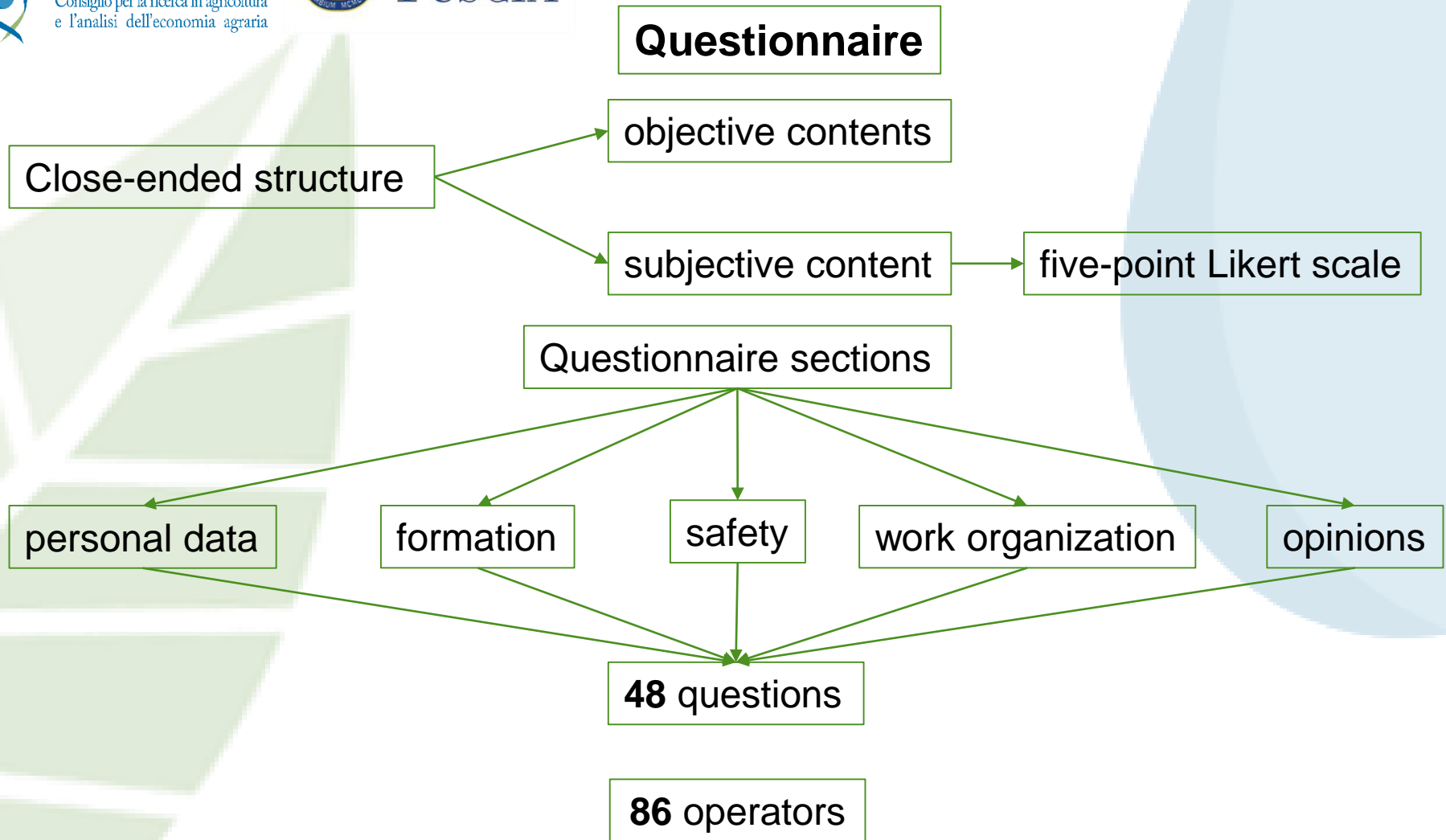
- pruning,
- felling of trees,
- cabling,
- phytosanitary inspections,
- others.

Advantages:

- targeted and selective interventions on tree branches,
- reaching internal portions of the canopy,
- accessing to trees located in confined areas where machinery cannot enter.



The scientific literature about the technical and economic evaluation of maintenance operation performed by tree-climbing appears rather poor.



In this paper we analyze technical information related to **26** answers

The participants

All males

Age: 62.8% were less than 40 years

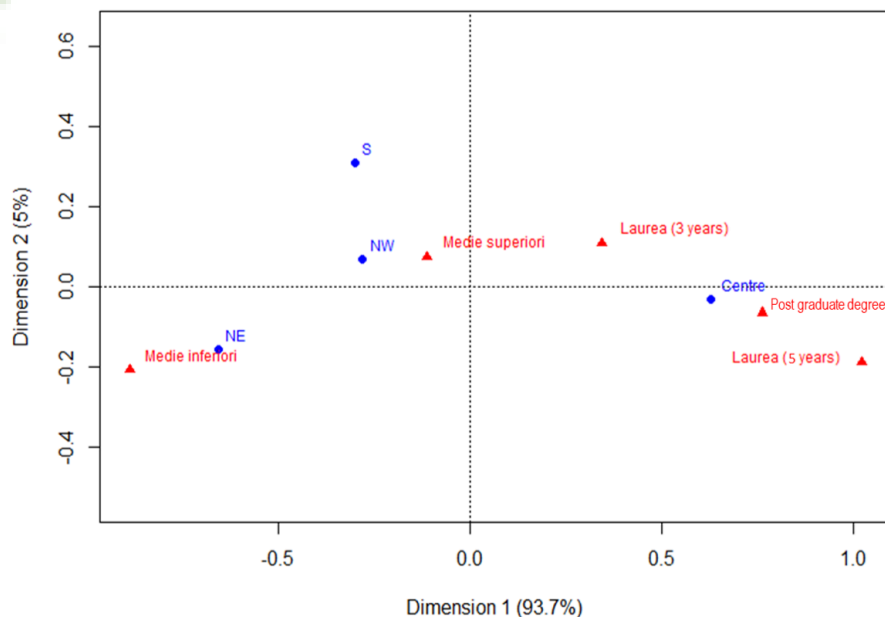
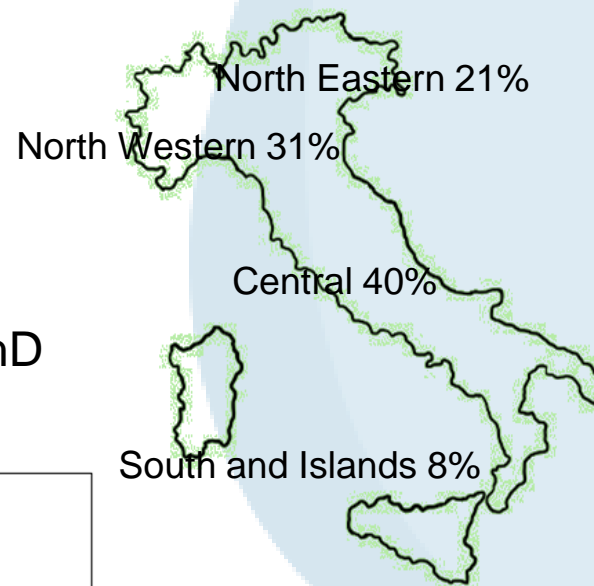
Level of education:

59% high school diploma,

17% Master degree or post graduate degree, i.e. PhD

The degree of education significantly differs (p-value = 0.01242 Pearson's Chi-squared test) according to area of work

Geographical work areas



Working positions

- were freelance (44%),
- company owners (34%),
- employee (17%),
- contractor (2%)
- member of cooperative (2%).

Professional training

Compulsory course: specific module on rope work on trees
Art.116 - annex XXI D.Lgs. 81/08.

8 out of 86 (9.3%) did not attend the course

The other courses

- basic courses for Health & safety Manager (Directive 89/391/EEC) (68.6%),
- mobile aerial platforms (64%),
- chainsaw (59.3%),
- first rescue (51.2%)
- anti-fire (39.5%),
- supervisor (36.0%),
- gardener (14.0%).

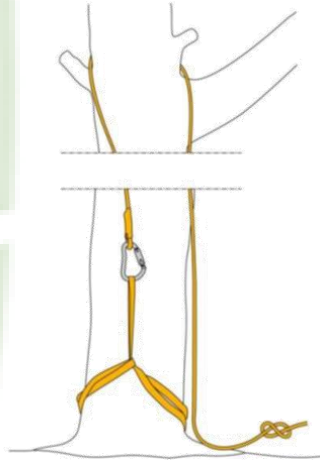
Other qualification courses

- other courses related to the profession (40.7%),
- voluntary certification courses (European Tree Worker - ETW) (32.6%).

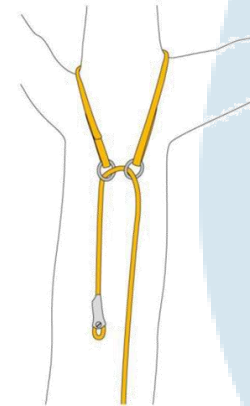


Techniques

Single Rope Technique (SRT) 70%



Doubled Rope Technique (DdRT) 17%



DdRT with handled rope clamp and prusik 8%



Climbing spike and adjustable lanyard 5%



Mechanical descenders or friction hitches



Mechanical descender

Zig zag 71.8%

Rig 30.8%

Friction hitches

Valdotain tresse 58.3%

Blake's hitch 45.8%



- The sector is characterized by a high level of operator education, training and a high degree of technological innovation both in terms of techniques and tools and equipment.
- We have compared the results with a previous survey carried out by Mazzocchi in 2017.
 - ❑ A reduction of self-employed workers was observed (44% versus 63%).
 - ❑ An increase in employers and employees (respectively 34% and 17% against 20% and 5%).
 - ❑ An increase in the use of mechanical descenders (ZigZag 71.8%) which in the past was around 31%.
 - ❑ A change was observed is the increase in the number of operators having got voluntary ETW certification, which increase from 27% to 32.6%.
 - ❑ An increase in the use SRT techniques is clearly preferred (70% versus 50%).

In the present study, technical and work conditions of professional arborists operating in tree care and maintenance were indagated by means of a survey carried out at national level.

The role of the professional arborist has gone beyond being only a pruner, as training and continuing specialization allow operators to provide tree management services from many domains.

However, further in-depth studies are desirable to improve productivity and safety of this type of emerging work dedicated to the correct management of urban green areas.

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