

WG3 Utilization and products



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Article Projects

- 📄 AP1 – Unconventional coppice (right of way, road banks, ditches, riparian etc.)
- 📄 AP2 – Mechanized chipharvesting methods for willow/poplar SRC in agricultural land
- 📄 AP3 – Comparing experiences with same species/products and properties of all coppice species – Quality of wood from coppice and high forest
- 📄 AP4 – Traditional products vs. chips in coppice harvesting
- 📄 AP5 – Database of traditional coppice harvesting productivity
- 📄 AP6 – Impact of chemical soil conditions on SRC biomass fuel properties
- 📄 AP7 – Safety and ergonomics in coppice harvesting
- 📄 AP8 – Database of short rotation Eucalyptus coppice harvesting productivity
- 📄 AP9 – Database of traditional short rotation Eucalyptus coppice conversions to non-coppice regeneration strategies

STSM

- 📄 Harvesting of hardwoods with new machines
- 📄 Knowledge Transfer in the Chestnut Coppice Industry – A Comparison of the Situation in Southeast England with Regions in Italy
- 📄 Human factors in small scale forestry, the ergonomic advantage of using a new equipment for winching



Mechanized coppice harvesting with new small-scale fellers and feller-bunchers

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Abstract: A further mechanization of coppice felling operations is desirable: Manual felling is rather expensive (low productivity/high costs) Most of the total activities occur during manual felling operations.

Problem: difficult harvesting conditions
 - hardwoods, high tree densities
 - dense grass in coppice
 - stems are small, density & other aspects
 - the terrain is generally rough
 - there is not fully mechanized solution yet

Material

4 studies have been carried out, each representing a specific type of traditional coppice forest (CP):

1. traditional CP (Spirito's study)
2. temporary CP (Spirito)
3. over dense conventional coppice (Becker)
4. open (after strip coppice) (Schwarz)

3. single stem short rotation forestry (SFR) (SFR)

The three machines on the left represented three different cutting mechanisms, from pictures on the left. Thorough testing these different feller-bunchers under representative work conditions, as offered by commercial logging operations.

Results

Tool	Type	Methodology	Operator	Productivity	Workload	Cost
Tree-feller	h	1	2	3	4	5
Tree-feller	h	0.8	0.8	1.8	2.0	2.1
Tree-feller	h	0.18	0.20	0.16	0.16	0.16
Feller-buncher	h	388	87	133	137	112
Feller-buncher	h	36	1.6	7	12	28
Specialist feller	h	0.5	0.8	34.4	2.3	1.8
Feller-buncher	h	100	101	1009	389	112
Productivity	dry 100%	0.1	0.7	0.3	0.8	0.3
Cost	€/ha	60.70	70.61	60.10	67.00	67.00

Productivity varied between 2.1-10.7 dry t 2000³ in the more conventional coppice stands (studies 1-3). It increased with study sites in all cases (grade 1st study 4 & 5).

Results are comparable with the requirements of commercial mechanized logging, which is usually performed under favorable conditions.

Maximum benefits of the total activities occur during manual felling and piling, which were the most productive activities.

Small share of delays (average < 20%).

Cost quality:

- Less than 20% stem and great quality cuts.
- Slight breaks produced poor cuts, which were too high above the ground and often generated narrow limbs of damage.
- One tree produced only few cuts & lower levels of damage.

FF coppice regeneration is confirmed to be not affected by cut quality. Stem mechanization could be introduced much faster, to the benefit of a much improved work safety.

Next year

M6: Factsheet on the utilization and future products

1. Compiling typical traditional coppice forest products, assessing their actual market share and market potential for the future;
2. Developing ideas and concepts for possible “new” products in the frame work of a bio-economy, green economy;
3. Developing concepts to assess the sustainable growth in yield potential using advanced remote sensing technologies for inventory

