REPUBLIC OF MACEDONIA

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- Total area of coppice forests: **565,047 ha**, of which:

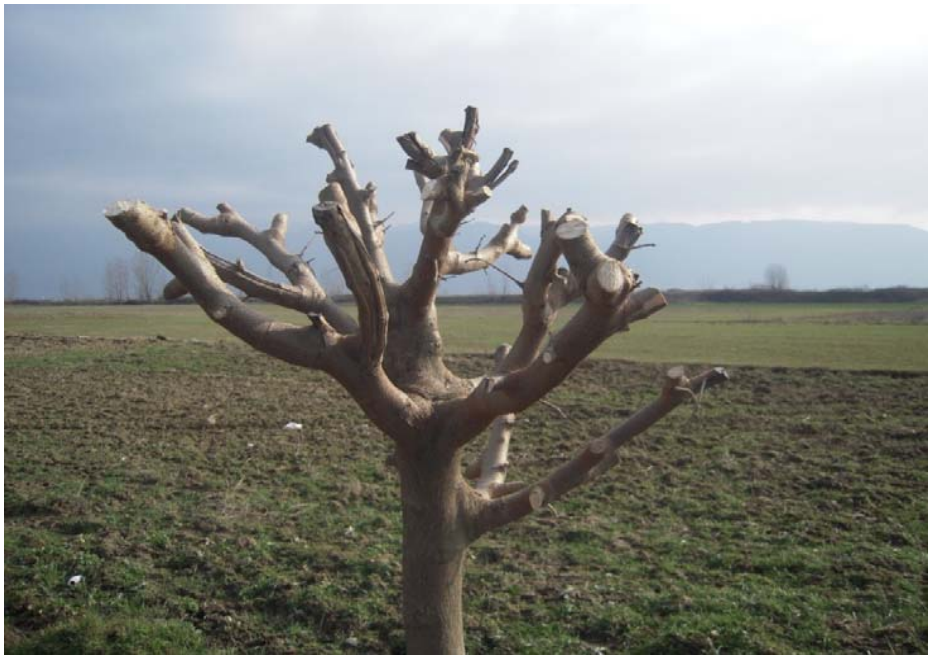
a. Low coppice: 562,622 ha

b. Coppice-with-standards: 2,425 ha

High coppice (pollarding)

- Special form: for mulberry tree (*Morus alba*) with leaves used in the past for silkworm feeding. Mulberry plantations were established on low productive agricultural areas and sprouts were cut each year.

- Today this system is used only in small areas (maximum 1/2 ha) or rows of trees in the fields of agricultural estates. They are used for the production of firewood, with rotation up to 15 years or growing 1-year sticks used mainly in agriculture for producing seedlings (e.g., tobacco, peppers, etc.)



Young mulberry tree used
for the production of sticks
(right: same tree in summer)

Tree row of mulberry along the borderline of an agricultural plot.
Sprouts are cut each year

Mulberry plantation used for firewood production

Black poplar (*Populus nigra*) pollarded for wood production

Coppice with standards, mixed black pine – pubescent oak stands. Black pine is established artificially

Tree species used in coppices

- Main tree species: Balkan beech (*Fagus moesiaca*) and several oak species (e.g., *Quercus petraea* sessile oak, *Q. frainetto* Hungarian oak, *Q. cerris* Turkey oak, *Q. trojana* Macedonian oak, *Q. pubescens* pubescent oak, and *Q. coccifera* Kermes oak).

- Accompanying tree species: European hornbeam (*Carpinus betulus*), oriental hornbeam (*Carpinus orientalis*), hop hornbeam (*Ostrya carpinifolia*), maples (field maple *Acer campestre*, Montpellier maple *Acer monspessulanum*, Bosnian maple *Acer obtusatum*, etc.), manna ash (*Fraxinus ornus*), trembling aspen (*Populus tremula*), etc.

Resprouting of a Balkan beech tree at 70-75 years of age
(Bistra mountain)

Old Balkan beech trees have no ability to resprout
(Bistra mountain)

Rotation of coppice forests

- Oaks (*Quercus pubescens, Quercus cerris, Quercus frainetto, Quercus, petraea)*: 50 years

- Balkan beech (*Fagus moesiaca*): 50 years

- Oriental hornbeam (*Carpinus orientalis*): 50 years

- European hornbeam (*Carpinus betulus*): 50 years

- Hop hornbeam (*Ostrya carpinifolia*): 50 years

- Black locust (Robinia pseudacacia): 30 years

- Soft broadleaves (*Populus* sp., *Salix* sp., *Alnus* sp.): 20 years

Growth and yield of coppice forests

- NO growth tables for coppice forests in the country so forest management plans = the only source of info. According to these documents, growing stock:
- oak coppice forests: 46 cu.m/ha
- beech coppice forests: 109 cu.m/ha

Research data on growth and yield of some coppice forests (from * = Ivanov 1970; ** = Trajkov et al. 2001)

	Source	Species	Age	N, trees/ha	Mean D, cm	Mean H, m	Growing stock, cu.m/ha	Current volume growth, cu.m/ha/yr
1.	*	*Q. frainetto*	23	2000	9.3	10.0	**76**	**3.4**
2.	*	*Q. frainetto*	15	9300	5.3	7.6	**91**	**6.3**
3.	*	*Q. frainetto*	14	7300	4.4	6.1	**40**	**3.2**
4.	*	*Q. frainetto*	29	3800	7.4	7.3	**83**	**4.3**
5.	*	*Q. petraea*	37	9000	7.2	10.4	**218**	**5.6**
6.	*	*Q. petraea*	48	950	13.7	11.4	**112**	**2.8**
7.	*	*Q. petraea*	32	1290	14.3	13.7	**132**	**3.5**
8.	*	*Fagus moesiaca*	80	950	22.7	21.2	**411**	**6.1**
9.	*	*Fagus moesiaca*	53	824	18	15.7	**146**	**5.4**
10.	**	*Q. petraea*	45	1690	13.7	15.3	**213**	**6.2**
11.	**	*Q. petraea*	50	920	18.6	15.6	**211**	**5.2**
12.	**	*Q. petraea*	50	1600	13.9	14.3	**178**	**4.9**
13.	**	*Q. petraea*	45	980	15.0	12.6	**121**	**4.7**
14.	**	*Q. petraea*	50	1130	16.0	14.4	**177**	**5.7**
15.	**	*Q. petraea*	45	1070	16.0	14.7	**173**	**5.2**