

CONTRIBUTION TO THE KNOWLEDGE OF THE PROPAGATION TECHNOLOGY OF THE *CRYPTOMERIA* *JAPONICA* DON. SPECIES

CONTRIBUȚII LA CUNOAȘTEREA TEHNOLOGIEI DE ÎNMULȚIRE A SPECIEI *CRYPTOMERIA JAPONICA* DON.

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Abstract. *In this paper there are presented the results regarding the propagation technology for the species *Cryptomeria japonica*, which is a species with rapide development and everly green. The study has been made on a three years period, in three vegetation period during the year (March, August, October) and has been focused on establishing the optimal period for regeneration of *Cryptomeria japonica* plants.*

Rezumat. *În această lucrare sunt prezentate rezultatele cu privire la tehnologia de înmulțire a speciei *Cryptomeria japonica*, care este una dintre speciile cu o dezvoltare rapidă și permanent verde. Studiul s-a desfășurat pe o perioadă de trei ani, în trei perioade de vegetatie din timpul anului (Martie, August, Octombrie) și s-a axat pe stabilirea perioadei optime de regenerare a plantelor de *Cryptomeria japonica*.*

The denomination of the species *Cryptomeria japonica* Don. come from the greek language krypto = hidden, meros = which refere to the hidden part of the flower. Is originary from the southern east of China, south of Japan and has been introduce in Europe in 1842. *Cryptomeria japonica* Don. species have a rapide development and everly green which can reach up to 70 m.

MATERIALS AND METHODS

The research has been made during 2003 – 2005, for establishing the optimal period for regeneration, in order to obtain new plants of *Cryptomeria japonica*. There has been choosen 3 vegetation period: March (before the begining of the vegetation), August (during the vegetation) and October (before the begining of the vegetative repose). There has been made both apical and basal shoots of the studied species. There has been collected basal and apical shoots with a length ranged between 15-20 cm, 15 copse from each type of shoot and there has been used 5 rooting substrated. All the research has been made in the climatic conditions of the Botanical Garden „Al. Buia” of the University of Craiova.

RESULTS AND DISCUSSIONS

During the first year of the study, during the first rooting period (March), the best results for the apical shoots of *Cryptomeria japonica* has been obtained on the rooting substrate made from sand and peat with a percentage of 66,6% (table 1), the lowest values has been recorded for the rooting substrates made from peat and perlite, peat and sand (table 1).

In the second period (August) the best results has been obtained on the rooting substrate made from sand and perlite with a percentage of 46,6% (table 1), and the lowest values has been recorded for the rooting sbstrate made from peat and sand with a percentage of 33% (table 1).

In the third period (October) the best results has been obtained on the rooting substrate made from sand and perlite with a percentage of 60% (table 1), and the lowest values has been recorded for the rooting sbstrate made from peat and sand with a percentage of 40% (table 1, fig. 1).

The basal shoots of *Cryptomeria japonica* has been given the best results during march on the rooting substrate made from sand + perlite, followed by October with 66,6% on the same rooting substrate and 60% on the rooting substrate made from perlite + sand (table 2, fig.2).

Table 1

The rooting percentage for apical shoots of *Cryptomeria japonica* (%) - 2003

Period	Rooting substrate				
	Peat	Perlite	Sand	Sand+Perlite 1:1	Perlite+Peat 1:1
March	46,6	60	46,6	66,6	46,6
August	33,3	40	33,3	46,6	40
October	40	53,3	46,6	60	46,6

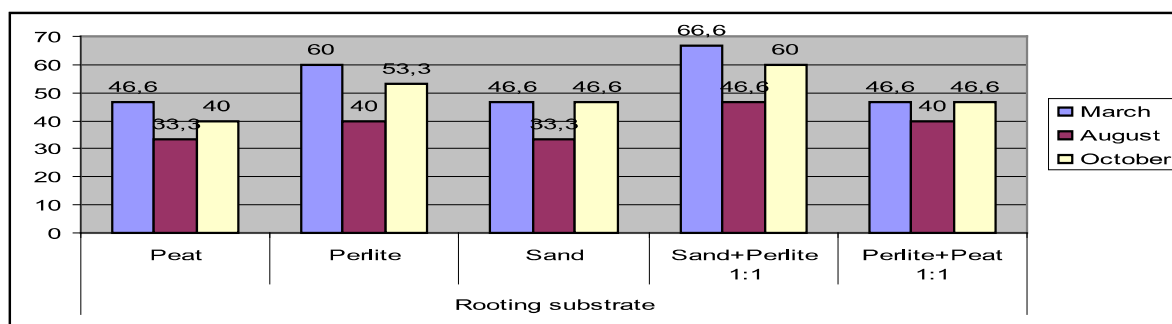


Fig. 1. The rooting percentage for apical shoots of *C. japonica* (%) – 2003

Table 2

The rooting percentage for basal shoots of *Cryptomeria japonica* (%) - 2003

Period	Rooting substrate				
	Peat	Perlite	Sand	Sand+Perlite 1:1	Perlite+Peat 1:1
March	46,6	53,3	60	73,3	60
August	40	46,6	33,3	53,3	40
October	53,3	60	60	66,6	53,3

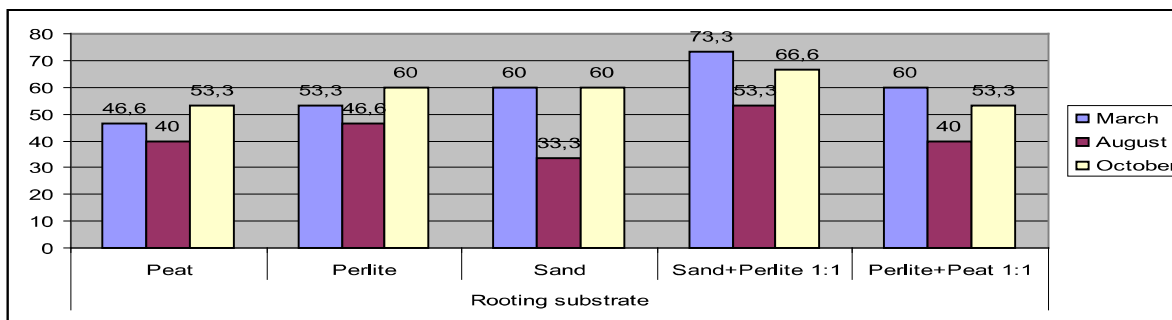


Fig. 2. The rooting percentage for basal shoots of *C. japonica* (%) - 2003

On the second year of the study there has been obtained the following results:

- At the apical shoots made in March the best results has been obtained on the rooting substrate made from sand + perlite 1:1 on which has rooted 60% from the shoots, followed by the rooting substrate made from perlite + peat 1: 1 with 53,3% and only 40% for the rooting substrate made only from peat and perlite (table 3, fig.3).

Regarding the basal shoots of *Cryptomeria japonica* during March has rooted 66,6% on the rooting substrate made from perlite + peat 1:1 followed by the substrate made from sand + perlite 1:1 with 60% rooted shoots, 53,3% on the rooting substrate made from perlite or sand and 46,6% on the rooting substrate made from peat (table 4).

Table 3

The rooting percentage for apical shoots of *Cryptomeria japonica* (%) - 2004

Period	Rooting substrate				
	Peat	Perlite	Sand	Sand+Perlite 1:1	Perlite+Peat 1:1
March	40	40	46,6	60	53,3
August	26,6	26,6	26,6	33,3	26,6
October	53,3	46,6	40	60	66,6

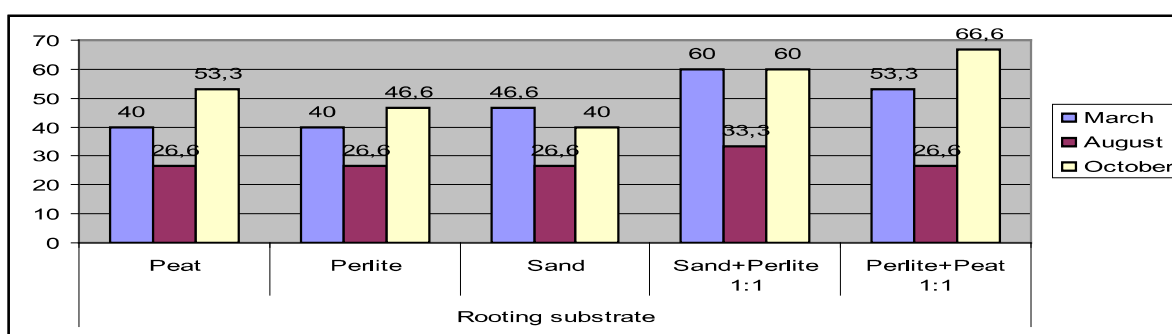


Fig. 3. The rooting percentage for apical shoots of *C. japonica* (%) - 2004

Regarding the second rooting period, in 2004 during August the recorded values has been lower than the ones from the previous rooting period. For the basal shoots of *Cryptomeria japonica* there has been recorded only 33,3% rooted shoots on the rooted substrate made from perlite and perlite + peat 1:1, followed by the substrate made from peat and sand + peat 1:1 with 26,6% rooted shoots and only 20% on the substrate made from sand (table 4, fig.4).

Table 4

The rooting percentage for basal shoots of *Cryptomeria japonica* (%) – 2004

Period	Rooting substrate				
	Peat	Perlite	Sand	Sand+Perlite 1:1	Perlite+Peat 1:1
March	46,6	53,3	53,3	60	66,6
August	26,6	33,3	20	26,6	33,3
October	53,3	46,6	53,3	60	60

Regarding the apical shoots, during August, there has been recorded only 33,3% rooted shots on the substrate made from sand + perlite, on all the other substrate the percentage of rooted shoots has been of 26,6% (table 3).

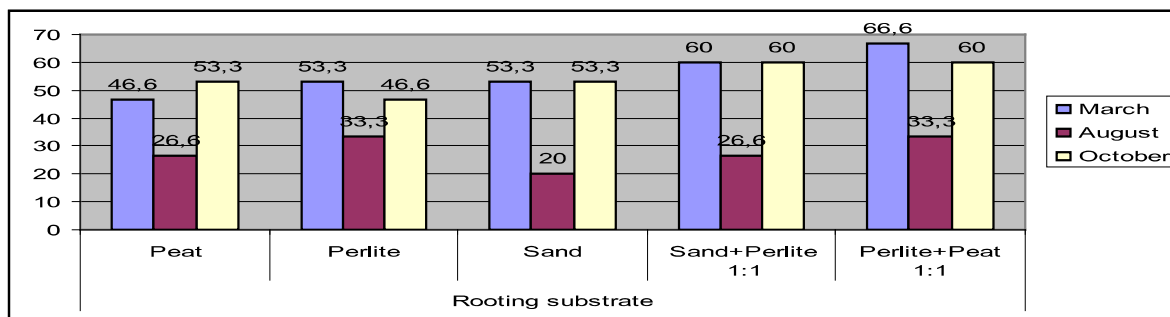


Fig. 4. The rooting percentage for basal shoots of *C. japonica* (%) - 2004

During the third rooting period (October 2004) the best results has been obtain with the apical shoots using the rooting substrate made from perlite + peat 1:1 with 66,6% rooted shoots followed by the substrate made from sand + perlite with 60% rooted shoots; 53,3% and 46,6% on the substrate made from peat or perlite and only 40% on the substrate made from sand (table 3). In October, for the basal shoots, the recorded values has been higher than the ones recorded in the second rooting period.

Thus, on rooting substrate made from sand + perlite 1:1 and perlite + peat 1:1 there has been recorded a percentage of 60% rooted shoots followed by the rooting substrate made from peat with 53,3% rooted shoots and 46,6% rooted shoots on the perlite rooting substrate (table 4).

In the third year of research, 2005, during the first rooting period (March), the apical shoots presented a 60% rooted shoots on the substrate made from sand + perlite 1:1, 46,6% rooted shoots on the sunbstrate made from perlite + peat 1:1 and 40% roote shoots on the substrates made from perlite or sand (table 5, fig.5).

Table 5

The rooting percentage for apical shoots of *Cryptomeria japonica* (%) 2005

Period	Rooting substrate				
	Peat	Perlite	Sand	Sand+Perlite 1:1	Perlite+Peat 1:1
March	46,6	40	40	60	46,6
August	26,6	33,3	26,6	40	33,3
October	46,6	46,6	40	53,3	53,3

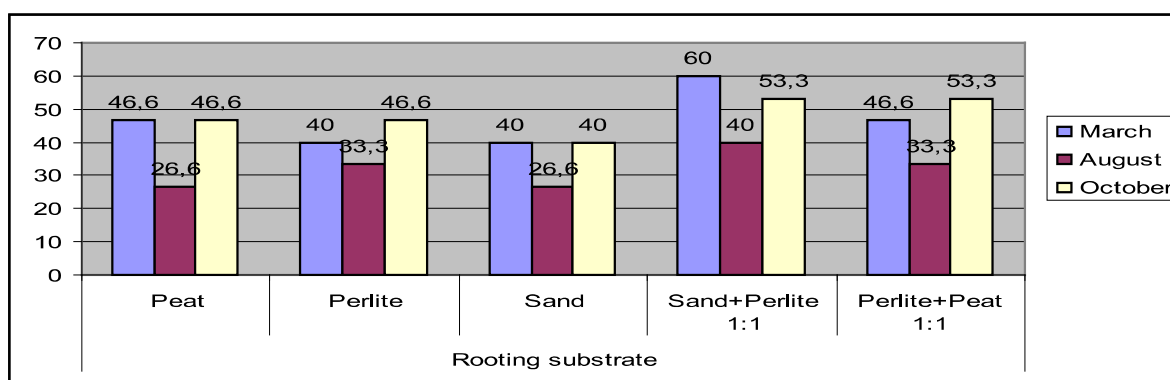


Fig. 5. The rooting percentage for apical shoots of *C. japonica* (%) - 2005

In the same period the basal shoots has rooted in a percentage of 66,6% on the rooted substrate made from sand + perlite 1:1, 60% on the substrate made from perlite + peat 1:1, 46,6% on the substrates made from perlite or sand and 40% on the substrate made only from peat (table 6, fig.6).

In the second rooting period (August), the percentage of the rooted shoots decrease comparative with the previous rooting period (March). Thus, the percentage of rooted shoots has been of 40% on the substrate made from sand + perlite 1:1, 33,3% on the substrate made from perlite + peat 1:1 or perlite and only 26,6% rooted shoots on the substrate made from peat or sand (table 5). Regarding the basal shoots in the same rooting period, the percentage of rooted shoots has been of 40% on the substrate made from sand + perlite, 33,3% on the substrates made from peat, perlite and perlite + peat 1:1 and only 26,6% on the rooting substrate made only from sand (table 6).

In the third rooting period, October, the apical basal has rooted in a percentage of 53,3% on the substrates made from sand + perlite 1:1 and perlite + peat 1:1 followed by the substrates made from perlite or peat with a rooting percentage of 46,6% and 40% on the substrate made from sand (table 5). In October 2005 at the basal shoots the rooting percentage has been of 60% on the substrate made from sand + perlite 1:1, 53,3% on the substrates made from perlite, sand and perlite + peat 1:1 and 46,6% on the substrate made from peat (table 6).

Table 6

The rooting percentage for basal shoots of *Cryptomeria japonica* (%) 2005

Period	Rooting substrate				
	Peat	Perlite	Sand	Sand+Perlite 1:1	Perlite+Peat 1:1
March	40	46,6	46,6	66,6	60
August	33,3	33,3	26,6	40	33,3
October	46,6	53,3	53,3	60	53,3

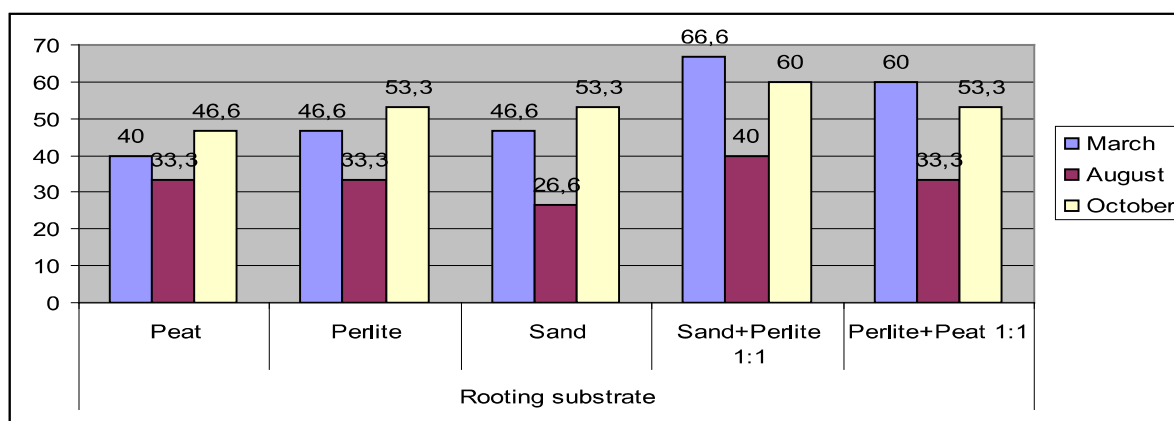


Fig. 6. The rooting percentage for basal shoots of *C. japonica* (%) - 2005

Regarding the average rooting during the vegetation period we noticed that: the year 2003 has been the most significantly regarding the average percentage values of the rooted shoots. Thus, in March has been recorded the highest rooting percentage for the species *Cryptomeria japonica* comparative with the years 2004 and 2005 (table 7). In 2004 the average rooting percentage has been significantly in October with 53,9%

comparatively with March and August when there has been recorded average values of 51,9% respectively 27,9% (table 7). Also in 2005 the highest percentage value has been recorded in October with 50,6% comparatively with the previous period March and August with percentage value 49,2% respectively 32,6%.

CONCLUSIONS

During 2003 the best results for the vegetative propagation for the species has been obtained using basal shoots on the rooting substrate made from sand + perlite 1:1, on which 73,3% shoots rooted from the shoots made in March.

In 2004 the percentage of rooted shoots has been of 66,6%, using apical shoots made in October, the same value has been recorded for the basal shoots made in March on the rooting substrate made from perlite + peat 1:1.

In 2005 the highest rooting percentage 66,6%, has been obtained using basal shoots in March on the rooting substrate made from sand + perlite 1:1. Regarding the basal shoots the rooting percentage has been of 66,6% made in March on the rooting substrate made from sand + perlite 1:1. The highest percentage 55,9% of the rooting average has been recorded in March 2003.

From the three year of research regarding the vegetative propagation of the species *Cryptomeria japonica* it come out that favourable period has been March 2003, on the substrate made from sand + perlite 1:1 with a percentage of 73,3% from the basal shoots (significantly percentage).

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