RESEARCH CONCERNING THE PRODUCTION OF PLANTING MATERIAL USING GENERATIVE PROPAGATION ON *ALBIZZIA JULIBRISSIN* Durazz.

CERCETĂRI PRIVIND PRODUCEREA MATERIALULUI SĂDITOR PE CALE GENERATIVĂ LA SPECIA *ALBIZZIA JULIBRISSIN* Durazz.

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Abstract*. The purpose of this research is to highlight the variation of whole-plant growth characteristics such as height, root collar diameter, number of leaflets and leaf area for Albizzia julibrissin, using different mixtures of soil. For this purpose four experimental trials have been installed The trails had the following design: V1: 60% manure + 20% sandy + 20% ground leaves, V2: 40% manure + 40% sandy + 20% ground leaves, V3: 50% manure + 30% soil + 20% ground leaves, V4: 30% manure + 50% soil + 20% ground leaves. Biometric observations of seedling were made at 69 days, 123 days and 154 days for each trial. The results indicate the high position of seedlings grown in rooting media composed by 30% manure + 50% sand + 20% ground leaves.*

Key words: *Albizzia julibrissin*, generative propagation, rooting media.

Rezumat. *Scopul acestei cercetări este de a pune in evidenta variaţia caracterelor: inaltimea puietului, diametrul la colet al puietului, nr. de foliole şi suprafata foliară în cazul speciei Albizzia julibrissin, folosind diferite amestecuri de pământ. In acest sens, a fost instalată o experientă în patru variante V1 60% mraniţă + 20%nisip + 20% pământ de frunze; V2: 40% mraniţă + 40% nisip +20% pământ de frunze; V3: 50% mraniţă + 30% nisip +20% pământ de frunze; V4: 30% mraniţă + 50% nisip + 20% pământ de frunze, iar observatiile biometrice au fost efectuate la 69, 123 şi 154 de zile de la repicarea puieţilor pe diferitele medii de cultură. Rezultatele au pus în evidenţă pozitia superioară în ceeea ce priveste caracterele analizate in cazul puieţilor crescuţi pe mediul de cultură format din 30% mraniţă + 50% nisip + 20% pământ de frunze.*

Cuvinte cheie: *Albizzia julibrissin*, înmulţire generativă, amestec nutritiv.

INTRODUCTION

Albizzia julibrissin Durazz. (silk tree) is a species of rare beauty. In our country it was introduce in mild climate region, in the West (parks and gardens from Timisoara) and South, where blooms and hold up quite well. The species could not be acclimated at high altitudes, for example in Braşov (Stănescu V., 1997).

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Silk tree is a tree that can reach heights of 10 m (Stănescu V., 1997). Crown is rare and bright. Leaves are alternate, bi-pinnately, compound, with small leaflets. Flowers present radial symmetry; pink and very showy. Fruit are a pod that does not open at maturity to release seeds (Iliescu Ana-Felicia, 1998).

The species' natural range is in the Far East.

Silk tree can be used in green spaces as a tree planted alone or in groups, sheltered by buildings because it is very sensitive to strong winds which can split strain (Poşta Daniela Sabina, 2009).

The literature recommends propagation by seeds harvested in October or November (Poşta Daniela Sabina, 2009). Varieties can be propagated by grafting; no result have been obtained by cuttings.

The purpose of this research is to highlight the variation of whole-plant growth characteristics such as height, root collar diameter, number of leaflets and leaf area for *Albizzia julibrissin*, using different mixtures of soil.

MATERIAL AND METHOD

The material consists of *Albizzia julibrissin* seedlings, obtained by generative propagation. The seeds were prepared by moisturizing, hot water treatment, stratification and scarification in order to ensure uniform emergence in a high percent and a short time.

Albizzia julibrissin seeds were sown on 02/16/2010, on a sowing media composed by 50% manure and 50% sand in the greenhouse. The temperature of 20-22°C, soil moisture of 55-60% and air moisture of 40-55% have been secured. Seedlings were transplanted after 35 days of emergence (fig.1), in different soil mixtures (fig. 2).

Fig. 1 - Seedlings prepared for transplanted

Fig. 2 - Experimental trials

Experimental trial are:

V1: 60% manure + 20% sandy + 20% ground leaves;
V2: 40% manure + 40% sandy + 20% ground leaves;
V3: 30%manure + 50% sandy + 20% ground leaves;
V4: 30% manure + 50% sandy + 20% ground leaves.

The assessment of the characters like stem height (cm), root collar diameter (mm), number of leaflets and leaf area (cm2) have been made.

Height was measured using tape measure with an accuracy of 1mm.

Root collar diameter was measured using an electronic caliper with an accuracy of 0.01mm.

Leaf area was determined by the parameters of the leaf, using formulas:

$S = S1+S2+S3$

Where: S - total leaf area (cm2)
Si - area for leaflet i (cm)

$S_i = K \times L \times l$

Where: K - coefficient (0,751)
L - leaflet length (cm)
l - leaflet width (cm)

To highlight the influence of the rooting media about the studied characters seedlings height, root collar diameter, number of leaflets and leaf area, observations were made at different time intervals. Reported on transplanted date, observations were made at 69 days (30.03 2010 - 7.06.2010 is the first growth period), at 123 days (7.06.2010 - 31.07.2010 is the second growth period of seedlings) at 154 days (31.07.2010 - 31.08.2010 represents the third period of growth).

The dates were statistically analyzed. The mean, standard error of mean, standard deviation and coefficient of variability has been determined.

RESULTS AND DISCUSSIONS

Calculated statistical parameters show us how the seedlings characters developed according to rooting media. The results are presented in table 1 for character "height", table 2 for the character "root collar diameter", table 3 for character "number of leaflets" and table 4 for character "leaf area".

Table 1

Statistical parameters for the character "height"

Date	The experimental trial	Mean	Standard error of mean	Variances	Standard deviation	Coefficient of variability
June 2010	V_1	3,74667	0,24840	0,86382	0,96204	25,68
	V_2	3,78667	0,20676	0,59849	0,80077	21,15
	V_3	3,53333	0,16581	0,38489	0,64217	18,17
	V_4	5,11333	0,20139	0,56782	0,77999	15,25
	All groups	**4,04500**	**0,129763**	**1.01031**	**1.00514**	**24,85**
July 2010	V_1	4,58667	0,34238	1,64116	1,32604	28,91
	V_2	4,66000	0,32423	1,47173	1,25573	26,95
	V_3	4,03333	0,14886	0,31022	0,57652	14,29
	V_4	6,81333	0,17751	0,44116	0,68751	10,09
	All groups	**5,02333**	**0,18834**	**2,12826**	**1,45886**	**29.04**
August 2010	V_1	5,28667	0,40706	2,31982	1,57655	29,82
	V_2	5,52000	0,37151	1,93227	1,43885	26,07
	V_3	4,62667	0,18985	0,50462	0,73530	15,89
	V_4	8,02000	0,16071	0,36160	0,62244	7,76
	All groups	**5,86333**	**0,22313**	**2,98711**	**1,72832**	**29,48**

Analysis table show higher values for the mean of the character height in experimental trial V_4. In terms of variability coefficient, the lowest values were obtained for the same experimental trial. We can also notice even a reduction of this coefficient for the last biometric observations.

Table 2

Statistical parameters for the character "root collar diameter"

Date	The experimental trial	Mean	Standard error of mean	Variances	Standard deviation	Coefficient of variability
June 2010	V_1	0,27400	0,04430	0,02748	0,17158	62,62
	V_2	0,39067	0,05290	0,03918	0,20489	52,45
	V_3	0,24067	0,00836	0,00098	0,03240	13,46
	V_4	0,43133	0,03363	0,01584	0,13027	30,20
	All groups	**0.33417**	**0.02144**	**0.02758**	**0.16606**	**49,69**
July 2010	V_1	0,34133	0,04927	0,03398	0,19082	55,90
	V_2	0,48067	0,05401	0,04083	0,20916	43,52
	V_3	0,30200	0,00863	0,00104	0,03342	11,07
	V_4	0,56000	0,04518	0,02857	0,17497	31,24
	All groups	**0,42100**	**0,02503**	**0,03758**	**0,19386**	**46,05**
August 2010	V_1	0,42533	0,04669	0,03052	0,18083	42,51
	V_2	0,60600	0,05396	0,04076	0,20897	34,48
	V_3	0,37533	0,00999	0,00140	0,03871	10,31
	V_4	0,76867	0,08566	0,10272	0,33175	43,16
	All groups	**0,54383**	**0,03396**	**0,06921**	**0,26308**	**48,38**

In that case, like in previously, the highest average value was obtained for the experimental trial V_4. It was also found a high variability for the experimental trials studied, excepted the experimental trial 3. In that case the coefficient of variability for root collar diameter is much lower than other trials.

Table 3

Statistical parameters for the character "number of leaflets"

Date	The experimental trial	Mean	Standard error of mean	Variances	Standard deviation	Coefficient of variability
June 2010	V_1	9,00000	0,67612	6,40000	2,61861	29,10
	V_2	9,80000	0,97199	13,22667	3,76450	38,41
	V_3	9,06667	0,52068	3,79556	2,01660	22,24
	V_4	11,80000	0,41633	2,42667	1,61245	13,66
	All groups	**9.91667**	**0.362268**	**7.87429**	**2.806117**	**28,30**
July 2010	V_1	11,46667	0,68914	6,64889	2,66905	23,28
	V_2	12,60000	0,93503	12,24000	3,62137	28,74
	V_3	11,53333	0,46667	3,04889	1,80739	15,67
	V_4	15,00000	0,36515	1,86667	1,41421	9,43
	All groups	**12,65000**	**0,36810**	**8,12966**	**2,85126**	**22,54**
August 2010	V_1	14,33333	0,69465	6,75556	2,69037	18,77
	V_2	15,66667	0,83190	9,68889	3,22195	20,57
	V_3	13,86667	0,48665	3,31556	1,88478	13,59
	V_4	18,13333	0,32170	1,44889	1,24595	6,87
	All groups	**15,50000**	**0,36938**	**8,18644**	**2,86120**	**18,46**

Regarding the character "number of leaflets", statistics parameter values follow the same line with the values obtained in the case of characters "high" and

"root collar diameter". It can be notice a decrease for the coefficient of variability from the first observations to the last ones for all experimental trials. We can also notice that the lowest values were obtained for the experimental trial V_4, just like the character "high".

Table 4

Statistical parameters for the character "leaf area"

Date	The experimental trial	Mean	Standard error of mean	Variances	Standard deviation	Coefficient of variability
June 2010	V_1	2,66661	0,28887	1,16828	1,11881	41,96
	V_2	3,87562	0,43081	2,59832	1,66851	43,05
	V_3	2,31703	0,16526	0,38236	0,64006	27,62
	V_4	4,97455	0,24351	0,83014	0,94310	18,96
	All groups	**3.45845**	**0.19938**	**2.38514**	**1.54439**	**44,66**
July 2010	V_1	4,76439	0,37586	1,97782	1,45571	30,55
	V_2	6,30287	0,43001	2,58867	1,66541	26,42
	V_3	3,58278	0,14987	0,31445	0,58044	16,20
	V_4	6,48976	0,27866	1,08714	1,07926	16,63
	All groups	**5,28495**	**0,22193**	**2,95530**	**1,71910**	**32,53**
August 2010	V_1	5,48734	0,36972	1,91375	1,43194	26,10
	V_2	7,47019	0,37384	1,95656	1,44787	19,38
	V_3	4,34763	0,12418	0,21589	0,48095	11,06
	V_4	7,65549	0,26988	1,01967	1,04523	13,65
	All groups	**6,24016**	**0,23262**	**1,80186**	**3,24672**	**52,03**

Last analyzed character shows, as expected, higher values for the leaf area for the experimental trail where the largest number of leaflets has been recorded. For this trial was obtained the higher value for character "high" and "root collar diameter" also. We are talking about experimental trial 4.

Table 5

Duncan Test

Experimental trials	Analyses characters							
	Height (cm)		Root collar diameter (mm)		Number of leaflet		Leaf area	
	Signifiant differences for p<0.05000							
	p	Sign	p	Sign	p	Sign	p	Sign
V1-V2	0,58752		0,02636		0,13126		0,00013	***
V1-V3	0,12840		0,53024		0,59405		0,01005	*
V1-V4	0,00006	***	0,00014	***	0,00013	***	0,00006	***
V2-V3	0,05199		0,00704	**	0,05441		0,00006	***
V2-V4	0,00011	***	0,04461	*	0,00650	**	0,66613	
V3-V4	0,00005	***	0,00006	***	0,00006	***	0,00005	***

Analysis of variances revealed highly significant influence on the character about substrate (table 5).

It has been found highly significant differences for experimental trial V4. The substrate made by 30% manure, 50% sandy and 20% ground leaves providing the best results.

CONCLUSIONS

1. The highest values in terms of growth rate regarding the characteristics "high" and "root collar diameter" have been obtained for experimental trial V4. A strong differentiation for the experimental trial V_4 in the third period of growth has been found.

2. The experimental trial with 30%manure + 50% sandy and 20% ground leaves gives the lowest results in terms of growth.

3. The characters "number of leaflets" and "leaf area" is approximately the same.

4. A more special case is found in the experimental trial V_2 which, although the number of leaflets is much smaller than in experimental trial V_4, leaf area is almost the same. Higher values of root collar diameter and height of seedlings in this trial are a result of increased biomass accumulation and can be explain by the big leaf surface.

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