

Shoot , leaflet , leaf , crown shape, Tree height & size , DBH and Specific gravity of *Leucaena* spp. Analytical study (C)

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Abstract

A statistical analysis of 22 species of leucaena tree showed that the cross section was rounded and the other Angled as 81.8% and 18.2%, respectively. Two species were distinguished by the thickness of the branch. The type (thin) was more frequent, 77.3% and thick (22.7%). In the same course, Texture for Fibrous was superior to Corky, The shape (length of the vein) showed two shapes, (less than 1 cm) and the second (larger than 1 cm), 59.1% and 40.9%, respectively. Thus, for the width of the net, 77.3% and 22.7% for the width less than 1 cm and greater than 1 cm. In the same way, the symmetry was about the rein and in two ways, very symmetrical at the base and weak at the base. The shape of the top of the paper came in three forms, Accumulate, Rounded, Spike, and Repeats 7, 4 and 2 respectively, then the rest of the species with one repeater. The length of the paper axis varied between 5- 14.5 mm. The shape of the crown was very different, and only rarely was it repeated. Turn the size of the tree to (small) except one type was (too large). The height of the tree began from 3 m to 20 m, while the tree diameter at the chest level was between 13 cm and 40.9% with a brother by 18.2% while the largest diameter 50 cm and one type only. The variance was not limited to these characteristics, where the variation was significant in the specific weight rating, which started from 0.5 to 0.8. Almost every type has its own specific weight.

Introduction :

The objectives of planting forest trees, especially industrial ones, are different. For this reason, fast growing trees are planted to produce wood, Wan *et al.*, (2012) ,and some of them are concerned with the work of windbreaks or fences of gardens, Sheila (2014) , in addition to the possibility of planting them for tourism purposes as they are grown for the purpose of preserving the

environment. Mohamed *et al.*, (2018). The variant specific gravity which is between 5-8, makes wood a primary material for various industries such as furniture, electricity poles, paper and fuel. And the speed of growth of this tree makes it the top of the trees favorite as it gives a profitable product (in terms of industrial) during the first years of life in addition to the production of pods in the first year of cultivation and have the advantage of natural regeneration in different circumstances and this is not found with a lot of other forest trees . The leucaena tree has different conditions and at different levels of sea level that qualify it to resist the environmental conditions and also have the opportunity to grow throughout the year. Lemcke *et al.*, (2018) . It is well known that this tree contributes to the provision of food on the human and animal level, especially in Africa. Marcos (2014). Leucaena leucocephala is one of most widely used dry season tree legume forage. Elfeel *et al.*, (2016) . The Leucaena tree has an impressive flowering ability and is almost as long as the year to provide the best nutritional center for beekeeping. Marcos (2014). The shape and size of the crown gives the tree a great aesthetic that drives those interested in planting it to decorate the sides of the roads and the corridors. These trees contain some types of toxic substances that may harm consumers, which should be used with caution. (CT Invasive Plant Working Group, 2008).

Materials And Methods :

From the textbook written by Hughes (1998), twenty two species were found . Data about each of Shoot , leaflet , leaf , crown shape, Tree height & size , DBH and Specific gravity of Leucaena spp. were collected then tabulated . A descriptive analysis using SPSS¹ system was done to know the differences between species according to frequencies , percentages and correlation between variables . These results were described through tables as shown later .

Results and discussion :

1. shoot cross section : Only two forms of this characteristic on the whole study were marked and folded in favor of round shape and with high repetitions of 18

¹ . Statistical Package for Scientific Search

times to form 81.8% while Angled remained the remaining 4 times only and 18.2%. Table (1).

Table (1) . Frequencies of shoot cross section

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Round	18	81.8	81.8	81.8
	Angled	4	18.2	18.2	100.0
	Total	22	100.0	100.0	

2. Shoot thickness :

Again the number 17 is repeated to represent the total frequency of the thickness of the thin branch thickness and 77.3% of the value of the other form thick by five repetitions. The researcher believes that this is due to the separation of growth and suitability to specific species growth, which negatively affects many of the characteristics under study. Table (2). The same course was Texture, 17 of which were Fibrous, while the remaining five were Corky. Table (2a).

Table (2) . Frequencies of Shoot thickness

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Thin	17	77.3	77.3	77.3
	Thick	5	22.7	22.7	100.0
	Total	22	100.0	100.0	

Table (2a) . Frequencies of Shoot texture

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	fibrous	17	77.3	77.3	77.3
	corky	5	22.7	22.7	100.0
	Total	22	100.0	100.0	

3. Length of the leaflet :

This was not very different in the studied species. There were 13 recurrences for less than 1 cm while 9 recurrences for larvae were 1 cm long and 59.1 and 40.9%, respectively. Table (3). This was similar to what Cook *et al.*, (2005) who pointed that bearing numerous leaflets 8 mm to 16 mm long .

.Table (3) . Frequencies of Shoot thickness

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	less than 1 cm	13	59.1	59.1	59.1
	more than 1 cm	9	40.9	40.9	100.0
	Total	22	100.0	100.0	

4. Leaflet width :

This width was not the same as the length of the wicket. The characteristics of the species (less than 1 cm) were repeated 17 times while five recurrences of the other species with width (greater than 1 cm) remained. It should be noted that the coefficient of correlation between the two grades was somewhat high recording 0.652 which is significant at the level of probability 1%. Table (4).

Table (4) . Frequencies of Leaflet width.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	less than 1 cm	17	77.3	77.3	77.3
	more than 1 cm	5	22.7	22.7	100.0
	Total	22	100.0	100.0	

5. Symmetry about mid rein :

The first is a strong symmetry at the base and repeated 17 times while the other weak symmetry pattern at the base for the remaining total of the total of 5 recurrences and 77.3 and 22.7%, respectively. Table (5) .

Table (5) . Frequencies of Symmetry about mid rein .

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	strongly symmetric at base	17	77.3	77.3	77.3
	weakly symmetric at base	5	22.7	22.7	100.0
	Total	22	100.0	100.0	

6. Apex Leaf shape :

We were not able to obtain all species in this respect, as the species we obtained were 18 species of all twenty-two species. The most prominent form was the Acuminate with seven repetitions and then the round shape or Rounded with four replicates and only two of the spiked shape with a short Cusp. All data and frequencies of this status were recorded in Table (6).

Table (6) . Frequencies of Apex Leaf shape .

		Frequency	Percent	Valid Percent	Cumulative Percent
		4	18.2	18.2	18.2
	acuminate	7	31.8	31.8	50.0
	acuminate or subbasement	1	4.5	4.5	54.5
	acuminate with short cusp	1	4.5	4.5	59.1
	acuminate, some with cusp	2	9.1	9.1	68.2
	lanceolate	1	4.5	4.5	72.7
	obtuse to rounded	1	4.5	4.5	77.3
	obtuse, acute or occasion rounded	1	4.5	4.5	81.8
	rounded	4	18.2	18.2	100.0
	Total	22	100.0	100.0	

7. Pinnular rachis length cm :

Between 5 mm and 14.5 mm, the lengths of the leaf axes varied by nature and were almost independent of the species themselves, without 3 repetitions of length 6 mm, length 8.5 mm, length 10.75 times, and the rest of the species repeating with one recurrence. Table (7)

8. Pairs pinna leaf :

On the basis of frequencies, we find that there are large differences between species and the wide range between the smallest number of sheets and the largest ranges between 2 - 35 and one per paper. At the same time, *L. lempirana* C.B. Hughes With the lowest number, we find that *L. cuspidata* stndley is very much different and has a number of vertebrates 35 with a note shown in Table (8). Of recurrence of some species in the number of vertebrates but relatively few replicates..

Table (7) . Frequencies of Pinnular rachis length cm.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	5.00	1	4.5	4.5	4.5
	5.50	1	4.5	4.5	9.1
	5.75	1	4.5	4.5	13.6
	6.00	3	13.6	13.6	27.3
	6.35	1	4.5	4.5	31.8
	6.40	1	4.5	4.5	36.4
	6.90	1	4.5	4.5	40.9
	6.95	1	4.5	4.5	45.5
	7.60	1	4.5	4.5	50.0
	7.90	1	4.5	4.5	54.5
	8.50	3	13.6	13.6	68.2
	9.00	1	4.5	4.5	72.7
	9.50	1	4.5	4.5	77.3
	10.00	1	4.5	4.5	81.8
	10.75	2	9.1	9.1	90.9
	13.00	1	4.5	4.5	95.5
	14.50	1	4.5	4.5	100.0
	Total	22	100.0	100.0	

9. Crown shape :

Although it is important to distinguish species, they have varied here by species, but they all share a light crown with a slightly crown intensity. As for the repetitions of shapes, it is repeated three times. The format (Open

Rounded) three times also and twice the shape (Small round). Table (9) shows all forms of crowns:

Table (8) . Frequencies of Pairs pinna leaf.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2.00	2	9.1	9.1	9.1
	3.00	3	13.6	13.6	22.7
	5.00	1	4.5	4.5	27.3
	5.50	2	9.1	9.1	36.4
	6.00	1	4.5	4.5	40.9
	7.00	1	4.5	4.5	45.5
	9.00	1	4.5	4.5	50.0
	11.00	1	4.5	4.5	54.5
	13.00	1	4.5	4.5	59.1
	15.00	1	4.5	4.5	63.6
	16.00	3	13.6	13.6	77.3
	18.00	1	4.5	4.5	81.8
	19.00	1	4.5	4.5	86.4
	20.00	1	4.5	4.5	90.9
	21.00	1	4.5	4.5	95.5
	35.00	1	4.5	4.5	100.0
Total	22	100.0	100.0		

10. Tree height :

Because this characterization is characteristic, we have considered analyzing its data in spite of the tendency of species towards independence in character. The height (3.5 m) was repeated three times, representing 13.6%, and the frequency of the height (3, 9, 11 meters) and the height of (12.5 meters) showed two and four frequencies respectively . The highest recorded height was 20 meters for the tree *L. Pulverulenta* (Schldl.) Benth, while at least 3 meters (*L. confertiflora* S. Zarate), Table (11). There was no significant correlation at the 5% probability level with tree size characteristics. (FAO, 2009) considered reaching a height of 5 m (Hawaiian type) to 20 m (Hawaiian giant type) .

11. Measure diameter at breast height (D.B.H) :

These qualities are characteristic of the species as well as reflect the state of the tree health and level of growth and the adequacy of environmental conditions surrounding. The statistical analysis of this feature reflected 9 recurrences recorded in favor of diameter 13 cm, four diameter 25 cm, 3 diameter 35 cm, 2 diameter 30 thickness and diameter 45 cm and one time for each diameter 45 and 50 cm. It is important to note that this tree can grow to these diameters, which are good in comparison to the size and height of the tree when studying the characteristics of the tree. Table (12). This is what Edward et al. (2006) found when studying the performance of growth in Mexico and found that the diameter at the chest level of Spp. *L. shannonii* was 2.26 cm while it reached 4.93 cm, almost double the Spp. *L. diversifolia* after three years Of agriculture. A strong correlation was recorded between this characteristic and the height of the correlation coefficient with a value of 0.722 at a level of probability of 1%.

12. Density & Specific Gravity :

Unlike the base of which we in the exclusion of the qualities that have lost them 25% of observations (data), we decided to analyze it as such because of its paramount importance in determining the efficiency of the type of investment or the industrial Kkhcb Furnishing or coal, construction or otherwise. Alabi (2006). As in table (13), we found that all of the studied species itself independent in their own registered density 0.50 g / cm³, while the type of intensity type reached 0.80 g / cm³. Knowing that some types Allosina who were within acceptable limits density, but it recorded a very high density of up to 0.95 g / cm³ as is the case of Spp. *L. magnifica* (Hughes *et al.*,(1998) .

Table (9) . Frequencies of Crown shape.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		2	9.1	9.1	9.1
	light fatherly	1	4.5	4.5	13.6
	light but spreading	1	4.5	4.5	18.2
	light feathery but spreading and irregular often modified by lopping	1	4.5	4.5	22.7
	narrow open	3	13.6	13.6	36.4
	Open	1	4.5	4.5	40.9
	open irregular narrow	1	4.5	4.5	45.5
	open irregular spreading	1	4.5	4.5	50.0
	open irregular spreading or upright	1	4.5	4.5	54.5
	open irregular, often spreading umbrella	1	4.5	4.5	59.1
	open irregular, spreading	1	4.5	4.5	63.6
	open rounded	3	13.6	13.6	77.3
	open spreading round	1	4.5	4.5	81.8
	Round	1	4.5	4.5	86.4
	small round	2	9.1	9.1	95.5
spreading open	1	4.5	4.5	100.0	
Total	22	100.0	100.0		

Table (10) . Frequencies of Tree size.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	small to medium	9	40.9	40.9	40.9
	small	9	40.9	40.9	81.8
	shrub or small	3	13.6	13.6	95.5
	very large	1	4.5	4.5	100.0
	Total	22	100.0	100.0	

Table (11) . Frequencies of Tree hight.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	3.00	2	9.1	9.1	9.1
	3.50	3	13.6	13.6	22.7
	5.00	1	4.5	4.5	27.3
	5.50	1	4.5	4.5	31.8
	6.50	1	4.5	4.5	36.4
	9.00	2	9.1	9.1	45.5
	9.50	1	4.5	4.5	50.0
	10.00	1	4.5	4.5	54.5
	11.00	2	9.1	9.1	63.6
	11.50	1	4.5	4.5	68.2
	12.50	4	18.2	18.2	86.4
	13.00	1	4.5	4.5	90.9
	18.50	1	4.5	4.5	95.5
	20.00	1	4.5	4.5	100.0
Total	22	100.0	100.0		

Table (12) . Frequencies of DBH.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	13.00	9	40.9	40.9	40.9
	25.00	4	18.2	18.2	59.1
	30.00	2	9.1	9.1	68.2
	35.00	3	13.6	13.6	81.8
	40.00	1	4.5	4.5	86.4
	45.00	2	9.1	9.1	95.5
	50.00	1	4.5	4.5	100.0
	Total	22	100.0	100.0	

Table (13) . Frequencies of Specific gravity.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.50	1	4.5	7.1	7.1
	.52	1	4.5	7.1	14.3
	.57	1	4.5	7.1	21.4
	.59	1	4.5	7.1	28.6
	.61	1	4.5	7.1	35.7
	.62	1	4.5	7.1	42.9
	.67	1	4.5	7.1	50.0
	.69	1	4.5	7.1	57.1
	.70	1	4.5	7.1	64.3
	.71	1	4.5	7.1	71.4
	.72	1	4.5	7.1	78.6
	.73	1	4.5	7.1	85.7
	.75	1	4.5	7.1	92.9
	.80	1	4.5	7.1	100.0
Total		14	63.6	100.0	

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