RESEARCH REGARDING THE FREQUENCY AND SIZE OF THE SHAPE DEFICIENCIES AT THE BEECH LOGS EXPLOITED FROM U.A. 95 A, U.P. I BOCEASA, O.S. REMEȚI

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Abstract

The present work presents the frequency and size of shape deficiencies identified in a lot of beech logs, resulted following the exploitation of the wood from the landscape unit 95 A, within the production unit I Boceasa belonging to the Forest District Remeți.

Key words: Shape deficiency, frequency, size, curvature, out of shape, ovality.

INTRODUCTION

The wood shape deficiencies are abnormalities of the trunk of trees, which affect the quality of the wood in a negative manner and, as a consequence, limit their processing and use possibilities (Beldeanu E., 1999).

As normal type, in relation to which the deficiencies are appreciated, in general, the wood as straight trunks (logs), as close to the cylinder shape, without curvatures, forks, excrescences and damages, having the wood with regular structure, natural duramen, regular annual rings, without growth deviations, modifications and discontinuities in structure, abnormal deposits and colours and degradations provoked by vegetal or animal bodies (Smit I., Timofte A., 2008).

Getting to know the causes which produce the shape deficiencies, as well as of the prevention or limitation measures of their appearance, is very important for all the important fields of specific forest activity.

MATERIAL AND METHODS

The research was done on a lot of beech logs exploited from u.a. 95 A, U.P. I Boceasa, O.S. Remeți. The stand from which the logs were extracted is placed on Valea Crăciunului, which is an affluent of Valea Drăganului.

The stand from which the logs were exploited present the following features:

- composition: 5MO3BR2FA;
- consistency: 0,9;
- age: 160 years old;
- origin FA: copse;
- average diameter: 30 cm;
- average height: 26 m [6, 7];

The type of soil within u.a. 95 A is of type districambosoil (brown acid soil), the type of resort being mountain with mix Ps large brown, with *Asperula – Dentaria* (Târziu D., 1997).

The stand is situated at the altitude of 1600 m, on slopes of 35 g and exposure NV.

The type of wood is a mix of resinous and beech with mull flora.

The research was done on a number of 40 beech logs with a length of 6 m. The presence of shape deficiencies was noticed, from which the size and frequency for curvature, out of shape, and ovality.

In order to determine the frequency index (*Id*) of deficiencies encountered the following relation was used:

$$Id = \frac{Nd}{N} \times 100$$

in which:

Nd – is the number of logs with deficiency;

N – total number of logs taken for study.

RESULTS AND DISCUSSION

The curvature represents the curved deviation of the axis of the trunk. This may be simple or multiple, as it appears along the trunk, only one time, or several times (Ionaşcu Gh., 2002).

For the logs studied, with a length of 6 m, we noticed the presence of simple curvatures in a single plan.

The curvature is determined through the percentage relation between the maximum arrow *s* and the length of the curved portion *L*, both measured in cm:

$$Cu = \frac{s}{L} \times 100 \ [\%]$$

In table 1 the size and frequency of the curvature for the beech logs studied is presented.

Table 1

Frequency and size of curvature

Total logs	Logs with curvature		Site of the deficiency (%) Frequency index (%)		
			0,1-5 small	5,1-10 average	10,1-15 large
	nr.	%			
40	23	58	10 0,25	7 0,18	6 0,15

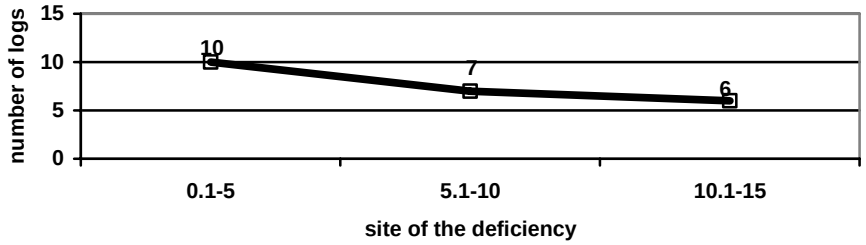

Fig. 1 Variation of the number of logs with curvature on size categories

It is observed that more than a half (58 %) from the logs studied presents curvature of different sizes. The largest frequency is presented by the logs with small curvature (fig. 1), which have a percentage of 25 % from the total number of logs.

The out of shape of the trunk represents the accentuated to the parcel, caused by the rootedness conditions (Beldeanu E., 2008).

The out of shape is estimated through the difference between the diameter of the trunk at the level of parcel *D* and the diameter *d* of this at the distance of 1 m towards the parcel, the result being expressed in (%).

$$L = (D - d) \text{ x } 100 \text{ [\%]}$$

In table 2 it is presented the size and frequency of the out of shape for the beech logs studied.

Table 2

Frequency and size of the out of shape

Total logs	Logs with out of shape		Site of the deficiency (%) Frequency index (%)			
	nr.	%	5,1-10 small	10,1-15 average	15,1-20 large	20,1-25 very large
40	30	75	19 / 0,48	9 / 0,23	1 / 0,03	1 / 0,03

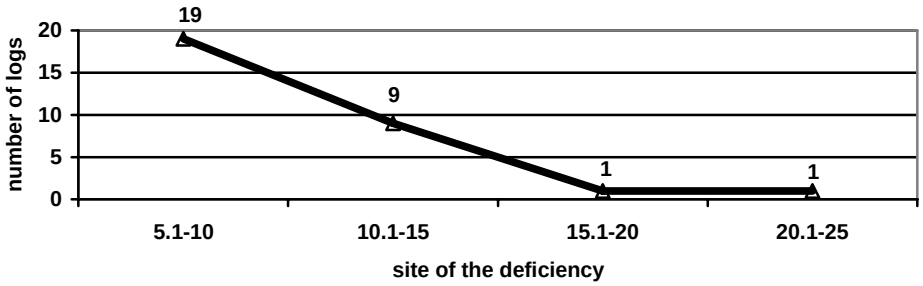

Fig. 2 Variation of the number of logs with out of shape on categories of size

It is noticed that a large percentage of logs, that is 75 %, present out of shape deficiencies. In which concerns the size (fig. 2), it is noticed that the highest percentage belongs to the logs with small out of shape (48 %) followed by the logs which present average out of size (23 %).

The ovality of the trunk represents a deficiency resulted from the abnormality of the transversal section from the circular shape (Beldeanu E., 2008).

The ovality is expressed in percentage and is calculated by relating the difference between the diameter at the thick head *D* and the diameter at the narrow head *d* of the log, at the diameter at the thick head *D* of this.

$$Ov = \frac{D - d}{D} \times 100 \text{ [\%]}$$

In table 3 are presented the size and frequency of ovality for the beech logs studied.

Table 3

Frequency and size of ovality

Total logs	Logs with ovality		Site of the deficiency (%) Frequency index (%)				
	nr.	%	< 5 very small	5,1-10 small	10,1-15 average	15,1-20 large	> 20 very large
40	21	53	1 / 0,03	5 / 0,13	8 / 0,20	5 / 0,13	2 / 0,05

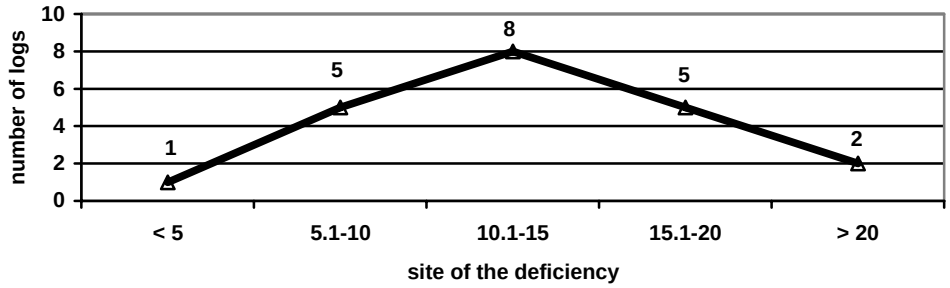

Fig. 3 Variation of the number of logs with ovality on categories of size

It is noticed that more than a half from the logs, that is 53 %, present ovality of different sizes, and in which concerns the aspect of the size (fig. 3), the highest percentage belongs to the logs with average ovality (20 %).

CONCLUSIONS

From the total of 40 logs taken for study 18 logs (45 %), present all the three deficiencies in the same time. For 80 % of the examples red hearts are also noticed. The causes of appearance of these site deficiencies in a very high percentage are multiple.

The causes which lead to the appearance of curvature and ovality at the lot of logs studied are: the accentuated slope of the field (35 g) and the asymmetry of the crown induced by the almost full consistency of the stand (0,9) and by the physiological competition with the mixed species (MO and BR). The curvature was identified at logs with the length of 6 m coming from the inferior third part of trunks of exploited trees.

The causes of appearance of the out of shape are resumed at the origin of beech trees (copse) and at the fact that the area is well known for its large quantity of annual average rainfall. We conclude that this area is improper for the development in normal conditions of the beech mixed with spruce fir and cone, due to the high altitude, large rainfall quantities and accentuated slopes.

Familiarization with the deficiencies, their causes leads to the application of measures in order to avoid their appearance, to the elimination or diminishing of negative effect and at the possibility of using in good conditions of assortments with deficiencies.

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