

VISUAL QUALITY ASSESSMENT IN CORK SAMPLES

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Introduction

Cork's commercial quality is determined by a subjective assessment of its appearance.

Key aspects of cork use, as debarking profitability or economic valuation of products, depend on this assessment.

Simple criteria, based on previous studies, have been written to assess the presence of the most frequent anomalies in cork samples.

Objectives

- 1/ Providing objective criteria to assess visual quality by anomalies.
- 2/ Analyze the application of these criteria by unskilled workers in the classification process.

Material & methods

Anomalies are studied in the transversal cut of 20x20 cm of cork planks coming from the suberoteca collection of the INIA-CIFOR.

Evaluation is made by assigning one of the following three values: 0 (absent), 1 (doubtful) or 2 (obvious).

For porosity, a more complex scale is used considering a total of six categories (1 to 6).

Sample sets were evaluated by one expert and two novice operators with little experience. Hence, three different scores were obtained.

Between operators, evaluations were compared considering that:

- if the difference between the scores was 0 → there was a match
- if the difference in valuations was > 2 → there was a discrepancy



Cork planks



Plank transversal cut

References

- Benito Lázaro, David (2014). *Revisión y desarrollo de modelos de clasificación del corcho en plancha*. Proyecto Fin de Carrera / Trabajo Fin de Grado, E.T.S.I. Montes, Forestal y del Medio Natural (UPM).
- García de Ceca, J.L. (2001) *Factores que afectan a la calidad del corcho en plancha*. Universidad Politécnica de Madrid, 166 p.
- Roldao, M. (1987) *A qualidade da cortiça*. Cortiça (583): 17-18.
- Zapata Blanco, S. (ed.) (2008) *Cork oak woodlands and cork industry: present, past and future*. Girona, Museu del Suro de Palafrugell.

"Seguros à terra / com garras de bronze,
os sobreiros sonham / impossíveis rumos".
O poeta perguntador



Imagem Armindo José Rodrigues: Câmara Municipal de Lisboa
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Results & Discussion

Table 1: Percentage of Discrepancies According to Anomalies.

ANOMALIES (GRADE)	EXPERT	NOVICE 1	NOVICE 2
Irregular belly (0-1-2)	0.82	1.92	0.00
Scrap (0-1-2)	0.00	1.92	1.92
Green cork (0-1-2)	0.00	0.00	0.00
Yellow stain (0-1-2)	1.64	0.00	0.00
Other stains (0-1-2)	4.10	19.23	7.69
Horizontal nail (0-1-2)	4.92	0.00	1.92
Vertical nail (0-1-2)	3.28	1.92	0.00
Clay (earthy corkwood) (0-1)	1.64	0.00	1.92
Cracks (0-1-2)	0.00	5.77	7.69
Exfoliation (0-1-2)	0.82	3.85	0.00
Insects (0-1-2)	10.66	0.00	25.00
Porosity (1-2-3-4-5-6)	11.48	21.15	26.92

Table 2: Scored Accuracy (total and %) between Operators.

Accuracy	Novice 1 vs. Novice 2		Novice 1 vs. Expert		Novice 2 vs. Expert	
	Scores	%	Scores	%	Scores	%
0, coincidence	867	59.2	395	63.1	361	57.9
Difference of 1	549	37.5	200	32.0	224	35.9
Difference ≥ 2	48	3.3	29	4.9	39	6.2

Table 3: Matches by Novice Operators.

Accuracy (%)	Novice 1	Novice 2
Exact score	63.1	57.9
Score difference 0-1	95.1	93.8

Differences between the evaluations by the novice operators are very low: 95.1% (63.1+32.0) vs. 93.8% (57.9+35.9) for a difference up to 1.

Discrepancies: Between novice operators compared to the expert are close to 5% (4.9 and 6.2); between both novices are even lower (3.3%).

Porosity caused the biggest number of discrepancies and differences in their score:

There is always a measure of porosity in any sample, whilst there may be no presence of other anomalies.

Conclusions

It is possible to apply objective criteria by non qualified workers for evaluating anomalies in cork samples, with a minimum of training.

Questions, comments...

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