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Flammability of species for use as fuel breaks in forest fires prevention

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Introduction

Fuel breaks are strips of vegetation with species of lower flammability than those of the main cultivation, aiming to reduce or prevent the fire spread. To determinate the species to compose fuel breaks, it is evaluated their flammability, which is the capacity of the vegetation to burn.

In this context, the present work aimed to evaluate the flammability of *Casearia sylvestris* and *Camellia sp*.

Material and Methods

Flammability was determined according to the methodology recommended by Valette (1990) and Petriccione (2006).

Species: *Casearia syslvestris* e *Camellia sp*.
Combustible material: thin leaves and branches (Ø < 0,7 cm)

Firing repetitions: 50
Sample:1 ± 0,1 g of raw combustible material

Epirradiator test (250 – 350 °C)
The burnings that exceeded 60 seconds: classified as "negative burning“.

Combustion characteristics :
IT = ignition time, in seconds
TC = time of combustion, is seconds
MFH = maximum flame height, in cm
N = ignition frequency
FI = flammability index (Image 1)

Image 1 – Flammability index

Ignition time (s)	Ignition frequency (N)					
	<25	25-38	39-41	42-44	45-47	48-50
>32,5	0	0	0	1	1	2
27,6-32,5	0	0	1	1	2	2
22,6-27,5	0	0	1	2	2	2
17,6-22,5	1	1	2	2	3	3
12,6-17,5	1	1	2	3	3	4
<12,6	1	2	3	3	4	5

Source: Valette (1990)
Legend: 0 = very low flammability; 1 = low flammability; 2 = moderately flammable; 3 = flammable; 4 = very flammable; 5 = extremely flammable.

Results

Table 1 shows the flammability average values of the studied species.

Table 1 – Flammability average values

Species	N	AIT	ATC	MFH	FI
Casearia sylvestris	48	17,5	5,3	13,5	4
Camellia sp.	50	18,7	14,7	12,2	3

Legend: N – ignition frequency; AIT = average ignition time, in seconds; ATC = average time of combustion, in seconds; MFH = máximum flame height, in centimeters; FI = flammability index.

Conclusion

- *Casearia sylvestris* and *Camellia sp.* were classified as “flammable” and “very flammable” species, respectively;
- It is recommended that these species are submitted to combustion and calorimetry analyzes in future studies to corroborate with these results.

References

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