STUDY OF MORPHOLOGICAL STRUCTURE AND THE GENETIC CONTROL OF LIGNOTUBER IN EUCALYPTUS

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. ***Introduction.*** *Eucalyptus sp.* originates from Australia and has adapted very well to Brazilian climatic conditions, from being used as a source of timber and raw material for production of pulp, paper and other supplies [5]. Eucalyptus hermaphrodite flowers, pollination by insects, outcrossing favored by protandry, but is also a rate of inbreeding [4].

This genus has a characteristic common to almost all species (95 %), which is the presence of a basal body, the lignotúber. Lignotúberes are lumps of wood found in the axils of the cotyledons or the first pair of leaves in the early stages of development. The lignotúber has the task of promoting the budding of plants and store nutrients [9, 1], possessing large amounts of reserve parenchyma (stock carb), and also many dormant buds that have the role of sprouting [7].

The heritability for the character lignotúber varies among species and even within sub-races, which suggests environmental influences on expression of this trait. The morphology and silvicultural aspects of lignotúber been relatively well studied, however, the genetic information of this nature are not well understood, and its inheritance in hybrid individuals [6, 8].

The objective of this work was the understanding of the type of inheritance lignotúber in *Eucalyptus grandis* X *urophylla* as well as monitoring the appearance of this character in the study population during the time covered in this study.

MATERIAL AND METHODS.

Analysis of the genetic control of Lignotuber. We used 111 individuals from a population of self-fertilization of a hybrid individual urograndis. This hybrid was obtained from a cross between the species *E.grandis* and *E.urophilla* belonging to the breeding program at Suzano Papel e Celulose. The seeds were germinated in plastic pots cleaned, containing a mixture of sand and vermiculite. Part of successfully seeded, and after reaching an acceptable level of development of root system were transferred to pots.

In total, 111 seedlings were transplanted, with 111 young subjects filled, with varying degrees of development.

Was conducted in this population monitoring of plant growth under the conditions offered, as well as developments in the emergence of lignotúber in individuals over time in which the study was conducted.

RESULTS AND DISCUSSION.

Evaluation of the development of lignotúber. From the cuts made in lignotúber it was possible to observe the various cell types such as parenchymatous cells, which contain reserves of starch and are quite numerous in relation to the stem, the region of the yolk, where the expansion takes place to form the mass of lignotúber. These observations agree with previous studies [1, 2] lignotúber they found in the same tissues in the stem, as foreign exchange, phloem lignified walls, rhytidome (bark), the conductive vessels.

These individuals was quantified the proportion of positive and negative for the presence of character, and the results are presented in Table. In individuals are discriminated against and their situation in each of the assessments.

In the first and second evaluation, conducted on 21.03.2005 and 02.06.2005 respectively, some individuals had a low level of development, which did not allow their inclusion in the statistics on the presence or absence of lignotúber. They are: 20, 24, 35, 41, 52, 80 and 91.

This evolution in the emergence of lignotúber is clearly visible in the figure, which presents the results of the evaluations.

The analysis of table and figure indicates that when the stress was increased the number of plants with lignotuber were increased too, this indicates the ratio of formation of lignotuber and abiotic stress., We believed that the lignotúber, as a body related to reserves and regrowth, facilitates the adaptation and survival of individuals with scarce environments, the population was exposed.

Table. **Subjects of the population with and without lignotúber**

analysis	Excluded individuals	Individuals with lignotúber	Individuals without lignotúber
21/03/05	20, 24, 35, 41, 52, 80 e 91	6,7,10,11,16,23,26,34,37,44,46, 47,49,53,59,61,65,66,68,75,78, 81, 85,92,93,96, 98,100, 105,109 e 110	**Other subjects not listed on the side**, **until the** 111
02/06/05	20, 24, 35, 41, 52, 80 e 91	**All subjects above plus:** 1,3,19,22,25,29,40,43,55,58, 72,76, 79,82,84,87,89,94,101 e 111	**Other subjects not listed on the side**, **until the** 111
01/08/05	20, 24, 41, 52, 80 e 91	**All subjects above plus:** 2,18,32,35,38,42,56,62 e 97	**Other subjects not listed on the side**, **until the** 111
06/09/05	20, 24, 41, 52, 80 e 91	**All subjects above plus:** 9,17,28,54,88 e 104	**Other subjects not listed on the side**, **until the** 111
31/10/05	24, 41, 52 e 80	**All subjects above plus:** 20 and 51	**Other subjects not listed on the side**, **until the** 111
18/01/06	24 (morreu), 41 e 52	**All subjects above plus:** 13,48 and 71	4,5,8,12,14,15,21,27,30(morreu),31,33,36,39,45,50,57,60,63, 64,6769,70,73,74,77,83,86,90, 91,95,99102,103,106 e 108.

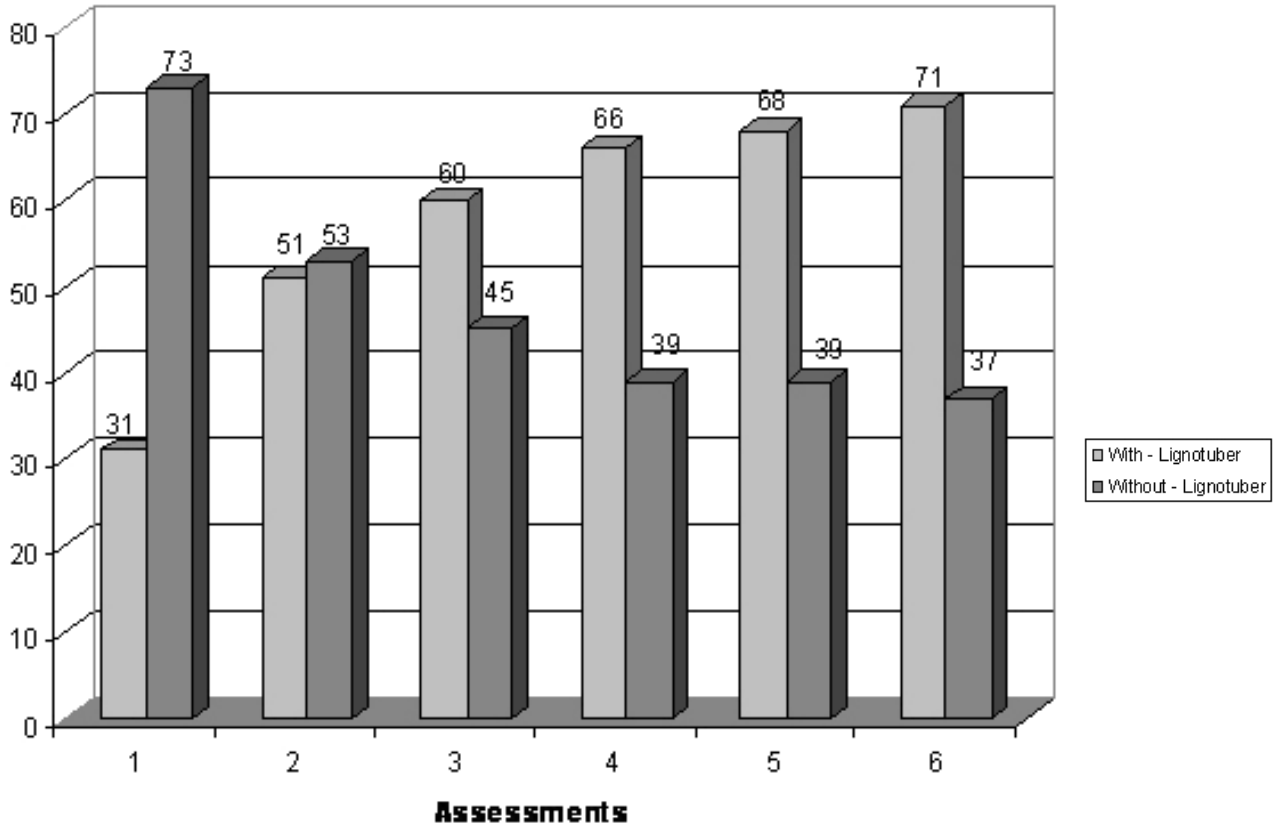

Figure. Proportion of plants with and without lignotuber after the six assessments.

The species *E. grandis* used with one of parentasi Lignotuber not present while the species *E. urophylla* has the character. The hybrid urograndis lignotuber presented in 100 % of plants assessed.

Considering that the F_1 parents were heterozygous for this trait, it is expected that three quarters of the F_2 plants lignotúber present

When was the first evaluation, only one fourth of the plants had lignotúber, this number has fallen by half in the second evaluation, and was also growing in subsequent evaluations, reaching 66 % in the sixth review.

It is likely that even more plants of this population may present lignotúber, but even this does not occur, this number reached up to the sixth assessment is sufficient and acceptable for the test of chi-square for the initial hypothesis is accepted, i. e. control gene for the trait is monogenic and dominant lignotúber.

From the assessments made in the field with the population, could also see that the development of lignotúber may be late in many plants, and that real assessment about the presence or absence of this character must necessarily be regarded as the time. This has previously been reported in other studies, as in Carr et al, [2], Carter and Paton, [3], among others

The formation of lignotúber is given by the expansion of surrounding tissue yolks accessory, and can be developed in four distinct ways. In all four modes, lignotúber begins to appear in 3 to 6 months of age of the plant, differing by the relative positions occupied by the developing axillary buds and the buds ancillary lignotúber. The same authors, says, however, that the ability to form lignotúber is not restricted to the cotyledon nodes of the primary buds, but also is owned by branches from the accessory buds.

LITERATURE

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PIGMENT APPARATUS OF DIFFERENT BIOMORPH OF *SAXIFRAGA OPPOSITIFOLI* IN ARCTIC

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Abstract. Our investigation was made in the High Arctic tundra at region Barentsburg (Svalbard) during the seasons of 2007–2010 years. *Saxifraga oppositifolia* L. is morphologically variable, and many scientists recognize two morphs: the prostrate form and cushion form. The plastid pigments content of prostrate and cushion forms of *Saxifraga oppositifolia* were analyzed. Variability within these forms appeared not very significant. Morphological variability within population of *S. oppositifolia* appeared to be adaptive for this species as a pioneer in the primary succession in High Arctic where the selective forces vary spatially and temporally.