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STUDY ON POLLEN GERMINATION CAPACITY IN SOME FOREST SPECIES

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Abstract: Testing of pollen viability in the present study was performed using the iodine staining method in potassium iodide. Fertile pollen in the presence of dye turned black, while sterile pollen remained colorless, or weakly colored. The anthers were harvested in the advanced floral button phase from four species (larch, birch, horn and forsita) on the USAMV campus, Cluj-Napoca. The anthers were fixed in Carnoy mixture (ethyl alcohol and glacial acetic acid, 3:1) and pollen germination capacity testing was done directly on solid nutrient medium. The results regarding the number of viable pollen grains is high (more than 30%), which means that the success of pollination can be ensured from this point of view, using as paternal genitor one of the analyzed species.

• Introduction

Knowing the germination capacity of pollen is important because it allows knowing the value of a genotype as a pollinator in interfertile combinations, as well as for artificial hybridization, when pollen must have a germinability of at least 30% to ensure successful pollination. Pollen is a fine powder, made up of numerous pollen grains, yellowish-white in color. The pollen grain is a microspore that represents the male gametophyte.

• Material and method

Analyzed species: *Larix decidua*; *Betula pendula*; *Cornus mas* and *Forsythia* spp.

Mature pollen, Nutrient medium, Sterile petri dishes, Distilled water, Brushes, Microscope, Anthers harvested in the floral button phase, Carnoy mixture (ethyl alcohol and glacial acetic acid in a ratio of 3:1), Microscope slides and needles.

Methods:

Direct method - (Determination of pollen germination capacity on solid nutrient medium),
Indirect method - (Determination of pollen viability).

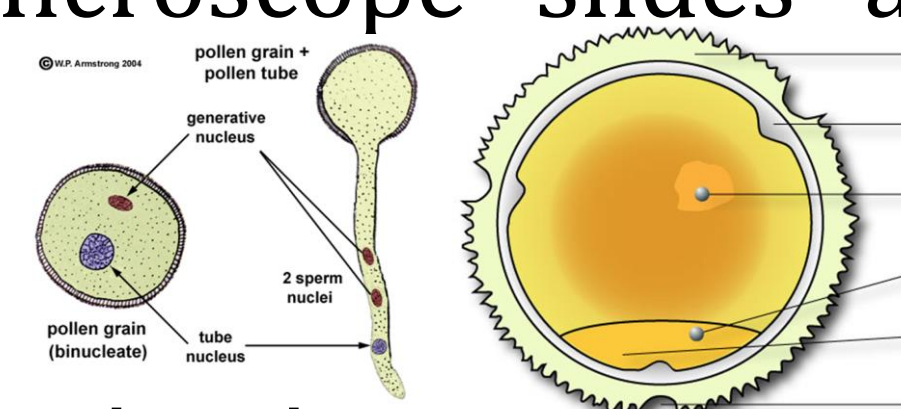


Fig. 1. Determination of pollen USAMV laboratory

• Results and discussions

More than 30% of pollen grains are viable for each species. The species with the highest percentage of viable grains is *Forsythia* (94%). The shape and size of pollen grains was almost similar in all species studied. Major differences could have been signaled if pollen grains had been sectioned, as recommended. The number of viable pollen grains is large (more than 30%), which means that the success of pollination can be ensured from this point of view, using as paternal genitor one of the species presented.

Species	Total number of pollen grains counted	No. of coloured grains (viable)	No. of colourless grains (non-viable)	Percentage of viable grains (%)
<i>Larix decidua</i>	300	270	30	90
<i>Betula pendula</i>	300	279	21	93
<i>Cornus mas</i>	300	275	25	92
<i>Forsythia</i>	300	281	19	94

Species	Total number of pollen grains counted	No. germinated grains	No. of ungerminated grains	Percentage of germinated grains (%)
<i>Larix decidua</i>	100	69	31	69
<i>Betula pendula</i>	68	56	12	82
<i>Cornus mas</i>	120	112	8	93
<i>Forsythia</i>	104	89	15	85

Table 1. The results obtained for the analyzed species

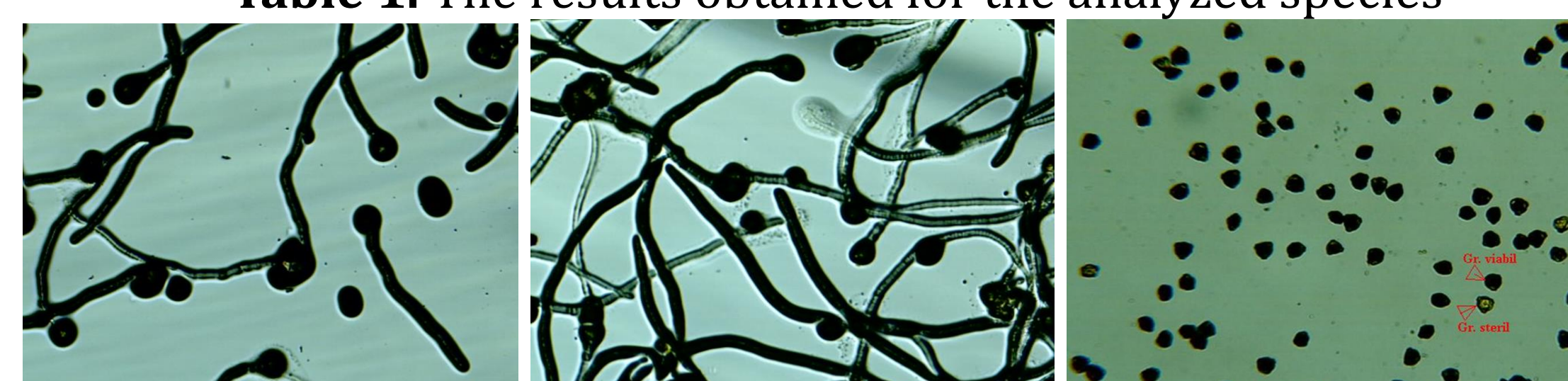


Fig. 2. The results obtained for the analyzed species

• Conclusions

As a recommendation, other aspects that need to be taken into account in the case of directed pollinations for inducing the necessary variability in creating new cultivars include, first and foremost, the interfertility of the parental forms."

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