

# Seed Symposium

# Abstracts

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## Abstract 103

**Incidence of green seeds in soybean genotypes produced under temperature and water stress**

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Soybean plants under water stress associated with high temperatures during seed maturation and pre-harvesting may show green seeds with expressive reduction on the seed lot quality. With the objective to evaluate the occurrence of green seeds, the effects under the retention of chlorophyll and the activity of the enzyme chlorophyllase among soybean genotypes, seeds of four soybean cultivars were grown under greenhouse conditions until the developmental phase R5.5. From the phase R6 the plants were transferred to phytotrons under stress temperatures varying from 28°C to 36°C. The quantity of water used in the phases was controlled at the following levels: control; 10% of gravimetric moisture and without water. The seeds were harvested in R9 where the percentage of green seeds and weight of 100 seeds in the upper third, middle and lower third of each plant were evaluated. The content of chlorophylls and the activity of the enzyme chlorophyllase were also determined. The level of occurrence of green seeds was affected by the genotypes as well as by the unfavorable environmental conditions. The cultivar BRS 133 showed a smaller index of green seeds, lower retention of chlorophylls and higher activity of the enzyme chlorophyllase compared with the Robusta cultivar. The incidence of green and less dense seeds in plants grown under water and temperature stress was greater in the lower third of the plant. The content of chlorophylls a, b and total chlorophyll in green seeds was inversely proportional to the activity of the enzyme chlorophyllase.

## Abstract 104

**Effects of different temperatures and substrates on seeds germination of *Parapiptadenia rigida* (Benth.) Brenan (Fabaceae-Mimosoideae)**Vitor H.V. Mondo, Pedro H.S. Brancalion, Silvio M. Cicero, Ana D.L.C. Novembre, Durval D. Neto  
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*Parapiptadenia rigida* is a tree species that has been used in Brazil for forest restoration. However there is no information about the germination test for this species. Therefore, the effects of nine temperature intervals between 15°C and 35°C were evaluated using a thermo-gradient table with a daily photoperiod of 8 hours. The effects of the two substrates, paper (on top of paper and paper roll) and vermiculite (in vermiculite and on top of vermiculite), were analyzed in chambers with a daily photoperiod of 8 hours, under 25°C and 30°C, and the percentage germination and germination speed were determined. The treatment on top of paper was also tested without light. In the temperature intervals between 25°C and 33°C the germination was higher and faster, and the light did not affect germination. The most favorable conditions for the germination test of *P. rigida* seeds were the temperature 25°C and the substrates conditions on top of paper and in vermiculite.

## Abstract 105

**Evaluations of the morphologic structure and development of the pequi seed (*Caryocar Braziliense* Camb.) (*Caryocaraceae*) using images of magnetic resonance tomography**Maria P. Domene, Clóvis I. Biscegli, Lucimara A. Forato, Antônio C.O. Ferraz, João D. Biagi  
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The species *Caryocar Braziliense* Camb. (*Caryocaraceae*) is a native of Cerrado, having potential use for the pharmaceutical, cosmetics and food industries, to agroecological ends. The preservation is important because pequi is threatened with extinction. The objectives were to evaluate the internal morphology and

the development of the seed, using nuclear magnetic resonance tomographic images, which allow an initial and exploratory analysis of the fruit in a non-destructive way. A Varian tomograph (model INOVA) was used with magnetic field of 2T, that operates in the frequency of 85 MHz for the hydrogen nuclei. The images were obtained with repetition times (TR=2s), times of echo (TE=25ms) and 4 sweepings. The images obtained were weighed by the density of hydrogen and bidimensionally analyzed correlating gray levels with form, position and texture of the tissues. They indicate the water type present that can be free water or more closely attached to healthy tissues. The images were taken in the coronal and sagittal directions. Images of whole pequi seeds were made. To obtain the images, the seeds were placed to germinate in sand substratum, in greenhouses type BOD, with alternating temperature of 20-30°C, and photoperiod of 16 hours of light. Images were obtained at time intervals of two months. The structures of endocarp and the embryo were observed. The contrasts of the gray degrees may indicate viability of the seeds. Changes in the embryonic axis indicating the growth of the radicle were observed.

#### Abstract 106

### Pattern of radiographic images of *Taxodium distichum* (L.) Rich. seeds

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*Taxodium distichum* is an ornamental and forest species, used in forestry of marsh regions which originated in the United States of North America. Its wood is frequently used in carpentry and construction. The X-Ray technique is a useful tool to study the seed quality, anatomy and morphology of embryos and the formation of seed structures. The objective of this work was to make a pattern of radiographic and corresponding photographic images that permit characterization of the species by its seed anatomical and morphological structures and to identify physical damages produced by insects and others. Digital radiography images were taken with X-ray equipment (SEMAX, INTA-TEXEL, Argentina) during 0.65" of exposition to the X-ray. A digital photography image corresponding to the digital X-ray image was taken. The seeds were submitted to different treatments before the digital radiographic and photographic images were taken: a) seed imbibition in rolled paper at ambient temperature (20°C) for 24 hours; b) imbibition in rolled paper at 25 °C for 72 hours; c) immersion in water at ambient temperature for 24 hours; d) artificial damage with a puncture in dry seeds; e) artificial damage with fissures in dry seeds. The digital radiographic and photographic images obtained in the different treatments showed the same clearness. They also permitted good differentiation between empty and filled seeds, seeds with artificial damage simulating insect attack and fissures. The X-ray technique permitted characterization of the species by their anatomical and morphological structures and detection of insect damage or breakages and to make a radiographic pattern of *T. distichum* seeds.

#### Abstract 107

### Hydropriming of forestry seeds with physical dormancy from the Amazon: *Parkia pendula* [Benth ex Walp]

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Visgueiro is a neotropical large tree of economic and ecological importance. This study determined experimentally the imbibition time and moisture content which *P. pendula* seeds need in order to activate their metabolism and benefit from priming to improve the performance in the nursery. Seeds that had been recently collected (7 days) and stored (2 years) were compared. After clipping, the seeds were kept in water at 15 °C for periods of 4 to 28 hours to reach the desired degree of imbibition (20, 40, 60, 80 and 90%). They were sown immediately afterwards or passed through a 7 day slow drying (24 ± 2 °C and 68 ± 3 % r.h.), where the seed moisture content returned to values between 8,8 and 16,0 %. The five degrees of imbibition, with or without subsequent drying, were considered as treatments. For each treatment 4 replicates of 25 seeds were sown in moist sand in the nursery (26°C to 36°C). Without treatment new seeds showed 59 ± 8,9 % germination, less than that of stored seeds with 76 ± 11,3 %. The seeds were extremely sensitive to submersion in water. A prejudicial effect on germination performance was observed when the submersion period exceeded 8 hours corresponding to a seed moisture of 48 to 54%. However after a short submersion (4 hours) when seed moisture reached 26 to 31% (equivalent imbibition