

uncertain. Approximately 50% of the tests had seeds in the latter category. These were interpreted to be low vigour individuals with accumulated damage. In the absence of specific guidelines for the interpretation of staining patterns an arbitrary assumption was made that 50% of such individuals would be capable of germinating; accepting that this will be an underestimate in some cases and an overestimate in others. Using this approach, estimates of viability were not significantly different for 81 collections. In 26 collections TZ gave a significantly higher estimate of viability suggesting the presence of dormant individuals whereas in only 1 case did TZ under estimate viability. ISTA recommends that grass caryopses should be either dissected transversely below the embryo or dissected longitudinally through the embryo in preparation for TZ staining. The two methods were compared directly for 34 seed collections, representing 32 species. On average the transverse dissection gave a better match to the germination estimate of viability. Estimates were not significantly different for 24 collections when the transverse dissection was applied compared to only 15 for the longitudinal dissection. Advantages and disadvantages of amended TZ methods and analysis for a wider range of families are discussed.

84 - APPLICABILITY OF THE TOPOGRAPHICAL TETRAZOLIUM TEST FOR SEED VIABILITY TESTING OF WILD PLANT SPECIES

DAWS, MATTHEW I., TERRY, JANET, MILES, STEPHANIE, DAVIES, HANNAH & WOOD, CHRISTOPHER B.

Seed Conservation Department, Royal Botanic Gardens, Kew, Wakehurst Place, Ardingly, West Sussex RH17 6TN, UK, m.daws@rbgkew.org.uk

The topographic tetrazolium test (TZ test) is widely used for rapidly assessing seed viability in a wide range of species, particularly those that have been recently harvested, are dormant or are slow to germinate. However, there are only International Guidelines for the use of TZ for 87 mainly agricultural, horticultural and forestry species. For these species, the test has been validated and embryo staining patterns interpreted. However, for other species there are concerns about the applicability of the test; results can be complex and subjective.

TZ is widely used for seed viability testing with species for which there are no International guidelines on methodology and the interpretation of staining patterns. For example, the TZ is routinely used within the Millennium Seed Bank Project for viability testing of wild plant species. Here we examine the wider applicability of the test by presenting data comparing viability estimates (TZ test) with germination levels for >200 wild plant species.

TZ provided an accurate assessment of viability for many species. In particular, it was useful for species with dormancy i.e. low recorded germination but high estimated viability. Thus for many species the TZ test may enable a differentiation between dormancy and seed inviability. However, for some species, particularly in the Solanaceae and Aizoaceae, germination values were consistently higher than viability estimates. Thus, for these species the test as currently implemented does not work and points to the need for further research to optimise either staining times, or embryo dissection prior to incubation in TZ.

85 - RECOMMENDATIONS FOR GERMINATION TEST PROCEDURES FOR NATIVE TREE SPECIES FROM THE BRAZILIAN ATLANTIC FOREST.

DE S. MEDEIROS, A.C., DE A. ABREU, D.A., DOS SANTOS, A.F. & SOUSA, V.S.

Embrapa Florestas - National Forest Research Center of EMBRAPA, Cx. P. 319, 83411-000, Colombo, PR - BRAZIL, medeiros@cnfp.embrapa.br

Embrapa Florestas set up a native tree seed bank - BASEMFLOR established in Colombo, State of Paraná, Brazil, in order to provide seeds for uses such as reforestation programs, reclamation of degraded ecosystems, establishment and restoration of riparian forests and forest covers on water catchment areas, botanical gardens, local and regional seed banks, and for research projects. One of this research projects involves development of seed technology including studies for breaking dormancy and germinating seeds. Seed morphology was studied, as well, when it was considered to help in devising appropriate treatments to promote germination. Recommendations for germination test for "vacuum"

(*Allophylus edulis* – Sapindaceae), "catala" (*Drimys brasiliensis* – Winteraceae), "tamanqueiro" (*Aegiphila sellowiana* – Verbenaceae), "angico-pururuca" (*Anadenanthera falcata* – Mimosaceae), "guaçatonga" (*Caesaria sylvestris* – Flacourtiaceae), "plixirão" (*Miconia cabucu* – Melastomataceae), "angico-branco" (*Anadenanthera colubrina* – Mimosaceae), "canudo-de-plito" (*Escallonia montevidensis* – Saxifragaceae); "peroba-rosa" (*Aspidosperma polyneuron* – Apocynaceae), "vassoura-vermelha" (*Dodonaea viscosa* – Sapindaceae), "erva-mate" (*Ilex paraguariensis* – Aquifoliaceae); "bugreiro" (*Lithraea brasiliensis* – Anacardiaceae) and "bagaçu" (*Talauna ovata* – Magnoliaceae) were defined.

86 - FITTING TEMPERATURE PROFILES TO CALIBRATE THERMIC REGULATION PROBES FROM CLIMATIC ROOMS USED IN SEED TESTING

DEMILLY, DIDIER, BILLY, BÉATRICE, HERBERT, OLIVIER, WAGNER, MARIE HÉLÈNE & LECHAPPE, JOËL

GEVES SNES Rue Georges Morel 49071 Beaucauzé Cedex, France, dldier.demilly@geves.fr

Several seed tests as germination or seed health must be performed in climate rooms or incubators. Temperature conditions and associated tolerances are described in the ISTA methods e.g. 20°C+/-2°C for the germination tests. To fulfil these requirements it is necessary to characterize thermostatic chambers (temperature profiles) and to calibrate the probes used to check the temperature. Laboratories which are applying for accreditation against the ISO standard 17025:1999 are frequently required by their national accreditation bodies to determine and use uncertainty of measurement for the probes and the temperature profiles. In our laboratory, germination rooms are constantly monitored with temperature probes in one point in the room. A method has been developed to ascertain the temperature profile of equipment, to calibrate simultaneously the probe according to the profile and to determine the uncertainty. This work was based on the national norm AFNOR XPX 15 140 may 1999 "Measurement of air moisture – Climatic and thermostatic chambers – Characterization and verification". A calibrated temperature monitoring equipment was used with 9 probes. For each room temperature has been recorded in 9 points at least. Several parameters as mean, variability, uncertainty and conformity to the expected temperature have been calculated. They allow to check if the temperature regulation is well adapted, and to specify correction and acceptable limits to be applied to the probe used for routine check. Acceptable limits can be determined taking account of the whole uncertainty from both temperature profile and check probe.

87 - STORAGE POTENTIAL OF COTTON SEEDS PREDICTED BY VIGOUR TESTS AND BIOCHEMICAL ASSAYS.

DIAS, D. C. F.S., FREITAS, R.A., DIAS, L.A.S. & OLIVEIRA, M.G.A.

Department of Fitotecnia / BIOAGRO, Universidade Federal de Viçosa - UFV, 36571-000, Viçosa, MG, Brazil, dcdias@ufv.br

This study was done to determine the ability of biochemical assays and vigour tests to predict the storage potential of cotton seeds. Cotton seeds of IAC-20 RR and Fabrika cultivars were stored from May 2001, for 12 months under ambient environmental conditions and in a cool room (13°C) in Viçosa, MG, Brazil. Seed quality was assessed before storage by standard germination, accelerated aging, cool germination and electrical conductivity tests and biochemical assays (lipooxygenase and acid phosphatase activity, trypsin inhibitor, lipid and acid content). The generalized Mahalanobis distances procedure was used to assess the relationship between vigour tests and biochemical assays carried out before storage and the values obtained in the standard germination test performed after 2, 4, 6, 8, 10 and 12 months storage. There was the greatest similarity or smaller and no significative Mahalanobis distances among standard germination, accelerated aging and cool germination results. It was observed that accelerated aging and cool germination test performed before storage estimated seed viability after 8 and 10 months storage under environmental conditions, respectively. Electrical conductivity test and biochemical assays were not efficient to predict storability of cotton seeds.