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19. Germination response to seed pretreatments in two genotypes of mountain laurel (*Kalmia latifolia* L.). Taylor, L. L. and Conev, R. Harris J. R. HortScience 44(4):1102. 2009.

lenge of lack of networking for this phenomenal knowledge and much more of it that is globally available and will be available in the future. A decision was made to collect, consolidate and easily retrieve and share for appropriate use by the stakeholders. Therefore, the General Assembly of the Conference ICV-2002 decided to establish the Vegetable Science International Network (VEGINET). The goal of VEGINET is to strengthen partnership and inter-institutional cooperation among the member organizations of the vegetable sector toward improved production and utilization of vegetables. Through the funding received from USDA-CSREES-International Science Education Competitive Grants Program-2006, VEGINET-USA chapter was formed at approved March 2, 2007 by the VEGINET Secretariat at Prem Nath Agricultural Science Foundation (PNASF), Bangalore, India. The VEGINET is co-sponsoring the upcoming International Conference on Horticulture (ICH-2009) to be held during November 9-12, 2009 in Bangalore, Karnataka, India. The Conference is designed to provide a common forum for all stake holders to share their experience and expertise to suggest the technology-institution-policy package for sustainable production and marketing of horticultural products. A special session on the TCDC has been scheduled at this conference for the VEGINET members to interact with the international collaborators and stakeholders.

Specified Source(s) of Funding: USDA-CSREES-ISE

Seed Technology/Asexual Propagation
Saturday, 25 July 2009 1:15–2:00 pm

(263) Propagation of Alaska Bog Blueberry, *Vaccinium uliginosum*

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Fruits of bog blueberry, Vaccinium uliginosum, were collected in August and refrigerated for 8 days after which half were cleaned to remove seeds and the remainder were frozen (–5 °C). Four replicates of 50 fresh seeds were sown onto filter paper in Petri dishes as a control. Extracted seeds from fresh berries were air dried and sown as before at 2–3-day intervals up to two months to learn the effects of drying on seed germination. This experiment was repeated with seeds from frozen berries to learn the effects of freezing on seed germination. Seeds air dried at 21 °C for 60 days were cold stratified on moist filter paper at 4 °C for 30, 60, 90, and 120 days and compared to dry seeds held at 4 °C and seeds extracted from frozen berries. Air-dried seeds showed a linear decline in percent germination with the length of the drying period, but all percentages did not exceed 35% during the 60-day period. Seeds from frozen berries maintained high germination percentages regardless of length of freezing time (70 ± 12%). Cold stratification improved germination (28.5% to 36.0%) over air-dried seeds (9.5 ± 1.9%), but there was no difference among stratification times. Germination of all stratified seeds was significantly lower than seed extracted from frozen berries (71.0 ± 10%). Optimum germination occurs with seeds extracted from frozen berries and sown immediately and not permitted to dry out. Softwood stem cuttings of wild-harvested bog blueberry from new growth rooted more than 50% from 20 June through August, and rooting did not differ among collection dates [greenhouse mist propagation, 25 °C bottom heat, 0.3% IBA powder, perlite/vermiculite 1:1 (v:v)]. Cuttings collected from 30 different wild locations showed a significant location effect in rooting percentages. Among individual plants, rooting ranged from 0% to 100%, averaging 51 ± 24%. Optimum cutting collection time is nearly all summer, and both plant variation and location influence final rooting success.

Specified Source(s) of Funding: USDA CSREES New Crop Opportunities Research Grant

(264) Germination Responses of Purpletop and Big Bluestem Caryopses Subjected to Prechilling, Sodium Hypochlorite, and Storage

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Degraded meadow may be restored by sowing native seed mixes. Establishment of native plants into an area may benefit the restoration process by increasing animal habitat in restored zones. Slow germination and/or poor stand establishment following seeding of purpletop (*Tridens flavus*) and big bluestem (*Andropogon gerardii*) may limit the use of these warm-season grasses native to the United States. This study evaluated (1) caryopsis prechilling (presowing chilling) with distilled water (dH_2O); (2) prechilling with potassium nitrate (KNO_3); (3) soaking in 10% chlorine bleach (v/v; 0.6% NaOCl); and (4) storage conditions following seed treatments. Prechilling of 'VA Ecotype' purpletop and 'Niagara, NY Ecotype' big bluestem increased final germination percentage (FGP) and germination rate, compared to nontreated caryopses (control), following 7 or 14 days at 5 °C in dH_2O or 0.2% KNO_3 for purpletop and following 7 days at 5 °C in dH_2O for big bluestem. Germination synchrony increased following prechilling of purpletop but not for big bluestem. Determinations using slant tests indicated that storing prechilled and dried-back purpletop caryopses for 10 days at 5 °C reduced FGP and shoot lengths in comparison to moist-stored caryopses. Sowing prechilled, moist-nonstored purpletop caryopses resulted in greater FGP and shoot and root lengths than other seed treatment combinations or nontreated caryopses. Seedlings from prechilled caryopses of big bluestem moist-stored for 10 days at 21 °C had reduced root lengths in comparison to dried-back, stored caryopses. NaOCl treatments resulted in reduced FGP and root lengths for stored purpletop but had little or no effect on big bluestem. Greenhouse trials indicated stand establishment increased four weeks after sowing prechilled caryopses compared to nontreated caryopses; however, sowing of prechilled or nontreated big bluestem caryopses resulted in similar stand establishment.

(265) Germination Response to Seed Pretreatments in Two Genotypes of Mountain Laurel (*Kalmia latifolia* L.)

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Mountain laurel, *Kalmia latifolia*, is an evergreen woody shrub in the family Ericaceae, and is found in the entire eastern portion of the United States from southwestern Maine to northern Florida. Most mountain laurel germplasm used for breeding purposes in the U.S. is from the northern portions of its range. Our research is directed toward breeding

of mountain laurel germplasm better suited for the southern portion of its range. The presented work investigates the differences in seed germination of two mountain laurel genotypes—one originating from a warmer location (USDA hardiness zone 8) and one originating from a colder location (USDA hardiness zone 6). Six hundred seeds of each genotype were subjected to 4 treatments—soaking overnight in distilled water (control), soaking overnight in 100 ppm gibberellic acid (GA), soaking overnight in 200 ppm GA, and subjecting to scarification at −80 °C for 24 hours with subsequent soaking overnight in distilled water. Seeds were placed on moistened germination paper in Petri dishes and the Petri dishes placed randomly in a growth chamber (324 $\mu mol \cdot m^{-2} \cdot s^{-1}$ of light from 8 a.m. to 12 a.m. at a constant temperature of 21 °C and relative humidity of 80%). After 29 days the experiment was discontinued as no further germination was occurring. All seeds subjected to scarification lost their vitality. An interaction between seed origin and GA treatment was evident. The 100 ppm GA treatment clearly inhibited germination in the southern genotype in terms of both germination dynamics and rate. The same concentration applied to the northern genotype led to earlier germination and a higher germination rate compared to the control. The 200 ppm GA treatment of the southern genotype seeds did not have an effect on either onset of germination, or on total germination compared to the untreated control. The northern genotype responded to the same treatment with earlier and accelerated germination, however, as of day 19, germination reached a plateau with insignificant increase afterwards. At the end of the experiment the germination rate of the northern genotype treated with 200 ppm GA was significantly lower than the control.

(266) Amending Storage Vessel and Media Improves Subculture Interval of *Musa* sp. Tissue Culture Plantlets

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Bananas and plantains (*Musa* sp.) are some of the most important food crops in the world. The USDA–ARS, Tropical Agriculture Research Station *Musa* spp. collection consists of 140 accessions maintained as clonally propagated plants in field plots as well as in tissue culture. Accessions maintained in tissue culture require routine sub-culturing as the nutrient medium is lost due to uptake by the plant. Current subculture intervals are carried out, every six months which is a resource- and time-consuming effort. In an attempt to lengthen the subculture interval period, an experiment was conducted to evaluate modified nutrient medium recipes as well as different storage vessels on four *Musa* spp. accessions. Three containers were tested: 1) glass test tubes, 2) glass test tubes + Parafilm® and, 3) in tissue culture bags. In addition, three medium formulations: 1) standard MS, 2) half-strength MS and, 3) MS with 4% mannitol were also evaluated. Treatment effects were determined by measuring root and leaf growth, number of suckers and rating plant vigor. Glass test tubes + Parafilm® and culture bags resulted in increased transfer intervals regardless of variety and medium formulation. Accessions did not have a significant effect on subculture interval. Subculture interval for glass test tubes + Parafilm® and tissue culture bags was extended an additional 6 months. Although at the experiment's termination the healthiest plants could be found in the half strength standard MS medium combined with the glass tubes + Parafilm®, additional advantages with the culture storage bags were identified, mainly the ease of using them for distribution purposes. The USDA–ARS TARS is the official *Musa* spp. germplasm repository for the National Plant Germplasm System and as such distributes these genetic resources for research and education purposes.

Specified Source(s) of Funding: USDA–ARS?

(267) Histological Analysis of Blueberry Regeneration

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Blueberry, *Vaccinium corymbosum* 'Aurora', was cultured *in vitro* on regeneration medium and histologically analyzed in an effort to identify the regenerative cells. Leaves with petioles were cultured on Woody Plant Medium supplemented with TDZ and IAA with the adaxial surface in contact with the medium and samples were removed daily and fixed to capture all stages of regeneration. Leaves were found to vary greatly in reaction time and intensity, as there was a gradient of division from adaxial to abaxial and from proximal to distal ends of the leaves. On three of the sectioned leaves, an area of organized division made a mound formation which appeared meristematic. The spongy parenchyma were the first cells to begin formation of this area, and are assumed to be the progenitors of regeneration. Further knowledge of blueberry regeneration not only helps to better understand the regeneration process, but could also prove useful in transformation studies of blueberry.

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(268) Nutrition Management of Perennial Stock Plants to Optimize Cutting Quantity and Quality

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Some popular garden perennials yield low numbers of viable cuttings per stock plant and/or produce cuttings that are slow to develop significant root mass, preventing propagators from meeting demand for rooted liners. Our objective was to determine the impacts of stock plant nutrition on number of potential cuttings, rooting percentage, and the subsequent root development of cuttings of some popular but difficult to propagate perennials. *Gaura lindheimeri* 'Siskiyou Pink', *Dianthus* 'Pixie Star', *Perovskia atriplicifolia* 'Filigran', and *Salvia ×sylvestris* 'May Night', were evaluated using five treatments of 0, 50, 100,150, 200, and 250 $mg \cdot L^{-1}$ N. Greenhouse-grown stock plants were fertilized with a custom-formulated complete liquid feed for ten weeks at which time potential cuttings were counted, and the sample