This article was listed in Forest Nursery Notes, Summer 2007

9. Enhancing germination of *Carex pensylvanica* seed. McGinnis, E. E. and Meyer, M. H. HortScience 42(4):930. 2007.

500 mg/L, or 1,000 mg/L, ampicillin, carbenicillin, cefotaxime, and 50mg/L + 50 mg/L, 250 mg/L + 250 mg/L or 500 mg/L + 500 mg/L of ampicillin + carbenicillin on Gamborg B5 media. After 1 month on antibiotic media, stem explants were screened for bacteria to determine bacteriostatic, or bactericidal effects. In addition, bacterial isolates were cultured on LB agar and tested against ampicillin, carbenicillin, and cefotaxime. H. macrophylla showed the greatest phytotoxicity (61%) when treated with 500 mg/L, and 1000 mg/L cefotaxime, while all other groups showed between 13% and 5% phytotoxicity. All treatments had a bactericidal effect. Ampicillin and ampicillin + carbenicillin treatments controlled growth significantly better than all other treatments when bacterial isolates were cultured on LB agar media.

(086) Enhancing Germination of *Carex pensylvanica* Seed

Esther E. McGinnis*, Univ. of Minnesota, St. Paul, MN, mcgi0031@umn.edu

Mary Hockenberry Meyer, Univ. of Minnesota, St. Paul, MN, meyer023@umn.edu

Carex pensylvanica is a native woodland sedge that has good potential as a groundcover and alternative lawn. Low seed set combined with poor germination has limited its horticultural use. Mechanical and physiological dormancy along with unfilled achenes are all obstacles to germination. Three experiments were conducted to enhance *C. pensylvanica* germination. In the first experiment, the effect of perigynia removal and the presence of light was tested. The second experiment examined whether one, two or four months of after-ripening and gibberellic acid could overcome physiological dormancy. In the final experiment, seeds were exposed to three different germination temperatures: a constant temperature of 22 °C, and two diurnally fluctuating temperature regimes of 26/18 °C and 30/14 °C. Based on these experiments, it was concluded that *C. pensylvanica* seed are light obligate. Furthermore, germination was optimized by perigynia removal, four months of after-ripening, and diurnally fluctuating germination temperature of 26/18 °C. Gibberellic acid did not appear to aid in germination of this species.

Specified source(s) of funding for the work presented in this abstract: Department, College, State and/or HATCH

(087) Seed Germination in Horned Poppies, *Glaucium* spp.

Karen Elsner*, Colorado State Univ., Fort Collins, CO, elsnerkc@simla.colostate.edu

Harrison Hughes, Colorado State Univ., Fort Collins, CO, hghughes@lamar.colostate.edu

Glaucium sp., Horned Poppies, are potential candidates for introduction to Colorado as new ornamental perennials. The various Horned Poppy species originate from Europe and the Middle East, specifically from the Mediterranean Basin to the arid mountains of the Middle East. These areas generally have hot, dry summers and mild, wet winters similar to Colorado's climate. However, the introduction of *Glaucium* into Colorado has been slow because their seeds have not germinated will in nursery greenhouses. Initial studies on stratification of *G. flavum* showed an increase from 15% germination without stratification to 54% germination with stratification at 8 °C. Another study conducted on *G. acutidentatum* and *G. flavum* from two different collection years, 2003 and 2005, compared seed coat treatments of acid scarification, hot water soak and mechanical scarification. Acid scarification resulted in improved germination for both species; however, the older seeds of *G. acutidentatum* showed a slight increase with a 60-minute acid treatment as compared to 30 minutes. Seed from 2005 did not exhibit this difference. Another study is under way to study the affect of combined scarification and stratification on *G. acutidentatum*, *G. grandiflorum*, and *G. corniculatum*.

Specified source(s) of funding for the work presented in this abstract: Department, College, State and/or HATCH

(088) Effects of Stratification, Germination, Temperature, and Pretreatment with Gibberellic Acid and Hydrogen Peroxide on Germination of 'Fry' Muscadine (*Vitis rotundifolia*) Seed

Patrick Conner*, Univ. of Georgia, Tifton, GA, pconner@uga.edu

Germination of muscadine seed has frequently been low and irregular in the Univ. of Georgia breeding program. In 2005 and 2006, a systematic study was undertaken to determine the best seed treatments and germination conditions for muscadine seed. Open-pollinated seeds of 'Fry' muscadine were used for all treatments. Seed was air-dried for several days to approximately 23% moisture before treatments were initiated. Stratification of seeds was performed by placing dry seed in damp vermiculite at 4 °C for periods of 0, 30, 60, and 90 days. The 90 day stratification period gave the highest germination percentage, with successively lower germination in the shorter stratification treatments. Pretreatment of seeds prior to stratification with three rates (0.5 M, 1.0 M, and 2.0 M) of hydrogen peroxide (H_1O_1) and four rates (1,000 ppm, 2,000 ppm, 4,000 ppm, and 8,000 ppm) of gibberellic acid (Ga_3) were used in an attempt to promote germination. Low rates of H_1O_1(0.5M) and Ga_3 (1,000 ppm) increased germination rates, while high rates of Ga_3(4,000 ppm and 8,000 ppm) reduced germination. The effect of temperature on germination was investigated by germinating seeds in four different temperature regimes: 22 C. 22/27 °C (16/8 h), 22/32 °C (16/8 h), and 22/37 °C (16/8 h). The 22/32 C temperature regime was significantly better than the other regimes. Nicking the seed coats prior to stratification and soaking seeds in running water after stratification were ineffective in promoting germination.

Specified source(s) of funding for the work presented in this abstract: Department, College, State and/or HATCH

(089) Effect of IBA on Rooting *Rhododendron carolinianum* Rehd. Cuttings

Fang Geng*, Central South Univ. of Forestry and Technology, Changsha, HN. csfugf@163.com

Donglin Zhang*, Univ. of Maine, Orono, ME, donglin@maine.edu

Jianmin Fu, Chinese Academy of Forestry, Zhengzhou, HA, fjm371@163.com

Xun Chen, Guizhou Academy of Science, Guiyang, chenxunke1956@163.com

Lanying Du, Chinese Academy of Forestry, Zhengzhou, HA, fjm371@163.com

Rhododendron carolinianum Rehd. is a beautiful evergreen shrub. It is native to Eastern US coast and tolerates for –33 °C. The plant and its cultivars are not common in the landscapes because of their vegetative propagation difficulty. Hardwood cuttings of Carolina Rhododendron were collected in October and treated with IBA powder and potassium salt. All cuttings were placed under mist benches equipped with 24 °C bottom heat. IBA rooting hormones significantly affected rooting of *Rhododendron carolinianum* hardwood cuttings. Plants with hormone treatment were rooted from 25.0 to 84.4%. No root was observed from cuttings without IBA application. IBA concentration played an important role on rooting of cuttings. The highest rooting percentage (84.4%) was obtained from the double-dip treatment of 8000 mg·L^{-1} KIBA quick dip, then 8000 mg·L^{-1} IBA powder. IBA concentrations at 8000 mg·L^{-1} or lower resulted 43.8% or lower rooting rates. Liquid 16,000 mg·L^{-1} KIBA alone was too higher for the plants and stem burn were noted from many dead cuttings. Cuttings soaked for 24 h at 200 and 400 mg·L^{-1} KIBA generated 31.3% and 37.5% of rooting, respectively. Root quality, as indicated by root ball volume of rooted cuttings, significantly affected by hormone concentrations and application methods. The biggest root ball, 38.9 cm, was found under double dips of 16,000 mg·L^{-1} IBA. The treatment with 24-h soaking at 200 mg·L^{-1} KIBA yielded the smallest root ball of 12.1 cm. Rooted cuttings were moved to the cooler for 6 weeks and vernalized for the next spring's flash growth.

Note: Donglin Zhang is also a guest professor at Central South University of Forestry and Technology, Changsha, Hunan, China.