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Germination characteristics of water sedge, *Carex aquatilis*, and cotton sedge, *Eriophorum angustifolium* from Arctic coastal wetlands, Prudhoe Bay, Alaska

Well sites, roads, and buildings at Prudhoe Bay Oilfields, Alaska, are built on permafrost soils that surface-thaw in summer to form extensive wetlands. To prevent thawing and subsidence of subsurface, ice-rich soils, gravel pads 2m or more thickness are built to support these facilities. As the oilfields age and are decommissioned, the gravel is removed, and sites must be revegetated. Since the 1970s, efforts to revegetate wetlands have included a variety of planting techniques and seed treatments mostly with native grasses. Water sedge, *Carex aquatilis* and cotton sedge, *Eriophorum angustifolium*, form large populations that spread vegetatively by rhizomes and often dominate these wetland environments. Despite their abundance, these species have not been considered for revegetation because vegetative methods are time consuming and expensive, and little is known about seed germination, seed development and viability. Germination experiments were begun to learn methods of seed germination of water sedge and cotton sedge for eventual use in direct-seeding or plug production for arctic wetland revegetation. Seeds of cotton sedge did not germinate more than 15% under a wide variety of conditions: 4 collection dates (30 July – 23 Sep), 30 harvest locations, light (PAR 99 - 108 $\mu\text{mol m}^{-2} \text{s}^{-1}$, 24h). vs dark, alternating (25/13°C, 15/9h) vs constant (25°C) temperatures, temperature ranges (10-30°C, 5°C intervals), prolonged cold dry storage (4°C, 6 mos); cold moist, stratification (4C, 30 – 150 days) and combinations of storage and stratification. These early results hint that early-season (30 July) harvest dates followed by cold stratification and then germination under alternating temperatures in light are important to overcome a physiological dormancy. Seeds of water sedge germinated best (up to 80 percent, mean 67 percent with dry storage, light, alternating temperatures). Dry-stored seeds germinated about 10 percent more than fresh seeds. Collection date and location did not have an effect on germination. For revegetation, the conditions for optimum germination of cotton sedge remain unknown. However, water sedge seeds have promise for commercial plug production or direct seeding of arctic wetland soils.