

GENERAL INTRODUCTION:

Research with Danthonia sericea Nutt.¹ was initiated to analyze the physiological adaptation of selected populations to different habitats. This investigation consisted of two portions. The first part of this study was specifically designed to determine whether or not daylength has a differential effect on the growth and phenology of selected populations collected from Georgia to New Jersey. This portion of the study utilized clones of Danthonia sericea collected from several habitats and grown under transplant garden, greenhouse, and experimental photoperiod conditions. The second part of this investigation focused upon mature fruit characteristics, and included average weight and number of caryopses produced by panicles of selected populations under field and greenhouse conditions. The second portion of the study also included measurements of several different characters related to fruit production. These included lemma length, glume length, number of spikelets per panicle, and number of panicles per plant.

The Taxon:

Danthonia sericea is an ecologically variable species complex distributed through the eastern and southeastern portion of the United States in several different natural habitats. In general,

¹Nomenclature from Gleason and Cronquist (1963).

Danthonia sericea, or downy oatgrass, is a perennial grass which begins vegetative growth in its natural habitat in early spring and flowers in late spring or early summer depending upon the latitude of the population. Danthonia sericea var. sericea occurs on dry, acid, and well-drained sandy soils in openings or along the fringes of pine woods. This variety of Danthonia sericea has villous sheaths and is also villous along the back of the lemma. Danthonia sericea var. sericea is distributed chiefly on the coastal plain, especially in sand barrens, from southern New Jersey south to northern Florida and ^{west} east to Kentucky and Louisiana (Hitchcock, 1950).

Danthonia sericea var. epilis (Scribn.) Blomq. occurs in cedar bogs in the northern portion of its geographic range in southern New Jersey, and along stream borders or on granite out-crops in the southern portion of its geographic range in Georgia. Danthonia sericea var. epilis has foliage with relatively glabrous sheaths, and very thin lemmas that are villous only on the margin (Gleason and Cronquist, 1963). Certain collections exhibit variation in lemma villosity varying from lemmas that are villous only on the margin to those which are villous on the margin and also sparsely villous half-way up the midvein (Quinn and Fairbrothers, personal communication).

The Danthonia sericea complex thus provided an opportunity to study seasonal growth and development of different populations in relation to contrasting habitat types. It also provided populations growing in both hydric and relatively xeric habitats which could be examined for seed number and weight.