Pat Holloway 11-4-86

SUMMARY OF GERMINATION TESTS WITH ALASKA NATIVE PLANTS

In May, 1986 I conducted a small germination test using some of the seeds offered for sale through the Alaska Native Plant Society. Seeds were stored, refrigerated at 40°F for about 2 weeks, then they were divided equally among several treatments which included room temperature (70°F) and daily alternating temperatures of 70° and 50°F for 16 and 8 hours, respectively. These alternating temperatures more closely emulate outdoor conditions than the constant temperatures. Seeds were placed on moist filter paper in Petri dishes which were then enclosed in plastic bags to retard evaporation. Dishes were placed in a growth chamber under lights. Successful germination was defined as emergence of the radicle (seed root) from the seed, and counts were made daily for 20-30 days.

Some seeds also were stratified by placing them between moist sheets of paper at 40° F for various lengths of time. This chilling treatment is necessary to overcome dormancy in some seeds. The lupine seeds were treated by scarification prior to germination. Lupine seeds have a hard seed coat that is impervious to water. The seed coat needs to be rubbed with sandpaper, pricked with a needle, or soaked in concentrated sulfuric acid to allow water to enter and start the germination process. The total number of seeds for each species is listed as (n= # of seeds) in the summaries below.

Silene acaulis (n=142) Seeds began to germinate in 3 days at room temp. Maximum germination was 66% after 22 days. Alternating (alt.) temps did not promote germination since only 26% germinated after 22 days.

Papaver Hultenii (n=256) Seeds began to germinate in 3 days at room temp. with 73.9% of the seeds germinating within 7 days. After 10 days, germination was 100%. Germination was delayed and total germination reduced at alt. temps. Within 6 days only 24% had germinated, and after 20 days only 64.5% had germinated.

Saussurea angustifolia (n=60) No germination occurred at either room or alt. temps. Only one seed out of 15 germinated following stratification for 4 months, then germination at room temp.

Lupinus sp. (n=740) Seeds were scarified by soaking in concentrated sulfuric acid for 0,30,60 or 90 minutes. They were rinsed in water, then germinated as outlined above in alt. temps. Only 2.8% of the unscarified seeds germinated, while the percentage for 30,60 and 90 minutes of acid soak were 87.5%, 92.1% and 52.2%, respectively. Most seeds germinated within 6 days, and ungerminated, scarified seeds

quickly turned to mush. The lupine seedlings are very susceptible to damping off and should be sown only in a sterile medium with perhaps a fungicide drench.

Anemone parviflora (n=70) Seeds began to germinate after 14 days at room temp., and 20 days at alt. temps. After 26 days, total germination was 48.8% and 52.0% at alt. and room temps,respectively.

Veronica grandiflora (n=242) Seeds started to germinate in 3 days at both room and alt. temps. At room temp. 50% germination occurred within 7 days, while at alt.temps, germination was 50% after 14 days. Total germination after 20 days was 95% and 88.2% for alt. and room temps, respectively.

Lesquerella arctica (n=100). Seeds began to germinate within 3 days at both temps, but germination was more rapid at room temp. where 80% germinated within 6 days. In contrast, only 4% of the seeds at alt. temps. germinated after 6 days. Total germination after 20 days was 90.9% and 57.8% at room and alt. temps, respectively.

Armeria maritima (n=102). No germination occurred at either room or alt. temps. Some seeds were also stratified for 4 months,but no germination occurred.