


BROOM SNAKEWEED (*Gutierrezia sarothrae*) DISPERSAL, VIABILITY, AND GERMINATION

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Broom snakeweed achene dispersal was monitored by placing surface-level traps outwards in the cardinal directions from ten plants and collecting the achenes weekly or bi-weekly from September 1993 until seeds were no longer retained by the plants after 42 wk. About 50% of the achenes dispersed between October and December. Especially high numbers of achenes were dislodged during periods of intense winter winds and rains with 78% of the seed placed into the east tray and 86% falling within 50 cm of the parent plant. Achene production averaged 3928 (\pm 1146) per plant in 1993 and 2036 (\pm 987) per plant in 1994. Achenes collected over time directly from the inflorescence and achenes stored in nylon packets on the

soil surface averaged 82% viability during fall and winter. Achene viability declined rapidly in late spring and few remained viable before the next seed crop. Greenhouse experiments compared the influence of water application interval and water amount on broom snakeweed germination and seedling survival. Treatments consisted of four water intervals: daily, 5-d, 10-d, and 15-d; and four water amounts: field capacity (1/1 fc), 3/4 fc, 1/2 fc, and 1/4 fc. Germination was 42% at daily: 1/1 fc and no seed germinated at daily: 1/4 fc. Data suggest that optimum germination occurs when soils are maintained at a minimum soil matric potential (Ψ_m) $>$ -180 kPa for at least 4 d. Optimum Ψ_m for seedling survival appears to range between -300 and -900 kPa while seedling mortality would generally be expected with a Ψ_m of $>$ -1800 kPa.