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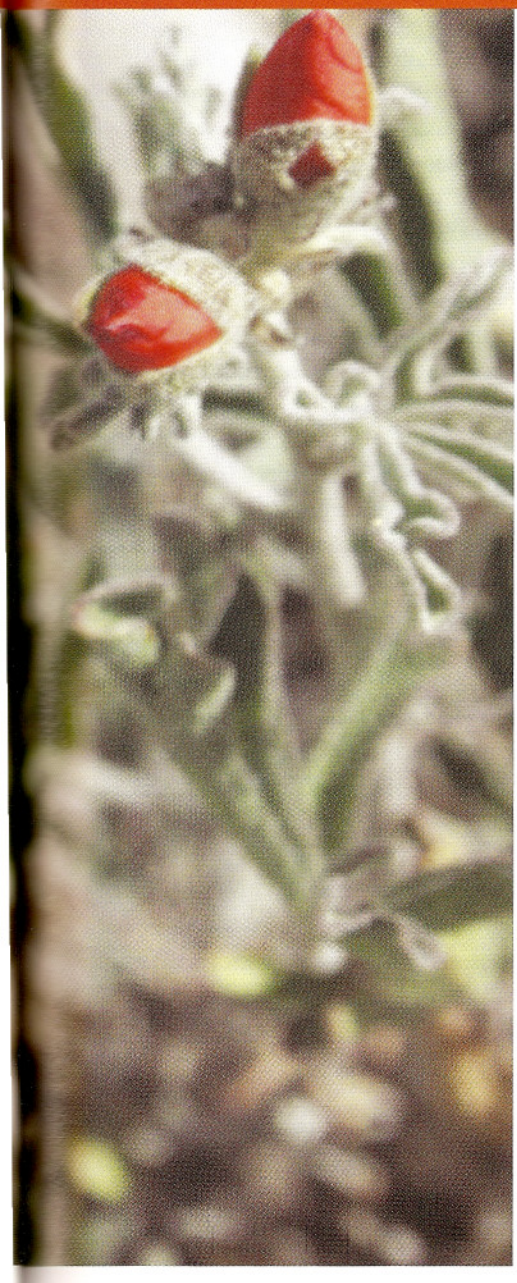

Optimal seeding depth of five forb species from the Great Basin

Jennifer K Rawlins, Val J Anderson, Robert Johnson, and Thomas Krebs

ABSTRACT

Use of forbs in revegetation projects in the Great Basin is limited due to high seed cost and insufficient understanding of their germination and establishment requirements. We tested the effects of seeding depth from 0 to 25.4 mm (1 in) on emergence and survival in clay and sandy loam soils of 5 ecologically important forbs. Significantly less emergence occurred of gooseberry-leaf globemallow (*Sphaeralcea grossulariifolia* (Hook. & Arn.) Rydb. [Malvaceae]) without a 3.2 mm covering of soil in both soil textures (14% and 19% reductions, respectively). Mountain dandelion (*Agoseris glauca* (Pursh) Raf. [Asteraceae]), Utah milkvetch (*Astragalus utahensis* (Torr.) Torr. & A. Gray [Fabaceae]), and tapertip hawksbeard (*Crepis acuminata* Nutt. [Asteraceae]) had greatest emergence on the soil surface and decreased at greater depths. Scarlet globemallow (*Sphaeralcea coccinea* (Nutt.) Rydb. [Malvaceae]) and *S. grossulariifolia* had significantly greater survival in the sand loam (71% and 87%) than in the clay soil (32% and 52%). Survival of *A. utahensis* and *C. acuminata* decreased significantly with surface seeding in the sandy loam soil. Seeding depth did not significantly impact survival of *A. glauca*. Seeding at 25.4 mm (1 in) reduced emergence or survival for all species. Maximum emergence and survival occurred at shallower seeding depths in the clay loam for most species. Based on our results for these forbs, we recommend a seeding depth of 3.2 mm (0.13 in) in clay soil and 6.4 mm (0.26 in) for sandy loam soil.

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KEY WORDS

native forbs, seeding depth, emergence, survival, Asteraceae, Fabaceae, Malvaceae, *Sphaeralcea*

NOMENCLATURE

USDA NRCS (2007)