



Seed ball strategies for gardening and restoration in arid landscapes

Elise Gornish



Figure 1. Seed balls are useful for both small gardening projects and large scale restoration projects.

To overcome challenges associated with gardening and restoration in arid landscapes, many techniques have been developed, including the strategic placement of irrigation lines, the application of mulch, and the improved selection of plant species and varieties. One technique that shows particular promise across both research and practitioner groups is the use and deployment of seed balls (Fig. 1).

Seed balls (also referred to as ‘seed pellets’ or ‘seed bombs’) are structures typically made of clay, compost, water and seed (but can include a huge range of ingredients including soil, rock dust, cat litter, coffee grounds, cayenne pepper, sand, worm castings and mycorrhizal fungi). These structures can ameliorate conditions that contribute to failure in arid land restoration (Madsen et al. 2016), including dry conditions that exacerbate seed desiccation stress and create soil crusts that limit seedling establishment, as well as seed loss via predation (typically by rodents and ants). Seed balls also serve to enhance seed to soil contact and reduce seed redistribution by wind. In theory, seeds are protected in the structure until adequate rainfall removes the surrounding clay and a small pocket of nutrients from the compost component of the seed ball nourishes the seedlings as they emerge. Seed balls are cheap and easy to make and can enhance germination of seeded species (Pedrini et al. 2017).

Additional References

- Jordan GL (1967) An evaluation of pelleted seeds for seeding Arizona rangelands. University of Arizona Agricultural Experiment Station Technical Bulletin 183
- Madsen MD, Davies KW, Boyd CS, Kerby JD, and Svejcar TJ (2016) Emerging seed enhancement technologies for overcoming barriers to restoration. *Restoration Ecology* 24: S77-S84
- Pedrini S, Merritt DJ, Stevens J and Dixon K (2017) Seed coating: science or marketing spin? *Trends in Plant Science* 22: 106-116

Making Seed Balls

1 Prepare



1 part seeds

Use seeds with small or nonexistent awns.
Best to use a diverse native seed mix.

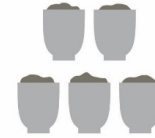
+



3 parts nutrients

Attempt to use local, organic ingredients.
Steer manure has performed better than other types of nutrient additives such as soil or coffee grounds.

+



5 parts clay

Typically fire clay, available at most art and ceramic stores.

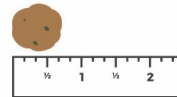
If seed eating animals are a particular problem, add a small amount of cayenne pepper to the mix.

2 Create



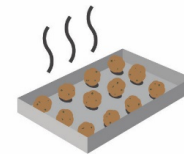
Mix and add water

Use a spray bottle.
Only enough to make the mixture sticky to form balls.



Create seed balls by hand

Circumference of 1/2 inch - 1 inch.



Dry seed balls indoors for at least 3 days

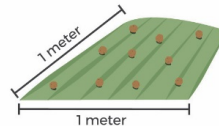
Seed balls can also be formed by using a pelletizer - see Cooperative Extension publication az1785 online for instructions on its construction extension.arizona.edu/sites/extension.arizona.edu/files/pubs/az1785-2018.pdf

3 Disperse



Can be done by hand or from a vehicle

Practitioners also use drones and even dogs to help spread seedballs!



Best done on an uneven surface (e.g. after tilling or after grazing)

Aim for approximately 10 seed balls per meter squared



Can occur anytime

Seeds are protected until germinating rains occur to wash off surrounding clay.



THE UNIVERSITY OF ARIZONA

Cooperative Extension

The University of Arizona
College of Agriculture and Life Sciences
Tucson, Arizona 85721

ELISE GORNISH
Cooperative Extension Specialist in Ecological Restoration

CONTACT:
ELISE GORNISH
egornish@email.arizona.edu

This information has been reviewed by University faculty.
extension.arizona.edu/pubs/az1797-2019.pdf

Other titles from Arizona Cooperative Extension can be found at:
extension.arizona.edu/pubs

Any products, services or organizations that are mentioned, shown or indirectly implied in this publication do not imply endorsement by The University of Arizona.

Issued in furtherance of Cooperative Extension work, acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture, Jeffrey C. Silvertooth, Associate Dean & Director, Extension & Economic Development, Division of Agriculture, Life and Veterinary Sciences, and Cooperative Extension, The University of Arizona.

The University of Arizona is an equal opportunity, affirmative action institution. The University does not discriminate on the basis of race, color, religion, sex, national origin, age, disability, veteran status, sexual orientation, gender identity, or genetic information in its programs and activities.