Seed ball strategies for gardening and restoration in arid landscapes

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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


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).
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 ½ 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.