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### **Plant Adaptations for Dry Climates**

In our high desert climate, plants are subjected to extended periods of high temperatures, intense sun, and drought. Fortunately, there are plants that have evolved to grow in climates like ours. Their unique variations in structure, form and color help them survive powerful sun, drying winds and drought.

If we learn to recognize these adaptations in plants we can select the right plants to handle the hottest, driest and windiest parts of our gardens.

Plants that grow naturally in dry or windy climates have evolved to maximize water usage, minimize water loss, and survive dry periods. They do so with a few specific adaptations:

1. Low growing mound-formers, mat and cushion-makers creep along the ground thereby exposing less surface area to drying winds.
2. Rosette-formers keep the mass of their growth close to the ground but then send up flower stalks for a short period to attract pollinators and disperse seed.
3. Thick, fleshy leaves increase water storage.
4. Plants with small, linear leaves expose less surface area from which water can evaporate.
5. Fine hairs that cover leaves help reduce moisture loss by reflecting sunlight and inhibiting air movement. These leaves tend to have a silvery appearance as a result of these fine hairs.
6. Shiny, leathery leaves reflect light and heat.
7. When leaves are held upright less of the surface is exposed to drying sun and wind.
8. Dryland-adapted plants have deep roots that search out hidden reserves of water.

A great way to become familiar with the characteristics of dryland-adapted plants is to examine native plants growing in their natural habitat. Grab a field guide and go for a hike – take your time so you can identify plants and read their descriptions. Notice where the plants are growing: Hot south facing slopes? Dry, rocky hillsides? As you observe these plants, you'll notice many of the adaptations mentioned above.

Let's take a look at a few plants often used in landscapes, both native and non-native, to see what adaptations they use to maximize water usage, minimize water loss and reduce exposure to drying winds:

- *Agave spp.*: succulent leaves store water; rosette growth form allows rain water to be channeled down the leaves to the root zone
- Apache Plume (*Fallugia paradoxa*): very small, slightly hairy leaves reduce evaporation and reflect the sun
- Bearberry and Manzanita (*Arctostaphylos spp.*): small leaves that are held upright reduce moisture loss and exposure to the sun; some species have a ground-hugging growth habit to reduce exposure to drying winds
- Desert Marigold (*Baileya multiradiata*): leaves covered in fine hairs reflect the sun
- Fairy Duster (*Calliandra eriophylla*): very small leaves covered in fine hairs reduce moisture loss and reflect the sun; few leaves during the dry, hot summer – this is called drought dormancy
- Lamb's Ear (*Stachys lanata*): leaves covered in fine hairs reflect the sun
- Rabbitbrush (*Ericameria nauseosus*): narrow, linear leaves with matted hairs reduce evaporation and reflect the sun
- Rosemary (*Rosmarinus officinalis*): small, linear leaves held upright to reduce exposure to sun and moisture loss
- Sage (*Artemisia spp.*): small leaves covered in fine hairs reduce evaporation and reflect the sun; deep roots find moisture deep in the ground
- *Sedum spp.*: thick, fleshy leaves store water
- Silver cholla (*Euphorbia*): small, linear leaves that are thick and nearly succulent reduce evaporation
- Thrift (*Armeria spp.*): ground-hugging habit to reduce exposure to drying winds; small, linear leaves reduce moisture loss
- Thyme, creeping (*Thymus spp.*): ground-hugging growth habit reduces exposures to drying winds; small leaves reduce evaporation
- Yarrow (*Achillea spp.*): small, linear leaves reduce evaporation

Successful gardening begins with choosing the right plant for the site. The next time you're searching for plants for the hottest or windiest areas of your garden, you'll save yourself a lot of headaches over stressed or dying plants if you select plants with the above features.

