

Brittle Landscapes

Land management techniques have to be adapted to suit a particular landscape. What works well in one place can be a disaster in another. It is now recognised that management that doesn't suit the landscape is the leading cause of desertification and salinity throughout the world.

Regenerative agricultural practices are vital, and part of the 'learning curve' which has brought us to the point where we look at land management holistically was completed when the concept of 'brittleness' was developed by Allan Savory to explain differences in how landscapes respond to disturbances such as grazing:

- In some areas, land heals best when left undisturbed. Free of fire or grazing animals, it re-vegetates rapidly.
- In parts of Africa, landscapes that fed wild herds of millions quickly desertify when grazed by just a few cattle.

A key difference is how these landscapes respond to prolonged rest (the absence of disturbance).

Brittle or nonbrittle?

Where prolonged rest heals land, moisture is present throughout the year. Savory calls these areas nonbrittle.

Areas where prolonged rest causes problems may have high or low rainfall, but all have a dry season. These areas are brittle. Most land is somewhere between brittle and nonbrittle.

Brittleness doesn't mean arid. An arctic forest may need only a little moisture to remain damp throughout its short, cool growing season. By contrast, an 8-month dry season makes some parts of Africa very brittle in spite of 60 inches of rain a year.

Brittleness varies within landscapes. The windy, sun-baked top of a hill may be dry and brittle, while the bottom of the sheltered valley below stays damp year-round.

Nonbrittle areas

Thanks to constant moisture, nonbrittle areas have rapid decay. New plants establish easily, and bare ground quickly covers with vegetation.

Constant moisture keeps decay organisms active throughout the growing season. Dead grass stems and twigs quickly rot at the base and fall over, producing natural mulch. Insects, fungi, and microorganisms work together to compost this material, and quickly turn it into new soil and plant food. The soil stays moist, making it easy for seedlings to push through.

Brittle areas

Because of long dry periods, brittle areas have slow decay. New plants have a hard time establishing, and bare ground is difficult to vegetate.

Dry periods cause decay organisms to die off during part of the year. Without active decay, dead growth may stand for years or decades, trapping nutrients and shading plants. Unmulched ground

between plants often causes soil to dry into a crust that seedlings can't push through. Young plants can dry out before their roots get deep enough to find moisture.

Many of the productive landscapes in the world are brittle or semi-brittle, including Africa's Serengeti and North America's deep-soiled prairies. What's the secret?

In brittle and semi-brittle areas, nature depends on animals to plant, mulch, and compost. These areas hosted vast numbers of herding grazers, such as wildebeest, springbok, and bison. Pack-hunting predators kept them bunched and moving.

A bunched herd tramples dead vegetation into mulch that protects the soil surface and keeps it moist. Hooves break soil crusts and plant seeds deeply enough to survive dry periods. The grazers' digestive systems provide year-round composting that recycles vegetation into high-quality fertilizer.

Brittleness affects land management

The distinction between brittle and nonbrittle environments is crucial because management that works in nonbrittle areas destroys brittle landscapes.

Nonbrittle areas thrive on prolonged rest. Bare ground quickly covers with vegetation, and if the climate is right, a forest soon springs up.

Brittle areas need disturbance to recycle standing dead vegetation into mulch, plant seeds, and break soil caps that keep air and water out of the soil. Plants in these areas depend on periodic grazing to remove their standing dead growth, which then becomes new soil.

Because of the obvious damage livestock do if left in one place too long, people often try to fix brittle landscapes by reducing or eliminating grazing animals. This may produce temporary improvement, but ultimately, resting the land can result in desertification.

Periodic grazing and trampling followed by adequate recovery periods can keep brittle land healthy. Left to the natural processes, this is how nature manages the landscapes. Herds that move and migrate, grazing and trampling heavily but then moving on. In Australia we have changed many things – including eliminating most of the Kangaroos and predators and introducing sheep and cattle.

Brittleness scale

Savory places landscapes on an **arbitrary brittleness scale** from 1 (very nonbrittle) to 10 (very brittle). He emphasizes that this scale is not precise -- the important thing is whether you are dealing with a brittle, semi-brittle, or nonbrittle environment, because that's what affects the land's response to management