

Australian Drought reasons and Solution.

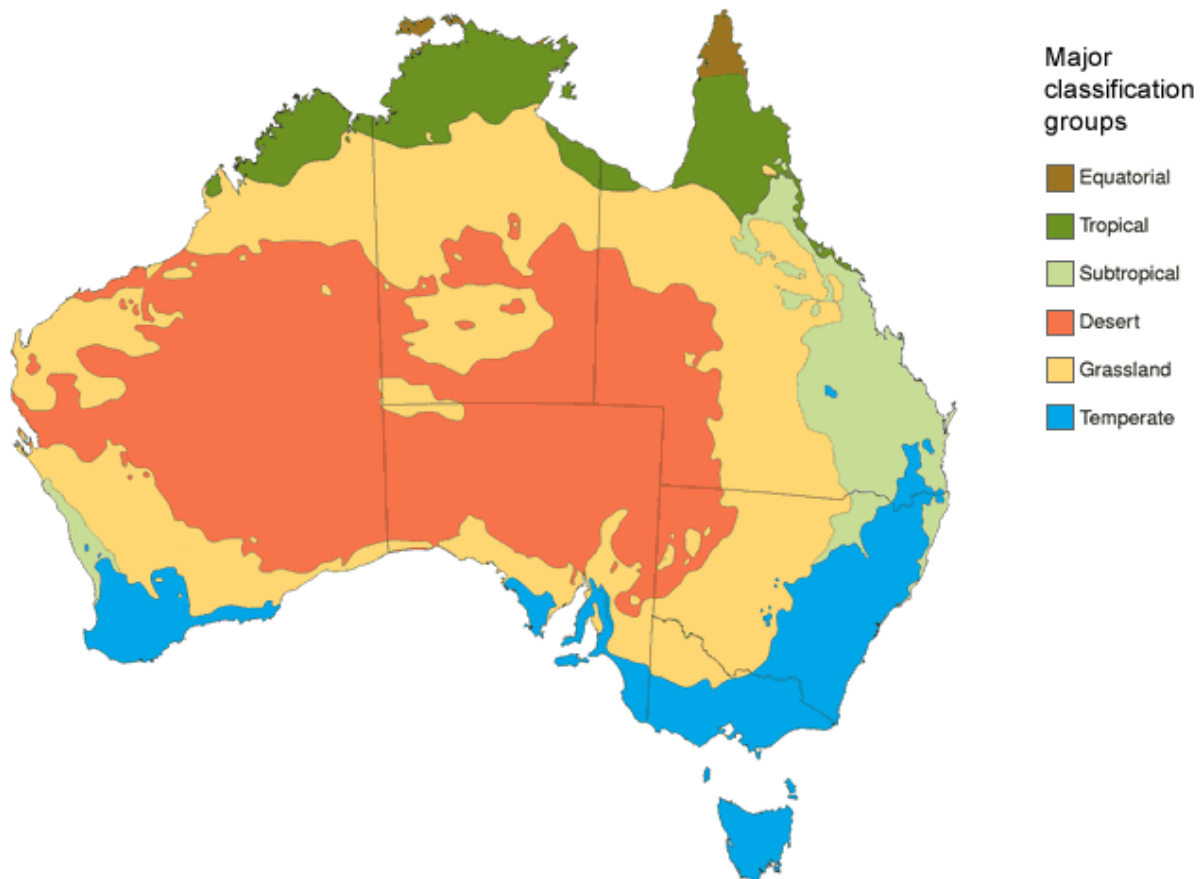
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Author : Rudolph Dsouza

Regions of Study : Victoria / NSW and Queensland.

Australia is huge beautiful country/continent. Australia's climate is governed mostly by its size and by the hot, sinking air of the subtropical high pressure belt. Consequently, Australia's winter is relatively mild, with less contrast between summer and winter temperatures than in the northern continents. Seasonal highs and lows can still be considerable.

Drought is an inevitable part of the Australian landscape but its impacts are wide reaching. It goes well beyond the paddock. It touches every corner of regional communities; it reaches cities and has the potential to affect trade



Most of the study covering only Grassland, how grasslands are disappearing and turning into desert or non productive barren land. Australian drought is

natural disaster along with manmade disaster, which also result of global warming. Grasslands are shrinking and desert is expanding.

How does grazing affect the environment?

Grazing can damage habitats, destroy native plants and cause soil erosion. ... This reduces food supply in ecosystems because the animals start competing for non-invasive plants for food. Grazing also causes soil erosion when livestock eat the plants that hold soil together with their roots.

What are the ill effects of uncontrolled animal grazing?

It reduces the usefulness, productivity, and biodiversity of the land and is one cause of desertification and erosion. Overgrazing is also seen as a cause of the spread of invasive species of non-native plants and of weeds.

How to reduce effects of uncontrolled animal grazing?

To reduce soil erosion in pastures by using rotational grazing. Moving animals through a series of paddocks allows pasture plants time to recover, reduces soil erosion, and improves forage quality. Or instead grazing feed the cattle/sheeps. Properly managed livestock grazing helps to reduce bush fire/Forest fire hazards by controlling the amount and distribution of grasses and other potential fuel. Livestock grazing is conducted under a license system based upon accepted principles of grazing management.

In Australia, most of the cattle graze without any systematic or controlled manner. Or farmers are not making any efforts to plant trees for cover for shade or user alternate feed system than hay.



Recurrent droughts experienced had led to farmers losing most of their livestock especially cattle, a situation that has left most of them impoverished as they were dependent on that agricultural enterprise as a source of their livelihood.

The best practice of rearing livestock under drought conditions through cultivating fodder crops. Fodder, a type of animal feed, is any agricultural foodstuff used specifically to feed domesticated livestock, such as cattle, goats, sheep, horses, chickens and pigs.

It includes hay, straw, silage, compressed and pelleted feeds, oils and mixed rations, and sprouted grains and legumes. Also Government should start to educate farmers or teach farmers the importance of growing fodder crops as one of the measures to reduce livestock death due to the effects of drought. Its not only Government responsibility but Farmers should also have adequate and readily available water sources to grow crops not only for their own consumption but for livestock as well. If there isn't enough rain they should irrigate such crops.

There are many types of Fodar like Aalfalfa / Tagasaste / Cumbunapier hybrid/Brachiaria/Mombasa grass/ Sorghum Sudangrass and triticale, which give more yield than normal grass in same area of land. These grass to be fed and not allowed to graze. By grazing cattle waste more grass by stomping and sheep will root out grass which will not grow again, or at least follow shrub paddock graze. A shrub paddock grazed during autumn could be grazed

again during spring — shrub species recommended in this guide can be grazed twice a year. A number of shrub species

Anameka old man saltbush cultivar.

Emu bush (*Eremophila longifolia*)

Nitre goosefoot (*Chenopodium nitrariaceum*)

Old man saltbush (*Atriplex nummularia*)

Rhagodia, Mallee saltbush (*Rhagodia preissii*)

River Murray saltbush, silver saltbush (*Atriplex rhagodioides*)

River saltbush (*Atriplex amnicola*)

Ruby saltbush (*Enchylaena tomentosa*)

Sandhill wattle (*Acacia ligulata*)

Tar bush (*Eremophila glabra*)

Thorny saltbush (*Rhagodia spinescens*).

Some shrub has been found to have anthelmintic (internal parasite control) effects. The combination of crop stubbles and shrubs can be effective, especially while there is still some grain on the ground.

However, in large cropping paddocks with small patches of shrubs, animals need to learn to combine the shrubs with the crop stubble into their daily diet, so grazing management that provides appropriate livestock experiences becomes important.

As what I seen from my study, most of the Australian farmer has no policy to harvest water or use water wisely. Most of them have no knowledge of rain water harvesting. Most of water collecting dams/ponds are open to direct sun which result in water evaporation.



Instead open Ponds/Dams farmers should dig deep wells or bore wells and pump water and use wisely when animals need it. Also not to allow animals directly drink water from the pond, which they spoil or waste the water and turning it non-potable.



If Ponds are huge to avoid evaporation, lakes should cover with Polystyrene or Thermacol which reduce direct sunlight to water and stop evaporation. There are natural plants which cover ponds as well, like lotus or invasive Salvinia molesta, but these plants create more environmental damage than save it.

Most of the rural houses made of wood, which need cooling in summer and heaters in winter time. If houses are built with natural compressed bricks, it will reduce Air conditioner/heater/Electrical use-age.

Most of the Australian houses built with Wood, Wall/Roof and floor by cutting down trees, instead eco friendly material, also eco friendly houses built with compressed bricks will save lot of money to build, it will last longer than wooden house. Environmental friendly, stronger, keep warm in winter and cool in summer.

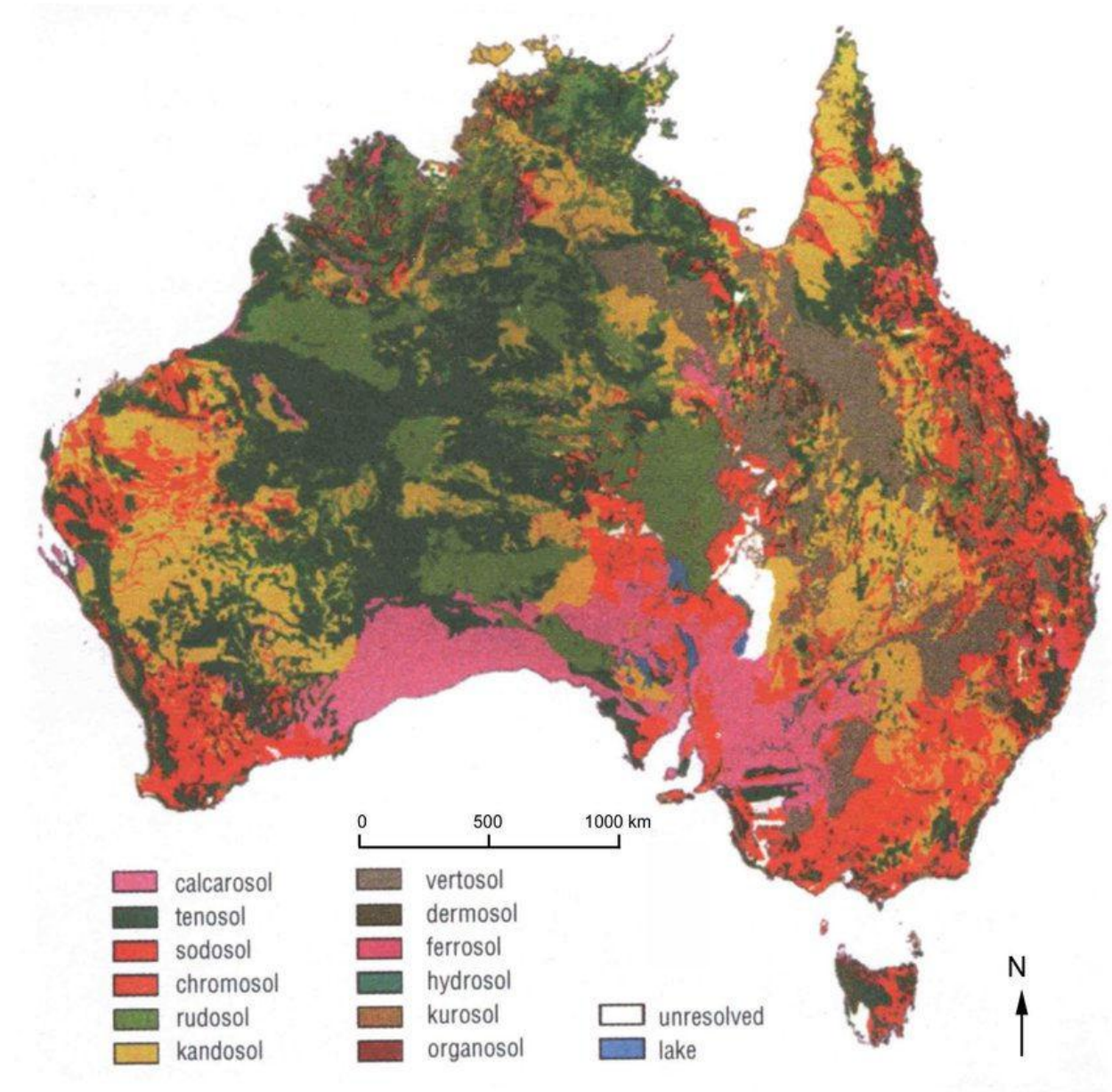


As we seen hardly any farmer is using Cow dung/sheep/pig waste to generate Biogas which can be used to Generate Power, to run Generator or use as cooking gas.

Only recently some are started using Solar based water heater or solar Power, still it need boost from Government to adopt new technology. With solar your Generate Power, can be used to cook or bake, solar cooker/parabolic cooker/heater and it also environmental friendly.

In Australia most of the trees are Tasmanian Blue Gum(*Eucalyptus*), Paperbark tree, *Melaleuca* tree, *Grevillea decurrens*, Wattles tree, Australian conifers, *Casuarina equisetifolia*, or Australian pine tree etc, most of them are related to *Eucalyptus* or similar which prone to bush fire/Forest fire and not edible by most of animals/cattle.

Soil :



Soil also play important role in Drought.

Vertosols

Vertosols are the most common soil in Queensland, which has very high-soil fertility—ability to supply plant nutrients and large water-holding capacity. A large belt of grey and brown Vertosols also run from the New South Wales border to Charters Towers—corresponding with Brigalow forests.

Ferrosols and Dermosols

Ferrosols are well-drained soils with red or yellow-brown colour and have clay-loam to clay textures.

This soil type is usually associated with previous volcanic activity and is mainly located along the Great Dividing Range. Large areas of these soils occur around Kingaroy and Atherton where they are used for intensive crop production. Dermosols are red, brown, yellow, grey or black and have loam to clay textures. This type of soil covers the higher-rainfall coastal and sub-coastal regions. Important areas of these soils are the Burdekin delta and the Lockyer and Fassifern valleys.

Chromosols and Kurosols

Both these soil orders are texture-contrast soils. Kurosols are strongly acid (pH below 5.5) whereas Chromosols are not.

Extensive areas of Chromosols are in the Western Downs and the Maranoa districts—west of the Great Dividing Range. Kurosols occur along the coast, mainly in southern Queensland.

Kandosols

Kandosols are red, yellow and grey massive earths. They generally have a sandy to loamy-surface soil, grading to porous sandy-clay subsoils with low fertility and poor water-holding capacity.

A wide range of crops can be grown on these soils where rainfall is higher or where irrigation is available. Large areas of Kandosols exist around Charleville—corresponding with mulga vegetation—and support sheep and cattle grazing on native pastures.

Sodosols

Sodosols are texture-contrast soils with impermeable subsoils due to the concentration of sodium. These soils occupy a large area of inland Queensland. Generally Sodosols have a low-nutrient status and are very vulnerable to erosion and dryland salinity when vegetation is removed.

Calcarosols

Calcarosols are lime-rich soils with sandy or loamy textures that may become more clayey with depth. They cover less than 0.5% of the state and occur in the arid western areas of Queensland; on calcium-rich sedimentary rocks, limestone and windborne deposits.

Rudosols, Tenosols and Podosols

These soils orders generally have a low fertility and low water-holding capacity.

Rudosols and **Tenosols** are poorly developed but widespread and can be shallow and stony. The most extensive areas of these soils are inland from Cairns. **Podosols** occur in the more humid coastal regions including areas such as Fraser Island and Shelburne Bay. **Podosols** occupy less than 1% of the state.

Hydrosols and Organosols

Hydrosols are soils that are saturated with water for long periods of time—typically a grey (or greenish-grey) colour. This soil type covers less than 1% of the state and is mainly found near coastal areas. However, many inland wetlands are dominated by **Hydrosols** even though these areas may only be intermittently inundated. **Organosols** are dominated by organic materials—commonly referred to as peats. They do not exist in large areas in Queensland but occur as small pockets in the more wet areas—along the humid coastal environment.

Soil health is a concept where all aspects of soil, that is, physical structure, chemical components and biological life are considered together. A soil does not have to be agriculturally productive to be healthy. However, many agricultural practices can make soils less healthy than they were in their natural state.

By managing structure, nutrients and biology in the soil, farmers can use soils within their capability so that the soils can be used productively without being degraded.

To maintain and improve soil health, farmers need to manage their production system so that it doesn't degrade the soil by;

Maintaining soil structure

Controlling erosion

Maintaining or improving soil organic matter levels

Maintaining or improving nutrient levels and water holding capacity of the soil

Soil management following Drought

The principal aim after rain should be to establish either pasture or crop as a groundcover on your bare paddocks as quickly as possible. This is especially important on the red soils, but is also important for the clays.

After drought, many soils will be in a different condition to what is considered to be their 'normal' condition. Some will be bare and powdery on the surface, some will be further

eroded by wind or water, and some will have higher levels of nitrogen (N) and phosphorus (P) than expected. Loss of effective ground cover (due to grazing or cultivation) leaves the soil highly prone to erosion by wind and water.

To make good decisions during a drought it is necessary to gather as much information as you can on the factors that will influence your decisions. Using your established network to stay informed about key factors that affect your drought strategies, remembering that the impact falls very heavily not only on the decision makers but also on the whole farm family.

The degree of planning depends on your level of risk and how you assess your past, current and future climate, pastures, livestock and business situations.

Droughts develop progressively, not overnight. Plan your strategies in early drought to ensure the economic survival of your business. Drought decisions are often made on an emotional rather than a logical basis. Try to make objective decisions and seek skilled help when necessary.

Experience from previous droughts is a guide as to what can happen. While factors such as stock prices, feed costs, availability of feed, and interest rates will vary.

For Cattle/Sheep, reduce grazing pressure by selling, egesting, culling or lot feeding stock, for crop change drought resistance crop or change patterns of Farming.

In the early drought phase (dry standing feed), grains and hays act as a substitute for paddock feed rather than a supplement. Supplements encourage the use of standing dry feed. Cereal grains (such as oats or wheat) are not efficient supplements when paddock feed is dry. They produce lactic acid in the rumen, which slows down the digestion and consumption of fibrous paddock feed. But if you mix with grain sprouts (Wheat/Barley) with dry hay or Alfa Alfa which can save your live stock, also by feeding small amounts protein meals, grain legumes or white cottonseed. In a fodder system, a grain like barley, wheat or oats is sprouted in plastic trays and allowed to grow for seven days and then fed to livestock. Sprouted grains can be grown indoors without soil and without much water. With Sprouted Fodder Systems you can feed any live stock, Cattle, sheep, Pigs, chicken, Rabbits etc.



Cattle can be fed molasses-based diets fortified with protein meal and urea if there is roughage in the paddocks or roughage is provided. Molasses-based diets are versatile and can be used in the early drought stage as a production feed as well as being used in full feeding.

All stock in a drought situation should be confined to a small area or a small shaded paddock or roofed shelter, so cattle do not have to walking around the paddock under burning sun looking for food or water, which limits the amount of feed required.

Forage:

Redstart – a hybrid brassica, a hybrid between kale and rape. The beauty about Redstart is its rapid ability to grow. Redstart is a relatively low-maintenance crop. However, it cannot be sown in a successive rotation due to club root. Redstart can be either baled or ensiled
Alfalfa, also known as lucerne or Medicago sativa, is a plant that has been grown as feed for livestock for hundreds of years. It was long prized for its superior content of vitamins, minerals and protein, compared to other feed sources.

The group of forage brassicas consists of related species, including forage rape (Brassica napus), leafy turnips (Brassica rapa), stubble turnips (Brassica rapa) and kale (Brassica oleracea). They can be used for forage, to produce high quality feed, they have outstanding feed quality and water use efficiency. They are a good alternative to reduce the risk on erosion and can be sown late. Due to their low sowing rate requirement.

Fodder beet is one of the highest yielding forage options available to farmers. Fresh yields of up to 300 t/ha with a dry matter content of 11-12% are possible. Fodder beet requires a weed free, firm fine seed bed that is well drained with no sub-soil compaction. Its leaves, which give up to 5 t/ha extra dry matter. All together, the total yield of a Brigadier crop gives 20 to 40 tonnes dry matter in a period of 4-6 months.

The stubble turnip is a traditional stubble and forage crop.

Clover

Lucerne

Common vetch

Winter vetch

Field pea

Red lentil

Lupin

Serradella

Sainfoin

Buckwheat

Phacelia

FORAGE GRASS:

Italian ryegrass

Annual ryegrass

Perennial ryegrass
Hybrid ryegrass
Cocksfoot
Tall fescue
Timothy, small timothy
Meadow fescue
Red fescue
Smooth stalked meadow ryegrass (Kentucky blue grass)

<https://www.qld.gov.au/environment/land/management/soil/soil-testing/types>

Ref: http://www.msfp.org.au/wp-content/uploads/2015-12-07-FINAL-Native-Shrub-Grazing-Guide_low-res.pdf

<http://www.abs.gov.au/ausstats/abs@.nsf/featurearticlesbytitle/4C690E6136B8B1EBCA2569DE00267E5F?OpenDocument>