

DESERTIFICATION

BACKGROUND

In dry areas such as Jordan's Badia sheep and goats provide the basis for existence because they lactate during the dry periods and have high reproduction rates. Goats and camels survive these harsh conditions best of all. Water is never far away (rock cavities, ground water) and at one time was much more plentiful than it is today. During the ice age the desert would have been much more temperate and the water from that period still lingers in the rocks below the desert, occasionally appearing as springs. Water is often located by observing scrub vegetation and trees which serve to fix nitrogen and provide shade, firewood and fodder. The provision of shade can also improve the position of the water table by bringing it closer to the surface.

CAUSES (Fig.F18)

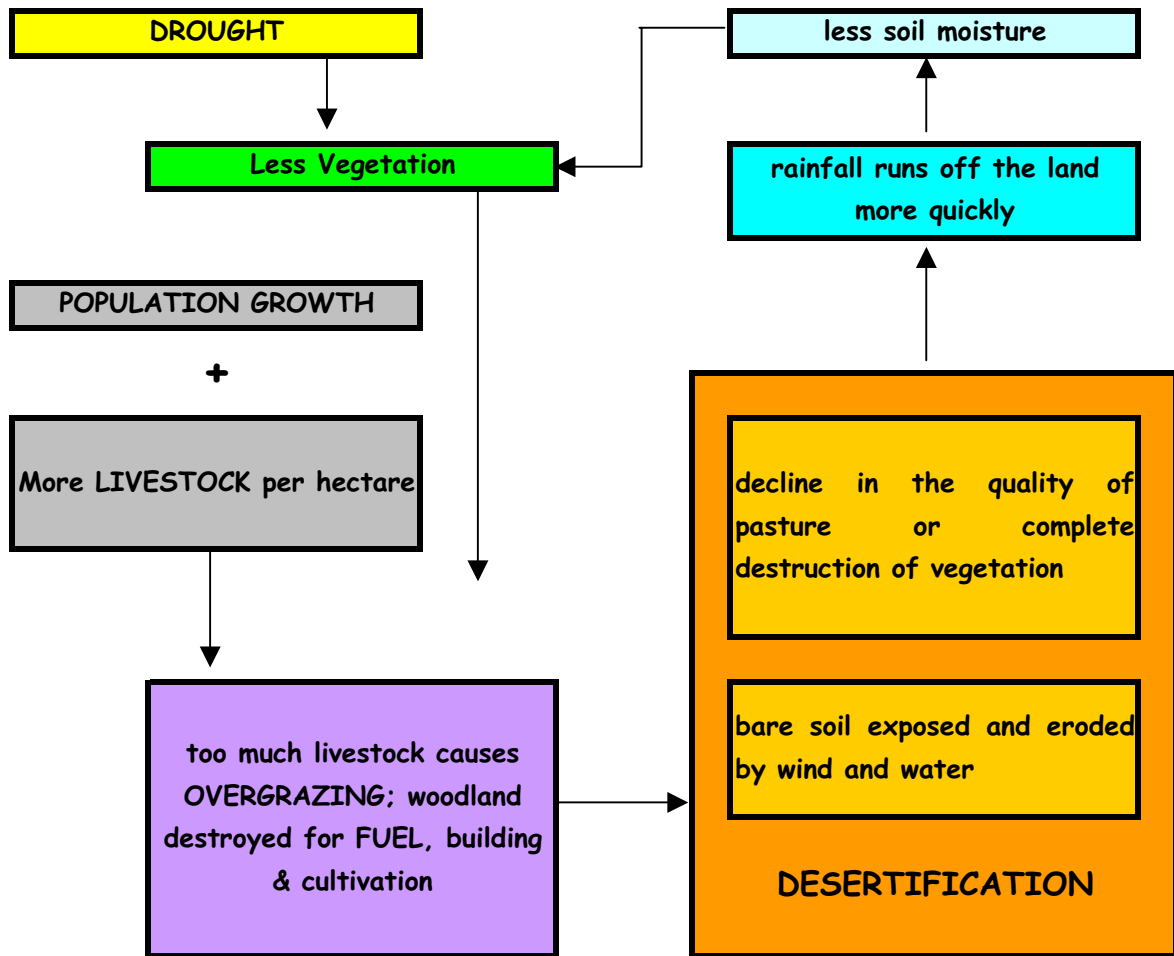
There is no one cause of desertification but wherever it occurs people are generally the culprit. The principal causes are:

1. Increased population density requiring more livestock.
2. Increased density of livestock putting pressure on vegetation and trampling the ground.
3. Firewood collection removing cover essential to shade, fodder and protection from wind or water erosion.
4. Low, sporadic rainfall and a wide diurnal range of temperature creating harsh conditions.
5. Nomadic people becoming increasingly sedentary and concentrating the pressure in one place.
6. A lack of alternatives to herding (e.g. arable farming).
7. The difficulty of educating a nomadic population as to the dangers of desertification.

RESULTS

- € Increased demand for stock and grazing land.
- € Reduction in annual production of pasture vegetation, especially the palatable perennial grass species.
- € An increase in ephemeral plants which only spring up with the rains.
- € Loss of soil cohesion (no roots to bind it)
- € Lowering of the water table (less vegetation: greater evaporation)
- € Concentration of erosion in one place from which the destruction spreads.
- € Soil compaction.
- € Decline in livestock health.
- € The persistence of a traditional way of life because it is not a means to an end other than survival.
- € Livestock are now regarded as the resource base rather than the land and its vegetation. This means a greater emphasis on increasing livestock rather than saving valuables to sell in drought periods.

Fig.F18: CAUSES OF DESERTIFICATION



TACKLING THE PROBLEMS (Fig.F19)

In combating desertification we need to take each root cause in turn to consider ways to reduce its effects:

Root Cause 1: Drought

- € Drill boreholes.
- € Provide a piped water supply.
- € Use polythene greenhouses for cultivation.
- € Construct dams to hold winter rains or water from flash floods.

Root Cause 2: Too many People.

- € Spread the load to reduce the effects of too many people concentrated in one place. e.g. by providing alternative livestock markets and trading points.
- € Encourage nomads to settle permanently as farmers or to migrate to towns.
- € Provide e.g. kerosene or solar power as alternatives to firewood for cooking, heating etc.
- € Improve standards of hygiene and medical services to reduce the need for large families.
- € Encourage the use of contraception.
- € Develop alternative sources of income. e.g. crop cultivation, tourism.
- € Improve the system of marketing livestock so as to make more income available for developing local initiatives e.g. improving roads, drilling wells.
- € Improve people's understanding of the problems and solutions through education and local councils.

Root Cause 3: Too many livestock

- € Spread the load to reduce the effects of trampling. e.g. (a) provide widely-spaced watering points. (b) rotate the grazing areas to allow regeneration of vegetation.
- € Reduce and/or control numbers through quotas/taxes etc.
- € Switch to arable farming. Experiment with *zero tillage* (allowing weeds etc. to remain so as to maintain soil moisture)
- € Plant trees to prevent the soil being eroded by wind and water.
- € Develop drought resistant plant/crop species.
- € Give assistance to livestock farmers so that herds can be reduced in times of drought, and the meat sold to markets in towns and cities.

References:

- Grainger, Alan 1982 **Desertification: How people make deserts, how people can stop and why they don't.** Earthscan Paperback.
- Raw, Michael 1987 **Understanding Human geography: a practical approach.** Bell and Hyman.
- Foskett, R and N. 1987 **People in the Rural Landscape.** Macdonald Education.
- Adeel, Zafaar et al 2005 **Ecosystems & Human Well-being: Desertification Synthesis.** Millenium Ecosystem Assessment Board (www.milleniassessment.org/en/synthesis.aspx)

SOLUTIONS TO DESERTIFICATION?

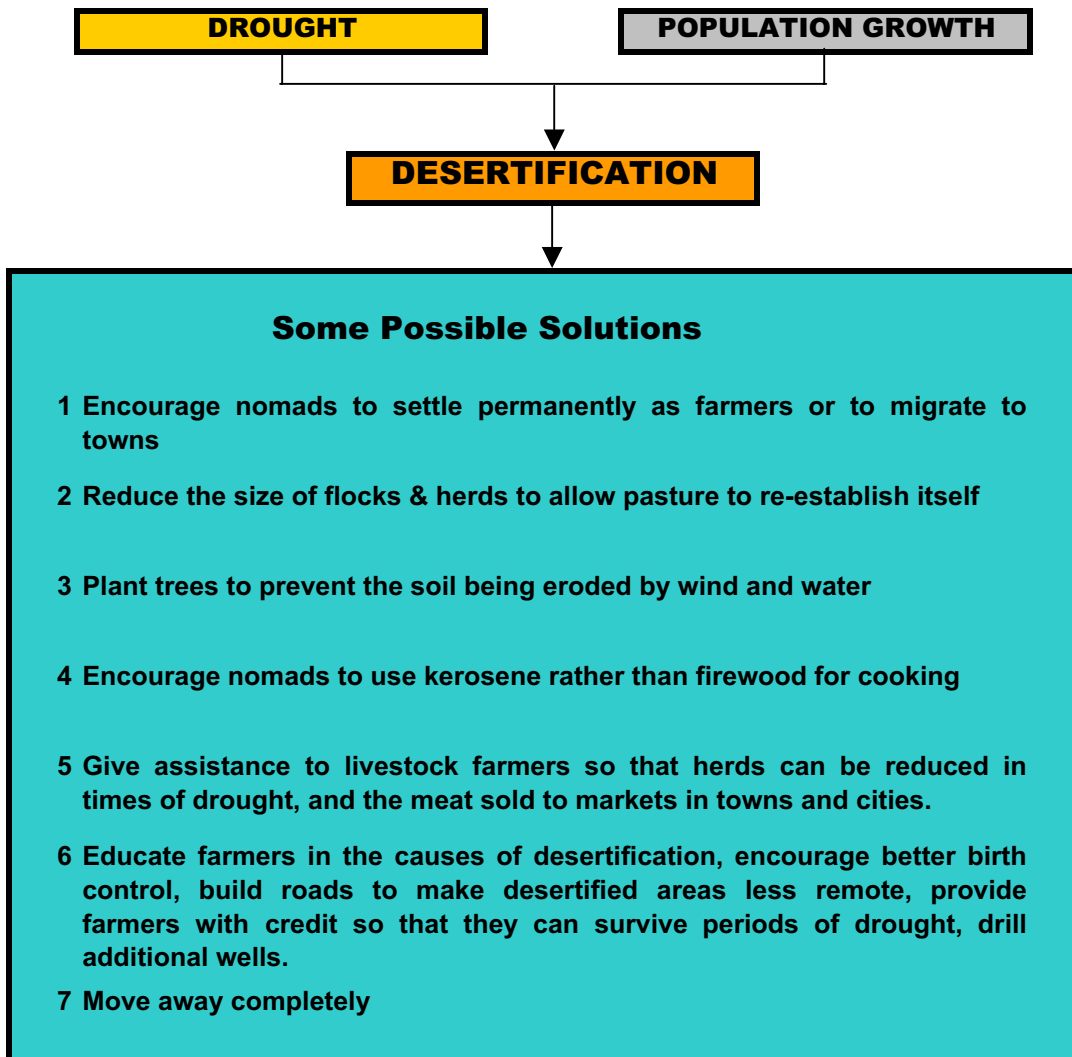


Fig.F19: Desertification - Some possible solutions