utilized rangeland in the African Sahel have often led to further overstocking by small livestock producers bringing about the danger of "desert encroachment."

(2) **Long-Term Relationships with Cooperating Nations**

One of the objectives of Title XII is to develop long-term and continuing relationships between the United States universities and foreign universities. It is anticipated that Title XII will enhance faculty and student exchange. Also there are programs within AID to stimulate farmer-to-farmer and rancher-to-rancher exchange. Our own American livestock producers can learn much from other nations. It is hoped that all these activities will lead to better understanding among all nations of the importance of cooperation in the prevention of famine.

**Summary**

The significant contribution of the world's rangelands to food production has not been adequately recognized by the scientific community or by society as a whole. This contribution to world food supplies is direct, in terms of the production of livestock products and some plant materials, and indirect, since vegetation management affects water yield, biological stability and environmental enhancement.

As man seeks to satisfy the needs of a population expected to double in 30 years, the world's rangelands will be subjected to increased demands for many uses, including food production. These demands must be met without major disturbance of range eco-systems. We must determine through additional research the optimum harvest level for livestock and other food-producing animals and at the same time allow energy, nutrients, and water to flow to the multiplicity of other biological organisms necessary for environmental stability.

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**Twenty Commandments for Grass Men**

*T. Lawrence*

**I**

*Thou shalt* divide thy pasture lands into thirds or quarters and graze them in succession, starting with Russian wild ryegrasses or crested wheatgrass in the spring, native grass after June 15, Russian wild ryegrass in the summer and early fall, and Altai wild ryegrass in the fall and winter period, letting thy kine on the first a little before it is ready; always moving them to another part when they have consumed the percentage growth allowable from that species, for the leaves are the digestive apparatus of the grass, and verily, while man can live in health with half a stomach, if his entire stomach is removed, he dies.

**II**

*If thy* pasture system contain both tame and native grasses, thou shalt vary the grazing height from one to the other according to the needs of each, so as to maintain both in good health. If either shalt start to deteriorate, thou shalt adjust the grazing or haying pressure so as to favor the weaker until it shall regain its strength, for verily, both are precious onto thee.

**III**

*If the* good grass which enriches thee starts to disappear from thy pasture, thou shalt give it a vacation. If thou has disobeyed this commandment in the past and thy pasture is too far gone for the good grass to recover, thou shalt destroy the weeds and tares thereon and replant it—or if the soil be loose and vulnerable to the wind, interseed—and thereafter sin no more.

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*Editor's Note: The author may have had tongue-in-cheek as he put his basic rules in Commandment form, but GOOD Grass Men follow these same rules as though they were Commandments.*

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**IV**

*Thou shalt* heed the advice of sages and exercise caution in the renovation of fragile ranges and those with sandy soils for fear of exposing thy trust to the ravages of erosion. However, as time and capital permit thou shalt break suitable pastures and reseedeth with Pedigreed seed of recommended varieties to at least triple or quadruple production from the resource entrusted to thee, for verily, men in other parts of thy world have not meat to eat nor milk to drink.

**V**

*To assure* that thou art not seeding noxious weeds into thy carefully cleaned and well tilled soil, insist on Certified seed of recommended varieties for verily, it is not meet to add to thy troubles and those of thy neighbor.

**VI**

*For maximum* production thou shalt include a legume in thy reseeded pasture, use appropriately wide row spacings, adopt recommended seeding patterns, seed no deeper than three centimeters, and apply suitable fertilizer and herbicide applications for these will help to feed the multitudes and supply thy new chariot.

**VII**

*Thou shalt* move thy salt and mineral from place to place at a far distance from thy water, to encourage even grazing. If possible, locate thy kine's drinking water for the benefit of thy range, not for thy own convenience. In some locales stock will graze three or four times farther south of their water than they will to the north. They do this in summer to take advantage of a cooling southerly breeze and in the winter to flee the cold north.
wind. Remember this, watch thy kine, ascertain their habits, then use thy knowledge and thereby preventeth spot grazing.

VIII

Thou shalt not destroy thy pasture in drought years by stocking it as heavily as in good and in effort to maintain the flow of wealth from it, as the Philistines do, but be prepared with part of thy crop land seeded to fall rye or oats to provide emergency pasture or hay in years of drought, otherwise tighten thy belt and delay the purchase of a new chariot until the rains come again.

IX

Whenever thou spiest a noxious or poisonous weed, thou shalt make all haste to destroy it, for thy neighbor's sake as well as thine own, for truly these accursed ones are like unto a pack of thieves that enter a man's home at night and strip it bare, whilst the master and his servants sleep.

X

If thy grass grow faint for lack of nourishment, thirsting not, thou shalt anoint it with nitrogen and other elements as needed, in the knowledge that if thou dost not feed thy grass, it cannot feed thy kine. In this regard, thou shalt bear in mind that the tiny creatures which release nitrogen from the soil slumber from early fall until late spring, and for this reason cool-season grasses feel the pangs of nitrogen-hunger more acutely than warm-season grasses.

XI

If thy pasture containeth both grass legumes, thou shalt anoint it with phosphate as needed, for verily, without it the legumes will surely perish.

XII

Thou shalt not let thy fields, which have become too saline to grow a cereal crop, remain unproductive, but seed them to a mixture of forage crops such as Altai wild ryegrass, tall wheatgrass, slender wheatgrass, Russian wild ryegrass, alfalfa and sweet clover, so that they may become productive once more for it is moot not to do so.

XIII

Thou shalt only burn thy pastures and range with fire upon the advice and counsel of sages, who knoweth the effects, both good and ill, that fire hath upon they particular plants, soil and area. Burn only in the spring as thy grass is getting green so that thy land will be naked only a short time. Before thy striketh thy match, knoweth thou that there is sufficient surface moisture to protect thy crown roots; sufficient sub-soil moisture to rekindle thy crop; sufficient and predictable wind to move thy fire where thee wants it, for he who burneth with no wind art both foolish and dangerous. To protect thy neighbor and thy good name, obtain any necessary permits, have good fire guards, back fires, and fire extinguishing equipment for verily, those who taketh proper precautions need not gnasheth their teeth, abhorreth their actions, and suffereth the scorn of their neighbors.

XIV

If the rain which falleth on thy pasture shall run off because the earth has been compacted into pavement by the hampering of many hooves for many years, thou shalt take resort to a machine which pitteth the surface, agitating the roots below and forming pygmy reservoirs to impound the liquid bounty from the skies and invite it into the ground, or, preferably, reseedeth using a cross-seed pattern of grass and legume in widely spaced rows to form pygmy reservoirs to likewise impound the liquid bounty from the skies so that it might penetrate into the ground.

XV

If a sand blow-out shall appear in thy pasture, thou shalt stew it with the seed of grasses that love sand, anoint it with a mulch of trash and keep thy cattle out till it has healed.

XVI

If thy cattle start to wear a deep track in thy grass, thou shalt erect a barrier across it and divert them to another route.

XVII

If thou hast grazed thy pasture threadbare and destroyed its spongy carpet, and the waters which should have sunk into the earth have come together in a flood and opened an abyss, thou shalt divert them to one side, heal the abyss, and ask forgiveness for thy sin.

XVIII

In all questions of management which baffle thee, thou shalt seek the counsel of the Agriculture Extension Service, the Research Station, and the College of Agriculture, as well as that of thy neighbor who has waxed fat off the land.

XIX

Thou shalt cherish thy pasture not only as a contributor to thy bank account but as a place of beauty for the delectation of thy soul, cultivating the friendship of the grasses and other good plants in it and acquainting thyself with their unique personalities and habits, that thou mayest gain more pleasure as well as profit from thy partnership with them.

XX

Lastly, thou shalt bear in mind at all times that thy grandson will be here long after thou art gone.