

Human Resources in Saudi Arabia's Rangeland
Development Research

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1. Introduction

In the southern part of the Arabian Peninsula, three kilometer high mountains can force monsoon storms to drop up to 500 millimeters of rain annually. In contrast, annual precipitation in the rest of the Arabian Peninsula seldom rises above 250 millimeters. Such sparse rainfall limits traditional human utilization of the peninsula to extensive herding, terrace agriculture or irrigation agriculture in a few scattered oasis and wadis (Figure 1). Of these, herding dominates the landscape. This domination is largely due to the fact that rangelands, unsuitable for agriculture, comprise well over 90% of Saudi Arabia, and, traditionally, over 70% of the population of Arabia was probably nomadic herders. Accurate information about rangeland resources and exploitation has been and continues to be a central concern of the inhabitants of the Arabian Peninsula. This brief paper outlines and evaluates the background sociocultural information currently available on human utilization of rangelands in modern Saudi Arabia. Specifically, we consider possible research needed to further understand such utilization.

2. Socioeconomic aspects of subsistence herding in Arabia

For the social scientist interested in human ecological adjustment, the fundamental properties relating human exploitation of rangelands in arid zones can be summarized by a chain of limiting factors.

First, animal density largely depends on consumable biomass. For example, in the desert areas of the Western Arabian Shield where estimated average annual consumable biomass production reaches 80 kg/ha, one animal unit requires approximately 51 hectares of rangeland annually

Figure 1. Annual Precipitation

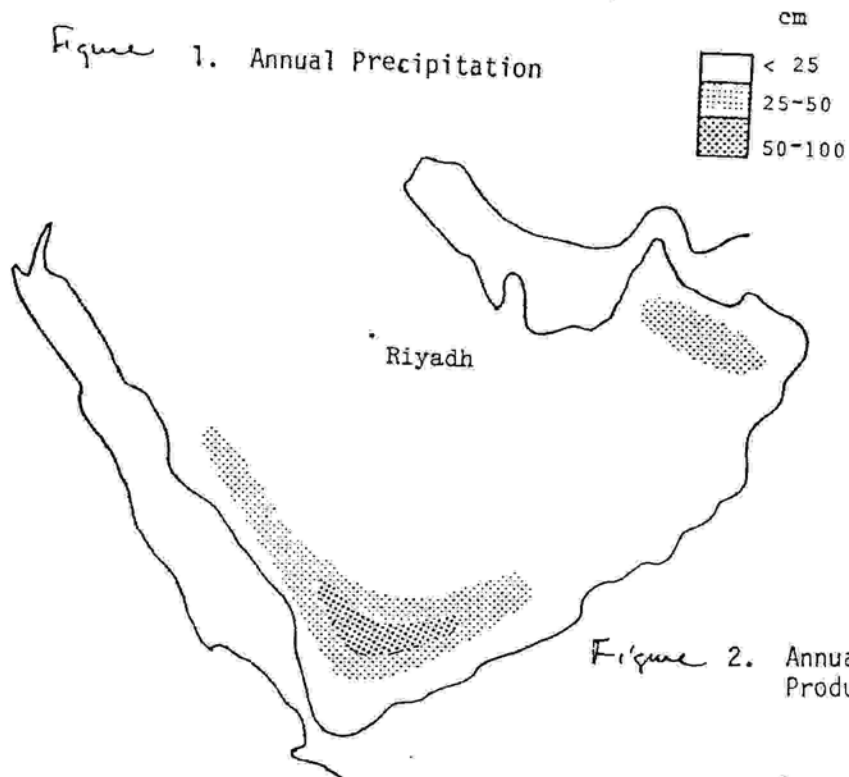
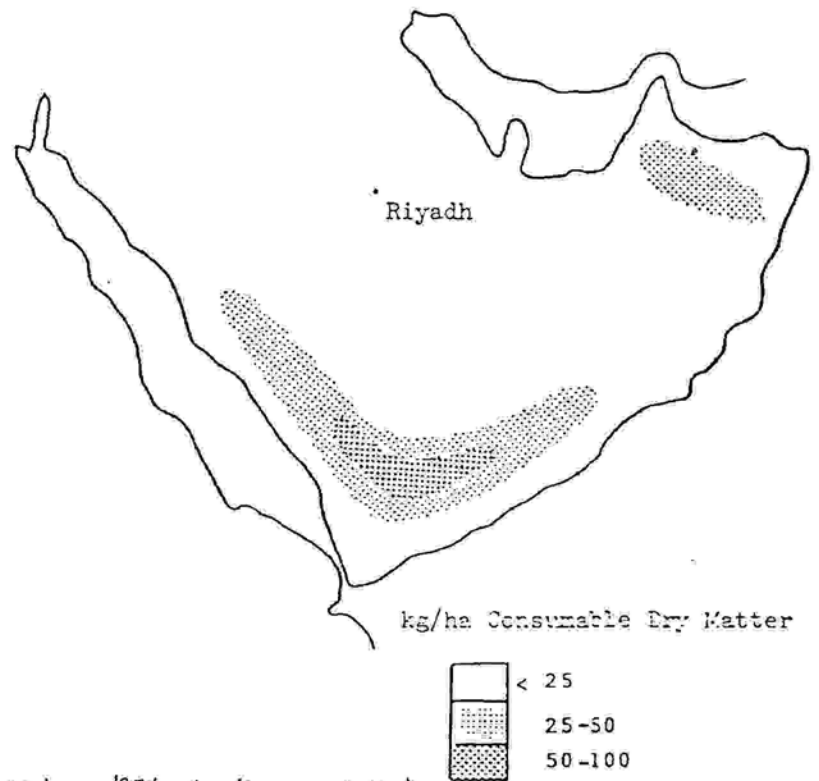


Figure 2. Annual Biomass Production



Source: Espenshade and Morrison 1974; Le Houerou & Hoste 1977.

(Duba and Ellis 1978:6-31). By comparison, in the western mountains where estimated average annual production approaches 325 kg/ha, only 15 hectares supply the biomass needed by one animal unit (Figure 2).

Second, the amount of consumable biomass is, in turn, limited largely by the amount of precipitation or more specifically, soil moisture. Other factors such as soil nutrients can become limiting factors only if soil moisture is adequate. For arid regions of the Middle East, Le Houerou and Hoste (1977) have discovered a useful relationship between precipitation and biomass production. Based on several data sources, they show that in the Mediterranean and Sahelo-Sudanese zones, approximately 1 kg/hectare of biomass available to grazing and foraging animals (consumable biomass) is produced for every millimeter of precipitation.

Third, such a sparse animal population necessarily limits the human population dependent on it to extremely low densities. In a recent areal survey of rangeland in the western shield of Saudi Arabia, an average 10.2 tents per 100 km² was noted (Duba and Ellis 1978:5-26). Assuming each tent averages 6 people, an estimated human population density for this range would be circa 1 person/1.7 km² (Figure 3).

Fourth, variation in rainfall and biomass production not only influence animal and human densities, but also the optimal composition of rangeland herds. Thus, while camels can graze range in almost any but the steepest slopes, sheep and goats can not efficiently exploit the drier desert areas. Sheep and goats have to be watered every 1-2 days, unless the moisture content of plants is high, which would allow up to 8 days between watering. Since small ruminants cannot walk great distances, they must be kept fairly close to reliable water sources. Camels, on

Figure 3. Human Population Density

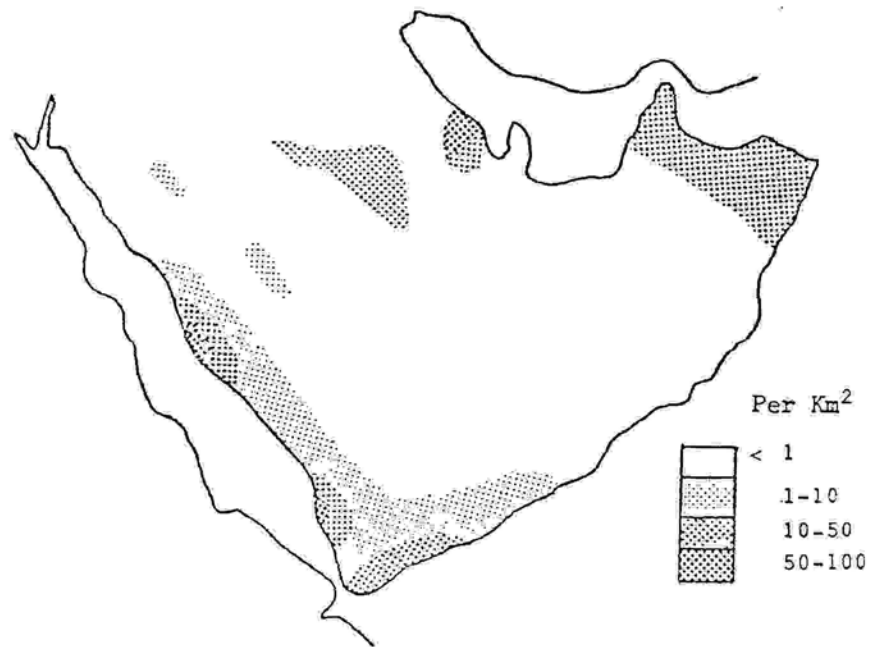
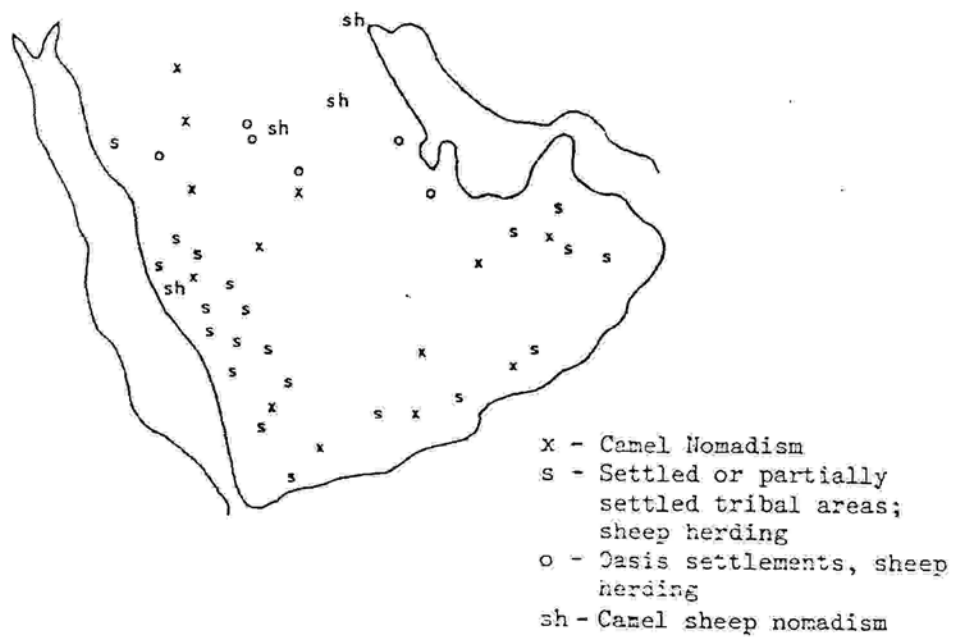


Figure 4. Traditional Tribal Subsistence



Source: Espenshady and Morrison 1974,

the other hand, can go up to 14 days without water and since they can travel around 5 km/hr, it is possible to graze camels in a wide ranging pattern.

Fifth, unpredictable distribution of rainfall means that the spatial distribution of humans and animals is highly variable. Even though general migration routes are traditionally well defined, day to day decision making has to be opportunistic. Thus, whatever strategies humans use for arid land grazing they must exhibit considerable flexibility. Such flexibility is frequently shown in the social relations between and within minimal social units.

The factors of animal physiology and climate combine to encourage two different, if somewhat idealized, patterns of Bedouin exploitation of the Arabian range. One of these patterns centers on the camel and the other on small stock--sheep and goats. Camel herding is concentrated in the dry interior of the Arabian Peninsula and northward. In Arabia, camel herding tends to be of what Johnson refers to as the "horizontal variety" with nomads shifting hundreds of kilometers annually from the central desert areas to the north (e.g., Ruwala, Mutair, Murrah) or to the coastal and foothills areas (e.g., Dawasir) in the spring (Johnson 1969). Sheep and goat herding, while more widespread tends to be found near better watered areas, and small stock herding is often found in closer conjunction with village agriculture and cattle raising (Figure 4).

In practice many Bedouin herding households own many combinations of sheep, goats and camels but these animals are usually herded separately in different regimes of movement. In a recent survey by Ibrahim and

Cole (1978) of 125 Saudi Arabian Bedouin herders, 28% claimed to own both sheep and camels. In general, where Bedouins depend on camels in the arid desert region, the requirements of long distance herd movement tend to produce a fully nomadic life style, carrying their belongings and tents with them (Ibrahim and Cole 1978:52). In the Ibrahim and Cole survey approximately 85% of the exclusive camel owners were engaged in long-range nomadism, while approximately 60% of the exclusive sheep owners were semi-settled or practiced only short-range nomadism. Further, over 2/3 of the short-range/semi-settled Bedouins were engaged in agriculture (Ibrahim and Cole 1978: Tables 5 and 8).

2.1 Household Economies of Herders

The commonly encountered fact of mixed animal ownership and mixed pastoral-agricultural pursuits led to a variety in actual household economies of those utilizing Arabian range resources. Saudi nomadic pastoralism, like that of other regions, shows considerable flexibility in its structure, management strategies, and mix of non-pastoral economic activities. The production systems of these households can vary at least in the following important ways: herd composition, herd size, degree of nomadism, involvement in agriculture, household size, and degree of entry into the national wage-labor economy. As a result it must be emphasized that the overriding characteristic of households exploiting range resources in the Arabian Peninsula is organizational flexibility.

Theoretically, a household composed of 2 adults and 4 children with between 25 and 30 camels (30% to 40% adult dams) can subsist from the

milk and meat of their herd. In practice households with 15-25 camels can make out quite well if their diet is supplemented by grain, dates and nuts (Dahl and Hjort 1976:8:238-246). Subsistence camel herders must stay close to their flocks since they depend on them for daily milk rations.

Because sheep provide food only when slaughtered, sheep herding is usually supplemented by other types of stock (like goats) or from agriculture products. Under these circumstances the absolute minimum number of small stock possible without eventually destroying the herd is somewhere between 40 and 60 head/household. One hundred small stock will provide a safe margin for subsistence. Actually, subsistence from sheep/goats is most often gained indirectly from trade in sheep and wool. Since households are not dependent directly on these sheep for their daily ration of food but rather for market purposes, flocks can be taken far away from the household or given to shepherds for safe keeping.

2.2 Herding and human social structure

Little is known about the specifics of Saudi Arabia's Bedouin households. For example, little is known about the impact of market oriented herding on the size of and labor requirements within the household. We know that camels are sometimes sold in urban markets, and from comparative data, it appears likely that most Arabian sheep herders are market oriented, but what influence this has on family structure is unclear. Nevertheless, the meager sources suggest that in both the small stock and camel situation, herds are owned and are the responsibility of individual households even though small groups of households

may coordinate their grazing schedules. Typically, 2 to 3 people are the theoretical minimum needed to manage a subsistence herd and associated domestic chores. In the Ibrahim and Cole (1978) survey of Arabian Bedouins (including full camel nomads, as well as small stock herders and semi sedentary groups) the distribution of household sizes is reported to be:

<u>Size</u>	<u>Percent</u>
1	1
2-3	11
3-5	19.2
5-7	28.8
7-9	19.7
9-11	13.5
11	6.7

These figures reflect the expected range of household sizes based on information from other Middle Eastern reports. Barth (1961:12) found that the small stock Basserri nomad households typically (69%) contained a nuclear family (5-6 people/household) while Cole (1975) finds a patrilineal extended family (circa 7-8 people/household) more common among the Āl Murrah. Among the camel herding Āl Murrah and most other camel owners, herding is a male responsibility (Cole 1975:38, Dahl and Hjort 1976:247). Shepherding, on the other hand, while most often intrusted to males, has been variously reported as the responsibility of women, girls and boys (Behnke 1980:35; Barth 1961:16). It might be that an extended family is more common among camel herders because camel herds take much longer to establish than do herds of small stock. Dahl and Hjort (1976:84:98-106) estimate that it takes 15-50 years for camels to double their numbers while small stock can double in only 2 to 5 years. Since camel herds cannot be expected to double in less than one human generation, cooperation over a two generation period might encourage the formation of extended families sharing capital invested in camels.

Typically, a Bedouin household is found in association with other households; although, the size of these groups and the type of associations vary a great deal. The most easily identifiable group of households among both camel and small stock owners is the minimal lineage (referred by Tapper 1979:58-59) as A-type communities. These groups are usually composed of between 30 and 50 households (tents) which collectively control rights to specific grazing and water resources. As Tapper puts it, "the connection between [minimal lineage] composition and rights in grazing and water resources is obvious" (Tapper 1979:58). In wetter, winter and spring months these groups may fragment into smaller grazing camps but reunite during major migrations and/or around permanent water sources. In the spring of 1978, camp density and camp size was estimated from areal photography for the western Arabian shield rangeland (Duba and Ellis 1978:5-25). Duba and Ellis found camp density ranges from 0 to 21 camps/100 km² ($\bar{X} = 4.5/100 \text{ km}^2$). The average camp area in the census zone was 22 km². The number of tents per camp ranged from 1 to 4.4 ($\bar{X} = 2.25$). Minimal lineages among camel herders tend to be partilineally organized while households within sheep and goat herding minimal lineages are more often related through affinal ties (Rubel 1969; Pastner 1971). These groups have certain important social responsibilities such as regulation of marriage, blood feud obligations and ceremonialism. Composition of a particular minimal lineage can vary a little from year to year but generally it is a corporate, self-defined collection of households which persist over generations even through some households dissolve and others are newly established. These groups of partilineal or affinal kinsmen are united with similar groups through kinship into clans or tribal subsections. These clans average between 150-500 households.

"They are the 'primary reference groups,' tend to a high degree of endogamy, almost always constituting 'marriage isolates,' and exhibit considerable historical continuity, being formed above the level of shuffling, fission, fussion and structural amnesia in genealogies" (Tapper 1979:62).

A number of these sections (up to around 20) make up a named tribe, which varies from 300 to as many as 10,000 households. Limited by lack of a good sociological/demographic census for Saudi Arabia, we can only say that probably a majority of the 100 significant tribes in the Arabian Peninsula are truly nomadic Bedouins. The 1974 census estimates Bedouin nomads (as opposed to settled villages) number about 1.9 million (25% of the Kingdom's population). Table 1 provides a partial list of the large tribes of Arabia along with probable major herding orientation if known. Among these tribes camel nomads consider themselves somewhat superior to the others. This feeling may relate to their greater independence, mobility and (historically) greater militarism.

Cole (1973) has drawn attention to the fact that all Saudi Arabian tribes are intimately connected with the national political scene and by implication are intimately linked with the sedentary components of Saudi Arabian society. Cole shows how Al Murrah are connected with sedentary elements at village oases and at regional urban/political centers, but also how the Al Murrah serve the modern state of Saudi Arabia as a ready military reserve. The sociocultural implications of Cole's observation goes beyond these observations. Salzman (1979), Burnham (1979) and Irons (1979) all agree that interaction with sedentary, agricultural, state organized societies leads to inequality between household and

Table 1. Major Herding Tribes of Saudi Arabia (after Lipsky 1959:68-71).

Location	Tribe	Herding Orientation (if known)
North and Central	Anazah	camel
	Harb	camel
	Shammar	camel
	Bani Sakhr	camel
	Dawasir	camel
	Matayr	camel
	Murrah	camel
	Hutaym	
	Awazim	small stock
	Mutayr	small stock
	Shwayah	small stock
South and Eastern Edge	Manasir	
	Rawashid	
	Manahil	
	Duru	
	Harasi	
Eastern Province	Hajr	
	Khalid	
Al Hijaz	Harb	nomads
	Buqum	nomads
	Fahn	nomads
	Munijihah	nomads
	Shanabirah	nomads
	Surur	nomads
	Utaybah	nomads
	Bali	settled with nomadic portions
	Thagif	settled with nomadic portions
	Zahran	settled with nomadic portions
	Quraish	shepards

Table 1. Continued

Location	Tribe	Herding Orientation (if known)
Asir	Shubah	camel
	Bal Aryan	nomads
	Naju	nomads
	Sanhan	nomads
	Asmer	settled and nomads
	Abs	settled and nomads
	Air	settled and nomads
	Bahr	settled and nomads
	Dura-b	settled and nomads
	Hilaf	settled and nomads
	Qaru	settled and nomads
	Shahrar	settled and nomads
	Shihr	settled and nomads
	Thawab	settled and nomads
	Zayd	settled and nomads
	Bishr	settled and nomads
	Sayar	settled and nomads
	Marwan	settled and nomads
	Yam	settled and nomads

lineage groups within pastoral tribes. Asad (1979) feels that the same enmeshment in agro-pastoral state level production systems often leads to the structural subordination of pastoral segments of complex systems. Although mobility and independence tend to produce sociocultural equality (Goldschmidt 1971) few modern social analysts would expect that equality is a characteristic of modern herding peoples in Saudi Arabia since these peoples have been impacted for many years by western technology and a national administration.

Obviously this sketch is limited by a paucity of data on the social conditions of Saudi Arabia's herders and by the necessity at times to generalize from widely scattered groups of Middle Eastern Herders. Especially disconcerting is the lack of recent good ethnographic work among Arabian herders (the exception being, of course, Cole's work among the camel herding *Al Murrah*). In addition, detailed information about the socioeconomic relationship between Arabian herders and the settled village population is urgently needed in order to understand fully the human exploitation of Arabian range resources.

2.3 Divergence from traditional herding

As was mentioned above, small stock raisers are seldom self-sufficient, independent subsistence herders. In Saudi Arabia a remarkable market for sheep, goats and even camels has existed for centuries in the throngs of Moslem pilgrims who come to Mecca in accordance with the dictates of Islamic beliefs. Arabian flocks provide hundreds of thousands of animals annually for this lucrative sacrificial market. In addition to direct market involvement, energy intensive techniques are rapidly

transforming the herding systems on Arabian rangeland. Notable among these innovations are the digging of wells and the use of trucks to transport animals to pasture and water to herds. In the areal survey reported by Duba and Ellis (1978:5-26) for every 10 tents recorded they saw nearly 8 trucks!

3. Identifying needed sociocultural research among Saudi Arabia's rangeland inhabitants

Recently, Shaner, Phillipp and Schmehl (1981) have proposed a useful approach to identifying needed research in agro-pastoral development. The approach begins by selecting a target area in which national or regional development objectives are tested. From here they suggest practical, controlled field experiments and end by urging the extension of useful results to other areas. Unfortunately, in the case of Saudi Arabian range development, significant problems arise with implementing even the first step. In Saudi Arabia (as in many other cases, we suspect) development objectives for this population and economic activity are not clearly specified nor can the target population be identified accurately. From the foregoing description of socioeconomic conditions on Saudi Arabia's rangeland it is clear that insufficient information is now available from which to consider policy decisions intended to improve the lives of those utilizing the range. Research and information is needed on subsistence systems, social organization (especially as it influences economic and range management decisions, inventories of resources commonly used by pastoral nomads, and marketing systems. Another important problem is the clear identification of policy alternatives and their associated programs for nomadic development.

In focusing on these two research areas (i.e., information gathering and policy making) rather than on recommending research into specific policy decisions, we might be accused of promoting a delaying strategy, by favoring research rather than action. However, we feel committed to the position that 1) good decisions cannot be made without good information, and 2) policy makers need to realize as fully as possible the implications of research and development recommendations. The poor quality and small quantity of information on present use of one of the kingdom's most important renewable resource--its rangeland--is embarrassing and needs urgent attention.

4. Development goals for arid zone herders

At a general level the goal of development is to "improve" the life of a target population. Definitions of improvement vary quite naturally from one situation to another and from one development agent to another; however, at base, a core set of factors are at least intuitively agreed upon as indicators of an improved life condition. For example, all would agree reduced infant mortality, increased life expectancy, increased literacy, and reduced physiological stress would indicate improvement in the quality of life. A more significant area of disagreement is reached, however, when we move to specify the measures necessary to achieve "improvement." Development work among pastoralists in arid zones is a perfect example. Consider the following list (Table 2) of proposals considered important by specialists in rangeland development (taken from participants in the First International Rangeland Congress, Hyderabad 1978). A policy maker with limited resources is faced with many different

Table 2. Sample of suggestions for improving the condition of rangeland inhabitants.

<u>Specific Proposal</u>	<u>Basic Orientation</u>
1. Changing traditional practices	Commercial herding
2. Introducing new productive technology	
3. Improving range management techniques	
4. Reseeding the range	
5. Destocking/improving breeds/veterinary services	Subsistence herding
6. Increasing use of forage/fodder	
7. Better understanding the basic rationale of subsistence herding	
8. Avoiding inappropriate innovations	
9. Accepting traditional practices	

"expert" suggestions all leading to the same goal. Experience has shown that generalizations from one situation to the next is difficult; so that, the local policy must be based on local considerations. Experts outside key decision making positions can be of only limited use; in the final analysis local decision makers must make the choices. As a general guide for decision making we offer the following five observations about the nature of current development options (see also Holling and Goldberg 1971).

First, most attempts to improve life conditions of herders can be classified as either commercially oriented or subsistence oriented, and the choice of an orientation can have profound impact on the future of a social system. We call these two alternatives basic orientations. On the one hand economic development might be directed toward sustaining and improving upon an existing labor intensive system of self sufficient subsistence herders or it might be directed toward rationalizing and modernizing that system by changing it into a more energy intensive, commercial, market oriented production system. We feel the distinction is useful despite the fact that few herding systems remain untouched by western technology and international markets, and all fall short of the "subsistence herding ideal." The distinction is useful because the two orientations represent ends of a continuum and serve to accentuate the major contrasts in various development alternatives. If the participants in the First International Rangeland Congress are representative of the field of rangeland specialists (Hyder 1978), 3/4 of the rangeland development research is dedicated to the commercialization of subsistence herding. Why the energy intensive orientation dominates is probably

related to the Australo-American training of most rangeland specialists where low labor ranching systems are the ideal and norm, and to the fact that western technology and international capital have penetrated most "traditional herding systems." Nevertheless, it must be recognized that commercially oriented production may not lead to the desired improvements in the quality of life (Aberle 1980, Baker 1981), or to equal improvements for all members of society (Bates 1972; Dahl 1979). Intensive production requires capital concentration, assured supplies of energy and equipment and eventual international competition where Australo-American interests already have a decided competitive advantage (Swift 1979). Further, the far reaching ramifications of many of these proposals bears careful consideration. Increased capital requirements, increased dependency, loss of self-sufficiency and loss of flexibility might leave many of these developed pastoral systems in quite vulnerable positions.

Second, selection among the available schemes and programs must be based on an analysis of accurate information about current conditions.

Third, those programs are best which involve diverse solutions of limited scope. It would be safer from an ecosystem point of view to preserve as much of the natural complexity of a system as is possible. This position might be achieved by giving local rangeland inhabitants a large say in proposing solutions and implementing schemes.

Fourth, complex systems like traditional rangeland production systems have the capacity to solve their own problems. Maximum local, direct participation will insure diversity and better information input.

Fifth, operational goals should be conceived of in terms of minimizing disasters rather than elimination of problems.

5. Sociocultural survey of Arabian rangelands

After establishing the basic orientation of development and specific proposals for development, Shaner, Philipp and Schmehl (1981) suggest selecting target and research areas. Again, lack of basic information will inhibit any attempt to meaningfully identify either a target area or a research area in Saudi Arabia. Therefore, we suggest instituting a basic information gathering program concerning the sociocultural conditions of Saudi Arabia's rangeland inhabitants. Information gathering should be comprehensive but focus on the needs of pastoral research. In order to aid in identifying crucial information areas consider the following list (Table 3) of factors mentioned by rangeland specialists as important sociocultural phenomena in rangeland development. It is clear that both the pastoral nomads and the government agents who are interested in sustained development need vast amounts of information in order to successfully introduce improvements. Further, the basic orientation will influence the type of information needed (see Table 3). Table 4 provides a summary of the major differences in information deemed necessary for subsistence and for commercially oriented development. The close relationship between basic orientation and type of sociocultural information considered relevant emphasizes the importance of an adequate information gathering system; failure to gather or have available some type of information might necessarily prohibit some development alternatives.

We feel that information in the categories listed in Table 5 would provide the knowledge necessary to authoritatively propose rangeland development research, identify a target population and select a research

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Table 3. Sociocultural factors deemed important¹ to the success of rangeland development schemes.

<u>Factors</u>	<u>Orientation</u>
household organization domestic production labor community/tribal organization rituals kinship raiding mutual support beliefs values norms informal vs. formal education alliances informal sanctions savings mechanisms (other than livestock) -----	Information needed by those assuming a subsistence orientation
population/demography sedentarism livestock population health ownership external security land tenure national politics social welfare programs grazing management units competition for rangeland -----	Information needed by both orientations
extension service surplus population/sector shifts income/profits rural to urban migration international markets/international laws market controls financial support feedlots/cooperatives processing facilities/light industry loans/credit/debt/capital investment management institutions leasing (land) agricultural controls mechanization/fertilization transportation	Information needed by those assuming a commercial orientation

¹ These factors are those mentioned by participants in the sociological and political aspects of rangeland resource management section and the range economics and management section of the First International Rangeland Congress (Hyder 1978).

Table 4. Descriptive summary of information categories needed by subsistence oriented and by commercially oriented schemes.

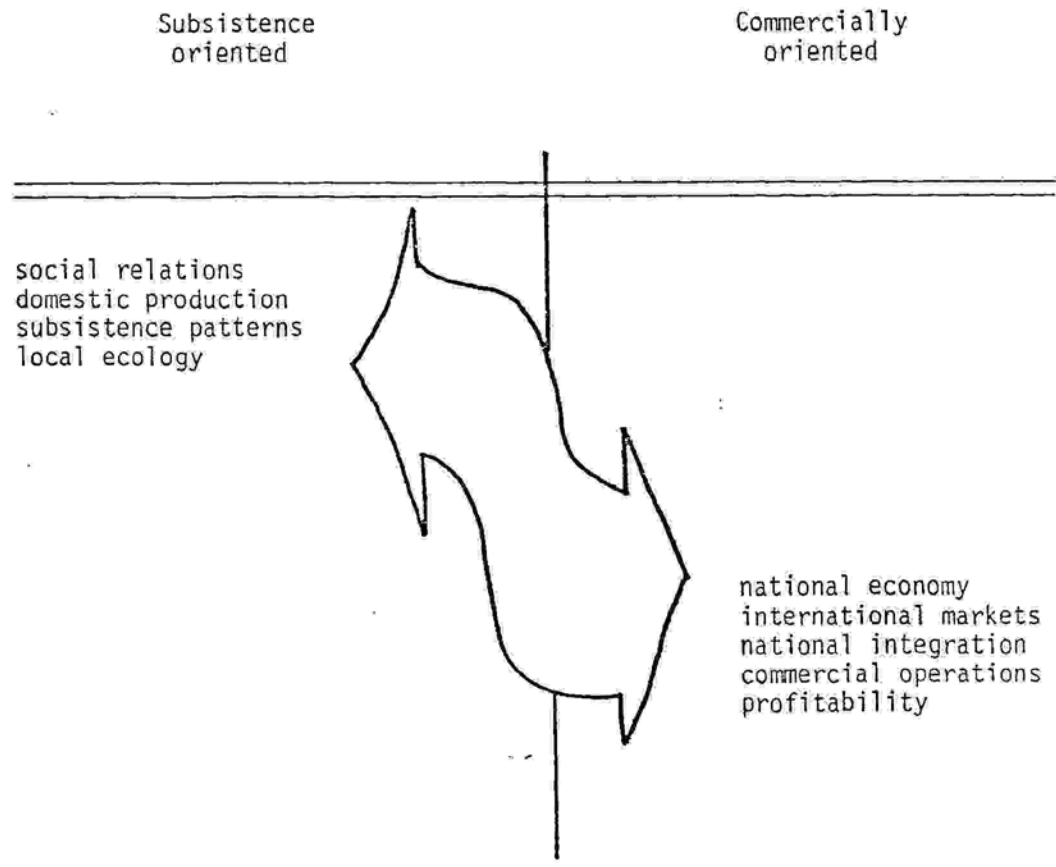


Table 5. Suggested outline of sociocultural information pertinent to rangeland development scheme evaluation and research.

Environmental relations

pastoral technology
local ecosystem
human exploitation

Demography

fertility, natality
growth rate
age structure

Household production

family structure
domestic division of labor
socialization
age and sex roles

Social organization

social structure
education
division of labor
political organization
international relations

Arts and Sciences

art
literature
sports
science

Culture

ethnobotany
ethnozoology
kinship
political ideology
religion
philosophy

area. This list derived from various research projects conforms closely to recommendations of other rangeland researchers (Downing and Ffolliott 1981; Bartlett *et al.* 1979).

This information should be collected for representative samples of Saudi Arabia's rangeland inhabitants. Such samples should be stratified for different types of animals, degree of sedentarization and degree of entry into the wage-labor economy. Since "development" proposes to help herding people, we feel the appropriate unit of observation among subsistence herders is the household or family. That is, the information gathered should reflect the conditions within households and the external relations of households. Lacking information on this population, drawing a representative sample of households would be very difficult; therefore, we propose selecting a number of households which cover the range of various types of household involvement in utilizing rangeland resources. In addition, practical considerations would make household surveys difficult. Since most pastoralists in Arabia are usually found in lineage or affinal groups (minimal lineages), this grouping provides a practical unit of observation. Exploitation of Arabian rangeland can be recognized in four major structural types (Table 6). We suggest collecting detailed sociocultural information (Table 5) on representative examples of households engaged in these exploitive patterns. Type A communities and households engaged in these structural patterns can be found in various tribal groups throughout Saudi Arabia. Tribal examples are given in Table 6.

Some of the necessary information can be collected in a structured survey format; however, reliable information can be obtained only after

Table 6. Typology of human exploitation of Arabian Rangeland and Tribal examples.

<u>Exploitive Pattern</u>	<u>Tribal Examples</u>
Fully nomadic camel herding	Anazeh or Harb of the Nejd
Short range sheep/goat herding	Quraish near Taif
Mixed camel/small stock herding	Awazim of the Eastern Province
Mixed agriculture/small stock herding	Thaqif or Zahran of Al-Hijaz

establishing confidence with the local population and first hand confirmation. In addition, accurate information about some aspects of the sociocultural domain can only be obtained by long-term participation in the lives of the community. Therefore, data collected must rely on long-term field studies of the participant observation type. At least, one if not two field studies per structural type would provide a good baseline for recommending further research into rangeland development projects. Each study should encompass a 12 month field study and 12 month write-up period. Thus, this proposed survey would require 8 man years at a minimum or more preferably 16 man years. Structuring their field observations to provide at least the information listed in Table 5, these researchers should provide comprehensive and comparable information on all four structural types of exploitation based on a sample of some 120 pastoralist households.

6. Conclusion

This paper has attempted to provide the background necessary for considering rangeland resource development from the perspective of sociocultural dimensions. This was accomplished by:

1. Setting the conditions for human utilization of rangeland,
2. Describing household, camp and community composition among arid zone herders,
3. Comparing where possible the camel herding with the small stock herding, and
4. Considering the basic connection between development schemes and the sociocultural considerations commonly taken up by rangeland specialists.

In addition, the authors take the position that proposing specific rangeland development projects at this stage for Saudi Arabia is premature. Policy as to the basic orientation that development will take is unclear and too little information now exists concerning the socio-cultural conditions of those utilizing rangeland resources. To remedy this situation, a baseline community/household survey was proposed.

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