

# CONSTRAINTS FACING GOAT-KEEPERS IN SEMI-ARID INDIA

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## Introduction

Since October 1997 BAIF Development Research Foundation, an Indian rural development NGO, and the Natural Resources Institute (NRI) have been collaborating on a four-year research project concerned with easing seasonal fodder scarcity for goats in various parts of semi-arid India. The project seeks to identify and address feed-related constraints affecting goat production, and then to develop and test technologies to ease or remove the constraints identified. In each district where it works the project begins by conducting surveys in a few villages in areas where BAIF has an operational presence. This paper summarises and discusses the information obtained about constraints.

## Material and Methods

The surveys have used semi-structured group interviews, and rapid rural appraisal (RRA) tools, such as mapping and diagramming. They seek to obtain a general picture of people's livelihood systems; and to gain an understanding of goat production and feeding systems, and goat-keepers' problems. Towards the end of the survey work in each village, which lasted about three days, the goat-keepers were asked to list *any* problems they considered to be important: and rank them in terms of their relative importance (for example, water scarcity 1<sup>st</sup>, disease 2<sup>nd</sup>, feed scarcity 3<sup>rd</sup>). The researchers did not have a predetermined list of problems. In villages where people from different castes keep goats for different reasons, or use different production practices, these groups were interviewed separately, as their ranking of problems could also differ. Men and women were also interviewed separately. The results of the rankings were generally cross-checked with other survey findings.

In a few cases, problem ranking has been followed by the use of **participatory problem tree analysis** to deepen understanding of the problems. Problem trees are a very useful diagrammatic tool for analysing problems and gaining a more in-depth understanding of their nature (Peacock, 1996). They involve identifying a core problem, the factors causing it, and the effects that it has. The core problem is represented as the trunk of the tree, the causes as its roots and the effects as its branches (see Figure 1 for an example). Normally, problem trees are constructed by development professionals – researchers, extensionists or practitioners; but in *participatory* problem tree analysis they are constructed by farmers, livestock-keepers etc. Since most of the goat-keepers with whom the project is working are illiterate, they represented the factors they had identified through symbols that they drew on pieces of card. Where they perceived a causal relationship between two factors they indicated this by placing a stick or ruler between the two relevant cards.

## Results and Discussion

Table 1 gives some information about rainfall and certain agro-ecological characteristics of the four survey districts that have a bearing on the nature and severity of the constraints experienced by goat-keepers. Tables 2-7 show the rankings of constraints that were given by male goat-keepers in 16 villages to members of the project team during 1997-2000. (Women were also interviewed, but it was sometimes more difficult to get rankings from them. Their answers are often, but not always (see below), similar to men's.)

The overall results can be summarised as follows, although there may be exceptions. Disease is an important constraint in all three districts, but otherwise there are some major differences. In Bhavnagar, the most serious constraint is perceived to be water scarcity: this is followed by feed scarcity, and then by disease. In Udaipur, disease is perceived as the main problem: water scarcity and feed scarcity are also serious constraints in some villages. The situation appears to be similar in Dharwad District, but more villages need to be surveyed to confirm or disconfirm this. In Bhilwara, water scarcity is seldom given as a priority constraint on goat production (but people are concerned

about the effect of drought on livestock in general), and feed scarcity has moved to the number one constraint. Lack of a breeding buck is the second most important constraint in the Bhilwara villages. In Vidisha, the picture is different again, with: (a) theft the most serious problem - more goats are lost through theft than through disease; and (b) predators the second most serious problem.

The high ranking given to water scarcity in Bhavnagar is probably related to:

(a) the relatively low rainfall in this district; and (b) the fact that milk production, which is likely to be particularly sensitive to water scarcity, is the primary benefit of goat-keeping in Gujarat (as it is a vegetarian state). In districts with higher annual rainfall water scarcity becomes less and less of a constraint.

The different priority constraints (theft and predators) identified in Vidisha are related to the higher forest cover found there. The forests provide cover to thieves, who work in small organised groups (3-5) of men: they carry slings and wear masks, making it difficult for the goat-keepers to catch and identify them: the stolen goats are taken away in a motor vehicle. The forests also serve as a habitat for predators (such as jackals and species of wild cats) and provide cover for them, making it more difficult for the herder to see them. Feed scarcity in the dry season is not a constraint here, partly because of the substantial quantity of browse available in the forest and partly because the goats graze on nutritious crop residues during the first two months of the dry season.

#### *Gender differences in ranking of constraints*

The different responsibilities of men and women in livestock production are liable to influence their perceptions of what are the main production constraints or problems. This is illustrated by men and women from scheduled castes in Kumbhan village, Gujarat. Men, who were responsible for disease management, identified disease as the only problem. By contrast, women, who were responsible for fetching drinking water from the village well for the goats (which were partly stall-fed), ranked water scarcity as the main constraint, and did not include disease as a constraint.

#### *The need to deepen understanding of problems*

The initial identification of problems, and discussions with livestock-keepers about them, are often superficial. For example, general discussions with Rabaris in Kumbhan and Valukad villages (Table 2) and Scheduled Caste women in Kumbhan (see discussion above) identified water scarcity in the dry season as a constraint. However, more detailed discussions revealed that the nature of the water scarcity problem was different in each case.

For Rabari men in Kumbhan, for whom livestock is the main enterprise and who herd their animals several kilometres each day, a major dimension of the problem (reduced milk production was another important dimension) was the distance they have to walk with their animals to find water in the dry season. Whereas for the women belonging to scheduled castes, who mainly stall-feed their 1-2 goats, the problem was that they have to walk two kilometres to the village well to fetch water and bring it back to the home. In Valukad, water scarcity was so severe that people were dependent on tankers bringing water every day, from which they purchased it. It is important to elucidate differences in the nature of problems like water scarcity, as the required intervention may be different in each case.

**Experiences with the use of problem trees** The use of *participatory* problem trees (i.e. ones constructed by livestock-keepers) has been very helpful in improving the researchers' understanding of key constraints. They reveal how the livestock-keepers perceive problems and relationships, which may be different from how outsiders see them; and they can also highlight the human (social and economic) dimensions of livestock production problems, which are usually given less attention by researchers.

#### *Human dimensions of livestock production problems*

Studies of livestock problems and constraints usually describe problems as they affect the animals - for example, in terms of growth rates, mortality or milk production. However, there are often important human or socio-economic dimensions that need to be understood and taken into account, some examples of which will now be given. In the water scarcity rankings discussed above, two of the groups described the problem in relation to demands on their labour, and the third in relation to

expenditure. The Rabaris of Kumbhan also complained about how tired they were at the end of the day (see Figure 1). A water infrastructure intervention by the BAIF/NRI project in 1999 reduced their herding distances, and hence their fatigue. Their wives identified another human aspect of the problem: they observed that the reduction in fatigue had led to less arguments with their husbands and in disagreements being settled amicably.

#### *A cautionary note*

RRA (and Participatory Rural Appraisal) are useful methods for obtaining information about constraints, and have the advantage of generating information quickly and cheaply. Sometimes, however, results may not be entirely reliable, for two reasons. First, people's answers about constraints may be influenced by their perceptions of: (a) what the researchers are interested in; and (b) the areas in which researchers may be able to provide assistance to them (e.g. veterinary services). Second, some constraints may not be mentioned, perhaps because the goat-keepers perceive them as a fact of life, about which little can be done. Two examples of such constraints are marketing and labour for herding.

Although marketing was hardly ever mentioned as a problem in the surveys, there is evidence that it is. BAIF's work in Bhilwara has shown that goat-keepers are often paid low prices by traders, and that once they know the weight of their animals and become more aware of market rates for goats they are able to negotiate higher prices. Nor is the availability of family labour for herding often mentioned as a constraint by goat-keepers. However, a regression analysis that tested the relationship between herd size and other variables showed that the availability of household labour is one factor that is "uniformly important in determining the herd size" (Sagar and Ahuja, 1993).

### **Summary and Conclusions**

A survey of goat-keeping constraints in semi-arid India found that they vary considerably from village to village, from one production system to another, and between men and women and different socio-economic groups. There are also differences in rankings between agro-ecological zones. Some of the constraints identified (e.g. theft, predators, water scarcity) are ones that are not conventionally addressed by livestock services agencies.

The initial identification of livestock problems tends to be superficial, and the use of participatory problem tree analysis can provide a more in-depth understanding of how goat-keepers perceive constraints and their inter-relationships. The survey found that there are sometimes important human dimensions to goat-keeping problems, as well as the biophysical ones that livestock scientists tend to focus on.

The findings point to the need for livestock service agencies in India to have broad mandates and to be flexible, if they are to be effective in helping goat-keepers address production problems. They also highlight the fact that the major constraints tend to be related to insufficient resources (feed, water, labour, cash etc.) rather than information needs *per se*. Thus, if the needs of poor goat-keepers are to be met, "there is a need either for appropriate messages based on an understanding of their objectives, options and constraints, or for complementary services to help address the constraints which currently prevent change" (Matthewman and Ashley, 1996).

### **References**

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## Tables and Illustrations

**Table 1 Rainfall and Other Characteristics of the Four Districts Surveyed**

| District (State)         | Mean annual rainfall (mm) | Other Characteristics  |
|--------------------------|---------------------------|--|
| Bhavnagar (Gujarat)      | 550 - unimodal            | Little forest. Some areas experiencing groundwater depletion and seawater ingress. |
| Udaipur (Rajasthan)      | 625 - unimodal            | Hilly area. Some forest.   |
| Bhilwara (Rajasthan)     | 700 - unimodal            | Plains area. Little forest.  |
| Vidisha (Madhya Pradesh) | 1000-1200 - unimodal      | Forest is relatively abundant  |
| Dharwad (Karnataka)      | 430 - bimodal             | Little forest  |

**Table 2 Ranked constraints on goat production in three villages of Bhavnagar - Rabaris**

| Rank | Kumbhan                  | Valukad                   | Hanol   |
|------|--------------------------|---------------------------|---|
| 1    | Water scarcity – summer  | Water scarcity - all year | Disease   |
| 2    | Forage scarcity – summer | Forage scarcity – summer  | Quantity of crop residues in late winter/summer |
| 3    | Disease                  | Disease                   | Water scarcity                                  |

**Table 3 Ranked constraints in five villages of Udaipur District - Tribals**

| Rank | Gopir   | Jothana                                      | Khakad                    | Kirat                   | Masinghpura |
|------|---------|--|---------------------------|-------------------------|-------------|
| 1    | Disease | Fodder scarcity, water scarcity and disease* | Disease (diarrhoea)       | Disease                 | Disease     |
| 2    | -       |  | Drinking water scarcity   | Theft                   | -           |
| 3    | -       |  | Insufficient concentrates | Shortage of tree fodder | -           |

\* The goat-keepers in Jothana saw these problems as inter-related.

**Table 4 Ranked constraints in three villages of Bhilwara District (April 1999)**

| Rank | Iras   | Laxmipura                                      | Udaipura                              |
|------|--|--|---------------------------------------|
| 1    | Feed scarcity in summer season (lack of trees) | Feed scarcity in summer season (lack of trees) | Insufficient trees/shrubs for grazing |
| 2    | Lack of breeding buck                          | Lack of breeding buck                          |                                       |
| 3    | Disease - mainly in rainy season               | Disease - mainly in rainy season               |                                       |

**Table 5 Ranked constraints in two villages of Bhilwara District (November, 1997)**

| <b>Rank</b> | <b>Patio ka khera (Bhils)</b>       | <b>Patio ka khera (Gujars)</b>      | <b>Indrapura (Gujars)</b>                      |
|-------------|-------------------------------------|-------------------------------------|--|
| 1           | Shelter from rain (waterproof roof) | Disease (outbreak of E.T.)          | Manpower for herding                           |
| 2           | Disease                             | Shelter from rain (waterproof roof) | Fodder scarcity, combined with cash constraint |
| 3           | Fodder scarcity in June             | Fodder scarcity in June             |  |

**Table 6 Ranked constraints in two villages of Vidisha District (August 1999)**

| <b>Rank</b> | <b>Navela</b>                  | <b>Mahavan</b> |
|-------------|--------------------------------|----------------|
| 1           | Theft                          | Theft          |
| 2           | Disease                        | Predators      |
| 3           | Predators                      | Diseases       |
| 4           | Infected hoofs in rainy season |                |

**Table 7 Ranked constraints in two villages in Dharwad District, Karnataka**

| <b>Rank</b> | <b>Naiknoor</b>          | <b>Devarhubli</b> |
|-------------|--------------------------|-------------------|
| 1           | Diseases (Kid mortality) | TO BE ADDED       |
| 2           | Fodder Scarcity (summer) |                   |
| 3           | Water Scarcity (summer)  |                   |

**Figure 1 Problem Tree constructed by Rabaris in Kumbhan, Gujarat, showing water scarcity as the core problem**

