

Folk Biological Classification of Minor Millet Species in Kolli Hills, India

Author: Rengalakshmi, R.

Source: Journal of Ethnobiology, 25(1) : 59-70

Published By: Society of Ethnobiology

URL: [https://doi.org/10.2993/0278-0771\(2005\)25\[59:FBCOMM\]2.0.CO;2](https://doi.org/10.2993/0278-0771(2005)25[59:FBCOMM]2.0.CO;2)

BioOne Complete (complete.BioOne.org) is a full-text database of 200 subscribed and open-access titles in the biological, ecological, and environmental sciences published by nonprofit societies, associations, museums, institutions, and presses.

Your use of this PDF, the BioOne Complete website, and all posted and associated content indicates your acceptance of BioOne's Terms of Use, available at www.bioone.org/terms-of-use.

Usage of BioOne Complete content is strictly limited to personal, educational, and non - commercial use. Commercial inquiries or rights and permissions requests should be directed to the individual publisher as copyright holder.

BioOne sees sustainable scholarly publishing as an inherently collaborative enterprise connecting authors, nonprofit publishers, academic institutions, research libraries, and research funders in the common goal of maximizing access to critical research.

FOLK BIOLOGICAL CLASSIFICATION OF MINOR MILLET SPECIES IN KOLLI HILLS, INDIA

R. RENGALAKSHMI

M.S. Swaminathan Research Foundation, III Cross Street, Institutional Area, Taramani,
Chennai, India

<rengalakshmi@mssrf.res.in>

ABSTRACT.—The paper attempts to present the classification of inter- and intra-specific minor millets by Malayali tribal farmers residing in Kolli Hills, Namakkal district, Tamil Nadu, India. The different species are *Panicum sumatrense* Roth ex Roem. & Schult., *Panicum miliaceum* L., *Paspalum scrobiculatum* L., and *Setaria italica* (L.) Beauv. Tribal farmers classify different species of millets using a set of exclusive morphological characters. The different landraces of each species are categorized into two different levels. The primary level of categorization is based on certain morphological, agronomic, and gastronomic characters of the landrace. The most useful parts are perceived and reflected in nomenclature, which subtly indicates the phylogenetic relationships among landraces. The secondary level categorization is based on practical utility of the landrace. Several subclassifications exist based on a specific cultural value of the taxa.

Key words: folk taxonomy, minor millets, Kolli Hills, Malayali tribal people.

RESUMEN.—Este trabajo presenta la clasificación inter e intraespecífica de los mijos cultivados por los agricultores de la tribu Malayali que residen en Kolli Hills, distrito de Namakkal, Tamil Nadu, India. Las especies involucradas son *Panicum sumatrense* Roth ex Roem. & Schult., *Panicum miliaceum* L., *Paspalum scrobiculatum* L. y *Setaria italica* (L.) Beauv. Los agricultores de esta tribu clasifican las diferentes especies de mijo mediante un conjunto de caracteres morfológicos excluyentes. Las diferentes variedades locales de cada especie se categorizan en dos niveles diferentes. El primer nivel de categorización se basa en ciertos caracteres morfológicos, agronómicos y gastronómicos de cada variedad local. Las partes más útiles se perciben como más importantes y ello se refleja en la nomenclatura, que indica sutilmente las relaciones sistemáticas entre las variedades. El segundo nivel de categorización se basa en la utilidad práctica de cada variedad. Según el valor específico de cada taxon existen varias subclasificaciones basadas en un valor cultural específico.

RÉSUMÉ.—Cet article présente une classification inter- et intraspécifique des millets secondaires obtenue des fermiers tribaux Malayali du Kolli Hills, district de Namakkal, Tamil Nadu, en Inde. Les espèces différentes sont *Panicum sumatrense* Roth ex Roem. & Schult., *Panicum miliaceum* L., *Paspalum scrobiculatum* L., et *Setaria italica* (L.) Beauv. Les fermiers tribaux classifient les différentes espèces de millets par rapport à un group exclusif de caractères morphologiques. Les différentes variétés cultivées de chaque espèce sont groupées en deux catégories aux niveaux différents. Le niveau primaire est basé sur des caractères morphologiques, agronomiques et gastronomiques de chaque variété cultivée. Les parties les plus utiles de la plante sont conçues perceptuellement et celles-ci sont reflétées dans la no-

menclature, ce qui reflète subtilement les relations phylogénétiques des variétés cultivées. Le niveau secondaire est basé sur l'utilité pratique des variétés cultivées. Plusieurs sub-classifications existent et celles-ci sont basées sur des valeurs culturelles spécifiques de chaque variété cultivée.

INTRODUCTION

Millet is a small-seeded annual grass species whose seeds are harvested for food and feed. They are one of the oldest cultivated grain crops in the world. Nearly 85% of the annual world millet production is used as human food and around 10% is used as animal feed (FAO and ICRISAT 1996). Millets are the staple food for millions of people living in the arid and semiarid tropics of Asia and Africa. They are also cultivated for grazing, forage, and silage.

Millets are generally fast growing, early maturing species that perform well in marginal environments. The seeds generally store well for long periods and need little time for cooking. They have an excellent nutritional profile, with high levels of essential elements, such as iron and calcium, vitamins, and dietary fiber. Based on seed size, millets are categorized as minor and major millets. Minor millets include fourteen species categorized as neglected and underutilized crops. The growth of minor millet consumption has been declining during the last three decades, while the use of other major millets (sorghum) and maize has almost doubled. In India minor millets are predominantly cultivated as a subsistence crop in the Eastern Ghats by several tribal groups, including the Malayali farmers of Kolli Hills. Four different species—little millet (*Panicum sumatrense* Roth ex Roem. & Schult.), Italian millet (*Setaria italica* (L.) Beauv.), kodo millet (*Paspalum scrobiculatum* L.), and common millet (*Panicum miliaceum* L.)—traditionally have been cultivated by these people. Each species is further classified into landraces, which is similar to 'folk-varietal' (Atran 2001).

MALAYALI OF KOLLI HILLS, FARMING SYSTEM, AND MINOR MILLETS

The Malayali community, one of the dominant tribal groups in Tamil Nadu, constitutes nearly 55% of the total state tribal population; most live in the northern districts of the state. Etymologically, the name Malayali comes from *malai* 'hill/mountain' and *yali* 'inhabitants or rulers of the hill'. The people prefer to call themselves Malayali *gounders* (in the Tamil language, wealthy farmers living in the plains). According to tradition, the Malayalis originally belonged to the Vellala caste of cultivators who emigrated from the plains. Inscriptions on copper plates show that the migration occurred as early as the beginning of the sixteenth century (Thurston and Rangachari 1975).

Kolli Hills is located in the southern end of the Eastern Ghats in the state of Tamil Nadu, south India. It encompasses a geographical area of nearly 280 km² at an elevation of 1300 m. The region receives an average annual rainfall of 1045 mm, with maximum precipitation occurring from June to August and again from October to December. Nearly 85% of the total cultivable area is under rainfed cultivation.

The total population of Kolli Hills is 35,883, of which the Malayalis constitute

94.1% (Census of India 1991). A homogeneous tribal Malayali community speaking the Tamil language inhabits this region. Typically, Malayali settlements are located on the slopes and on the plateau and consist of tiny scattered huts. The community is divided into several exogamous clans. Marriage between inhabitants of different hamlets is generally encouraged and patrilocal residence is the accepted norm.

The mainstay of the economy is agriculture combined with cattle herding and swine keeping. Malayalis supplement their income by collecting non-timber forest products for sale as well as for their own use, and by working as laborers in coffee plantation estates. Agriculture provides the major part of their subsistence. Until recently the staple foods of Malayalis were minor millets, grain legumes, and wild yams supplemented with rice and wheat. Even though they are not vegetarians, the 'sacred' tag attached to cows prevents them from eating beef. Pigs are an essential part of Malayali household economy and ritual and they also hunt small game for food. Although agriculture is a household enterprise, social norms determine the division of labor based on sex and age. The traditional agriculture of Malayali people has been undergoing change during the last three decades due to the introduction of cash crops such as tapioca, coffee, and pineapple. Numerous fruit crops, spices, and commercial crops have been introduced over a period of time, which has accelerated the decline of minor millet cultivation. Consequently their diet has changed and their main staple food today is rice.

Traditionally, Malayalis classify agricultural land based on soil type and topography—*vayal* (fields in the valley), *mettankadu* (terraced beds on slopes), *kollakadu/kothukadu* (rocky terrain on the highest slopes). The cropping system varies with topography and minor millets are grown as rainfed subsistence food crops either monocropped in *mettankadu* or under a bush fallow system in *kollakadu/kothukadu*. Little millet, proso millet, kodo millet, and Italian millet are the common minor millet species that have been cultivated with wide intraspecific diversity. The landraces differ in maturity period, agronomic quality, and gastronomic character. The late maturing landraces are cultivated under a bush fallow system, while early maturing ones are grown on terraced fields. Bush fallow farming is the predominant method of minor millet cultivation in rocky terrain (*kollakadu*), with an average cycle of three to five years.

In the past, the landraces of different species were geographically isolated. Each village, hamlet, or household would cultivate two to three different landraces primarily to spread the risk and to optimize the utilization of natural resources. To this day, Malayali farmers are keen on maintaining the pure strains. In the selection process more attention is given to maintaining seed quality than to improving productivity. Seed selection and storage practices vary depending on crop. For little millet and kodo millet, the women collect the seed from the threshing floor after harvest. There is no selection of promising plant types in the field. In the case of Italian millet and finger millet, the plants are selected in the field itself for disease-free, fully-filled heads with plump grains. The selected ear heads are dried separately, bundled, and tied to the roof above the hearth. Accidental mixtures are not removed deliberately; when necessary, farmers obtain pure seed from neighboring farmers. In this process, because of the breeding system and

the reproductive biology of the species, opportunities for the development of intermediaries are minimal even in the mixed cropping system.

The minor millets have not wholly disappeared from the Kolli Hills region. During 1970–1971 the total area under minor millet cultivation was nearly 1799 ha. It was drastically reduced to 840 ha during 2000–2001. Currently, out of 247 hamlets in Kolli Hills, more than 120 continue cultivating millets (the average millet growing area per household was around 0.25–0.50 ha). On average each hamlet has 30 households, and around 25% of the total households cultivate millets.¹

Gastronomic, agronomic, and social factors play an important role in maintaining the millets in cultivation. The preference for millets in the diet is due to their nonstarchy polysaccharides, which slowly release glucose to the blood stream during digestion. Malayali women prepare several dishes with millets for daily consumption and for festivals. Their use as a special food in prenatal care of women and their fodder quality are important factors in maintaining this traditional resource. Even nowadays pregnant and lactating women in many households prefer a millet-based diet. Millets provide energy and prevent weight gain. They believe that during pregnancy the consumption of millet helps to induce lactation and maintain body temperature after delivery.

The millet-based cropping system permits the cultivation of several crops annually (e.g., mustard, pulses, coriander), thereby maintaining soil fertility and preventing soil erosion. Most of the cultivable lands were originally forested. The establishment of a permanent cultivable field from a forest/bush fallow field takes about 10–12 years. In this process of conversion millets are cultivated as a first crop for about 8–10 years in order to stabilize the soil and maintain soil structure.

Millets are also significant in ritual practices and they bring social prestige to Malayali households. The Malayalis offer a special dish made with Italian millet flour mixed with brown sugar while worshipping the goddess Mariamma, one of their main deities. The social status of the household goes up in the village when the household manages to offer more diversified grains, which include all minor millets cultivated in the hills. Also it is customary to give seven kilograms of little millet as a part of the bride price (*parisam*).

METHODOLOGY

The study was carried out between June 1997 and December 2001. Participatory methods, interviews, and observation were used to elicit the information. Out of 247 millet-growing villages in Kolli Hills, nearly 25 villages were selected and participatory appraisals were carried out. Subsequently, 10–12 knowledgeable men and women farmers in each village were identified and interviewed. Also, participant observations and visits to the farmers' fields during different phases of crop growth were carried out. The different processes involved in storage and post-harvest operations were observed and recorded. The techniques of Participatory Rural Appraisal (PRA) were used to record the changes in the cropping pattern (timeline analysis) as well as to understand the agroecology of millet cultivation and the main characteristics used to distinguish and describe landraces in the field (transect analysis) (Chambers 1992). Pair-wise comparison analysis

TABLE 1.—Nomenclature details of four minor millet species in Kolli Hills.

General name	Botanical name	Folk name	Meaning
Common millet	<i>Panicum miliaceum</i> L.	<i>varikora</i>	striped grass
Kodo millet	<i>Paspalum scrobiculatum</i> L.	<i>thirivaragu</i>	twisted varagu
Little millet	<i>Panicum sumatrense</i> Roth ex Roem. & Schult.	<i>sama</i>	<i>samai</i> (Tamil)
Italian millet	<i>Setaria italica</i> (L.) Beauv.	<i>thina</i>	<i>thinai</i> (Tamil)

of landraces was carried out to understand the criteria used by men and women farmers for differentiation. Activity profiles were recorded to get information about the sexual/gender division of labor in the production and management of millet species (Williams et al. 1994). Triangulation (cross-checking) at the end helped to validate the data. In addition, participant observation enhanced understanding of the different agronomic practices within the context of the annual crop calendar. During June 1999, all the landraces of the different folk species were grown in a rented experimental field at Kolli Hills in collaboration with farmers. Selected informants (14 women and 16 men, 25–60 years old) were asked to view and name the types independently of one another in order to elucidate gender differences in knowledge of landraces and their different phases of growth. Voucher specimens, which include the whole plant and the seed materials, were collected and deposited in the community herbarium of M.S. Swaminathan Research Foundation, Chennai, India.

FOLK SYSTEMATICS

Farmers classify the crops into folk species and folk varieties (Table 1). Folk-specific and folk-varietal level categorization is structured in a hierarchical system that corresponds to morphological resemblances that they interpret as familial relationships between types and that reflects the way the plants are used. It resembles the Linnaean taxonomic system and is based on a morphological species concept.

Folk-specific Level Identification and Classification.—At the folk-specific level, four millet species were differentiated by the interviewees using a set of seed characteristics and the characteristics of the growing plant. The people interviewed also used post-harvest treatment methods for differentiation. The following are the characteristics used by farmers to differentiate all four species from one another at different phases of crop growth:

Vegetative stage—stem thickness and hairiness; leaf sheath and plant architecture

Reproductive stage—ear shape and structure

Seed/grain—shape, size, color, and texture

Post-harvest operations—processing methods and food quality

Nomenclature. The farmers organize their practical knowledge into a folk taxonomic structure that is stored, retrieved and communicated using special terminology. The linguistic components of local names of common and kodo millet

TABLE 2.—List of small millets cultivated in Kolli Hills.

General name	Botanical name	Landraces
Common millet	<i>Panicum miliaceum</i> L.	(<i>varikora</i> —there are few landraces)
Little millet	<i>Panicum sumatrense</i> Roth ex Roem. & Schult.	<i>malliasama</i> <i>sadansama</i> <i>thirikulasama</i> <i>kattavettisama</i> <i>kottapattisama</i> <i>karumperumsama</i> <i>vellaperumsama</i>
Kodo millet	<i>Paspalum scrobiculatum</i> L.	<i>sengalivaragu</i> <i>thirivaragu</i>
Italian millet	<i>Setaria italica</i> (L.) Beauv.	<i>killanthina/mukkananthina</i> <i>mossakkannathina/koranthina</i> <i>karumthina</i> <i>senthina</i> <i>perumthina</i> <i>palanthina</i>

species, which have different common names in Kolli Hills, describe the phenotypic characteristics of the two millets. In both species, the principal dimensions used to differentiate specific taxa are lexically encoded in their names. The local names adequately characterize the species. Common millet is locally called by Malayalis *varikora* 'striped kora', as the seed has series of brown lines. Kodo millet is commonly referred as *thirivaragu* 'twisted varagu', because the ear head shape and the arrangement of grains make the ear head look like a twisted object. Little millet and Italian millet are differentiated at the generic level as *samai* and *thinai* respectively, which are lexically unanalyzable (Table 2).

Folk-varietal Level Differentiation and Nomenclature.—Malayali farmers categorize the landraces along two dimensions. The first one differentiates among the landraces following a taxonomic hierarchical model (Hunn 1982), and is reflected in the nomenclature of the taxa. The second dimension is a functional classification in which the categorization is based on the uses of the taxa.

The taxonomic hierarchical system of classification is based on morphological and gastronomic characters, which are reflected in nomenclature. This suggests a common ethnobiological principle of a positive relationship between cultural importance and lexical differentiation (Berlin 1992). Also, nomenclature reflects contrasting morphological characters among the cultivars. The most useful parts of the plants are labeled in the nomenclature using morphological cues such as plant height, ear structure and arrangement, and agronomical and gastronomic qualities. The name *malliasama* 'white sama' refers to its gastronomic quality: the cooked rice is soft in texture and white in color like the jasmine flower, which is pure white in color. *Sadansama* 'braided sama' is so called because the secondary branches of the panicle are arranged like a braid. *Thirikulasama* 'twisted sama' is so called because the grains, densely arranged in the tertiary branches, give the secondary and tertiary branches of the panicles a twisted appearance. In *pil-lusama* 'grass sama', the stem is very thin, like a grass. In *kattavettisama* 'hard sama', the stem is very hard to cut at the base and so the name indicates difficulty

TABLE 3.—Functional variables of little millet landraces classified based on their utility.

Functional equivalents/landraces	Little millet landraces*							
	ms	ts	ss	ps	vps	kps	kvs	pis
Method of harvest								
whole plant (<i>adiarrupu</i>)	+	+	+	—	—	—	+	+
panicles alone (<i>melaruppu</i>)	—	—	—	+	+	+	—	—
Maturity period								
short duration (3–4 months)	+	+	+	—	—	—	—	+
long duration (5–6 months)	—	—	—	+	+	+	+	—
Cultivation niches (agroecosystem)								
terraced beds (middle of slope)	+	+	+	—	—	—	+	+
rocky terrain	—	—	—	+	+	+	—	—
Cropping system								
mixed cropping	—	—	—	+	+	—	—	—
monocropping	+	+	+	—	—	+	+	+
Tolerance to seasonal drought								
tolerant	—	—	—	+	+	—	—	—
susceptible	+	+	+	—	—	+	+	+
Ease of processing—comparative rating. 1: 2 poundings; 2: 2–4 poundings; 3: >4 poundings	1	1	1	2	2	1	3	3
Meal quality in terms of taste and texture (1: good; 2: average; 3: poor)	1	3	2	1	2	1	2	3
Fodder value								
suitable	+	+	+	—	—	—	+	+
not suitable	—	—	—	+	+	+	—	—

* ms-*mallasama*; ts-*thirikulasama*; ss-*sadansama*; ps-*perumsama*; vps-*vellaperumsama*; kps-*kottapattisama*; kvs-*kattavettisama*; pis-*pillusama*.

in the harvesting process. *Kottapattisama* ‘castle sama’ gives a higher yield and so the name is a metaphor for its high productivity. *Perumsama* ‘big sama’ reflects the size and robustness of the plant, as well as the duration of the crop. The further subdivisions *vellaperumsama* ‘white big sama’ and *karumperumsama* ‘black big sama’ denote the color of the grain.

In Italian millet the primary classification is also based on morphological cues and agronomical practices. *Killanthina* ‘nipping thina’ represents harvesting practice. *Mossakkanathina* ‘dense hairy thina’ and *koranthina* ‘bristles thina’ reflect the dense hairs in the earhead. *Karumthina* ‘black thina’ and *senthina* ‘red thina’ describe the color of the grain. *Perumthina* ‘big thina’ reflects the size of the ear. *Palanthina* ‘milky thina’ describes the milky white color of the grains. In Kodo millet, there are two landraces differentiated on the basis of grain color, *karungkali* with a black seed coat and *sengalivaragu* with a red one.

Functional Classification.—Categorization is based on multiple use values (food and fodder), harvesting method (cutting the whole plant or the ear head alone), and maturation and landscape characters (e.g., early and late maturing landraces in relation to the agroecosystem; soil fertility) (Table 3). Some landraces of little

millet can be grown only in bush fallow cycles because they need fertile soil, whereas others need less fertile soil in terraced beds with annual crop rotation. On the basis of the day length, landraces are classified into early (90–110 days) and late (150–180 days) maturing landraces. The late maturing landraces are cultivated in rocky terrain, do not have fodder value, are suitable for both intercropping and monocropping, and the panicle alone is harvested. The early maturing landraces have fodder value, are cultivated in the terraced bed with crop rotation, and are harvested near the root. This system of classification is highly context-sensitive and location-specific and is structured on the basis of practical utility. Several functional variables are applied to compare the appropriateness of growing a particular crop for a particular purpose on a particular field: method of harvesting, maturity period, cultivation niches (microenvironment) and cropping system, tolerance of seasonal drought, ease of processing, meal quality, and fodder value.

These functional variables are used individually, and most of them are utility-based. The functional variables are practically-motivated categories that reveal the crop diversity and management strategies of Malayali farmers in conceptually organizing the core taxa. Farmers' frequent and intense encounters with the millets for practical reasons of food production and optimizing resources result in awareness and use of the agronomic, gastronomic, and post-harvest qualities of landraces for cultivation. Table 4 shows the differentiating criteria at the inter- and intraspecific levels, and also the level of categorization within the species.

Italian millet landraces are also categorized on the basis of agronomic qualities (functional variables such as length of growth period), harvesting practice (cutting the whole plant or head alone), and morphological characters (e.g., tillering, plant height). The criteria for differentiating folk generics are morphological distinctions both at plant and grain level that show the way people process and use plants. Criteria that are phenotypically identifiable and heritable are reflected in the nomenclature. Both the folk-specific and folk-varietal levels reflect the cultural importance that is conceptually and linguistically recognized by Malayali farmers. The characters used for identification of the different landraces are qualitative characters, heritable and not influenced by environmental conditions.

The functional classification is based on agronomic characteristics. It is a special purpose taxonomy that organizes practical knowledge about landraces. It is a local classification used by the Malayali men and women. Farmers prefer characters in a specific landrace that are distinct from those used to differentiate or name the taxa. The gastronomic, morphological, and agronomic characters are perceptually prominent for the farmers and have adaptive significance for the survival of little and Italian millet landraces. According to Harlan (1975), landraces are the products of human selection for such characteristics as color, texture, and utility, and these characteristics are widely used by farmers in naming their landraces. The nomenclatural pattern in most of the folk-varietal taxa correlates with morphologically distinguishable and genetically transmittable characteristics, which could facilitate the identification and utilization process.

GENDER-DIFFERENTIAL KNOWLEDGE

Variables such as gender and age influence the way people categorize millets. According to the traditional division of labor in Kolli Hills, only men perform

TABLE 4.—Contrasting criteria at folk-specific and folk-varietal level.

Folk-specific level	Folk-varietal level in little millet		Folk-varietal level in Italian millet	
	Primary	Secondary	Primary	Secondary
Plant morphology (e.g., stem character)	Maturity periods	Ear head structure; shape and arrangement of grains	Method of harvest	Hairiness
Hairiness	Growing niche/habitat	and secondary and tertiary panicles	Suitability to cropping system	Color of the grain
Ear head—shape and structure	Method of harvest	Meal quality	Crop duration	Size of the ear head
Seed color, shape and luster	Fodder value and Suitability to cropping system	Texture of the stem Architecture of the plant Color of the grains		Method of harvest

activities like plowing, seed sowing, and cross plowing. Malayali men and women jointly take decisions on crop and landrace selection and allocation of areas for the cultivation of different minor millets. Men and women make decisions about when to sow, and women suggest the best time for the men to cross-plow based on their close observation of crop growth. Even though some of the activities are shared by both Malayali men and women, the nature of the roles and the responsibilities of close watching and caring for the crop put the women in the situation to take almost all decisions regarding millet cultivation (MSSRF 2001). Women engage in many vital activities: they maintain optimum plant population density, weed, monitor crop development, and manage the seed supply (seed selection, storage, exchange, and post-harvest utilization). Both men and women harvest, thresh, winnow, and transport the crop. An in-depth comprehensive analysis of gender roles and decision making in small millet cultivation and utilization illustrates how women's roles are linked to the cultivation of millets and their conservation.

Malayali women and men have different experience with and knowledge of millet landraces. Women and men characterize folk-specifics and folk-varietals in different ways, which largely may be attributed to differences in the traditional division of labor. Both men and women use seed color and plant vigor. But women differentiate the little and Italian millet landraces on the basis of geographical distribution, edaphic and climatic requirements, plant height, arrangement of grain in the panicle and shape of the panicle, processing and meal quality, and impact on health. In contrast, Malayali men differentiate them on the basis of agronomic practices and productivity.

With regard to specific characteristics such as susceptibility to damage from birds, early ripening, and threshing and pounding requirements, only women are able to discriminate between different landraces. Intimate involvement of women in seed management, processing, and food preparation helps them to gain deeper biological and gastronomic knowledge. This is reflected in a more detailed categorization that uses subtle characteristics. For example, Malayali women characterize a little millet landrace *kottapattisama* as a wonderful taxon, greatly preferred because of its higher productivity, adaptation to diverse agroecosystems, meal quality, and ease of processing. The active role of women in seed management, particularly in selection of high quality plants, helps them to acquire breeding knowledge. Consequently, their perspective on classification is based on practical resource use.

Irrespective of gender, older Malayali men and women (> 40 years) identify and classify using phenotypic characters, geographical distribution, agronomy, relative gastronomic qualities, and uses. Younger people (< 40 years) could not distinguish landraces and identified all as general folk-specific groups. This might be due to lack of experience and less frequent interaction with the different landraces. However, within the group of younger people, women are more knowledgeable than men in seed selection, threshing, pounding, and gastronomic qualities. Thus the process of knowledge acquisition is dynamic, gendered, and responsive to change and adaptation through natural and cultural selection by women and men.

SUMMARY

Folk-biological classification of millets by Malayali tribal farmers of Kolli Hills shows that agronomic, morphological, and gastronomic characters are pragmatically applied to classification. The millet nomenclatural structure reveals the cognitive understanding of the biological characteristics of the species as well as practical knowledge that comes from intimate relationship with the species. Farmers classify minor millet species and landraces in a hierarchical manner using a set of exclusive characters. Malayali farmers classify the folk varieties in two different dimensions. The hierarchical classification helps them to differentiate taxa on the basis of characters that are reflected in nomenclature. Most of the differentiating and nomenclatural categories refer to qualitative heritable characters and are less influenced by environmental factors. This indicates the stability of differentiating characters and the deep understanding of the Malayali farmers. In functional classification, each of the taxa is classified in a limited number of categories on the basis of utilitarian values. It is a special purpose classification dealing with the organization of the functional knowledge of the Malayali farmers. It is used in restricted domains of activity. Though common characters are used in functional classification, the characters of each taxon within the group varies between regions. Social variables influence the categorization process, particularly the gender division of roles and responsibilities related to millet cultivation and utilization.

NOTES

¹ Village Records during respective periods (1970–1971 and 2000–2001). Village land revenue records called 'G returns' for the period 1970–1971 and 2000–2001 are managed by the Village Administrative Officer (VAO) for Kolli Hills for each agricultural year.

ACKNOWLEDGMENTS

The author would like to thank L. Vedavalli, P. Thamizoli, and K. Balasubramanian, M.S. Swaminathan Research Foundation, for their valuable comments and encouragement and the Hindustan Lever Research Foundation, Mumbai, for its financial support. The author appreciates the cooperation and help rendered by the men and women farmers of Kolli Hills, who constantly shared their time and experiences in completing the study.

REFERENCES CITED

- Atran, Scott. 2001. Folk biology and the anthropology of science: cognitive universals and cultural particulars. *Behavioral and Brain Sciences* 21:547–569. Available online at www.bbsonline.org/documents/a/00/00/04/23/bbs00000423-00/bbs.atran.html (verified 5 January 2005).
- Berlin, B. 1992. *Ethnobiological Classification: Principles of Categorization of Plants and Animals in Traditional Societies*. Princeton University Press, Princeton.
- Census of India. 1991. Nammakkal District, Tamil Nadu State, Series I, India.
- Chambers, Robert. 1992. Rural appraisal: rapid, relaxed and participatory. *IDS Discussion Paper* 311. Institute of Development Studies, Sussex.
- FAO and ICRISAT. 1996. *The World Sorghum and Millet Economics: Facts, Trends and*

- Outlook*. Food and Agriculture Organization, United Nations.
- Harlan, J.R. 1975. *Crops and Man*. The American Society of Agronomy and the Crop Science Society of America, Madison, Wisconsin.
- Hunn, Eugene S. 1982. The utilitarian factor in folk biological classification. *American Anthropologist* 84: 830–847.
- MSSRF 2001. Role of rural and tribal women in agrobiodiversity conservation. Paper presented by R. Rengalakshmi at FAO Expert Consultation Meeting on Rural Women's Role in Local Agro-biodiversity Conservation, Southeast Asian Regional Centre for Graduate Study and Research in Agriculture (SEARCA), Los Banos, The Philippines, 10–13 September.
- Thurston, Edgar and K. Rangachari. 1975. *Castes and Tribes of Southern India*, vol. IV, pp. 406–426. Cosmo Publications, Delhi.
- Williams, S., J. Seed, and A. Mwau. 1994. *The Oxfam Gender Training Manual*. Oxfam, Oxford.