

# On Sidama folk identification, naming, and classification of cultivated enset (*Ensete ventricosum*) varieties

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**Abstract** An ethnobotanical study was carried out in Sidama to document and analyze the local system of naming, identification and classification of the cultivated varieties of enset used by farmers. The results revealed much information of biological and cultural value which can aid the botanical and genetic study and improvement of enset. Farmers recognized a total of 119 different infra-specific units of enset. The locally perceived biotas are partitioned into three well-recognized groups, namely sub-variety, variety, and supra-variety. Taxa assigned to the three groups have nomenclatural and ethnobotanical features that mark them as members of a separate group. A description and analysis of the nomenclatural and ethnobotanical features of taxa assigned to each of the three groups is presented with emphasis on the nature of the characters used for identification and grouping. A folk biological classification system of enset consisting of four taxonomic levels is proposed. The study has the potential for furthering our understanding of the ways traditional farming communities in centres of crop diversity perceive and organize biological diversity.

**Keywords** *Ensete ventricosum* · Ethiopia · Folk taxonomy · Nomenclature

## Introduction

Enset, *E. ventricosum* (Welw.) Cheesm. (syn. *Musa ensete* Gmel., *Ensete edule* (Gmel.) Horan.), is the economically important species of the genus *Ensete* (Cheesman 1947). *E. ventricosum* is widely distributed in Africa from the Cameroon to Ethiopia and the Transval (Simmonds 1962). Its cultivation and use as a food crop is, however, restricted to Ethiopia.

Morphological descriptions of the genus *Ensete* and that of *E. ventricosum* are given by Baker and Simmonds (1953) and Cheesman (1947). The enset plant is a giant single-stemmed herbaceous tree which may grow up to 13 m high and a diameter of 2 m or more. The leaves are conspicuously large (2.5 × 1.0 m or more) with broad midribs and long leaf sheaths that overlap to form a pseudostem. The true stem is a short, compact and fleshy underground stem or 'corm'. Enset is a monocarpic plant, i.e., it produces flowers once and then dies after producing fruits and seeds. Depending on ecology and variety, enset takes nine or more years to produce flowers and set seeds. The fruits of enset are dry and contain 10–25 large (>1 cm in diameter) black or brown seeds.

Enset is native to Ethiopia, the centre of its domestication and diversity (Vavilov 1951). The crop is among the earliest plants domesticated in Ethiopia; its domestication dating back to Neolithic or even earlier times (Stanley 1966). The plant is believed to have been domesticated by the people inhabiting southwestern Ethiopia where it is still the standard

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article of food (Westphal 1975). About the enset plant of Ethiopia, however, very little is known and no coherent description of the species can yet be presented. The species is thought to be variable (Baker and Simmonds 1953) but information on the extent and nature of the variation within it remains unknown. It is no wonder that there are so many synonyms for *E. ventricosum* (Baker and Simmonds 1953; Cheesman 1947). On the other hand, a number of researchers have reported that the communities that cultivate and use the crop in Ethiopia recognize and maintain a considerable assemblage of enset varieties (Bizuayehu and Ludders 2003; Admasu and Struik 2002; Fujimoto 1997; Shigeta 1996). The different varieties are individually identified and given separate names by farmers. Hitherto, however, there has been little attempt to document and study how farmers perceive, identify, name, and classify enset varieties in sufficient detail. This is the purpose of this paper.

## Methodology

Enset is grown by more than a dozen ethnic groups in Ethiopia. This paper documents and describes how the Sidama identify, name and classify enset varieties. The Sidama people are Cushitic speakers inhabiting the southeastern part of Ethiopia. Enset is a very important crop to the Sidama; it is their principal staple food (Smeds 1955). According to Murdock (1959), the enset plant was first brought into cultivation in the Sidama region. How the Sidama name and classify their varieties might thus give some valuable insights into how enset and its varieties are perceived and classified in general.

Both formal and informal surveys covering over 300 interviewees, 30 in each of 10 locations in Sidama, were carried between 2000 and 2004. Details of study sites and sampling procedures are presented elsewhere (Bizuayehu and Ludders 2003). Ethno-botanical data collected include local names of varieties (both known and actually grown), information about the identity, history, sex, preparation methods, cultural characteristics (e.g. the nutritional, symbolic and cultural uses), associated myths and stories on enset varieties found in the gardens of each household. Translation and interpretation of the meanings of names used to label varieties were made

by farmers, expert native speakers and by using bilingual Sidama–English dictionary (Gasparini 1983). Ten assistants, who are speakers of the local language, helped throughout the study in transcribing, interpreting and collection of data. Identification of varieties was done by asking farmers how each variety is distinguished from others planted in their gardens. Finally, photographs and field notes of varieties were taken during field visit of the gardens of interviewed households by the author to verify information and link names with farmers' description of varieties.

## Results and discussion

The Sidama call the enset plant *weese* (singular *weesho*). Enset is differentiated from other crops that are cultivated for food (*gidde*). In Sidama, enset is represented by a large number of infra-specific units. A total of 119 named units of enset were recorded in this study alone. The number of named enset taxa that are recognized and maintained by Sidama farmers is much higher than that reported from other parts of Ethiopia (Admasu and Struik 2002; Fujimoto 1997). The large number of folk enset taxa recorded reflects the existence of considerable diversity within the crop and the long history of its cultivation in Sidama.

As indicated above, farmers recognize large inventories of infra-specific enset taxa. Analysis of the linguistic and ethno-botanical data gathered further revealed that the individual units are grouped into a number of locally recognised categories. Three major categories can be identified: variety, sub-variety, and supra-variety. Taxa assigned to each group are perceived by farmers as distinct and are given separate labels. The local system employed for naming and identification of taxa assigned to the three groups are described below.

### Varieties of enset

Sidama botany of enset recognizes at least 103 varieties. Of these, 79 represented actually grown varieties whereas the rest were reported verbally. The Sidama refer the varieties of enset collectively as '*sirco*'. Gasparini (1983) defines the word '*sirco*' as seed, offspring, and lineage thus indicating that the category is recognized linguistically. Biologically, enset varieties are clones, i.e., vegetatively

reproduced assemblages of individuals. All arose in cultivation. In accordance with the International Code of Nomenclature for Cultivated Plants (Brickell 1980), the different varieties can be referred to as clones or cultivars.

### *Names and naming of varieties*

From the preceding paragraph, Sidama farmers recognize some 103 varieties. Each of these is perceived as distinct and given a separate name. The list of enset variety names recorded in Sidama is presented in Table 1 together with some additional information. Farmers possess detailed knowledge of the different varieties in their gardens as well as in the surrounding villages. The number of names of enset varieties known by an individual farmer ranged between 5 and 35, the mean was 15.6 (s.d. = 5.3). Often several of these are grown by individual cultivators who may plant up to 24 enset varieties in their garden (Bizuayehu 2008). At site level, the number of variety names recorded ranged from 28 to 60, mean was 42.5.

There are marked differences in the frequency (i.e. the number of times a name was referred to by informants) and spatial distribution of enset variety names in Sidama. The frequency of any given name ranged between 1 and 294. Fourteen (13.6%) names were referred to by a single informant only; 59 (57.3%) of the names were known to more than 10% of the respondents of which nine were referred to by more than 50% of the farmers. These are *gantichcha* (98%), *ado* (92.3%), *uwishsho* (74.7%), *cacco* (74%), *birra* (62%), *midashsho* (60.7%), *geedime* (58.7%), *alattichcho* (55%), and *mundraaro* (50.3%). In terms of spatial distribution, the number of locations a given variety name was recorded ranged from 1 to 10, the mean was 4.2 (s.d. = 3.1). Twenty-eight (27.2%) of the names were recorded at a single location only whereas the rest were recorded at two or more locations. Of the later, six (5.8%) names were recorded at all the 10 locations. These are: *ado*, *agana*, *alattichcho*, *cacco*, *gantichcha*, and *uwishsho*. It follows that many names and varieties of enset are known to most members of the community and across locations, indicating that varieties and information about them are widely shared.

*Structure of names:* Examination of the names applied for labeling individual varieties revealed that

they are of two types structurally: those that are composed of a single word (unitary names) and those that consisted of two words (binary names). Examples of unitary names include *ado*, *gantichcha*, *midashsho*, etc. Binary names include *waanni waasa*, *meentu weshsho*, *gonni waasa*, *daama shaashe*, *wermi qaalo* and *waanni kure*. Naming of varieties thus takes place in two ways: unitary and binary. Ninety-seven (94.2%) of the varieties recorded in Sidama are labeled with unitary names whereas names of six (5.8%) varieties are binary, which means that the naming system used for varieties is uninomial.

*Origin and meanings of names:* Translation of names by farmers, expert native speakers, and by the author using bilingual Sidama–English dictionary revealed that 71 (68.9%) of the recorded names have meanings. The remaining 32 (31.1%) names have no meanings or their etymology is lost; they are merely labels given to different varieties. The meanings of Sidama enset variety names are presented in Table 1. Analysis and interpretation of the meanings of words given to enset varieties revealed that names of varieties are derived from a wide range of sources. The elements from which names are taken include descriptive characteristics of the variety, locality where it grows or come from, its distribution or local importance, names of persons and social groups, from the vernacular names used for other biological taxa, natural objects, body parts and others. The local naming of varieties is thus based on a large number of attributes or objects.

Twenty-seven (26.2%) of the names are descriptive of some aspects of the variety they label such as its particular characteristics, locality where the variety grows or come from, distribution or local importance (Table 1). In addition, in 12 of the 21 varieties that are given names of plants, animals, body parts and objects, farmers established clear relationships between the specific characteristics of the variety and the referent. These are: *ado*, ‘milk’, is so said because it has light green leaves and leaf sheaths as well as white corm; *agana*, ‘moon’, has a yellowish-white (creamy) petioles and leaf sheaths; *ambooma*, ‘hyena’, has black spots on its leaf sheath and petiole; *arrishsho*, ‘sun’, has bright red petioles and leaf sheaths; *birra*, ‘money’, has a sweet corm that is valued as money; *borbodhicho*, ‘*Solanum campylacanthum*’, has black green stripes on petiole

**Table 1** Names and meanings of Sidama enset variety names<sup>a</sup>

Source of names	Names of varieties
Plant characters	<i>addame</i> ‘light brown’, <i>baalicho</i> ‘feathery leaf’, <i>boottate</i> (♀ <sup>b</sup> ) ‘fat’, <i>boorcha</i> ‘striped’, <i>bullaa</i> (♂) ‘brown’, <i>dammala</i> (♂) ‘thick’, <i>cacco</i> (♀) ‘thin’, <i>daama shaashe</i> ‘shapeless’, <i>gantichcha</i> (♂) ‘multi-coloured’, <i>haquuna</i> (♂) ‘woody’, <i>hawwe</i> ‘easily broken’, <i>kishee</i> ‘swollen’, <i>kuule</i> (♀) ‘black’, <i>qaanqo</i> (♀) ‘reddish’, <i>qaraaraansho</i> (♂) ‘bitter’, <i>seediraamo</i> (♂) ‘long’, <i>xoroorra</i> (♂) ‘long’, <i>uwishsho</i> ‘falling’
Locality	<i>alaticcho</i> (♀), <i>dargichcha</i> (♂), <i>birbo</i> , <i>garawicho</i> (♂)
Distribution	<i>tokkochcha</i> ‘single’
Local importance	<i>madde</i> (♂) ‘always ready’, <i>shiilcho</i> ‘fermented & sweet’, <i>waanni kure</i> (♀) ‘main pot’, <i>waanni waasa</i> (♂) ‘main food’
Names of plants	<i>borbodhichcho</i> ‘ <i>Solanum campylacanthum</i> ’, <i>kire</i> (kind of wild plant), <i>leemmicho</i> (♀) ‘ <i>Arundinaria alpina</i> ’ or bamboo, <i>duuwane</i> (♀) ‘ <i>Syzygium guineense</i> ’, <i>xunnayiicho</i> (♂) ‘ <i>Solanum alatum</i> ’
Names of animals	<i>ambooma/gotiichcho</i> ‘hyena’, <i>awulcho</i> ‘owl’, <i>doowiraamo</i> (♂) ‘vulture’, <i>geedime</i> (♀) ‘antelope’
Names of objects	<i>agana</i> (♂) ‘moon’, <i>ado</i> (♀) ‘milk’, <i>arrishsho</i> (sun), <i>birra</i> (♂) ‘money’, <i>ciikko</i> ‘mat made of bamboo’, <i>gereercho</i> ‘milk container’, <i>goloomma</i> (♂) ‘shield’, <i>kincho</i> (♂) ‘stone’, <i>heqece</i> (♀) ‘thread’
Body parts	<i>midashsho</i> (♂) ‘rib’, <i>mundraaro</i> (♂) ‘blood’, <i>shombo</i> (♂) ‘lung’, <i>miqiicho</i> ‘bone’
Names of person	<i>argo</i> , <i>benjo</i> , <i>laallamo</i> , <i>shaarite</i> (♂), <i>siriirro</i> (♀)
Social groups	<i>daraasite</i> , <i>kanbaaticha</i> (♂), <i>gare</i> , <i>harbe</i> , <i>maldea</i> (♂), <i>meentu weshsho</i> (♀) ‘women’s enset’, <i>silxiite</i> , <i>wolaanticha</i>
Others	<i>aiidaara</i> (♀) ‘friends’, <i>badado</i> (effort), <i>buufare</i> (♂) ‘small rain’, <i>garbo</i> ‘swampy’, <i>goocaro</i> ‘shallow cooked’, <i>hemeseesa</i> (♀) ‘shameless’, <i>micco</i> (♂) ‘misery’, <i>qaanda</i> ‘eye discharge’, <i>shawwe</i> ‘kwashiorkor’
Untranslatable names	<i>agade</i> , <i>amole</i> , <i>askaala</i> (♂), <i>astaara</i> (♂), <i>buulagna</i> , <i>cilakko</i> , <i>felo</i> , <i>gamacalla</i> (♂), <i>geena</i> (♂), <i>gonni waasa</i> , <i>goricho</i> (♀), <i>gosaallo</i> , <i>gulluummo</i> (♂), <i>haaho</i> (♀), <i>haaiisa</i> (♂), <i>haansha</i> , <i>haalla</i> , <i>keeshe</i> , <i>kitiicho</i> , <i>loonkiisa</i> , <i>meleketete</i> , <i>menama</i> , <i>miccharoo</i> , <i>molaagna</i> , <i>moonala</i> , <i>monofila</i> , <i>niifo</i> , <i>saranna</i> (♂), <i>saalmaalee</i> , <i>sheqesha</i> , <i>tontoloma</i> , <i>wormi qalo</i>

<sup>a</sup> Names of varieties are written in Sidama language; c = ch, chch = ch, dh = p, q = k, x = t

<sup>b</sup> ♂ = male, ♀ = female

and leaf sheaths as well as a slender pseudostem; *doowiraamo*, ‘vulture’, drops its lamina backwards; *heqece*, ‘thread’, has narrow leaves; *leemmicho*, ‘bamboo’, has slender pseudostem and rather erect and narrow leaves; *miiqqicho*, ‘bone’, produces strong fiber in the leaf sheaths; *mundraaro*, ‘blood’, has a pink or reddish sap; *shombo*, ‘lung’, has light red lamina. Many names are thus descriptive words which mean that they can aid in the identification of enset varieties.

#### *Distinction and identification of varieties*

The various named varieties are recognized by farmers as distinct; this was recently confirmed using AFLP analysis (Almaz et al. 2002). The determination of a variety’s identity and distinctiveness is made by considering a large number of plant characters. Table 2 summarizes the different plant characters and character states used by farmers and names of taxa identified using them. The types of characters used are morphological, physiological, chemical and

vegetative cycle. The variations in character patterns may occur at whole plant level, at the level of organ or the specific economical products obtained from plant parts such as the cooked corm or *waasa*.<sup>1</sup> The characters used by farmers reflect that a folk variety has a distinctive biological and cultural (i.e. related to use) features that distinguishes it from others. Since descriptor lists for enset has yet to be established, the characters identified and used by farmers can serve as workable keys for studying the variations within enset and characterizing its varieties.

Farmers used a total of 40 characters and 83 character states as keys to determine the identity and distinctiveness of enset varieties (Table 2). More than half of these refer to aspects of a variety’s morphology, thus showing that morphological characters played a key role in the local identification and distinction of enset varieties. Morphologically, varieties are separated from one another by characters

<sup>1</sup> A traditional food made by decorticating and grating of corm and leaf sheaths and fermentation of the resulting pulp.

**Table 2** Plant characters used by farmers in the identification of enset varieties<sup>a</sup>

Character	Character state + name of representative variety
1 Morphological characters	
1.1 Leaf orientation	1. Horizontal: <i>kitiicho</i> 2. Erect: <i>alattichcho</i> , <i>leemmicho</i>
1.2 Lamina orientation	1. Lamina folds backwards: <i>doowiraamo</i>
1.3 Orientation of pseudostem	1. Curves at the base: <i>qaanda</i> 2. Erect: others
1.4 Leaf shape	1. Leaf twisting and curling: <i>madde</i>
1.5 Leaf strength	1. Stiff: <i>ambooma</i> , <i>alattichcho</i> 2. Soft: <i>shawwe</i> , <i>baalicho</i>
1.6 Leaf width	1. Broad: <i>dammala</i> , <i>ado</i> , <i>borricha</i> , <i>keeshe</i> , <i>ambooma</i> 2. Narrow: <i>gamachala</i> , <i>leemmicho</i>
1.7 Leaf length	1. Long: <i>gantichcha</i> , <i>kitiicho</i>
1.8 Leaf colour	1. Green or light green petiole, lamina, and midrib: <i>ado</i> , <i>birra</i> , <i>geedime</i> 2. Red petiole and midrib: <i>keeshe</i> , <i>geenna</i> , <i>arrishsho</i> , <i>uwishsho</i> , <i>askaala</i> , <i>guullummo</i> , <i>shawwe</i> , <i>astaara</i> 3. Light red lamina: <i>shombo</i> , <i>buufaro</i> 4. Black petiole and midrib: <i>kuule</i> 5. Brown petiole: <i>midashsho</i> 6. Yellowish white petiole and midrib: <i>agana</i>
1.9 Colour variegation on petiole and midrib	1. Present: <i>ado</i> , <i>ambooma</i> , <i>geedime</i> , <i>gantichcha</i> , <i>gosaallo</i> , <i>heqece</i> , <i>aiddaara</i> , <i>borbodhicho</i>
1.10 Pseudostem length	1. Long: <i>seediramo</i> , <i>borbodhicho</i> , <i>siriirro</i> , <i>midashsho</i> , <i>sarana</i> , <i>geenna</i> , <i>xoroorra</i> 2. Short: <i>alatticho</i> , <i>kincho</i> , <i>cacco</i> , <i>buufaro</i> , <i>birra</i> , <i>uwishsho</i> , <i>aiddaara</i>
1.11 Pseudostem girth	1. Thick: <i>ado</i> , <i>geenna</i> , <i>keeshe</i> , <i>dargichcha</i> , <i>kitiicho</i> 2. Slender: <i>waanni kure</i> , <i>cacco</i> , <i>borbodhicho</i> , <i>leemmicho</i> , <i>siriirro</i> , <i>gamachala</i> , <i>buufaro</i> , <i>askaala</i> , <i>aiddaara</i>
1.12 Pseudostem base	1. Bulbous: <i>dammala</i>
1.13 Pseudostem color	1. Light green or green: <i>ado</i> 2. Red: <i>arrishsho</i> , <i>uwishsho</i> , <i>askaala</i> , <i>guullummo</i> , <i>shawwe</i> , <i>astaara</i> , <i>shombo</i> , <i>buufaro</i> 3. Black: <i>kuule</i> , <i>gantichcha</i> , <i>geedime</i> 4. Brown: <i>midashsho</i> , <i>addaama</i> , <i>bulla</i> 5. Yellowish white: <i>agana</i>
1.14 Colour variegation on pseudostem	1. Present: <i>ambooma</i> , <i>borbodhicho</i>
1.15 Lifting of the leaf sheath	1. Leaf sheath lifts from pseudostem: <i>waanni kure</i> 2. Tightly clasping: others
1.16 Hardness of leaf sheath	1. Hard: <i>gantichcha</i> , <i>kitiicho</i> 2. Soft: <i>midashsho</i>
1.17 Sap colour	1. Whitish or watery: <i>ado</i> , <i>guullummo</i> 2. Pink: <i>mundraaro</i>
1.18 Water storage capacity	1. Leaf sheaths store high volume of water: <i>guullummo</i> 2. Low: <i>alatticho</i>
1.19 Corm size	1. Large: <i>dammala</i> , <i>guullummo</i> , <i>aiddaara</i> , <i>micco</i> , <i>midashsho</i> , <i>alatticho</i> , <i>geenna</i> , <i>geedime</i> , <i>gantichcha</i> 2. Small: <i>waanni kure</i>

**Table 2** continued

Character	Character state + name of representative variety
1.20 Pseudostem/corm ratio	1. High: <i>gantichcha</i> , 2. Low: <i>dammala</i> , <i>doowiraamo</i> , <i>garawichcho</i> , <i>guulummo</i>
1.21 Colour of corm	1. White: <i>chiiko</i> , <i>ado</i> 2. Red: <i>mundraaro</i>
1.22 Hardness of corm	1. Soft: <i>midashsho</i> 2. Hard/strong: <i>gantichcha</i> , <i>qaanda</i> , <i>guulummo</i> , <i>miiqqiicho</i>
2 Biochemical characters	
2.1 Substances present	1. Bitter: <i>uwishsho</i> , <i>qaraaraansho</i> , <i>xunayyicho</i> , <i>kincho</i> 2. Abortifacient: <i>astaara</i> , <i>askaala</i> 3. Antimicrobial: <i>cacco</i>
3 Physiological characters	
3.1 Seasonal variation in dry matter content	1. Low: <i>gantichcha</i> , <i>bulla</i> 2. High: <i>ado</i>
3.2 Discoloration of corm and leaf sheath after cutting	1. Fast: <i>alattichcho</i> , <i>agana</i> , <i>buufare</i> 2. Slow: others
3.3 Fermentation rate of pulp	1. Fast (2/3 days): <i>midashsho</i> , <i>keshee</i> , <i>ado</i> 2. Slow: <i>guulummo</i> , <i>golomma</i> , <i>cacco</i> , <i>gantichcha</i>
3.4. Growth rate	1. Fast: <i>midashsho</i> , <i>kitiicho</i> , <i>keshee</i> 2. Slow: <i>guulummo</i> , <i>cacco</i> , <i>mundraaro</i> , <i>leemmicho</i> , <i>alattichcho</i> , <i>uwishsho</i> , <i>aiidaarra</i> , <i>gosallo</i>
3.5 Tolerance to disease	1. Tolerant of bacterial wilt: <i>gantichcha</i> 2. Susceptible: <i>midashsho</i>
3.6 Tolerance to pests	1. Attacked by porcupines, mole rats: <i>birra</i> , <i>waanni kure</i> , <i>haaho</i> 2. Not attacked: <i>gantichcha</i>
3.7 Regeneration capacity	1. Produce large number of suckers: <i>bulla</i> , <i>maade</i> , <i>ado</i>
4 Life cycle	
4.1 Length of vegetative period	1. Long (>9 years): <i>kitiicho</i> , <i>gantichcha</i> , <i>guulummo</i> 2. Short (7–8 years): <i>midashsho</i> , <i>keshee</i> , <i>gosallo</i> , <i>leemmicho</i> , <i>cacco</i>
5 Characteristics and qualities of products from plant parts	
5.1 Palatability of cooked corm	1. Sweet: <i>haaho</i> , <i>astaara</i> , <i>birra</i> , <i>waanni kuore</i> , <i>siriirro</i> , <i>mundraaro</i> , <i>askaala</i> , <i>ado</i> 2. Not sweet: <i>gantichcha</i> , <i>qaanda</i> 3. Bitter: <i>uwishsho</i> , <i>xunnayiicho</i> , <i>cacco</i> , <i>kincho</i>
5.2 Texture of cooked corm	1. Powdery: <i>birra</i> , <i>waanni kuore</i> , <i>siriirro</i> , 2. Sticky: <i>midashsho</i> 3. Watery: <i>xunnayiicho</i> , <i>kincho</i>
5.3 Physical strength of <i>waasa</i>	1. Hard: <i>gantichcha</i> 2. Soft: <i>midashsho</i>
5.4 Colour of <i>waasa</i>	1. White: <i>gantichcha</i> , <i>ado</i> , <i>geedime</i> , <i>midashsho</i> , <i>goccharo</i> , <i>kuule</i> , <i>kitiicho</i> , <i>waanni kure</i> , <i>bulla</i> 2. Red: <i>maldea</i> , <i>guulummo</i> , <i>mundraaro</i> , <i>buufare</i> , <i>alattichcho</i> 3. Black: <i>cacco</i>
5.5 <i>waasa</i> content	1. High: <i>midashsho</i> , <i>dammalla</i> , <i>ado</i> , <i>geenna</i> , <i>kitiicho</i> 2. Low: <i>guulummo</i> , <i>mundraaro</i> , <i>leemmicho</i> , <i>waanni kure</i>
5.6 Taste of <i>waasa</i>	1. Sweet: <i>waanni kure</i> , <i>bulla</i> , <i>goccharo</i> 2. Bad: <i>gantichcha</i>



**Table 2** continued

Character	Character state + name of representative variety
5.7 Water content of <i>waasa</i>	1. High: <i>qaanda</i> 2. Low: <i>waanni kure, bulla, birra</i>
5.8 <i>Bula</i> (starch) content	1. High: <i>bulla, midashsho, gantichcha, wolaantichcha, keeshe, geedime, geenna</i>
5.9 Strength of fibre	1. Strong: <i>kitiicho, gantichcha, keeshe, midashsho</i> 2. Soft: <i>goricho</i>

<sup>a</sup> The list of characters and names of varieties are based specifically upon only the varieties whose descriptions the author was able to get. It should not be regarded as exhaustive

generally inherent in vegetative structures; these are characters associable with the leaf (orientation, shape, color, width, length, strength and variegation), the pseudostem (length, girth, color, orientation, and lifting of leaf sheaths) and the corm (size, color, and hardness). Reproductive structures played little or no role in the local identification of varieties. This is not surprising as enset plants rarely reach flowering stage in the cultivated state. Among morphological characters, the most commonly used are plant colors (26 varieties) and the dimensions of the pseudostem (12 varieties).

#### Sub-varieties

Analysis and interpretation of the vernacular names applied to enset revealed that some varieties are composed of a number of subordinate units. For instance, there are four names that bear the name *gantichcha*, one of the well-known varieties found in Sidama (see Table 1). The four are labeled as follows: *gantichcha boowe*, *alatti gantichcha*, *borro gantichcha* and *harbagoncho gantichcha*. The four differently named entities are clearly affiliated to each other and included in the *gantichcha* variety as all bear the name *gantichcha*. Each is also recognized as distinct from all the others and from the *gantichcha* variety since each carries a specific label attached to the name such as ‘*boowe*’, ‘*alatti*’, ‘*borro*’ and ‘*harbagoncho*’. The example clearly shows that the *gantichcha* variety is further partitioned into a number of linguistically recognized taxa. It illustrates that Sidama botany of enset recognizes a sub-category within the category variety. The sub-category and the different linguistically recognized forms of a variety have been designated as sub-variety by the author.

In Sidama, a total of 16 sub-varieties, representing 13.5% of the total inventory, were recorded. Eleven of these represented actually grown sub-varieties whereas the rest were reported verbally. The 16 sub-varieties are included into six locally well-recognized varieties. Table 3 lists the names of varieties and their sub-varieties recorded in Sidama. The numbers of sub-varieties recorded for a given variety varied between 1 and 6. Generally, most widely grown enset varieties include more sub-varieties than less widely grown ones. Thus *ado* and *gantichcha*, the two most widely grown varieties in Sidama, have each six and four sub-varieties, respectively, whereas the rest have between one and two. Compared to varieties, sub-varieties are known to a small number of farmers (mean = 4.1) and have limited spatial distributions

**Table 3** Varieties and sub-varieties of enset

Variety group	Sub-varieties
<i>ado</i>	<i>waanna ado</i> <i>sidancha ado</i> <i>boowete ado</i> <i>darassi ado</i> <i>addam ado</i> <i>ado waajjo</i>
<i>gantichcha</i>	<i>borro gantichcha</i> <i>gantichcha boowe</i> <i>alatti gantichcha</i> <i>harbagoncho gantichcha</i>
<i>midashsho</i>	<i>darassi midashsho</i> <i>bullo midashsho</i> <i>boowete midashsho</i>
<i>dammala</i>	<i>daraasi dammala</i>
<i>uwishsho</i>	<i>boowete uwishsho</i>
<i>cacco</i>	<i>shawwa cacco</i>

(mean = 2.2). An exception is *daraasi ado*, which is known to 152 farmers and was recorded at 8 of the 10 study sites. The existence and prevalence of sub-varieties indicate the degree of precision attained by traditional farming communities in classifying enset.

#### *Distinction and identification of sub-varieties*

The different sub-varieties of a given variety were reported to have the diagnostic characteristics of the main variety; each was also reported to differ from all the others and the main variety in at least one morphological feature. For instance, the four sub-varieties of '*gantichcha*', like the main variety, have characteristic black spots on their petiole bases and leaf sheaths. They are distinguished from one another by differences in height and thickness of pseudostem, leaf width and growth rate. The main distinguishing feature of the six sub-varieties in the '*ado*' group is that they have light green leaves and leaf sheaths as well as white corm. Two of the sub-varieties differ in one character—the presence (*sidancha ado*) and absence (*daraasi ado*) of white powder on the leaf. The others differ from one another and the main variety in height, thickness, leaf size and color intensity. The sub-variety *shawwa cacco* is distinguished from the main variety by leaf number, height and growth cycle. The sub-variety *bullo midashsho* is separated from the other members by the rich brown color of its sheaths and petiole. The above facts indicate that the sub-variety is used to designate a distinct group of varieties of common phenotype.

#### *Names and naming of sub-varieties*

Examination of the names used for labeling sub-varieties shows that all consisted of two words (Table 3). Names of sub-varieties are thus binary. In the preceding pages, it was shown that names of six enset varieties are also binary. However, sub-variety names differ from variety names in that they are made up of two parts: one part represents the name of a locally well-established enset variety to which the sub-variety belongs. The second part, which can be a prefix or suffix, identifies the particular sub-variety within the group. Binary names given to varieties, such as *waanni waasa*, *meentu weshsho*, *daama shaashe*, etc., do not include the name of locally recognized taxa. It follows that two

distinct naming systems are employed by farmers for labeling varieties and sub-varieties. The existence of two different naming systems can be taken as a clear evidence of the existence of two separate folk categories. Note that the naming system used for sub-varieties is comparable to the binomial system whereby a plant is given a two-part name representing the genus and species. The binomial makes the hierarchical relationship between a variety and its subordinate taxa transparent.

As pointed above, the basic name of a sub-variety is a binary name consisting of a word designating the variety plus a prefix or suffix added to it. The prefix or suffix is meaningless alone because many different sub-varieties in different varieties may have the same specific prefix/suffix. Examples of frequently used words are *boowe (te)* and *daraasi* (Table 3). The prefix/suffix is usually an adjective that describes or modifies the name further. Some of them indicate color, such as *waajjo* 'white', and *bullo* 'brown'. Others indicate size (e.g., *boowete* 'big'), name of social groups (e.g. *daraasi*), geographical areas (e.g., *alatti*, *harbagoncho*, *shawwa*, *addam* and *borro*) or the local importance of the sub-variety (e.g., *wanna* 'main'). Nine (56.3%) sub-variety names carry modifiers that refer to geographical areas; the rest carry modifiers that refer to the particular characteristics or importance of the sub-variety. The prefix/suffix that marks a sub-variety thus reflects its characteristics or geographical origin.

#### Supra-variety groups

Sidama farmers have a number of additional systems for grouping enset varieties. Two major ways of classifying enset varieties can be identified: use in local foods and sex. Sex and use groupings are formed by assembling several enset varieties and sub-varieties together; they are thus supra-variety categories, i.e. are groupings higher than the folk variety. Each grouping method is based on different principles. The characteristics of the different groups and the underlying basis of the classifications are presented below.

#### *Sex groups*

Sidama farmers ascribe sex to enset varieties, i.e., every variety is either a male (*labbahu*) or a female (*meati*). Thirty-four (32.7%) of the varieties recorded



in Sidama are male whereas 17 (16.3%) are female (Table 1). No data is available regarding the sex of the remaining varieties. Sidama farmers thus recognize two groups of enset varieties on the basis of sex: ‘male’ and ‘female’. Fujimoto (1997) and Almaz and Niehof (2004) reported that other ethnic groups in Ethiopia also distinguish and group enset varieties on the basis of sex, showing that different communities classify varieties in a similar way.

Of the interviewed farmers, 91% were aware of sex distinctions among enset varieties showing that the concept is widely shared by the community. The category must therefore be significant to the local culture. Farmers also showed remarkable consistency in recognizing sex categories. For example, all the 174 informants that responded identified the variety *gantichcha* as male. Similarly, all the 145 farmers consistently identified the variety *ado* as female. This indicates that the category is meaningful and consistent across locations. Consistency in the grouping of varieties on the basis of sex is also evident in the fact that varieties and sub-varieties are categorised into the same group. Thus the different sub-varieties of *ado* were described as female. Similarly, the different sub-varieties in the *gantichcha* group were assigned to male group. Farmers have also shown equally contrasting views regarding the sex of a few varieties, namely *gosaallo* and *aiddaara* thus showing that farmers may have different opinions about the importance of gaps and similarities among enset varieties.

**Identification of male and female groups:** On the basis of sex, enset varieties fall into two supra-variety groups: male and female. These are marked off from one another by means of a complex of nine pairs of opposed characters (Table 4). The groups are clearly distinct apart from the subjective question of how male are ‘male’ varieties and how female are ‘female’ varieties. The types of characters are morphological (plant size), physiological (tolerance to stress, season when maximum dry matter is present), vegetative cycle, and cultural (ease of processing, rate of fermentation, *waasa* or *bula* content, quality of *waasa*, and fibre strength). The classification, however, is not related to biological sex. This is consistent with the known flowering behaviour of enset, which is bisexual (Cheesman 1947). The groups and the defining attributes can influence important practical decisions such as

**Table 4** Characteristics of male and female groups and varieties

Characters	Male	Female
Ease of processing into <i>waasa</i>	Difficult	Easy
Rate of fermentation	Slow	Fast
Plant size at maturity	Tall and thick	Shorter and slender
<i>waasa</i> or <i>bulla</i> content	High	Less
Tolerance to abiotic stress	Tolerant	Less tolerant
Seasonal variation in dry matter content	Low	High
Quality of <i>waasa</i> (colour, taste, odour)	Low	High
Vegetative cycle	Long	Short
Fibre in leaf sheath	Strong	Soft

selection of varieties, organization and management of enset gardens, and formulation of mixtures for making *waasa*, the staple food (Bizuyeyu 2008).

**Names of male and female varieties:** Names of male and female enset varieties are marked with characteristic endings. Names of male varieties end usually, but not always, in ‘a’, ‘i’ and ‘u’. Names of female varieties end usually, but not always, in ‘te’, ‘e’, ‘o’ and ‘cho’ (Table 1). Male and female groups and individual varieties assigned to them are thus recognizable linguistically.

#### *Processing and cooking groups*

The Sidama divide enset varieties into two major kinds on the basis of their utilization in local foods: those whose corm ‘*haamicco*’ can be dug and eaten after boiling (‘cooking’ group) and those that require complex processing (i.e., decortications, grating and fermentation of the resulting pulp into the local foods known as *waasa* or *bula*) (‘processing’ group). Included in the cooking group are some 15 varieties namely, *birra*, *siriiro*, *waanni kure*, *askaala*, *astaara*, *gosaallo*, *mundraaro*, *haaho*, *doowiraamo*, *ado*, *kuule*, *garbo*, *aiddaara* and *geedime*. The processing group includes many of the varieties recorded in Sidama, including those in the cooking group. However, even here only a small number of enset varieties are grown widely for the purpose of processing. Important varieties include ‘*gantichcha*’, ‘*midashsho*’, ‘*ado*’, ‘*dammala*’ (and their sub-varieties), *kitiicho*, *bulla*, and *geena*.

On the basis of use, enset varieties fall into two supra-variety groups: processing and cooking. No formal names are used to label the groups and individual taxa. Also, the different groups are not mutually exclusive. However, processing and cooking groups and individual varieties assigned to them exhibit a number of contrasting characteristics that distinguish them from one another (Table 5). The groups are thus clearly perceived.

*Identification of processing and cooking groups:* As Table 5 shows, processing and cooking groups and varieties are marked off from one another by means of a complex of five pairs of opposed characters. Apart from the degree of differentiation, the two groups are clearly distinct. The characters refer to aspects of a variety's structure/morphology (plant size), physiology (tolerance to pests) and cultural features (palatability of the corm, texture of corm, and *waasa* content). Note that except for plant size and *waasa* content, the characters used are different from those used for grouping varieties into male and female groups. Use can thus be considered an alternative and distinct way of classifying enset varieties. The categories influence practical decisions of selection of varieties and management of enset gardens (Bizuayehu 2008).

#### Sidama folk taxonomy of enset

Three major groups of enset varieties recognized by Sidama farmers have been described above. The local

classification system thus recognizes four groups of enset. Each of these can be considered as belonging to different level and thus arranged hierarchically. In order from the least to the most inclusive group, the categories are sub-variety, variety, supra-variety, and enset. Applying Berlin et al. (1973) framework of folk biological classification, the groups can be assigned to four universal formal taxonomic categories, namely sub-variatal, varietal, sub-specific and folk specific. The folk group enset and variety are labelled; sub-variety and supra-variety groups are unnamed. Individual taxa belonging to the folk group variety, sub-variety, and supra-variety are also labelled.

The above interpretation and analysis of Sidama classification and naming of enset allows for the recognition of a folk biological classification consisting of four taxonomic groups. Table 6 presents the structure of Sidama folk taxonomy of enset and its varieties. Sidama taxonomy of enset shares the general scheme found in Indian folk taxonomy of potato varieties (Zimmerer 1991; Brush et al. 1981; Hawkes 1947; La Barre 1947). The taxonomic groups identified by Sidama folk may correspond to biologically recognized divisions. Taxonomic and molecular studies have already revealed that taxa assigned at the folk specific and folk varietal level correspond to biologically distinct species and variety, respectively (Cheesman 1947; Baker and Simmonds 1953; Almaz et al. 2002). From the ethnobotanical data gathered, taxa assigned to supra-variatal and sub-variatal categories may also

**Table 5** Characteristics of processing and cooking groups and varieties

Characters	Processing	Cooking
Palatability of cooked corm	Bitter or not tasty	Sweet
Texture of cooked corm	Hard, fibrous	Soft and powdery
<i>waasa/bula</i> (starch) content	High	Low
Plant size at maturity	Tall and thick	Shorter and slender
Susceptibility to vertebrate pests	Not attacked	Attacked by porcupines and mole rats

**Table 6** Structure of Sidama folk taxonomy of enset

Taxonomic category	Sidama label	Number of taxa/groups	Type of labels applied to individual taxa
Folk specific	Weese	1	Unitary name
Folk sub-specific	Unlabelled	4	Markings on ends of names
Folk varietal	Sirco	98	Unitary names, few binary names
Folk sub-variatal	Unlabelled	16 (6)	Binomial names

correspond to the biologically recognized sub-specific and sub-varietal divisions, respectively. But detailed studies are necessary.

## Conclusions

The study documented and described how Sidama folk identify, name and classify enset varieties. A number of conclusions can be drawn from the study.

- (i) There exists a systematic and well-developed local naming and classification system of enset varieties in Sidama. This is evident in the recognition of sub-variety, variety and supra-variety groups, in the use of different nomenclatures for members of each group as well as in the type of characters used for identifying and separating taxa. The finding provides additional support to the view that naming and classification is not an activity confined to the domain of modern science only.
- (ii) Identification and classification of varieties as perceived by informants and expressed in the names used for labelling varieties are made by referring to a variety's botanical and cultural characters. Biological and functional considerations thus constitute the basis of the local biological classification.
- (iii) The study highlighted the local perception of enset. According to farmers, enset is highly diverse. This diversity commonly expresses itself as variations in morphological, physiological and chemical characters of the enset plant as well as in the characteristics and qualities of economical products from plant parts. These are farmers' general perceptions. Further botanical and genetic studies are necessary to establish the genetic nature of the observed variations and make the wealth of enset diversity of greater use to the community.
- (iv) Knowledge of the names, characteristics and properties of the locally recognized enset varieties and categories are widely shared within the community and across Sidama. This is significant considering the informal nature of the local naming and classification system.
- (v) The study is not exhaustive. The list of Sidama enset varieties and their descriptions are

incomplete. The author also managed to obtain the etymology of a limited number of the names. Further explorations and ethnobotanical studies are necessary to unravel the complexities present within Sidama enset fully. However, the facts presented in this paper clearly demonstrated the value of folk classification systems for assessing the nature and extent of diversity in less known crop plants.

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