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Naming of Plants in Nyamwezi and Sukuma Societies of Tanzania

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Abstract

Since research has shown that the classification of plants into noun classes varies from one Bantu language to another (Legère, 2020), the present article contributes to the formation of the canonical noun classes for plants in the Nyamwezi and Sukuma languages in Tanzania. The data was gathered in Mwanza, Shinyanga, Simiyu and Tabora regions mainly through elicitation, revealed that the language has developed a lexicon of plant names based on four word formation strategies: (i) assignment of plant names to canonical tree noun classes 3/5 and 5/6, event for reduplicated, compounded and borrowed nouns; (ii) compounding of verbs and nouns to derive plant names; (iii) reduplication of verbs and nouns to derive plant names, and (iv) lexical borrowing from Swahili and English. The abundance of nouns in classes 5/6 suggests innovation in that classes 3/4 are being replaced by classes 5/6. Also, the paper shows that under the compounding, reduplication and phrasal mechanisms of nouns formation, many plant names express: (a) the structure and physiology of the plants, e.g. scent, softness or hardness; (b) physical environment where plants flourish, e.g. on mountain tops; (c) the berries and tubers produced by the plants; (d) the (gender) sex of the plants, and (e) the scent/smell produced by the plants. Based on the findings, it becomes plausible to establish that the Nyamwezi and Sukuma people employ both linguistic resources and physical and natural environment in assigning names to plants. This is a testimony that plants have formed a central part in the ethno-cultural practises of this community.

1.0 Introduction[3]

The relationship of the Nyamwezi and Sukuma, as an ethnic groups occupying central, western and northern Tanzania, with the vegetation cover in their vast hinterland is the main focus of this study. Berlin (1992) points out that one of

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the ways to study the man and plant relations, which is at the core of ethno-biological investigations, is through indigenous names of plants. In Bantu languages, the investigation of the morphologies of the names of the plants, and the sources of the concepts on the naming of plants is required in order to outline the relationship between ethnic groups and plants in their hinterlands (Heine and Legère, 1995; Legère, 2020). The contribution of the present article, therefore, lies on the identification of the ways through which the Nyamwezi and Sukuma people name plants in their vast hinterland. Each contribution is outlined in detail in the subsequent paragraphs.

The contribution of this paper is three-fold. Firstly, the naming culture of the Nyamwezi and Sukuma people reveal their relationship with plant and animal resources. Traditionally, the Nyamwezi and Sukuma people were bestowed with names related to medicinal plants, e.g. *Kasanda* 'a fertility medicine prepared with the roots of that tree'; the environments in which the plants flourish, e.g. *Malâle* 'productive cultivation field (farm)', parts of the plant, e.g. *Kadâla* 'little, thin leaflet of a plant' etc. (Schönenberger, 1995). Similarly, their personal names are related to both wild plants and cultivated crops and circumstances associated with the farm preparation, seed sowing, farm weeding, and crop harvesting (Manyasa, 2008). However, the study of the manner in which the Nyamwezi and Sukuma people name the wild plants and cultivated crops in their hinterland is not complete hence it calls for further research. In fact, it only occurred in passing in Lusekelo (2016) who deals with incorporation of foreign names. The research gaps that the present paper fills concerns the identification of the mechanisms which the Nyamwezi and Sukuma people employ to name plants.

Secondly, an important contribution of Nyamwezi and Sukuma to African linguistics in general and Bantuistics in particular surrounds dialectological variation (Batibo, 1991, 2000; Masele, 2000, 2001; Nurse, 1999; Roth, 2013). The variations in tone spreading and different sparintization processes in Nyamwezi and Sukuma raised a debate on the dialectical continuum between these communities. To date, the debate stands as follows. Abrahams (1967) treats the Nyamwezi and Sukuma as a single community which reveal similar socio-political organisations and socio-economic activities operating under chiefdoms called *batemi*[4] in both varieties. Similarly, Nurse (1999:10), boldly, pointed out for Nyamwezi and Sukuma: "these are dialects of one language"; but not Kimbu, Konongo and Sumbwa. Masele (2001) accepts the dialectical continuum of the Banyamwezi and Basukuma but proposes four dialects of the Banyamwezi: Dakama, Galaganza, Konongo and Nyanyembe. Nyamwezi~Sukuma dialect continuum is maintained. But Roth (2013) does not accept the borderline between

[4] The inventories of segmental units in Nyamwezi and Sukuma show a 7-vowel system and lack of bilabial plosives, which manifest as /β/ and /ɣ/ (Batibo, 1985; Maganga and Schadeberg, 1992; Matondo, 2003). Use the orthography *b* and *g* to represent these consonants, respectively.

Nyamwezi and Sukuma as established by Batibo (1991, 2000), Nurse (1999) and Masele (2001). Roth (2013) proposes the north-eastern border of the Nyamwezi language at Kigwa (35 kilometres from Tabora urban). He proposes the north-western boarder to be Makingi (50 kilometres outside Tabora Urban). This means Nzega is a Sukumaland! In order to continue the debate, this paper contributes datasets based on plant names. The names of plants help to unearth the variations of the Nyamwezi/Sukuma language. Therefore, we will establish the dialectological variations between the names of plants in the hinterland of Nyamwezi and Sukuma group.

Thirdly, studies on Bantu languages enumerate the sources of conceptual information of modifiers in the names of plants which manifest as associative constructions, compounded nouns, and noun phrases. There are variations between Bantu languages (Welmers, 1963; Legère and Heine, 1995; Thornell, 2010; Van de Velde, 2013). In this paper, we investigate the sources of concepts in the nominal modifiers in Nyamwezi and Sukuma. Then we compare the sources of concepts in Nyamwezi and Sukuma, with the findings in Swahili (Legère and Heine, 1995), Vidunda (Legère, 2009) and Kwangwali and Kwanyama (Legère, 2020).

After this introduction, the paper is organised in this manner. Section 2 covers issues related to bare nouns in Nyamwezi and Sukuma. The intent is to exhibit the morphological structure, noun classification and semantic interpretations of the plant names. We also further contribute to the incorporation strategies of foreign nominal structures, which appeared in Luhende (2018). Section 3 presents three other mechanisms employed to derive plant names among the Nyamwezi and Sukuma group: It examines the structure of compound nouns as a mechanism to name plants (section 3.1); it describes reduplication of the plant names (section 3.2); and it presents data that exhibit phrasal structures as another mechanism to name plants (section 3.3). In section 4, datasets from plant names are used to discuss the variations between Nyamwezi and Sukuma. The main contribution is to show the variation that results from large geographical situation of speakers. The conclusion in section 5 remarks on the dialectological variation within the ethnic group in relation to the naming of plant resources.

2.0 Noun Classification and Placement of Names of Plants[5]

The plant names in Nyamwezi and Sukuma constitute the primary structure, which is nominal prefix plus nominal root (Batibo, 1991, 2000; Masele, 2000; Matondo, 2003). The augment (pre-prefix) is an optional unit of a noun, which provides definite interpretation once available (Matondo, 2003).

2.1 Noun Classification of Native Plant Names

Each plant names is assigned to a particular noun class. Based on the literature, Table 1 presents the noun classification of Nyamwezi and Sukuma. The plant names fall into noun classes 3/4, 5/6, 7/8 and 9/10. An examination of the placement of plant names is executed in Table 1:

Table 1: Noun Classification in Nyamwezi and Sukuma

Class	Prefix	Example	Semantics
1	*m*	*mtemí* 'chief'	humans, kinships, personifications
2	*ba*	*batemí* 'chiefs'	
3	*mu*	*mkologomá* 'tree sp'	plants
4	*mi*	*mikologomá* 'tree sp'	
5	*i/li*	*ihagala 'forked branch'*	grass, plants, fruits
6	*ma*	*mahagala 'forked branches'*	
7	*ji/gi*	*jikómbe* 'cup'	artefacts, inanimate nouns, plants
8	*shi/si*	*shikómbe* 'cups'	
9	*N*	*ngoko* 'fowl'	animals, insects, plants
10	*N*	*ngoko* 'fowls'; *ngulu* 'hills'	
11	*lu*	*lugulu* 'hill'	elongated things
12	*ka*	*kagóbo* 'small skin'	diminutives
13	*tu*	*tugóbo* 'small skins'	
14	*bu*	*busadu* 'sickness'	abstractness
15	*gu*	*gucha* 'dying'	infinitive nouns
16	*ha*	*hamibannga* 'on the tree…'	locatives
17	*ku*	*kumibannga* 'to the tree…'	
18	*mu*	*mumibannga* 'in the tree…'	

Sources: Batibo (1985), Luhende (2018), Maganga and Schadeberg (1992), Matondo (2003) and Richardson (1956)

Our datasets show that only two noun classes appear to accommodate native plant names in Nyamwezi and Sukuma: 3/4 (*m-*/*mi-*) and 5/6 (*li-*/*ma-*). The claim that

[5] We have over 600 entries of plant names as first-hand datasets gathered from Sikonge (195 nouns), the hinterland of the Nyamwezi people. The datasets also come from Kahama (84 names), Magu (110 nouns) and Meatu (175 nouns), the homelands of the Sukuma society. Some 75 names are secondary datasets extracted from Batibo (1985), Luhende (2018), Maganga and Schadeberg (1992), Masele (2001), Matondo (2003), Richardson (1959) and Steere (1885). After comparing similar and variations in names, we remain with some 300 plant names used in this paper.

noun classes 7/8 and 9/10 accommodate native plant names requires some observations, as articulated below.

The literature highlights the canonical nominal classes for plants and related nouns being 3/4 (*m-*/*mi-*) (Richardson, 1956; Luhende, 2018), as common across Bantu languages (Legère, 2009; Van de Velde, 2019). A large number of plant names in our datasets are assigned to the class (see Table 2). Therefore, this claim is confirmed in our datasets. But in Nyamwezi and Sukuma language, phonological processes tend to produce the alveolar nasal instead of the bilabial nasal for some nouns.

Table 2: Plant Names in Noun Classes 3/4 'default plant class'

Singular (noun class 3)	Plural (noun class 4)	English Name	Botanical Name
mdalu	*midalu*	knobwood	Zanthoxylum chalybeum
mdege	*midege*	maize	Zea mays
mfuru	*mifuru*	black plums tree	Vitex doniana
mgagani	*migagani*	African cabbage	Cleome gynandra
mhuula	*mihuula*	plums tree	Parinari curatellaefolium
mkoola	*mikoola*	pod mahogany	Afzelia quanzensis
mlama	*milama*	velvet bushwillow	Comberetum molle
mpogolo	*mipogolo*	apple-ring acacia	Acacia albida
nguu	*miguu*	acacia	Acacia sp.
nsunko	*misunko*	tobacco	N. Tobaccum
ng'wandu	*miandu*	baobab	Adansonia digitata

Source: Field Data (2020)

The noun classes 5/6 (*li-*/*ma-*) also constitute a large number of plant species (Luhende, 2018). In our datasets, this turns to be the default class for Nyamwezi and Sukuma (see Table 3). Richardson (1956: 85) contends that "many nominal stems begin with *-i-*." This is possible as the noun class prefix (*li-*) is eroded and appears as *-i-* or zero in many Bantu languages (Ngunga and Mathangwane, 2015).

Table 3: Plant Names in Noun Classes 5/6 'Default Plant Class'

Singular (noun class 5)	Plural (noun class 6)	English name	Botanical name
idubilo	*madubilo*	gum arabic tree	Acacia nilotica
igwata	*magwata*	gum arabic tree	Acacia senegal
ikonda	*makonda*	Indian jute	Corchorus sp.
inaalo	*manaalo*	acacia	Acacia sp.
litalantu	*matalantu*	bitter apple	Solanum incanum L.

Source: Field Data (2020)

Some names bear nominal prefixes for class 5 (with prefix *-i-*), while they get plural prefixes in class 4 (with prefix *-mi-*), (Table 4). Based on the abundance of plant names in classes 4 and 5, we are of the opinion that these remain in the default plant classes. This phenomenon is also identified for Vidunda, which has many plant names in the noun classes 5/4 (Legère, 2009). But Swahili has abundant plant names in noun classes 3/4, 5/6 and 7/8 (Legère, 2003).

Table 4: The Pairing of Plant Names in Classes 5/4

Singular (noun class 5)	**Plural (noun class 4)**	**English Name**	**Botanical Name**
inaalo	*minaalo*	acacia	Acacia sp.
ipelemese	*mipelemese*	---[6]	Grewia platyclada
isungululu	*misungululu*	poison arrow vine	Strophanthus emiini
inàngàlé	*minàngàlé*	candelabra tree	Euphorbia ingens

Source: Field Data (2020)

So far, we have identified two noun classes which accommodate many plant names in Nyamwezi and Sukuma language. This phenomenon of assigning names of plants to classes 3/4 and 5/6 is reported in the languages Kwangali, Kwanyama and Swahili languages (see Legère, 2020). But other Bantu languages such as Mpiemo, Swahili and Vidunda contain plant names in noun classes 7/8, 9/10 and 11/10 (see Legère, 2003, 2009; Thornell, 2010).

2.2 Noun Classification of Borrowed Names of Plants in Nyamwezi and Sukuma

Based on the list of plant names, loanwords are common in Nyamwezi and Sukuma. The donor languages are English and Swahili. Each of these borrowed plant names reveal nativization processes discussed below.

A couple of plant names had been incorporated from Swahili loans in Nyamwezi and Sukuma (see Table 5). As regards cereals and tubers, Lusekelo (2016) pointed out that Swahili is the source of names as such crops were introduced from Asia and/or Europe through the coastline. Consequently, Swahili speakers introduced the crops in the interior of Tanzania.

[6] In this article, the blank spaces stand for the names of plants that we did not identify its Swahili, English and/or botanical names. Legère (2009, 2020) pointed out that this is not strange because the characterisation of plants does not reach a point in which all native names bear its equivalents in national and international languages.

Table 5: Swahili Loanwords in the Plant Names in Nyamwezi and Sukuma

Singular	Plural	Noun Class	English Name	Botanical Name
bamila	*mamibamila*	5/6 [zero/ma]	okra	Okra
bupilipili	*mabupilipili*	5/6 [zero/ma]	pepper	Piperacease
(i)gatani	*magatani*	5/6 [i/ma]	cotton	Agava sisalana
ihalage	*mahalage*	5/6 [i/ma]	beans	Phaseulus vulgaris
liseti	*maliseti*	5/6 [zero/ma]	sunflower	Helianthus annuus
mbaazi	*mibaazi*	3/4 [m/mi]	pigeon pea	Cajanus cajan
mdimu	*midimu*	3/4 [m/mi]	citrus (lime)	Mytenus undata
mhogo	*mihogo*	3/4 [m/mi]	cassava	Manihot esculenta
mjohoro	*mijohoro*	3/4 [m/mi]	ironwood	Cassia siamea
mkalatusi	*mikalatusi*	3/4 [m/mi]	eucalyptus	Eucalyptus
mpeela	*mipeela*	3/4 [m/mi]	guava	Guava sp.
mwalubaini	*mialubaini*	3/4 [m/mi]	neem tree	A. indica
mnyembe	*minyembe*	3/6 [m/mi]	mango tree	Mangifera indica
ng'alannga	*mang'alannga*	9/6 [N/ma]	peanuts	Arachis hypogaea

Source: Field Data (2020)

Plant names borrowed from Swahili are assigned to noun classes 3/4 (with prefixes *m-*/*mi-*) and 5/6 (with prefixes *i-*/*ma-* or *zero*/*ma-*). This is a common phenomenon for the borrowing from Bantu languages, which has similar affiliation with Nyamwezi and Sukuma.

Other morpho-phonological processes of nativization include insertion of the approximant /l/ as in *bamila* (Swahili: *bamia*) 'okra'. Insertion of consonants is a common phenomenon in the nativization of loans in Nyamwezi and Sukuma (see Maganga and Schadeberg, 1992; Batibo, 1985; Luhende, 2018). English contributed to names of some plants in Nyamwezi and Sukuma (see Table 6). As compared to Swahili, English loans are fewer in Nyamwezi and Sukuma.

Table 6: English Loanwords in the Plant names in Nyamwezi and Sukuma

Singular	Plural	Noun Class	English Name	Botanical Name
(i)babayu	*mibabayu*	5/4 [i/mi]	papaya	Papaya sp.
(i)tumbate	*matumbate*	5/6 [i/ma]	tobacco	Nicotiana tobacum
mkalatusi	*mikalatusi*	3/4 [i/mi]	eucalyptus	Eucalyptus spp.
santifulawa	*masantifulawa*	5/6 [N/N]	sunflower	Helianthus annus

Source: Field Data (2020)

The names of plants with English etymology are integrated into the default 'plant classes' 3/4 (with prefixes *m*/*mi*) and 5/6 (with prefixes *i*/*ma*). As a result, the lexicon of the language contains a large number of names in these classes as compared to other classes which constitute plants and crops.

Luhende (2018) argues that very limited English loans for trees have been identified in Sukuma owing to the fact that speakers of the language inherited names of several trees around their hinterland. We counter argue here that many plants of exotic origin began to appear in Nyamwezi and Sukuma land during the missionary services and colonization. As a result, New World crops and plant names have been adopted from English as well (Lusekelo, 2016; Lusekelo and Mgeja, 2020).

3.0 Other Strategies of Naming Plants

Three other linguistic strategies are employed by the Nyamwezi and Sukuma in naming the plants, namely compounding, reduplication, and associative phrasal names. These naming strategies are attested in other Bantu languages (see Legère, 2009; Thornell, 2010). Also, the speakers of Nyamwezi and Sukuma draw names from the structure and physiology of plants, and physical environments in which plants flourish (Mauseth, 1998). This phenomenon is not discussed fully in previous studies (see Legère, 2009; Musehane, 2007a; Thornell, 2010). With evidence from sixty seven (67) names in our datasets, these facts are discussed in subsequent sections. The intent is to unearth mechanisms that the Nyamwezi and Sukuma adopt in bestowing names to plants in their local biodiversity.

3.1 Compounding Strategy

Many plant names in Nyamwezi and Sukuma constitute compounding process (Table 7). Compounding is not unique to Nyamwezi and Sukuma ethnic groups, rather it is attested in other Bantu languages, as discussed by Musehane (2007a) for Sesotho, Legère (2009) for Vidunda, Thornell (2010) for Mpieno, Ilonga (2016) for Ruhaya, and Lusekelo (2019) for Kiswahili, among other scholarships in plant nomenclature.

Table 7: Compounded Plant Names in Nyamwezi and Sukuma[7]

Source$_1$	**Source$_2$**	**Compound**	**Class**
bamba 'make'	*ng'omba* 'drum'	*ibambang'oma* 'drum maker'	3/4 [m/mi]
binza 'cut'	*ndimu* 'animal'	*mbinzandimu* 'animal cutter'	3/4 [m/mi]
finula 'break'	*mpasa* 'axe'	*kafinulampasa* 'axe breaker'	12/6 [ka/ma]
futwa 'make'	*mvula* 'rain'	*mfutwamvula* 'Dichrostachys sp.'	3/4 [m/mi]
gusa 'scratch'	*hela* 'money'	*igusahela* 'small seasonal herb'	5/6 [i/ma]
lya 'eat	*mabimbi* 'effort'	*ijilyamabimbi* 'climber species'	5/6 [i/ma]

[7] To avoid repetition and reduce confusion, datasets from Nyamwezi and Jinakiiya-Sukuma compound nouns have been provided in this table. In the dataset, there are twenty-four (24) compounded plant names.

moga 'bath'	*balungu* 'chiefs'	*likamogabalungu* 'seasonal herb'	5/6 [li/ma]
lalwa 'tear'	*nkuba* 'thunderstorm'	*mkalalwankuba* 'a greenish tree'	3/4 [m/mi]
liwa 'be eaten'	*mfwengi* 'bird'	*mliwamfwengi* 'a small shrub'	3/4 [m/mi]
luzya make sour'	*minzi* 'water'	*mluzyaminzi* 'a small tree'	3/4 [m/mi]
nyoocha 'roast'	*nguku* 'fowl'	*nyoochanguku* 'a small shrub'	9/6 [N/ma]
puga 'expel'	*mbuu* 'mosquito'	*ipugambuu* 'small-smelly shrub'	5/6 [i/ma]
saama 'shift'	*ng'ombe* 'cow'	*isaamang'ombe* 'grass species'	5/6 [i/ma]
sesa 'expel'	*nhanga* 'guinea fowl'	*kasesanhanga* 'Asparagus sp.'	12/4 [ka/mi]
zima 'put off'	*mulilyo* 'fire'	*mzimamulilyo* 'a small shrub'	3/4 [m/mi]

Source: Field Data (2020)

The compounded plant names are assigned to the regular noun classes 3/4 and 5/6. Also, compounded plant names get assigned to noun classes 9/6, 12/4 and 12/4, similar to the Bantu language Ruhaya (Ilonga, 2016). Here the diminutive noun class is introduced for plant names in Nyamwezi and Sukuma. This is not the case in other Bantu languages which do not assign plant names to the default classes 3/4 and 5/6 for plants, plant fruits, and parts of plants; rather most plant names fall into classes 5/4 in Vidunda (Legère, 2009) and 7/8 in Mpiemo (Thornell, 2010).

A little more than half of the compounded plant names derived from the combination of a verb and nominal (V+N). This combination is common in Bantu languages. For instance, Lusekelo (2019b), Mphasha (2009) and Musehane (2007a) found the combination of verbs and nouns to derive compounded nouns in Sesotho, Shona and Swahili. But this phenomenon does not rule out the abundance of the noun + noun (N+N) compounds in Nyamwezi and Sukuma, similar to the Bantu language Sesotho (Musehane, 2007b). Importantly, for the present research is the semantic interpretation of the compounded nouns in Nyamwezi and Sukuma. Three points are central in understanding the relationship of the Nyamwezi and Sukuma with the plants in their hinterlands.

Firstly, both the structure and physiology of the plants, which are well known by the speakers, are used to create names of plants. The speakers assign plant names that elaborate the hardness or softness of the plant structure. We use a few exemplary names here. The name *kafinulampasa* 'axe breaker' is derived from the essence of hardness of the stem of the plant. It is very hard to cut down. This is the reason it bears the name 'axe breaker'. The name *mfutwamvula* 'rain maker/Dichrostachys sp.' is associated with the traditional belief in which the plant is used by local rain makers. The name *jipandwanoni* 'a horny tree which is not landed by birds' has reference to its structure. It bears thorns which prohibit birds from perching on it. Likewise, the names *ipugambuu* 'small-smelly

shrub/*Ocimum sp.*' and *kasesanhanga* 'Asparagus sp.' have reference to their physiology. The speakers of Nyamwezi and Sukuma assigned the first name to plants based on the scent that it produces which could expel flies. Also, they assigned the second name based on physiology that expels guinea fowls.

Secondly, the physical environment that attracts the growth of the plant is also key in assigning names to plants among the Nyamwezi and Sukuma. The good example is the name *mgugumbuga* which is a perennial shrub that grows in the forest.

Thirdly, the structure of the product of the plant is also a trait that is used to name plants amongst the Nyamwezi and Sukuma, e.g. *matunya ga ntumbili* 'small shrub that produced pairs of yellowish edible berries.' The name is obtained from the shape of the berries.

In the analysis for Nyamwezi and Sukuma names, we run short of three conceptual sources of the plant modifiers, namely animals, colour and size, which had been found in Swahili plants. Heine and Legère (1995) identified conceptual sources of attributive modifiers in Swahili to include habitation, animals, origin, colour, size, smell, and morphology. Nonetheless, these sources of conceptual names manifest in other mechanisms of word formation, as discussed in the subsequent sections.

3.2 Reduplication Strategy

Reduplication is a common phenomenon in the creation of new nouns from bases in Sukuma (Matondo, 2006). This is a common phenomenon in Bantu languages, as Schadeberg and Bostoen (2019: 196) noted, "reduplication occurs with all kinds of words. Reduplicated nouns and adjectives are usually lexicalised, and generally only the stem is reduplicated." Bantu languages employ reduplication as a strategy to create plant names (Legère, 2009). Table 8 provides names formed through reduplication in Nyamwezi and Sukuma:

Table 8: Reduplicated Plant Names in Nyamwezi and Sukuma[8]

Source Words	Reduplicated Plant Name	English Name	Botanical Name
fwila 'spit'	*ifwilafwila*	creeper species	Anona senegalensis
lumbá 'scent'	*ilumbalumbá*	African basil	Ficus thonningii
mabeeré 'milk, breasts'	*gabeerebeeré*	shrub species	---
nééngò 'infertility'	*maneengonééngo*	tree species	---
tingí 'coloured'	*itingitingí*	type of Aloe vera	Aloe sp.

Source: Field Data (2020)

[8] Similarly, to get rid of confusion, these reduplicated nouns are for Nyamwezi and Jinakiiya-Sukuma. In the dataset, there are seventeen (17) reduplicated plant names.

The morphological point that emanates from the data concerns the noun class 5/6, e.g. *ilumbalumba* vs. *malumbalumba*) 'African basil', which are predominantly accommodating reduplicated nouns in Nyamwezi and Sukuma. Some plant names fall into noun class 5/4, e.g. *ifwilafwila* vs. *mifwilafwila* 'creeper species'.

Reduplication in Nyamwezi and Sukuma indicate intensity (Matondo, 2006; Schadeberg & Bostoen, 2019), similar to other Bantu languages (Lusekelo 2009a). In our dataset we find the verb *lumba* 'to praise, to thank' that reduplicates to derive the noun *ilumbalumba* (plural: *malumbalumba*) 'African basil/*Ficus thonningii*'. Based on its physiology, the name is a result of intensity of the scent produced by the plant. This is in line with Schadeberg and Bostoen (2019:197) who point out that "reduplication of verbs is a productive process, indicating repetition often coupled with low intensity."

The reduplication process also exhibits diminutive nouns. For instance, the noun *nééngò* 'infertility' is reduplicated to obtain the plant name *maneengonééngo* 'tree species'. The utility of the plant is to cure infertility in women. Therefore, its contents and utility help to assign the name of the plant.

The physiology of the plant is another mechanism that is obtained through reduplication. In our datasets, the name *gabeerebeeré* 'shrub that produces whitish (milk-like) sap' had been derived from the noun *mabeeré* 'milk'. The shrub's sap, which is the plant's physiology, is the etymology of the plant name.

The scent of the plants is also used to name plants through reduplication. A good example is the name *ilumbalumbá* 'African basil/*Ficus thonningii*' which derives the name from the scent.

3.3 Plant Names Appearing in Phrasal Structures

3.3.1 Names in Associative Construction

A couple of plant names in Nyamwezi and Sukuma appear in associative or genitive construction. The associative marker is *-a* in Nyamwezi and Sukuma (see Table 9), similar to the associative marker is *-a* identified across Bantu languages by Welmers (1963) and Van de Velde (2013). Van de Velde (2013) calls the associative marker the relator. Associative constructions are common in plant names in Bantu languages. It had been shown to appear in some plant names in Bemba (Kula, 2012).

Table 9: Associative Constructions in Plant Names in Nyamwezi and Sukuma 9

Singular	Plural	Noun Class	English Name
busiga bo kuuri	*mabusiga a kuri*	5/6 [bu/ma]	'grass species'
idoke ***lya*** *mwipolu*	*madoke* ***ga*** *mwipulu*	5/6 [li/ma]	Annona sp.
ifumbi ***lya*** *ng'ong'oi*	*mafumbi* ***a*** *ng'ong'oi*	5/6 [li/ma]	'a small seasonal herb'

[9] Even for this datasets, the fifteen names come from Nyamwezi and Jinakiiya-Sukuma.

ifumbi ***lya*** *lwelwe*	*gafumbi* ***ga*** *lwelwe*	5/6 [li/ma]	'a small seasonal herb'
igagua ***ja*** *munguru*	*magaguha* ***a*** *munguru*	5/6 [li/ma]	'a small shrub'
ihuuji ***lya*** *bagikulu*	*mahuuji* ***ga*** *bagikulu*	5/6 [li/ma]	'a small creeper'
ikonda ***lya*** *wima*	*makonda* ***a*** *wima*	5/6 [li/ma]	Corchorus sp.
ikumbo ***lya*** *jisukuma*	*makumbo* ***a*** *jisukuma*	5/6 [li/ma]	Ocimum sp.
ilendi ***lya*** *ulale*	*malendi* ***ga*** *ulale*	5/6 [li/ma]	Corchorus sp.
ilendi ***lya*** *wima*	*malendi* ***ga*** *wima*	5/6 [li/ma]	Corchorus sp.
ilumbalumba ***lya*** *shimba*	*malumbalumba* ***ga*** *shimba*	5/6 [li/ma]	Ficus thonningii
isawi ***lya*** *mapando*	*masawi* ***a*** *mapando*	5/6 [li/ma]	Asparagus sp.
kukumba ***lya*** *hansi*	*makukumba* ***zya*** *hansi*	5/6 [li/ma]	'small fruity herb'
lukuba ***lwa*** *hansi*	*tulukuba* ***twa*** *hansi*	11/13 [lu/tu]	'small creeper'
mahoro ***ga*** *ntumbili*	*mahoro* ***ga*** *ntumbili*	5/6 [li/ma]	'small fruity herb'

Source: Field Data (2020)

According to van de Velde (2013:217) "two nominal constituents are in a relation of dependency in the Bantu languages." As most plant names in this category fall into the default plant classes 5/6, the relator canonically manifests as *li-a* (*ly-a*)/*g-a*(*a*) in Nyamwezi and Sukuma. Exception is for the name *lukuba* ***lwa*** *hansi* - *tulukuba* ***twa*** *hansi* 'small creeper(s)' that manifests in classes 11/13. At this point, we record that the noun class 11 (with prefix *lu-*) and the diminutive class (with prefix *tu-*) are used to accommodate plant names.

In the associative constructions, the names of plants appear in the left, while their modifiers appear after the relator. This is common in Bantu languages, as van de Velde (2013:219) states that "the canonical connective construction relates nominal constituents headed by a canonical Bantu noun by means of an overt relator." In the agreement pattern between the head word and modifier, the agreement marker bears the noun class prefix and the relator *-a*. In other words, van de Velde (2013:219) states that "a canonical Bantu noun can be characterized as a lexeme that can function as an argument of a lexical verb and that has a unique gender specification".

The linguistic materials exhibit a close relationship between the Nyamwezi and Sukuma people with plants in their hinterlands, a common phenomenon across ethnic groups in the world (Berlin, 1992). One of the linguistic parameter to arrive at this claim is evidenced by the manner in which the Nyamwezi and Sukuma use different plant-related modifiers of plants in naming plants. In our datasets, we identified five major conceptual sources of modifiers:

(i) The physical location of the plants. This may include the forest areas as exemplified by *idoke lya mwipulu* 'Annona sp.' or mountainous places as illustrated by *igaguha lya munguru* 'a small shrub'.
(ii) Plant names also exhibit gender (male/female) differentiation as illustrated by *ihuuji lya bagikulu* (medicine for women) 'a small creeper'.
(iii) Names of plants reveal cases of ethnic identity, as illustrated by *ikumbo lya jisukuma* 'Ocimum sp.'
(iv) Names of plants reveal the manner of growth of the plant, as exemplified by *ikonda lya wima* (up-right/standing jute) 'Corchorus sp.' as opposed to *ilendi lya ulale* (creeper) 'Corchorus sp.'
(v) Plant names reveal the possessor of the product, e.g. *mahoro ga ntumbili* (testicles of monkeys) 'small herb that produces a pair of edible fruits' and *ilumbalumba lya shimba* (the scent of a lion) 'Ficus thonningii'.

In our datasets, we run short of two other semantic sources of the concepts in modifiers, namely colour and smell, which had been identified in Swahili language. Heine and Legère (1995) identified conceptual sources of attributive modifiers in Swahili to include habitation, animals, origin, colour, size, smell, and morphology. However, smell as the source of concept is identified fully in reduplicated plant names, as discussed above.

Furthermore, our datasets appear to lack three other sources of concepts for modifiers, namely place of use, time of use, and function, as described in other Bantu languages. Welmers (1963:433) found that "the associative morpheme indicates a variety of semantic aspects of association between what precedes what follow." Seven types of associations include: material, contents, place of origin, place of use, time of use, function, and possessor. Some of these sources of concepts of modifiers manifest in plant names whose structures are typical of noun phrases, as discussed in the subsequent section.

3.3.2 Names in Noun Phrases

A number of plant names manifest as noun phrases (Table 10), similar to the structure of noun phrases of Bantu languages (Lusekelo, 2009b; Rugemalira, 2007; van de Velde, 2019). Notice also that names in this category are assigned to noun classes 3/4 and 5/6.

Table 10: Noun Phrases in Plant Names in Nyamwezi and Sukuma10

Singular	**Plural**	**Noun Classes**	**Botanical Names**
igandaga gitaale	*magandaga mataale*	5/6 [li/ma]	Aloe vera sp.
ipugambuu ikeema	*mapugambuu makeema*	5/6 [li/ma]	'Ocimum sp.
ipugambuu igoosha	*mapugambuu magoosha*	5/6 [li/ma]	Ocimum sp.
katanga nunkanunka	*makatanga nunkanunka*	12/6 [ka/ma]	Ocimum sp.
likitungulu sumu	*maakitungulu sumu*	5/6 [li/ma]	'small poisonous herb'
mfuru minzi	*mifuru minzi*	3/4 [m/mi]	Vitex doniana
mfuru ufuma	*mifuru zya ufuma*	3/4 [m/mi]	Vitex doniana
ng'eesha nhaale	*ming'eesha nhaale*	3/4 [m/mi]	'small seasonal shrub'
ng'oga bagore	*mang'oga bagore*	3/6 [m/ma]	'a seasonal herb'
nkoma nkulu	*mikoma nkulu*	3/4 [m/mi]	Grewia sp.
nyoocha nguku	*mamoocha nguku*	5/6 [li/ma]	'small shrub species'

Source: Field Data (2020)

All the names constitute the nominal head words, except three which contain verbal expressions *-oga* 'kill', *-oocha* 'burn' and *-puga* 'expel'. This is common in Bantu languages (Heine & Legère, 1995; Legère, 2009). It follows, therefore, that within this category, nominals become head words which are located in the left-side of the noun phrase (Rugemalira, 2007; Lusekelo, 2009b).

The modifiers constitute mainly adjectival expressions. This is slightly different from van de Velde (2013: 220) who points out that "the two departures discussed first involve an R2 that has formal characteristics of an adjective and a verb." The verbal modifiers are not attested in our datasets.

Morphologically, plant names which appear in noun phrases fall into the canonical plant classes of 3/4 and 5/6 (Table 10). The diminutive class is also attested in this category of plant names.

Based on the relationship between the speakers of the languages and their local biodiversity, the nominal expressions used as attributive modifiers comprise five sources of concepts:

(i) The age and/or size of the plant contributes to the name, as illustrated by igandaga gitaale (old plant) 'Aloe vera sp.' and nkoma nkulu (old plant) 'Grewia sp.'.

(ii) The gender (male/female) differentiation of plants is made possible using the words keema (female) as in ipugambuu ikeema 'Ocimum sp.' and goosha (male) as in ipugambuu igoosha 'Ocimum sp.'.

[10] The eleven names in this dataset come from Nyamwezi and Jinakiiya-Sukuma.

(iii) The property of the plant in relation to the names of animals as illustrated by e.g. nyoocha nguku (chicken burner) 'small shrub species'.
(iv) The scent/smell that the plant produces tend to contribute to the name as illustrated by katanga nunkanunka 'Ocimum sp.' in which the word nunka 'to smell' is used to derive the name.
(v) The physical location of the plant such as around water-bodies, e.g. mfuru minzi 'Vitex doniana'.

These sources of concepts for attributive nominal modifiers are also identified by Heine and Legère (1995:40) in Swahili. But the differences are apparently around colour and country of origin of the plants, which are not found in Nyamwezi and Sukuma.

4.0 Plant Names in the Study of Dialects of Nyamwezi and Sukuma

The physical landmass in which the Nyamwezi and Sukuma inhabit is relatively very large, perhaps the leading in Tanzania (LoT, 2009). As a result, geographical dialect variations becomes inevitable. A review of the literature shows the variations.

For instance, scholars in the large Nyamwezi and Sukuma hinterland gather data from different dialects, which had been reported by Masele (2000) as the main cause of variation and puzzling conclusions arrived about this language. As discussed below, the difference manifests in the literature cited about noun classes in this section.

In this review section, perhaps we should begin with noun classes because the literature shows morphological variations between Nyamwezi and Sukuma. Based on datasets from Gimunakiiya (Kinyantuzu) of Bariadi district, Matondo (2003:6) excludes diminutive classes 12/13. Guided by datasets from Jinakiiya speaker from Maswa district, Richardson (1956:84) and Luhende (2018:31) enlist nouns in class 12/13 (*ka-*/*tu-*), e.g. *kaalugulu-tuulugulu* 'small hill(s)', *kayoka-tuyoka* 'small snake(s)', *kawa-tuwa* 'small dog(s)' etc. In Nyamwezi, the diminutive classes are attested (Maganga and Schadeberg, 1992).

Another dialectological difference is shown by Matondo (2003:6) who excludes the locative class 16 (*ha-*), while Richardson (1956:84) and Luhende (2018:33) provide examples for this class: e.g. *hakaya* 'at home' and *hamikologomá* 'at the *mikologoma* trees.' In addition, the noun classes 7/8 bear different prefixes obtained in different dialects. For example, Matondo (2003:6) provides *gi-*/*si-* as in *giláatu-siláatu* 'shoe(s)', Luhende (2018:31) gives *ji-*/*shi-* exemplified by *jikómbe-shikómbe* 'cup(s)'. These variations unfold in our datasets.

Similarities in the names of plants manifest in the lexicon of Nyamwezi and Sukuma (Table 11). The different consonantal segments, which unfold in datasets, had already been reported in the existing literature (Batibo, 2000; Masele, 2001; Roth, 2013): /h/ vs. /k/ as in *nhaale* vs. *nkaale* 'Ricinus communis', /s/ vs. /ʃ/

as in *msisi* vs. *mshishi* 'Tamarindus indica', /s/ vs. /t/ as in *itunduru* vs. *kasunzulu* 'Dichrostachys cinerea', /g/ vs. /k/ as in *gabeeya* vs. *kayeeba* 'Abelmoschus esculentus' etc. For the details of phonological differences between Nyamwezi and Sukuma, references to Masele (2001) and Roth (2013) are highly recommended.

Table 11: Selected Names of Plants across Jinakiiya-Sukuma and Sikonge-Nyamwezi

Jinakiiya	Nyamwezi	Botanical Name	English Name	Swahili
busiiga	*busiiga*	Sorghum bicolor	sorghum	mtama
gabeeya	*kayeeba*	Abelmoschus esculentus	cassava	kisamvu
ibabayu	*ibabayo*	Carica papaya	papaya	papayu
mandege	*midege*	Zea mayis	maize	mahindi
nhaale	*nkaale*	Ricinus communis	castor bean	nyonyo
nhogo	*mhogo*	Manihot esculenta	cassava	mihogo
ipeela	*mpeela*	Guava sp.	guava	mapera
nhaale	*nkaale*	Ricinus communis	castor bean	nyonyo
inyaaja	*mnyazya*	creeper	---	---
lusunga	*nsunga*	a small herb	---	---
ilumbalumba	*ilumbalumba*	Ficus thonningii	strangler fig	mnukanuka
itunduru	*kasunzulu*	Dichrostachys cinerea	sicklebush	mtunduru
ulula	*ilula*	Acacia sp.	acacia	mgunga
nshishi	*msisi*	Tamarindus indica	tamarine	mkwaju
itindula	*litalantu*	Solanum incanum L.	bitter apple	ndulele
isengese	*isengesha*	'seasonal herb'	---	---

Source: Field Data (2020)

The variation between Sikonge-Nyamwezi and Meatu (Jinakiiya)-Sukuma is apparently attested in our datasets (Table 12). The data in Table 12 does not contain plant species that are not available in Nyamwezi speaking area.

Table 12: Selected Names of Wild Plants in Jinakiiya-Sukuma and Sikonge-Nyamwezi

Jinakiiya	Nyamwezi	Botanical Name	English Name	Swahili
likalinga	*mkaale*	Ricinus sp.	castor bean	nyonyo
ikonda	*ilendi*	Corchorus sp.	Indian jute	mlenda
manumbu	*kafuu*	Ipomea batatas	sweet potatoes	viazi vitamu
itumbate	*nsunko*	Nicotiana tobacum	tobacco	tumbaku
lizeti	*santifulawa*	Helianthus sp.	sunflower	alizeti

igunga	---[11]	Acacia tortilis	acacia	mgunga
ihushi or *isawi*	*kasesanhanga*	Asparagus spp.	---	aspagara
mangalida	---	Eminia entennulifa	---	---
midushi	---	Cordia sinensis	cordia	---
isiindi	---	Cucurbitales sp.	cucumber	matango
gongogongo	---	Commiphora emini	myrrh	---
inaalo	---	Acacia sp.	acacia	mgunga
mayoba	---	Cucurbitales sp.	pumpkins	maboga
nshili	---	Vicia faba	cowpea	kunde
bamila	---	Abelmoschus sp.	okra	bamia

Source: Field Data (2020)

Chambers and Trudgill (2004) outline the differences in sound patterns and vocabulary as a result of geographical dispersal of speakers. Based on our investigation, we accept the suggestion by Roth (2013). The choice of a single point as a research site for dialectology would require to be reconsidered. Ndale dialect would appear to be more of Sukuma, rather than Nyamwezi; so do the large part of Nzega District.

The lexicostatistical techniques which we employed bears a lot of impact on our analyses. Masele (2001) employed Swadesh wordlists, while Roth (2013) did not stick to Swadesh but had a list of words. Eventually, the outcomes between Masele (2001) and Roth (2013) differ significantly. Based on badly selected cognates, it becomes hard to conceive the postulation that Nyamwezi and Sukuma are two languages. This is not in line with Chambers and Trudgill (2004) who proposed a questionnaire as the primary tool of data collection across dialects. We show utility of interviews in the inventory of plant names as a method to dialectology. We show how the same crop may receive different names across dialects of the same language.

Moreover, the topographical difference between Meatu and Sikonge allows variations in the wild biodiversity. Eventually, plants which grow in both districts appear to have similar names. Variations arise from plants which grow in one district, which bear separate names. And we will treat it as regional (geographical) dialectology rather than language variation.

[11] Due to geographical location, some plant species do not flourish in some environments. It follows that plant names not attested in Nyamwezi speaking area are not listed here.

5.0 Conclusion

Based on Table 1, there is no plant names assigned to noun classes 7/8; rather noun classes for diminutives comprise plant names. We showed that in the morphology of Nyamwezi and Sukuma, plant names canonically are accommodated in noun classes 3/4 and 5/6, which are the default noun classes across Bantu languages (Legère, 2020). The current trend shows that the Nyamwezi and Sukuma speakers assign many plant names into class 5/6, which is likely to be replacing the traditional tree classes 3/4. However, most of the plant names obtained through compounding, reduplication and compounding fall into noun classes 5/6. This appears to be innovation, as the Nyamwezi and Sukuma people have been claimed to be innovative and accommodative of the new linguistic materials from neighbouring groups (Batibo, 2000). As new findings for Nyamwezi and Sukuma, apart from the canonical classes, Nyamwezi and Sukuma contain plant names in the diminutive noun classes 12 (e.g. *kafinulampasa* 'axe breaker') and 13 (e.g *tulukuba twa hansi* 'small creeper(s)'). Also, the nasal class 9 contains some plant names (e.g. *nyoochanguku* 'a small shrub'). Similarly, the noun class 11 also comprises names of plants (e.g. *lukuba lwa hansi* 'small creeper').

The analysis of the morphological structures of the plant names revealed that the Nyamwezi and Sukuma people had have a close relationship with the plants which grow in their hinterlands, which is a common phenomenon for small ethnic groups in the world (Berlin, 1992). In fact, we conclude that structure, environment and physiology contribute to the naming of plants in this ethnic group. The physiology of the plants is described through reduplication (e.g. *ilumbalumba* 'African basil/Ficus thonningii', *gabeerebeeré* 'shrub that produces whitish sap' etc.) and compounding (e.g. *kafinulampasa* 'axe breaker' and *mfutwamvula* 'rain maker/Dichrostachys sp.' etc.). Both are secondary mechanisms to derive plant names in this ethnic group. The first strategy is the assignment of names to the canonical noun classes for plants and fruits.

Bantu languages reveal specific sources of concepts for the modifiers of plant names (Welmers, 1963; Bernd and Heine, 1995). We conclude that for the plant names that manifest as compounded nouns, associative constructions, and noun phrases, the Nyamwezi and Sukuma have developed mechanisms to relate the head words and modifiers. The main sources of the concepts include: (i) the age and/or size of the plant, (ii) the physical location of the plant habitations (water bodies, mountains, forest), (iii) the manner of growth of the plant (creeper, climber or standing), (iv) the content, strength and structure of the plant tissues (softness or hardness), the gender (male/female) differentiations of the plants, and (vi) physical structure of the plant (thorny, fruity, smooth). Therefore, the Nyamwezi and Sukuma utilize the land, plant and animal resources in naming plants. These sources of concepts for attributive nominal modifiers were not identified under

word formation strategies of compounding, reduplication and associative construction.

With regard to dialectology, both Sikonge Nyamwezi and Meatu Sukuma reveal similarities in plant names. The variation is primarily a result of geographical spaces in that some plants that grow in Sikonge are not available in Meatu and vice versa. Also, we demonstrated that Sikonge Nyamwezi and Jinakiiya Sukuma exhibit diminutive noun classes for plant names. With this data, our findings collaborate with Maganga and Schadeberg (1992) and Luhende (2018) in that diminutive noun classes manifest in the lexicon of the language.

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