

# The significance of word formation techniques utilised in Northern Sotho plant names

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Word formation is a system of rules that can produce new words based on existing lexical items. Word formation strategies are employed by languages to develop their terminology or vocabulary. Although earlier studies have been conducted on Northern Sotho plants, such as reduplication of plant names and traditional medicine uses and methods used to process medicinal plants, the strategies used in the formation of plant names have not been the subject of in-depth study. The present study aims to analyse word formation strategies used in formulating plant names in Northern Sotho. Word formation strategies, such as affixation, compounding, reduplication and semantic extension, are investigated. The research framework is based on the cultural keystone species ethnobotanic theory underpinned by the nomenclature principle used to classify plant names. Plant names data were collected from existing sources, including scholarly books, dissertations, articles and theses, and the data were analysed using a qualitative method. In this study, the researcher found different types of word formation strategies used in forming plant names in Northern Sotho. This study recommends that further study be conducted on word formation techniques used in the naming of plants in Northern Sotho, especially on the relationship between their morphological and semantic structures.

**Contribution:** The study fills the knowledge gap in the significance of word formation techniques applied to plant names in Northern Sotho. In Northern Sotho plant names in particular, word formation strategies have received relatively little attention. Therefore, to improve Northern Sotho terminology, the study identifies various word formation techniques that need to be examined. The study will give linguists insight into the various word construction techniques that are applied to plant names. Documenting the formation of the plant names contributes to the preservation of linguistic and cultural knowledge for future generations.

**Keywords:** affixation; compounding; reduplication; derivational; strategy

## Introduction

A set of techniques known as word formation allows for the creation of new words from pre-existing lexical objects. To distinguish things, like gods, people, days, continents, countries, rivers, mountains and plants, these entities are given names (Mziray & Lusekelo 2023:2). Languages utilise word creation procedures to build their vocabulary or terminology. Any human language's vocabulary is continually being flooded with words, including plant names, created through a variety of word formation techniques so that the language can convey or name things, ideas, acts and concepts (Kari 2016). Word formation is a very extensive and frequent activity that relies on a few different processes of joining morphemes because of the constant expansion of everyday vocabulary. Languages differ in terms of the strategies they employ in forming plant names; for example, in the Digo language according to Mziray and Lusekelo (2023:3), plant names are constructed through strategies of borrowing, phrasal expressions (object phrases, non-determiner phrases and genitive phrases) and reduplication.

The researcher was inspired to investigate the strategies used in Northern Sotho to construct plant names due to different strategies used in producing plant names in different languages, such as English, Chasu and Digo. This study identified and discussed different word formation strategies used by Northern Sotho communities to name plants. Even though earlier research on Northern Sotho plants focused on the reduplication of names, traditional medicine applications and medicinal plant processing techniques, the strategies used in the formation of names were not thoroughly investigated. The present study aims to analyse word formation strategies used to form plant names in Northern Sotho, with the objective of preserving the knowledge of the etymology of these plant names. Word formation strategies, such as affixation, compounding,

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reduplication and semantic extension (Mziray & Lusekelo 2023), are analysed in this study. Affixation is a morphological process in which a base word is modified by adding affixes to create a new term (Toluspayeva et al. 2024). The nomenclature principle, which is used to categorise plant names, supports the cultural keystone species theory (Gaoue et al. 2017) that forms the basis of the research framework. Data of plant names were collected from existing sources, including articles, scholarly books, dissertations and theses with most of the names sourced from Louwrens' (2001) list of Northern Sotho plant names. The data collected were analysed using the qualitative method.

## Literature review

Oraib et al. (2014) used an ethnobotanic approach to investigate the features and distribution of plants used by local people of Northern Jordan. In their study it was found that plants are still important for conservation and community-based activities, such as the production of food, wood and medicine. The naming and classification of plants may be influenced by the botanical knowledge of the Northern Jordanian community, whose language reflects their cultural customs and environmental characteristics. The study of Oraib et al. (2014) makes a great contribution to this study as it indicates the relationship between language and culture in the naming of plants. However, while their study concentrates on the uses of the local plants, this study concentrates on the naming of plants in terms of word formation strategies, which will assist the Northern Sotho communities to gain a cultural understanding of the plant names.

A thorough synchronic investigation of compound plant names in English terminology was conducted by Šokčevićová (2015). Her theoretical section provides an overview of various techniques applied to categorisation based on the body of research that is currently accessible in the analysis of compound plant names. In the application section, the frequency of the occurrence of these categories is compared, and the dominant patterns are examined. The last section of her study offers a thorough examination of noun-noun compounds, concentrating on the semantic relationships between the two nouns that are not stated in the compounds themselves. According to Šokčevićová (2015:10), words are categorised in two primary groups: 'complex' and 'simple' words. From a morphological perspective, basic words like 'rose' and 'tulip' cannot be further divided, whereas complex words, like 'blueberry', are clearly formed by combining smaller, meaningful pieces known as morphemes. In this study, it is necessary to clarify that Šokčevićová's reference to complex and simple words in English has a different application in African languages as most of their words are morphologically complex; for example a word such as *motšhidi* [sourplum] can be divided further into a prefix (*mo-*) and a stem (*-tšhidi*), which is the lexical constituent of the word. In order to distinguish words with one lexical constituent from other morphologically complex words, which contain two or more lexical constituents, the term 'compound' has been

used in linguistic descriptions (Kosch 2006:14); for example, *modulakgogo* [lowveld cluster leaf] would be described as a compound noun as it contains two lexical constituents, namely *-dul-* and *kgogo*.

Kari (2016) lists and analyses several word formation strategies that Degema uses to create words. According to Kari, Degema uses affixation, compounding, reduplication, borrowing, clipping and semantic extension as word production techniques. Reduplication and clipping, which are more frequently used in proper nouns, are regarded to be less common in language usage than affixation, compounding, borrowing and semantic expansion. Any human language that is meant to serve the communication needs of its users is constantly being inundated with new words, especially content words that are formed through a variety of word formation strategies and can express or name new objects, ideas or concepts, actions and states of being. Although Degema is an Edoid language spoken on Degema Island and in the Niger Delta (Kari 2016), while Northern Sotho is a language spoken in South Africa, both languages share an African linguistic background that frequently uses comparable plant naming techniques. Among these techniques are compounding, affixation and reduplication. By taking into account how these techniques might also be used in Northern Sotho, which reflects common human activities in language usage and cultural engagement with the environment, it is possible to better understand the function that word construction plays in plant names in Degema. Informed by Kari's research, this study will focus on strategies such as affixation, compounding, reduplication and semantic extension to form plant names in Northern Sotho.

Constant and Tshisikhawe (2018) used a case study of the Vhavenda to investigate how a rural South African community uses and practises their knowledge and beliefs of plant species for biodiversity conservation on common lands. In their study the Vhavenda people's use and knowledge of native plants were the main subject of ethnobotanical research. The Vhavenda people's cultural and linguistic systems are also intricately linked to the ethnobotanical knowledge and plant naming customs of the Northern Sotho people. The important word formation strategies employed in Northern Sotho plant names illustrate the diverse roles that plants have in local culture, including ecological, spiritual and medicinal purposes. These knowledge systems work together to support a sustainable strategy for biodiversity conservation that is based on a profound reverence for nature and an advanced linguistic framework that expresses this appreciation.

Louwrens (2001), who studied plant names, emphasises reduplication of Northern Sotho and Setswana plant names. In his study, Louwrens (2001) indicates that shrubs as a life form have a greater tendency of reduplicating than trees as a life form, an observation that is mirrored in the structure of names given to shrubs and trees respectively. This study will include reduplication as a word formation strategy but will

differ from Louwrens' study as only Northern Sotho plant names will be discussed and analysed. Most of the plant names in this study were sourced from Louwrens (2001).

## Theoretical framework

Gaoue et al. (2017) assert that ethnobotany focuses on the study of indigenous plants and the practical understanding of those plants using the traditional knowledge of the communities and their culture. The ethnobotanic idea of the cultural keystone species theory, which is supported by the nomenclature principle used to categorise plant names, serves as the framework for this research. In their study of ethnobotany, Gaoue et al. (2017) explain that, according to the cultural keystone species theory, some plant or animal species are essential to sociocultural systems, and their extinction would have a detrimental effect on cultural stability and identity. Coe II (2018:iv) supports Gaoue et al. (2017) by indicating that the disappearance of these species is anticipated to have a major impact on cultural integrity and balance since it suggests that cultural keystones are projected to influence culture and language. In this article, the cultural keystone species theory is employed as the use of word formation strategies of plant names in Northern Sotho and is based on the cultural significance of specific plants and how their names reflect these cultural values. As a result, Northern Sotho's word formation techniques support the preservation of traditional knowledge, social structure and cultural identity within the community by reflecting the cultural significance of keystone species linguistically.

## Nomenclature principle

The systematic naming and classifying of plants is known as nomenclature. Vasudeva Rao (2004:602) explains nomenclature as a process of determining and classifying the correct plant names. Vasudeva Rao (2004) further asserts that taxonomy, the science of locating, identifying, categorising and naming living things as well as the study of the relationships between taxa and the guiding principles of such a classification, is related to botanical nomenclature. Therefore, in general, the study of taxonomy is more extensive and largely concerned with the classification and grouping of plants.

However, the name given to a specific plant species (referred to as the botanical name) also includes the genus to which it belongs. In this article, the cultural keystone species theory of ethnobotany is employed with the nomenclature principle in classifying the names of plants.

## Methodology

Ethnobotanic methods of data collection are purely qualitative in nature. In qualitative research, various forms of data are collected, interpreted and compared from different sources in search of common themes to support the validity of the study (Leedy & Ormrod 2001:32). In this

article, a qualitative design was employed because subjective and inductive reasoning were used to explain and describe meanings attached to the names of plants. The study is more explanatory and descriptive. Thematic data analysis was used to unpack the themes emerging from different types of word formation strategies. According to Braun and Clarke (2006:78), the goal of thematic data analysis is to identify and categorise themes and research patterns that address research phenomena. Ethnobotanic data gathered from books, journals, dictionaries, terminology lists, conference papers and articles related to the topic were analysed. To guarantee the quality and reliability of the data used in this article, the researcher herself gathered the data from pre-existing records. By using a dependable data source, the source can be trusted to produce consistent results under comparable circumstances, and the data are guaranteed to be correct and stable. Reliability is essential to guarantee that inferences made from data are reliable and reproducible. By examining pertinent sources, the validity of this material was confirmed. To verify validity even further, sources discussing the word formation techniques of Northern Sotho plant names were examined to identify recurring themes. Since the data in this article stem from sources published in different years, it is regarded as legitimate and trustworthy, which confirms reliability.

## Data presentation and analysis

Matthews (1974) proposed a theory of word structure that views words as composed of morphemes (the smallest units of meaning). According to his model, words can be analysed in terms of:

- Roots: The base form of the word, which carries its core meaning.
- Affixes: Prefixes, suffixes and infixes that modify the root in meaning, function or grammatical role.

Matthews (1974) identifies several processes for forming new words, such as compounding, derivation and inflection. The different ways that plant names are created in Northern Sotho are explained by Matthews' theory of word structure. The methods employed to create plant names in Northern Sotho are in line with the theory's emphasis on morphemes, roots, affixes and word building techniques. Matthews' morphological insights offer a strong foundation for comprehending how Northern Sotho words, including plant names, can be expressed by compounding, affixation, reduplication or semantic relation. During the collection of ethnobotanical data, attention was given to indigenous plant forms such as trees, shrubs and grass.

## Word formation strategies

Northern Sotho has a rich system of word formation that is very evident in the creation of plant names. Creating plant names usually involves the following strategies: (1) affixation; (2) compounding; and (3) reduplication.

## Affixation

Affixation, the process of joining an affix to a base to create words, is one of the main ways in which Northern Sotho words are formed. Kari (2016) argues that affixation is a very productive process by which nouns and verbs are formed in a language. Louwrens (1994:6) argues that *lebopi* 'affix' is a morpheme that affects the meaning of a word by adding it to the word's structure. Affixes are categorised into four types based on where they are located in the word's structure, namely prefixes, suffixes, circumfixes and suprafixes. The following plant names were formed through affixation of prefixes and suffixes.

**Plant names affixed with the prefix *Mo-*:** In simple morphological structure, the strategy used to form plant names involves attaching a noun class prefix to a noun stem (Mziray & Lusekelo 2023:14). In Northern Sotho, most of the plant names are affixed with the prefix *Mo-*, which is a prefix of noun class 3. In this class *Mo-* is a class prefix of non-human species, especially plants. Examples of plant names with the prefix *Mo-* are:

- (a) *Mokgaripa* 'Knob thorn'
- (b) *Motšhidi* 'Sourplum'
- (c) *Mopipi* 'Stink shepherd's tree'
- (d) *Molope* 'Weeping boer bean'
- (e) *Mekgaripa*
- (f) *Metšhidi*
- (g) *Mepipi*
- (h) *Melope*

The prefix *Mo-* as in (a) to (d), marks singular, while the prefix *Me-* as in (e) to (h), marks plural.

**Plant names affixed with the prefix *Se-*:** Some plant names are affixed with the prefix *Se-*, which is a prefix of noun class 7. The following are examples of plant names with the prefix *Se-*:

- (i) *Serokolo* 'African ginger'
- (j) *Seokgolwe* 'Transvaal sesame bush'
- (k) *Sekgokgopa* 'Aloe'
- (l) *Dirokolo*
- (m) *Diokgolwe*
- (n) *Dikgokgopa*

The prefix *Se-* as in (i) to (k) marks singular, while *Di-* as in (l) to (n) marks the plural.

**Plant names affixed with prefix *Le-*:** Some plant names are affixed with the prefix *Le-*, which is a prefix of noun class 5. The following are examples of plant names with prefix *Le-*:

- (o) *Lehlakanoka* 'Common reed'
- (p) *Letšikiri* 'Fine leaved finger grass'
- (q) *Letšeketšeke* 'Kikuyu grass'
- (r) *Mahlakanoka*
- (s) *Matšikiri*
- (t) *Matšeketšeke*

Most of the plant names in (o) to (q) designate grasses. They take the prefix *Le-*, which is a prefix taken from *lebjang* [grass]. The prefix *Le-* marks the singular form, while *Ma-*, as in (r) to (t), marks the plural form. Most of the mentioned grasses are used as building material and/or tools for crafts. The mentioned grasses are used as follows:

- *Lehlakanoka* - the dried stems of this type of grass is used for thatching, basketry, decoration, arrows and musical instruments.
- *Letšikiri* - this grass is tall and used for thatching.
- *Letšeketšeke* - this type of grass is used to make traditional mats [*magogwa*].

**Plant names affixed with different prefixes:** Certain plant names lack the prefix *Mo-*, *Se-*, or *Le-*, even though these are appended to the majority of plant names in the singular. Some examples of these plant names are:

- (u) *Theepe* 'Pigweed'
- (v) *Patše* 'Cannabis'
- (w) *Mmilo* 'Wild medlar'
- (x) *Ditheepe*
- (y) *Dipatše*
- (z) *Mebilo*

Plant names in (u) and (v) do not have a singular prefix, (w) has the prefix *M-*, while the plural prefixes in (x) to (z) are *Di-* and *Me-* respectively.

Some plant names are affixed with the suffix *-na* or *-ne*. According to Louwrens (2001:156), those plant names are:

- (aa) *Mošwana* 'Umbrella thorn'
- (bb) *Mokgwakgwana* 'Black monkey orange'
- (cc) *Sebetlwane* 'Type of grass'
- (dd) *Mošunkwane* 'Lippia javanica'

Plant names are suffixed with *-na* or *-ne* as in (aa) to (dd). The suffix *-na* and its alternative *-ne* indicate intense diminutives in Northern Sotho (Lombard, Van Wyk & Mokgokong 1988:75).

Most of the plant names in this category are morphologically complex but semantically simple as they cannot be divided further into meaningful components and are believed to be the oldest names in the plant nomenclature (Mziray & Lusekelo 2023:14).

Most of the plants discussed under Affixation are utilised by Northern Sotho communities for wood, food, medicine, building materials and tools for crafts.

## Compounding

Compounding is the technique by which two or more pre-existing words are joined to form new words in Northern Sotho (Mphasha 2006). In agreement with Mphasha, Šokčevićová (2015:11) indicates that compounding is a process in which two or more morphemes are combined with a notion to their grammatical and semantic relationships to

form a single word. Compounding is one of the methods used to create the intricate morphological structure of plant names. Most of the plant names are made up of simple compounds that are primarily derived from metonymical, metaphorical and other related relationships (Šokčevićová 2015). Compounding takes place when two or more meaningful (lexical) units are put together, with or without one or more functional (grammatical) morphemes. Since compound plant names are so broad, it makes sense to separate them into subcategories according to different criteria. Compound biological names of plants can be categorised into verb-centred, noun-centred and phrasal compounds. The different categories are discussed below:

**Verb-centred compound plant names:** This kind of compound is found as the compound's second element in other categories. According to Northern Sotho, a verb-centred compound noun is one that is made up of two or multiple lexical categories with a verb as the main element. A noun class prefix may be positioned at the beginning of the morphological structure of these compound nouns (Mphasha 2006:1).

Examples of verb-centred compound biological plant names from Mphasha (2006:1) include the following:

- (a) *Modikaseolo* 'Knot berry'

In *modika + seolo* the first part of the biological name comprises the verb stem *-dika* 'attack', to which the noun class prefix *Mo-* is affixed to indicate a plant. The second part *seolo* 'anthill' is a noun.

- (b) *Modulakgogo* 'Lowveld cluster leaf'

In *modula + kgogo* (Louwrens 2001:157), the first part of the biological name comprises the verb stem *-dula* 'sit' to which is affixed the noun class prefix *Mo-* is affixed to indicate a plant. The second part is a noun *kgogo* 'chicken'.

- (c) *Maphumadifala* 'Eucomis autumnalis' or 'Blood lily'

In *maphuma + difala* (Louwrens 2001:157), the first part of the biological name comprises the verb stem *-phuma* 'break', to which the noun prefix *Ma-* is affixed. The second part, *difala* 'granaries', is a noun.

- (d) *Makgonatšohle* 'Enicostema axillare'

In *makgona + tšohle* (Louwrens 2001:157–159), the first part of the biological name comprises the verb stem *-kgona* 'be able', to which the noun prefix *Ma-* is affixed. The second part is a quantitative pronoun *tšohle* 'all'.

Some other examples of verb-centered compounds are (Louwrens 2001:157–159):

- (e) *Mogatakgomo* 'Wild stink wood'  
 (f) *Mofatanare* 'Scented thorn'  
 (g) *Morothamadi* 'Wild teak'

Plant names in (a), (b), (e), (f) and (g) are verb-centered compounds in noun class 3 with the prefix *Mo-* where the

first part of the name comprises the verb and the second part a noun. In (c) and (d) the first part of the name comprises the verb, to which the prefix *Ma-* of noun class 6 is affixed. In (c) the second part is a noun, while in (d) the second part is a quantitative pronoun.

**Noun-centred compound plant names:** In this category, the noun appears as the head of the compound with a verb or other word category as the second element of the compound (Šokčevićová 2015). The structure and semantic relation of compound nouns that consist of two categories will be discussed and analysed.

- (a) *Lehlakanoka* 'River reed'

In the biological plant name *lehlakanoka*, the two nouns are *lehlaka* 'reed' and *noka* 'river'. The possessive *la* 'of' can be used to show the relationship between *lehlaka* and *noka*; *lehlaka* 'reed' is the head noun, while *noka* 'river' modifies it, that is, a reed of the river (Mphasha 2006).

- (b) *Moremootlwa* 'Thorny tree'

In the biological plant name *moremootlwa*, the two nouns are *more* 'tree' and *mootlwa* 'thorn'. Correspondence between *more* and *mootlwa* can be indicated by the possessive *wa* 'with', *more* 'tree' as the head noun of which *mootlwa* 'thorn' modifies it, that is, a tree which has a thorn (a tree with a thorn) (Mphasha 2006).

- (c) *Molalakgaka* 'Horned thorn'

In the plant name *molalakgaka*, the two nouns are *molala* 'neck' and *kgaka* 'crowned guinea fowl'. The noun *molala* has the prefix *mo-* and the stem *-lala*, while the second noun *kgaka* falls under noun class 9, which is a class of non-humans. *Molala* and *kgaka* are related by using the possessive *wa* 'of'; the head noun *molala* 'neck' is modified by *kgaka* 'crowned guinea fowl', that is, a neck of a crowned guinea fowl (Louwrens 2001:158).

- (d) *Mokgalakgatša* 'Rhoicissus erythroides'

The compound plant name *mokgalakgatša* consists of the noun *mokgala* 'gap or opening' as the first part. The noun *mokgala* has the prefix *mo-* and the stem *-kgala*, while the second part of the compound is a verb stem *-kgatša* 'throw' (Mphasha 2006).

- (e) *Moduhlare* 'Common hook thorn'

In the plant name *moduhlare*, the two nouns are *modu* 'root' and *-hlare* 'tree'. The second noun is actually *mohlare* but *mo-* is omitted due to the compounding. The proportion between *modu* and *-hlare* can be conveyed by the possessive *wa* 'of'; the principal noun is *modu* 'root', which is justified by *-hlare* 'tree', that is, a root of a tree.

Some further examples of noun-centered compound plant names are:

- (f) *Mohweleretšhipi* 'Red bush-willow'  
 (g) *Mmilorotwane* 'Type of wild medlar'

In this section, plant names (a), (b), (c), (d), (e), (f) and (g) are noun-centred compounds as the first part of the names comprised the noun. The relation between the first part and the second part of the plant name can be expressed by the possessive *wa* 'of' or *la* 'with'.

**Phrasal compound plant names:** Phrasal compounds, which were first created as a lexicalisation of a grammatical structure, are an additional category of compound nouns (Šokčevićová 2015). Phrasal compound plant names in Northern Sotho may be nominal or adjectival. Nominal phrasal compound plant names contain a noun that qualifies the other noun in the name. Adjectival phrasal compound plant names contain an adjective that qualifies or describes a noun in the name. Examples of phrasal compounds are:

- (a) *Mokakawomošweu* 'Three-hook thorn'

The biological plant name comprises a noun *mokaka* [udder] and adjectival word group *wo mošweu* [the white one]. The adjectival word group consists of the adjectival particle *wo* and an adjective of colour, *mošweu* [white]. The adjective *mošweu* has an adjectival stem *-šweu*, which is preceded by the prefix *mo-*, which corresponds with that of the noun *mokaka*, which is qualified. The literal meaning of *mokakawomošweu* is 'the white udder'.

- (b) *Lerumolamadi* 'Cancer bush'

The biological plant name *lerumolamadi* comprises a noun, *lerumo* [spear], and another noun, *madi* [blood]. The relation between *lerumo* and *madi* is expressed by the concord *la* [of], which makes the noun *madi* to qualify *lerumo*. The literal meaning of *lerumolamadi* is 'spear of the blood'.

- (c) *Nakalatholo* 'Bulbine tortifolia' (kind of lily)

The biological plant name *lenakalatholo* comprises a noun *naka* [horn] and another noun *tholo* [kudu]. Originally, the first noun of the plant name was *lenaka* but later the prefix *le-* was omitted and the noun became *naka*. The relation between *lenaka* and *tholo* is expressed by the concord *la* [of], which makes the noun *tholo* to qualify *naka*. The literal meaning of *nakalatholo* is 'the horn of a kudu'.

- (d) *Nakalatholo* 'Himantopus' or 'black-winged stilt'

The biological plant name *mahloammutla* comprises a noun *mahlo* [eyes] and another noun *mmutla* [hare]. The relation between *mahlo* and *mmutla* is expressed by the concord *a* [of], which makes the noun *mmutla* to qualify *mahlo*. The literal meaning of *mahloammutla* is 'eyes of the hare'.

- (e) *Malalaakwaetše* 'Devil's thorn'

The phrasal plant name *malalaakwaetše* comprises a verb stem *-lala* [sleep] and the perfect verb stem *-kwaetše* [lie on the back] (Mphasha 2006). The verb stem *-lala* is prefixed by *Ma-* to become *malala*. The relation between *malala* and *-kwaetše* is expressed by the concord *a* [of], which makes *-kwaetše* to qualify *malala*. The literal meaning of *malalaakwaetše* is 'the one who sleeps by lying on the back'.

Some more phrasal compound plant names include the following:

- |     |                        |                   |
|-----|------------------------|-------------------|
| (f) | <i>Mphalatšamaru</i>   | 'Wild asparagus'  |
| (g) | <i>Mošwangwamatuba</i> | 'Cannabis'        |
| (h) | <i>Marobadibogale</i>  | 'Kind of an aloe' |

In this section the phrasal compound plant name in (a) consists of the noun *mokaka* and the adjectival word group *wo mošweu*. Plant names in (b), (c) and (d) comprise a noun and a qualifying noun. The relation between the first noun and the second noun is expressed by the concord *la* (b) and (c), and *a* [of] (d), which qualify the first noun, such as *lerumolamadi* (Louwrens 2001) 'spear of the blood'. The plant name in (e) comprises a verb stem and a perfect verb stem. The relation between the first verb stem *-lala*, which is prefixed by *ma-*, and the perfect verb stem *-kwaetše* is expressed by the concord *a* [of], which makes *-kwaetše* to qualify *malala*.

### Reduplication

According to Louwrens (2001:146), reduplication is regarded as *multistemmedness*, which is the act of creating new words by repeating a linguistic part of the base, such as a root or stem. In support of Louwrens, Nadarajan (2006:39) notes that repetition of a word's stem, root, or part of it results in a morphological phenomenon known as reduplication. In many languages, reduplication is employed to create semantic forms in lexical derivations and to communicate grammatical functions in inflections. The number of word categories that can be reduplicated is not uniform across languages (Kari 2016). According to Northern Sotho names of shrubs as botanical life form, *mošunkwane* [shrub] are linguistically marked in the sense that they show the tendency to reduplicate unlike the life forms *mohlare* [tree] and *lebjang* [grass] (Louwrens 2001:151). Louwrens (2001) continues his argument by stating that:

The correlation that has been noted between shrub names and reduplication on one hand, and tree names and the virtual absence of the reduplication on the other, can at this point be rephrased in terms of differences in degrees of linguistic markedness. Tree names, being labels for the most salient botanical life form, are least marked, i.e. they show less complexity at the phonological level, for example, *mohlopi* 'Boscia albitrunca' and *mokgapa* 'acacia galpinii'. Names of members of the less salient life form 'shrub', on the contrary, are linguistically marked in the sense that they show a strong tendency to reduplicate. They are, in other words, linguistically more complex, for example, *seboaboana* 'sesamothamnus' and *mokaikai* 'Antizoma agustifolia'. (p. 151)

There are different types of reduplication which occur in the plant names of Northern Sotho. Full and partial reduplications are the only two types of reduplications that will be covered in the sections that follow.

**Full reduplication:** Full reduplication is the most productive type of reduplication in the plant names of Northern Sotho. In this type of reduplication, the stem or root of a word is

repeated in its entirety, excluding the prefix, causing the word to rhyme (Alsamadani & Taibah 2019:118). The following are examples of full reduplication in Northern Sotho plant names:

- |     |                         |                                  |
|-----|-------------------------|----------------------------------|
| (a) | <i>Mothwathwaathwaa</i> | ' <i>Maystenus tenuispina</i> '  |
| (b) | <i>Moselesele</i>       | ' <i>Dicrostachys cinerica</i> ' |
| (c) | <i>Mokaikai</i>         | ' <i>Antizoma agustifolia</i> '  |
| (d) | <i>Monepenepe</i>       | 'Butterfly bush or heart'        |
| (e) | <i>Mogorogoro</i>       | 'Velvet corkwood'                |

Stems of plant names in (a), (b), (c), (d) and (e) above are repeated entirely with the exclusion of the prefix *Mo-*. The stems have a rhyming sound, which is caused by ideophonic sounds such as *thwathwaathwaa*, *selesele*, *kaikai*, *nepenepe* and *gorogoro* respectively.

**Partial reduplication:** Partial reduplication involves reduplication of only a part of a word. In partial reduplication, the repeated stem is slightly modified (Mziray & Lusekelo 2023). The following are examples of partial reduplication:

- (f) *Mokgegetšane* 'Climbing raisin'
- (g) *Mokankane* 'Cordia grandicalyx'
- (h) *Mokgwakgwana* 'Black monkey orange'
- (i) *Seboaboana* 'Sesamothamnus'
- (j) *Mokgwakgwatha* 'Common tree euphorbia'
- (k) *Mokakata* 'Common star-chestnut'

The repeated stems of plant names in (f), (g), (h) and (i) usually end with the suffix *-na* or *-ne*, while in the plant names (j) and (k), the repeated stems have different suffix endings, such as *-tha* and *-ta* respectively.

Most of the biological plant names discussed under Reduplication fall under 'shrub' as names of this life form and show stronger propensity for reduplication than tree names.

## Semantic extension

Semantic extension is a technique for extending the literal meaning of a word, phrase or expression to something other than what it originally means (Mziray & Lusekelo, 2023:2). Kari (2016) contends that semantic extension is the process by which one or more semantic senses from the same or a different conceptual domain are added to the primary semantic sense or emphasis of a linguistic item. The following plant names in Northern Sotho contain examples of semantic extension:

- |     |                  |            |
|-----|------------------|------------|
| (a) | <i>Mmidibidi</i> | 'Cape ash' |
|-----|------------------|------------|

The botanical plant name *mmidibidi* 'Cape ash' is derived from the Northern Sotho word *lebedi*, which according to Ziervogel and Mokgokong (1975) means 'veranda' or 'stoep with a roof'. This shows that the enormous tree with its spreading branches, which communities highly value for the shade it provides, is semantically related to a veranda.

- |     |                   |               |
|-----|-------------------|---------------|
| (b) | <i>Monepenepe</i> | 'Sjambok pod' |
|-----|-------------------|---------------|

The botanical name *monepenepe* is derived from *-nepenepe*, which according to Ziervogel and Mokgokong (1975) means 'honeycomb'. The tree's sweet-smelling, yellow flowers, which are produced in enormous loose sprays before the leaves, are what give rise to the semantic relationship between this tree and honeycomb, hence *monepenepe*.

- |     |                          |             |
|-----|--------------------------|-------------|
| (c) | <i>Lehlokwanalatsela</i> | 'Basuticus' |
|-----|--------------------------|-------------|

The biological grass name *lehlokwanalatsela* comprises a noun *lehlokwana* 'diminutive of grass' and another noun *tsela* 'road'. Sometimes the prefix *le-* is omitted and the noun becomes *hlokwana*. The relation between *lehlokwana* and *tsela* is expressed by the concord *la* 'of', which makes the noun *tsela* to qualify *lehlokwana*. The grass is long and only grows near the road, which is what gave rise to the semantic extension of the name *lehlokwanalatsela* meaning 'the grass which grows near the road'.

Some other plant names with semantic extension include the following:

- |     |                       |                            |
|-----|-----------------------|----------------------------|
| (d) | <i>Mookanathutlwa</i> | 'Slender three-hook thorn' |
| (e) | <i>Mohlatša</i>       | 'Red leaved fig'           |

## Findings

The findings of this study indicate that plants are the cultural key species in Northern Sotho communities. It was found that the morphological structure of most of the plant names in Northern Sotho comprises a noun class prefix, which is either singular or plural, with a noun root. In some plant names, the root is suffixed with *-na* or *-ne*. Word formation strategies, such as affixation, compounding, reduplication and semantic extension, are very important in the formation of plant names. Affixation is the major strategy used in naming plants in Northern Sotho as most of the plants contain class prefixes. Most of the plant names in Northern Sotho are classified under the affixation strategy with *Mo-* as the prefix. *Mo-* is a class prefix of noun class 3, which refers to non-human species, especially plants in the singular. In the plural, the class prefix is *Me-*, noun class 4. It was further found that some plant names deviate from the class prefix *Mo-* and *Me-* and use class prefix *Se-* (noun class 7 singular) and class prefix *Di-* (noun class 8 plural), *Le-* (noun class 5 singular) and *Ma-* (noun class 6 plural). There are some plant names which do not feature any class prefix, such as *theepe* 'pigweed' and *mphalatšamaru* 'wild asparagus'. Some plant names are extended with the suffix *-na* or *-ne*, which are the diminutive suffixes in Northern Sotho. However, in these instances, they are used as verbal extensions. Other strategies, such as compounding, reduplication and semantic extension, are used in conjunction with affixation in the naming of plants.

The article contributes to knowledge of plants as the cultural keystone species in Northern Sotho communities and plant names, which often carry deep cultural meanings, reflecting the relationship between the community and the environment. Understanding how and why certain strategies

are employed in naming plants offers insights into cultural significance of the plants. Documenting the formation of the plant names contributes to the preservation of linguistic and cultural knowledge for future generations.

## Conclusion

In the context of Northern Sotho, the names given to plants reflect their social, cultural and environmental importance. Plants are the culturally significant species that bind the Northern Sotho communities together and facilitate a better understanding of the relationship between language, culture and the environment. Documenting ethnobotanical knowledge of plant names of Northern Sotho communities is an important activity that helps define the cultural identities of the communities concerned and provides the evidence for linking them with the land. The study revealed that Northern Sotho word creation techniques, including affixation, compounding, reduplication and semantic extension, serve as a linguistic reflection of the cultural importance of keystone species, helping to maintain traditional knowledge, social structures and cultural identity within the community. It is recommended that a further study be undertaken on word formation strategies that are used in the naming of plants in Northern Sotho with a focus on the relationship between their morphological and semantic structures.

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