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Examining the current value of indigenous plant material culture in Limpopo Province, South Africa

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Abstract. Indigenous plant-derived material culture dominates many of the tools and utensils manufactured and used by communities that depended on the natural resources for their livelihoods. Endemic plants provide humans with essential materials for construction purposes and for the design of household utensils. The goal of this study was to describe the current value of indigenous plant material culture. Semi-structured interviews with a purposive sample of 127 respondents provide 13 native plants as sources of fibre, timber, culms, oil and dye used to make household utensils, huts, brooms, mats and baskets. The cultural significance of these materials includes the production, preparation, serving and storage of food; house construction; protection of courtyards; and cleaning. These materials are still valued in the culture of the studied community, and represent the tangible heritage of the community.

Keywords. Indigenous knowledge; material culture; cultural heritage; native plant; natural resource

1. Introduction

Members of local communities have developed unique knowledge related to the uses of plant resources due to their constant association with the natural environment (Malla & Chhetri, 2009). These resources serve humans with many ranges of useful materials such timber, poles and fencing for construction purposes (Kochhar, 1998) as well as traditional arts and handicrafts (Cunningham, 1996; Molina, 2015). For Joshi *et al*. (2011), a great variety of tools, weapons and utensils were manufactured and used to gather plants for food, fibre and medicine as well as clothing. These make up a community's material culture (Nakashima *et al*., 2000; Bates *et al*, 2009) which, according to Bahru *et al*. (2012), varies across cultures in terms of the types and availability of plant species used, environmental conditions and indigenous knowledge of producing material objects (Yassin *et al*., 2015).

The plant-based material culture embraces functional items manufactured by the community to fulfil the livelihood of daily requirements (Cotton, 1996). Hoang *et al*. (2008) show that this area of research attracted many scholars to describe the types of plant-based material culture used by different societies. The main reason behind this interest was understanding the reasons for the choice of specific plants to manufacture particular materials that differ in size, shape and durability across societies (Berkes, 1998). Yassin *et al*. (2015) hypothesise that dependency on indigenous plant-derived material culture is attributed to the need to conserve cultural values. Joshi (1995) reasoned that plant-derived materials are used for different purposes, including the protection of heritage. These observations motivated the need

to describe the current value of indigenous plant material culture of Dikgale community in Limpopo Province, South Africa. The objective is to examine knowledge of using plant materials to make household material objects and their cultural significance. Documentation of indigenous knowledge of native plant use is not only useful for the description of material culture, but also for their conservation as part of the community's cultural heritage.

2. Materials and Methods

2.1 Study location

Dikgale community is located in Polokwane Local Municipality, Capricorn District of Limpopo Province in South Africa, approximately 40 km from Polokwane, the capital of the province, and 15 km from the University of Limpopo (Statistics South Africa Census, 2014). The site covers an area of 169.79 km², with a population of 39966 (235.39 per km²) in 8810 (51.89 per km²) households. The community is situated between 23.460-23.480 south latitude and 29.420-29.470 east longitude, and an average altitude of 1400m above mean sea level. The settlement pattern is in the form of a central residential area comprising demarcated housing stands with communal grazing land some distance away (Dikgale Energy Survey Report. 2016). Subsistence livelihood is replaced by cash labour to provide for household needs (Chikosi, 2017). The local vegetation upon which the community depends for food, health care and other cultural uses is near extinction as a result of the negative impact of rainfall scarcity and increased temperature.

2.2 Ethnobotanical survey

Two sets of purposive samples were used to collect information about the plant-derived material culture of the Dikgale community. The first sample was made up of four wood carvers (male) and three weavers (female). These respondents were identified through snow-ball sampling with the objective of including them in the study in order to obtain information about the type of plant-derived materials they produce. Another sample of 120 community members was used to collect information about the cultural value of plat-derived material culture and their current use. The selection of potential respondents was on the basis of South African citizenship and the period of stay in Dikgale community. Only citizens who stayed in the community for about 30 years were selected to participate in the study. Initially, about 179 community members showed interest to take part, but only 120 members consented to participate. Data were collected through semi-structured interviews, which were conducted in the households of the respondents. Data processing produced themes and sub-themes such as the types of material objects produced and their cultural significance, and the names of plants used to make each of the materials. The plants were recorded in terms of their botanical families, scientific and vernacular names, species number, habit, part used, type of materials produced and their cultural significance. The voucher specimens for the plants recognised were collected, identified and stored in the University of Limpopo Herbarium.

3. Results and Discussion

3.1 Indigenous plants used in material culture

Thirteen native plants belonging to ten families were identified as sources of material culture in Dikgale community. The plants were only collected from the wild. Shrubs (5) were the most common growth forms followed by trees (4) and grass (3) used in the Dikgale material culture. This observation corroborates Abera's (2013) argument that shrubs are in abundance than any other growth forms in the forests, and are sources of many household material needs. The plant parts used included stems (5) followed by culms (3), barks (2), leaves and fruits.

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Yassin *et al*. (2015) attest that a stem is the most used plant part in the manufacture of plant material culture. In the study, *Agave Americana, Ficus burkei, Sclerocarya birrea* and *Grewia flavascens* are sources of raw material to manufacture more than one material products. According to Bahru *et al*. (2012) and Yassin *et al*. (2015), plant species that are sources of material culture have multiple uses.

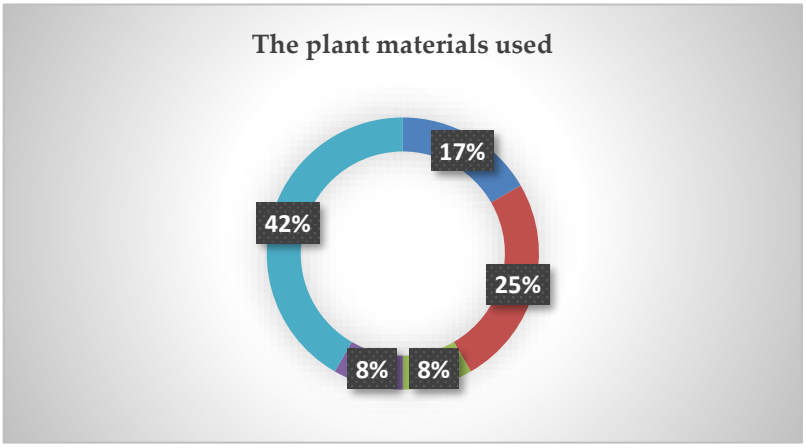

Figure 1: The plant materials used

Of the plant species identified, the most common material used was stems, which accounted for 42%, followed by culms (25%), barks (17%), leaves and fruits with 8% each. This prevalence of the use of tree stems in the manufacturing of cultural materials justifies the hardwood plant species dominance in the wild (Yassin *et al*. 2015).

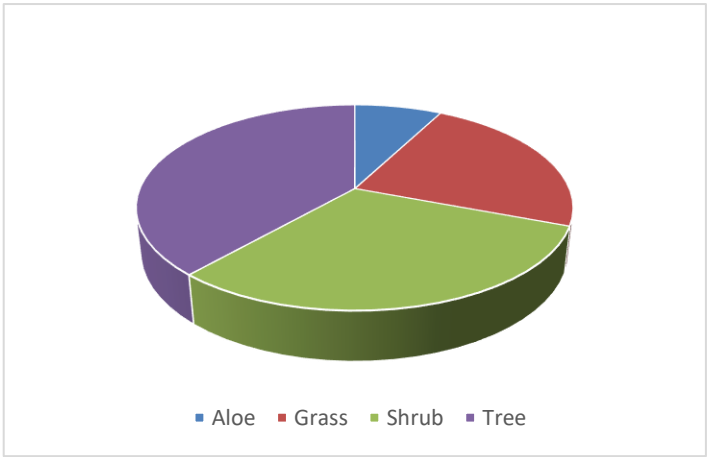

Figure 2: Plant habits used

The most predominant plant habits exploited were shrubs, trees, followed by grasses and aloes. Four trees and five shrubs were used as sources of timber used to construct huts and enclosures, and to manufacture household utensils. Culms of three grass species were used as sources of raw material to make household brooms and sleeping mats. Aloes were used as a source of fibre used in hut construction and the binding of woods.

3.2 Material objects and their cultural significance

The material objects were grouped in terms of their cultural significance.

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3.2.1 Huts

The respondents reported that traditional mud huts with cylindrical walls are supported by timber frames developed from *Dichrostachys cineria* species, which help to prevent cracking. They consist of vertical poles bound together with wicker- work, and are plastered inside and outside with mud and cow-dung. In selecting suitable poles, characteristics such as shape, strength and durability were taken into account. Preference was given to tall and straight trunks with red heart-timber, which is resistant to termites. Suitable plant materials for roofing and thatching were chosen on the basis of their availability, durability and water-proofing characteristics. The hut roof was constructed from *Dichrostachys cineria* poles and *Grewia flavescence* saplings bound together to form a conical frame. The conical frame was thatched by culms of *Aristida congesta* and *Phragmites communis* selected by virtue of their water-proofing properties. Fibre obtained from *Faidherbia albida* and *Grewia flavascens* was used to fasten the roofing materials to the supporting frame. Cotton (1996) attests that timber and fibre remain fundamental in the construction of shelter, even though timber predominates in the making of homesteads. Timber is most often used for the construction of houses and fences in Loita due to the closeness to the forest (Bahru *et al*., 2012). Kochhar (1998) and Abbiw (1990) support that plant species serve humans with many useful materials for the building and construction of timber, and poles for construction, fencing and other purposes.

3.2.2 Fencing posts

It was reported that poles derived from the wood of *Acacia permixta* and *Dichrostachys cinerea,* which are relatively straight, tall and termite-resistant are used for fencing of homesteads. A good fence can last for more than twenty years. These plants also provide the most preferable fence posts required to protect Vhavenda homesteads and fields (Mabogo, 1990).

3.2.3 Household utensils

The wood carvers' responses to the type of plant materials used to manufacture household utensils were that the materials are selected on the basis of functional criteria such as shape, workability, strength and flexibility. The most commonly manufactured household utensils reported were *lefehlo* (stirring-stick), *leho* (spoon), *mogopo* (platter), *lehudu* (mortar), *motshe* (pestle) and *kgamelo* (milking pail). These objects are made from various types of wood that differs in strength. The hard, white and pliable timber of *Rothmannia capensis* was used to make durable spoons and stirrers. Mortars, pestles, platters and milking pails were carved from sections of the stem of *Sclerocarya birrea*. The most important sources of fibre reported were *Agave americana, Ficus burkei* and *Grewia flavascens*. The fibre was used to make *dirotwana* (small wicker baskets) to store and serve grain, and *leselo* (winnowing fan) used to winnow grain. Cunningham (1996) supports that the most common home-made plant products are used in the production and preparation, serving and storage of food.

3.2.4 Sleeping mats

It was reported that traditional sleeping mats are made by plaiting several culms of *Scirpus validus* by a string together, after which the mat is decorated according to preference. Decoration is done by dipping the strings into a basin of water with the bark of *Berchemia Zyheri*. The same *Scirpus* culms are plaited together on the butt-end by strings of fibre to form the preferred mats. The culms are also used as under-thatch on roofs of huts by the Vhavenda (Mabogo,1990).

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3.2.5 Twine and rope

The respondents stated that the fibrous bark of *Ficus burkei*, *Grewia flavascens* and *Kirkia wilmsii*, together with fibrous leaves of *Agave americana* are used to make twine and rope used to bind roof palisades, and as a rope used to bind firewood. Mabogo (1990) corroborates that fibre from the same species has always been a raw material needed for Vhavenda's material culture.

3.2.6 Oil and dye extracts

About seventy-nine percentage of the respondents reported that oil is obtained from the dry kennels of *Sclerocarya birrea* by cracking the embryos, and by grinding them to make oil which is used to tender venison. The embryos from the fruit of *Ximenia caffra* are ground to make oil used in leather tanning. The bark of *Berchemia zeyheri* yields a red pigment which is used to dye fibre used to make wicker utensils. Mabogo (1990) supports that plant extracts and exudates have been sources of dyes, gums, tannins, latex, waxes, resins and adhesives used in material culture.

3.2.7 Brooms

Observations from the study are that the respondents use locally available plant materials such as grasses and branches to sweep floors and courtyards. *Aristida congesta* culms are cut by women when matured, and are tied in a bundle to make simple brooms for sweeping floors and courtyards. The activity of gathering culms is done with knowledge and experience as straight and tall materials are carefully selected.

3.3 Prevalence of use of material culture

Many (96%) respondents fully rely on material culture for livelihood today. Of these, 45% reported that they still value traditional mud huts. The huts, which are mostly replaced by modern brick houses, were retained and used as bedrooms by the elders. The same huts were also used as storage rooms for subsistence crop grains. Baskets, twine, ropes, dye and oil were reported to be currently used by 38% of the respondents. All respondents reported that they use stirrers and wooden spoons daily for cooking pap. Although the material creation utensils such as milking pails, oils, twine, ropes and fence posts are replaced by modern materials, the use of grass brooms is still prevalent among the respondents. They attested that the traditional grass broom is the most suitable broom to sweep floors and courtyards. Fewer respondents (45%) reported that they retained mortars, pestles, baskets and mats as part of their cultural creations. The main reasons submitted by the respondents were that huts are ventilated and mostly preferred in summer when the temperature increases. The same huts are preferred as the best storage places for grain, which would last for long and less likely to be attached by weevils. The reason for the continuous use of wooden spoons and stirrers was that they cannot be replaced as they are the only appliances ideal for cooking pap, which is the staple food of the respondents. The respondents believe that grass brooms sweep better than conventional brooms. Most respondents (98) reported that they could not dispose their material creations because they are part of their cultural heritage to be preserved. Balick and Cox (1996) support the prevalent use of material creations by the respondents by showing that indigenous societies, which traditionally developed the skill and knowledge of the use of indigenous plant materials to manufacture household tools and other important products, will continue to rely on their material culture, and are likely to preserve them as symbols of cultural heritage.

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Conclusion

An ethnobotanical study was conducted to analyse the current uses of indigenous plant-derived material culture of Dikgale community in Limpopo Province, South Africa. The respondents reported a wealth of knowledge of the types of plant species exploited to make material creations. The species are sources of timber, which is used to manufacture household utensils, and construct huts and fence posts. Brooms, oil, dye, mats, baskets and twine are non-timber products derived from culms, barks and leaves. Some plant materials such as fibre, culm and timber have more than one uses. Fibre is used to make twine and rope, which used in the construction of huts and the binding of fuel wood; culms are used to make brooms and thatch; and timber is used in the construction of fence and huts and for making household utensils. Brooms, wooden stirrers and spoons, huts are still valued as the material creations for cleaning the houses and courtyards, cooking and ventilation. Some material productions such as traditional mats, baskets, mortars and pestles are preserved and well-maintained as symbols of the cultural heritage of Dikgale community.

Author Contribution

I am the sole author of the manuscript.

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Species Names	Vernacular	Habit	Part used	Material produced	Cultural significance
Anacardiaceae *Sclecarya birrea* (A. Rich) Hochst. (65)	*Morula*	Tree	Stem	Pail, mortar, pestle, stirrers, spoons and platters	Preparation, cooking and serving food
Asparagaceae *Agave american* L. (7)	*Sekgopa*	Aloe	Leaf	Fibre	Twine and rope, Baskets, Binding palisades and Grain storage
Cyperaceae *Scirpus validus* Vahl. (64)	*Mohlahla*	Grass	Culm	Mat	Sleeping mat
Fabaceae: i. *Acacia permixta* Burtt Davy. (5)	*Mosela-phala*	Shrub	Stem	Pole	Fence post
ii. *Dichrostachys cineria* Wight et Arn. (26)	*Moretšhe*	Shrub	Stem	Pole	Beam; Fence post
iii. *Faidherbia albida* A Chev. (34)	*Mokgaba*	Tree	Stem	Fibre	Tying roof palisades
Kirkiaceae *Kirkia wilmsii* Engl. (45)	*Modumela*	Tree	Stem	Fibre	Binding and tying thatch
Malvaceae *Grevwia flavascens* Juss. (37)	*Moretlwa*	Shrub	Stem; Bark	Palisade, Fibre	Roofing frame Binding of palisades
Moraceae *Ficus burkei* (Miq) Miq. 1867. (35)	*Mokumu*	Tree	Stem	Fibre; wood	Wooden spoons and stirrers, tying of wood and palisades; Food serving utensils
Olacaceae *Ximenia caffra* Sond. (79)	*Motšhidi*	Shrub	Fruit	Oil	Tanning
Poaceae i. *Aristida congesta* subsp. (12)	*Lefsielo*	Grass	Culm	Broom	Sweeping Sweeping
ii. *Phragmites australis* (Cav.) Steud. (57)	*Lehlakanoka*	Grass	Culm	Thatch material	Roof thatch
Rhamnaceae *Berchemia zeyheri* (M. Berchem) C.L.P. Zeyher. (14)	*Monee*	Shrub	Bark	Dye	Colouring of storage baskets and sleeping mats