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Diversity and Importance of Benin's Forests and Agroforestry Systems Woody Species in Mortars and Pestles Manufacture

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Abstract

The disappearance of resources with high genetic potential and great utility for people and the challenge of the conservation and sustainable management of these resources are two opposing facts of which the world is now concerned. In Benin, forests and agroforestry systems complement each other in wood supply for mortar and pestle manufacture. Thus, this study aimed to investigate the diversity of woody species used for mortar and pestle manufacture and to analyze the preferences of manufacturers through an ethnobotanical approach. Based on the snowball sampling method, and interviews with 112 manufacturers from different ethnic groups, we identified 31 tree species. These species belong to 30 genera and 13 plant families. The Fabaceae are more represented with 14 species (i.e. 45% of the total). Ten are frequently used. But there are four species, such as *Vitellaria paradoxa* C. F. Gaertn., *Prosopis africana* (Guill. & Perr.) Taub., *Terminalia glaucescens* Planch. ex Benth. and *Pericopsis laxiflora* (Benth.) Meeuwen, which are highly preferred by manufacturers respectively. The calculation of the Indexes of Possession of Global Knowledge (IPSG) revealed that the ethnic group Nagot (0.204) possessed more knowledge and is followed by Mahi (0.201) and Fon (0.18) respectively. Forests and agroforestry systems are both supply sites for manufacturers. The non-parametric Wilcoxon test proved that there are no significant differences between the species' preference for mortars or pestles manufacture (v = 181, *p*-value = 0.38). Since the trees cutting in agroforestry systems can be destructive to them, provisions such as the promotion of agroforestry in rural areas and the integration of the used species in the reforesta-

tions programs must be taken to curb the pressure and contribute to the conservation of the biodiversity.

Keywords

Agroforestry Systems, Benin, Diversity, Forest, Mortars and Pestles, Uses, Woody Species

1. Introduction

People always use different plant species in the environment for medicinal, food, energy (firewood, charcoal), building, cultural or artisanal purposes (Aké-Assi et al., 2010). In Africa, some woody species are used for the traditional manufacture of mortars and pestles (Mensah et al., 2012; Hamon & Legall, 2013). The wooden mortar and pestle are both tools that occupy a very important place in African people's homes. They are commonly used as food processing tools (Ahouansou et al., 2012; Tingbe et al., 2018; Coulibaly/Diakite et al., 2020) and their use is often specialized at a particular step or for a range of ingredients in particular (Hamon & Legall, 2013). They also belong to cookware and are used as wooden food contact materials (Mensah et al., 2012). The contact of these materials with food surfaces mediates the transfer of chemical substances from wood to food and vice versa (Schultz & Ncholas 2000; Pietarinen et al., 2004), because of the fact that most indigenous wood species used for their manufacture are phytochemical-rich (Mensah et al., 2012), so their use can also provide health for people.

In Benin, the woody species used for mortar and pestles manufacture often come from forests (Houétchégnon, 2016; Litta et al., 2021). But due to current concerns for the conservation and protection of the environment and various socio-cultural considerations, natural forests are less and less playing their role of wood supply. Access to them becomes more and more limited, either because they are completely destroyed or transformed into permanently protected forests as parks, or reserves, or temporarily as land conservation for the future (Peltier, 2019). Benin rural people keep sometime some trees in fields, pastures and landscapes in order to create some agroforestry systems which increase the socio-cultural, economic, ecological and environmental benefits from these spaces (Biaou et al., 2016). But, agroforestry systems also have become supply sites for mortars and pestles manufacturers (Bayé-Niwah et al., 2020). A previously study realized (Somanin et al., 2021) revealed twenty-four plant species which are used for mortars and pestles manufacture in Benin and among them are both forest species and those which are known as agroforestry systems trees (Biaou et al., 2016). But this study was realized just in the central part of the country.

In order to establish sustainable management of plant resources employed in the manufacture of mortars and pestles in Benin, it is imperative to know more about the woody species that are used for that purpose over the country.

Our study aims to identify the woody species used throughout Benin for the traditional manufacture of mortars and pestles and to analyze the manufacturer's preferences. It provided additional information in order to establish an exhaustive list of the species used.

2. Material & Methods

2.1. Study Area

This study was carried out in the Republic of Benin, located in the intertropical zone, between the parallels 6˚30' and 12˚30' North latitude, and between the meridians 1˚ and 3˚40' East longitude. With a total area of 114,763 km^2, Benin is limited to the north by the countries Niger and Burkina Faso, to the south by the Atlantic Ocean, to the west by Togo and to the east by Nigeria. The south of the country is marked by an equatorial climate with high humidity and alternating dry seasons, while the center and the north are characterized by a tropical climate. Three chorological units displaying a degree of endemism and climatic distinctiveness (White, 1983) are recognized in Benin: a Guineo-Congolian zone, a Guineo-Sudanian zone and a Sudanian zone, spread out respectively from the south to the north of the country. The vegetation is composed of semi-deciduous and dense humid forest, mangrove; mosaics of open forests, possibly with dense dry forests, dotted with wooded and shrubby savannahs and crossed by gallery forests, from the south to the north (Plan National d'Adaptation, 2022).

The prospected villages were chosen in a reasoned way according to the geographical distribution of ethnic groups, the presence of mortars and pestles manufacture (Somanin et al., 2021) based on the population and housing census in Benin in 2013 (Institut National de la Statistique et de l'Analyse Economique, 2017).

2.2. Sampling Method

Manufacturers, that constitute the sample, were difficult to find, due to their absence in some localities (Somanin et al., 2021). Therefore, "*snowball sampling*" was the most adapted sampling technique for their identification. Developed by Goodman (Goodman, 1961), it consists of taking into account the recommendations of people previously surveyed to generate others (Johnston & Sabin, 2010).

Initially used in sociology for studies related to hard-to-reach people (Magnani et al., 2005; Platt et al., 2006), it proves its effectiveness in several other fields, including social forestry (Kant & Lee 2004; Thompson et al., 2005; Atindogbé et al., 2013).

Considered as a sampling method in its own right, the snowball sampling procedure is non-probability and it is normally impossible to quantify the probabilities of selection in the sample (Wilhelm, 2014). This method's limitation concerns the difficulty to produce unbiased estimates of the characteristics of the sampling population itself. Inferences are therefore only possible on parameters of the relations' network (Snijders, 1992). But a study showed that by choosing

previously the number of people that a participant can indicate, we reduce the biases linked to this sampling method (Johnston & Sabin, 2010). So, during data collection during the fieldwork of this study, the number of people that a manufacturer can indicate was fixed to three, in order to give each of the respondents an equal chance to recruit peers (Atindogbé et al., 2013). It also has been possible to use this method in its extreme in order to reach the greatest number of manufacturers, to reduce once again bias (Atindogbé et al., 2013).

One hundred and twelve manufacturers, including 33 seniors, 73 adults and 6 young people, were identified as sample. They were all men and belong to eleven different ethnic groups such as Baatonou, Fon, Holi, Idaatcha, Iffè, Itcha, Mahi, Nagot, Peuhl, Somba and Waama.

2.3. Data Collecting

The data used in this study were collected in February 2022 using an ethnobotanical approach throughout the study area. The prospect villages were chosen by progressing in the snowball sampling method described above. Mortar and pestle manufacturers were interviewed using a semi-structured technique. The data collected focused on the personal information of manufacturers, the species used by each of them for mortar and pestles manufacture, their preference for these woody species, and the type of tools that each species can be used to make.

Once the species were listed by the manufacturer in the local language, the "*travel guide technique*" (Tiétiambou et al., 2016) was used to identify the scientific names. This technique consists to:

- Note the local names of known species mentioned by the manufacturer;
- Follow him in the natural habitat of the species mentioned for direct observation and collect herbarium samples;
- Determine the scientific name of the species in the laboratory using some flora, especially "*Flore Analytique du Benin*" in our case (Akoégninou et al., 2006).

Each manufacturer was also asked to rank the species he uses in order of preference, on the one hand for the manufacture of mortars and on the other hand for pestles.

2.4. Data Analysis

Descriptive statistics were used to calculate means, frequencies and percentages. A national list of species used to manufacture mortars and pestles in Benin was drawn up. The parameters described below were calculated:

- The relative frequency of citation of the species according to the communities interviewed:

$$F = \frac{Nec}{N} \times 100 \quad (1)$$

Nec represents the number of people who mentioned a species and N is the total number of people interviewed.

- The Global Species Knowledge Possession Index (IPSG) by community (Assogbadjo et al., 2011):

$$\text{IPSG} = \frac{Vm}{Nt} \quad (2)$$

With, *Vm*, the average number of species mentioned by a community;

Nt, the total number of species mentioned by all the communities.

This index varies from 0 (when the community did not mention any species) to 1 (if the community has mentioned all the species). Therefore, the communities with more knowledge about the species used in the manufacture of mortars and pestles are those with the highest values of the index.

A preference analysis method was used to categorize the used species (Lawrence et al., 2005). Each manufacturer cited the first five most favorite species in order. Then, the ranks given to the species were converted into scores which are decreasing following the order of citation. A score of 0 is given to listed species that have not been cited by the interviewee in his list of most favorite species (Dembélé et al., 2016). For each species identified, the mean score is calculated per tools manufactured using the following formula:

$$Vti = \frac{Ti}{Ni} \quad (3)$$

With *Vti*, the mean score assigned to a given species by a category of interviewees in a community;

Ti, the sum of the scores given to species by this category of interviewees in the community;

Ni, the number of interviewees from this category.

The non-parametric Wilcoxon test was used to assess difference between the species mean scores of preference for the manufacture of mortars and those for the manufacture of pestles.

3. Results

3.1. Diversity of Species Used

Thirty-one (31) plant species were identified as woody species used for mortars (**Figure 1**) and pestles (**Figure 2**) manufacture in Benin (**Table 1**). They belong to 30 genera and are distributed in 13 different families. The ten most frequently used based on the frequency of citation were respectively *Vitellaria paradoxa* C.F.Gaertn., *Prosopis africana* (GuilI. & Perr.) Taub., *Terminalia glaucescens* Planch. ex Benth., *Pterocarpus erinaceus* Poir. and *Azadirachta indica* A. Juss., *Pericopsis laxiflora* (Benth.) Meeuwen, *Khaya senegalensis* (Desr.) A. Juss., *Afzelia africana* Smith ex Pers., *Burkea africana* Hook. and *Pseudocedrela kotschyi* (Schweinf.) Harms (**Table 1**). Apart from *Detarium microcarpum* Guill. & Perr. and *Lannea barteri* (Olïv.) Engl. which are used only to manufacture mortar and *Swartzia madagascariensis* Desv. which is only used to make pestle, all other species can be used for the manufacture of both of these tools.

Figure 1. Mortars made of *Daniellia oliveri* wood in a manufacturing workshop in Bohicon (Benin).

Figure 2. Pestles made of *Prosopis africana* wood for sale near a road in Hounkpogon (Benin).

Table 1. Checklist of plant species used for the manufacture of mortars and pestles in Benin.

FAMILY	SPECIE	USAGE*	FC** (%)
Anacardiaceae	*Mangifera indica* L.	M, P	1.79
	Lannea barteri (Olïv.) Engl.	M	0.89
Apocynaceae	*Holarrhena floribunda* (G. Don) Durand & Schinz	M, P	1.79
Combretaceae	*Terminalia glaucescens* Planch. ex Benth.***	M, P	47.32
	Anogeissus leiocarpus (D. C.) Gull. & Perr.	M, P	7.14
Ebenaceae	*Diospyros mespiliformis* Hochst. ex A. D. C.	M, P	6.25
Euphorbiaceae	*Bridelia ferruginea* Benth.	M, P	2.68
Fabaceae	*Prosopis africana* (Guill. & Perr.) Taub.***	M, P	91.07

Continued

	Pterocarpus erinaceus Poir.***	M, P	42.86
	Pericopsis laxiflora (Benth.) Meeuwen***	M, P	25.89
	Khaya senegalensis (Desr.) A. Juss.***	M, P	24.11
	Afzelia africana Smith ex Pers.***	M, P	22.32
	Burkea africana Hook.***	M, P	22.32
	Daniellia oliveri (Rolfe) Hutch. & Dalziel	M, P	13.39
	Parkia bilglobosa (Jacq.) R.Br. ex G. Don.	M, P	13.39
	Acacia auriculiformis A. Cunn. ex Benth.	M, P	7.14
	Isoberlinia doka Craib & Stapf.	M, P	6.25
	Detarium microcarpum Guill. & Perr.	M	3.57
	Albizia zygia (De.) J.F. Macbr.	M, P	0.89
	Dialium guineense Willd.	M, P	0.89
	Swartzia madagascariensis Desv.	P	0.89
Meliaceae	*Azadirachta indica* A. Juss.***	M, P	37.5
	Pseudocedrela kotschyi (Schweinf.) Harms***	M, P	22.32
Moraceae	*Milicia excelsa* (Welw.) C.C. Berg.	M, P	7.14
	Antiaris toxicaria Lesch. ssp. Welwitschii (Engl.) C.C. Berg	M, P	0.89
Myrtaceae	*Eucalyptus camaldulensis* Dehnh.	M, P	11.61
Ochnaceae	*Lophira lanceolata* Tiegh. ex Keay	M, P	7.14
Rutaceae	*Zanthoxylum zanthoxyloides* (Lam.) Zepernick & Timler	M, P	7.14
Sapotaceae	*Vitellaria paradoxa* C.F. Gaertn.***	M, P	91.96
	Manilkara multinervis (Baker) Dubard	M, P	13.39
Verbenaceae	*Gmelina arborea* Roxb.	M, P	0.89

Legend: *M = manufacture of Mortar, P = manufacture of Pestle; **Citation Frequency; ***The most frequently used species.

Among the thirteen plant families, Fabaceae family is more represented. With 14 species, it represents 45% of the total of the species listed. It is followed by Anacardiaceae, Combretaceae, Meliaceae, Moraceae and Sapotaceae, with 2 species each of them, while the others taxa are represented by only one species each of them (Figure 3). Moreover, 60% of the most frequently used species are Fabaceae (Table 1).

Because our research sample was composed of many ethnic groups, it was necessary to know the level of knowledge of each of them according to the diversity of species used for mortar and pestle manufacture. These ethnic groups were variously represented: 29 of the manufacturers belong to Mahi ethnic group, 26 were Fon, 18 were Idaatcha, 9 were Baatonou, 7 were Holi, 7 were Waama, 5 were Iffè, 3 belong to Nagot while 3 were Peuhl and Somba each, and 2 were

Itcha. Indexes of Possession of Global Knowledge (IPSG) revealed that Nagot ethnic group has more knowledge than the others. It was followed by Mahi and Fon ethnic groups respectively (Figure 4). The ethnic groups of Iffè, Idaatcha, Holi and Itcha which respectively followed the first three were also not the least. Based on the general population and housing census in Benin in 2013 these four ethnic groups and the ethnic group Nagot all belong to Yoruba and related ethnic groups. In addition, Fon and Mahi all belong to Fon and related ethnic groups. It can therefore be said that Yoruba and related ethnic groups and Fon and related ethnic groups were those who use the greatest diversity of species for the manufacture of mortars and pestles in Benin.

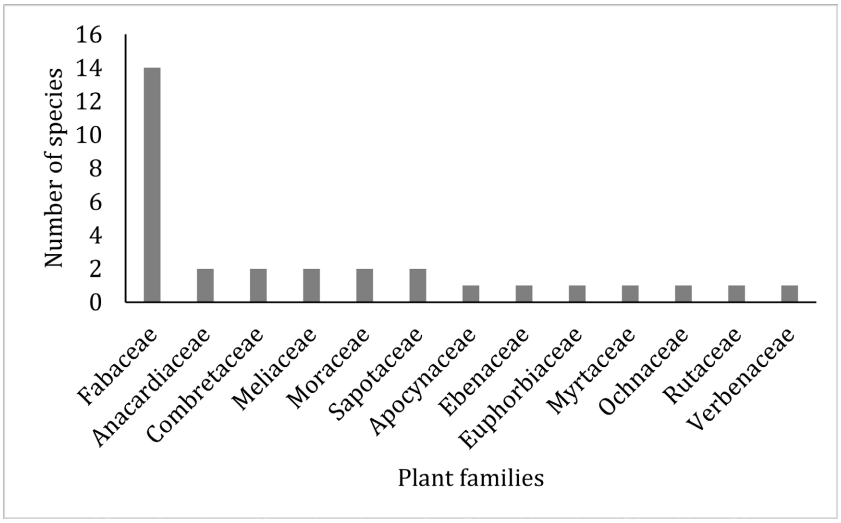

Figure 3. Representativeness of plant families.

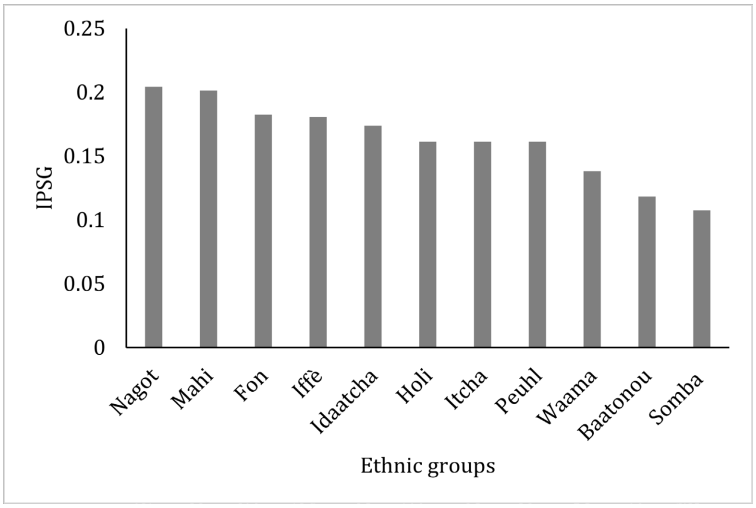

Figure 4. Global Knowledge Possession Index of ethnic groups.

3.2. Manufacturers' Preferences for the Different Species Used

The plant species used to make mortars and pestles in Benin were not all appreciated in the same way by manufacturers. It is confirmed by the results obtained

from the application of the categorization method of preference for data collection. This method which consisted in collecting the opinion of each manufacturer on his five most preferred species helped to rank species used in order of preference (Table 2). Species with the mean score zero (0) were those not cited by any manufacturer among the top five most preferred species.

Regarding the manufacture of mortars, twenty-four species among the thirty-one identified were cited at least once among the five most preferred species by manufacturers (MS > 0). Three species displayed a mean score greater than 1 for mortar manufacture. These are respectively *Vitelleria paradoxa* (MS = 4.05), *Prosopis africana* (MS = 3.58) and *Terminalia glaucescens* (MS = 1.12) (Table 2). It means that they are more preferred than others cited for the manufacture of mortars. Moreover, for the manufacture of pestes, *Pericopsis laxiflora* is added to these three previous species with a mean score of preference equal to 1.04. These four species are the most preferred by the manufacturers following their mean scores. In addition, *Prosopis africana* (MS = 4.05) is the most preferred for the manufacture of pestles, while *Vitellaria paradoxa* (MS = 3.58) is at the first rank for the manufacture of mortars (Table 2). The non-parametric test of Wilcoxon performed on the basis of the Mean scores of preference for Mortars on the one hand and Mean scores of preference for pestles on the other, proved that there are no significant differences between them (v = 181, *p*-value = 0.38). So we can say that in general, a preferred species for mortars manufacture is preferred for pestle manufacture. But the difference is clear when we compare their values for each tool.

3.3. Role of Agroforestry Systems in Wood Supply for the Manufacture of Mortars and Pestles

Mortar and pestle manufacturers have two sources of wood supply such as (1) forests and (2) agroforestry systems. As far as the supply modes are concerned, there are three, such as (1) free access wood cutting in forests, (2) exchanges and (3) purchase. The details are presented in Table 3. In the first case of wood supply, the wood is directly cut in forests (78% of citation) or agroforestry systems (16% of citation) without any intermediary. In this case, the wood is cut either in natural forests or in the manufacturer's own farm. In the second case, the manufacturer obtains the wood needed from someone and then shares the tools manufactured with that person at the end of the manufacturing process. The wood can either come from forests (19%) or agroforestry systems (35%) too. But in 10% the manufacturers don't know where the wood comes from. In the last case, the manufacturers buy the wood needed for their activity. It can also come from forests (12%) or agroforestry systems (10%). There is no answer in 14% for the supply site.

We can notice that for all the different wood supply modes, a part of the wood comes from agroforestry systems. In addition, for the exchanges, agroforestry systems are the most cited (35% in opposite to forests which were cited by 19% of the manufacturers).

Table 2. List in order of preference of woody species used for the manufacture of mortars and pestles.

SPECIES	Mean scores of preference for Mortars	Mean scores of preference for Pestles
Vitellaria paradoxa	4.05	2.69
Prosopis africana	3.58	4.51
Terminalia glaucescens	1.12	1.32
Pericopsis laxiflora	0.05	1.03
Pterocarpus erinaceus	0.89	0.36
Azadirachta indica	0.68	0.87
Khaya senegalensis	0.46	0.29
Afzelia africana	0.38	0.11
Burkea africana	0.12	0.44
Pseudocedrela kotschyi	0.49	0.33
Daniellia oliveri	0.08	0
Manilkara multinervis	0.21	0.02
Parkia bilglobosa	0.05	0
Eucalyptus camaldulensis	0.07	0
Acacia auriculiformis	0.04	0
Anogeissus leiocarpus	0.03	0.07
Lophira lanceolata	0.08	0.04
Milicia excelsa	0.05	0.03
Zanthoxylum zanthoxyloides	0.08	0.18
Diospyros mespiliformis	0.09	0.03
Isoberlinia doka	0.09	0.01
Detarium microcarpum	0.09	0
Bridelia ferruginea	0	0
Holarrhena floribunda	0	0
Mangifera indica	0	0
Gmelina arborea	0	0
Albizia zygia	0	0
Antiaris toxicaria	0	0
Dialium guineense	0.01	0.03
Lannea barteri	0.02	0
Swartzia madagascariensis	0	0

Table 3. Frequency of citation of wood supply sites and modes for the manufacture.

Supply sites \ Supply modes	Frequency of citation (%)		
	Free cut in the forests	Exchange	Purchase
Forest	78	19	12
Agroforestry systems	16	35	10
No Answer (N/A)	0	10	14
Total	94	64	36

4. Discussion

4.1. Diversity of Species Used

In addition to supplying its raw material from available wood resources, the traditional manufacture of mortars and pestles is a species-selective activity. Despite the species richness in Benin's forests and agroforestry systems (Akoégninou et al., 2006), only thirty-one are really used by manufacturers to make these tools. The number of species used shows that all plant species cannot be used for this purpose. That is why the conservation and the sustainable management of those species are very necessary. Regarding the main role of pounding played by mortars and pestles in households, the wood species which must be used for their manufacture must have a high hardness in order to be able to withstand the shocks caused by the pestle in the mortar during their use (Hamon & Legall, 2013; Somanin et al., 2021). The wood hardness is therefore the main property that limits the number of species used. Some authors have already mentioned some of these species for mortar and pestle manufacture (Houétchégnon, 2016; Bayé-Niwah et al., 2020; Litta et al., 2021; Somanin et al., 2021; Kouakou et al., 2020).

The species used for the traditional manufacture of mortars and pestles in Benin are mostly indigenous (84%) (Akoégninou et al., 2006). However, five among them such as *Acacia auriculiformis*, *Azadirachta indica*, *Eucalyptus camaldulensis*, *Gmelina arborea* and *Mangifera indica* are exotic species (Akoégninou et al., 2006). The heavy use of indigenous species reflects the fact that the manufacture of these tools generally still an activity that is transmitted from generation to generation. The diversity of species used is a use list transmitted to the present generation by their parents (Somanin et al., 2021). But the number of species used can decrease or increase depending on the availability of each species in the local vegetation (Weber et al., 2010), because when a species grow well naturally in a region, it is more accessible, more known and then more used (Traoré et al., 2011). So the local policies of conservation of the vegetation and forests restauration can also have a great impact on the availability of the species used for the manufacture of mortars and pestles.

4.2. Manufacturers' Preferences for the Different Species Used

During their use, tremendous repetitive stress are placed on the mortar by the pes-

tle. Therefore, the wood species used to make the mortar must be extremely hard, durable and capable of absorbing the applied force without developing cracks. As far as the pestle is concerned, the main characteristics of wood required are tremendous strength, high durability, low sensitivity to moisture and good fungi and insect resistance (Mensah et al., 2012). The twenty-four species from the list which are cited once at least as favorite species for the manufacture of mortar and pestles are those for which more importance and attention must be paid for the sustainable management of the available wood resources. Furthermore *Vitellaria paradoxa*, *Prosopis africana*, *Terminalia glaucescens*, *Pterocarpus erinaceus* and *Pericopsis laxiflora* as the most favorite of all must be well integrated in reforestation programs. More specifically, data such as availability, density per hectare and other parameters must be collected in field for their sustainable management. Although a species used to make mortars can also be used to make pestles, *Prosopis africana*, *Pericopsis laxiflora*, *Azadirachta indica* and *Burkea africana* are respectively more preferred for the manufacture of pestles than mortars (**Figure 5**).

Generally, the preference of the species depends on the knowledge of people in the community (Diop et al., 2011) and could also be influenced by the socio-cultural realities (Somanin et al., 2021) or by the species abundance in the local vegetation (Traoré et al., 2011). That is why many species are used to make these tools, but are not appreciate at the same way by the manufactures. The species such as *Bridelia ferruginea*, *Holarrhena floribunda*, *Mangifera indica*, *Gmelina arborea*, *Albizia zygia*, *Antiaris toxicaria* and *Swartzia madagascariensis* are not cited at all as favorite species, neither for mortar or pestles. These species are often used in large manufacturing workshops in order to allow the manufacturers to be able to meet demand in case of shortage of the mainly used species.

4.3. Role of Agroforestry Systems as Wood Supply for the Manufacture of Mortars and Pestles

Agroforestry systems are now playing the role of relieving tropical forests in

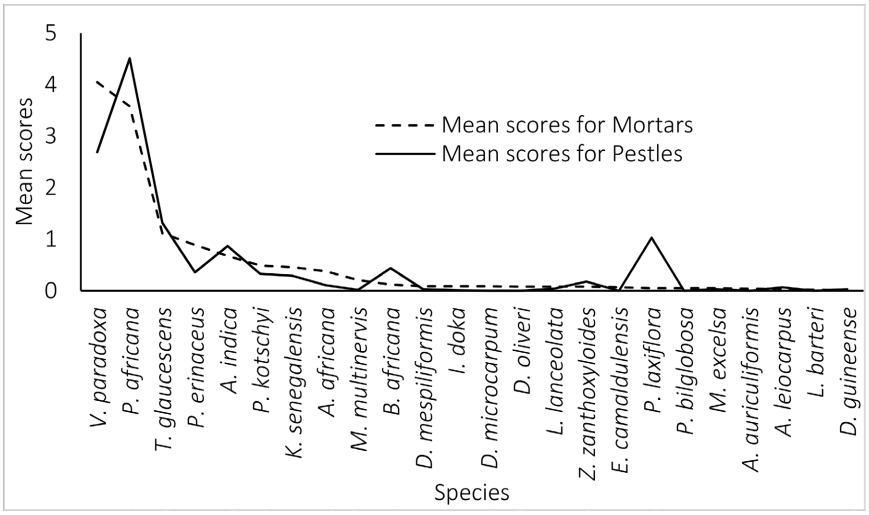

Figure 5. Preference mean scores curves.

goods and services supply (Peltier, 2019). Benin is a non-forest country of West Africa where the forests are in a process of degradation (Orekan et al., 2011) with the creation of multifunctional agroforestry systems (Biaou et al., 2016). Among the species identified by this research, seven are frequently encountered in agroforestry systems. These included *Afzelia africana*, *Daniellia oliveri*, *Eucalyptus camaldulensis*, *Khaya senegalensis*, *Parkia bilglobosa*, *Pterocarpus erinaceus* and *Vitellaria paradoxa* (Biaou et al., 2016). Some are subjected to strong anthropogenic pressures and are becoming increasingly rare in the forests. Others such as *Afzelia Africana*, *Khaya senegalensis* and *Pterocarpus erinaceus* are even already listed on the red list of the International Union for the Nature Conservation (UICN) for Benin (Neuenschwander et al., 2011). Those who still available in the forests are sometimes represented by small diameter trees, which do not favour for mortars manufacture (Somanin et al., 2021) leading pressures on agroforestry systems. Thus, agroforestry systems play a role of resilience to the depletion of forest woody species (Peltier, 2019; Biaou et al., 2016). But this will not last long due to the relatively low tree density these ecosystems than forests (Akplo et al., 2019). In additional, their other roles of providing ecosystem and economic services (Biaou et al., 2016; Vodouhè et al., 2016) for people could make them less available for woodworking activities.

5. Conclusion

This study reveals the diversity of Benin woody species used in the manufacture of mortars and pestles. It also shows one crucial role of agroforestry systems in wood supply for the activity. The checklist of preferred species used should now serve as a benchmark in reforestation policies in areas where the manufacture of mortars and pestles is highly exercised and even beyond in order to effectively return to the forest what has been taken from it. Some inventories are also necessary for more information about the availability of the species used and their state of conservation in the local vegetation. The promotion of agroforestry in rural areas could also make it possible to sustain the use of these species.

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Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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