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A Review Into The Effective Use Of Library Materials As Source Of Islamic Knowledge: A Case Study Of Makassar Community

H.Munawir Kamaluddin.[1], Moveh Samuel [2],
[1] Universitas Islam Negeri Alauddin Makassar
Jl.Sultan Alauddin No. 36 Samata Kabupaten Gowa Sulawesi Selatan Indonesia Corresponding
[2]Department of Mechanical Engineering, Faculty of Mechanical Engineering Universiti Technology Malaysia Skudai 81310 Johor Bahru
author: samonyimoveh@gmail.com

***Abstract*— This study investigates and proposes an effective use of library and its materials as a source of Islamic knowledge in the Indonesian Makassar community. It also highlights some of the major setbacks to the current library system in grey areas such as Islamic knowledge. It was discovered that the current standard international accepted classification systems lacked adequate space for materials on Islamic knowledge for two reasons: the first of which is, less awareness on the part of devisers of the depth and variety of Islamic topics; and their bias and the second reason is lack of interest in Islam, despite the fact that different indigenous classification systems and expansions have been developed, using either the original notation or alternative notations. Some systems were even developed without following any standards or logic. This study however, has revealed a need for empirical study of libraries with rich collections on Islam in order to gain a better understanding of the problem and find an optimal solution.**

Keywords—Islam, Classification system, knowledge, Libraries

I. INTRODUCTION

Mass production of literature and preservation of knowledge has been witnessed by the glorious early Muslim history with the establishment of huge libraries and its massive collection. Undeniably as time goes by, literatures are being widely produced on Islam and its different branches of knowledge. Therefore, the emergence of new topics and disciplines in the field of Islamic studies need a new independent and comprehensive classification scheme because the existing scheme could no longer accommodate the potential development of Islamic knowledge ((Idrees, 2013). This classification systems plays a fundamental role in the organization, display, retrieval, and access to the knowledge and materials in libraries. According to other researchers, during the last 150 years, formal classification systems and standards with proper notation and hierarchies have been developed to replace the previous generic categorization of human knowledge (Idrees, 2013). These systems are known and used by the libraries internationally. Some of such international standard systems are Dewey Decimal Classification (DDC), United States of America Library of Congress Classification (LCC), Universal Decimal Classification (UDC), Henry E. Bliss's Bibliographic Classification (BC), and S.R. Ranganathan's Colon Classification (CC).These systems have served their purpose adequately in most disciplines and areas of knowledge. Nevertheless, some grey areas lack proper place and enumeration in these "fit-for-all" standard classification systems. Islamic knowledge is one of such areas that has not been properly addressed by these systems. Hence the libraries that have developed extensive collections on Islam face the problem of organizing their collections while using these systems. This paper examines this problem and presents a potential solution.

II. OBJECTIVES

The development of extensive Libraries collections schemes on knowledge is facing a lot of setbacks in organizing their collections while applying the commonly used classification systems. The reason for such challenges is that the standard library classification systems do not provide sufficient place, proper enumeration, and sufficient expansion for resources on various filed especially Islamic studies, Reasons are lack of proper awareness on the part of deviser on the depth and variety of Islamic topic and also the lack of interest on Islam. Using the Makassar community as a case study, this paper intends to address the following;

1.To draw an accurate picture of the classification problems faced in the organization of Islamic knowledge and materials in the libraries that have reasonably good collections on Islam.

2.To know what local classification practice are used and to overcome the problem encountered in these libraries?

3.To discover the satisfaction level of the libraries with their presently adopted classification systems.

4.To suggest the optimal solution of the problem.

III. LITERATURE SURVEY

Libraries have long been institutions where users find information. And one major way in which libraries materials are organized is called classification, which is a technique of organizing knowledge in facilitating the use of reading materials and provide convenience to the users. It plays a vital role in the physical arrangement, gaming access to to reading materials, and retrieval of library materials. According to literature library classification is “the arrangement of books on shelves or descriptions of them, in the manner which is most useful to those who read. Rafferty (2001) also states that general classification schemes for libraries are concerned with mapping knowledge so that ‘subjects’ are differentiated from each other and the relationships between ‘subjects’ are spatially represented

Some of the widely used internationally accepted classification scheme for organizing information are Dewey Decimal Classification (DDC), U.S. Library of Congress Classification (LCC), and Universal Decimal Classification (UDC). According to Arianto (2006), most of the libraries in Islamic countries have employed DDC in organizing their collection. The Islamic countries' libraries that have used DDC are Pakistan, Saudi Arabia, Iran and Indonesia, while LCC in Malaysia has been the most widely employed by university libraries.

All these three schemes are easy to use and convenient for most general collection libraries. However, review of literature indicates that empirical data collected by Idrees & Mahmood (2009 & 2010) and later reaffirmed by Idrees (2012) had shown that the libraries are facing problems regarding the classification of materials that houses rich collection on Islam. Their investigation discovered that the standard classification schemes haven’t yet provided proper place and enumeration to Islamic topics in their schemes. Also there were no uniform practice and coordination among the libraries in classifying materials on Islam. Idrees (2011) reported that these standard classification systems also lack proper space for materials on Islam for two reasons: less awareness on the part of devisers on the depth and variety of Islamic topics; and their bias and lack of interest on Islam. Using either, the original notation or alternative notations, these different indigenous classification schemes and expansions have been developed without following any standard or logic.

Sulistyo-Basuki (2008) reported that the Indonesian librarians had changed the inappropriate term of ‘Mohammedanism’ used in the 15th edition of DDC to ‘Islam’ in spite of its lacking notation for the purpose of the organization and arrangement of Islamic materialsAmong indigenous tree crops, the demand for *Adansonia digitata* L. globally has increased enormously dramatically in more sectors, such as the medical industry, food industry and cosmetic industry. For instance, the discovery of pharmacological properties as well as the multiple medicinal purpose uses of the whole plant in many part of the world [1],

particularly Africa, places the plant at a higher pedestal. proceedings.

Adansonia digitata L. is a perennial plant mostly regarded as a fruit-bearing forest tree. Known as baobab tree in both English and French, it belongs to the Malvaceae family and very characteristic of the Sahelian region [2]. It is a multipurpose and widely-used species with medicinal properties, numerous food uses of various plant parts, and bark fibres are used for a variety of purposes [3, 4]. Even though the tree can live up to 1000 years or more the trees are generally deciduous, shedding its leaves every dry season. For the past years, baobab leaves have been a major component in traditional diets. The leaves which are rich in iron and other vitamins are commonly used as a leafy vegetable. The leaves can be eaten fresh or in the form of dry powder. In countries like Nigeria, Togo and Ghana the dried leaves are called “kuka” and are used to make delicious vegetable soup [4]. The dry pulp of the fruit, after separation from the fruits and fibres is eaten directly mixed into porridge or milk. The seeds of baobab can be used as thickener for soup. The seeds may be fermented into seasoning, roasted for direct consumption or pounded to extract vegetable oil. The tree also provide source of fibre, dye and fuel. The indigenous use baobab as source of water and food [1, 5].

In spite of the numerous benefits of baobab particularly the leaves in diet, it has never been under cultivation like the other indigenous vegetable species in northern Ghana. The few baobab trees found in northern Ghana are naturally regenerated plants. For this reason, fresh leaves available only in the wet season (3-4months). Observations showed that even during the wet season few fresh baobab leaves are seen on the market compared to other numerous leafy vegetables, while in the dry only the dry processed forms are readily available. However, consumers prefer fresh vegetables to the dry processed form. In this regards, mostly women and children are found scouting for fresh leaves in the wild during the dry season. This practice turns to be laborious, time demanding and in most cases lead the destruction of branches to obtain few leaves. Like the other leafy vegetables, baobab leaves production are affected by several factors including pests and diseases, extreme temperatures, erratic rainfall pattern, long drought and low soil fertility. Women and children mostly engage in wild leaves harvesting are exposed to snake bites, scorpions, among others. There have instances where children have been victims of severe injuries from broken trees branches. Therefore, it is commendable to search for alternatives to makes fresh baobab leaves available in quality and quantity all year around through garden cultivation.

In recent years, poor soil fertility, low levels of available mineral nutrients in soil, inappropriate nutrient management strategies, as well as lack of

plant genotypes with high tolerance to nutrient

deficiencies or toxicities are major bottlenecks contributing to food insecurity, malnutrition and eco-system degradation [6]. In general, investigations into plant nutrition can provide highly valuable information that can be used to negate the constraints outlined earlier. This will eventually result in increased productivity, sustained food and nutrition security with eco-friendly strategies. Several authors indicated that at least 60% of cultivated soils have problems limiting plant growth, that are attributed to mineral-nutrient deficiencies and toxicities, and approximately 50% of the world population has micronutrient deficiencies, thus presenting research into plant nutrition a promising area to augment global demand for sufficient food production and raise nutritional value [7-9]. It is estimated that high increase in world fertilizer consumption may hit as much as 200 or even

300 million tons in 2020, which prompts concerns due to low nutrient use efficiency and poor soil management [10]. For that matter, study of element and nutrient balances at various stages such as on-farm, nursery, and soil system balance, has remain generally preferred as an approach to sustainable agriculture productivity. However, there still are inadequate information in soil amendment for indigenous leafy vegetables.

Nowadays, commercial and traditional farming in Ghana are choosing to use of organic fertilizers for growing vegetables crops due to the many benefits to the soil, water and living organisms. Compared to inorganic fertilizers, organic manure can serve as alternative practice for soil structure improvement [11] and less cost to the poor farmer. However, to the best of our knowledge, adequate information on agronomic practices on both soil amendment and harvesting to domesticate the production of baobab leafy vegetable are completely lacking. However, efforts toward establishing standards for intensive cultivation of baobab seedlings to produce fresh leaves during the dry season as well are most appropriate. The specific objectives of the present study include; to determine the effect of different types of soil amendments on leaf yield, to determine the most appropriate harvesting frequency that affect leaf retention to maintain baobab seedlings growth as garden plants.

II. MATERIAL AND METHODS

Description of Experimental Site

A pot experiment was carried out in the plant house of the Faculty of Agriculture, UDS at Nyankpala near Tamale. The experimental site lies within the interior Guinea Savanna of Ghana which falls on latitude 9^{O} 25' 141", longitude O^{O} 58' 142" and at an altitude of 183m above sea level. The natural vegetation is grasses, shrubs and few trees that are scattered. The soil is brown in colour, moderately drained with sandy loam texture, derived from voltaian sandstone and classified as Nyankpala series (Plinthic Acrisol). The rainfall pattern is monomodal and erratic and associated with prolonged drought. The area has the total annual monomial rainfall of about 1022mm which falls mainly between May and September each year. The area has an average minimum temperature of 25 ^{O}C and maximum average temperature of 35 ^{O}C. During the experiment the Plant House recorded a mean minimum temperature between 22.5 ^{O}C and 32.0 ^{O}C with relative humidity between 34.8 % and 48.2 %.

Experimental Design

A 3 x 5 x 3 factorial in a Randomized Complete Block Design (RCBD) was used. There were five different soil amendments: cow dung (cow manure)/sheep manure/poultry manure/NPK 15-15-15 and zero-manure (control). Approximately10t/ha of various organic manure each at 226.8g/pot and 200kg NPK/ha at 11.5g NPK/pot were used to treat sandy loam soil. The rates of organic manures and NPK used were based on earlier work done on cabbage in the study area. Harvesting regimes of leaves consisted of the following: every 2 weeks harvest, every 3 weeks harvest and zero-harvesting (control). Leaves of control plants were retained and harvested only at the 4^{th} harvest. A total of 15 treatment combinations were used. Ninety pots measuring 18 x 15cm were laid in 3 blocks with 30cm between blocks.

Different organic manure was mixed with soil before filling and sowing of the baobab seeds. NPK (15-15-15) fertilizer was applied to the seedlings two weeks after germination whiles the control received no fertilizer treatment. Three seeds were sown and subsequently thinned to one seedling in each pot at the 7^{th} days after germination.

Data collection and statistical analysis

Data was collected on the following parameters; plant height, stem girth at 5cm above ground, number and leaf weight were recorded at weekly interval. During harvesting, three leaflets were left on each plant after every harvest to help the plants in photosynthesis. Data collected were subjected to analysis of variance (ANOVA) using the computer software GENSTAT (sixth edition) and the least significant

difference (LSD 0.05) were used to separate the

means.

III. RESULTS AND DISCUSSION

Effect of soil amendments and harvesting on vegetative growth: The results showed that

interaction between the soil amendments and harvesting regimes did not significantly (P >0.05) affect plant height although soil amendments alone significantly (P <0.05) affected plant height at 2, 4, 6, 8, 10 and 12 WAP. The results on comparison between amendment type was as follows Cow dung > Poultry manure > Sheep manure > NPK > Control (Table 1). Harvesting of baobab leaves at 4 WAP (Figure 1) and 8 WAP (Figure 2) showed a significant difference (P < 0.05) in plant height although plant height at 2, 6, 10 and 12 WAP were not significant (P >0.05). Results indicated that the different soil amendments significantly (P < 0.001) affected stem girth only at 8 WAP (Figure 3), 10 WAP (figure 4) and 12 WAP (figure 5) although cowdung and control had better influence with NPK recording the least effect on stem girth. This observation could be due to the reason that stem girth (an indicator of plant growth) with time increases both in size and the number of cells increase [12, 13].

Cow-dung as an organic manure is a good source of the three main elements (nitrogen, phosphorus and potassium) which are needed by plants. It also improves the physical

Table 1. Effect of soil amendments on mean plant height at 14 days interval

	Mean Plant Height (cm)						
Soil Amendments	2 Weeks	4 Weeks	6 Weeks	8 Weeks	10 Weeks	12 Weeks	Means of treatments
Sheep manure	4.36	9.44	11.84	11.64	11.96	11.96	10.2
Cow dung	8.06	13.41	13.73	14.58	15.14	15.38	13.4
NPK	5.38	7.81	8.40	10.64	10.68	10.68	8.93
Poultry manure	6.99	13.26	14.90	15.00	15.06	14.07	13.2
Control	NPK	8.40	11.23	3.47	4.93	5.01	4.77
LSD (0.05)	2.657	4.084	4.708	4.347	4.796	4.616	

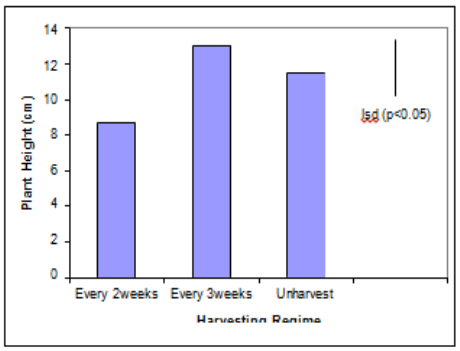

Fig.1. Effect of Harvesting Regimes on Plant Height at 4 WAP.

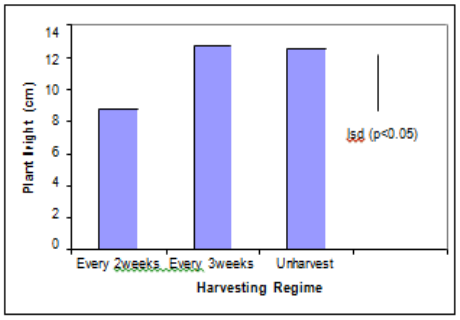

Fig. 2. Effect of Harvesting Regimes on Plant Height

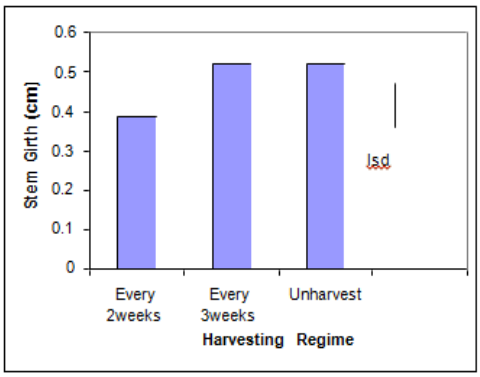

Fig. 3. Effect of Soil Amendments on Stem Girth at 8 WAP.

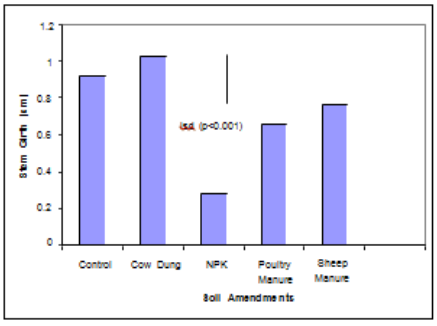

Fig. 4. Effect of Soil Amendments on Stem Girth at 10 WAP.

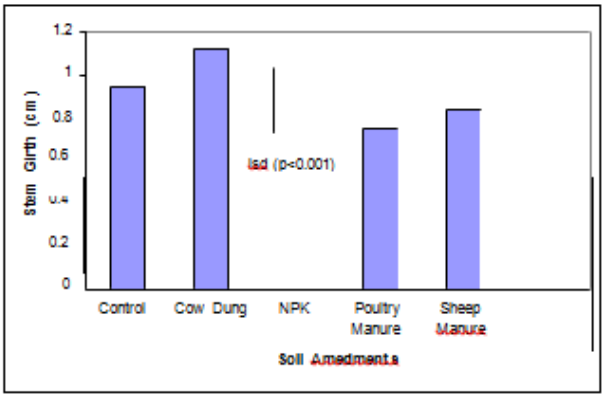

Figure 5. Effect of Soil Amendments on Stem Girth at 12 WAP

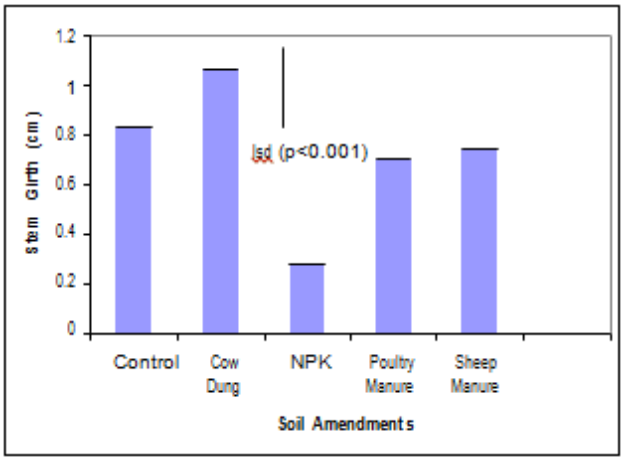

Figure 6. Effect of Harvesting Regimes on Stem Girth at 4 WAP.

Effect of soil amendments and harvesting on Mean Leaf Yield of baobab seedlings

The comparison between amendment type followed this gradient: Cow dung > Poultry manure > Sheep manure > NPK > Control. Even though, soil amendments and harvesting regimes did not have any interactive effect on leaf yield, but soil amendments alone significantly (*P* <0.05) affected first, second and fourth harvests. The first harvest showed much increase in leaf yield than the other harvests (Table 2). This was an indication that plants produced high number of leaves at the initial growth stages. From the results, NPK gave relatively low leaf yield over the period [20], while organic manure was able to provide enough nutrients that perhaps contributed to the high leaf yield [21]. Cow-dung, for instance has is not only popular among farmers in most parts of the savannah zone of Ghana, but has a lasting effect on the structure and water holding capacity. Similarly, the different harvesting regimes (2nd and 3rd harvests) had a significant (*P* <0.001) effect on mean leaf yield (Table 3). The less frequent leaf harvest (every 3 weeks) produced higher leaf yield than every 2 weeks was expected which perhaps enabled the seedlings to recover from defoliation.

Table 3. Effect of Harvesting Regimes on Mean Leaf Yield at Different Harvest.

	Mean Leaf Yield (g)				
Soil Amendments	1st Harvest	2nd Harvest	3rd Harvest	4th Harvest	Means of treatments
Sheep manure	1.278	0.289	0.366	0.461	0.60
Cow dung	1.188	0.376	0.393	0.788	0.69
NPK	1.117	0.202	0.480	0.441	0.56
Poultry manure	1.163	0.344	0.540	0.520	0.64
Control	0.259	0.149	0.164	0.147	0.18
l.s.d (0.05)	0.647	0.150	0.350	0.377	

Table 3. Effect of Harvesting Regimes on Mean Leaf Yield at Different Harvest.

				Mean Leaf Yield (g)	
Harvesting	1st Harvest	2nd Harvest	3rd Harvest	4th Harvest	Mean of treatments
2weeks	1.199	0.342	0.366	0.483	0.60
3weeks	1.703	0.374	0.700	0.831	0.90
Un harvest	-	-	-	0.100	0.1
l.s.d (0.05)	0.501	0.116	0.270	0.292	

Effect of Soil amendments and harvesting regimes on mean Leaf Count

According to the results soil amendments had a significant (*P* <0.05) effect on mean leaf count and the gradient is as follows: Cow dung > Poultry manure > Sheep manure > NPK > Control (table 4). Studies indicated that soil augmented with organic manure content to 4-5%, can maintain sufficient plant nutrition for a good crop to the end of the season or possibly over a period of years. This has been the practice, particularly in both rural and urban horticulture [22]. Organic soil amendment are very essential the sustainability of crop production systems since it forms important sources of nitrogen and carbon [23, 24] and it is also very critical in moderating pH and transportation of soil contaminants [22].

Table 4. Effect of Soil Amendments on Mean Leaf Count at Different Weeks

	Mean Leaf Count						
Soil Amendments	2 Weeks	4 Weeks	6 Weeks	8 Weeks	10 Weeks	12 Weeks	Means of treatments
Sheep manure	2.123	2.623	2.92	2.95	1.884	1.783	2.38
Cow dung	2.363	2.824	3.03	3.92	2.296	2.353	2.80
11.5g NPK	2.297	1.948	2.38	2.53	1.830	1.800	2.13
Poultry manure	2.379	2.767	3.02	2.99	2.228	2.351	2.62
Control	1.693	1.762	1.23	1.21	0.969	0.811	1.28
l.s.d (0.05)	0.470	0.578	0.725	0.726	0.615	0.559	

Generally, harvesting regimes significantly (*P* <0.05) affected mean leaf count positively except at 2 WAP where the harvesting did not significantly affect mean number of leaves (See table 5). Feeding at an early stage of plant growth makes a huge difference later [11], which probably might have accounted for the significant differences in mean leaf count subsequently. Organic manure, particularly animal manures have been used for plant production effectively for centuries and has been considered an integral part of sustainable agriculture [25].

Table 5. Effect of Harvesting Regimes on Mean Leaf Count at Different Weeks

	Mean Leaf Count						
Harvesting Regimes	2 Weeks	4 Weeks	6 Weeks	8 Weeks	10 Weeks	12 Weeks	Means of treatments
2weeks	1.937	1.924	2.08	2.05	1.312	1.336	1.77
3weeks	2.330	2.651	2.64	2.72	1.560	1.560	2.24
Unharvest	2.187	2.580	2.83	2.80	2.532	2..383	2.59
l.s.d (0.05)	0.364	0.449	0.561	0.563	0.476	0.433	

IV. RESEARCH IMPLICATIONS FOR NUTRITION AND INCOME SECURIT

Until recently, the baobab tree has never been planted deliberately but rather grows virtually wild. In the regions where the tree is found, it is cherished (even worshipped). However, land degradation, desertification and population pressure are now breaking down traditional farming systems, and the all-important trees particularly the baobab that sustain people are either disappearing or suffering from over exploitation. As a matter of fact, if people start to plant and cultivate their own trees, they will no longer have to strip so many leaves from adult trees around the village. According to Schreckenberg, et al. [26] leaf stripping prevents 90 percent of wild baobab from bearing fruit. However, if the findings of this study are adopted, that will mean relatively young seedlings can be used for intensive leaf production throughout the year for consumption. Baobab leaves have a high content of iron compared to numerous other wild-gathered foods, and are a rich source of calcium [27] which will go a long way to improve upon the diet of the people who utilize it most, particularly in northern Ghana Finally, the advantage of cultivating baobab seedlings include the use of limited production input. The seedlings have the potential to grow in soil with limited fertility although addition of organic manure will increase the soil nutrient level over long period of time and improve physical soil qualities. In order words, the physical and chemical qualities as well as soil microorganisms in soil will be improved.

V. CONCLUSION

Baobab seedlings can be grown in home gardens. Improving the soil nutrients will facilitate better plant growth under intensive garden cultivation. It was also evident that harvesting every three weeks will give high leaf yield. Cow-dung combined with harvesting of leaves every 3 weeks could support regular leaf yield and growth performance of baobab. The findings are in line with the purpose to domesticate baobab seedlings to market garden plants for commercial cultivation. Subsequent investigation should consider different aspect of Baobab cultivation practices such as the effect of intercropping, plant spacing and integrated pest control on leaf yield and retention.

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