

Research Article**Size and Shape of Yagya Kund: Mathematical and Spiritual aspects**Jairam Motlani^{1*}¹Research Scholar, Dev Sanskriti Vishwavidyalaya, Haridwar, India*Corresponding. Email: jairam.motlani@gmail.com<http://doi.org/10.36018/ijyr.v3i1.50>

Abstract. The size and shape of the Yagya Kund is one of the important aspects for successful completion of Yagya. Vedic literature describes in details about their types, size, shapes and constructions. Yagya Kund size and shape helps in construction of the Kund for specific spiritual or materialistic outcomes which require specific mathematical measurements of Yagya Kund. The shape of the Yagya Kund is decided based on the purpose of the Yagya, while the size is decided based on the total offerings given to the fire. The spiritual and mathematical aspects on size and shape of the Kund are presented in the study. During the study analysis, it was observed that Vedic texts used mathematical knowledge from various streams such as astrology, trigonometry, geometry, etc in the construction of Yagya Kund. The size of Yagya Kund is directly propositional to the number of offerings to be done. In addition, during the construction of any Yagya Kund, first of all a circle is made whose parameter is fixed to the number of offerings to be done, then a particular Yagya Kund is to be constructed. Regardless of the shape, the construction of Kund based on the diameter given in the ancient texts resulted in the same surface area and volume for particular number of offerings, opening a gate for further study of fine mathematics involved in the Yagya Kund construction.

Keywords. Yagya Kund, Shape, Size, offerings, Vedic Mathematics, Area and Volume, Angul, Hast, Yava, Yuka

Introduction

Yagya is an essential part of Indian culture. According to Indian scripture, the human life runs on the philosophy of Yagya from birth to the end. In Indian culture conceiving (*garbhdhan*) is also a kind of Yagya and so the funeral (*anteyeshti*). There are three root meanings of word Yagya i.e. to worship (*dev poojan*), to harmonize (*sangatikaran*) and to bestow (*daan*) (1,2).

Yagya is being used for different purposes for spiritual or materialistic desire and One of the central aspect in this regard is shape and size of the Fire pit. The Vedic ritual Yagya is done in the fire pot termed as Kund.

As per the Panini Grammar the root (*dhatu*) of the word Kund implies for meanings – 1) protective place (*rakshanarthkudi*), 2) object of the measurement (*manarthkkun*), 3) the opening place, nurturer, place of fire, pot for water (*koshkaar Kund*), etc. Here for the perspective of Yagya, it is taken as the place for fire of Hawan (Yagya). Thus, Vedic literature describes Kund as a medium to offer *havi* (offerings) to divine and the whole process as Yagya (2).

This Vedic ritual Yagya includes very strict mathematical measurement for every part of the ritual. The size of *Mandap* is dependent on the size of the Kund and the size of the Kund is dependent on the number of offerings. The number of offerings is dependent on the spiritual penance (*Dharm-anushthan*) it was meant for.

In Vedic times the science of Yagya has highly evolved. This is reflected in different types of materials and tools used in the Yagya with detailed protocols of their construction and utility. One such aspect of Yagya is the size and shapes of Yagya Kund.

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The spiritual and mathematical aspects on size and shape of the Kund are presented in the study.

Different shapes of Yagya Kund and their purposes

‘Bhavishya Purana’ and ‘Kund Mandap Siddhi’, both books described total 10 types of shapes i.e. Circular, Semi-circular, Vulvar shape, Trigonal shape, Lotus shaped, square shaped, Pentagonal shaped, Hexagonal shaped, Heptagonal shaped and Octagonal shaped. They are shown in Table 1. Different shapes are recommended for specific spiritual and material purposes and ignorance of it, as per the scriptures, it can lead to nullification or reduction of the desired outcome. Table 1 also described their purpose (3,4).

These are the commonly mentioned Yagya Kund shapes. However, there are texts mentioning other types of shapes such as starshaped Hexagonal (*vishamshadastra*) and starshaped octagonal, etc (*vishamashtashtra*), etc (2) (Figure 1).

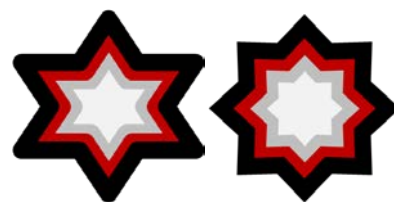


Figure 1. Some additional example of Yagya Kund A) Star shaped Hexagonal, B) Star shaped Octagonal

Yagya Kund (top view of Kund image).











Sr.No	Name of Yagya Kund	Type of shape	Image of Yagya Kund (top view)	Anecdotal example of Purpose of Kund Shape
1	Vrittakaar Kund	Circular		For peace
2.	Ardhchandrakar	Semi-circular		For welfare
3.	Yoni Kund	Vulvar shape		To get progeny (child) and to treat women diseases
4.	Trayasra	Trigonal shape		To win over enemies
5.	AbajKund(Padma)	Lotus shaped		To induce health, peace, wealth, positive outcome, rain
6.	Chatusra Kund	square shaped		For everything
7.	Panchasra Kund	Pentagonal shaped		For peace from enemey energies
8.	Shadasra Kund	Hexagonal shaped		For defying enemies (Uchhedan and maran karma)
9.	Saptakar Kund	Heptagonal shaped		To treat psychological disorder(<i>bhoot dosha shanti</i>)
10.	Ashtasra Kund	Octagonal shaped		To attain good health

Table 1. List of the Yagya Kund as per the shape and their purposes.

Different shapes of Kund provide the *Yagyakarta* (person, who is doing the Yagya) different results. The person (*Yagyakarta*) chooses the shape of Kund on the basis of results he or she wants from the Yagya. In the book 'sharda tilak' results of various shape of Yagya Kund has been described. In the shloka in the 3rd chapter 86-89 (*tritya Patal, 86-89*) (5), it mentioned - the square Kund can be used for all kind of work, yoni Kund to get progeny (child), semicircle Kund for grace, triangle Kund to fight off enemies, circle Kund to attain peace, hexagonal Kund for defying enemy (*maran* and *uchchheda karma*), lotus shaped Kund to promote the rain and octagonal Kund to attain health (see Table 1). Apart from that in 'Mandap Kund Siddhi' book, it has been mentioned that pentagonal Kund is used for attaining peace and heptagon Kund is used to treat psychological disorders (*bhootdosh shanti*) (Table 1) (4)

Shape of Yagya Kund as per the person class (cast)

In Vedic times, the cast system was based on the deeds and not based on birth. There are plenty of examples person born to one class choose the action of the other class. Regardless, each type of class required different spiritual and materialistic energy and hence, different Kund shapes were recommended for different class. Besides it also indicated that Yagya was compulsory part of their life regardless of their class system.

The book 'Sharda Tilak' describes the utilization of different Yagya Kund shape by different category of people as follows (3) - It means *Brahmin* should do Yagya in square shape Kund (*chaturstra Kund*), *Kshatriya* should do in circle Kund (*vrattakar Kund*), *Vaishya* should do in semi circle Kund (*ardhchandrakar Kund*), *shudra* should do in triangle Kund (*trikona*

Kund) and females should do in Yoni Kund (3).

Size of the Yagya Kund is dependent on the total number of offerings

Vedic literature mentioned size of the Kund is dependent on the total number of offerings. The size of the Yagya Kund is calculated before its construction as it is mandatory that during Yagya process, it should not overflow and no situation arise that it gets full and access needs to be removed. The fire is considered very sacred and divine and it should be respected well. Rishis, hence, used a very fine mathematics for the whole process. i.e. Yagya Kund must have capacity to hold that volume of offerings and at the end of the Yagya, Yagya Kund should be filled 2/3 of the total size and height.

Total number of offerings decides total volume. Hence, a Vedic calculation for total number of offerings and required size is mentioned in literature as follows in table 2.

A Shloka from ancient Indian book of Yagya known as shardatilak (3) states that the size of Yagya Kund should be considered on the bases of number of offerings to fire (*ahuties*) to be offer. For 10,000 offerings (*ahuties*) *BhuHastatmaka* Kund (1 hand long) is enough, for 100000 offerings *DueHastatmaka* (2 hand long) should be considered. For 1000000 offerings person should make *ChaturHast* Kund (4 hand long) and if evenmore number of offerings are involved in Yagya the *AashtHastatmaka* Kund (8 hand long) should be constructed.

Here 'hand' is used as unit which is not as length but it rather represents area or volume and it is a unit required for construction of the Yagya Kund. The details are as follows.



Mathematical units involve in construction of Yagya Kund (5)

Here the Kunds are classified based on the size measured in the unit 'Hast' (hand). In the construction of Yagya Kund in Vedic times the mathematical formulas had particular units such as *Liksha, Yuka, Yava, Angul, Hast*. These units helped in doing construction of fine and complex shaped Yagya Kund. These units are converted and shown in modern units as below.

- 8 *liksha* = 1 *yuka* = 0.03125 cm = 0.01230316 inch
- 8 *yuka* = 1 *yava* = 0.25 cm = 0.09842525 inch
- 8 *yava* = 1 *Angul* (approximate width of a finger of host) = 2 cm = 0.787402 inch
- 24 *Angul* = 1 *Hast* = 48 cm = 18.897648 inch
- 21 *Angul* = 1 *ratni* = 42 cm = 16.535442 inch

- 22 *Angul* = 1 *aratni* = 44 cm = 17.322844 inch

'Hast' and 'Angul' are the main units for Yagya Kund construction. 1 Hast is 24 Angul. This is a base formula for all types of calculations in the Yagya Kund construction.

The research article by Shailajkumarshrivastava (5) described 1 Angul as 2.0 cm. The book by Munger Yoga Publications (6) described 1 Angul as 1.9 cm. It also mentioned that the Angul used for calculating the Yagya Kund construction is the measurement of the width of the thumb of the *Yajman* (host), who is supposed to give the offerings to fire. It also explains that the total volume of offerings is dependent on the size of the finger/Angul of the host. This was the finest calculation used in Yagya Kund construction.

Number of oblation	Traditional Name of the Kund	Common term & Traditional unit	Area of the Kund
<50	---	<i>Mushthimatra</i>	---
51-99	---	<i>From Kuhani to Kanishka</i>	---
Up to 1000	<i>BhuHastatmaka</i>	One hand = 24 Angul	576 Angul
Up to 10,000	<i>DueHastatmaka</i>	2 hand = 34 Angul	1152 Angul
Up to 1,00,000	<i>AbidhyHastatmaka</i>	4 hand = 41 Angul	2304 Angul
Up to 1 million (10,00,000)	<i>Angsthatmaka</i>	6 hand = 58 Angul	3456 Angul
Up to 10 million (1,00,00,000)	<i>AshtHastatmaka</i>	8 hand = 63 Angul	4608 Angul

Table 2: Relation of the number of offerings and required size of the Kund

Fundamental considerations in the Yagya Kund construction and their mathematical aspects

Bhavishya Purana (2) and *Sharda Tilak* (chapter 3 shloka 82-83) (3) described - if you have to offer 50 to 99 offerings then make *rattipraman* Kund (21 Angul), for 100 to 999 offering make *aratnipraman* Kund (22 Angul), for 1000 to 9999 offering make 24 Angul (1 Hast) Kund, for 10,000 to 99,999 offering make two 'Hast' Kund, for 100,000 to 999,999 offerings make 4 'Hast' Kund, for 10,00,000 to 99,99,999 offerings make 6 'Hast' Kund, and if the offerings are over 99,99,999 then make 8 'Hast' Kund. Table 2 describes the relevant area for different Kund sizes.

The volume is same of all different shaped YagyaKunds

The most interesting thing in these calculations is that regardless of shape, the volume is kept same for the same amount of offerings as offerings count decides the total volume required (Table 3).

The diameter of the circle for each type of the Kund shape was previously described in the book 'Kund Mandap Siddhi' (4,8). Also the Vedic formula to calculate the area using diameter (see sloka 13 reference 8) is also described in the book and it was applied as shown in table 3. As it is seen the all 10 shaped with different diameter resulted in same area i.e. 576 Angul which is decided based on the number of offerings as shown in Table 2.

Sr. no.	Name of Yagya Kund shape	Diameter of circled (Angul.yava.yuka) = cm.	Multiply the square of diameter of circle (D^2) by the divisor given in shloka	Divide the product by 10000	Area of the Kund (Angul)
1.	Circular Kund (vritt Kund)	$(27.0.5) = 54.155$ cm	$7854 * D^2$	$5756982/10000$	575.7
2.	Padhma Kund	$(27.0.5) = 54.155$ cm	$7854 * D^2$	$5756982/10000$	575.7
3.	Ardhchandra Kund	$38.2.3 = 74.593$ cm	$2927 * D^2$	$5759927.2/10000$	575.9
4.	Yoni Kund	$30.2.0 = 60.5$ cm	$6293.4 * D^2$	$5760000/10000$	576
5.	Trikon Kund	$42.1.0 = 84.25$ cm	$3247.4 * D^2$	$5760000/10000$	576
6.	Chaturasra Kund	$33.7.4 = 67.875$ cm	$5000 * D^2$	$5760000/10000$	576
7.	Panchasra Kund	$31.1.0 = 62.25$ cm	$5944/2 * D^2$	$5760000/10000$	576
8.	Shadasra Kund	$29.6.0 = 59.5$ cm	$6495 * D^2$	$5760000/10000$	575.9
9.	Saptasra Kund	$29.0.0 = 58$ cm	$6841 * D^2$	$5759266.7/10000$	576
10.	Ashtasra Kund	$28.4.0 = 57$ cm	$7071 * D^2$	$5759329.4/10000$	575.9

Table 3. The diameter of the different Kund for its construction and calculation of their surface area.

Conclusion

Design and construction of yagya Kund requires very scientific and rigorous mathematical knowledge. Indian sage had developed the science of Yagya Kund construction with very fine mathematical models and they were great scientists. They provided Vedic mathematical formulation for preparation of yagya Kund which is true in current time period too. Regardless of the shapes the total volume & surface area remained same. The different shapes of yagya Kund have different aims as their purpose was to produce different energy with help of different Yagya Kund shapes. The energy science and protocols of different shapes for specific purposes is beyond the scope of this paper but it demands a thorough investigation of this Vedic wisdom.

References

1. Acharya shrivardrajpranita. Laghusidhhantkoumudi, subodh sutra (sutra 864). Choukhambha Sanskrit bhawan, Varanasi. 2018;p-582. ISBN: 978-81-89986-89-6.
2. Pt. Sri Ram Sharma Acharya. Yagya ka gyaan vigyaan. Mathura Janjagarn Press, 1998.
3. Purnaprajna Dasa. Bhawishyapuran. Ras Bihari Lal and Sons. 1992. ISBN 8184030150.
4. Maharshi Abhay katyayana. MandapKund siddhi. Choukhambhasurbhartiprakashan. 2017.
5. S.N. Khandelwal. Shardatilak. Choukhamba Orientalia, Varanasi. 2014.
6. Shrivastava Sk. Measurement units of length, mass and time in India through the ages. International journal of physical and social science. 2017;7(5):39-48.
7. Gyanshruti Sannyasi, Srividyananda Sannyasi. Yajna, a Comprehensive Survey. Yoga Publications Trust. 2006. ISBN 10: 8186336478.
8. Maharshi Abhay Katyayan. 2014. Kundark. Choukhamba publishing house Varanasi.