



aranyakam

The **Kuruma Tribe** have long been the inhabitants of the forest regions of **Muthanga**, a small town in the **Wayanad district** of Kerala, India, agriculture and cattle rearing being their primary occupation. They are one of the five main indigeneous tribal settlements in Wayanad and believed to be the descendants of Vedars, the region's ancient rulers.



The community has, since olden times, been farmers and hunter gatherers. They were even vital in the revolt against colonists during the rule of the famous king Pazhassi Raja, India's first freedom fighter against colonial rule. In 1952, they were forced to occupy land given by the state according to the Forest Policy Act (1952) and the Wildlife Protection Act. To this day, they continue to occupy these lands and tend to these fields while rearing cattle.

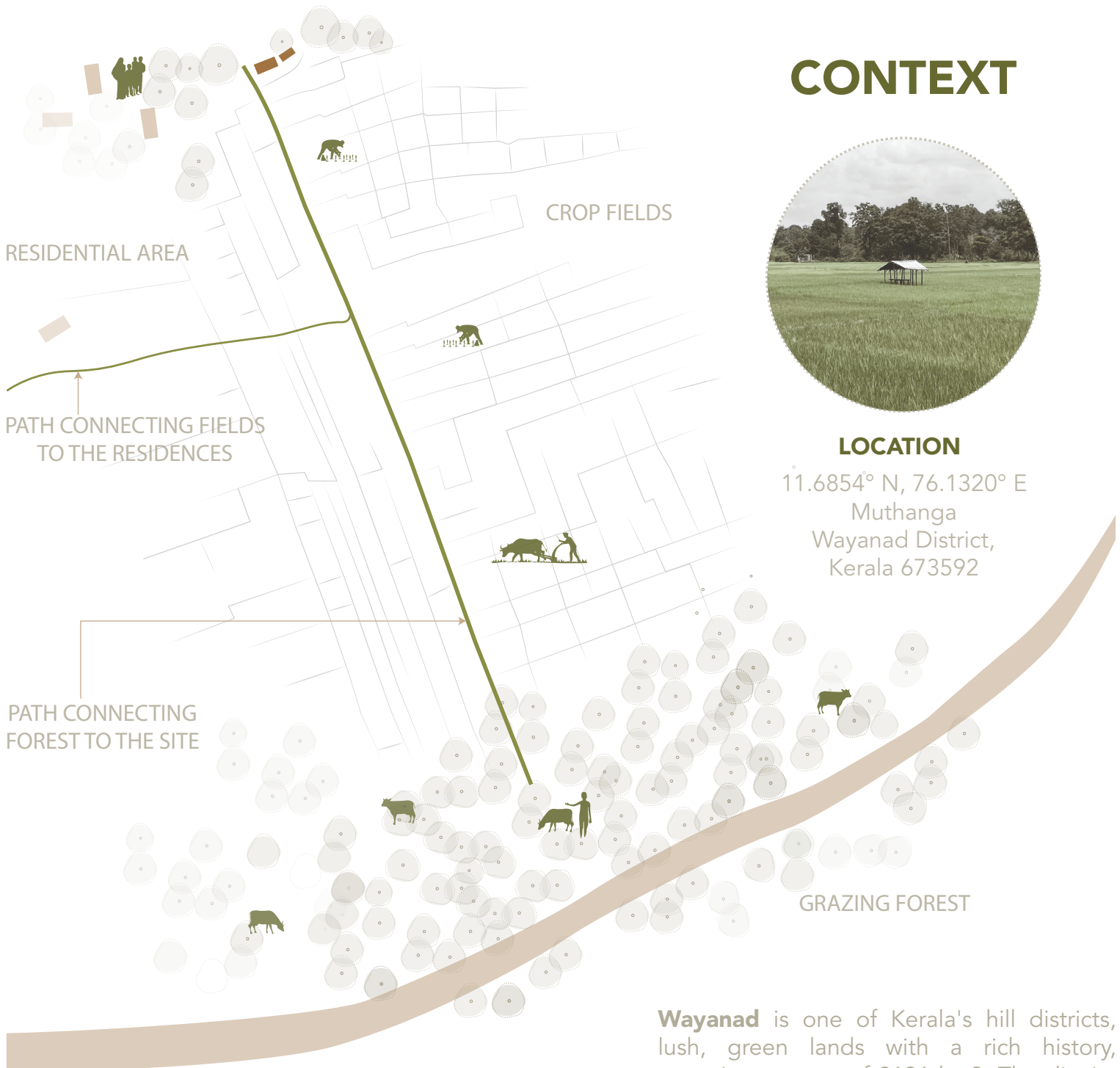
However, they have fallen far since those times. Most families have sold off their cattle and few remain who still do, their agriculture also declining. We hope to change that soon, raising the current annual income of Rs. 7000 to Rs. 3 lakhs.

CONTEXT



LOCATION

11.6854° N, 76.1320° E
Muthanga
Wayanad District,
Kerala 673592



GRAZING FOREST



RESIDENTIAL AREA

The cattle herds are housed in a shed adjoining the family's house. In the mornings, they are taken to the nearby forest area to graze and only return by 5 PM in the evenings.

Wayanad is one of Kerala's hill districts, lush, green lands with a rich history, spanning an area of 2131 km². The district consists of three main cities - Kalpetta, Mananthawady, and Sulthan Bathery. 17% of the district's total population comprises tribals - the highest in the state the number totalling to 1.25 lakhs. 90% of its population of 8.16 lakh rely on agriculture for their livelihood. 40,129 are farmers, 74,813 are agricultural labourers and 17,413 are plantation labourers. 37,267 people earn their sustenance from animal husbandry and forest produce. The major crops grown here are perennial cash crops like coffee, pepper, tea, cardamom, arecanut et cetera.

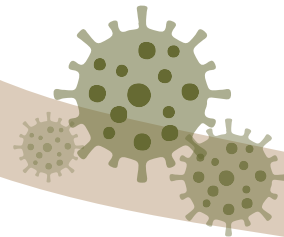
Our site is located in **Muthanga**, one of the district's major forest regions.

THE PROBLEM

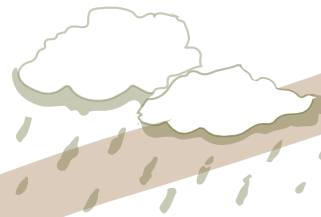


Initially, the community gained their income from agriculture and selling the dung from their cattle herds.

Since ancient times, the Kuruma Tribe have been rearing cattle and cultivating their fields - it is the tradition which has been followed for many years, through generations and defines their lifestyle and culture. Their main source of income was from selling the dung produced by the cattle and also selling the produce from their fields. In addition to selling the dung, they also used it for themselves as manure in their fields, negating the need for chemical fertilisers.



Due to irregular rain patterns and COVID-19, they experienced drought, famine and floods, leading to an agricultural loss and the small profit they used to receive from selling the cow dung was incomparable. As a result, most families sold their cattle herds as it was not economically feasible.



Now, only 4-5 families remain who have kept their herds, in an effort to preserve their culture and tradition.



The effort right now is to uplift the community and lift them out of their hard times while still preserving the community's culture and tradition.



Their current income is just a meagre sum of Rs. 7000/annum.



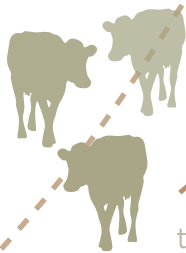


6am - day begins



8am - milking cows for household consumption

They produce 15 kg of dung everyday - of which 8 kg is produced while the cows are in the shed and not grazing - but their milk production is comparatively less with respect to other breeds. The milk produced is just enough for a single family's need but the dung produced is a natural fertiliser, one of the best for agriculture. Moreover, this dung can also be made into a particular type of organic fertiliser, **JEEVAMRUTHAM**.



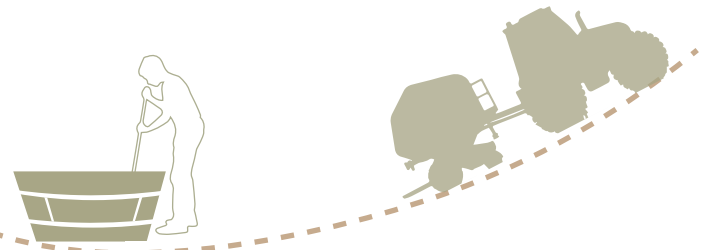
11am - The cattle is taken to the nearby forest for grazing. This gives them good access to a nutritious diet.



THE SOLUTION

Wayanad cows are indigeneous to Wayanad in Kerala. They are comparatively smaller and fall under the endangered species category due to cross-breeding and are on the verge of extinction as well.

The cattle raised by the families in the community are taken to graze in the forests everyday in the morning and only return in the evening by 6 PM. Their primary food intake consists of the forest vegetation and they are not fed anything else - there is no need for another source as the forest greens are more than sufficient for their growth.



Jeevamrutham constitutes cow dung, cow urine, jaggery and lintels in fixed quantities and can be in solid, semi-solid or liquid form. Aranyakam will make use of **Ghana-Jeevamrutham** (in solid form) as it has a shelf life of 6 months and is highly rich in various plant nutrients and absolutely chemical-free, keeping the microbes in the soil alive. It also improves soil quality and increases the nutrient absorption rate of plants to boost plant growth and production.

What is different about Aranyakam is that the Ghana-Jeevamrutham produced will also contain a handful of the nearby forest soil which enriches it with additional nutrients.

Our proposal involves a revamped cow shed for a single family whose herd consists of 12 Wayanad cows and a full fledged attached structure for the preparation of Jeevamrutham.

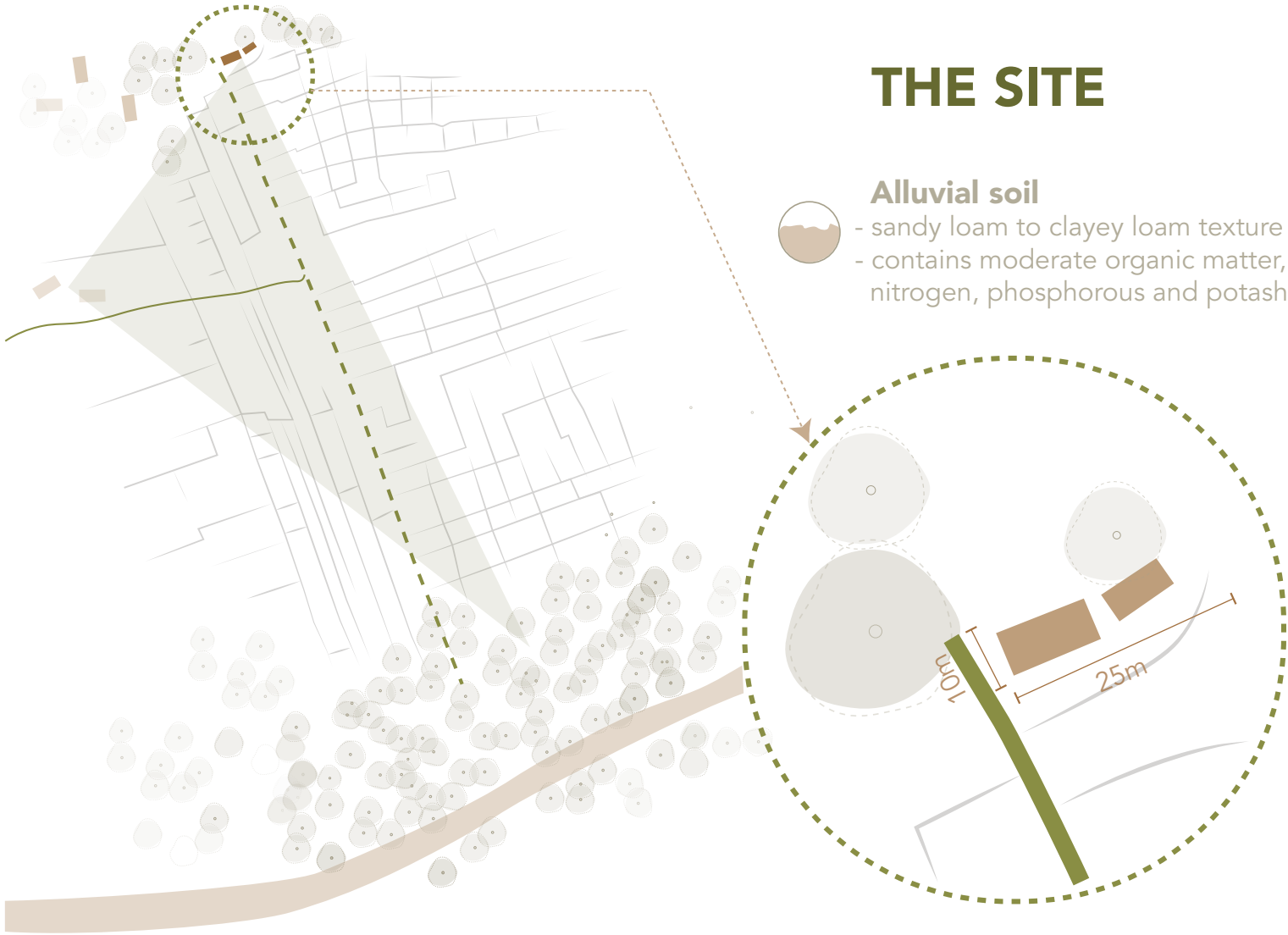
6pm - cattle is bought back to the shed before sunset, ending their activities for the day

THE SITE

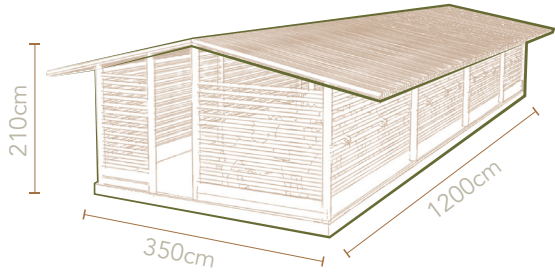
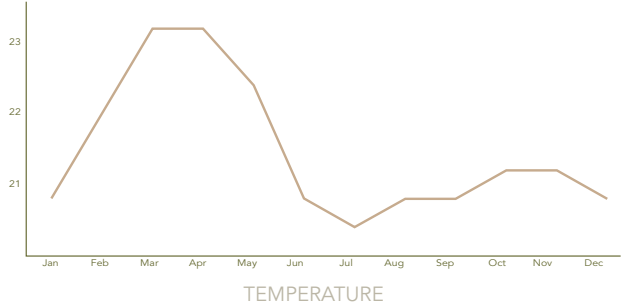
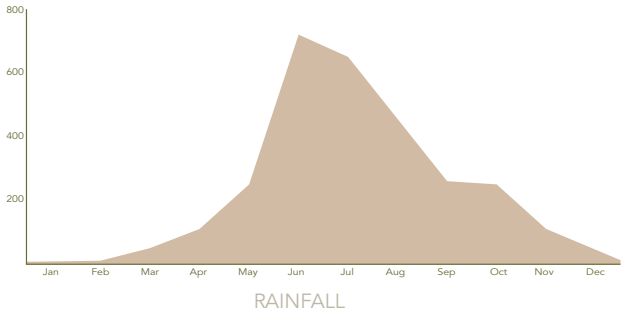
Alluvial soil



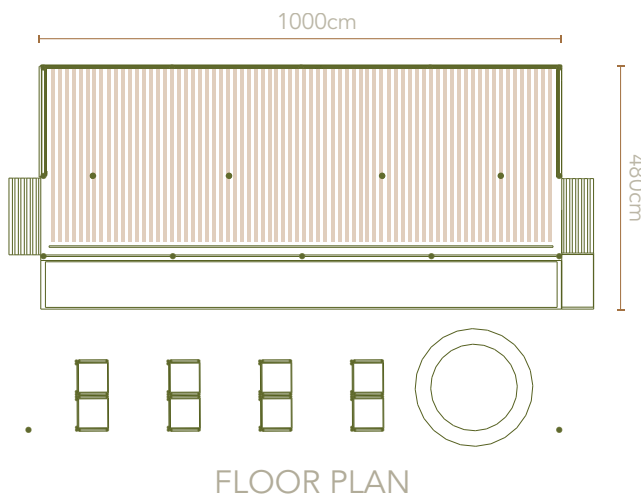
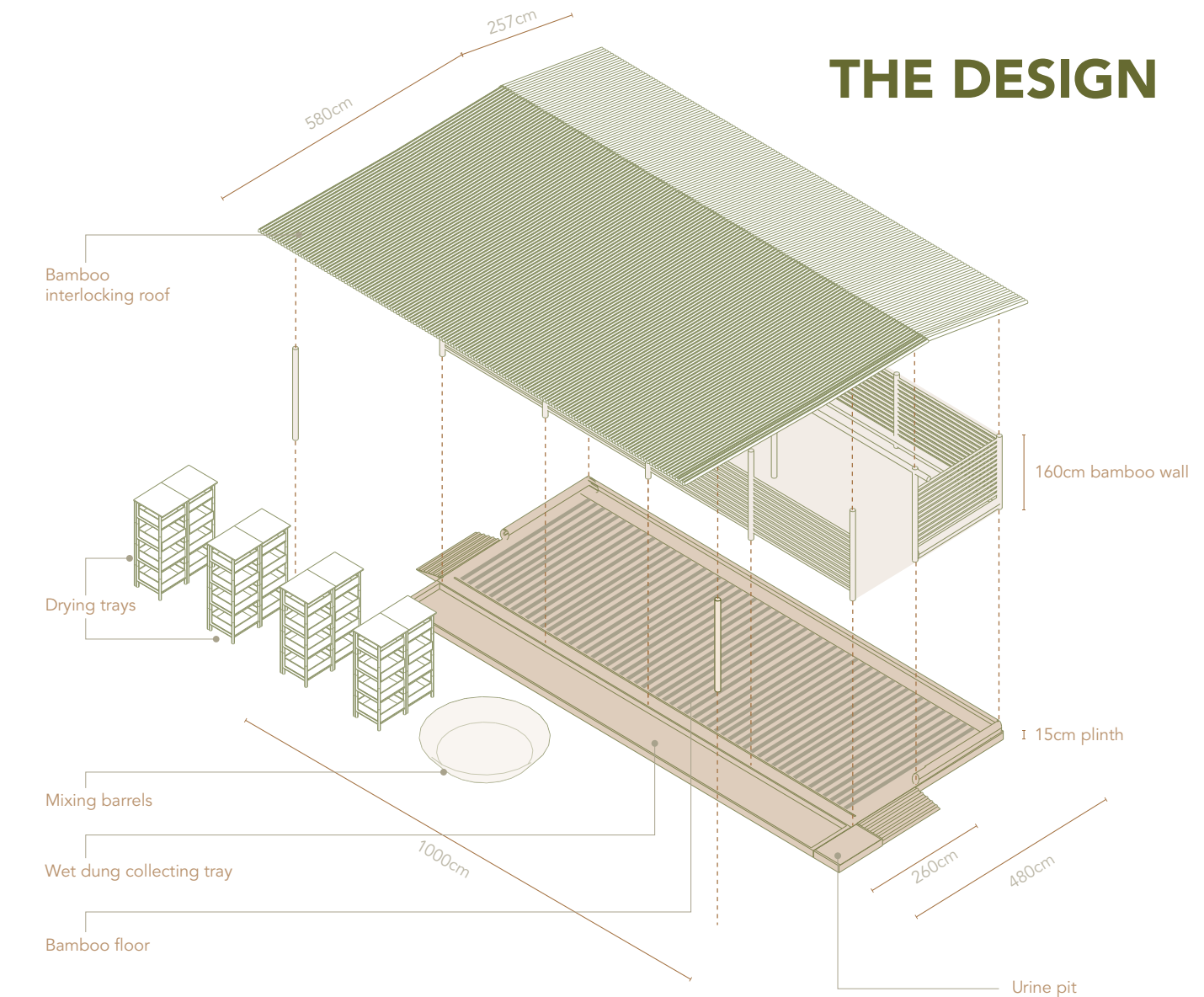
- sandy loam to clayey loam texture
- contains moderate organic matter, nitrogen, phosphorous and potash



Our site covers a tentative area of 200 m² but can be expanded with the successful implementation and expansion of the project in the future. The site abuts paddy fields on two sides and forests on the other two and currently has two dilapidated cow sheds. One of them belongs to Surendran who owns 21 Wayanad cows and the other belongs to his sister, Nalini, who owns 12 cows. We aim to start with Nalini and her 12 cows and on successful implementation, move on with Surendran



THE DESIGN



A module for five cows (1 cow gives 8kg dung; 5 cows give 40 kg) includes 24 trays. 1 tray can hold 5kg of wet dung and thus there is a requirement of 8 trays to collect dung for a single day. The time period for drying is 3 days.

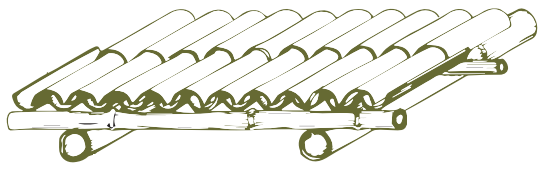
PHASE 1

Introduction of the manufacture of Ghana-Jeevamrutham to the families.

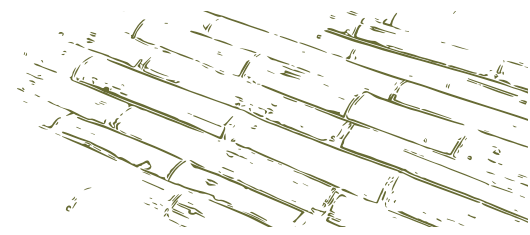
The project proposal comprises the following for the self-reliant manufacture of the Ghana-Jeevamrutham which can be introduced in any site.

- Wet dung tray** to collect dung from the shed
- Drying trays** for the storage and drying of dung over the span of 3-4 days
- Mixing barrel** where all the constituents are to be mixed for its preparation
- Green space** for growing lentils which could also transform into their vegetable garden

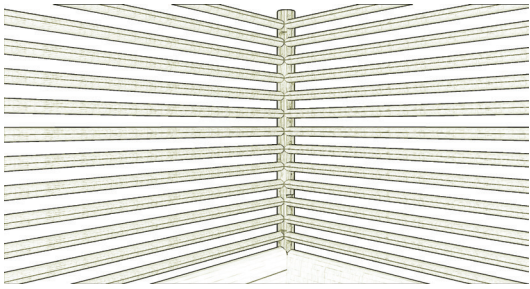




Roof: Made of cut bamboo.



Floor: Lined with hollow bricks and filled with rammed earth which is a mixture of construction waste materials and earth. This method of construction is cost effective, sustainable and efficient.



Walls: Made of bamboo logs

As a building material, it has a high tensile strength of about 28,000 pounds/square inch (more than steel), incredibly low weight and is one of the most widely used building materials as a support for concrete. Their versatility and ready availability make it a fine choice for construction.

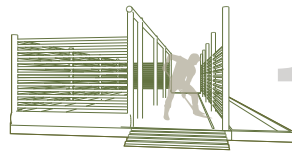
This structure is made wide enough to facilitate the veterinary doctors to work inside.

The jute packaging comprises sacks of 3 different sizes - 5 kg, 10 kg and 50 kg to accommodate the different levels of demand ranging from small house nurseries to large farms.

These packages are designed to be reused as plant pots which are not just aesthetic but also sustainable in the long run.

The proposed project also comprises an innovative design for the cow shed which is demanded by the site.

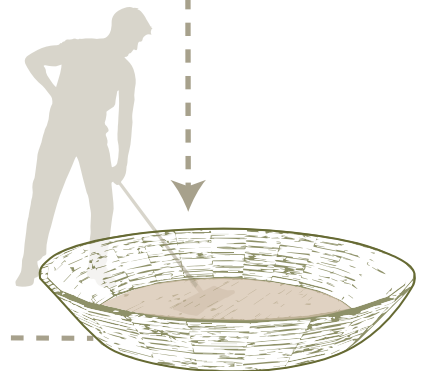
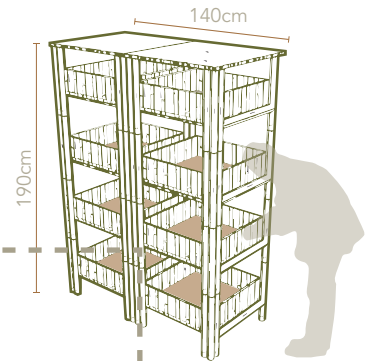
Bamboo is the primary material used in the construction of the shelter which will be sourced from the forest with legal sanction from the forest department.



1 The cow dung is shoveled into the drying pit through the full length opening at the rear end of the shed.

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The wet dung is then taken and filled into the drying trays (capacity = 5 kg each) and then left for drying in the tray for about 3-4 days.



3

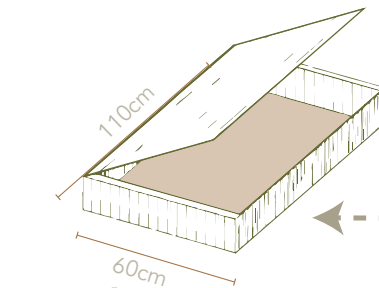
Dried dung is then transferred to the circular barrel made of bamboo to mix it along with lentil powder (20g for every kilo of dung), jaggery (20g for every kilo of dung), a handful of forest soil and cow urine (5 ml for every kilo of dung).

4

Mix is left in the barrel to dry and turn to a fine powder for 3 to 4 days.

5

The Ghana-Jeevamrutham thus prepared is then packaged in jute bags (facilitates aeration) at the houses of the residents. and then transported to local markets.



PHASE 2

After the successful implementation of phase 1, we hope to expand, reach and implement the project in the rest of the neighbourhood and maybe even the community. Online marketing strategies like selling them on Amazon will also be done.



PHASE 3

Wayanad is a tourist location and the implementation of the project can be used to attract tourist attention which can improve local businesses and bring more publicity and attention to the project.



FINANCIAL MAPPING

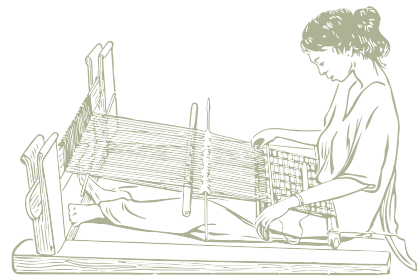
LABOUR COST			
WORK	LABOUR CHARGE	NO. OF DAYS	TOTAL COST
ALIGNING HOLLOW BRICKS	900/WORKER	1 DAY	1800
CONCRETE WASTE LAYING	1000/WORKER	1 DAY	2000
PLASTERING	900/WORKER	1 DAY	1800
BAMBOO FLOORING	900/WORKER	2 DAYS	3600
SHED CONSTRUCTION	900/WORKER	7 DAYS	12600
MAKING TRAYS AND MIXING BARRELS	900/WORKER	5 DAYS	9000
TOTAL			30600
MATERIAL CHARGE			
MATERIAL	COST PER UNIT	QUANTITY	TOTAL COST
HOLLOW BRICK	32 BRICK	80 BRICK	2560
CONCRETE WASTE	500/LOAD	10 LOADS	5000
MORTAR	300/50 KILOGRAM	2 BAGS (50kg)	600
BAMBOO -floor -walls -roof -trays -mixing barrel			0 (CUT FROM FOREST WITH LEGAL SANCTION)
JUTE	45/KILOGRAM	50 KG	2250
PLASTER	72/SQ.M	42 SQ.M	3000
TOTAL			13410
TRANSPORTATION			
MATERIAL			TOTAL COST
BAMBOO (FROM FOREST)			200
HOLLOW BRICKS, MORTAR FROM MARKET			1000
CONCRETE WASTE			1000
TOTAL			2200

TOTAL COST = 47610 ≈ 48000 INR for a single module
The budget can accommodate an extra module as well.

PRODUCERS: RESIDENTS OF THE TRIBAL COMMUNITY

THE KURUMA TRIBE - Families willing to accept the proposal of making Ghana-Jeevamrutham.

The proposal puts forward an efficient and economical way of utilising the cow dung which facilitates the conservation of the families' culture, occupation and also preserves the species.



PROVIDERS: JUTE BAG SUPPLIERS

Local jute bag producers get consistent orders for the packaging material (jute) and production.

CONSUMERS

People buying small quantities for maintaining household farming to larger quantities which would be needed for nurseries and sanctuaries.

STAKEHOLDERS

GOVERNMENT SECTOR

The Forest Department provides legal sanction to cut bamboo from the forest for construction purposes.

MARKETING

The availability of Ghana-Jeevamrutham on intermediate online platforms and also the direct supply of the product from the farmers to the local markets will be beneficial for the product to gain significant consumer attention and demand.

POWER



LOCAL VOLUNTEERS

The local leaders and professionals who have voluntary interest in the upbringing of the community as well as in the conservation of the local breed can manage the smooth and continued working of the project after its implementation.

INTEREST

BENEFIT

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The project **Aranyakam** is proposed for the upbringing of the families of the Kuruma tribe by introducing an efficient method of converting the cow dung into Ghana-Jeevamrutham.

The pure breed native Wayanadan cows are the ones kept and maintained by the families. The distinguishing feature of these cows is that the milk production is as less as 1.5 L/day when compared to the production of cow dung 14 kg/day.

The speciality of its dung is that it is enriched with various microbes and minerals due to the fact that it only consumes forest grass.

THE CONCLUSION

MANUFACTURING OF JEEVAMRUTHAM

The manufacture, packaging and selling of Ghana-Jeevamrutham will give these families an additional economic benefit which can also result in the empowerment of the tribe. An introduction to online marketing will also help them in reaching more customers. The estimated rise in their annual income would be much greater- from the current income of **Rs. 7000/annum to Rs. 3 lakhs** - a massive jump which sustains their livelihood and helps in conserving not just the community's culture and tradition but also saves the species from extinction.

Moreover, the appreciable increase in annual income and the introduction of an easier workflow acts as incentive to generate interest in the younger generation to carry on with this project. The production of Jeevamrutham will also enable the community to use the same for their fields which will **increase their crop yield, replenish the soil and help in sustaining and restoring the forest ecosystem.**

PACKAGING AND STORAGE AT RESIDENT HOUSES OF THE COMMUNITY

Thus, **Aranyakam** proposes to bring innovative and efficient methods for the manufacture of Ghana-Jeevamrutham which will make the Kuruma Tribe more self-reliant and **conserve their farming and cattle rearing culture as well as the conservation of the pure breed native cows.**

On a global scale, cultivation would be made more efficient, starting from household kitchen gardens in urban cities to huge plantations and farmlands. The high concentration of various plant nutrients and the fact that it is absolutely chemical free retains soil microbes and ensures its sustained living. The improvement of soil quality and the increased nourishment rate boosts plant growth and yield and guarantees a bright future for the Kuruma Tribe and, in turn, the future of agriculture.

TRANSPORTED TO THE LOCAL MARKETS AND SOLD ON ONLINE PLATFORMS

