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# Analysing Feasibility, Identifying markets and establishing linkages for Cashew (Srikakulam District), Turmeric and Long Pepper (Visakhapatnam district)

Summer internship report

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5/28/15

Centre for People's Forestry

# DECLARATION BY ORGANIZATION

This is to certify that the project report titled “Analysing Feasibility, Identifying markets and establishing linkages for Cashew (Srikakulam District), Turmeric and Long Pepper (Visakhapatnam district)” done by Ashok Anand and Amit Gautam (PFM 2014-16) for Centre for People’s Forestry (CPF) is original work. This has been carried out as summer internship under my guidance for partial fulfilment of Post Graduate Diploma in Forest Management at Indian Institute of Forest Management, Bhopal.

Place: Secunderabad

Reporting Officer

Date:

Organization Name & Seal

## DECLARATION BY STUDENT

I, Ashok Anand (1479), hereby declare that the project report titled “Analysing Feasibility, Identifying markets and establishing linkages for Cashew (Srikakulam District), Turmeric and Long Pepper (Visakhapatnam district)” is original work. The contents of the project report have not been published before and reflect the work done by me during my Summer Internship of the Post Graduate Diploma in Forest Management at Indian Institute of Forest Management, Bhopal from 01 April 2015 to 06 June 2015 with Centre for People’s forestry (CPF).

Place: Secunderabad

Ashok Anand (PFM 2015-16)

## DECLARATION BY STUDENT

I, Amit Gautam (1404), hereby declare that the project report titled “Analysing Feasibility, Identifying markets and establishing linkages for Cashew (Srikakulam District), Turmeric and Long Pepper (Visakhapatnam district)” is original work. The contents of the project report have not been published before and reflect the work done by me during my Summer Internship of the Post Graduate Diploma in Forest Management at Indian Institute of Forest Management, Bhopal from 01 April 2015 to 06 June 2015 with Centre for People’s forestry (CPF).

Place: Secunderabad

Amit Gautam (PFM 2015-16)

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## Executive summary

Cashew, Turmeric and Long Pepper are the primary cash crops produced in Visakhapatnam and Srikakulam districts of Andhra Pradesh. Though the tribal farmers have been cultivating these crops from decades, there has not been much development in the production and processing of these products over the years. Though cashews are collected from trees in the wild previously, the ITDA (Integrated tribal development agency) had distributed the cashew tree land among the tribal farmers and they have started collecting and selling in a larger scale.

In the case of turmeric, there are several grades, according to the year in which it is harvested, which are produced by the farmers. Currently, the turmeric is sold only in its raw stage and not polished. For polishing the turmeric, it would require a polishing drum mechanizing the process. Some farmers polish the turmeric by rubbing it against the ground manually.

Long pepper, also known as Pippalu in the local language, is primarily used in herbal medicines as a main ingredient. The villagers harvest the long pepper by pulling out the whole plant and selling it in the form of smaller cut pieces. If cut in smaller pieces using a specialized long pepper cutter, and graded according to its thickness, the value added is enormous.

Hence to capitalize on the high value addition on each of the above products, CPF planned to install processing units for the benefit of the farmers. This project is being funded by BFDW, a German funding agency.

One processing unit for cashews, consisting of a boiler, peeler and cutting table is sanctioned for installation in Srikakulam district. Similarly, for turmeric, 10 manually operated polishing drums and 100 cutters for long pepper, funding is allotted. For this an extensive feasibility and marketing survey is required.

Our study was to conduct a feasibility study on each of the products and also establish marketing linkages for them. The feasibility study was done by first doing extensive literature reviews and doing a preliminary field visit. The interviews were conducted in the main visit for villagers, middlemen, existing processing plant owners and traders. These were conducted using questionnaires created from the ground up.

The data was used to measure the villagers' willingness for the plants, the maximum distance they are willing to take their produce, their knowledge of the market prices and such. Also their willingness to attend training programmes and working in the processing plants was also gauged.

A database was made of buyers of processed Cashew, Turmeric and Long pepper and also buyers of the leftover shells of cashew. This would help the cooperatives for marketing their product after the processing is done.

From the data analysis it was found that almost all of the villagers had little to no training whatsoever, on any efficient production or processing practices. Also it was found that the villagers are highly enthusiastic for this project proposal and they are willing to work toward the success of this if sufficient training is provided. They currently use only natural manures made from animal and plant waste. Yet they yearn for any training that can be provided to them for more efficient use of the waste in making the manure.

The recommendations from this study are the following.

- Set up of two more processing plants for cashew for the two remaining mandals i.e. Seetampeta and Saravakota.
- Transportation should be provided to the villagers for taking the raw material from them till the processing plant.
- The capacity of the cashew processing plant should be increased from the proposed 80 to 120 kg daily limit.
- Monitoring of the workers after the start of the plant though training will be given. This is to ensure the output is not compromised.
- Cashew shells, currently thrown, sold to buyers as a side business.
- 5 more turmeric polishing drums to be set up for the remaining 5 villages in Paderu mandal.
- Transportation should be provided for both turmeric and long pepper producers for transporting their produce to the market.
- 200 cutters should be distributed instead of the earlier proposed 100 cutters, by collecting half the cost from the farmers themselves.

## Acknowledgements

We are using this opportunity to express our gratitude to everyone who supported us throughout the course of this Summer Internship. We are thankful for their aspiring guidance, invaluable constructive criticism and friendly advice during the project work. We are sincerely grateful to them for sharing their truthful and illuminating views on a number of issues related to the project.

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# ANALYSING FEASIBILITY, IDENTIFYING MARKETS AND ESTABLISHING LINKAGES FOR CASHEW (SRIKAKULAM DISTRICT), TURMERIC AND LONG PEPPER (VISAKHAPATNAM DISTRICT)

## Introduction

### About the organization

Centre for people's forestry was established on August, 2002. It was previously an autonomous wing within the Centre for World Solidarity. CPF works for the rights and livelihoods of forest dependent communities with due regard to conservation.

### Vision

"The marginalised section (women, tribals, dalits and other resource poor) among forest dwelling and dependent people manage and utilise forest resources sustainably with due regard to conservation of biodiversity and attain livelihood security through skill diversification."

### Mission

"Promoting capacities, diversifying skills and enhancing livelihood security of the marginalized sections among forest dwelling and dependent communities."

### Background of the project

Our project is a smaller part of a larger umbrella project "Sustainable livelihoods and empowerment to (target) Adivasi communities in Andhra Pradesh and Telangana states", under the resource agency BFDW (Bread for the world – Protestant Development Service).

Our part is to help the tribal villagers in both Srikakulam and Visakhapatnam districts in increasing their respective value additions particularly in the context of Turmeric, Long Pepper and Cashew. This requires a study on the working of each product's processing industry, and on the feasibility of establishing a cooperative processing unit for each respectively. Also linkages would be established from the grass root producers till the end buyers of the product, so as to transfer the profits transparently to the producer.

### Details of SI assignment

The detailed working of the processing required by each product until its use by the end buyer needs to be studied. This would help in the setting up of the respective cooperatives.

The markets need to be analysed for opportunities for any new entrants into the industry. The end consumer expectations of the consumer needs to be gauged with respect to the grade and quality of the finished product from the raw cashew, turmeric as well as long pepper.

Feasibility study needed to be done for each processing unit for each of the product, thus helping in the practical set up of the same. Details such as the optimum location, capacity, issues and training requirement needed to be enumerated.

In fact a report must be made which can be a one stop shop and can supply all the details that is required in order to right up start and run the cooperative processing units with confidence

The issues faced by the villagers should also be studied so as to suggest any alternate way for alleviating the same discarding the present proposal if needed.

Finally, the increase in income for the villagers due to this initiative from CPF was estimated using data analysis.

## Work structure

### Studying existing literature

Extensive research was done on the topics given below from a variety of sources such as peer reviewed journals, research articles, project reports and the Internet in general.

- Value addition process, markets and usages of
  - Cashew
  - Turmeric and
  - Long pepper

### Preliminary field visit

This was conducted in order to gain a basic understanding on the nuances of the industry present. The field visit consisted of a visit to Paderu mandal in Visakhapatnam district as well as visits to Saravakota, Seetampeta and Hiramandalam mandals in Srikakulam district. This visit to Visakhapatnam district was to gain knowledge on Turmeric and Long pepper and their value chain, and the visit to Srikakulam district was primarily to learn the same in the case of cashew.

### Main field visit

The major field visit followed the preliminary one. In this we collected data from villagers and traders alike using the questionnaires we created after coming back from our preliminary field visit. The data collected included details on their income breakup, and related to the production details of the products we are interested in.

We visited altogether 11 villages spread over 4 mandals and 2 districts. 6 villages from Srikakulam district and 5 villages from Visakhapatnam district were visited. This helped in collecting data from a highly diverse population from the respective districts, producing any of cashew, turmeric or long pepper products.

## Analysing field data

Right after we finished our data collection work in the field, we started analysing the data according to our objectives step by step. This required firstly coding the ungrouped information digitally. We used Microsoft excel for the data analysis.

The data was of both qualitative and quantitative nature. Both required different treatments in order to arrive at the inferences.

## Literature review

### Cashew industry in India

Cashew was introduced to India around five centuries ago by the Portuguese. Earlier it was not a main crop as an agriculture base but was used for some other purposes as soil binding to check erosion. Later on it became a high economy crop across the country. Now India became one of the leading producer and exporter of cashew across the world. It has approximately 0.97 million hectare for cashew cultivation producing approximately 770 kg cashew per hectare. It has been produced in many states across India mainly in the states of Maharashtra, Kerala and Karnataka in western coast and Andhra Pradesh, Odisha and Tamil Nadu in eastern coast. India accounts around 65 percent of world's total export with exporting to more than 60 countries in the world. The cashew export council of India (CEPCI) helps to promote and export cashew kernels and cashew nut shells. It works as an intermediate body between exporters and importers. It also helps to solve the disputes between them.

### Cashew production statistics

Cashew production statistics shows the contribution of India to the world cashew industry. India is at the top in the world cashew industry by producing 39.47 percent of total cashew production over the world. It is at 1<sup>st</sup> position in Asia also. The production is increasing year after year. Maharashtra is the leading state in cashew production followed by Kerala which is the 2<sup>nd</sup> largest producer state in India, Andhra Pradesh is at 3<sup>rd</sup>, Odisha is at 4<sup>th</sup>, Kerala is at 5<sup>th</sup> and Tamil Nadu is the 6<sup>th</sup> largest producer of cashew in India including Goa and West Bengal also which are producing a small quantity.

### Turmeric industry in India

Turmeric, *Curcuma Longa* (also known as Haldi) is an ancient crop in India. It is a native crop to India and has been grown and used since 600 BC. India is the largest producer, consumer and exporter of turmeric. India produces the best turmeric in the world and exports it to

many countries such as Japan, Sri Lanka, Iran, North African countries, the USA and the UK. In India production of turmeric per year is about 527,960 tonnes cultivated over 149,410 hectares of land. Turmeric is considered to be closely related to ginger and contains rich curcumin which provides it yellow colour, warm and mellow flavour.

## Turmeric production statistics

India is the largest turmeric producer in the world by contributing approximately 80 percent of the total turmeric production all over the world. Indian turmeric is highly demanded and considered best in the world because of high curcumin content. Main season for growing and harvesting turmeric is between January to June every year. The turmeric growing states in India are Andhra Pradesh, Tamil Nadu, Odisha, Maharashtra, Assam, Kerala, Karnataka and West Bengal. Andhra Pradesh which is has the 40 percent of the total turmeric area contributing 60 percent of total turmeric production followed by Odisha at the 2<sup>nd</sup> position has 17 percent turmeric production area contributing 12 percent of total production and Tamil Nadu is at 3<sup>rd</sup> position having 13 percent turmeric production area contributing 13 percent of the total turmeric production.

## Long pepper

Long pepper or pippalu is a medicinal plant famous in both north and south India. Also popular in Islamic regions of north and east Africa. Long pepper is unripe part of the plant which is used in medicines. First crop comes after 6 months of planting and grows on up to 3 years. Pippalu plant grows well in sandy soils and likes hot and moist climate. Pippalu plants have high medicinal values which helps to cure for asthma, cough and as hair tonic.

## Cashew processing flow chart

### CASHEW PROCESS FLOW CHAT - RELEVANT MACHINERY



FIGURE 1 PROCESSING FLOW CHART



**FIGURE 2 CASHEW BOILER (400KG CAPACITY)**

## Weight of cashew nuts inside the shell

When the cashews are processed by removing the outer shell and after scaling, the remaining weight of the leftover cashew is a little above a third of the weight of the initial raw material. Out of 1 kg of raw cashew pods, only around 350 g of cashew nuts remain.

## Cashew Nut Shell Liquid (CNSL)

The cashew nut shell contains a dark reddish brown liquid. This is a by-product of cashew processing industries. This raw material is used for a number of polymer based industries like paints and varnishes, resins, industrial and decorative laminates, break lining and rubber compounding resins.

## Cashew husk

Cashew Testa or Husk is a by-product of this industry. This is the thin outer covering of the cashew nut after the removal of the outer shell. The cashew husk is one of the sources of vegetable tanning materials available indigenously. It highly contains condensed type of tannins due to which it offers good scope for commercial production of tannin extract either alone or in blends with Myrobalan.



**FIGURE 3 CASHEW FRUITS**

## Cashew shell cake

Cashew shell cake is one of the best fuels. It is made from cashew shells and is used primarily in industries of the same. The shell cake is the leftover part of the shell after de-oiling.

## Cashew finished product grades

Grade	Rate (Rupees per kg)
180	570
210	550
240	540
320	530
JH	530
K	480
ST	460
LLP	420

- W - 180, is the ' King of Cashew ' - They are larger in size and very expensive.
- W - 210, are popularly known as ' Jumbo ' nuts.
- W - 240, it is an attractive grade which is reasonably priced.
- W - 320, are the most popular among cashew kernels and highest in terms of availability, worldwide.
- W - 450, are the smallest and cheapest white whole kernels and hence the favourite among low priced whole grades.

### Turmeric polishing flow chart

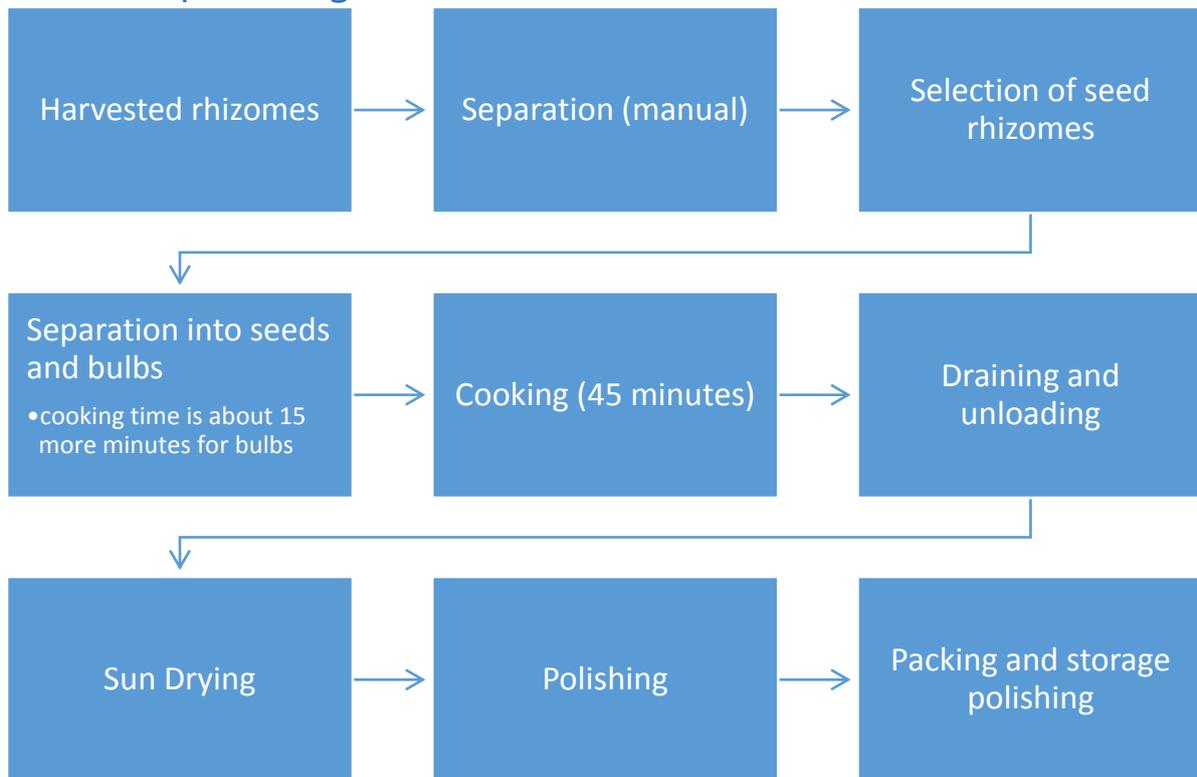


FIGURE 4 TURMERIC PROCESSING FLOW CHART

### Weight of turmeric after polishing

Around 7 to 8 percent of the weight of the raw turmeric goes into polishing wastage if recommended polishing practices are used. Usually 5 to 8 percent weight in full polishing and 2 to 8 percent weight in half polishing is “polishing wastage”.

## Turmeric and Long Pepper grades and their prices

**TABLE 1 TURMERIC AND LONG PEPPER GRADES**

Product	Categorisation	Rate(Rupees per kg)	Uses
Turmeric	Bulb Turmeric (Kommu)	85	Used in cosmetics such as Kumkum and Vico turmeric
	Finger Turmeric (Dhumpa)	85	
Long pepper	Grade 1	220-230	Used in medicinal purposes and tablets
	Grade 2	125	
	Grade 3	40-50	
	Grade 4	20-22	

### Turmeric varieties

Bulb turmeric are primary rhizomes of *Curcuma longa*, are well developed, smooth and are free from roots. They are perfectly dry and are free from weevil (a type of beetle) damage and fungus attack, not artificially coloured with chemicals.

Finger turmeric are secondary rhizomes of *Curcuma longa*, are well set and close grained. They are free from bulbs, are perfectly dry and are free from weevil damage and fungal attack. And they are not artificially coloured with chemicals.



FIGURE 5 OLD TURMERIC

### Long pepper varieties

There are four types of grades of long pepper based on thickness, quality and the node placement on the stem.

### Long Pepper processing flow chart

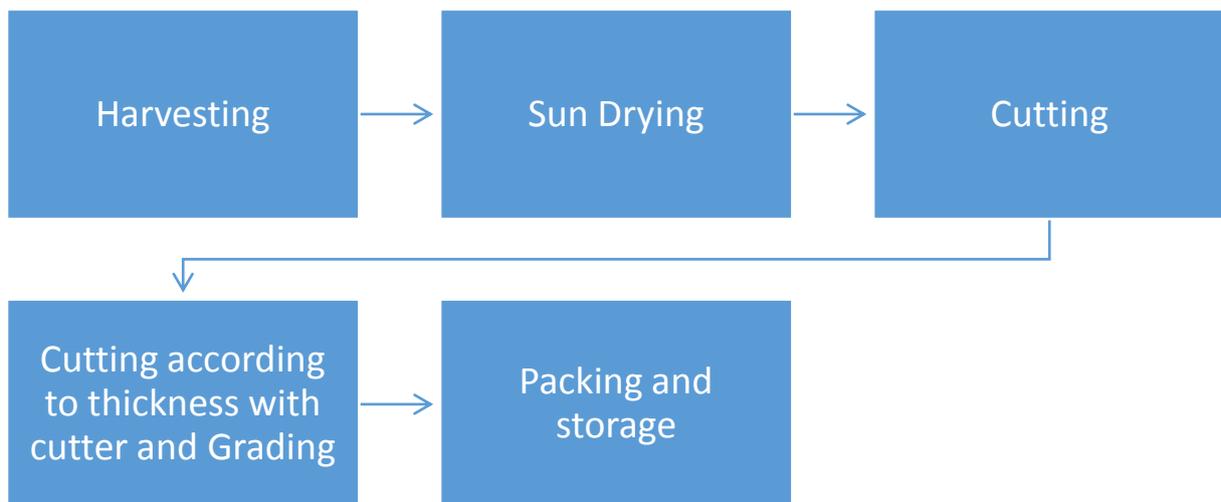


FIGURE 6 LONG PEPPER PROCESSING FLOW CHART

## Preliminary Field Visit

On the 6<sup>th</sup> of April, we started on our preliminary field visit to the districts of Vishakhapatnam and Srikakulam in order to gain a practical insight on the objectives and aspects of our project.

### Turmeric and Long Pepper



**FIGURE 7 TURMERIC SUN DRYING**

The first two days were spent for understanding the agricultural, processing works done in regard to turmeric and long pepper. For this we visited the Paderu village in Vishakhapatnam district. We started by first going to the Monday shandy in a village named Pedabailu.

According to the villagers selling in the shandy, they sell their produce to merchants, who in turn sell to traders in Madugula, a nearby village. The traders sell the raw turmeric to processing plants in and around the region. Every week not less than 100 tons of turmeric and 20 to 30 tons of long pepper are transported according to the locals.

Next we visited Peddabailu village of Kujjala gram Panchayat. From our visit to the actual village of the farmers, we learned all the activities performed by the farmer for the production of turmeric and long pepper. Some salient features of this are that the normal turmeric is harvested in the second year and the leftover turmeric roots which are harvested in the third year is called old turmeric (Guddi Pasupu). One valuable development in this region is that all artificial fertilizer usage has stopped completely and only natural fertilizer, like that which is arrived at from animal waste, is only used. Using rudimentary

calculations, we arrived at Rs 46500 as an estimate of the annual household income in the village.

**TABLE 2 PRELIMINARY DATA: GRADES**

Product	Categorisation	Rate(Rs per kg)	Uses
Turmeric	Old Turmeric	17-20	Used in cosmetics such as Kumkum and Vico turmeric
	Normal Turmeric	70	
Long pepper	Grade 1	500-1000	Used in medicinal purposes and tablets
	Grade 2	300	
	Grade 3	85-90	
	Grade 4	20-22	



**FIGURE 8 GRADE 3 PIPPALU**

On the next day, we visited a few turmeric processing plants to learn more about the jobs done in them. Raw turmeric roots are purchased by the plant owners and they are again dried for a day. They are then fed to a drum which grinds them, resulting in the outer dust layer being removed. Only these polished turmeric roots are exported to various markets across India. There again the turmeric is powdered and then sold either wholesale or in retail.

In a long pepper processing unit, we saw that there were no automated machinery being used and the only equipment which is used in addition to labour are cutters. These cutters are primarily used for the purpose of grading the roots. The nodes are supposedly of much higher prices than the other part of the root. The farmers do not have access to and also the

skill in using the cutters. The difference in the normal from the graded long pepper was very significant.

## Cashew

We visited the district of Srikakulam in order to gain an insight on the plantation and processing aspects of cashew. During our visit of the same we stayed in the Pathapatnam branch office of CPF and we travelled to the required sites. Samyogita, a local NGO in partnership with CPF, assigned two coordinators, Mr Ramu and Mr Suresh. They accompanied us all throughout the travel. Since during our tour of the turmeric and long pepper activities, we gained a lot of knowledge by visiting a local shandy, talking to the traders there and knowing the prices at which they buy and sell, we wrongfully thought that we could gain the same about cashew by visiting a shandy here too. The shandy here is called Neridivalasha. Cashew sold in the shandy were final products and



**FIGURE 9 PATHAPATNAM**

they were bought from somewhere else and not from any relevant people in our focus area. Though the shandy observed was on a huge scale, and everything from small toys to cattle were being traded in, there was no one selling the raw cashew pods yet to be processed.

Grade	Rate (Rupees per kg)
1	570
210	550
240	540
320	530
JH	530
K	480
ST	460
LLP	420

**TABLE 3 CASHEW GRADES**



**FIGURE 10 CASHEW GRADES**

The first village we saw was Colony Maluva. It is one of the villages under Saravakota mandal. We talked with one J. Apparao, a farmer, who has 1.3 acres of cashew tree plantation. Our findings are that in a year, the harvesting period lasts for a maximum of only 30 days. The harvest season is between April and May and on an average the produce does not exceed 200 kg. On the day we talked to him, his claim was that he started harvesting about ten days back and a good 20 days was left. Since he did not yet start selling his produce, he did not know the present selling rate, but his estimate according to rumours was Rs.90/kg of cashew pods. The farmers do not sell directly to the factory owners, but to the middlemen who come and collect their produce directly from the villages of the farmers. The middlemen generally take their cut of around Rs.5/kg and sell to traders, who in turn again take their cut of Rs.3 to 4/kg and sell to the factory owners finally. This system is like this because of convenience of everyone. The traders do not want to buy small quantities from the farmers separately and instead, buy in bulk from the middlemen. The factory owners in turn buy in bulk from the traders. All of them right from the farmer, to the factory owner are perfectly satisfied with this system in place.

The second village we visited was Mamidijuala, of Hiramandalam mandal. There are an estimated 45 households in the village while 30 households practice cashew plantation. Each household has on an average 2 acres of cashew trees. Which comes to a total of 60 acres purely under cashew plantation.

A cashew processing plant was also visited, and the various processes required for extracting the final cashew product and grading necessary, were understood from its very helpful supervisor Mr Madhu.

An important finding through this visit was that the plant owners themselves do not sell the finished product but sell them through brokers. The brokers do the exporting. The owner of the plant did not know exactly where all his product is being exported and his only priority is processing and selling their product in bulk to the brokers, who stay in the adjoining village, as claimed by the owner.

## Main field visit

We conducted our main field study between the dates 23<sup>rd</sup> April and 2<sup>nd</sup> May. We first conducted our interviews in Paderu mandal in Visakhapatnam district and then went on to the three mandals in Srikakulam district.



FIGURE 11 SEETAMPETA MANDAL

## Sampling

The sampling method we used was cluster sampling. We sampled randomly selected villages in all mandals and interviewed the villagers in each of those villages accordingly thus maintaining the diversity of the sample.

We also interviewed equal number of male and female respondents for this study thus maintaining gender neutrality.

The sampling from each mandal and village is given in the table below.

**TABLE 4 SRIKAKULAM DISTRICT**

S. No	Village name	Gram Panchayat	Mandal	Sample Size
1	Colony Maluva	Maluva	Saravakota	4 persons
2	Kottakota	Titukupai	Seetampeta	4 persons
3	Titukupai Guda	Titukupai	Seetampeta	4 persons
4	Lokonda	Mahalaxmipuram	Hiramandalam	4 persons
5	Mamidijola	Mahalaxmipuram	Hiramandalam	4 persons
6	Godiapadu	Mahalaxmipuram	Hiramandalam	4 persons

**TABLE 5 VISAKHAPATNAM DISTRICT**

S. No	Village name	Gram Panchayat	Mandal	Sample Size
1	G. Kothuru	Thumpada	Paderu	5 persons
2	Gaddamputtu	Thumpada	Paderu	5 persons
3	Gorrelagondi	Kujjalli	Paderu	5 persons
4	R. Kothavuru	Kujjalli	Paderu	5 persons
5	Panasapalli	Gabbangi	Paderu	5 persons

## Data analysis

### Srikakulam district

Our data analysis involves using the data collected using interviews from questionnaires, from a pre-decided sample size to project the findings onto the population of cashew producers living in Srikakulam district's three mandals: Saravakota, Hiramandalam, and Seetampeta. Altogether, the collected data is from 11 villages which will be extrapolated to the beneficiaries in 43 villages. Focus group discussion results will be given after the main

data analysis.



FIGURE 12 SEETAMPETA FGD

## Willingness of the producers

### Perceived benefit from Cashew processing plant

The villagers were asked whether they thought they would gain a tangible benefit by the establishment of a processing unit near them.

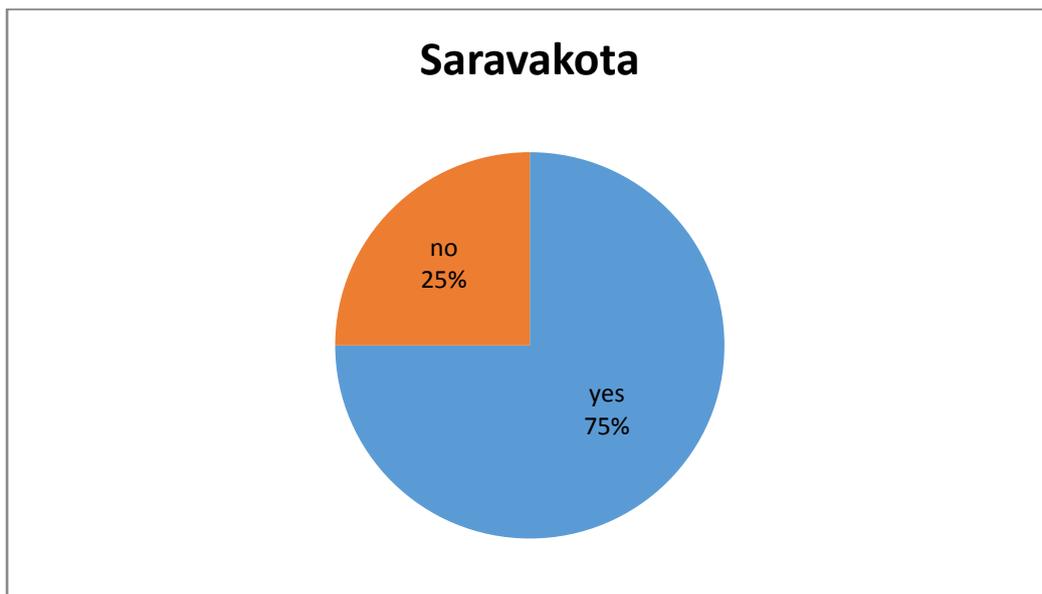
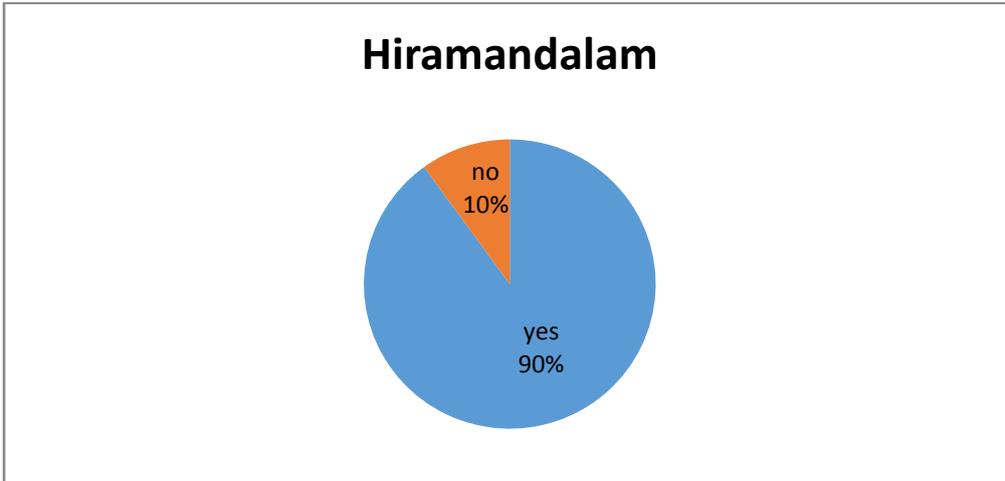
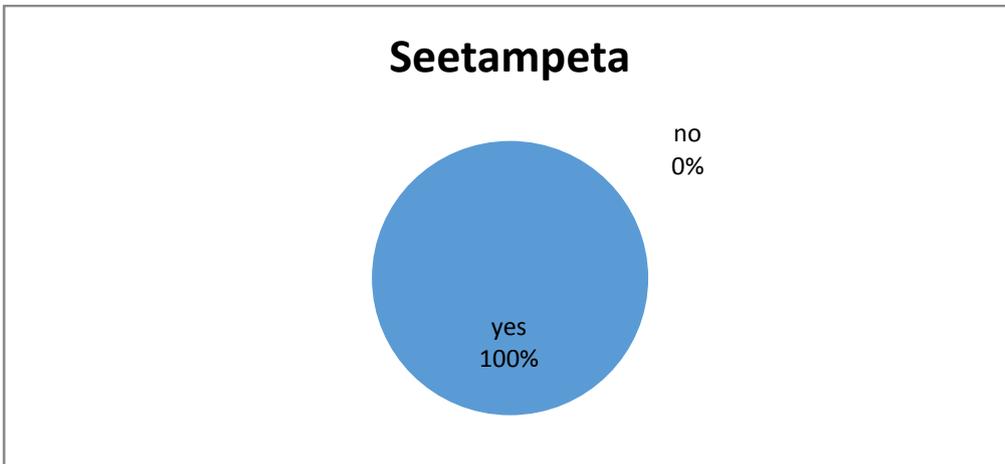


FIGURE 13 SARAVAKOTA MANDAL



**FIGURE 14 HIRAMANDALAM MANDAL**

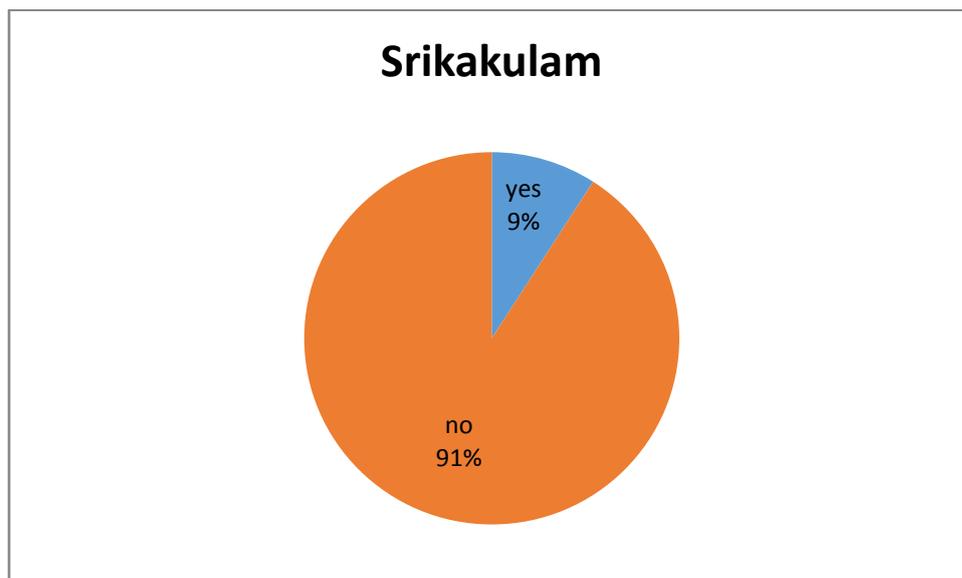


**FIGURE 15 SEETAMPETA MANDAL**

From the charts above, it can be clearly understood that almost all of the population in Srikakulam district have a perception that the establishment of a processing unit for cashew anywhere near them would benefit them greatly. In each mandal more than 75% of the living population agreed with the same according to the collected data.

### Knowledge about the price of the finished products

The question asked was whether they knew anything about the value addition effected by the processing, as in the removal of the outer covering, and grading.



**FIGURE 16 ALL MANDALS**

From the chart above, we see that 91% of the population did not know the selling price of the finished product. The finished product in this case is the “shell removed” and “graded” cashew nuts.

Since all the mandals individually gave, for all intents and purposes, similar data, a cumulative graph representing all three mandals is plotted above. Clearly almost no one knows exactly for how much margin they can be getting out of their product after complete processing and grading. So the villagers will greatly benefit from a sort of a seminar, which can be conducted, teaching the all the nuances of the value addition from processing and grading of the cashew and the margin they can charge from the end buyers.

## Feasibility

### Land requirement

The farmers are willing to donate the land. They were also willing to sign a written agreement according to the supporter NGO “Samyogita”. This ensures that there would not be any future legal issues and also cost reduction in the form of no rent to be paid.

### Willingness to pay for the operation and management of the processing plant

The villagers were asked whether they would be willing to pay for the operation and management costs of running the plant according to the weight of the raw material brought by the villagers. This question is important in order to get an idea of whether they are actually willing to commit and would help in the smooth running of the plant.

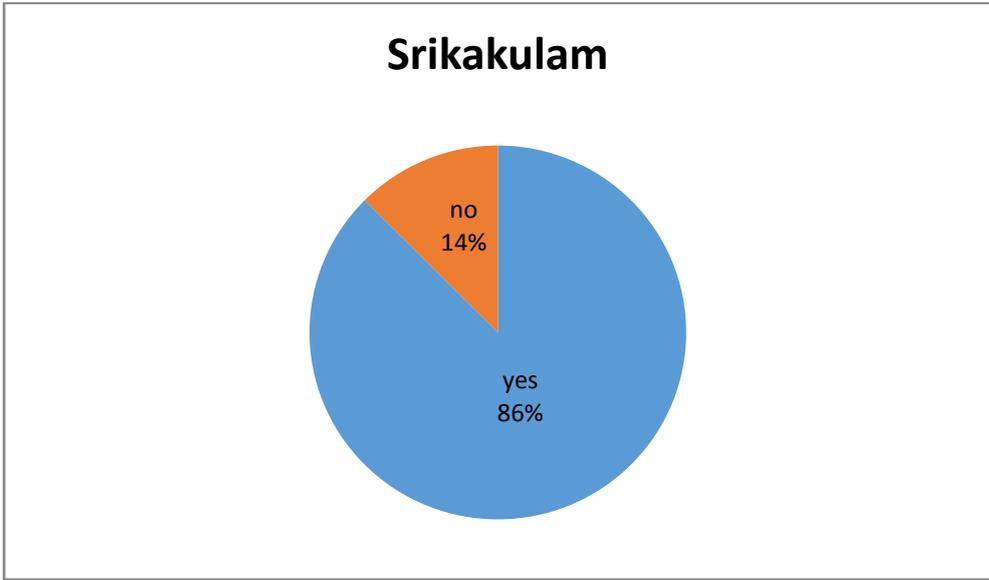


FIGURE 17 ALL MANDALS

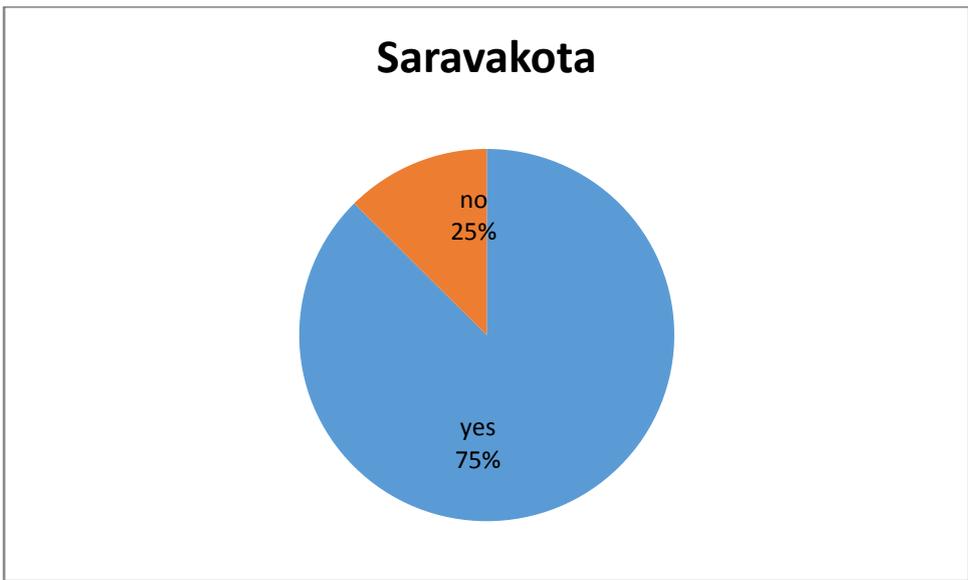
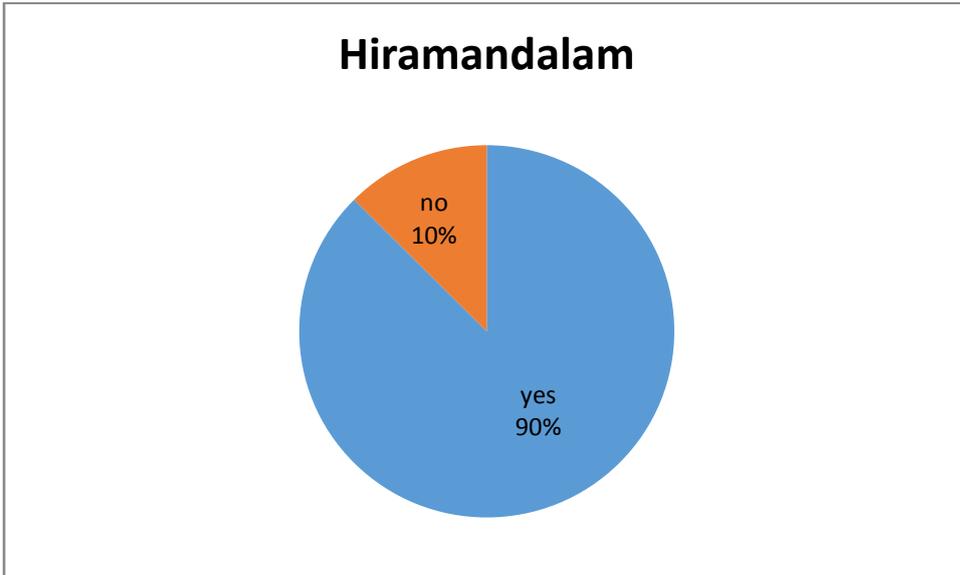
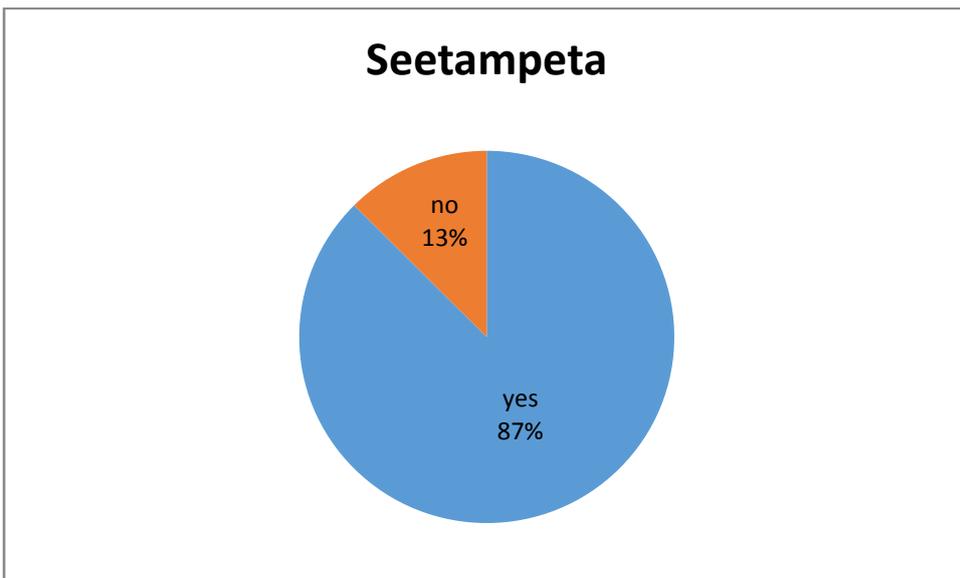


FIGURE 18 SARAVAKOTA MANDAL



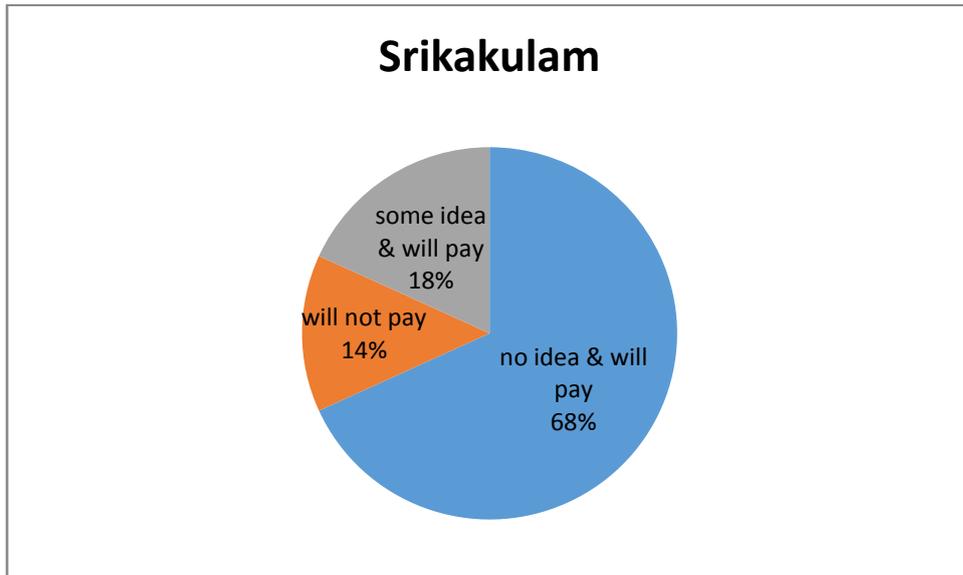
**FIGURE 19 HIRAMANDALAM MANDAL**



**FIGURE 20 SEETAMPETA MANDAL**

As seen above, three charts show the answers of each mandal separately and one shows the opinion of the whole district. More than 75% of the population have answered positively and apparently are willing to pay for the running of the plant.

Clearly a significant number of people are practically interested in the set-up of the plant and are also willing to invest the required money in it.

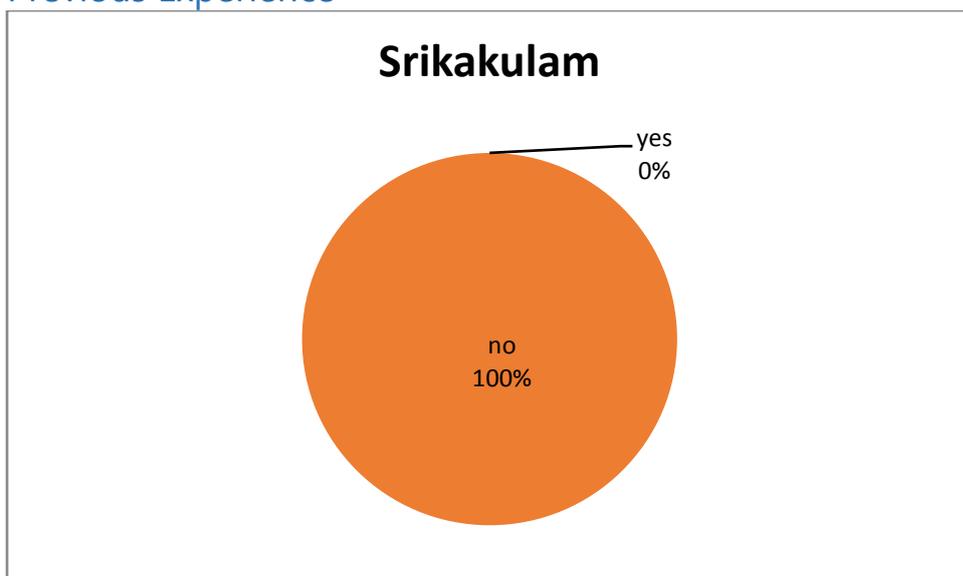


**FIGURE 21 ALL MANDALS - WILLINGNESS TO PAY THE AMOUNT PER KG OF PROCESSING**

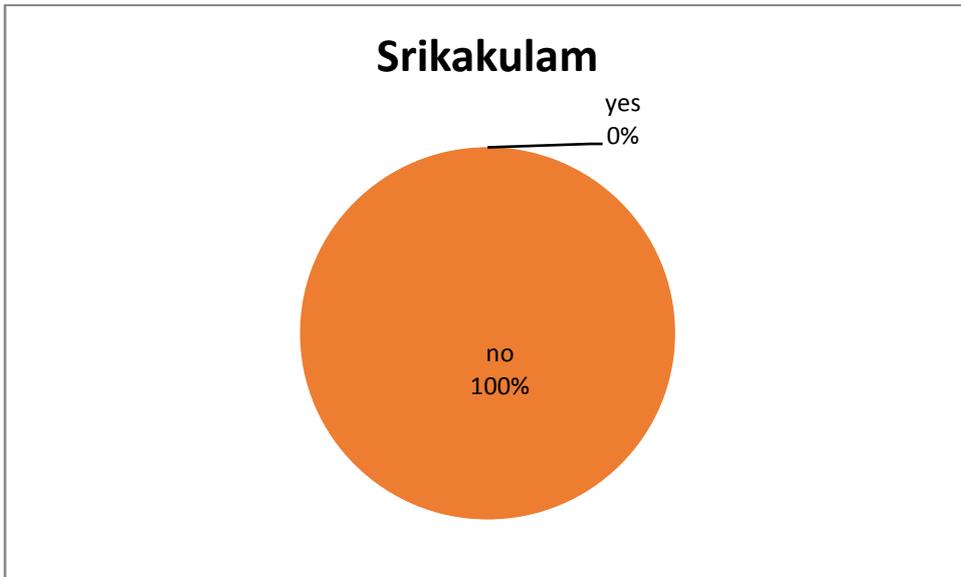
Continuing on the same vein, the above chart illustrates the percentage of people who have some idea about how much would they need to pay in terms of per kg of the product processed. For instance, “some idea and will pay”, are those who have on an average said that they are willing to pay around Rs.1 to 2 per kg of their supplied raw material. Those who have no idea are not those who will not pay completely, but they just do not have any idea on how much would be a fair deal and are willing to pay if the price charged is known to them.

## Feasibility of the plant

### Previous Experience



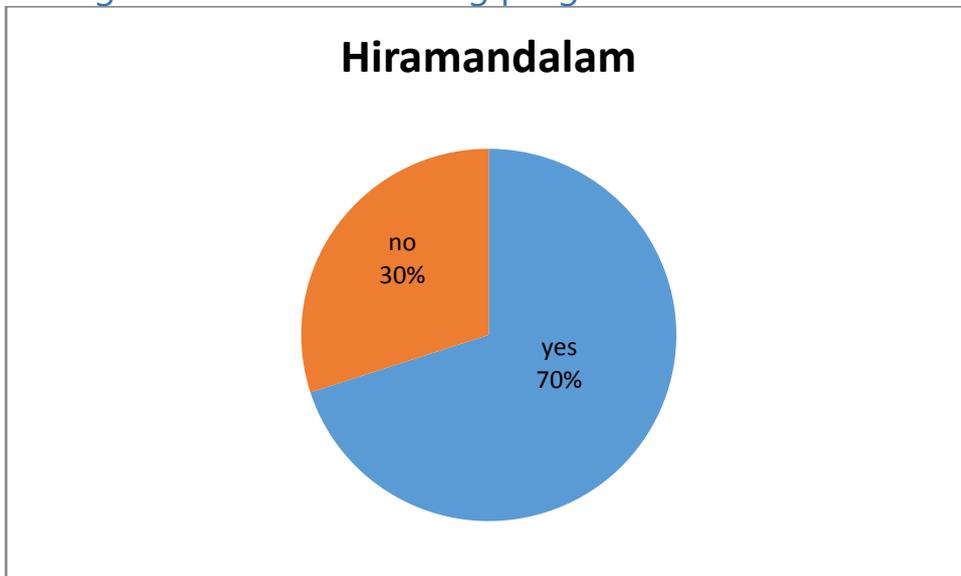
**FIGURE 22 ALL MANDALS: ANY EXPERIENCE ON OPERATION OF PLANT**



**FIGURE 23 ALL MANDALS – ANY EXPERIENCE ON GRADING OF FINISHED PRODUCT**

The above charts illustrate that no one interviewed and thus the whole population barring a very small and negligible number, are having absolutely no previous experience on both running and grading the finished cashew nut product.

### Willingness to attend training programme



**FIGURE 24 HIRAMANDALAM**

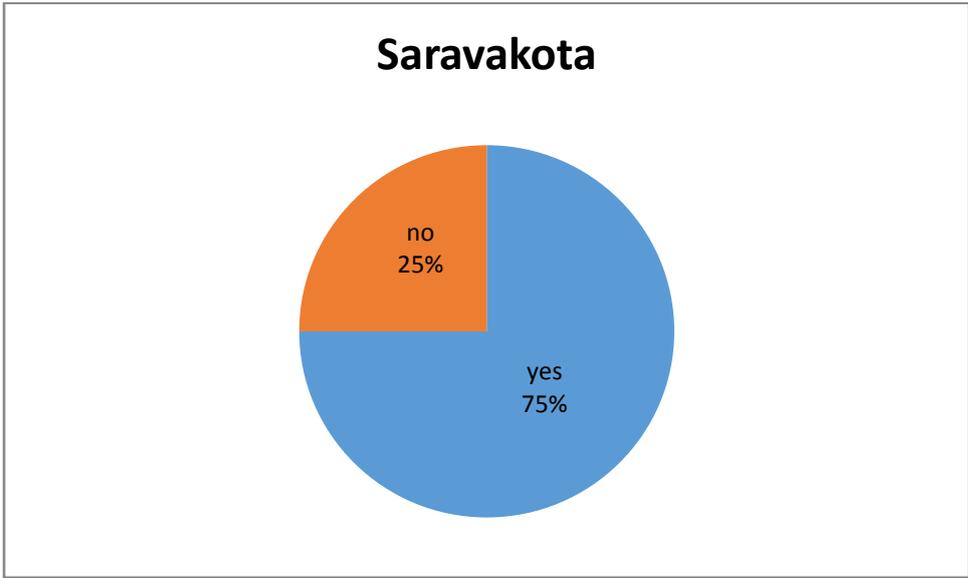


FIGURE 25 SARAVAKOTA

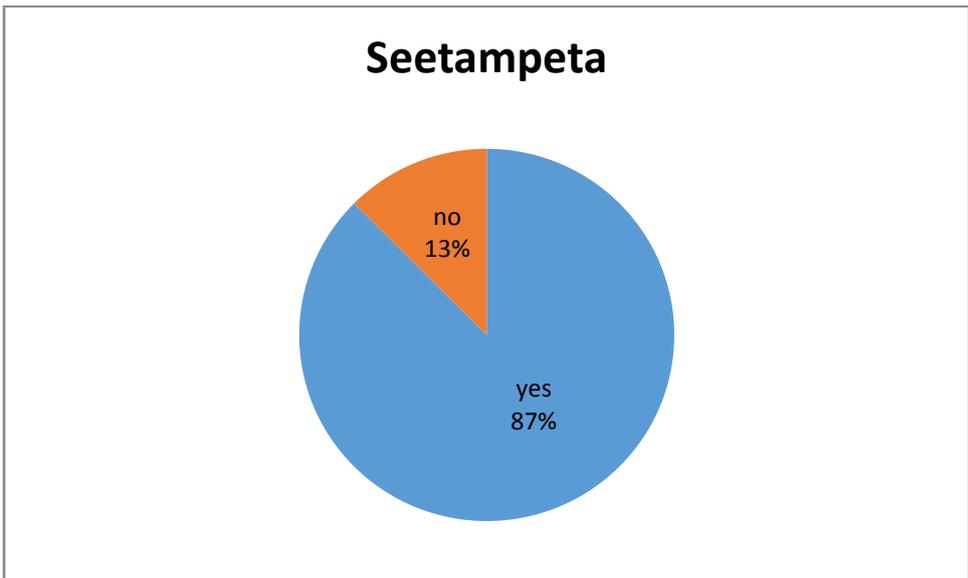
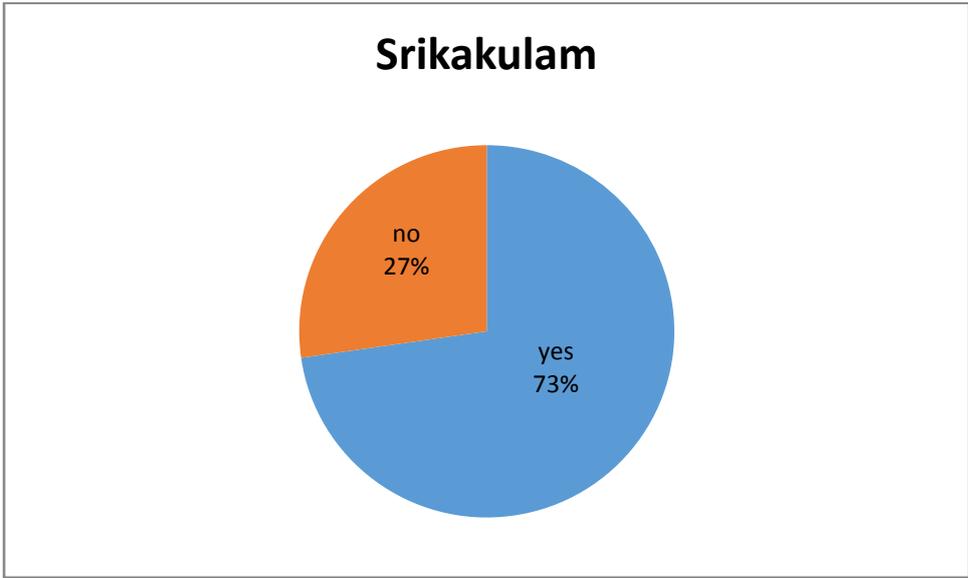


FIGURE 26 SEETAMPETA

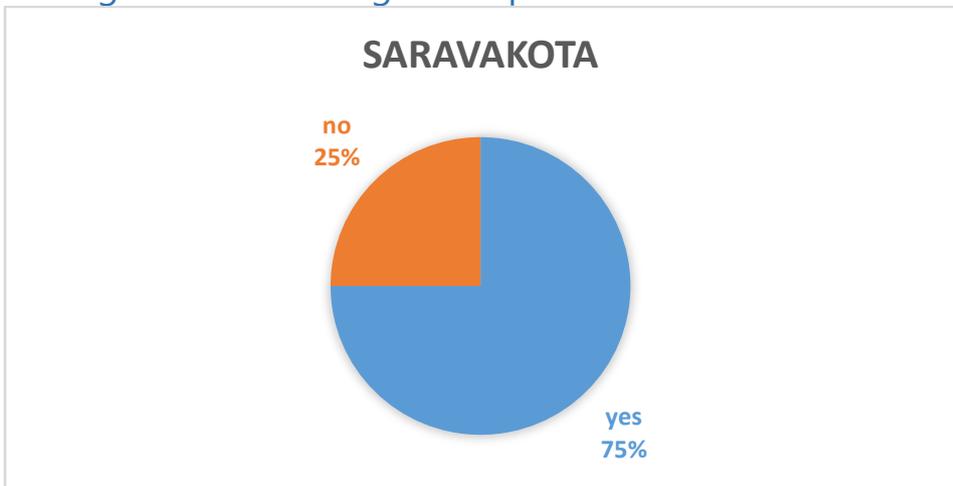


**FIGURE 27 ALL MANDALS**

Though this data looks very diverse, more than 75% of the population are willing to attend a training programme on the operation of the plant.

This shows that a major portion of the population are highly enthusiastic about the plant and will do what is deemed necessary for its set up.

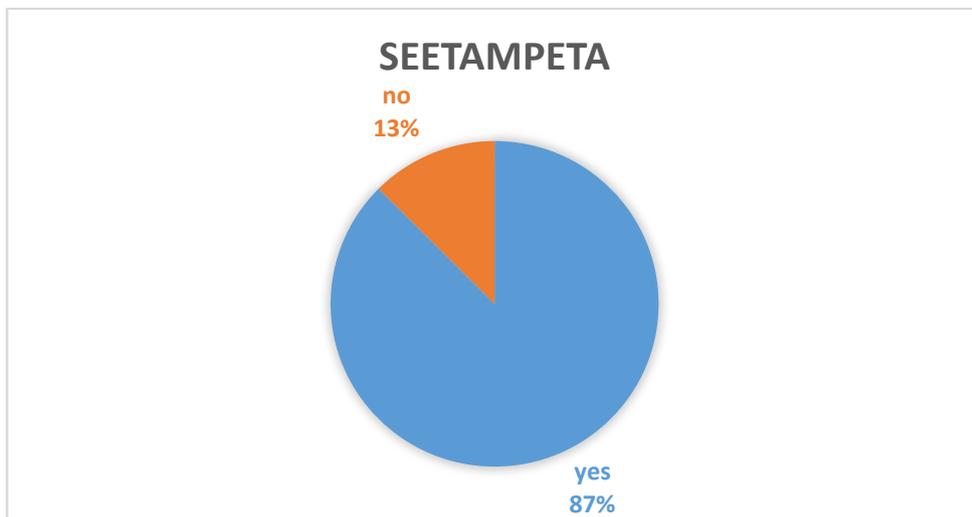
### Willingness for working in the plant



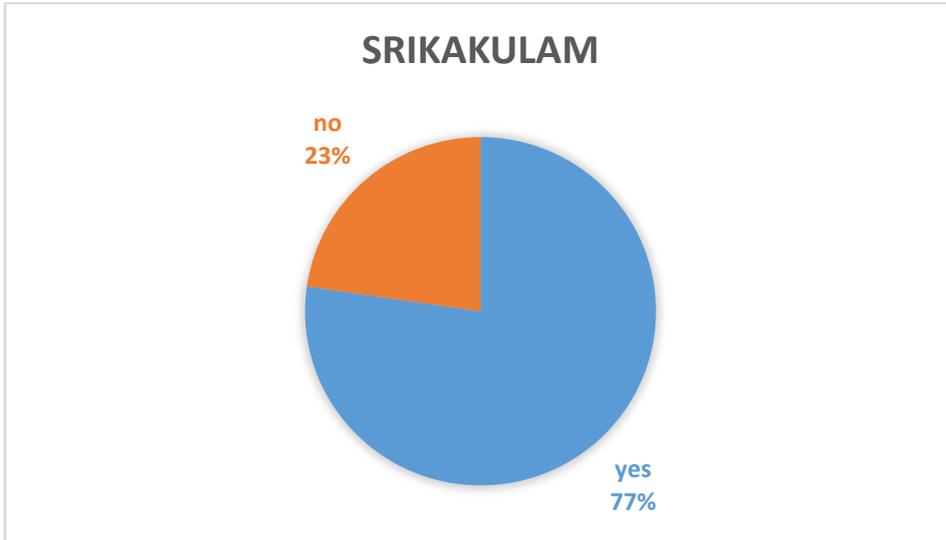
**FIGURE 28 SARAVAKOTA**



**FIGURE 29 HIRAMANDALAM**



**FIGURE 30 SEETAMPETA**



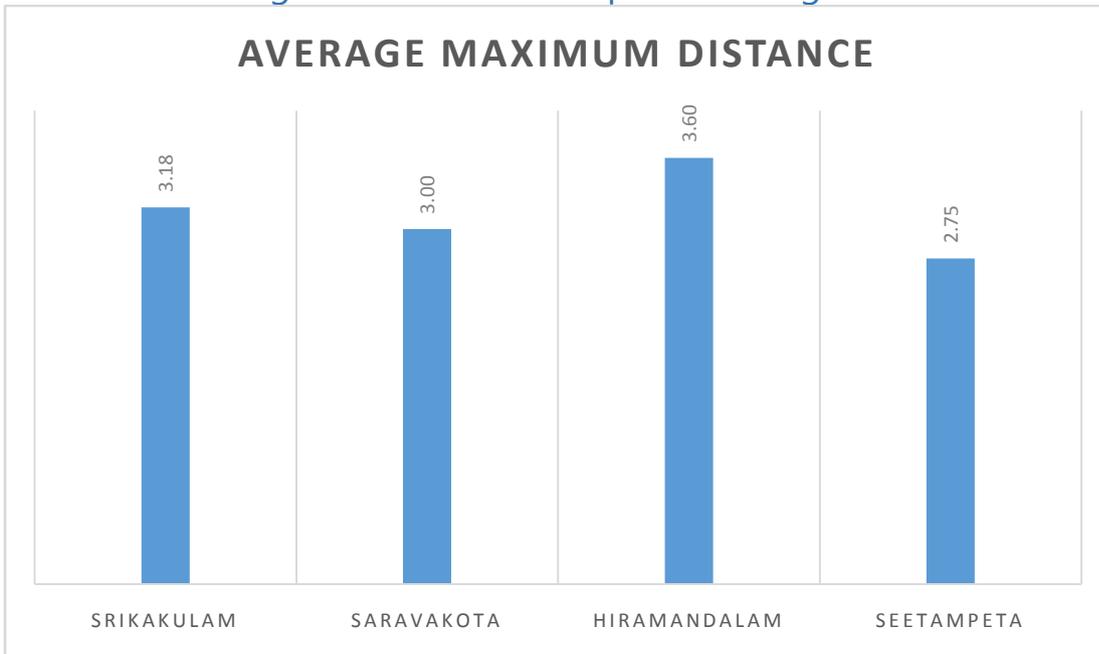
**FIGURE 31 ALL MANDALS**

Just like the previous analysis, 77% of the population answered positively conveying their interest in helping in running the plant. Although sufficient training is required for this.

Pragmatically, the farmers are ready to learn the nuances of forming and running a cooperative, and hence making this a viable venture.

### Optimal location for unit

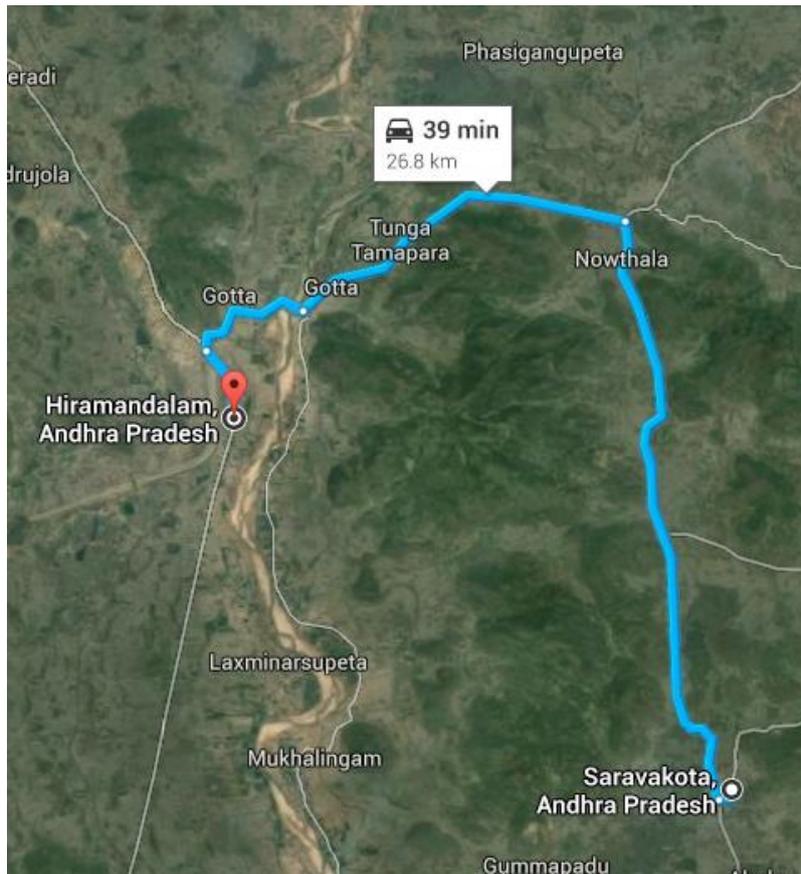
Maximum average distance from respective village



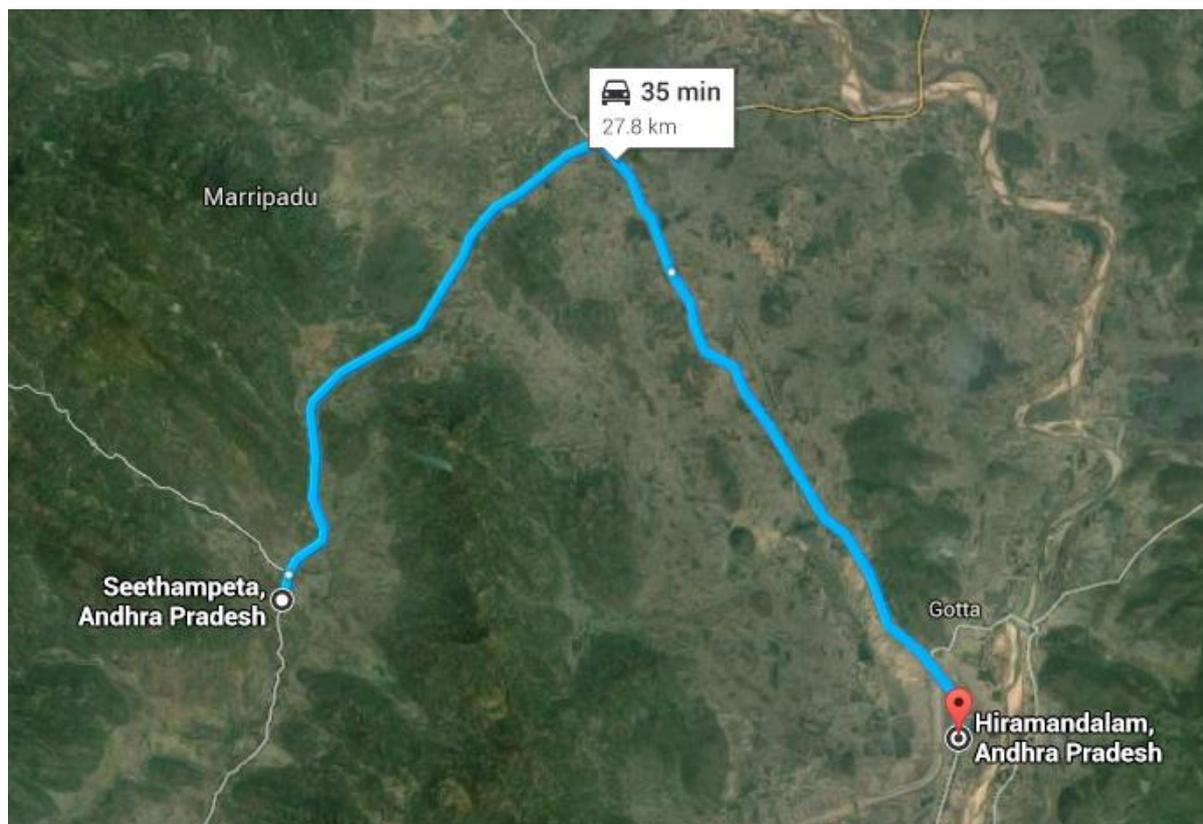
**FIGURE 32 AVERAGE DISTANCE- ALL MANDALS**

From this analysis we find that the average distance, the farmers are willing to travel and take their produce till the plant, is around three kilometres. Hence the plant should optimally be within three kilometres of the maximum possible villages in Srikakulam so that the maximum possible farmers stand to benefit from the cooperative.

The optimal placing of the plant would not only effect in the reduction of inconvenience and transport charges, but also would tremendously help in inducting a sense of ownership in the minds of the villagers, which will directly result in a very enthusiastic work ethic in the end workers working in and managing the operation of the unit.



**FIGURE 33 SARAVAKOTA TO HIRAMANDALAM**



**FIGURE 34 SEETHAMPETA TO HIRAMANDALAM**

From the above two figures, we can clearly visualize the bigger picture. Since the proposal is to set up one plant in one the mandals from a total of three mandals, only one village for the optimal location has to be chosen.

From Samyogita, our partner organization, we learned that they were favouring the village Mamidijola, in Hiramandalam mandal as a candidate site for the unit. From the visuals, we can conclude that in whichever mandal the unit is installed, it will leave out the other two mandals high and dry. The three mandals are spread significantly in relation to each other for a viable benefit sharing among the village dwellers in each mandal.

**TABLE 6 HOUSEHOLDS IN MANDALS**

S.No	Name of Mandal	Total number of households
1	Saravakota	153
2	Seetampeta	225
3	Hiramandalam	227

To effect benefit to the maximum number of households, the plant should be situated in either Seetampeta or Hiramandalam.

To shortlist one mandal from these two, we take the criterion of proximity with any highway. With this criterion, we are left with Hiramandalam, since Seethampeta is much more remote and is situated in between hills.

Now we know that setting up the unit in hiramandalam would be the most optimum among the candidate mandals, but the village is yet to be arrived upon.

**TABLE 7 VILLAGE HOUSEHOLDS**

S. No	Village	Households
1	Lokonda	58
2	Mamidijola	45
3	Godiapadu	31
4	Anthakapalli	23
5	Ippaguda	9
6	Seedhi	61

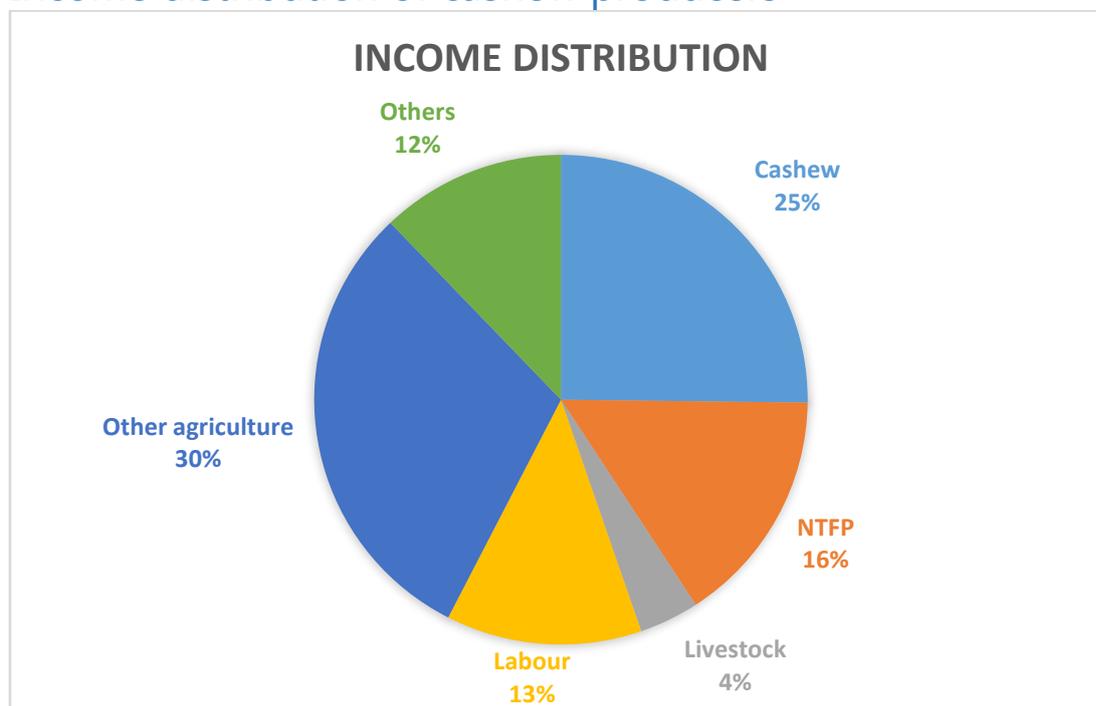
From the above table, any village from Lokonda and Seedhi can be selected according to the number of households. Since Lokonda is much more accessible and is centred in Hiramandalam, it can be a good location to set up the plant.

Mamidijola also has 45 households which makes it a close second in comparison to Lokonda.



**FIGURE 35 LOKONDA TO MAMIDIJOLA**

## Income distribution of cashew producers



**FIGURE 36 CASHEW PRODUCERS**

### Estimation of increase in income

From the income data collected, we isolated their income from cashew on an annual basis. Dividing this figure by their land holding specific to Cashew plantation, we get the income from each acre area under cashew cultivation per year. Averaging out for the whole sample, the average income per acre under cashew annually came out to be Rs.5062.49/acre-yr.

On an average a farmer produces 56.25 kg of raw cashew per year for each acre of plantation. According to data, this converts to 19.69 kg of finished product as we know that on an average 1 kg of raw cashew pods yield only about 350 g of cashew nuts.

The selling price of the finished product is Rs.500 per kg. The cost of processing, transport and all other charges in operations per kg of raw material processed is Rs.50 per kg. Converting this to the cost in units of kg of finished product produced, we get Rs.142.85 per kg. So the profit after removing the cost of processing is Rs.357.14 per kg cashew nuts.

The villagers gain a revenue of Rs.7032.14 per acre of cashew production per year. This converts to an increase in income per year of 39 percent over the previous income.

**TABLE 8 CASHEW PRODUCTION PER VILLAGE FOR TARGET VILLAGES**

S No	Village name	GP	Mandal	Production(in kg)
1	Lokonda	Mahalaxmipuram	Hiramandalam	12000
2	Mamidijola	Mahalaxmipuram	Hiramandalam	7400
3	Godiapadu	Mahalaxmipuram	Hiramandalam	9600
4	Anthakapalli	Mahalaxmipuram	Hiramandalam	4800
5	Ippaguda	Mahalaxmipuram	Hiramandalam	6200
6	Seedhi	Mahalaxmipuram	Hiramandalam	6500
			<b>Total</b>	46500

## Proposed processing capacity of the enterprise

The total Product available from 6 villages = 46500 Kg

Per day processing capacity of the plant @ 40 Kg per round = 80-120 Kg

Maximum period 2-3 months for the processing enterprise = 90 days /year

Therefore the cashew that can be processed per season = 7200 Kg

## Vishakhapatnam district – Data Analysis

In this district we collected data according to the requirement on our feasibility and cost benefit analysis on Turmeric polishing drums and Long Pepper cutters.

### Turmeric

#### Willingness of the producers

From this question we find whether the producers know that they do receive a tangible and significant benefit through the installation of the turmeric polishing drums.



FIGURE 37 PADERU MANDAL

100 percent of the sample who were asked this question replied positively, and therefore we can infer that the population has a general idea about the polishing drums and their value addition.

Knowledge and awareness are extremely important for the villagers, so that they know that what we are doing is actually for their benefit and not something superficial.

### Knowledge about the price of the finished product

This gauges their knowledge on whether they know what the selling price of the polished turmeric is. This question is on whether they have any idea on the product price and not on its accuracy.

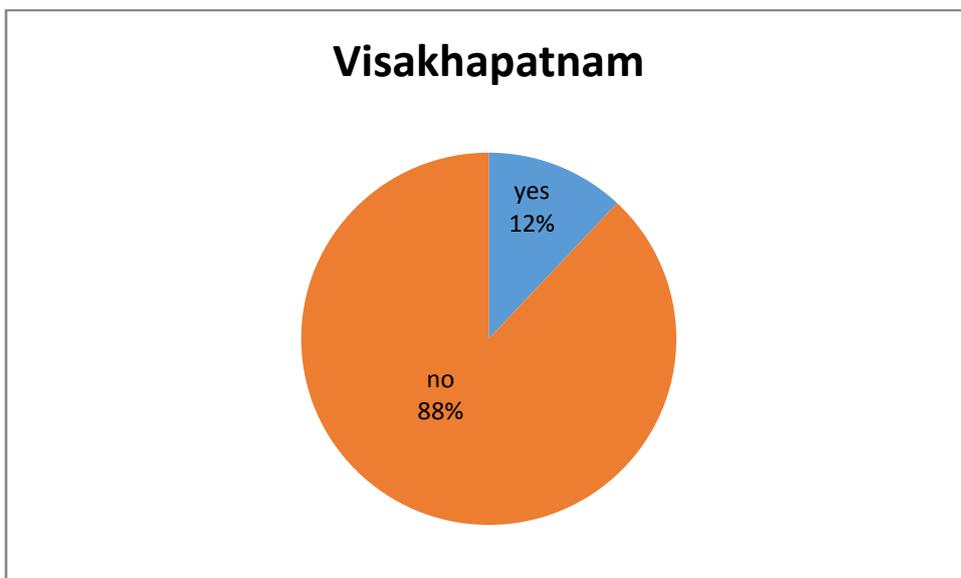


FIGURE 38 PADERU MANDAL

More than 85% of the population are ignorant on the price offered by buyers for the product. This calls for sufficient training for the producers on their pricing strategy. This also would help in educating them no bargaining techniques

### Willingness to pay for operation of the drums

The polishing drums would require running expenses, and the producers will need to pay to use them on a per kg basis.



**FIGURE 39 PADERU MANDAL**

All those interviewed answered positively and were ready to pay the charges for the running and maintenance of the Polishing drums.

**TABLE 9 OPERATIONS COST**

No	Amount(Rs/kg)
5 persons	10
19 persons	5
1 person	2.5
Average	5.833

When asked about what charge they considered to be reasonable, we got an average price of Rs.6 per kg turmeric processed.

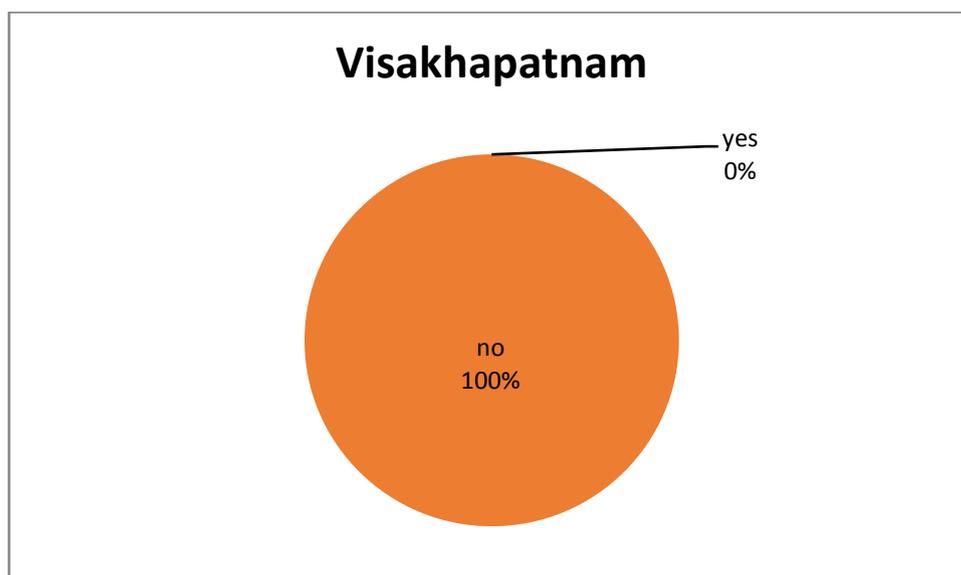
## Feasibility of this venture

### Land requirement

The farmers are willing to donate the land. They were also willing to sign a written agreement according to the supporter NGO “Gramabhyudaya”. This ensures that there would not be any future legal issues and also cost reduction in the form of no rent to be paid.

### Previous experience

This was to find whether there were anyone who had any previous experience in either operating or working near a polishing drum unit ever in their lives.



**FIGURE 40 PADERU MANDAL**

Their answers were overwhelmingly negative and practically no one had a clue in the way of operating a polishing drum.

So a training programme is a must to teach them and make them understand the nuances of operating and managing a turmeric polishing drum.

### Willingness to attend training programme



**FIGURE 41 PADERU MANDAL**

Practically everyone are willing to attend any training programme organized by CPF, related to turmeric polishing. The training can be more than just pertaining to running the drums, but can also be related with best practices employed for efficiency and maximizing profits by increasing production.

### Running the drums

In this the producers were asked whether they were willing to take time out to help in the operations involved.



**FIGURE 42 PADERU MANDAL**

Again a resounding yes from all interviewed villagers. All are willing to work if remunerated sufficiently.

### Optimal Location for placing the polishing drums

A question was asked in the questionnaire on how far the villagers are willing to travel taking their produce with them to the Turmeric polishing drum unit. On an average for the whole district, we got the value as 1.5 kilometres.

Since the proposal is for supplying 10 such units, and there are 14 target villages in total in Paderu mandal, Visakhapatnam district, 10 most populous villages can be chosen for the set-up of the necessary units.

## Income distribution among Turmeric

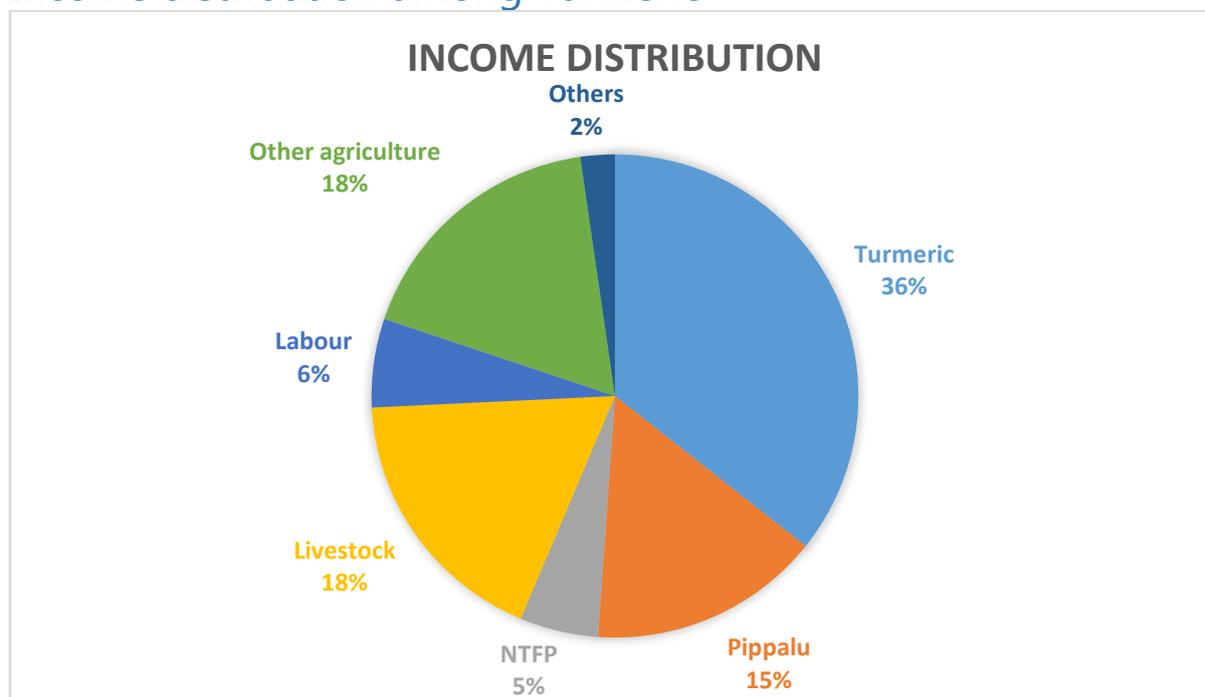


FIGURE 43 TURMERIC AND PIPPALU PRODUCERS

### Income increase estimation

The current income received by the farmers per acre under cultivation of turmeric was calculated as follows. In the interview we asked how much they earn from turmeric alone annually. This figure was divided by their respective land area under cultivation of turmeric to calculate the income from turmeric per year and per acre area. This figure when averaged for the whole sample, we got its value as Rs.13860.95.

From the questionnaire for traders, we found that the selling rate of processed turmeric was around 113 to 115/kg and that the trader charges around Rs.3 to 4/kg as his margin of profit subtracting all his expenses. Using statistics and the data on the producers' average annual production, we calculated their average income per kg turmeric produced as 80.26 for all grades combined.

The producer would spend around Rs.10 for both processing and transport for every kg of turmeric he sells, therefore he gets a net increase in income from turmeric of about Rs.20 per kg. The producer should sell at a rate of Rs.115 per kg of polished turmeric. This increase in income converts to a whopping 31.25 percent increase in income. These calculations, estimates and data used were arrived upon through meticulous field observations. As in, the expenditure of Rs.10 per kg of turmeric is actually Rs.2.75 per kg transportation charges which is currently borne by traders who export to markets in Chennai. Rs.6 per kg was taken from the question asked on how much the villagers are willing to pay, of which the analysis

is given previously. The total expenditure estimate comes to Rs.8.75, which was rounded to Rs.10 for contingency expenditure.

A 31.25 percent increase in income is a huge benefit for the villagers through this project.

**TABLE 10 PRODUCTION OF TURMERIC AND LONG PEPPER PER VILLAGE**

S No	Village name	GP	Mandal	Production-turmeric(in kg)	Production-long pepper(in kg)
1	G. Kothuru	Thumpada	Paderu	5200	1600
2	Gaddamputtu	Thumpada	Paderu	6600	1600
3	Thumpada	Thumpada	Paderu	5800	400
4	Bailaveedhi	Thumpada	Paderu	4200	550
5	Chinthada	Thumpada	Paderu	6000	150
6	Gorrelagondi	Kujjalli	Paderu	3600	950
7	R. Kothavuru	Kujjalli	Paderu	4200	1000
8	Isukalagondi	Vathamamidi	Paderu	800	0
9	Kandulapalem	Devapuram	Paderu	2000	450
10	Panasapalli	Gabbangi	Paderu	10200	1600
11	Nereduvalasa	Gabbangi	Paderu	3800	800
12	Kothabu	Gabbangi	Paderu	unknown	unknown
13	Kurudimetta	Gabbangi	Paderu	unknown	unknown
14	Chavidimamidi	Kadeli	Paderu	2600	300
15	Thotagunnala	Kadeli	Paderu	1400	200
			<b>Total</b>	56400	9600

## Proposed processing capacity of turmeric polishing drums

The total Product available from 15 villages = 56400 Kg

Per day processing capacity of the plant @ 50 Kg per round, 2 cycles per day and for 10 drums = 1000 kg

Maximum period 2-3 months for the processing enterprise- 90 days /year

Therefore the Turmeric that can be processed per season = 90000 Kg

Hence, the capacity is much higher than the available annual production

One company that sells manually operated polishing drums is “Farm steel products”, Industrial estate, Vijayawada. Ph. No. 08666571258.

## Long Pepper (Pippalu)

### Willingness of the producers

CPF is proposing to distribute about 100 Long Pepper cutters to producers of the same. The following questions were to measure the farmers’ willingness and their benefit perception of the same.

### Benefit perceived

To see whether the villagers know that they are going to profit from the usage of cutters to better grade their produce and hence sell at a higher rate than previously.

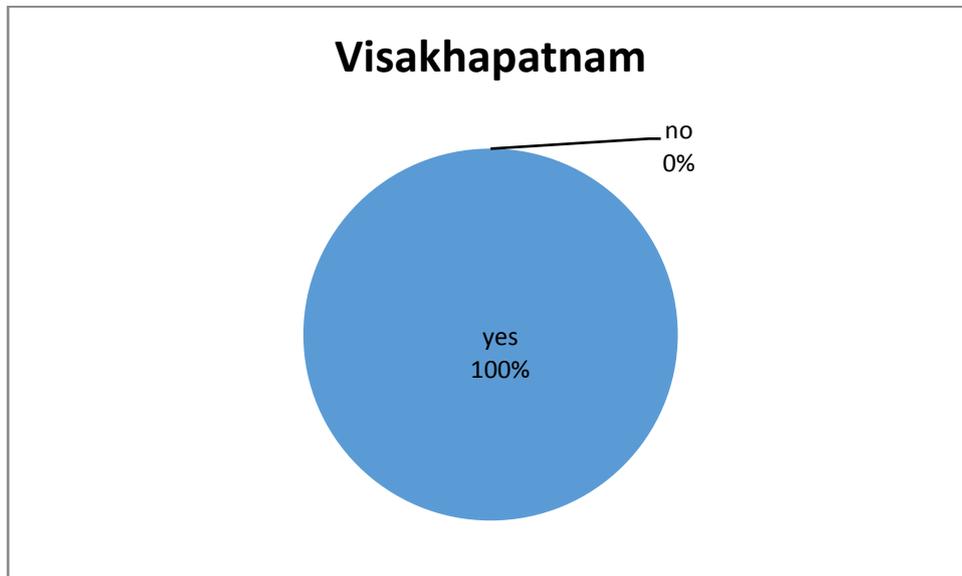


FIGURE 44 PADERU MANDAL

Almost the whole population knew about the cutters and that they are important in the value chain of Long pepper products.

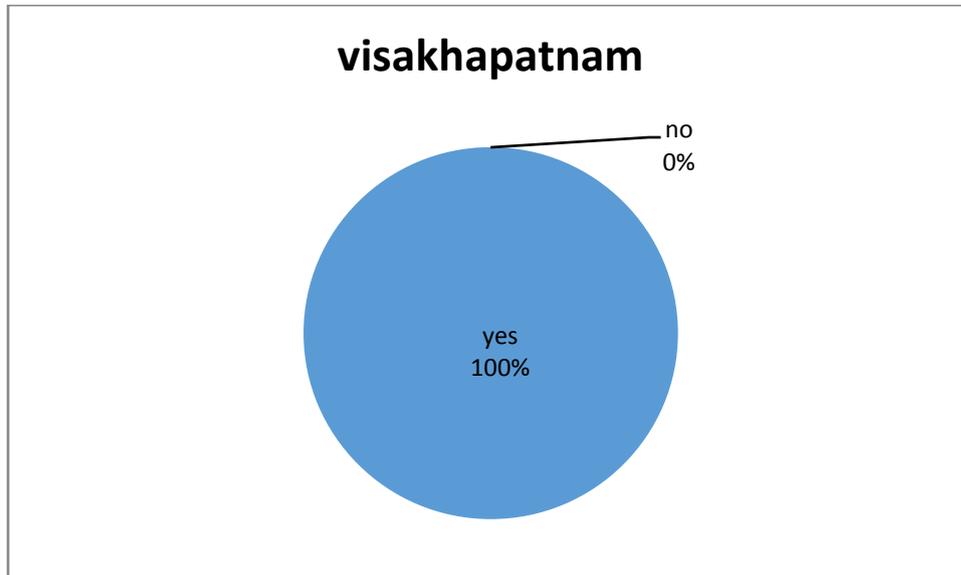
The cut and graded long pepper fetch significantly higher prices compared to the produce currently sold in bulk. The node part which is generally thicker than the rest which is costlier than the thinner Pippalu (common for Long Pepper) grades.

### Feasibility

Here the feasibility of this venture is measured.

### Willingness to pay for cutters

In this we asked whether the producers are willing to invest money in a cutter. This would also measure their commitment in learning and using the cutter for improving the value of their produce.



**FIGURE 45 PADERU MANDAL**

The response was overwhelmingly positive for this question. All of them were willing to pay for the cutters.

### Proportion of cost of cutters payable

The consensus among the villagers interviewed was that 50% of the cost will be borne comfortably by them. Assuming a cutter cost around Rs.110. Then the producer is willing to pay approximately Rs.55 for each cutter. Since CPF was planning to distribute free cutters to 100 selected producers, now using the Rs.50 given by the villager for each cutter, we can actually provide cutters to 200 individuals within the previously decided budget.

Another deduction from the above analysis is that the villagers are actually committed to this and are willing to invest their hard earned money into this, showing us that they are indeed serious about this venture.

### Previous experience in cutting

This was to know whether anyone in the population knew or had ever used a Long pepper cutter in their life.



**FIGURE 46 PADERU MANDAL**

Since more than 80% of the population did not have experience of using a cutter a training programme on the use of the cutter is surely required.

### Willingness to attend training programme



**FIGURE 47 PADERU MANDAL**

The above chart shows that most of the people are willing to attend a training programme if it is provided.

### Estimation of increase in income

Using the details collected from Long pepper processing plants visited, we calculated the total processing and transportation charges incurred on each bag of Pippalu as follows.

**TABLE 11 COST STRUCTURE OF PROCESSING PIPPALU**

Details	Amount
Pippalu per bag	50 Kg
Transport	15
Gunny Bag	60
Thread	6
Loading and Unloading	5
Total	86

As seen from the villagers data that was collected, the villagers were selling their produce at an average of Rs.108.8 per kg, taking into account all the grades. The selling price of the value added product is currently around Rs.131 per kg, taking average of all the grades. After calculation, it was found that the villagers would receive an increase of up to 20 percent more on their previous income from Pippalu. More accurately the percentage increase is 19.16%.

## Focused group discussion

### Turmeric and long pepper

To get general perception among all the villages about the turmeric and long pepper processing and value addition, we conducted a focused group discussion at one of the village "Gorrelgondi". It was attended by around 10 villagers from different villages who are active supporters of CPF's partner NGO "Gramabhyudaya".

Discussions were based on some necessary questions which are important for the polishing Drum/Long Pepper Cutters to be implemented.

Discussion about any kind of institutional support provided, response was not in favour. Villagers are not getting any relevant support from any organisation either government or non-government, which is most needed for the villagers at different stages of their agricultural practices. Involvement of women in agricultural practices is more or less equal or even more than men in some villages, by giving a helping hand in the livelihood for the household. Currently they are growing traditional variety of plants. The price for the raw material which they are growing is depends on the market rate, villagers do not negotiate

but sell only at market price, and farmers do not have any choice. There are some challenges faced by villagers, for instance, during rainy season it is very difficult to dry the cultivated wet turmeric. They do not have any storage facility and therefore if provided it will be very helpful for the same. Government water supply is given only once in day and charged at Rs30 per month. They do not have any knowledge about selling methods. Farmers feel that they do a lot of hard work in the field but are not getting the sufficient revenue. They require trainings for all kind of operations. They need fertilizer supply for turmeric.

## Cashew

For cashew processing and value addition, we got the general perception by conducting 3 focused group discussions, one in each mandal. It was attended by around 10 members who are active supporters of CPF's another partner NGO "Samayogita".

Cashew producers are also not getting relevant support from any institutional body, which is most required at all stages to improve the production. Women are equally involved in all practices. Currently their business is based on natural variety of plants. Earlier, the government provided some hybrid plant's varieties but they didn't survive. Prices for cashew pods depends on market forces and decided by the plant owners also. For selling the raw cashew pods, villagers do not go any local market. Middlemen come to the village itself and buy the raw product in bulk from several farmers. Middlemen generally come in the month of April-may (main season). They are non-tribal people, belonging to nearby towns. Some problems faced by villagers are that they need to do weeding thrice in a year at Saravakota mandal which requires significant spending and there is also an elephant problem in Seetampeta mandal. Elephants are in nearby areas which eat fruits and damage the plants. Due to their fear of them, it is difficult to collect cashew pods when the elephants are present in the fields. Now together with the forest department they are taking some actions. In Hiramandalam, weather and dew damages the production. Due to this problem, there was lesser yield in the present year.

## Management of Cashew processing unit

According to our study, the management of the processing unit would best be done in the following ways. The cashew production per village is given as an Annexure.



FIGURE 48 CASHEW CUTTING TABLE

### Alternative 1

- The farmers would sell their produce to the processing plant at a higher price than the present rate, thus increasing their earnings
- The profits earned by the processing plant will be shared between the farmers who sold their produce and the management committee of the plant.
- The management committee will consist of members form the farmer clubs which are already in all villages.

### Alternative 2

- The farmers will give their produce to the processing plant without taking any money
- The cashews would be processed till the finished product and then be sold.
- The end profit would be distributed among the farmers who gave their produce and a small amount will be retained by the management to be kept in reserve.
- The profits will be distributed after removing all expenses including processing, transportation, selling expenses and wages.

### Alternative 3

- The farmer would give his produce and get it processed, thus getting the finished product (cashew nuts) for a predetermined fee as per kg of raw material.

- This charge includes the processing fee, wages and management reserve for the processing plant.
- The farmer will bear transportation and selling costs by himself
- The workers in the processing plant will again be from the farmer club only, and they will be paid wages for their hourly work.

## Management of turmeric polishing drums



**FIGURE 49 POLISHING DRUMS (400KG CAPACITY)**

The turmeric production per village is given in the annexure.

- The farmer bring his respective unpolished turmeric produce to the polishing drum
- He is charged Rs.1 per kg of the raw material and then given the polished turmeric
- The farmer then sells this polished turmeric at a higher price than before
- For selling he can take the help of the turmeric buyers data base as given in the annexure

## Management of pippalu (Long Pepper) cooperative

The pippalu production per village is given in the same table as that of Turmeric production.

- The farmers will be distributed cutters.
- Using them, the farmers would cut and grade their pippalu produce
- The graded pippalu will then be collected, re-graded (standardized) and exported by the cooperative and the profits will be distributed among the farmers retaining a little to cover the costs and for the reserve.

## SWOT analysis

### For cashew processing plant

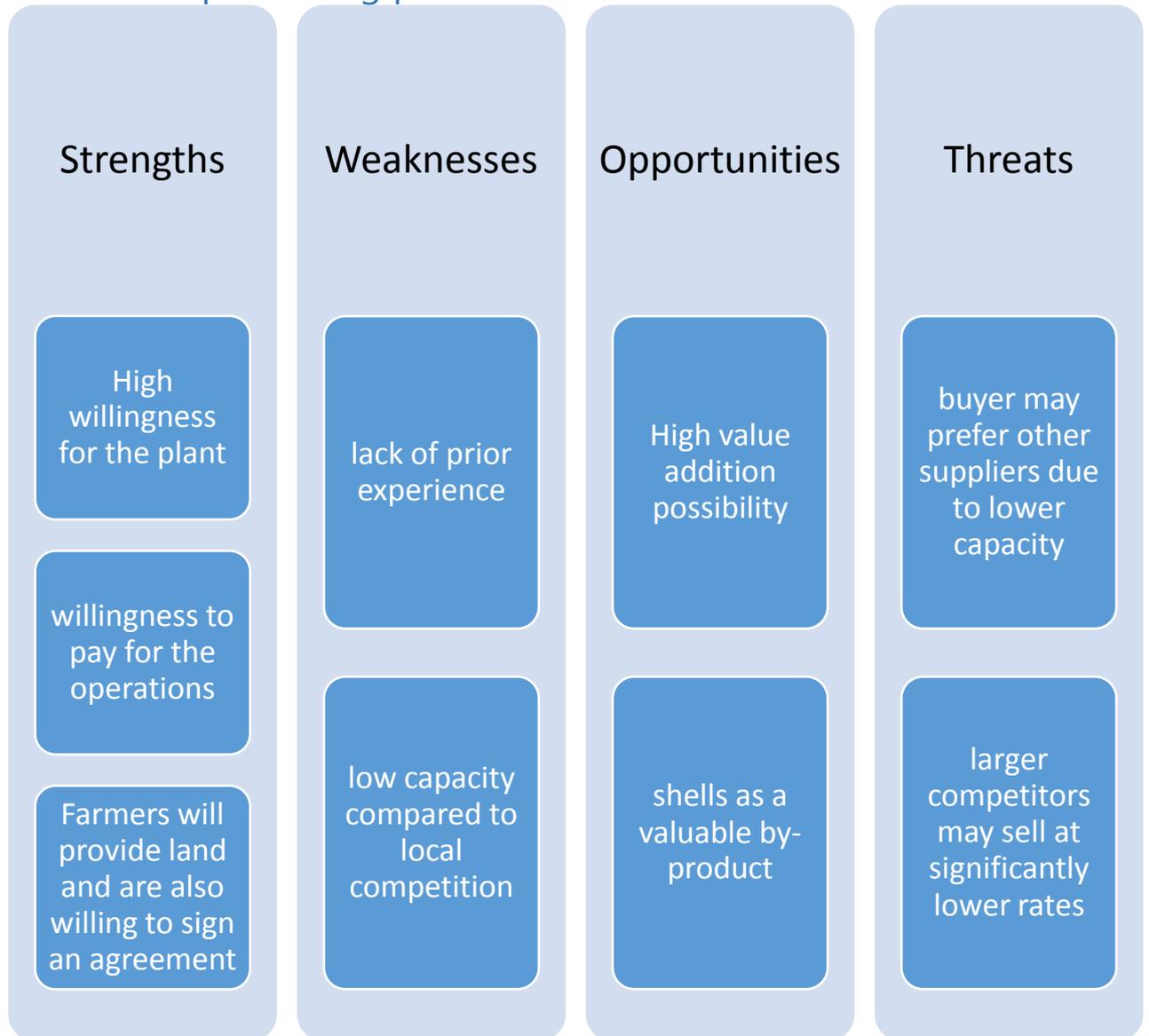


FIGURE 50 SWOT ANALYSIS FOR CASHEW PROCESSIGN PLANT

## For Turmeric polishing drums



FIGURE 51 SWOT ANALYSIS FOR TURMERIC POLISHING DRUM

## For Pippalu (Long Pepper) cutters

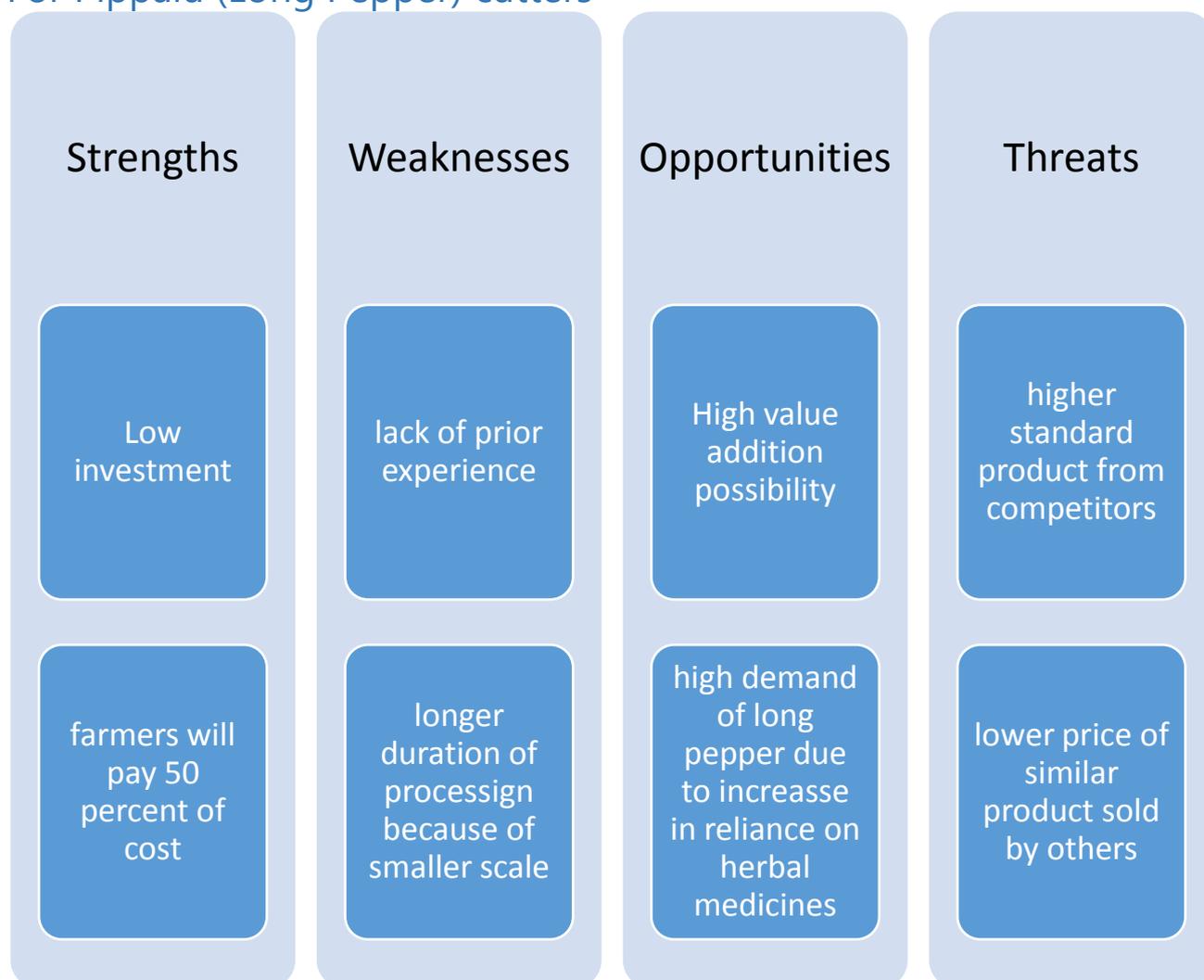


FIGURE 52 SWOT ANALYSIS FOR PIPPALU CUTTERS

## Conclusions

India is the largest producer, consumer and exporter of Turmeric in the world. India has around 80% of world turmeric production and 60% of the export market. Of all the Turmeric production in India, Andhra Pradesh has 40% of the total land area under turmeric cultivation. Though the Turmeric yield per hectare has been increasing year after year, its total production has been decreasing mainly due to the reduction in the area under its cultivation. This decreasing trend shows the increase in interest of farmers on other crops.

The production of Turmeric and Long Pepper is done mainly for earning for the farmers rather than any sort of self use. In fact, the very farmers who produce turmeric in their farms buy polished turmeric separately for household use. Hence Turmeric, Long Pepper and in the same vain, cashew are primarily cash crops.



**FIGURE 53 FGD IN MAMIDIJOLA**

Though the final price of the finished product which comes from extensive processing such as polishing and grinding into powder, the farmers get only a small portion of the pie. Doing all the hard work required, for the growing of the plants and also single-handedly carrying the full burden of risk, this is extremely unfair for the poor farmers. The set-up of polishing drums for the benefit of farmers for their benefit was proposed to this end. This would help the farmers to gain headway deeper into the value addition process.

From the data analysis and sufficient extrapolation, the estimated increase in income from the value addition to the turmeric currently sold by the farmers stood at a whopping 31% from previously.

In the same way, Pippalu (long pepper) is also just sold without any sort of value addition and grading, though the next step of cutting them into smaller pieces using cutters is a process which adds tremendous value to the product and can be sold at unimaginably high prices compared to the present rates. What is more surprising is that the cutting and grading process could not be simpler. The traders who buy and sell Pippalu are having a ball with the amount of profit they get at such low investments. With this exact point in mind, it was proposed to distribute Long Pepper cutters among the farmers and also give sufficient training on their use as well.

Currently, the traders of long pepper buy from shandies and after the required cutting and grading, export to herbal product markets in North Indian cities such as Ahmedabad and Delhi. The producers would be greatly helped if they would be provided information on potential markets and buyers after the process of value addition. The same goes for Turmeric producers too.

From our data analysis it can be concluded that a maximum number of the population are highly enthusiastic of all these interventions and would surely help in the project to run smoothly.

In Srikakulam district, both the primary cash crop as well as the plantation crop is of cashew. It gives significantly higher income than any other crop they produce. Though, the cashew trees require a lot of care and investment, it is a highly profitable business. In the present year, the crop of cashew has been greatly affected by the recent disastrous cyclone "Hud Hud" which had destroyed several trees.

Cashew requires processing which is in the form of removing the inner cashew nuts from the pods by removing the outer shells. Then scaling of the pinkish cashew follows. Grading is finally done after the scaling process which is then packed and either exported or sold to local brokers. The proposal is to set-up one processing unit which includes one boiler and the shell removal unit. A cooperative will be formed with a few people in the beginning but will slowly but surely expanded based on its success.

## Recommendations

The building of the Cashew processing plant and cooperative in Srikakulam district would be highly profitable for the farmers there. Since every Mandal's response was highly positive, it is recommended that two more plants to be set up in the remaining mandals for the benefit of the farmers. This would increase the end benefit tremendously. Set up and running of the other two plants will take a lesser investment than the first one, as all three can be integrated with each other in terms of supply chain and marketing.

According to the proposal, the cashew is not going to be processed till the final stage, but only till the point where only the outer covering is removed. Improving the capacity of the plant so that complete cashew processing can be done is of utmost importance. Manpower is not an issue as can be seen in the extensive data analysis done formerly.

We can also think of providing a transportation facility for the farmers. A single truck can do wonders in improving the convenience of the farmers by transporting the raw material to the plant and the finished product from the plant to the market. This will surely help in improving the efficiency by a long way.

Another very important point to consider is that the workers will not only be required to be given training, but they also need to be monitored for a small duration. If only given training, the people running the plant will have the necessary knowledge, but they would also require sufficient guidance and correction where necessary for the operations to go smoothly.

Cashew shells which currently are just being wasted can be used productively for either fodder for cattle or can also be used for making dye. From recent developments it is discovered that the dye made from cashew shells is very versatile and is also practically

permanent and the clothes made from this dye will not fade very easily. This could become a viable side business for the villagers for extra profit.

Since we are already providing 10 turmeric polishing drums, it is recommended that 5 more drums can be provided so as to cover all the 15 villages in Paderu mandal for the benefit of the turmeric farmers in the remaining villages. This is also important keeping in mind the small capacity of the drums currently proposed to be bought.

Transportation for both raw material and the polished turmeric from farmers to buyers should be provided. This would improve the convenience of the farmers greatly by reducing travel time and also wastage on the way. This would also reduce the chances of damaging the produce due to climatic reasons such as sudden rain.

The proposal to provide 100 Long pepper cutters to the producers of the same is recommended to be increased to 200 as explained in the data analysis. Half the money required can be collected from the villagers who are ready to pay and therefore double the current number will be benefited.

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## Annexure 1: Buyers database

### Cashews

S No	Name of company	Contact No	Address
1	Vishnu Cashew Company	(91)-8942-240341, (91)-9291531052	Goru Veedhi, Srikakulam Ho, Srikakulam - 532001, Palasa
2	Sri Umamaheswari Cashew Industry	(91)-8942-241054	Srikakulam Ho, Srikakulam - 532001, Tarlakota Road Palasa
3	Sitharama Cashew Industry	(91)-8942-241057, (91)-9440444262	Srikakulam Ho, Srikakulam - 532001, Main Road Palasa
4	Satya Sarojini Cashew Products	(91)-8942-241075	7-32, Kapu Veedhi, Srikakulam Ho, Srikakulam - 532001, Palasa
5	Sri Nataraja Cashew Products	(91)-8942-241107	Kapu Veedhi, Srikakulam Ho, Srikakulam - 532001, Palasa
6	ROTEX TRANSMISSION	9850039447,9850708304, 020-24363108	'Kaju House', Besides Mahananda Dairy, BhilareWadi, Near Katraj, Pune - Satara Road, Tal. Pune = 411046 (Maharashtra). Website : <a href="http://www.cashewnutmachine.com">www.cashewnutmachine.com</a> Email : <a href="mailto:rotexindia@hotmail.com">rotexindia@hotmail.com</a> , <a href="mailto:rotexglobal@gmail.com">rotexglobal@gmail.com</a>

## Cashew shells

S No	Name of company	Contact No	Address
1	Sri Raj Cashew Industries	<b>09290464746</b>	16-24, Mallikharjuna Colony, Rajam Srikakulam District., Srikakulam - 532 127, Andhra Pradesh
2	Akshar Cashew Industries Private Limited	<b>09643007172</b>	No. 35, Kesavlal Estate, Near Raghuvir-1, Aslali By Pass Road , Ahmedabad - 382427, Gujarat
3	Incas Enterprises	<b>08048003698</b>	No. 54/7, Karikalan Street, Paari Nagar, Ashok Nagar , Chennai - 600083, Tamil Nadu

## Turmeric

S No	Name of company	Contact No	Address
1	Kumar Enterprise India	8046072415	No. 4-261 Sundarnagar, Old Diary farm , <b>Visakhapatnam</b> - 530040, Andhra Pradesh
2	Sri Deviprasad Industries	8042536227	No. 16/ 8, Dasari Street, V. Madugula , <b>Visakhapatnam</b> - 531 027, Andhra Pradesh
3	S.R. Agrotrade Exim	9948229999	No. 12-5-48, New Colony, Anakapalle , <b>Visakhapatnam</b> - 531001, Andhra Pradesh
4	Surya Enterpries	9700365779	28-15-19, Opp. Police Club, Suryabagh , <b>Visakhapatnam</b> - 530020, Andhra Pradesh
5	Anapurna Trader	8042956390	Door No. 18-189/1 Prahaladpuram, <b>Visakhapatnam</b> , Andhra Pradesh

## Long Pepper

S No	Name of company	Contact No	Address
1	Lazarson food and health care pvt. Ltd.	8046048447(Srinivas)	no-9-9-46/1, mangapuram colony, maddilapalem,visaakhapatnam-530001,A.P.
		8912782733	
		9346411650	
2	M. Dhirubhai & Co.	8043258642	No. 18 B, Sukeas Lane, 1st Floor ,
			Kolkata - 700001, West Bengal
3	Krishna trading company	9953362102	2211/141A, Ist Floor, Aggarwal Market, Katra Tobacco, Khari Baoli,
			New Delhi - 110006, Delhi
4	Green earth products ltd.	8447503998	W - 105, Greater Kailash Part - 1,
			New Delhi - 110048, Delhi
5	RDB commodities	8588874439	No. 22/1, Ground Floor, Manikam Street, Choolai,
			Chennai - 600112, Tamil Nadu

## Annexure 2: production per village

### Raw cashew production per village

S No	Village name	GP	Mandal	Production(in kg)
1	Colony Maluva	Maluva	Saravakota	4000
2	Sarava Maluva	Maluva	Saravakota	10400
3	Sarava Bonthu	Chinna Kittalapadu	Saravakota	9200
4	Ambalagandi	Titukupai	Seetampeta	6800
5	Kottakota	Titukupai	Seetampeta	10800
6	Kusumuru	Titukupai	Seetampeta	12600
7	Titukupai	Titukupai	Seetampeta	6400
8	Titukupai Guda	Titukupai	Seetampeta	12800
9	Lokonda	Mahalaxmipuram	Hiramandalam	12000
10	Mamidijola	Mahalaxmipuram	Hiramandalam	7400
11	Godiapadu	Mahalaxmipuram	Hiramandalam	9600
12	Anthakapalli	Mahalaxmipuram	Hiramandalam	4800
13	Ippaguda	Mahalaxmipuram	Hiramandalam	6200
14	Seedhi	Mahalaxmipuram	Hiramandalam	6500
			total	119500

## Turmeric and Pippalu production per village

S No	Village name	GP	Mandal	Production-turmeric(in kg)	Production-long pepper(in kg)
1	G. Kothuru	Thumpada	Paderu	5200	1600
2	Gaddamputtu	Thumpada	Paderu	6600	1600
3	Thumpada	Thumpada	Paderu	5800	400
4	Bailaveedhi	Thumpada	Paderu	4200	550
5	Chinthada	Thumpada	Paderu	6000	150
6	Gorrelagondi	Kujjalli	Paderu	3600	950
7	R. Kothavuru	Kujjalli	Paderu	4200	1000
8	Isukalagondi	Vathamamidi	Paderu	800	0
9	Kandulapalem	Devapuram	Paderu	2000	450
10	Panasapalli	Gabbangi	Paderu	10200	1600
11	Nereduvalasa	Gabbangi	Paderu	3800	800
12	Kothabu	Gabbangi	Paderu	unknown	unknown
13	Kurudimetta	Gabbangi	Paderu	unknown	unknown
14	Chavidimamidi	Kadeli	Paderu	2600	300
15	Thotagunnala	Kadeli	Paderu	1400	200
			<b>Total</b>	56400	9600

## Annexure 3: Turmeric polishing drums locations As decided by Grambhyudaya

S No	Village name	GP	Mandal	Drums
1	Chinthada	Thumpada	Paderu	1
2	Isukalagondi	Vathamamidi	Paderu	
3	Thotagunnala	Kadeli	Paderu	1
4	Chavidimamidi	Kadeli	Paderu	
5	Kothabu	Gabbangi	Paderu	1
6	Kurudimetta	Gabbangi	Paderu	
7	Gaddamputtu	Thumpada	Paderu	1
8	G. Kothuru	Thumpada	Paderu	
9	Gorrelagondi	Kujjalli	Paderu	1
10	Bailaveedhi	Thumpada	Paderu	
1	R. Kothavuru	Kujjalli	Paderu	1
2	Thumpada	Thumpada	Paderu	1
3	Nereduvalasa	Gabbangi	Paderu	1
4	Kandulapalem	Devapuram	Paderu	1
5	Panasapalli	Gabbangi	Paderu	1

## Annexure 4: All Questionnaires

### Questionnaire for cashew producers

1. Name of interviewer:
2. Start time:
3. End time:
4. Duration:
5. Date of interview:
6. Village name:
7. Gram panchayat:
8. Mandal:

### Background information

1. Name:
2. Age:
3. Sex:
4. Farmer club: (Yes/No)
5. No. of members in the household:     , Dependent:     , Earners:
6. Land holding in area: (Acres)
7. Area distribution according to crop:

Name of crop	Area
Cashew	
Others	

8. Estimated income per month:

Sources	Amount (in Rs)
Agriculture (Total)	
Cashew	
NTFP	
Livestock	

Labour	
Others	

9. Government Aid:

Scheme	Amount (in RS)

10. Are you having any kind of insurance for your crop? (Yes/No)

11. If yes, please give details.

12. If required where do you borrow money from?

13. Where do you buy seeds from? Cost?

14. Do you have any institutional support (trainings)?

15. What is the role of women in this business?

16. Do you have a bank account? (Yes/No)

17. Money use:

Name	Amount	Details
Investing		
Saving		
Others		

18. How do you maintain your accounts (cash flow)?

## Current expenditure

19. Expenditure distribution:

Name of expense	Amount (in Rs)
Agriculture	

Livestock	
Household expenses:	
Food	
Electricity	
Healthcare	
School (in total for all children)	
Other (please specify)	

20. Do you use any type of fertilizer? (Natural, artificial, none)

21. What variety of plant do you grow?

22. Do you have storage facility and what is the rent charged?

### Farmer willingness

23. Will you benefit from a cashew processing unit established near you? (Yes/No)

24. What is the value of the finished product? (In Rs)

25. Would you be willing to pay for the operation and management of the said unit? (Yes/No)

26. Approximately how much can you pay per kg of the raw cashew pods? (In Rupees)

27. How far are you willing to take your produce to the plant? (In km)

28. Do you have any experience of operating a processing plant? (Yes/No)

29. Do you have any experience about grading the finished product? (Yes/No)

30. Are you willing to attend a training programme on the operation and grading processes in the plant? (Yes/No)

31. Would you be willing to work in the processing plant? (Yes/No)

### Selling rates

32. Rates for selling to the middlemen:

Name	Selling expense(specify unit)	Grade	Amount (in Rs per kg)	MSP (current)
Cashew				
Fruits				

## Production

33. How much cashew do you produce per year? (in kgs)

34. Selling product:

Name	Duration/Cost of waiting period	Selling rate (Rs per kg)
Immediately after harvest		
After waiting		

## Questionnaire for turmeric/long pepper

1. Name of interviewer:
2. Start time:
3. End time:
4. Duration:
5. Date of interview:
6. Village name:
7. Gram panchayat:
8. Mandal:

### Background information

1. Name:
2. Age:
3. Sex:
4. Farmer club: (Yes/No)
5. No. of members in the household:     , Dependent:     , Earners:
6. Land holding in area: (Acres)
7. Area distribution according to area:

Name of crop	Area
Turmeric	
Long pepper	
Others	

8. Estimated income per month:

Sources	Amount (in Rs)
Agriculture (Total)	
Turmeric	
Long Pepper	
NTFP	

Livestock	
Labour	
Others	

9. Government Aid:

Scheme	Amount (in RS)

10. Are you having any kind of insurance for your crop? (Yes/No)

11. If yes, please give details.

12. If required where do you borrow money from?

13. Where do you buy seeds from? Cost? (in Rs)

14. Do you have any institutional support (trainings)?

15. What is the role of women in this business?

16. Do you have a bank account?

17. Money use:

Name	Amount	Details
Investing		
Saving		
Others		

18. How do you maintain your accounts (cash flow)?

## Current expenditure

19. Expenditure distribution:

Name of expense	Amount (in Rs)
Agriculture	
Livestock	
Household expenses:	
Food	
Electricity	
Healthcare	
School (in total for all children)	
Other (please specify)	

20. Do you use any type of fertilizer? (Natural, artificial, none)

21. What variety of plant do you grow?

22. Do you have storage facility and what is the rent charged?

## Farmer willingness for turmeric polishing Drum

23. Will you benefit from a turmeric polishing drum provided near you? (Yes/No)

24. What is the value of the finished product? (In Rs)

25. Would you be willing to pay for the operation and management of the said unit? (Yes/No)

26. Approximately how much can you pay per kg of the raw turmeric? (In Rupees)

27. How far are you willing to take your produce to the Drum? (In km)

28. Do you have any experience of operating a turmeric polishing Drum? (Yes/No)

29. Are you willing to attend a training programme on the operation of a polishing drum?  
(Yes/No)

30. Would you be willing to work with the drum? (Yes/No)

## Farmer willingness for cutters for Long pepper

31. Will you benefit from a long pepper cutter provided to you? (Yes/No)
32. Would you be willing to pay for the cutter? (Yes/No)
33. Approximately how much can you pay per cutter? (In Rupees)
34. Do you have any experience of using a cutter? (Yes/No)
35. Are you willing to attend a training programme? (Yes/No)

## Selling rates

36. Rates for selling to the middlemen:

Name	Selling expenses	Grade	Amount (in Rs per kg)	MSP (current)
Turmeric				
Long pepper				
by products				

## Production

37. How much Turmeric do you produce per year? (in kgs)
38. How much Long Pepper do you produce per year? (in kgs)
39. Selling product:

Name	Duration/Cost of waiting period	Selling rate (Rs per kg)
Immediately after harvest		
After waiting		

## Questionnaire for Buyers (Cashew):

1. Date of interview:
2. Name of the interviewer:
3. Start time:
4. End time:
5. Duration:

## Background information:

1. Name:
2. Age:
3. Farmer: (Yes/No)
4. Village:
5. Gram panchayat:
6. Mandal:

## Value addition chain:

7. At which level are you working?

Insert a number:

1-Middle man    2-Trader    3-Processing plant owner

8. Which type of product are you buying?

		Buying Rate (in Rs/kg)
Raw produce		
Semi processed product		
Full processed product		

9. Is the price you buy at negotiable? (Yes/No)
10. How do you maintain your accounts (Cash Flow)?
11. Do you lend money to farmers? (Yes/No)

12. Are you doing any further processing before selling?

None	
Semi processing	
Full processing	

13. Perspective:

Grading	Quality	Price

14. To whom are you selling (3rd party)?

Middle man	Trader	Processing plant owner	Export	Selling rate (in Rs/kg)

15. Are you using leftover part of cashew ( cashew shells)?

Not using	Using	If selling (rate in Rs/kg)

16. How much quantity of both are you getting from 1 kg of cashew pods?

Quantity of leftover shells	Quantity of finished cashew

## Daily production

17. How much finished product do you produce per day?

## Cost building

	Capacity	Cost	Rent
Boiler			
Oven			
Peeling unit	NA		

18. How many hours does your plant run per day?

## Expenses per month

expense	amount (In Rs)
diesel	
electricity	
labour wages	
rent	
transport	
food	
others	

## Annual turnover:

Quantity of cashew pods (in tonnes)	Quantity of finished cashew (in tonnes)	Expenditure (in RS)	Revenue (in Rs)

19. If person is processing unit owner ask to provide list of end buyers (address,contact no etc.)?

## Questionnaire for Buyers (Turmeric & Long pepper) :

1. Date of interview:
2. Name of the interviewer:
3. Start time:
4. End time:
5. Duration:

### Background information:

1. Name:
2. Age:
3. Farmer: (Yes/No)
4. Village:
5. Gram panchayat:
6. Mandal:

### Value addition chain

7. At which level are you working?

Insert a number:

1-Middle man    2-Trader    3-Processing plant owner

8. Which type of product are you buying?

		Buying Rate (in Rs/kg)
Raw produce		
Semi processed product		
Full processed product		

9. Is the price you buy at negotiable? (Yes/No)
10. How do you maintain your accounts (Cash Flow)?
11. Do you lend money to farmers? (Yes/No)

12. Are you doing any further processing before selling?

None	
Semi processing	
Full processing	

13. Perspective:

Grading	Quality	Price

14. To whom are you selling (3rd party)?

Middle man	Trader	Processing plant owner	Export	Selling rate (in Rs/kg)

### Daily production:

15. How much finished product do you produce per day?

### Cost building

	Capacity	Cost	Rent
Drum			
Cutters	NA		

16. How many hours does your plant run per day?

### Expenses per month

Expense	amount (In Rs)
Diesel	
Electricity	
labour wages	
Rent	
Transport	
Food	
Others	

### Annual turnover:

Quantity of turmeric (in tonnes)	Quantity of long pepper (in tonnes)	Revenue (in Rs)

17. If person is processing unit owner ask to provide list of end buyers (address,contact no etc.)?

## Questionnaire for focus group discussion (cashew):

1. Do you have any institutional support (trainings)?
2. What is the role of women in this business?
3. What variety of plant do you grow?
4. Do you have storage facility and what is the rent charged?
5. Will you benefit from a cashew processing unit established near you? (Yes/No)
6. Would you be willing to pay for the operation and management of the said unit? (Yes/No)
7. Do you have any experience of operating a processing plant? (Yes/No)
8. Do you have any experience about grading the finished product? (Yes/No)
9. Are you willing to attend a training programme on the operation and grading processes in the plant? (Yes/No)
10. Would you be willing to work in the processing plant? (Yes/No)

## Questionnaire for focus group discussion (turmeric & long pepper):

1. Do you have any institutional support (trainings)?
2. What is the role of women in this business?
3. What variety of plant do you grow?
4. Do you have storage facility and what is the rent charged?
5. Will you benefit from a turmeric polishing drum established near you? (Yes/No)
6. Would you be willing to pay for the operation and management of the said unit? (Yes/No)
7. Do you have any experience of operating a processing plant? (Yes/No)
8. Do you have any experience about grading the finished product? (Yes/No)
9. Are you willing to attend a training programme on the operation and grading processes in the plant? (Yes/No)
10. Would you be willing to work in the processing plant? (Yes/No)