

## Penamakuru - A Village in the Krishna Delta

We wanted to see how people live in a delta village. We started from Vijaywada and reached Vuyyuru town. The terrain was totally plain, without any significant slope. We crossed a number of canals and water channels lined with green trees.

### Bandar Canal

After travelling about 3 kms from Vuyyuru, we crossed the Bandar canal to reach Penamakuru. Bandar canal takes off from the Krishna River at Prakasam Barrage in Vijaywada. It flows from the North West of the village to the South East direction. Water of this canal is taken to the fields through small field channels. Penamakuru village is situated between the Krishna River (which flows to the West of the village just a few kilometers away) and the Bandar canal.



Fig: 4.5. Plain landscape of Penamakuru



Fig: 4.6. Huts along Bandar Canal

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As Penamakuru is very near to river Krishna the groundwater can be found by digging for only 15 to 25 feet. Hence, the expenditure on digging borewells is very low. Since the entire region is electrified, most of the bore pumps have submersible pumps operating with electricity. Thus the coastal plains have plenty of water.



Fig: 4.7. A borewell irrigating paddy and sugarcane fields

In recent years there has been an increasing use of groundwater through the borewells to cultivate the uplands which cannot be easily irrigated with canal water.

- Does it rain in your region between the months of June to October?
- Is the rain adequate for agriculture in your area?
- Compare the availability of water in your area and that in the Krishna Delta Plain region.

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### Soils

In Penamakuru, the soils are mostly fertile alluvial black soils. The soils deposited by the river are called alluvial soils or 'ondru bhumi'. Alluvial soils are heavy and have high water holding capacity. They are also rich in nutrients. Do you think crops will grow well on such soils?

We can find fine and clayey black soils ('nalla vegadi bhumi') upto a depth of 15 feet. They get very sticky with rain and retain moisture for a long time. When they dry up they tend to crack – this causes what is called self-ploughing and causes fertility.

Some parts of the village nearer to the river on the West and South have sandy soils ('suka bhumi').

By and large most of the soils of this region are fertile and if water is available it is possible to raise two to three crops a year.

- What is the relation between moisture level in the soil and crop production?
- Look at the map of the village to identify the canal, the road, the centre of the village and the houses and huts.
- Look at the map of the Penamakuru village to see the field channels which take off from the Bandar Canal. See the direction in which they flow.
- Gently shade the portions which you think will be irrigated by the canals.

### Rainfall and Irrigation

This region receives rains from June to October from the South West monsoon. From November to May there is relatively very little rain. Due to good sunshine and warm temperature it is possible to raise crops throughout the year. However, as there are no rains after October it is necessary to irrigate the lands with water either from the canal or the wells or tanks.

The lands on the eastern side of the village which are nearer to the canal and low lying can be easily irrigated with the canal water. The lands towards the western and northern side are on higher elevation and cannot be easily irrigated with canal water. In such areas farmers use borewells.



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### Cyclones & Floods

Krishna district is one of the most flood prone districts of the state. Every few years when the rains are very heavy in the catchment area the dams are full. Excess water is released by the big dams. Then the flood waters enter the lowlying villages along the river. This can be both very destructive and productive. Floods are also caused by cyclones which bring heavy rains from the sea along with strong winds which uproot trees and cottages. Penamakuru is lucky as it is on high ground and has not been adversely affected even during the worst floods of 1997, 2006 or 2009.

- Can you think why the floods can be both destructive and productive?
- Find out from your elders about the major floods in the past and what happened during those times.
- How can we minimise the damage done by floods and cyclones?

### Crops

Paddy is extensively cultivated all over the coastal plains especially in Krishna District. Most of the lands, especially in the low areas (pallam) are sown with paddy. The nursery for the paddy monsoon crop called *salva* is sown and transplanted in the months of June/ July. They usually grow high yielding paddy varieties like MTU 2716, Swarna, and BPT. This is harvested around October-November. The main agricultural operations like ploughing, threshing and transportation are done with tractors. Transplantation is still mainly done by women and harvesting too is done by men



Fig: 4.8. Turmeric, Sugarcane and Banana fields

and women together. From the month of December they sow the winter crop called *dalva*. This is either paddy or pulse crop.

During the last few years many farmers have been cultivating sugarcane instead of paddy. Sugarcane stands in the field for nine months to a year and is harvested around February-March. Then it grows again to give a second crop the next year. These fields need tending throughout the year and this work is done mainly by men.

The villagers cultivate turmeric, yam, banana etc. in the uplands. These are sown with the arrival of rains and harvested in February - March. Crops like sugarcane, turmeric, yam and banana are grown for sale in the market and are not consumed in the village.

In olden days the farmers of Penamakuru cultivated red gram, green gram and millets on the uplands. These did not require much water. However nowadays these crops have been replaced with vegetables and sugarcane which require irrigation.

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### Vegetables

Uplands (*meraka* or *garuvu bhumulu*) of this village are suitable for growing vegetables. In the low lying lands if water is not sufficient for a second crop of paddy they cultivate vegetables. Usually they cultivate brinjal, ladies finger, ivy gourd *dondakai*, ridge guard and cabbage. These are sold in Vuyyuru Rythu bazaar. During summer some of the farmers cultivate *jeeluga*

or *pillipesara* to increase fertility of their fields. These are leguminous green manure crops which fix nitrogen in the soil. After 30 to 40 days these crops are ploughed back into the soil.

### Orchards

On the bank of river Krishna and upland areas of Penamakuru we can see several fruit bearing trees and orchards like guava, sapota, papaya. The farmers told us that soil near the river contains more sand. The capacity of these soils to retain moisture is very less. So crops like paddy do not grow well on sandy soils. The fruit trees grow well as their roots penetrate deep into the soil and draw out water. Hence the lands close to river are suitable for growing fruit bearing trees.

### Irrigation, market and changing crops

We have seen that there is a shift from growing food grains like millets, paddy and pulses to cash crops like sugarcane,

vegetables, fruits and turmeric. This is made possible by the growth of irrigation as these crops need lot of water, and also by the availability of loans to purchase other inputs like seeds and fertilisers.

- Why do you think this change is happening?
- To what extent do you think this is beneficial to the farmers?
- Will this also create some problems?

### Land ownership, tenancy

There are about 750 families in Penamakuru. Of these 10 families have 10 acres of land or above. Approximately 150 families have land below 5 acres and remaining families do not have any land. They either lease in the land of the landed farmers or work as labourers on their farms.



Fig. 4.9 Workers harvesting yam.

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- Types of soil in Penamakuru are (tick the correct answer): a) sandy/ rocky; b) sandy/ clay; c) black/ sandy.
- Which of the following statements is correct: a) Sandy soil retains moisture. b) Black soil retains more moisture. c) Black-sandy soil retains moisture.
- Farmers of Penamakuru grow rice in \_\_\_\_\_ soil.
- Fruit orchards are by the side of river Krishna because \_\_\_\_\_.
- If you live in a village: what is the depth of a borewell? What layers do you dig through to reach water? How is land irrigated in your area?

### Houses

People following a large number of professions and castes live in this village.

The main village is inhabited only by landowning people. The others live in nearby hamlets on the banks of the canal and South of the village. In the middle of the village, we can also find *kirana* shops, bank, R.M.P. Doctors, medical shops, iron welding shops, hair salon, tiffin shops etc.

Here is a collection of photographs of houses and other buildings in the village. Look at the pictures below and describe them. Point out the difference and similarities in the roofs, walls, boundary walls etc.



Fig. 4.10 Houses of farmers



Fig. 4.11 Hut



Fig. 4.12 Houses of small farmers



Fig. 4.13 Roads & Houses

### Animal rearing

All lands in the village are cultivated and there is not much land for grazing cattle. Hence only a few bullocks, cows, buffaloes and sheep are reared for working on the fields and other purposes. How do you think they would feed the animals?

### Basket weaving, pig rearing and fishing

On the banks of Bandar canal live 15-20 basket weaving families. They migrated

to this village for work. Their main occupations are making baskets, catching rats, or rearing pigs. Jagannadha Nanchariaiah settled here about 30 years back. They collect date palm strands from the banks of canal for making baskets. He and his wife make 5-6 baskets per day and sell them in nearby villages. Their neighbour Katta Sivaiah catches fishes with the help of basket traps and sells them in nearby villages.

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### Poultry

The village has a fully mechanised poultry farm. Water is supplied through nipples and food is supplied by the conveyers. There are about 80,000 hens in this poultry laying about 50,000 eggs each day. These eggs are sent to Vijayawada and other states like Assam and Bihar through agents. The chicken dropping is sold as fish feed to farmers in nearby area.



Fig. 4.14 The Poultry farm

### Rice Mill

There is a rice mill in this village. The owners of this rice mill purchase paddy from the peasants and prepare rice to sell in other places.



Fig 4.15 Rice mill

Poultry and rice mills are based on agriculture and therefore are called agro-industries. This is a common feature in the plains. They get the necessary raw materials easily at hand. It is also easy to transport their produce to the distant markets.



Fig. 4.16 Basket making

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### Road transport & markets

The road network in this region is well developed providing connectivity to many towns and cities. This helps in marketing of the produce.



Fig. 4.17 Transportation of vegetables & fruits to Rythu Bazaar

The farmers of this village sell sugarcane to nearby sugar factory which is located at Vuyyuru. The vegetables and banana are supplied to 'Rythu Bazar' which is in Vuyyuru and Vijayawada. The paddy is sold in the fields itself through brokers.

### Availability of labour

Most of the people in this village are employed in this village itself. Some agricultural labourers also come from the surrounding villages. The youth who studied 10<sup>th</sup> or above are working as electricians, auto drivers or mechanics.

### Key words

Mountain  
Plateau  
Plain  
Coast  
Cyclone  
Flood

### Improve your learning

1. What kind of changes are taking place in Penamakuru village?
2. How do the poor and landless families eke their livelihood in the plains?
3. What do you think are the difficulties of farming in plain villages like Penamakuru?
4. Do you think it will be a good idea for all farmers of the village to grow only sugarcane or turmeric? Give your reasons.
5. Plains like the Krishna delta have very dense settlement and a very large number of people live in them. Can you explain the reason for this, after reading this lesson?
6. Form two teams and let each team formulate twenty simple questions on the information given in the chapter. Exchange the questions and answer them to be corrected by the team which set the questions.

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## Salakamcheruvu - A Village on the Plateau

In the previous lesson we saw a village on the coastal plains which had plenty of water and rich soils. Can you imagine life in a very different kind of place with very little rain and poor soils? Discuss in the class.

### Deccan Plateau

Observe the Andhra Pradesh sketch map 1 showing major Land forms in chapter 4. The plateaus of Andhra Pradesh are mostly a part of Deccan plateau. Plateaus are lands situated at a height. If you start from Nellore and follow the Pennar upstream, you will cross the coastal plain and reach the Velikonda hills. You will have to climb the hills to reach the plateau region of Kadapa and Anantapur districts. The Velikonda hills form the escarpment of the plateau.

Unlike the plains which are flat, plateaus are marked by several small hills, hill ranges and hillocks interspersed with flat areas between them. As a result cultivation and settlement is possible only in small pockets. They are also more rocky, with thin layers of soil.

An important aspect of this region of Andhra Pradesh is that it receives very low rainfall. We wanted to see how people live in such difficult terrains and therefore visited a



Fig. 5.1. Dry bed of Salakam Cheruvu tank

village which is situated in Anantapur district.

### Salakamcheruvu

After crossing several hills and rocky stretches we finally reached Salakamcheruvu, 30km North-East of Anantapur in Singanamala mandal. It is named after a tank called Salakamcheruvu. The tank is so located that rain water from the high hills to its West, North and South flow into it. This tank today is dry. The villagers told us that it has been dry for the last twenty years.



Fig. 5.2. Sketch of Salakamcheruvu village

- Look at the diagram of the location of Salakamcheruvu. Can you see the hills on the three sides of the village and the tank?
- Can you think of reasons why the tank has been dry for so long?

have little humus or nutrients, have little capacity to hold water, and lack sufficient depth for roots to grow and spread. As a result, many fields need to be left fallow or uncultivated for some years after a crop.

Only small stretches of flat lands have deeper and finer soils. However such lands have got degraded and become uncultivable 'soudu' or saline soils. Saline soils have high content of lime and salts and will not absorb water. These soils are not suitable for all the crops.

- Compare the soil of the plateau village with the soils of the plains. Can you explain which of these is better for agriculture?

### Soils

The fields are located on both low slopes of the hills and on the flat ground below. As a result a lot of stones roll down into the fields. The soils are red and only about two to three feet deep. These soils



Fig. 5.3. Red soils with stones near the hills

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### Climate and rainfall

The rainy season is from June to November. However it rains very little in these parts. This rainfall is also very unreliable as it may or may not rain properly in a particular year. Drought is a recurring phenomena. Consequently, there will be years when there is not enough water to grow any crop or even for drinking. Thus when farmers sow a crop, it may not rain at all and the crop may dry up. In view of its low and erratic rainfall, this part of the state is called 'drought-prone'.

- Can you compare the rainfall situation in the coastal plains village and the interior plateau village?
- Find out from your elders if the rainfall in your area too is unreliable and erratic.

### Water resources

With the rains being so less and unreliable the people of this region have to store rainwater and use groundwater. There are no streams or canals near Salakamcheruvu.

#### a. Tanks

From the early days the people of this region have excavated tanks to store the rain water and the water flowing down the seasonal streams. Plateaus are particularly suited for building such tanks because of natural depressions in the landscape



Fig. 5.4. Singanamala Cheruvu on the road to Salakamcheruvu

and the existence of small hills. You can see at Salakamcheruvu how the water from the surrounding hills come down and how a small wall built across a small stream by joining two hills can create a large water reservoir. There are thousands of such tanks in Anantapur district itself. Besides large tanks, there are also a few small ponds (*kuntas*) built to provide drinking water to animals of the village.

In earlier times the village people together took care to repair the tanks, keep the area from where the water came to the tank clean and proper, and regulate the use of the tank water. This has declined rapidly in the last thirty years. As a result the tanks like Salakamcheruvu have become dry.

- Discuss in the class how the *cheruvus* help in improving the soils, in storing rain water, in preventing floods in rivers, in recharging groundwater, etc.
- Visit a nearby tank and find out if it is used for irrigation and what crops are grown under them.

#### b. Wells and Borewells

While tanks store the rain water that flow on the surface of the land, wells help us to use the water that seeps down beneath the soil. It is very difficult to dig wells in the plateau because of rocks underneath. Even after the rocks are broken, and the well is dug, there may be little or no water. Due to low rainfall, the underground water level is very deep. Once the water in the well is used for irrigation in the fields, it takes at least two days for the water to be replenished in the well.

In recent years open wells are not used for irrigation and the farmers instead depend upon borewells. You have read about such wells in the plains village. However, it is very expensive to dig borewells in the plateau. In Salakamcheruvu water is found below 250 feet. Farmers have been spending huge amounts of money in the hope of finding good source of water. They dig deeper and deeper every year upto a thousand feet or more. Farmers dig several bores to see who is lucky. Very few farmers can afford to invest so much money. Only 5-10 farmers who have more land have borewells. The rest of the farmers depend on rainfall only. While the bore wells are on the increase, the *cheruvus* and tanks have been getting dry due to poor maintenance. The tanks are used by all people and animals of the village while the bores are used by one or two farmers only.

- What are the sources of water in Salakamcheruvu?

### Declining ground water levels – a widespread problem

Farmers all over the plateau region of Andhra Pradesh have been digging more and more borewells in order to grow cash crops. This has caused an over use of the groundwater - more water is being pumped out than is being recharged by rains. As a result every year the water level in the wells is going down and the bores go dry after a very short use.

Do people in your region face similar problems? Find out and discuss the causes and possible solutions.

### Agriculture and crops

The farmers of Salakamcheruvu grow only one crop in the Kharif or monsoon season. Earlier farmers mainly grew food crops - millets (like ragi, *sama*, *varagu*, *korra*, Sorghum, etc.), pulses and a little paddy. Millets need very little water and can also grow on poor soils. The paddy crop is cultivated using the water from the village tank. Besides these food crops the farmers also grew some cotton and groundnut which they sold in the market.

During the last twenty or thirty years there has been a significant change in the crops - farmers have reduced the sowing of millets and other food crops and instead are cultivating mainly groundnuts or chillies. Sometimes crops like sorghum, red gram and maize are sown between the groundnut fields.

Generally it rains in the months of June and July for 10 days ('*Tolakari Vanatu*'). Then they sow seeds for groundnut. If the onset of rains is late, that is in August they

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