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## Participatory rural appraisal for detecting the climatic conditions in Sriram Nagar village, Rangareddy district

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### Abstract

Agriculture is the main occupation for the people living in rural India. 49% of the population in the nation is involved in agriculture and related activities (Census 2011). Because of changing climatic conditions agriculture becomes a challenging task for the farmers. PRA aims to find all available resources, the relation between the villages to the other institutions, and prepared a map with the help of villagers. In this study, various PRA tools were used for the identification of problems in Sriramnagar village of the Rangareddy district of Telangana state. Based on the observations during transect walk and at the time of group discussions, by using different PRA tools the data was collected from the villagers. Results revealed that in the village the major soil is red sandy soil, vegetables, rose, lily, paddy, cotton are the major crops, animals are hen, buffalo, cow, and goat. Only one drinking water source is present at Panchayat Office. Maximum rainfall is between June to September. National Institute of agricultural extension management (Manage) have more impact on their day to day life. The majority of the respondents had landholding between 1-2 acres have pakka house and annual income of up to Rs. 50000. Most of them belong to a middle-class family and falls under other cast community. Three canals and four check dams present around the village but these dams are filled with sand. From 2017 onwards Telangana government providing water facility to the village under mission Bhageradha scheme. By changing the time period many changes have occurred in villagers food habits, climate, and agricultural practices. stationary, fertilizers, seeds (for agriculture) fruits, sorghum, clothes, jewelry, etc... products are imported into the village from outside market and vegetables, rice, cotton, maize, flowers (Rose, Lilly) poultry, milk, etc. are exported from the village to outside market concluded that the major problems are water facility for irrigation. Because of climate change, the rainfall percentage is very low. Unemployment because of the low literacy rate. Villagers were not having a proper public transport facility.

**Keywords:** participatory rural appraisal, detecting, climatic conditions

### Introduction

Agriculture is the main occupation for the people living in rural India. 49% of the population in the nation is involved in agriculture and related activities (Census 2011) [2]. The contribution of agriculture and allied sectors to the Gross Domestic Product (GDP) is declining steadily with the country's broad-based economic growth (Singh *et al.*, 2020) [6]. Because of changing climatic conditions agriculture becomes a challenging task for the farmers. Sriramnagar village has a large cultivated area but it is facing problems of the regular occurrence of terminal droughts, decreasing water level, etc. Animals also facing the problems of fodder and water problem during drought seasons. The village has the potential of growing horticultural crops like tomato, some of the seasonal locally edible varieties of green leafy vegetables. Because of these problems in this village, there is a scope of adoption of water management technology. The village has more agricultural labor but a lack of employment opportunities. So some of them involving as construction workers. By considering the above problems participatory rural appraisal is used to know about the life and living conditions of the people. PRA aims to find all available resources, the relation between the village to the other institutions, and prepared a map with the help of villagers. It is learning about people and their environment. It is an approach to development planning and as a method of investigation evolved from many different sources to be utilized in a participatory mode (Abedo, 2000; Meena *et al.*, 2018) [3]. It is essential for providing basic information, identifying and assessing problems, appraising, designing, implementing, monitoring, and evaluating programs and projects, developing and transferring appropriate technologies, hypothesis generation, providing guidelines for survey designs and assessing the applicability of program, and interpreting the results obtained through different methods (Reddy *et al.*, 2016) [4].

In this study, various PRA tools were used for the identification of problems in Sriramnagar village of the Rangareddy district of Telangana state.

### Materials and Methods

The study was conducted at Sriramnagar village, which is situated between DMS Latitude 17°23' 26.3544" N and DMS Longitude 77°50' 4.8984"E of Moinabad Mandal in Rangareddy District of Telangana. The Sriramnagar village has a population of 1822 (in which 930 males and 892 females) with 424 households. The total geographical area of the village is 940 hectares. The data was collected through the Participatory rural appraisal method. For this relevant PRA tools were identified and shortlisted. The shortlisted PRA tools were carried out with the help of the National Institute of agricultural extension management (Manage) friend and the villagers, to furnish information about the selected village. Based on the observations of general transect walk and data

collected from villagers during group discussions, resource availability and agro-ecological data were compiled depicting the climatic and environmental conditions, and availability of resources in relation to agricultural practices prevalent in the village.

The different PRA tools used were:

1. Transect Walk
2. Seasonal calendar
3. Venn diagram
4. Wealth ranking
5. Social map
6. Resource map
7. Timeline
8. Inflow and outflow map.

### Results and Discussion

#### 1. Transect walk

Table 1: Transect walk

Land Use	Road	Homestead	Home garden	Crop field	Peed
Soil	Red sandy	Red sandy	Red sandy, loamy	Clay, loamy, red sandy	clay
Trees	Banyan tree, Tamarind tree, Neem	Tamarind tree, Neem, Guava	Neelum, rose	-	-
Crop	-	Tomato, beans, ladies finger, cucumber, etc...	Tomato, beans, ladies finger, Green leafy vegetables, etc...	Rose, lily, Cotton, Paddy, Sorghum, Tamarind, beans, Green leafy vegetables, cucumber, etc...	-
Animals	-	Poultry	Hen, buffalo, cow, Goat, dog	buffalo, cow, Goat	-
Water Facilities	-	Panchayat water	Panchayat water	Bore, canal	-
Problems	Most of roads are Kacha	Unemployment	Lack of irrigation facility, Pest and disease	Lack of irrigation facility, Pest and disease, lack of agricultural knowledge.	Lack of rain fall
Recommendations	-	-	-	Need small scale irrigation project, Popularisation of low agricultural tools and technologies, Expansion of agricultural knowledge.	-

Key informants: Sudhakar Reddy, village sarpanch, villagers (Bal Reddy, Vanaja, Phanedra, Narasimhulu, Mallamma, Yadhaiah, Lakshmi etc.).

Transect walk started from east to west of the village during the transect walk, it was observed that in the village the major soil is red sandy soil, tamarind, neem, and a large Banyan tree present at the starting of the village. The major crops are vegetables, rose, lily, paddy, cotton. Animals are hen, buffalo, cow, and goat. The drinking water source is Panchayat Office. For irrigation canals, bores were present. Most of the roads were kachha.

#### 2. Seasonal calendar

Based on the information in table no-2, it reveals that maximum rainfall is between June to September, The major seed sowing time is June, July, August. Major agricultural activities take place during June, July, August whereas, in September, October is less agricultural activity. They have peak income in December, January, and February. Harvesting of crops majority is done in October and November, and livestock activity is maximum during January. Drinking water and irrigation water is available adequately in July, August, September, and October because in these months major

rainfall occurs. Men have more work in March, April, and September, December, and January. May months. Whereas women have more work in August, September, December, and January.

Table 2: Seasonal calendar

Month	Jan	Feb	March	April	May	June	July	Aug	Sep	Oct	Nov	Dec
Rain	-	-	-	-	☔	☔☔☔	☔☔☔☔	☔☔☔☔☔	☔☔☔☔☔	☔☔	-	-
Seed sowing	●●●	-	-	-	-	●●●●●●	●●●●●●	●●●●●●	●●●●	●●●	●●	●
Agricultural Activities	▲▲▲	-	-	-	▲▲	▲▲▲▲	▲▲▲▲	▲▲▲▲	▲▲▲▲	▲▲▲	▲▲	▲
Income	\$\$\$\$	\$\$\$\$	\$\$	\$\$	\$\$\$	\$\$\$	\$\$\$\$	\$\$	\$\$	\$\$	\$\$	\$\$\$\$
Harvesting	-	-	-	-	-	-	-	-	XXX	XXXX	XXXXX	XX
Livestock												
Drinking water availability					=====	=====	=====	=====	=====	=====	=====	=====
Irrigation water availability	-	-	-	-								
Men working days	♂	♂	♂♂♂	♂♂♂	♂♂♂♂	♂♂♂♂	♂♂♂♂	♂♂♂♂	♂	♂	♂	♂
Women working days	♀♀♀	♀	♀	♀	-	♀♀♀	♀♀	♀♀♀	♀♀♀	♀♀♀	♀♀♀	♀♀♀

Key informants: Sudhakar Reddy, village Sarpanch, villagers (Bal Reddy, Vanaja, Phanedra, Narasimhulu, Mallamma, Yadhaiah, Lakshmi, etc.).

3. Venn diagram

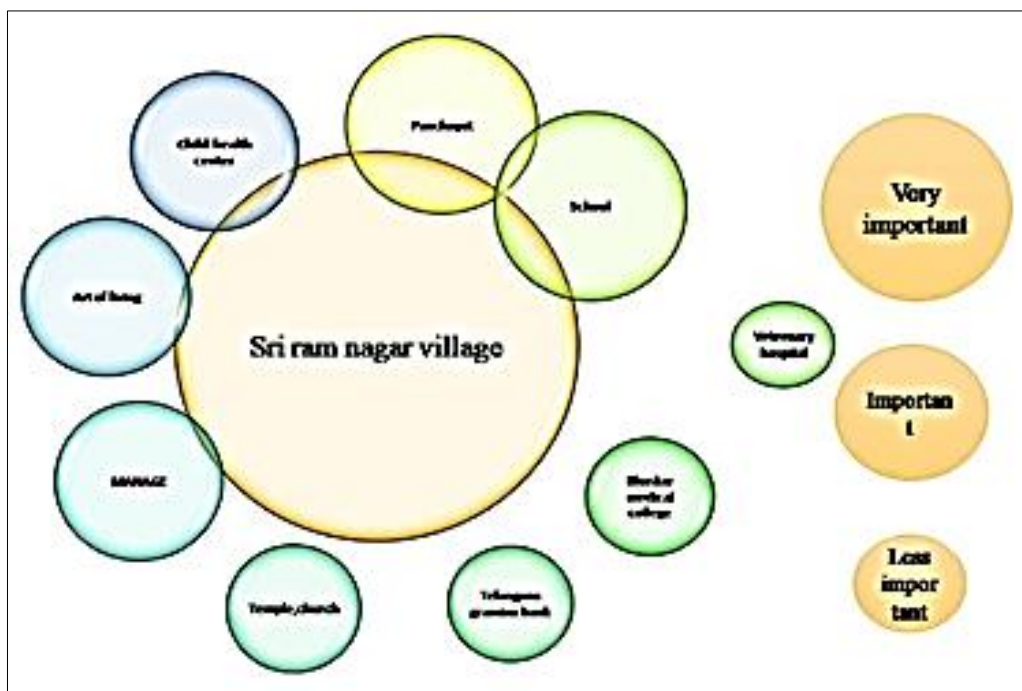


Fig 1: Venn diagram



Key informants: Sudhakar Reddy, village sarpanch, villagers (Bal Reddy, Vanaja, Phanedra, Narasimhulu, Mallamma, Yadhaiah, Lakshmi, etc.).

The key institutions for this village are Panchayat Office, school, child health center, Manage, temples, church, art of living, veterinary hospital, Telangana Gramina bank, Bhaskar medical college.

Among these Panchayat Office, school, child health center, art of living, Manage have more impact on their day to day life. Circles represent the key institutions around the village. The size of the circle indicates the relative importance of the institution and its distance from the nucleus.

**4. Wealth ranking**

**Table 3:** Wealth ranking

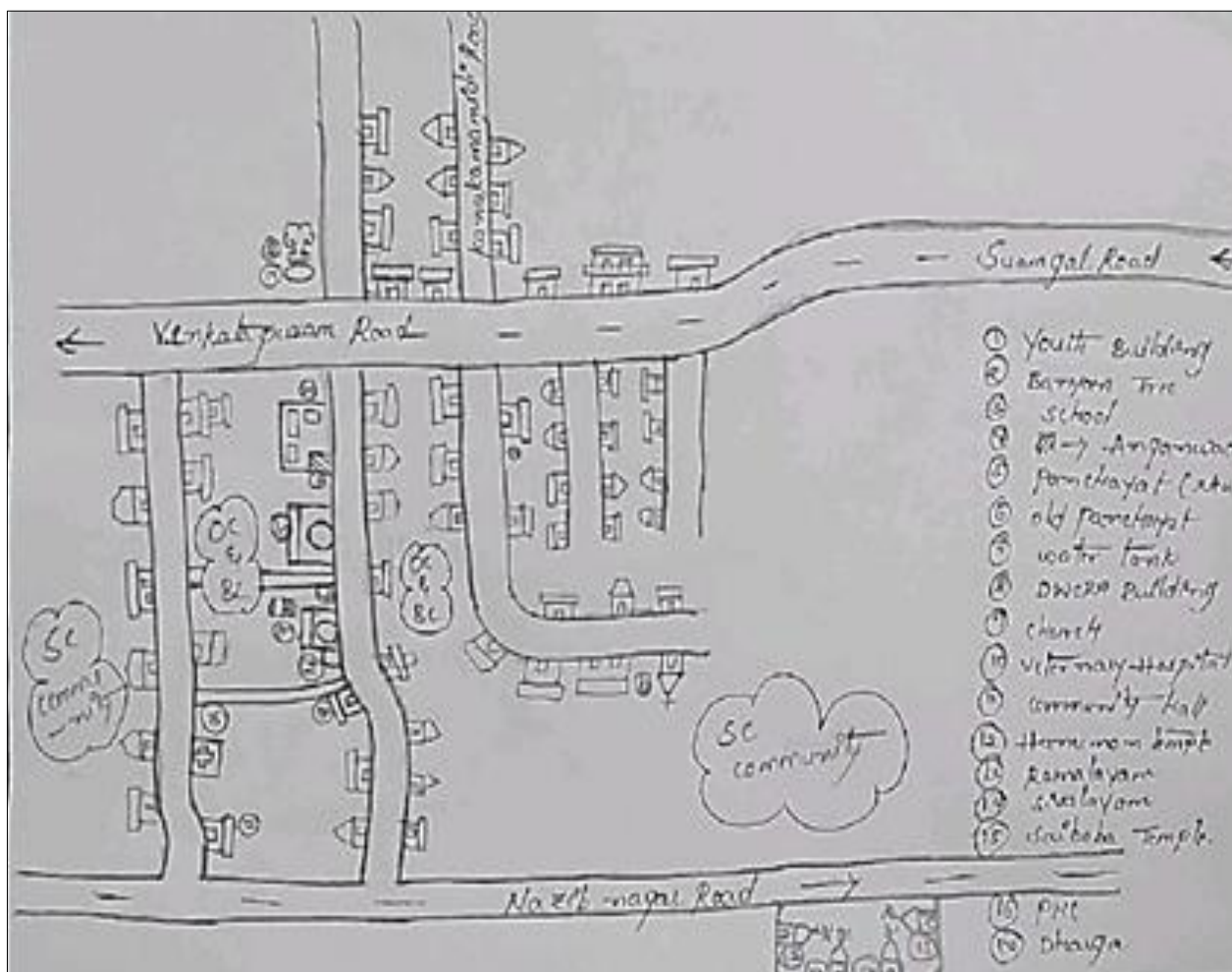
Land holding		
1-2 acres	2.5 acres	Above 5 acres
335	63	26
Types of house		
Kacha house	Packka of house	Building
167	246	11
Annual income		
50000	50-2- lakhs	Above 2 lakhs
352	52	20

Key informants: Sudhakar Reddy, village sarpanch, villagers (Bal Reddy, Vanaja, Phanedra, Narasimhulu, Mallamma, Yadhaiah, Lakshmi, etc.).

Above table, no-3 reveals that the majority of the respondents had landholding between 1-2 acres have pakka house and annual income of up to Rs.50000.

**5. Social map**

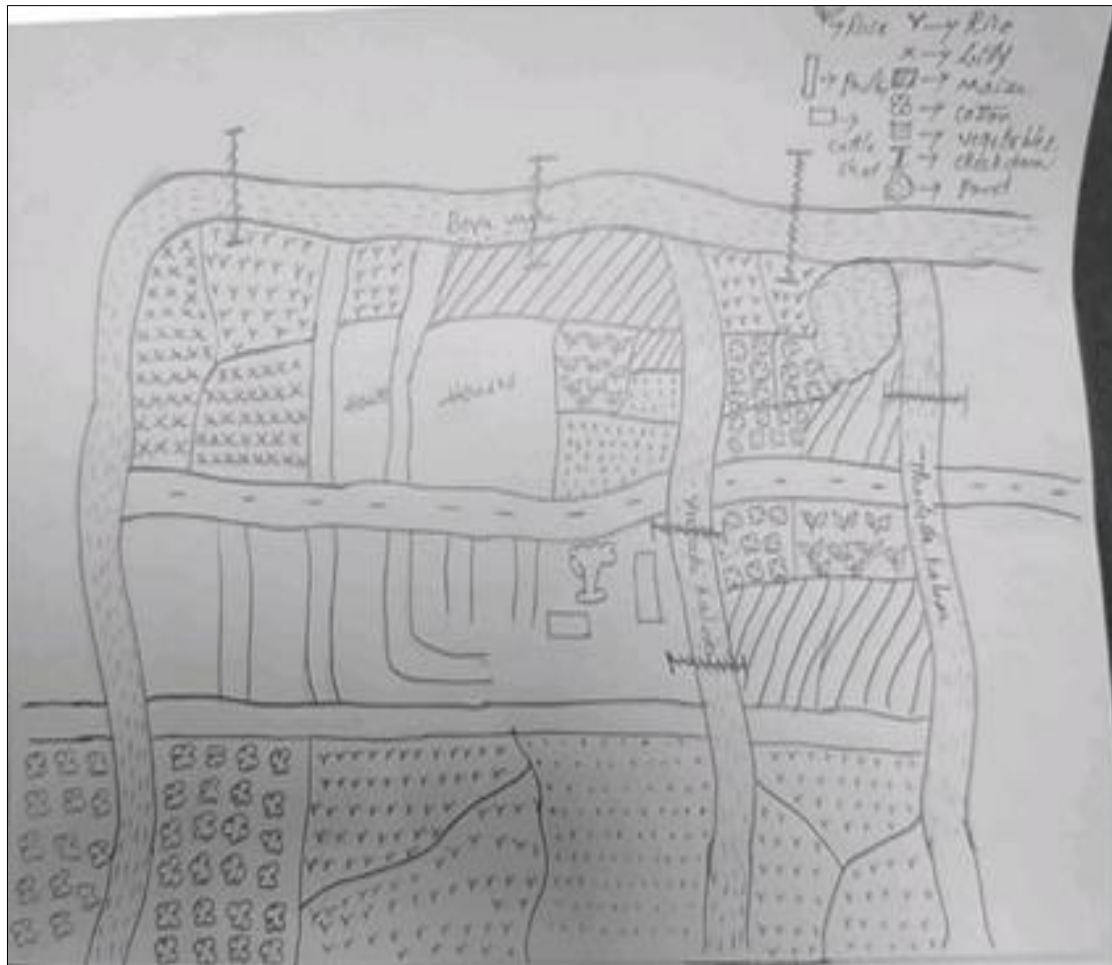
In the village, most of them belong to a middle-class family and falls under other casts, backward community, Schedule cast community. The lower caste dwells at the periphery and the upper caste nucleus of the village. Panchayat Youth building, V hospital, Anganwadi center, at the Office, tertiary WCRA building, temples, church are also present.



**Fig 2:** Social mapping

Key informants: Sudhakar Reddy, village sarpanch, villagers (Bal Reddy, Vanaja, Phanedra, Narasimhulu, Mallamma, Yadhaiah, Lakshmi, etc.).

**6. Resource map**



**Fig 3:** Resource mapping

Key informants: Sudhakar Reddy, village Sarpanch, villagers (Bal Reddy, Vanaja, Phanedra, Narasimhulu, Mallamma, Yadhaiah, Lakshmi, etc.).

In this village, natural resources are three canals Boya vagu (canal), yerrodukaaluva (canal), thodellakaluva (canal). Around the village 4 check dams are present, but these check dams are filled with sand. If the sand is removed from the

dams sufficient water will be available to the villagers. They are primarily growing rice, Lilly (flowers), maize, cotton, vegetables, roses, one Dairy, and one poultry units also present.

**7. Timeline**

- 1892- village was established
- 1953- village Kacha path was constructed
- 1981- village was electrified
- 1993- 1st water tank constructed
- 1995- school constructed
- 2000- bus service started
- 2002- Anganwadi building was constructed
- 2006- child health center
- 2009- 2nd water tank constructed
- 2017- mission Bhagiradha for drinking water

**8. Time trend analysis**

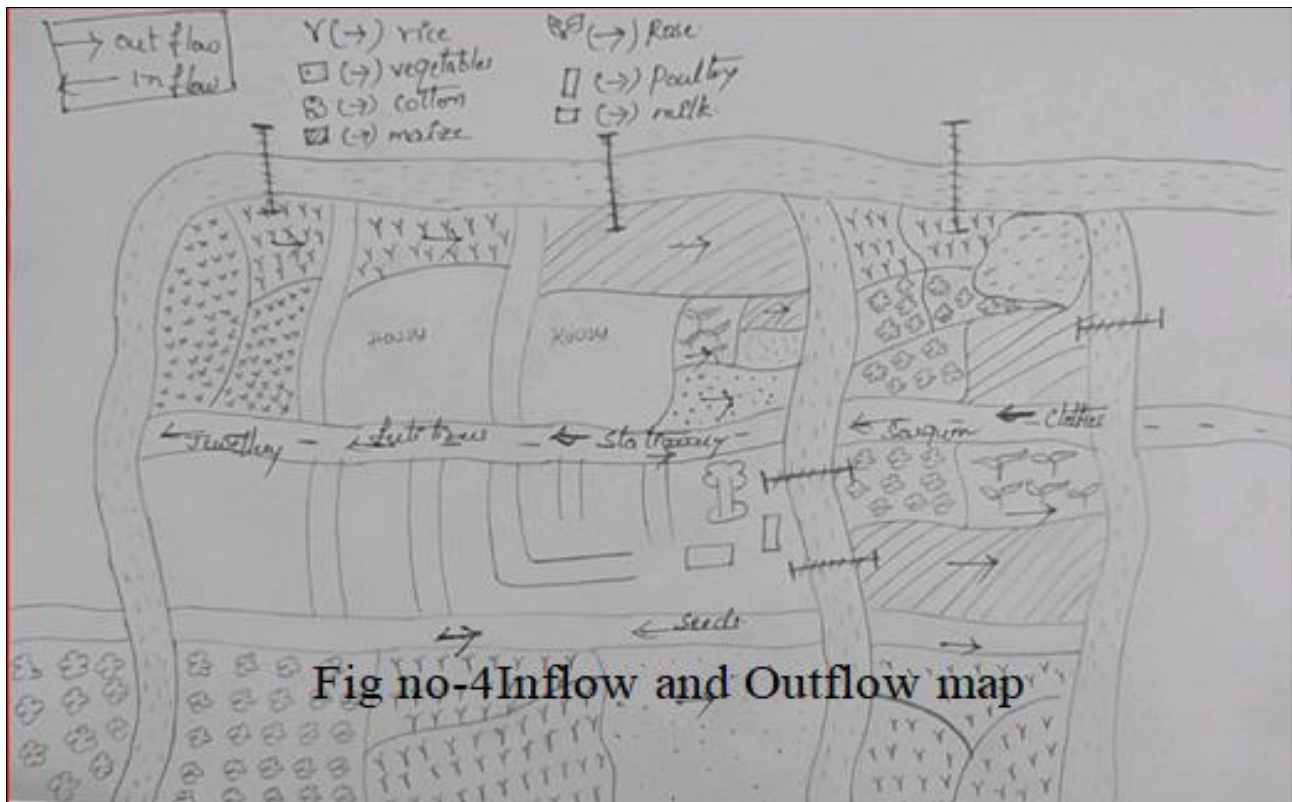
**Table 4:** Time trend analysis

	1989-1999	1999-2009	2009-2019
<b>Agriculture:</b>			
Fertilizers:	Animal's dung used in farms	More use of fertilizers	D.A.P, Growmore, Potash.
Crops:	Blackgram, Jute, Rice, Red gram	Blackgram, Jute, Rice, Maize	Cotton, Vegetables, Maize
Irrigation:	Wells, Rivers	Wells, Rivers	Bores
Machines used:	Bullock carts	Tractors	More Use of machines
Climate:	Good Rainfall	Better rainfall	Lack of Rainfall
<b>Food habits:</b>	Maize Rotti, Ambali, Foxtail millet, other millets	Rice, Rotti, green leafy Vegetables, Non-Veg	Rice, Chapathi, rotti, Green leafy veg, Non-Veg
<b>Drinking water:</b>	Well, River water	Bore water	Panchayat water

Key Informants: Sudhakar Reddy, village sarpanch, villagers (Bal Reddy, Vanaja, Phanedra, Narasimhulu, Mallamma, Yadhiah, Lakshmi, etc.).

The information of table no-4 indicates that from 1989-2019 many changes have occurred in their food habits, climate, and agricultural practices as depicted in the table.

**In flow-out flow map**



**Fig no-4** Inflow and Outflow map

**Fig 4:** Inflow and outflow map

The products imported from the outside market are stationary, fertilizers, seeds (for agriculture) fruits, sorghum, clothes, jewelry, etc. The products exported outside from the village market is vegetables, rice, cotton, maize, flowers (Rose, Lilly) poultry, milk, etc.

Key Informants: Sudhakar Reddy, village sarpanch, villagers (Bal Reddy, Vanaja, Phandera, Narasimhulu, Mallamma, Yadhaiah, Lakshmi, etc.).

### **Problem identification**

#### **Transport**

- i) There is no proper public transport facility

#### **Safe drinking water**

- i) Water collection points are away for some people
- ii) Only one point at the Panchayat office

#### **Crop production**

- i) Lack of irrigation facilities
- ii) Low rainfall
- iii) Insufficient farm implements
- iv) Pest and diseases attack crops

#### **Horticulture**

Inadequate water supply to horticultural crops

#### **Animal husbandry**

- 1) Lack of proper livestock management practices

#### **Others**

- 1) Lack of primary Health Care facility
- 2) Inadequate drinking water facility
- 3) Lack of market

### **Conclusion**

By conducting PRA it can be concluded that the major problems are water facility for irrigation. Because of climate change, the rainfall percentage is very low. unemployment because of the low literacy rate. Villagers don't have a proper public transport facility. This study will help to improve water productivity and increasing employment generating activities.

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