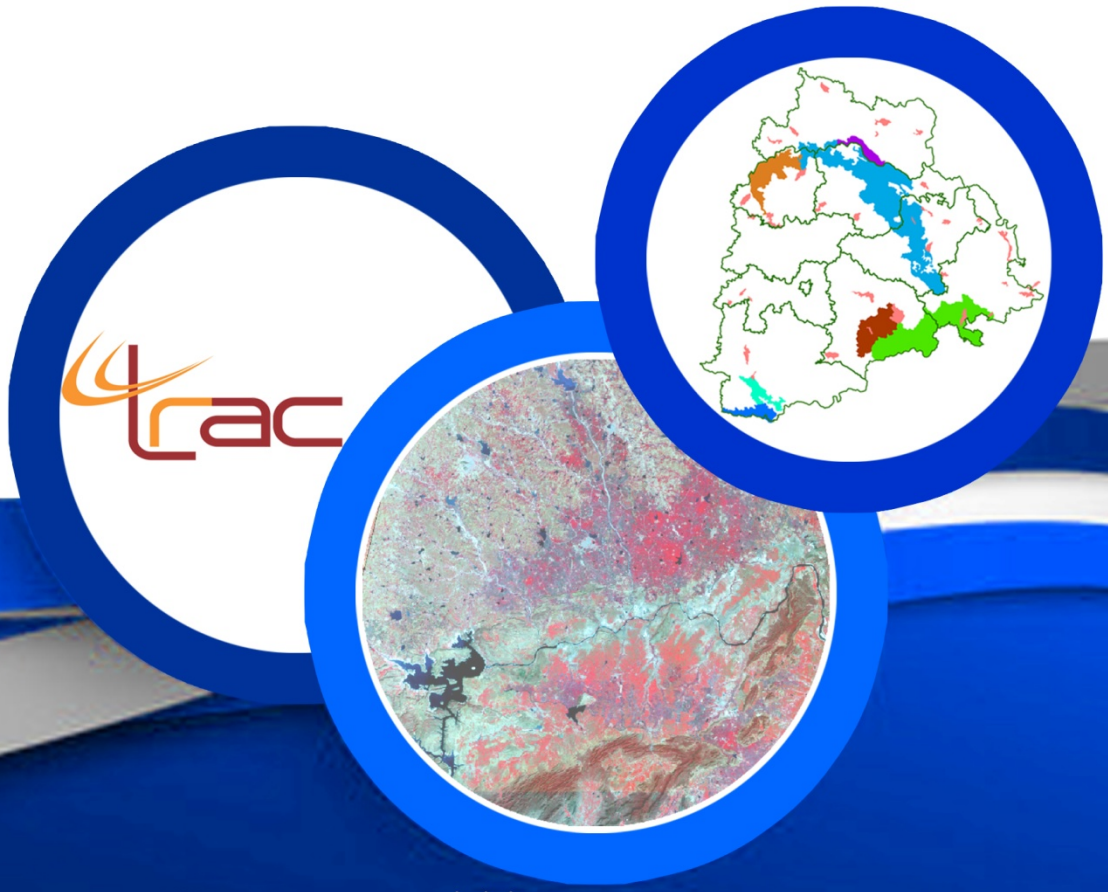
# SATELLITE REMOTE SENSING BASED COMMAND AREA MONITORING OF MAJOR AND MEDIUM IRRIGATION PROJECTS

## Kharif 2014 -15



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# EXECUTIVE SUMMARY

Monitoring and evaluation of irrigation command with regard to water management and agricultural productivity is vital to know the resource, environment and the returns from the investment. It is realized that a substantial gap exists between irrigation potential created and potential utilized. Remote Sensing is found to be an effective tool for irrigation planning and management over space and time, because of the time constraints, dynamic changes and vast areas involved.

The prime objective is to evaluate the cropping pattern in the command areas using satellite remote sensing techniques supplemented with field data. The study covers part of Godavari basin and Krishna basin in Telangana State. The part of Godavari basin has 3 Major and 20 Medium irrigation projects and the part of Krishna basin has 4 Major and 13 Medium irrigation projects.

Remote Sensing & GIS tools have been employed for the cropping pattern analysis.The spatial extent of crops for both Wet & Irrigated Dry (ID) have been derived for each command. The performance indicators viz. equivalent Wet area, productivity for all the projects at project level and for few projects at disaggregated level has been estimated.

The following observations were made during the kharif season in the command areas of major and medium irrigation projects under Godavari and Krishna basin in Telangana State.

**Godavari Basin:**

- Kaddam Narayan Reddy project - The total crop area is 83% of the total ayacut area and the wet crop is 31% and ID crop is 69% of the total irrigated area.
- Nizamsagar project - The total crop area is 92% of the total ayacut area and the wet crop is 77% and ID crop is 23% of the total irrigated area.
- SRSP-I - The total crop area is 89% of the total ayacut area and the wet crop is 39% and ID crop is 61% of the total irrigated area.
- 20 Medium projects – 10 projects total crop area is above 50% of the ayacut area and the remaining 10 projects total crop area is below 50% of the ayacut area.

**Krishna Basin:**

- Jurala project - The total crop area is 94% of the total ayacut area and the Wet crop is 82% and ID crop is 18% of the total irrigated area.
- NSLC project - The total crop area is 80% of the total ayacut area and the Wet crop is 77% and ID crop is 23% of the total irrigated area.
- Rajoli Banda Diversion Scheme (RDS) project - The total crop area is 96% of the total ayacut area and the Wet crop is 31% and ID crop is 69% of the total irrigated area.

- SLBC (AMRP) project - The total crop area is 34% of the total ayacut area and the Wet crop is 34% and ID crop is 66% of the total irrigated area.
- 13 Medium projects - 7 projects total crop area is above 50% of the ayacut area and the remaining 6 projects total crop area is below 50% of the ayacut area.

**Comparision of Current year Crop Area with Ayacut Area:**

- Total Kharif crop area and Ayacut Area of all Major Irrigation projects in Telangana State for current year, 2014-15. It is observed that the total Kharif crop area is 81% of the total ayacut area.
- Total Kharif crop area and Ayacut Area of all Medium Irrigation projects in Telangana State for current year, 2014-15. It is observed that the total Kharif crop area is 53% of in the total ayacut area.
- Total Kharif crop area and Ayacut Area of all Major and Medium Irrigation projects in Telangana State for current year, 2014-15. It is observed that the total Kharif crop area is 78% of in the total ayacut area of Major and Medium Irrigation projects

## List of Tables



## List of Graphs

## 1. Introduction

Monitoring and evaluation of irrigation command with regard to water management and agricultural productivity is vital to know the resource, environment and the returns from the investment. It is realized that a substantial gap exists between irrigation potential created and potential utilized.

Irrigation planning and management involves knowledge of both the total demand and the distribution of demand for irrigation water over space and time. The major information required for irrigation studies is about crop type, crop acreage, crop condition and crop yield. From this information estimates for water demands can be made. Because of the time constraints, dynamic changes and vast areas involved, Remote Sensing is found to be an effective tool for irrigation studies compared to conventional methods which are point based, time consuming and cumbersome.

Remote sensing techniques are cost and time effective to provide objective primary information of cropping pattern, cropping intensity, crop acreage, crop productivity, water logging and soil salinity/alkalinity, irrigation area utilization on the spatial and temporal scales. This helps in comparative performances, evaluation and identifying problem areas within the command for corrective management measures.

### 1.1 Background

Irrigation and Command Area Development (I&CAD) Department is the member of Water Management Committee an Apex body constituted by Government of Telangana at state level. Water related issues like regulation, performance, convergence and Information on crop type, extent under major and medium irrigation projects of Telangana State are the requisites of the committee. The committee evinced keen interest to know the scope of "Satellite Remote Sensing based monitoring of major and medium irrigation projects" of Telangana State. TRAC is being the nodal agency for carrying out remote sensing and GIS based studies in the Telangana state. As per the recommendations of the committee, Telangana State Remote Sensing Applications Centre (TRAC) is continuously monitoring the command areas of the state over last few years.

## 2. Objective

The prime objective is to evaluate the cropping pattern in the command areas using satellite remote sensing techniques supplemented with field data during Kharif season of 2014 -15.

## 3. Study Area

The study covers all the existing 7 Major and 33 Medium irrigation projects under Godavari basin and Krishna basin of Telangana State. The part of Godavari basin has 3 Major and 20 Medium irrigation projects and the part of Krishna basin has 4 Major and 13 Medium irrigation projects. The Figure-1 shows the spatial extent of the command areas. Tables 1 & 2 shows the details of Major and Medium Projects, such as Ayacut, Mandals & Villages covered.

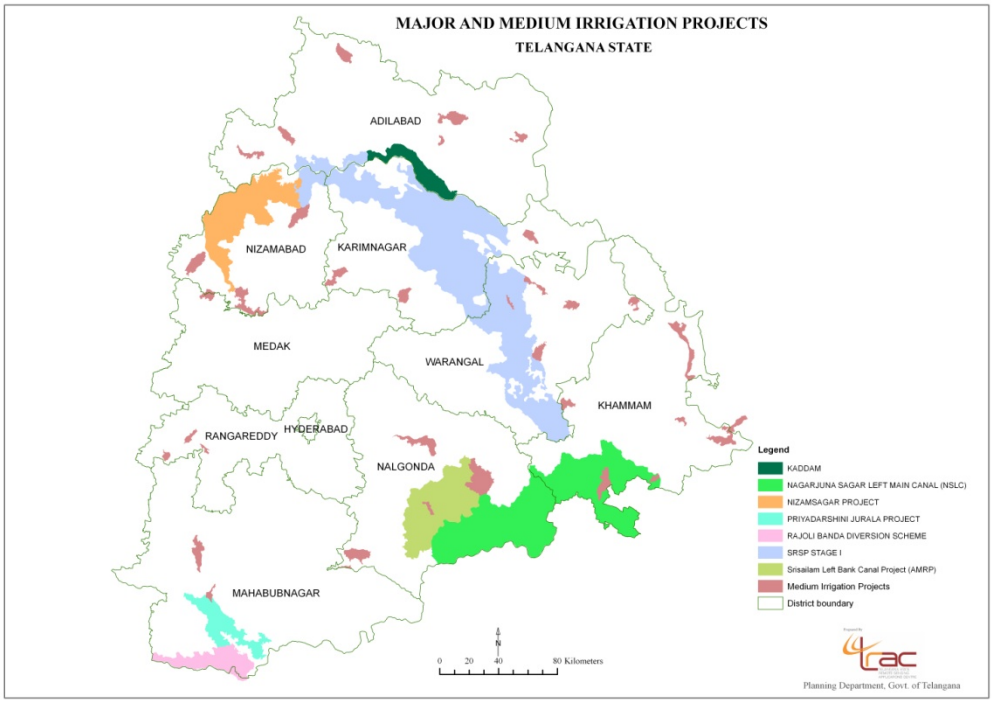



Fig. 1 Command Boundaries of Major and Medium Irrigation Projects

Table 1 Details of Ayacut, Mandals & Villages covered in Major Irrigation Projects

| S.No | Major Projects | Total Ayacut (ha) | Mandals | Villages |
|---|---|---|---|---|
| 1 | Kaddam Narayan Reddy Project | 27,530 | 5 | 112 |
| 2 | Nizamsagar Project | 93,660 | 19 | 354 |
| 3 | Sri Ram Sagar Project (SRSP) | 3,87,266 | 81 | 1,096 |
| 4 | Jurala (Priyadarshini) Project | 42,405 | 12 | 113 |
| 5 | Nagarjuana Sagar Left Canal (NSLC) | 2,66,257 | 33 | 524 |
| 6 | Alimineti Madhavareddy Project (SLBC) | 92,152 | 15 | 214 |
| 7 | Rajolibanda Diversion Scheme | 35,425 | 6 | 81 |
| | **Total** | **9,44,695** | **171** | **2,494** |

Table 2 Details of Ayacut, Mandals & Village covered in Medium Irrigation Projects

| S.No | Name of Medium Project | Total Ayacut (ha) | Mandals | Villages |
|---|---|---|---|---|
| 1 | NTR Sagar Project | 2,429 | 1 | 14 |
| 2 | Sathnala Project | 9,717 | 3 | 25 |
| 3 | Swarna Project | 3,621 | 2 | 15 |
| 4 | Sudavadu(Gaddanna vagu) | 5,668 | 2 | 14 |
| 5 | Vattivagu Project | 9,919 | 2 | 30 |
| 6 | Yerravagu (Palvi Purushotham Rao) Project | 4,453 | 1 | 13 |
| 7 | Boggulavagu Project | 2,084 | 2 | 8 |
| 8 | Sanigaram Project | 2,065 | 2 | 10 |
| 9 | Upper Manair Project | 5,298 | 2 | 15 |
| 10 | Mukkamamidi Project | 1,320 | 1 | 5 |
| 11 | Peddavagu Project | 6,478 | 3 | 14 |
| 12 | Taliperu Project | 10,000 | 1 | 6 |
| 13 | Nallavagu | 2,453 | 2 | 9 |
| 14 | Koulasnala Project | 3,644 | 2 | 19 |
| 15 | Pocharam Project | 4,251 | 2 | 42 |
| 16 | Ramadugu Project | 2,024 | 2 | 11 |
| 17 | Laknavaram Project | 3,522 | 1 | 7 |
| 18 | Malluruvagu Project | 3,036 | 1 | 15 |
| 19 | Ramappa lake | 2,024 | 1 | 5 |
| 20 | Salivagu Project | 1,238 | 1 | 6 |
| 21 | Bhyaram Project | 2,915 | 1 | 6 |
| 22 | Lankasagar Project | 2,977 | 1 | 10 |
| 23 | Wyra Project | 7,038 | 2 | 24 |
| 24 | Koilsagar Project | 5,040 | 4 | 23 |
| 25 | Sarlasagar Project | 1,695 | 3 | 10 |
| 26 | Asifnahar Project | 6,172 | 2 | 22 |
| 27 | Dindi Project | 5,196 | 2 | 22 |
| 28 | Musi Project | 12,216 | 6 | 42 |
| 29 | Utukur Marepally Project | 592 | 3 | 8 |
| 30 | Jutpally Project | 843 | 2 | 6 |
| 31 | Kotepally Project | 3,723 | 2 | 16 |
| 32 | Lakhnapur Project | 1,072 | 2 | 8 |
| 33 | Pakhal lake | 5,272 | 1 | 12 |
| | **Total** | **1,39,989** | **65** | **492** |

## 4. Data Used

| | |
|---|---|
| **GIS Layers** | Command Area Boundaries |
| **Remote Sensing Data** | IRS Resourcesat-2 - AWiFS - 101-59 data of 5th October 2014 |
| | IRS Resourcesat-2 - AWiFS - 101-60 data of 29th October 2014 |

### 4.1 Methodology

The command area boundaries of each project have been delieneated based on available maps gathered from the field offices of the respective projects. Wherever the maps are not available the command boundaries are demarcated based on cropping pattern and terrain characteristics, interpreted with the help of satellite data and drainage pattern of the area.

Remote Sensing & GIS tools have been employed for the cropping pattern analysis. IRS Resourcesat - 2, AWiFS data of 5$^{th}$ October and 29$^{th}$ October is classified to identify for each command the spatial extent of Wet and irrigated dry (ID) crops. Multi date interpretation is performed on available satellite data, so as to avoid cloud cover and analyse the best reflectance available in either of the images. The Interpretation is validated using the Ground Truth data. The performance indicators viz. Equivalent Wet area for all the projects has been estimated.

### 4.2 Ground truth

The cropping pattern analysis in Kharif 2014-15 has been carried out with ground truth verification of 197 locations in the entire state (Figure -2).

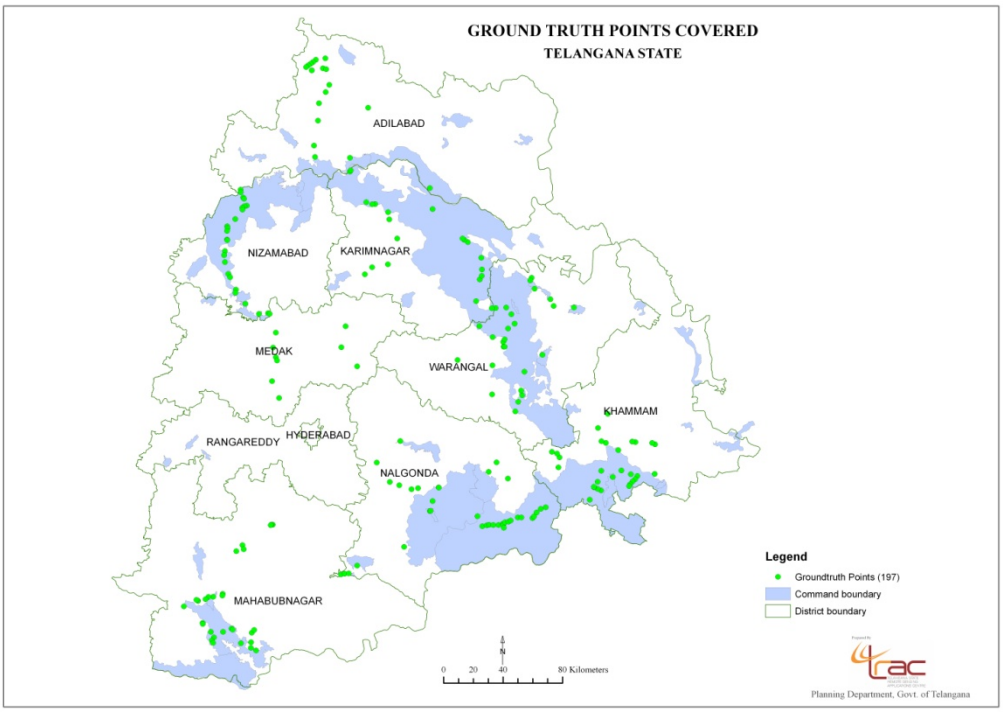



Fig.2 Ground truth points covered map

## 5. Rainfall

At the end of the South-West monsoon from June to October, Telangana State had a deficit rainfall of 498.1 mm against the normal rainfall of 715.1 mm, which is 30 per cent deficit against normal. Only 13 out of 464 mandals in the State had excess rainfall (+20 per cent and above). They include 10 mandals of Mahabubnagar district. All the districts with the exception of Mahabubnagar district experienced severe drought. Mahabubnagar district had a normal rainfall, with a range of +19 to -19 per cent of normal rainfall. The remaining eight districts of the State faced a deficit rainfall ranging from -20 to -59 per cent of the normal rainfall.

Rainfall with a range of (+19 to -19 per cent) to the normal was in 70 mandals, deficit rainfall with a range of (-20 to -59 per cent) in 352 mandals and scanty rainfall with a range of (-60 to -99 per cent) was in 29 mandals. The deviation map of rainfall with respect to normal rainfall in Kharif season from June 1st to October 15th 2014 is shown in the Figure-3.

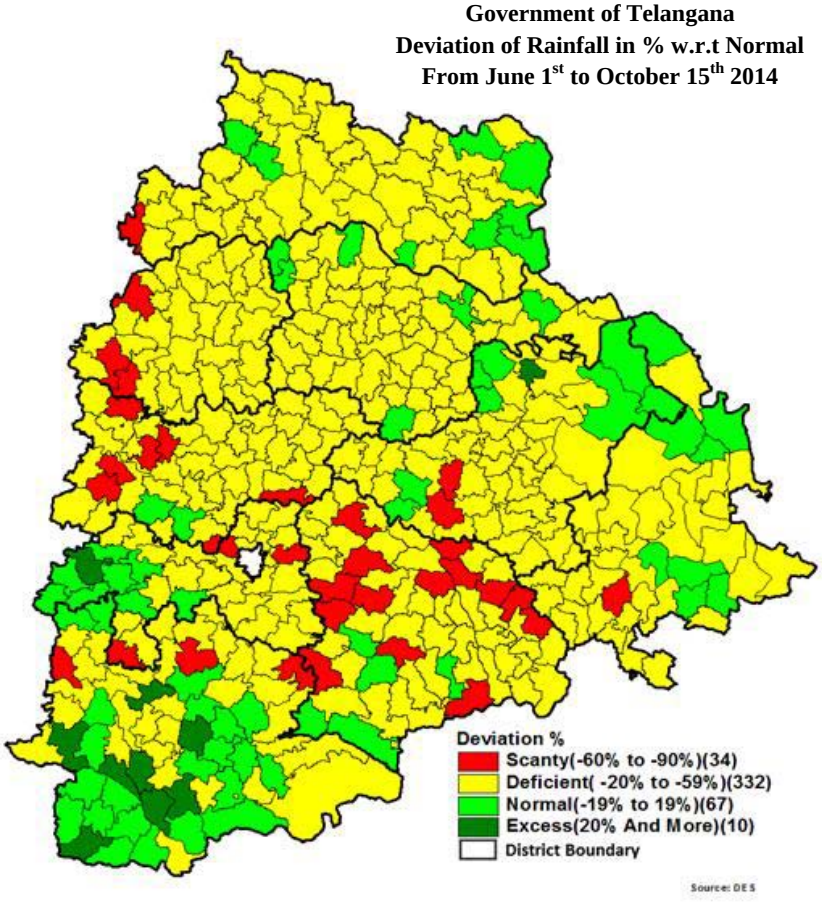



Fig.3 Deviation of Rainfall in percent w.r.t. Normal from June 01st to 15th October 2014

## 6. Analysis & Observations

The total command ayacut of Major and Medium Irrigation projects of Telangana State is 10.83 lakh ha. The command ayacut of Major and Medium Irrigation projects is 9.43 % of the total geographical area of Telangana State. Major projects total ayacut area in Godavari and Krishna basins of Telangana State is 9.44 lakh ha covered by 171 mandals / 2494 villages. Medium projects total ayacut area in Godavari and Krishna basins of Telangana State is 1.39 lakh ha covered by 65 mandals / 492 villages either totally or partially.

### 6.1 Godavari basin - Major Projects

The Godavari basin of Telangana has 3 Major irrigation projects with command ayacut of 5.08 lakh ha covered by 105 mandals / 1562 villages. In Telangana State out of the total irrigated area by major irrigation projects 54% of the irrigated area is contributed by Godavari Basin.

#### 6.1.1 Kaddam Narayan Reddy Project

The Kaddam project is constructed across Kaddam River which is a tributary to the Godavari River. The project is located near the Peddur (V) Kaddam (M) in Adilabad District. The project GCA is 58,300 ha out of which the total ayacut is 27,530 ha and is covered by 5 mandals / 112 villages of Adilabad District. In Godavari Basin of Telangana, out of the total area irrigated by major irrigation projects, Kaddam project contributes 5.4%.

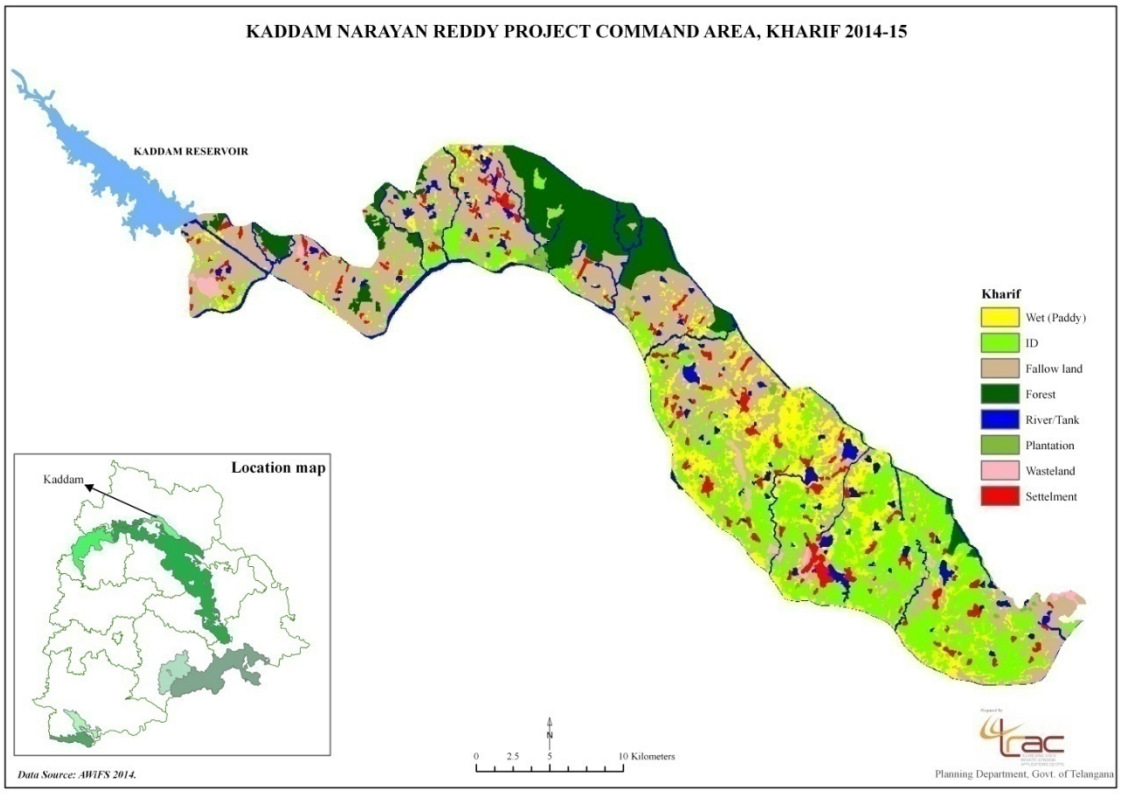



Fig. 4 Classification of Kaddam Project

Satellite data analysis in the Kaddam command area for the cropping pattern during Kharif period of 2014-15 is shown in Figure-4.

**Results**

- The irrigated area is found to be 22,925 ha out of the total ayacut of 27,530 ha.
- The equivalent Wet area is estimated as 7,076 ha and ID area is estimated as 15,850 ha.
- The total crop area is 83% of the total ayacut area out of which the wet crop is 31% and ID crop is 69% of the total irrigated area.
- The ID crop irrigated area is almost double the wet crop irrigated area.
- The kharif crop area, for the current year, 2014-15 is 53% when compared with the previous year 2013-14.

### 6.1.2 NIZAMSAGAR PROJECT

The Nizamsagar project was constructed across river Manjeera, a tributary of Godavari River in Nizamabad district. The designed ayacut under this project is to provide irrigation facility to 93,660 ha. It is supplying water through the main canal covered by 19 mandals / 354 villages of Nizambad district. The command area starts from Banjepalle in Yellareddy mandal. In Godavari Basin of Telangana, out of the total area irrigated by major irrigation projects, Nizamsagar project contributes 18.43%.

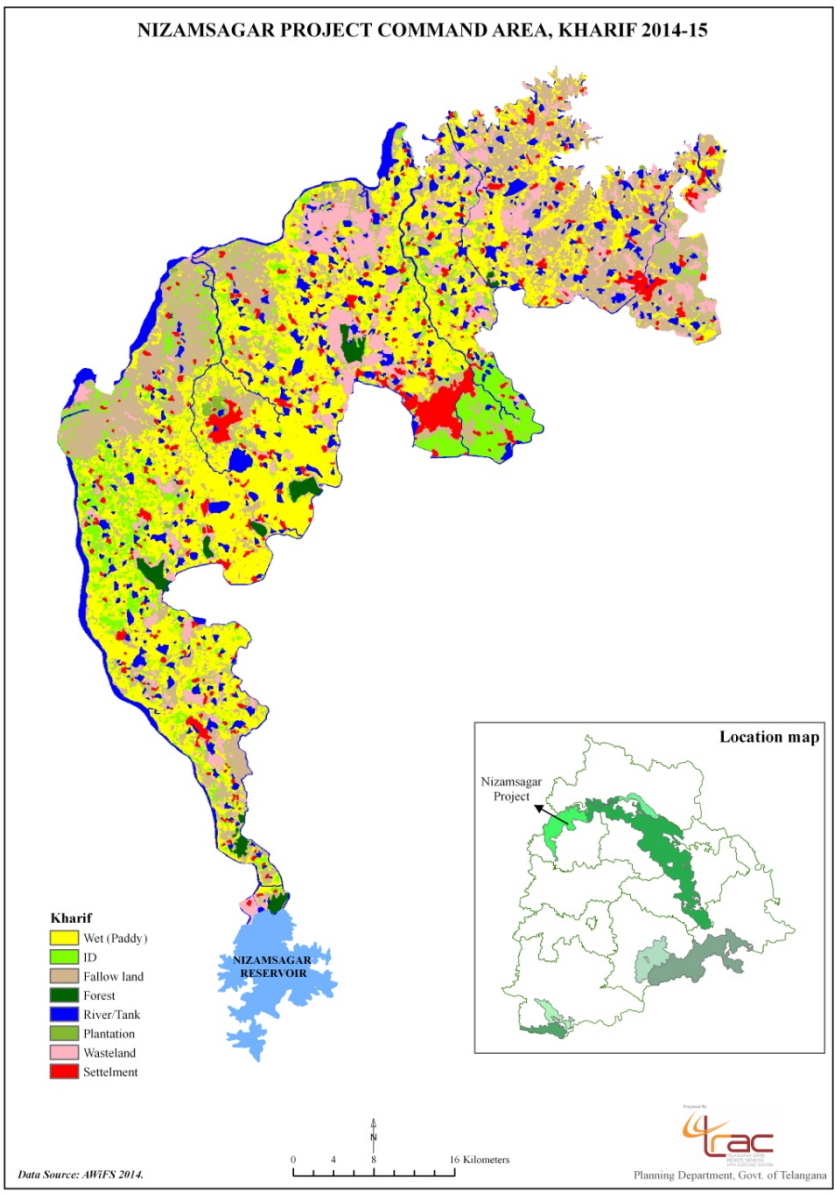



Fig.5 Classification of Nizamsagar Project

Satellite data analysis in the Nizamsagar command area for the cropping pattern during Kharif period of 2014-15 is shown in Figure-5.

**Results**

- The irrigated area is found to be 86,452 ha out of the total ayacut of 93,660 ha.
- The equivalent Wet area is estimated as 66,838 ha and ID area is estimated as 19,613 ha.
- The total crop area is 92% of the total ayacut area and the Wet crop is 77% and ID crop is 23% of the total irrigated area.
- The kharif crop area, for the current year, 2014-15 is 63% when compared with the previous year 2013-14.

### 6.1.3 SRIRAMSAGAR PROJECT (SRSP)

Sriramsagar project (SRSP) is a multipurpose project constructed across the river Godavari near Pochampad village in Balkonda Mandal, Nizamabad District. The project GCA is 9, 13,160 ha out of which the total ayacut is 3, 87,266 ha and is covered by 81 mandals / 1069 villages of Karimnagar, Nizamabad, Adilabad, Warangal and Khammam Districts. In Godavari Basin of Telangana, out of the total area irrigated by major irrigation projects, Sriramsagar project contributes 76.23%.

There are four main canals under this project namely Kakathiya Canal, Saraswathi Canal, Laxmi Canal and Kaddam Canal. The project envisaged to provide irrigation facility to an extent of 391736.3 ha under Kakathiya canal, Saraswathi canal and Laxmi canal. In addition to that it provides irrigation under Kaddam project to the extent of 27518.67 ha of localized ayacut. Apart from that some minor irrigation tanks were being fed by the system. Out of 391736.3 ha localized ayacut, about 369073.9 ha is under Kakathiya canal, about 14164.02 ha under Saraswathi canal and 8903.098 ha under Laxmi canal. The total length of the Kakathiya main canal is 284 km. The length of Saraswathi Canal is 47 km. The Laxmi canal is 3.5Km. The Lower Manair dam (LMD) constructed at the confluence of Mohedamada River and Manair River which is a tributary of a Godavari River to drop the Kakathiya canal water at 146km.Generally, the canal water is released from mid July to November/December; during kharif. In Rabi season water is supplied from December to March/April depending on storage available and crop status.

The principal-irrigated crops are paddy, maize and Jowar in the Kharif season, paddy and maize in Rabi season, and cotton, Chillies as the two season crops. The command area spreads five Districts namely Karimnagar, Nizamabad, Adilabad, Warangal and Khammam.

Satellite data analysis in the Sriramsagar command area for the cropping pattern during Kharif period of 2014-15 is shown in Figure-6.

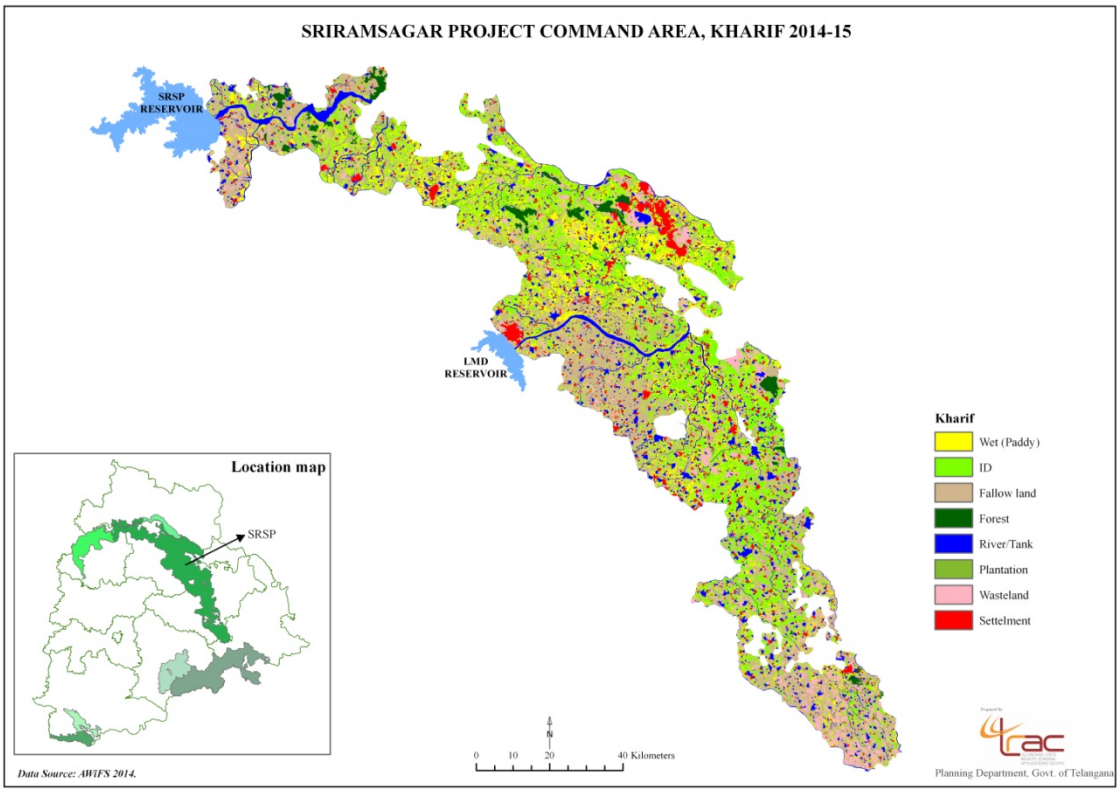



Fig.6 Classification of SRSP

**Results**

- The irrigated area is found to be 3, 44,792 ha out of the total ayacut of 3, 87,266 ha.
- The equivalent Wet area is estimated as 1, 34,086 ha, ID area is estimated as 2, 10,706 ha.
- The total crop area is 89% of the total ayacut area and the wet crop is 39% and ID crop is 61% of the total irrigated area.
- The kharif crop area, for the current year, 2014-15 is 57% when compared with the previous year 2013-14.

## 6.2 Godavari basin - Medium Projects

The Godavari basin of Telangana has 20 Medium irrigation projects covered with command ayacut 0.85 lakh ha covered by 34 mandals / 283 villages. In Telangana State out of the total irrigated area by medium irrigation projects 61% of the irrigated area is contributed by Godavari Basin.

### 6.2.1 NTR SAGAR PROJECT

The NTR Sagar Project was constructed across Chelmelavagu River, near Irkapally village of Tiryani Mandal in Adilabad District. The gross storage capacity of the reservoir is 309.71 Mcft at FRL +326.30 m. The project GCA is 3,820 ha out of which the total ayacut is 2,429 ha, covering 14 villages of Tiryani mandal. In Godavari Basin of Telangana, out of the total area irrigated by medium irrigation projects, NTR sagar project contributes 2.85%.

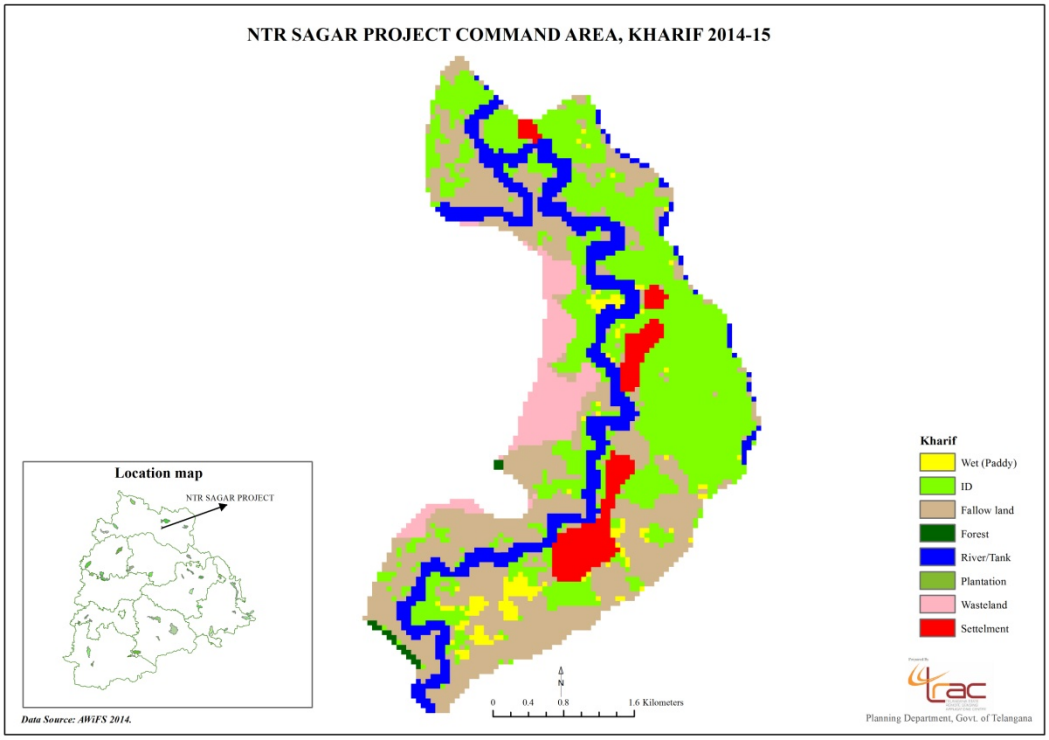



Fig.7 Classification map of NTR Sagar Project

Satellite data analysis in the NTR Sagar command area for the cropping pattern during Kharif period of 2014-15 is shown in Figure-7.

**Results**

- The irrigated area is found to be 641 ha out of the total ayacut of 2,429 ha.
- The equivalent Wet area is estimated as 48 ha, ID area is estimated as 594 ha.
- The total crop area is 54% of the total ayacut area and the wet crop is 7% and ID crop is 93% of the total irrigated area.

- The kharif crop area, for the current year, 2014-15 is 54% when compared with the previous year 2013-14.

### 6.2.2 SATHNALA PROJECT

The Sathnala Project as constructed across Sathnala River near Kanpa village of Jainath mandal in Adilabad District. The gross storage capacity of the reservoir is 1,010 Mcft at FRL +286.50 m. The project GCA is 20,120 ha out of which the total ayacut is 9,717 ha covering 25 villages of Adilabad, Jainath and Bela mandals. In Godavari Basin of Telangana, out of the total area irrigated by medium irrigation projects, Sathnala project contributes 11.4%.

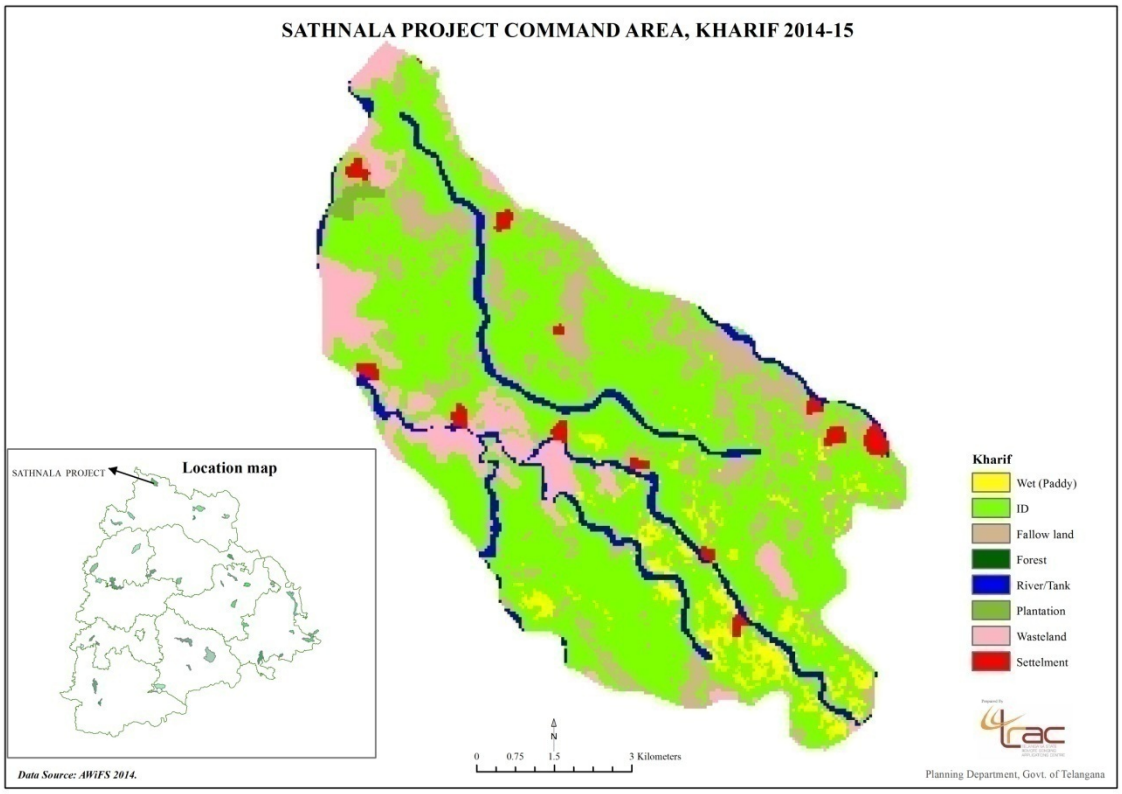



Fig.8 Classification map of Sathnala Project

Satellite data analysis in the Sathnala project command area for the cropping pattern during Kharif period of 2014-15 is shown in Figure-8.

**Results**

- The irrigated area is found to be 5,274 ha out of the total ayacut of 9,717 ha.
- The equivalent Wet area is estimated as 349 ha, ID area is estimated as 4,925 ha.
- The total crop area is 54% of the total ayacut area and the wet crop is 7% and ID crop is 93% of the total irrigated area.
- The kharif crop area, for the current year, 2014-15 is 79% when compared with the previous year 2013-14.

### 6.2.3 SWARNA PROJECT

The Swarna Project was constructed across Swarna River near Swarna village of Sarangapur Mandal in Adilabad District. The gross storage capacity of the reservoir is 1,266.71 Mcft at FRL +360.58 m. The project GCA is 10,580 ha out of which the total ayacut is 3,621 ha covering 15 villages of Sarangapur and Nirmal mandals. In Godavari Basin of Telangana, out of the total area irrigated by medium irrigation projects, Swarna project contributes 4.25%.

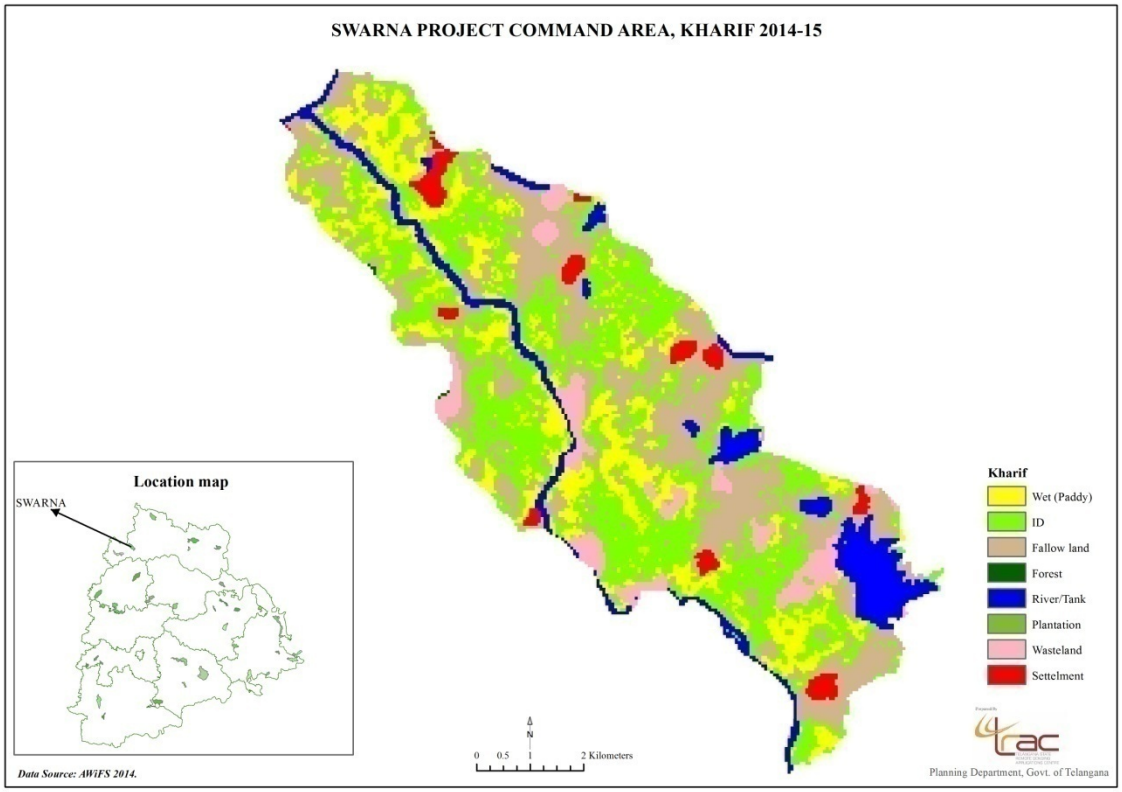



Fig.9 Classification map of Swarna Project

Satellite data analysis in the Swarna project command area for the cropping pattern during Kharif period of 2014-15 is shown in Figure-9.

**Results**

- The irrigated area is found to be 3,157 ha out of the total ayacut of 3,621 ha.
- The equivalent Wet area is estimated as 1,014 ha, ID area is estimated as 2,143 ha.
- The total crop area is 87% of the total ayacut area and the wet crop is 32% and ID crop is 68% of the total irrigated area.
- The kharif crop area, for the current year, 2014-15 is 64% when compared with the previous year 2013-14.

### 6.2.4 SUDDAVAGU

The Suddavagu Project was constructed across the, Bhainsa Village.It is located near the Bhainsa Mandal Adilabad district. The project GCA is 13,450 ha out of which the total ayacut is is 5,668 ha. Catchment area of the project is 699sq.km. The estimated cost of the project is 4,870 Lakhs. Command area covers bhainsa, mudhole & lokeshwaram mandals. In Godavari Basin of Telangana, out of the total area irrigated by medium irrigation projects, Suddavagu project contributes 6.65%.

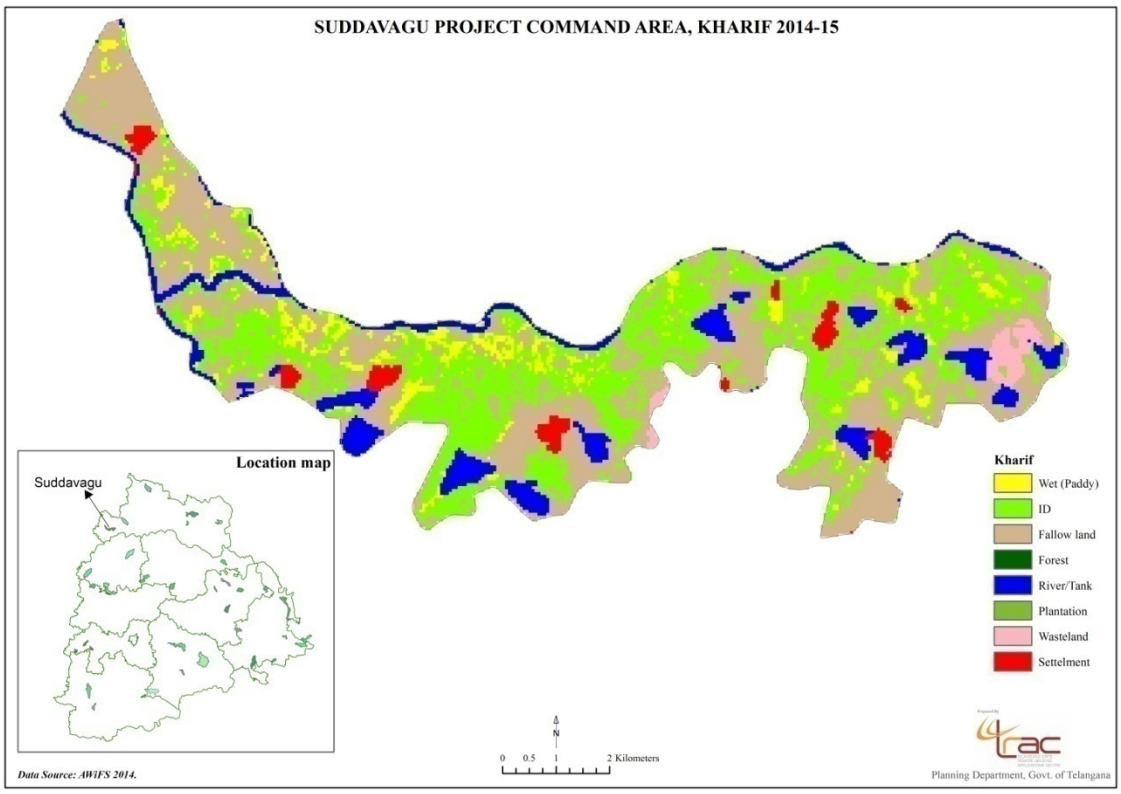



Fig.10 Classification map of Suddavagu Project

Satellite data analysis in the Suddavagu project command area for the cropping pattern during Kharif period of 2014-15 is shown in Figure-10.

**Results**

- The irrigated area is found to be 2,357 ha out of the total ayacut of 5,668 ha.
- The equivalent Wet area is estimated as 371 ha, ID area is estimated as 1,986 ha.
- The total crop area is 42% of the total ayacut area and the Wet crop is 16% and ID crop is 84% of the total irrigated area.
- The kharif crop area, for the current year, 2014-15 is 49% when compared with the previous year 2013-14.

### 6.2.5 VATTIVAGU PROJECT

The Vattivagu Project was constructed across Vattivagu River near Pahadibanda village of Asifabad Mandal in Adilabad District. The gross storage capacity of the reservoir is 2612 Mcft at FRL +239.50 m. The designed ayacut under this project is 9,919 ha covering 30 villages of Asifabad and Rebbana mandals. In Godavari Basin of Telangana, out of the total area irrigated by medium irrigation projects, Vattivagu project contributes 11.64%.

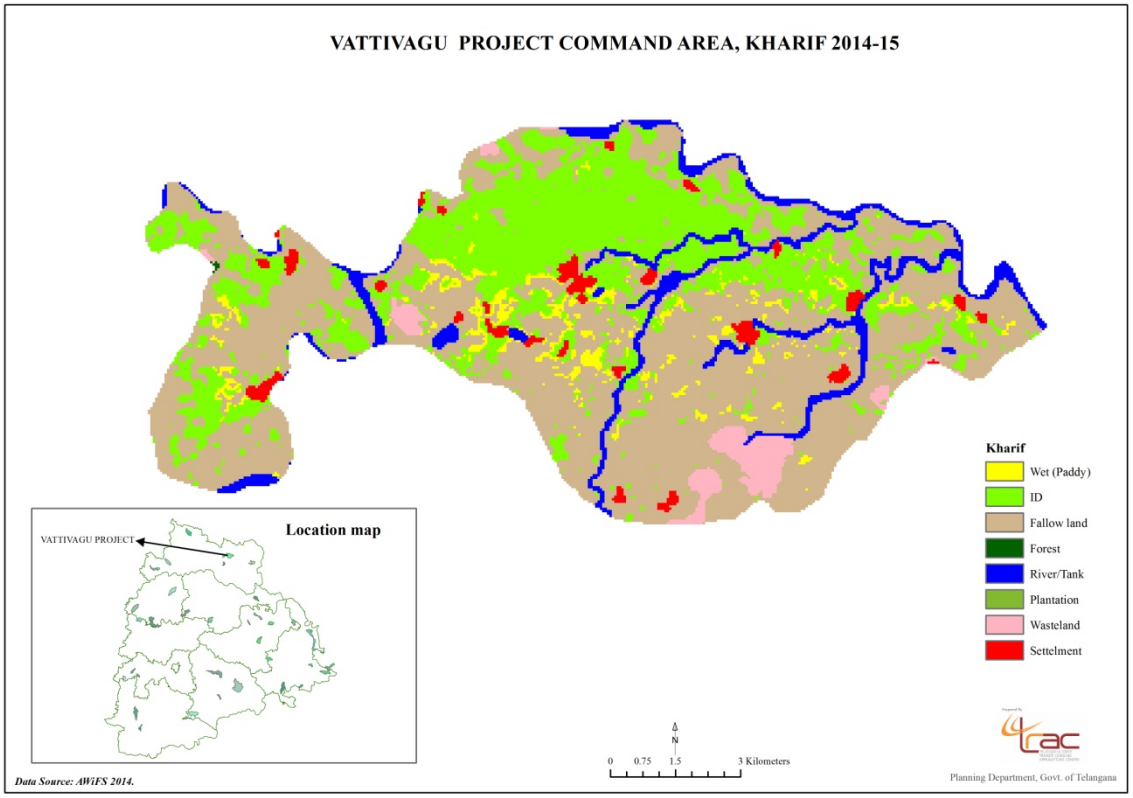



Fig.11 Classification map of Vattivagu Project

Satellite data analysis in the Vattivagu project command area for the cropping pattern during Kharif period of 2014-15 is shown in Figure-11.

**Results**

- The irrigated area is found to be 3,652 ha out of the total ayacut of 9,919 ha.
- The equivalent Wet area is estimated as 403 ha, ID area is estimated as 3,249 ha.
- The total crop area is 37% of the total ayacut area and the Wet crop is 11% and ID crop is 89% of the total irrigated area.
- The kharif crop area, for the current year, 2014-15 is 39% when compared with the previous year 2013-14.

### 6.2.6 YERRAVAGU (PALVAI PURUSHOTHAM RAO PROJECT)

The Yerravagu Project was constructed across the, Klawara Village. It is located near the Dahegaon Mandal Adilabad District. The project GCA is 6,160 ha out of which the total ayacut is 4,453 ha. Catchment area of the project is 450sq.km. Command area covers bhainsa mandal. In Godavari Basin of Telangana, out of the total area irrigated by medium irrigation projects, Vattivagu project contributes 5.22%.

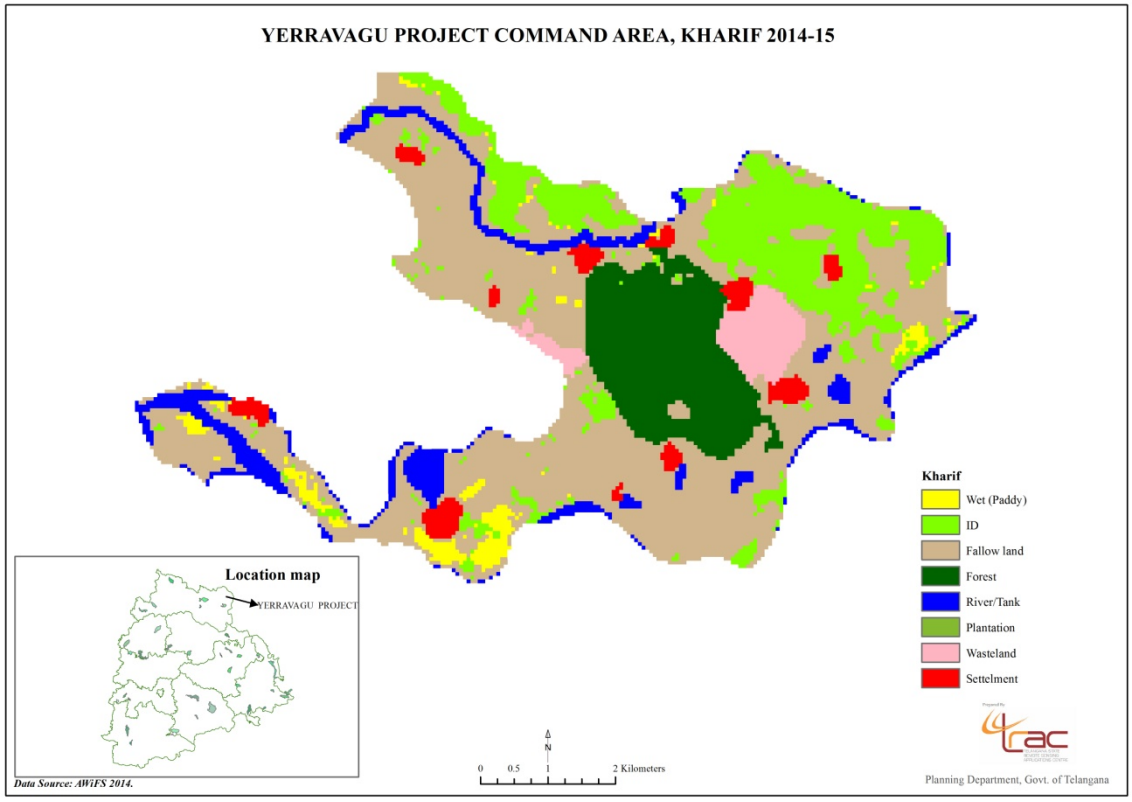



Fig.12 Classification map of Yerravagu Project

Satellite data analysis in the Yerravagu project command area for the cropping pattern during Kharif period of 2014-15 is shown in Figure-12.

**Results**

- The irrigated area is found to be 917 ha out of the total ayacut of 4,453 ha.
- The equivalent Wet area is estimated as 126 ha, ID area is estimated as 791 ha.
- The total crop area is 21% of the total ayacut area and the Wet crop is 14% and ID crop is 86% of the total irrigated area.
- The kharif crop area, for the current year, 2014-15 is 32% when compared with the previous year 2013-14.

### 6.2.7 BOGGULAVAGU PROJECT

The Boggulavagu Project was constructed across Boggulavagu River, near Rudraram village of Malhar Rao mandal in Karimnagar District. The gross storage capacity of the reservoir is 365 Mcft at FRL +159.41 m. The project GCA is 4,300 ha out of which the total ayacut is 2,084 ha covering 8 villages of Kataram and Malhar mandals. In Godavari Basin of Telangana, out of the total area irrigated by medium irrigation projects, Boggulavagu project contributes 2.44%.

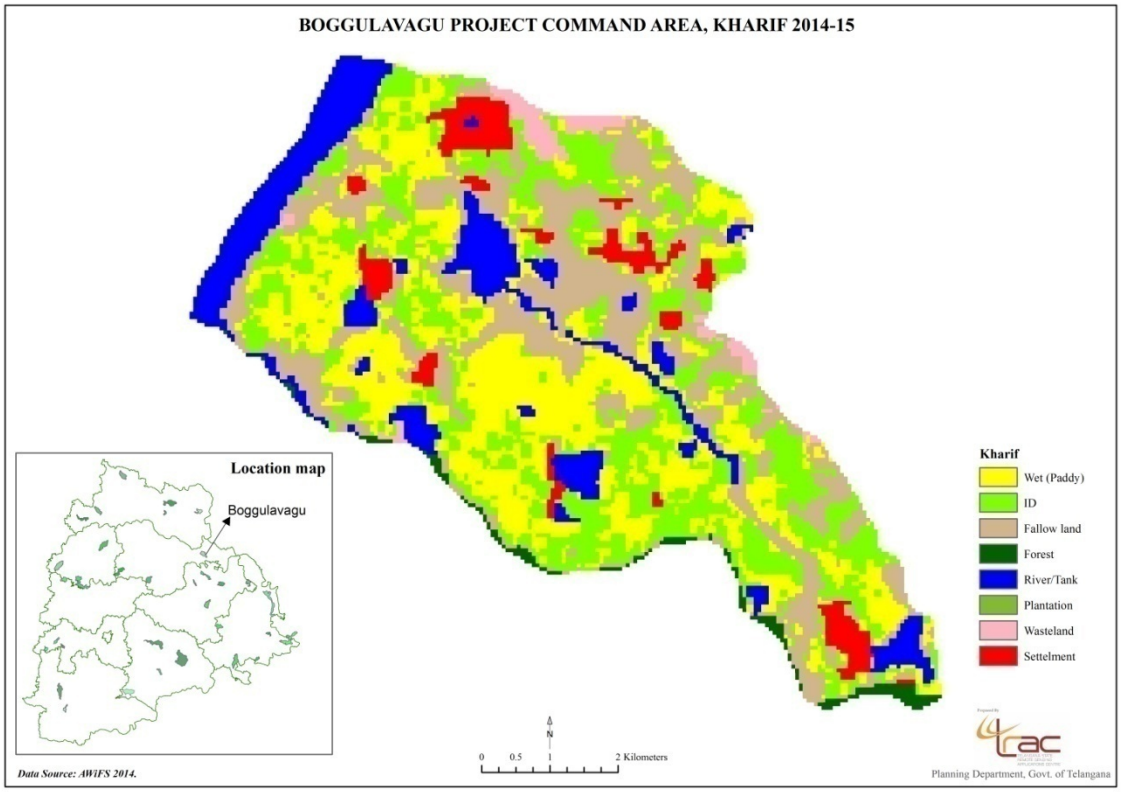



Fig.13 Classification map of Boggulavagu Project

Satellite data analysis in the Boggulavagu project command area for the cropping pattern during Kharif period of 2014-15 is shown in Figure-13.

**Results**

- The irrigated area is found to be 2,818 ha.
- The equivalent Wet area is estimated as 1,454 ha, ID area is estimated as 1,364 ha.
- In the total crop area, Wet crop is 52% and ID crop is 48% of the total irrigated area.
- The kharif crop area, for the current year, 2014-15 is 76% when compared with the previous year 2013-14.

### 6.2.8 SHANIGARAM PROJECT

The Shanigaram Project was constructed across Siddipetavagu River, near Shanigaram village of Koheda Mandal in Karimnagar District. The gross storage capacity of the reservoir is 1,092 Mcft at FRL +357.46 m. The project GCA is 5,830 ha out of which the total ayacut is 2,065 ha covering 10 villages of Koheda and Bejjanki mandals. In Godavari Basin of Telangana, out of the total area irrigated by medium irrigation projects, Shanigaram project contributes 2.42%.

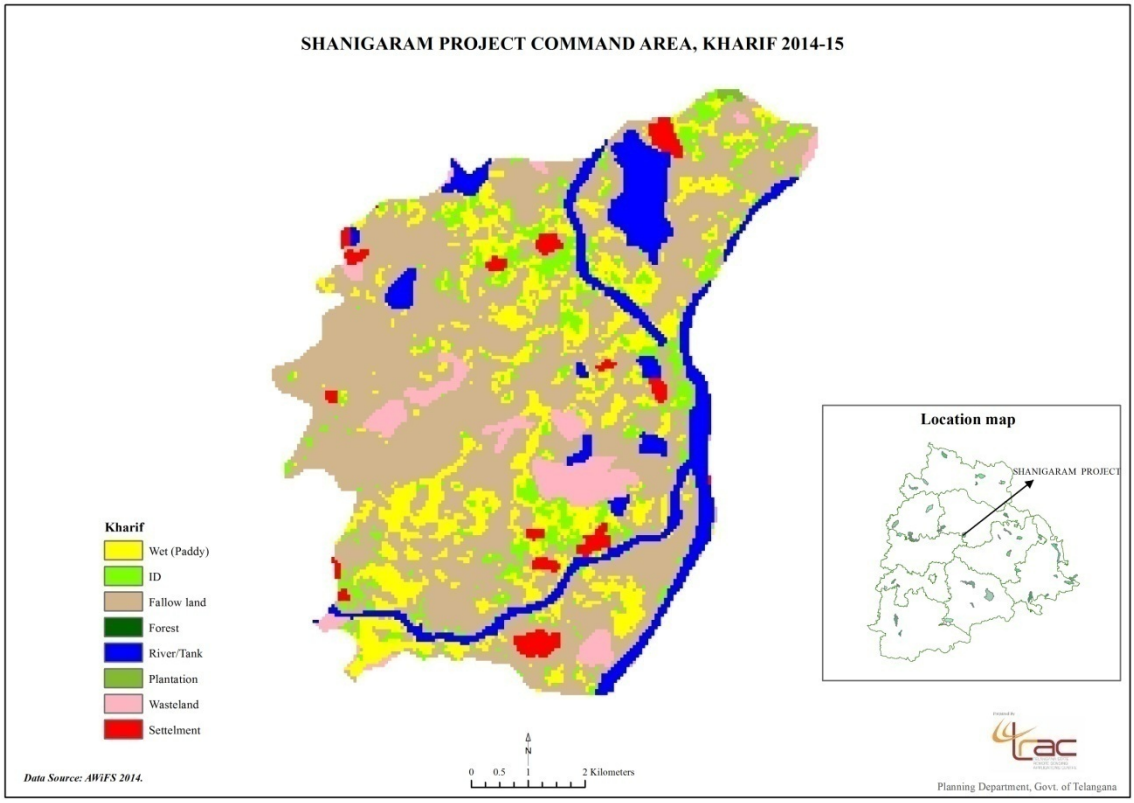



Fig.14 Classification map of Shanigaram Project

Satellite data analysis in the Shanigaram project command area for the cropping pattern during Kharif period of 2014-15 is shown in Figure-14.

**Results**

- The irrigated area is found to be 1,568 ha out of the total ayacut of 2,065 ha.
- The equivalent Wet area is estimated as 1,069 ha, ID area is estimated as 499 ha.
- The total crop area is 76% of the total ayacut area and the Wet crop is 68% and ID crop is 32% of the total irrigated area.
- The kharif crop area, for the current year, 2014-15 is 30% when compared with the previous year 2013-14.

### 6.2.9 UPPER MANAIR PROJECT

The Upper Manair Project was constructed across Manair River near Narmal village of Gambhiraopet Mandal in Karimnagar District. The gross storage capacity of the reservoir is 2169.70 Mcft at FRL +451.85 m. The project GCA is 11,280 ha out of which the total ayacut is 5,298 ha covering 15 villages of Gambhiraopet and Mustabad mandals. In Godavari Basin of Telangana, out of the total area irrigated by medium irrigation projects, Upper Manair project contributes 6.22%.

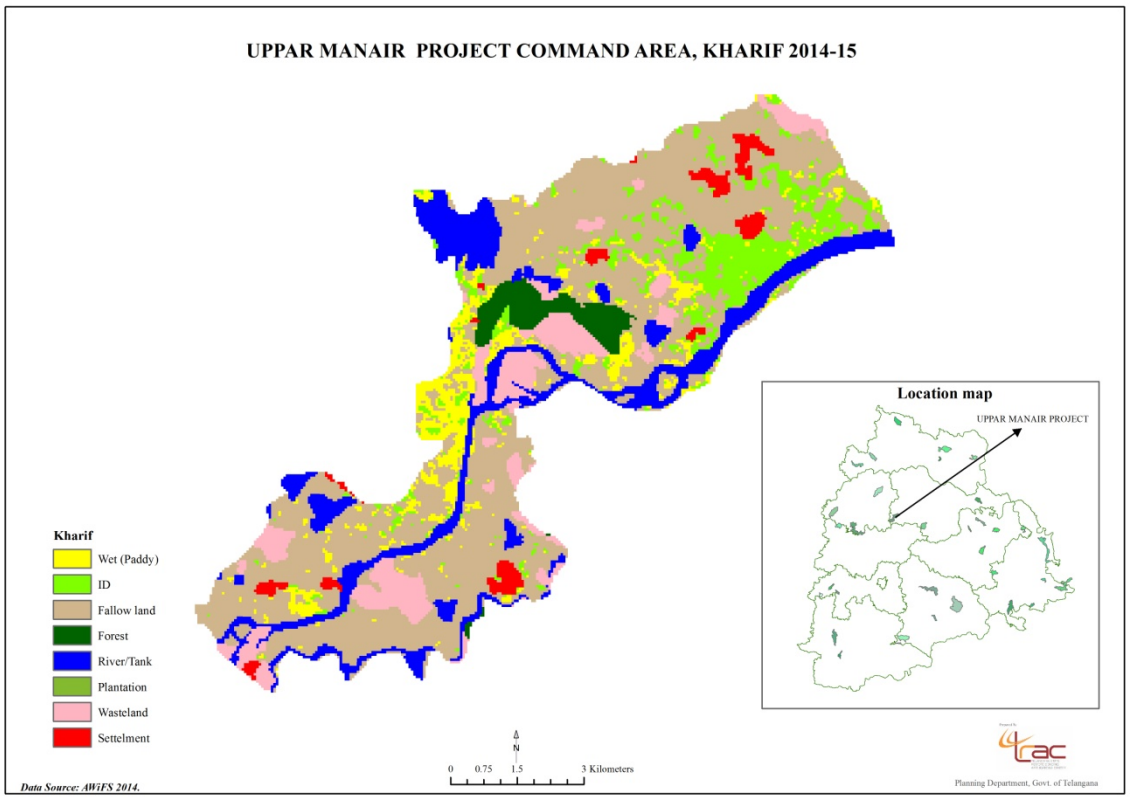



Fig.15 Classification map of Upper Manair Project

Satellite data analysis in the Upper Manair project command area for the cropping pattern during Kharif period of 2014-15 is shown in Figure-15.

**Results**

- The irrigated area is found to be 1,362 ha out of the total ayacut of 5,298 ha.
- The equivalent Wet area is estimated as 611 ha, ID area is estimated as 751 ha.
- The total crop area is 26% of the total ayacut area and the Wet crop is 45% and ID crop is 55% of the total irrigated area.
- The kharif crop area, for the current year, 2014-15 is 26% when compared with the previous year 2013-14.

### 6.2.10 MUKKAMAMIDI PROJECT

The Mukkamamidi Project was constructed across Mukkamamidi River, which is a tributary of Pamuleru River near Mulkalapalli village in Khammam District. The gross storage capacity of the reservoir is 142.67 Mcft at FRL +120.50 m. The project GCA is 2,270 ha out of which the total ayacut is 1,320 ha covering 5 villages in 1 mandal which is Mulkalapalli. In Godavari Basin of Telangana, out of the total area irrigated by medium irrigation projects, Mukkamamidi project contributes 1.55%.

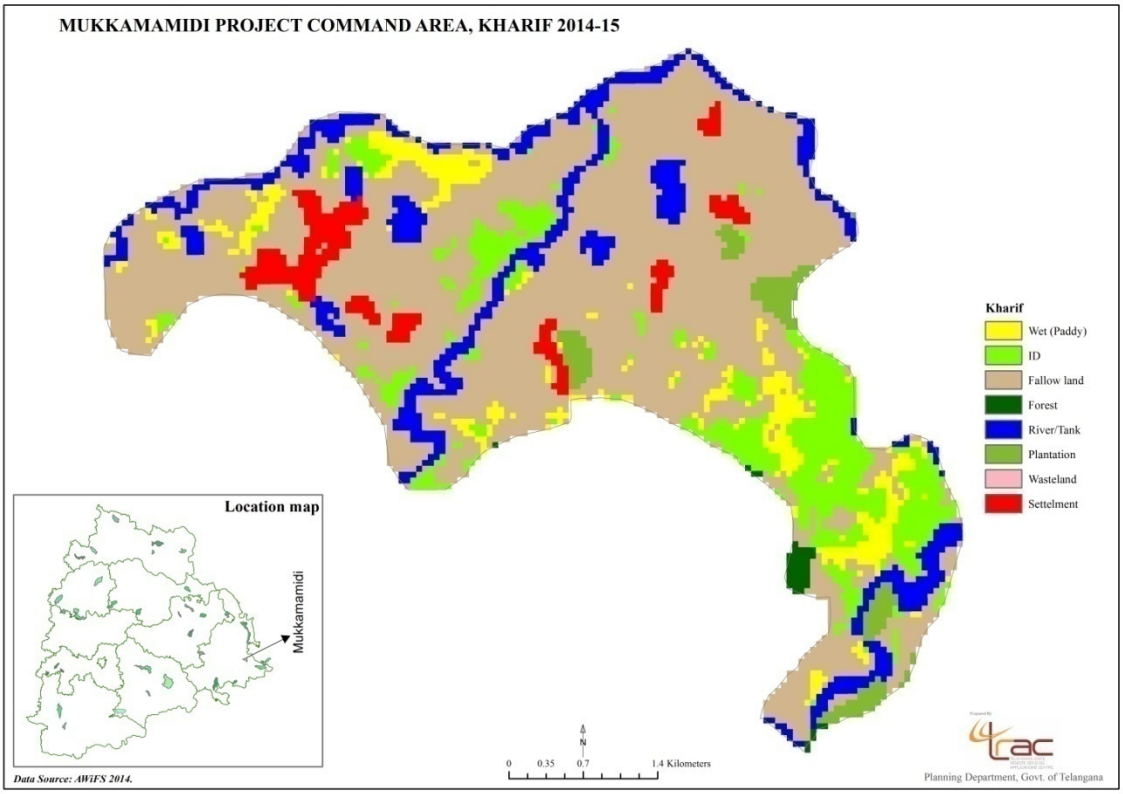



Fig.16 Classification map of Mukkamamidi Project

Satellite data analysis in the Mukkamamidi project command area for the cropping pattern during Kharif period of 2014-15 is shown in Figure-16.

**Results**

- The irrigated area is found to be 423 ha out of the total ayacut of 1,320 ha.
- The equivalent Wet area is estimated as 148 ha, ID area is estimated as 275 ha.
- The total crop area is 32% of the total ayacut area and the Wet crop is 35% and ID crop is 65% of the total irrigated area.
- The kharif crop area, for the current year, 2014-15 is 24% when compared with the previous year 2013-14.

### 6.2.11 PEDDAVAGU PROJECT

The Peddavagu Project was constructed across Peddavagu River, which is a tributary of Godavary River near Gummadipalli village of Aswaraopet Mandal in Khammam District. The gross storage capacity of the reservoir is 413.19 Mcft at FRL +81.24 m. The designed ayacut under this project is 6,478 ha covering 14 villages of Aswaraopet, Kukkunur and Velerupad mandals. In Godavari Basin of Telangana, out of the total area irrigated by medium irrigation projects, Peddavagu project contributes 7.60%.

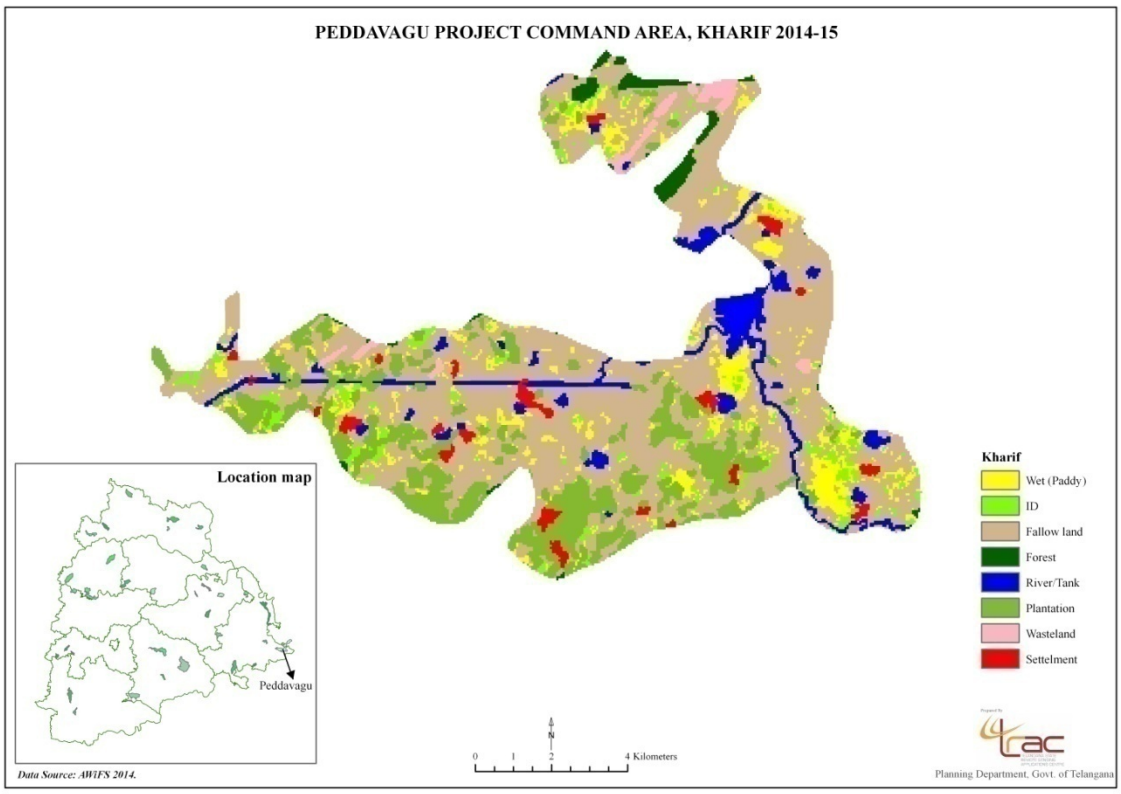



Fig.17 Classification map of Peddavagu Project

Satellite data analysis in the Peddavagu project command area for the cropping pattern during Kharif period of 2014-15 is shown in Figure-17.

**Results**

- The irrigated area is found to be 1,340 ha out of the total ayacut of 6,478 ha.
- The equivalent Wet area is estimated as 908 ha, ID area is estimated as 432 ha.
- The total crop area is 21% of the total ayacut area and the Wet crop is 68% and ID crop is 32% of the total irrigated area.
- The kharif crop area, for the current year, 2014-15 is 13% when compared with the previous year 2013-14.

### 6.2.12 TALIPERU PROJECT

The Taliperu Project was constructed across Taliperu River, which is a tributary of Godavary River near Peddamadisileru village of Cherla Mandal in Khammam District. The gross storage capacity of the reservoir is 508.54 Mcft at FRL +74.00 m. The project GCA is 15,320 ha out of which the total ayacut is 10,000 ha covering 21 villages of Cherla and Dummugudem mandals. In Godavari Basin of Telangana, out of the total area irrigated by medium irrigation projects, Taliperu project contributes 7.60%.

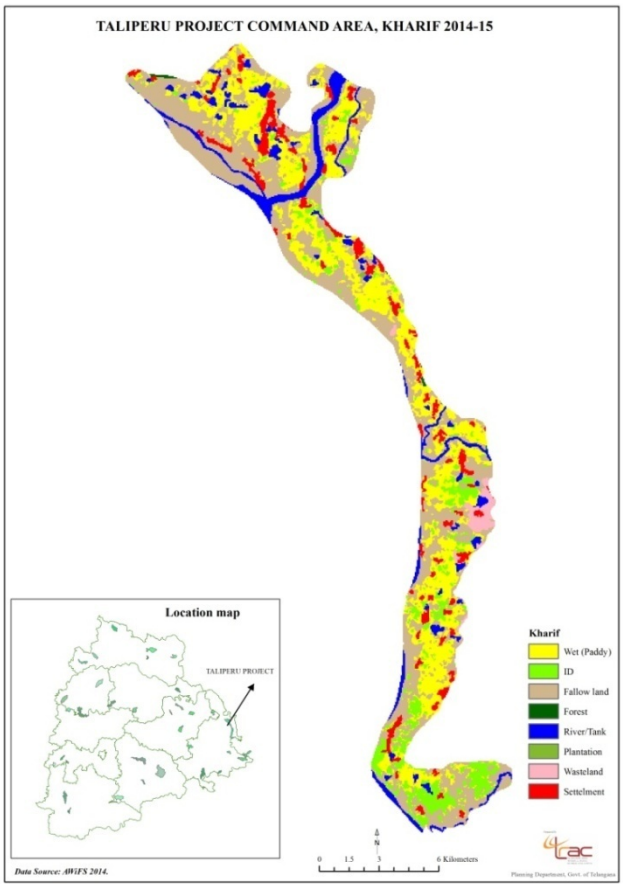



Fig.18 Classification map of Taliperu Project

Satellite data analysis in the Taliperu project command area for the cropping pattern during Kharif period of 2014-15 is shown in Figure-18.

**Results**

- The irrigated area is found to be 6,160 ha out of the total ayacut of 10,000 ha.
- The equivalent Wet area is estimated as 4,670 ha, ID area is estimated as 1,490 ha.
- The total crop area is 62% of the total ayacut area and the Wet crop is 76% and ID crop is 24% of the total irrigated area.
- The kharif crop area, for the current year, 2014-15 is 55% when compared with the previous year 2013-14.

### 6.2.13 NALLAVAGU

The Nalla Vagu Project was constructed across the Nalla Vagu River / Stream, which is a tributary to the Manjeera River. The Project is located near the Sultanabad village, Kalher Mandal, Medak District. The project GCA is 4,780 ha out of which the total ayacut is 2,453 ha in the Districts of 1.Medak (1808.543 ha) 2.Nizamabad (627.6684 ha). The Project utilizes 1.090 TMC of the available water and the Reservoir Storage Capacity is 0.746 TMC (gross) and 0.653 TMC (net). In Godavari Basin of Telangana, out of the total area irrigated by medium irrigation projects, Nalla Vagu project contributes 2.88%.

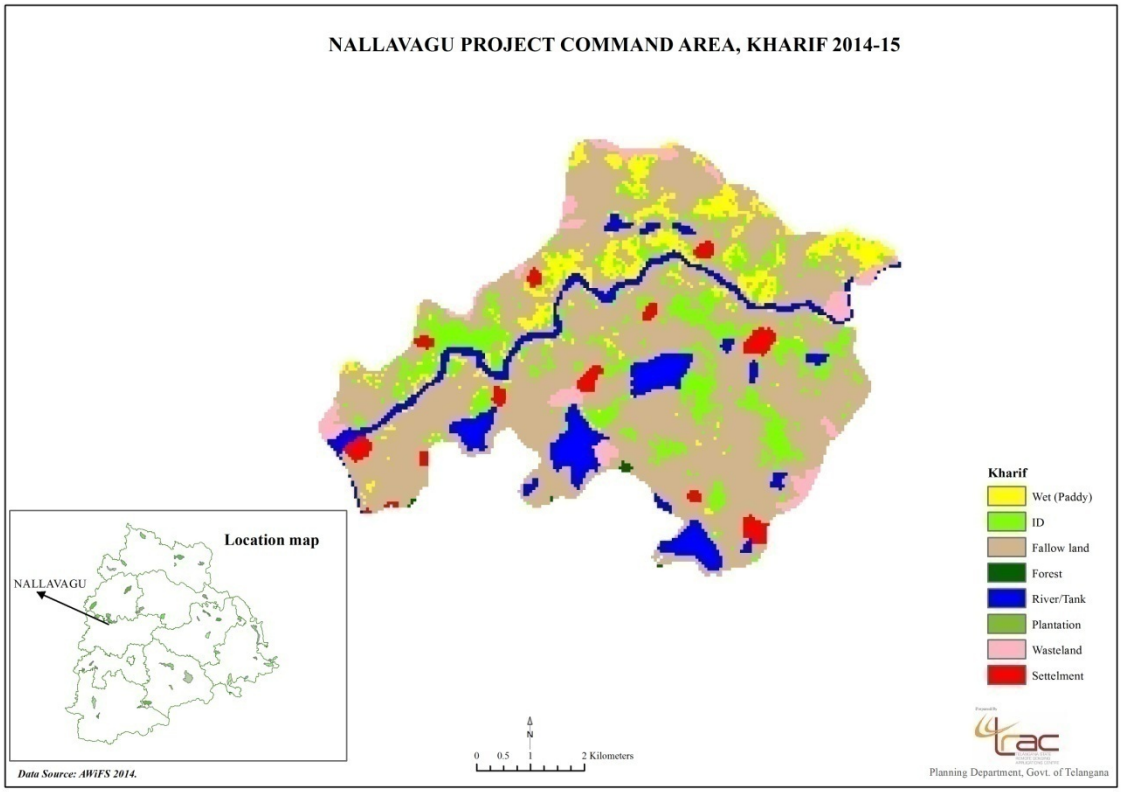



Fig.19 Classification map of Nalla Vagu Project

Satellite data analysis in the Nalla Vagu project command area for the cropping pattern during Kharif period of 2014-15 is shown in Figure-19.

**Results**

- The irrigated area is found to be 1,033 ha out of the total ayacut of 2,453 ha.
- The equivalent Wet area is estimated as 393 ha, ID area is estimated as 640 ha.
- The total crop area is 42% of the total ayacut area and the Wet crop is 38% and ID crop is 62% of the total irrigated area.
- The kharif crop area, for the current year, 2014-15 is 25% when compared with the previous year 2013-14.

### 6.2.14 KOULASANALA PROJECT

The Koulasanala Project was constructed across Koulasanala River, near Sawargaon village of Jukkala Mandal in Nizamabad District. The gross storage capacity of the reservoir is 831 Mcft at FRL +458.00 m. The project GCA is 10,620 ha out of which the total ayacut is 3,644 ha covering 19 villages of Jukkala and Bachkinda mandals. In Godavari Basin of Telangana, out of the total area irrigated by medium irrigation projects, Koulasanala project contributes 4.28%.

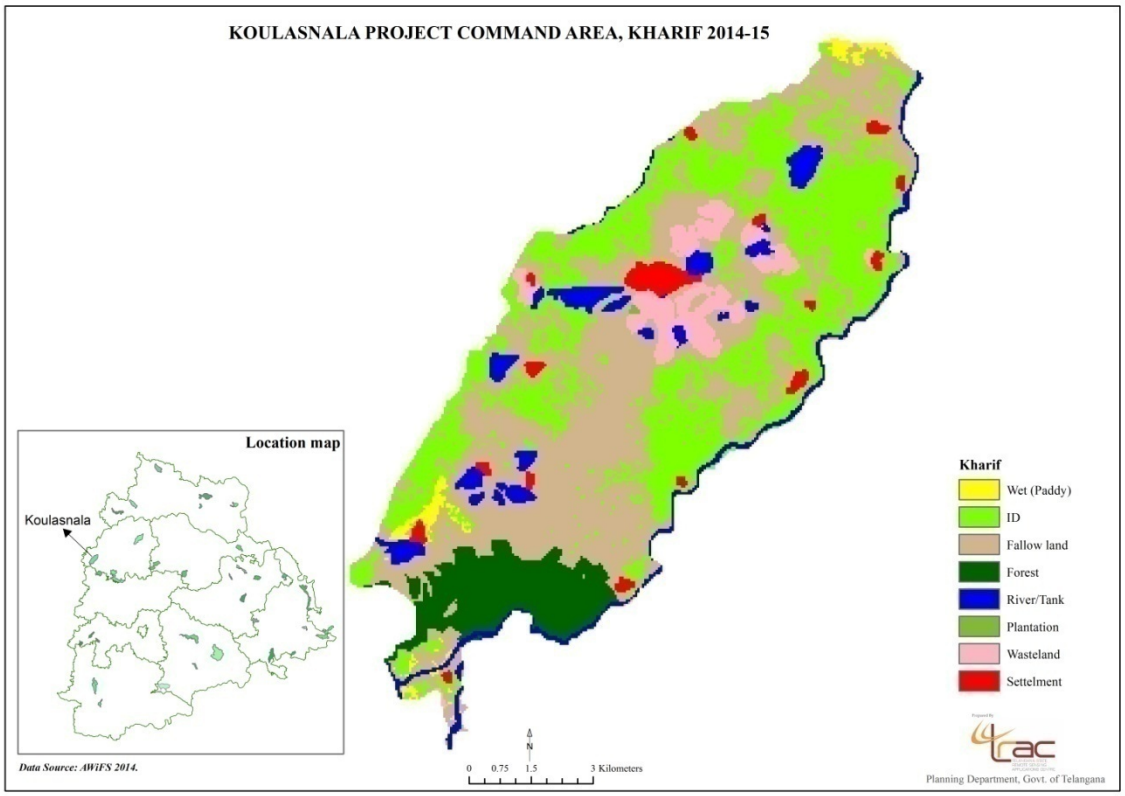



Fig.20 Classification map of Koulasanala Project

Satellite data analysis in the Koulasanala project command area for the cropping pattern during Kharif period of 2014-15 is shown in Figure-20.

**Results**

- The irrigated area is found to be 3,644 ha out of the total ayacut of 3,644 ha.
- The equivalent Wet area is estimated as 136 ha, ID area is estimated as 3,506 ha.
- The total crop area is 100% of the total ayacut area and the Wet crop is 4% and ID crop is 96% of the total irrigated area.
- The kharif crop area, for the current year, 2014-15 is 45% when compared with the previous year 2013-14.

### 6.2.15 POCHARAM PROJECT

The Pocharam Project was constructed across Alair River, near Pocharam village of Nagireddypet Mandal in Nizamabad District. The gross storage capacity of the reservoir is 1,820 Mcft at FRL +446.22 m. The project GCA is 13,880 ha out of which the total ayacut is 4,251 ha covering 42 villages of Nagireddypet and Yellareddy mandals. In Godavari Basin of Telangana, out of the total area irrigated by medium irrigation projects, Pocharam project contributes 4.99%.

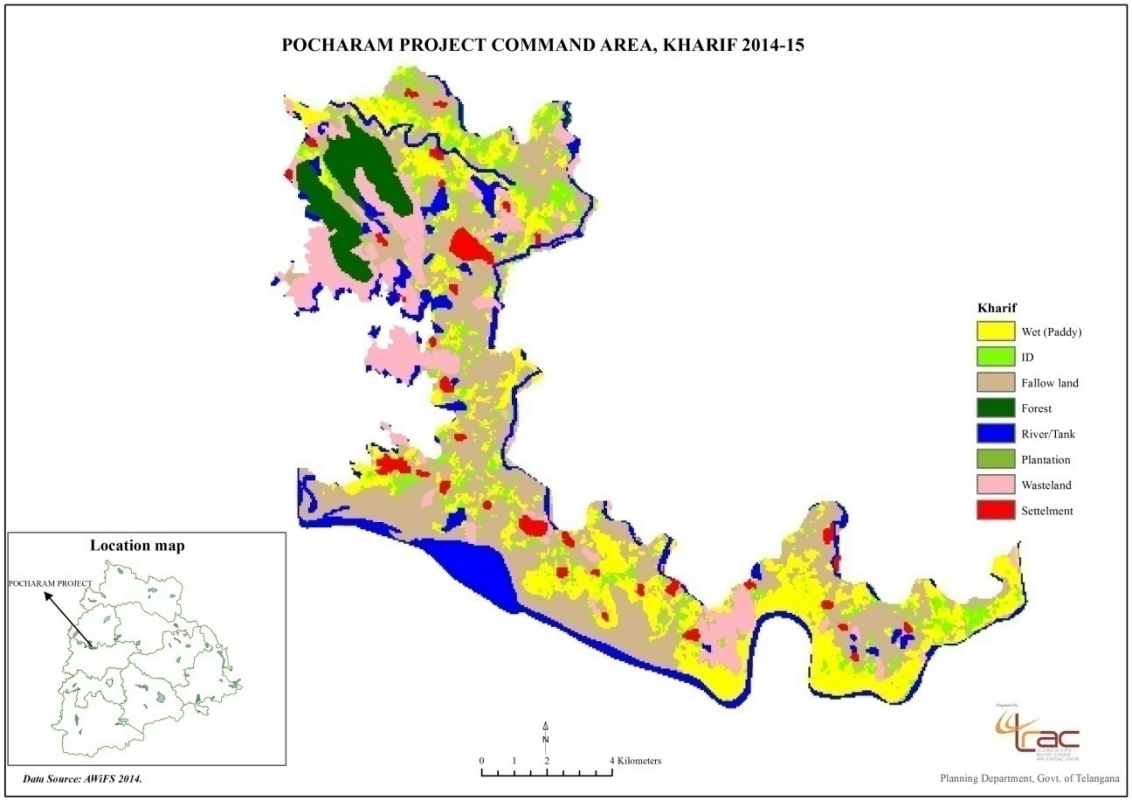



Fig.21 Classification map of Pocharam Project

Satellite data analysis in the Pocharam project command area for the cropping pattern during Kharif period of 2014-15 is shown in Figure-21.

**Results**

- The irrigated area is found to be 4,026 ha out of the total ayacut of 4,251 ha.
- The equivalent Wet area is estimated as 2,931 ha, ID area is estimated as 1,096 ha.
- The total crop area is 95% of the total ayacut area and the Wet crop is 73% and ID crop is 27% of the total irrigated area.
- The kharif crop area, for the current year, 2014-15 is 46% when compared with the previous year 2013-14.

### 6.2.16 RAMADUGU PROJECT

The Ramadugu Project was constructed across Ramadugu River, near Ramadugu village of Dharpally Mandal in Nizamabad District. The gross storage capacity of the reservoir is 574.22 Mcft at FRL +388.16 m. The project GCA is 9,890 ha out of which the total ayacut is 2,024 ha covering 11 villages of Dharpally and Dichpally mandals. In Godavari Basin of Telangana, out of the total area irrigated by medium irrigation projects, Ramadugu project contributes 2.37%.

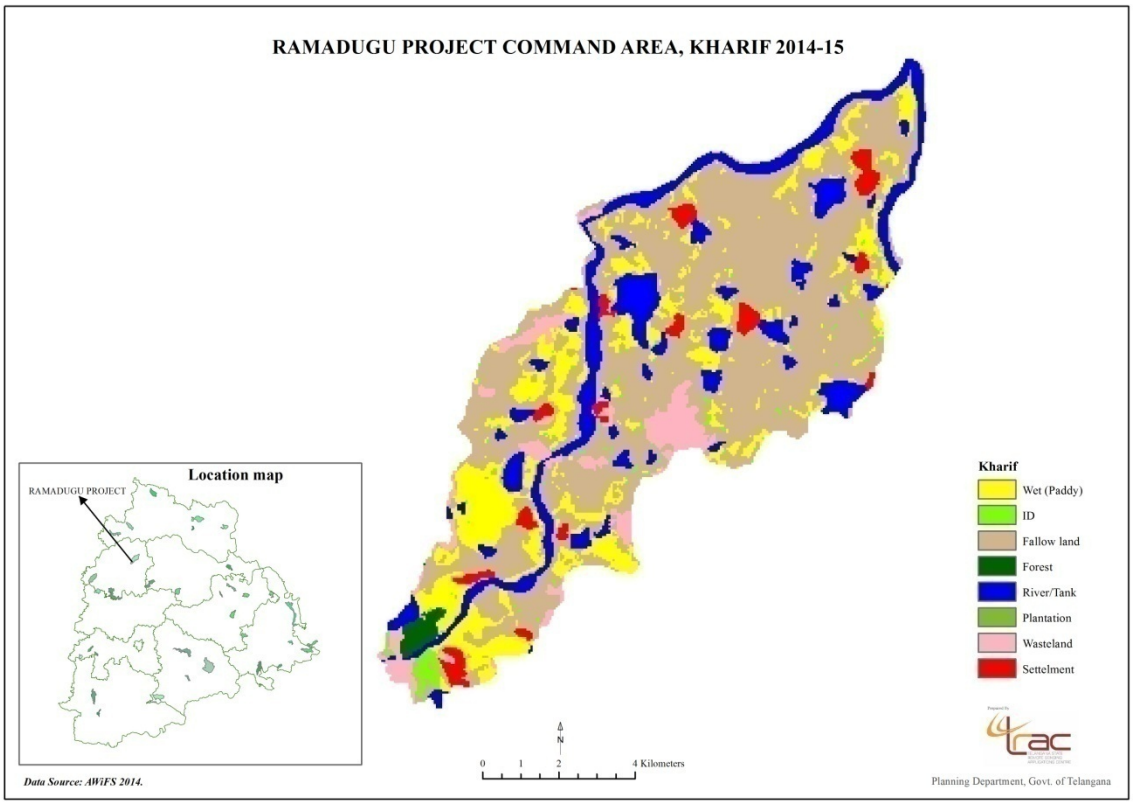



Fig.22 Classification map of Ramadugu Project

Satellite data analysis in the Ramadugu project command area for the cropping pattern during Kharif period of 2014-15 is shown in Figure-22.

**Results**

- The irrigated area is found to be 1,971 ha out of the total ayacut of 2,024 ha.
- The equivalent Wet area is estimated as 1,821 ha, ID area is estimated as 150 ha.
- The total crop area is 97% of the total ayacut area and the Wet crop is 92% and ID crop is 8% of the total irrigated area.
- The kharif crop area, for the current year, 2014-15 is 26% when compared with the previous year 2013-14.

### 6.2.17 LAKNAVARAM PROJECT

The Laknavaram Project was constructed across Laknavaram River, near Chalvai village of Govindaraopet Mandal in Warangal District. The gross storage capacity of the reservoir is 2,135 Mcft at FRL +97.23 m. The project GCA is 4,940 ha out of which the total ayacut is 3,522 ha covering in 1 mandal which is Govindaraopet. In Godavari Basin of Telangana, out of the total area irrigated by medium irrigation projects, Laknavaram project contributes 4.13%.

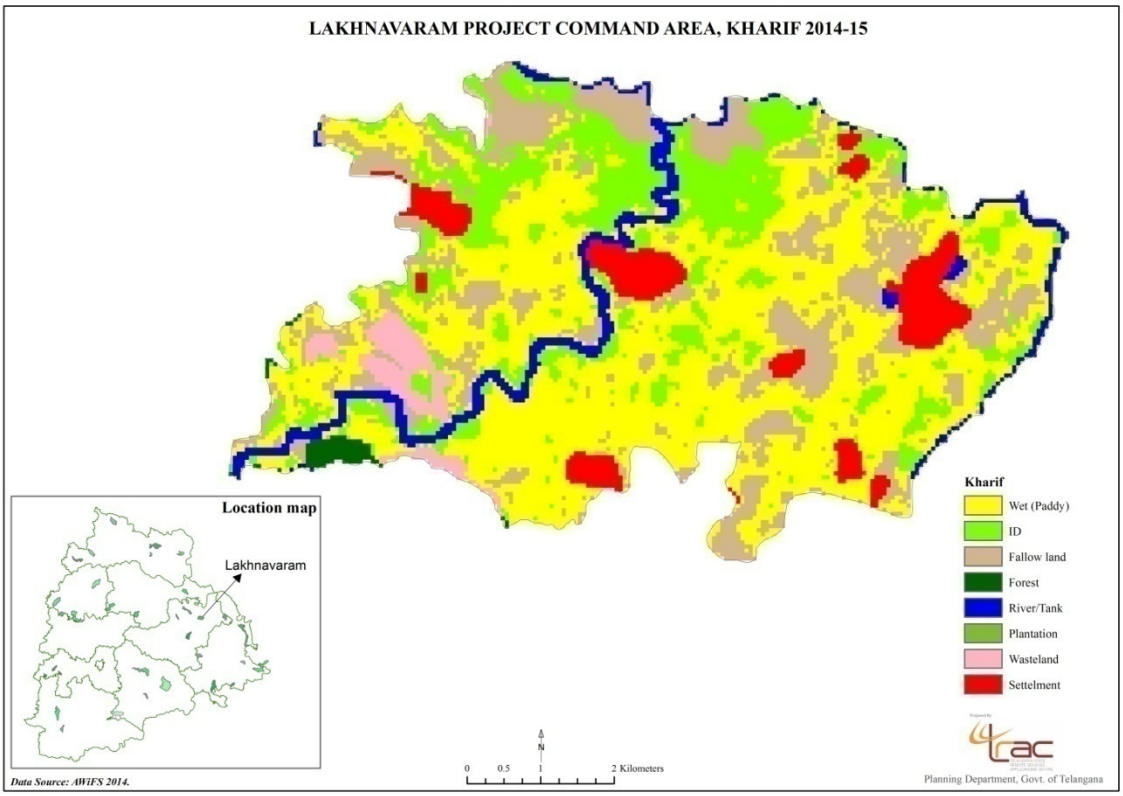



Fig.23 Classification map of Laknavaram Project

Satellite data analysis in the Laknavaram project command area for the cropping pattern during Kharif period of 2014-15 is shown in Figure-23.

**Results**

- The irrigated area is found to be 3,033 ha out of the total ayacut of 3,522 ha.
- The equivalent Wet area is estimated as 2,154 ha, ID area is estimated as 879 ha.
- The total crop area is 86% of the total ayacut area and the Wet crop is 71% and ID crop is 29% of the total irrigated area.
- The kharif crop area, for the current year, 2014-15 is 75% when compared with the previous year 2013-14.

### 6.2.18 MALLURVAGU PROJECT

The Mallur Project was constructed across Malluru River, which is a sub tributary of Godavary River near Mangapet Mandal in Warangal District. The gross storage capacity of the reservoir is 342.73 Mcft at FRL +115.25 m. The project GCA is 4,890 ha out of which the total ayacut is 3,036 ha covering 15 villages in 1 mandal which is Mangapet. In Godavari Basin of Telangana, out of the total area irrigated by medium irrigation projects, Mallurvagu project contributes 3.56%.

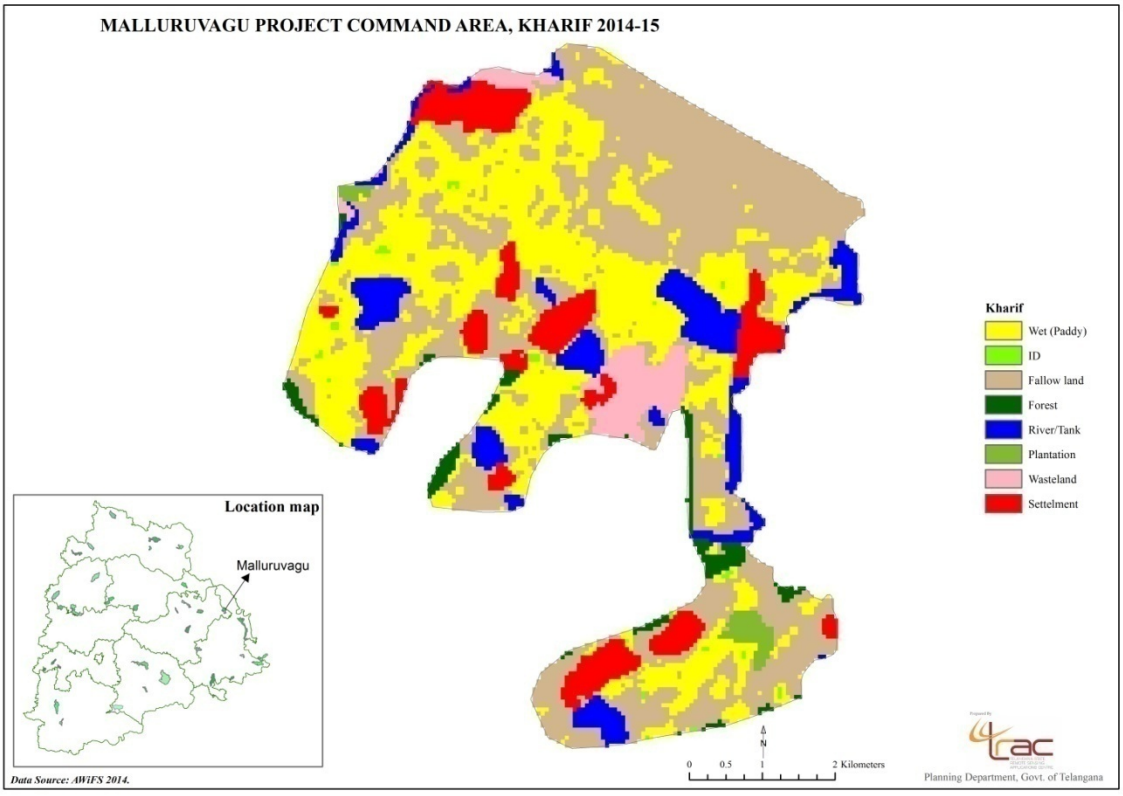



Fig.24 Classification map of Mallurvagu Project

Satellite data analysis in the Mallurvagu project command area for the cropping pattern during Kharif period of 2014-15 is shown in Figure-24.

**Results**

- The irrigated area is found to be 1,297 ha out of the total ayacut of 3,036 ha.
- The equivalent Wet area is estimated as 1,281 ha, ID area is estimated as 16 ha.
- The total crop area is 43% of the total ayacut area and the Wet crop is 99% and ID crop is 1% of the total irrigated area.
- The kharif crop area, for the current year, 2014-15 is 46% when compared with the previous year 2013-14.

### 6.2.19 RAMAPPA LAKE PROJECT

The Ramappa lake Project was constructed across Medivagu River, which is a tributary of Godavari River near Palempet village of Venkatapuram Mandal in Warangal District. The gross storage capacity of the reservoir is 2910.31 Mcft at FRL +203.00 m. The project GCA is 2,000 ha out of which the total ayacut is 1,970 ha covering 5 villages in 1 mandal which is Venkatapuram. In Godavari Basin of Telangana, out of the total area irrigated by medium irrigation projects, Ramappa lake project contributes 2.37%.

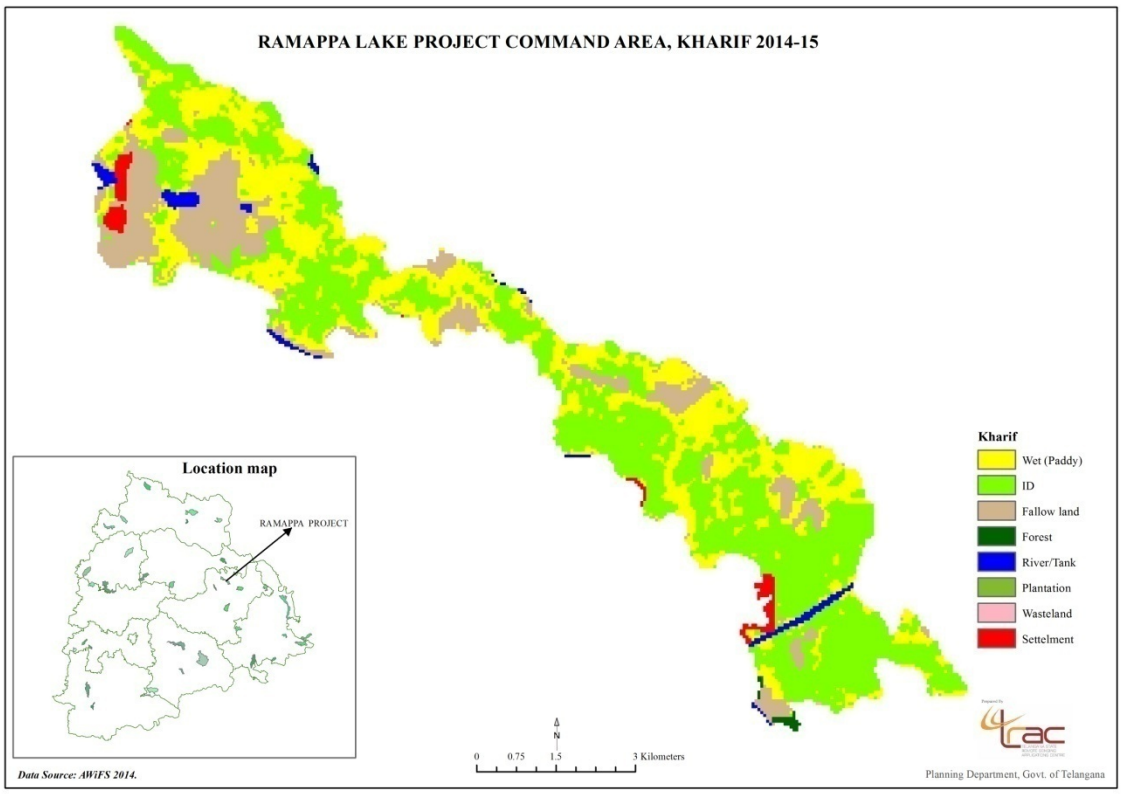



Fig.25 Classification map of Ramappa Lake

Satellite data analysis in the Ramappa Lake project command area for the cropping pattern during Kharif period of 2014-15 is shown in Figure-25.

**Results**

- The irrigated area is found to be 3,610 ha.
- The equivalent Wet area is estimated as 1,448 ha, ID area is estimated as 2,162 ha.
- In the total crop area, Wet crop is 40% and ID crop is 60% of the total irrigated area.
- The kharif crop area, for the current year, 2014-15 is 90% when compared with the previous year 2013-14.

### 6.2.20 SALIVAGU PROJECT

The Salivagu Project was constructed across Salivagu River, near Peddakondapaka village of Shayampet Mandal in Warangal District. The gross storage capacity of the reservoir is 560.77 Mcft at FRL +217.02 m. The project GCA is 2,450 ha out of which the total ayacut is 1,233 ha covering 6 villages in 1 mandal which is Shayampet. In Godavari Basin of Telangana, out of the total area irrigated by medium irrigation projects, Salivagu project contributes 1.45%.

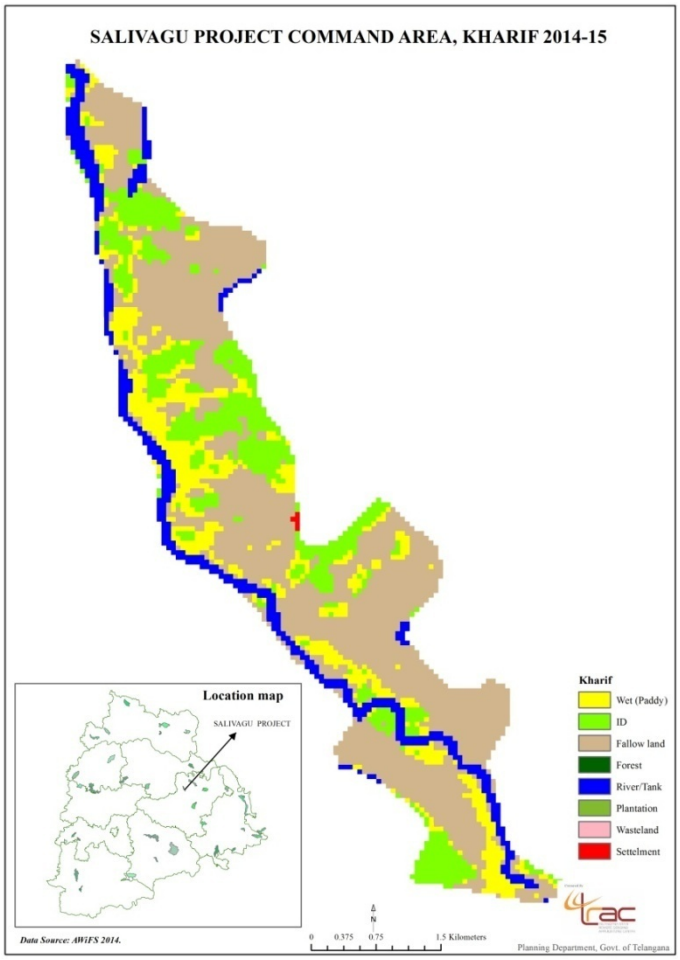



Fig.26 Classification map of Salivagu Project

Satellite data analysis in the Salivagu project command area for the cropping pattern during Kharif period of 2014-15 is shown in Figure-26.

**Results**

- The irrigated area is found to be 528 ha out of the total ayacut of 1,233 ha.
- The equivalent Wet area is estimated as 241 ha, ID area is estimated as 287 ha.
- The total crop area is 43% of the total ayacut area and the Wet crop is 46% and ID crop is 54% of the total irrigated area.
- The kharif crop area, for the current year, 2014-15 is 39% when compared with the previous year 2013-14.

## 6.3 Krishna Basin - Major Projects

The Krishna Basin of Telangana has 4 Major irrigation projects covered with command ayacut 4.36 lakh ha covered by 66 mandals / 932 villages. In Telangana State out of the total irrigated area by major irrigation projects 46% of the irrigated area is contributed by Krishna Basin.

### 6.3.1 JURALA (PRIYADARSHINI) PROJECT

The Jurala project was constructed across the Krishna River in Mahabubnagar District. The project GCA is 74,350 ha out of which the total ayacut is 42,405 ha and is covered by 12 mandals / 113 villages in the drought affected areas. In Krishna Basin of Telangana, out of the total area irrigated by major irrigation projects, Jurala project contributes 9.72%.

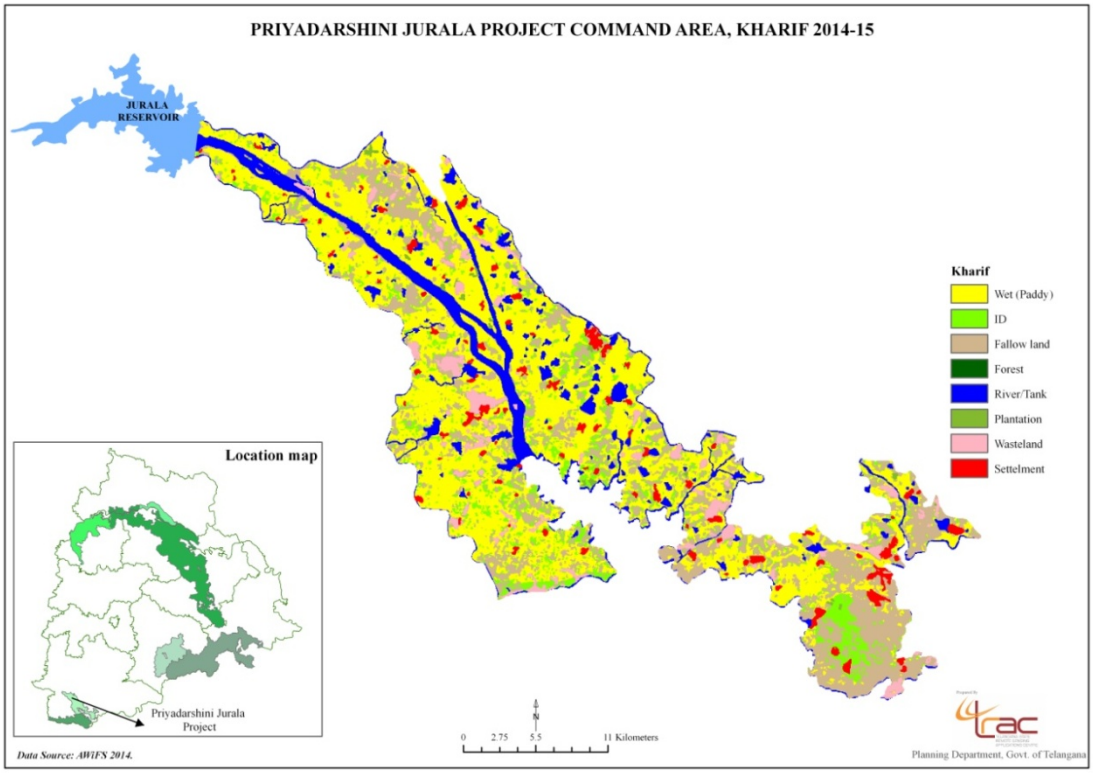



Fig.27 Classification of Jurala (Priyadarshini) Project

Satellite data analysis in the Jurala project command area for the cropping pattern during Kharif period of 2014-15 is shown in Figure-27.

**Results**

- The irrigated area is found to be 39,874 ha out of the total ayacut of 42,405 ha.
- The equivalent Wet area is estimated as 32,829 ha, ID area is estimated as 7,045 ha.
- The total crop area is 94% of the total ayacut area and the wet crop is 82% and ID crop is 18% of the total irrigated area.
- The kharif crop area, for the current year, 2014-15 is 79% when compared with the previous year 2013-14.

### 6.3.2 NAGARJUNASAGAR LEFT BANK CANAL (NSLC)

The Nagarjuna Sagar Project Left canal takes off from the left flank of the reservoir and runs for about 295 km long. The total command area is divided into three zones and supplies water through 66 majors and branch canals in 32 blocks. The zone-1 consists of 15 blocks i.e. from block-1 to 15. The zone-2 consists of 12 blocks i.e. from 16 to 21/7th block. The zone-3 consists of 5 blocks starting from 21/8 to 21/11 blocks. The localized ayacut under NSLC is about 2, 66,257 ha and is covered by 33 mandals / 524 villages in Nalgonda and Khammam Districts. The major crops in the command area are Wet and ID. In Krishna Basin of Telangana, out of the total area irrigated by major irrigation projects, NSLC project contributes 28.1%.

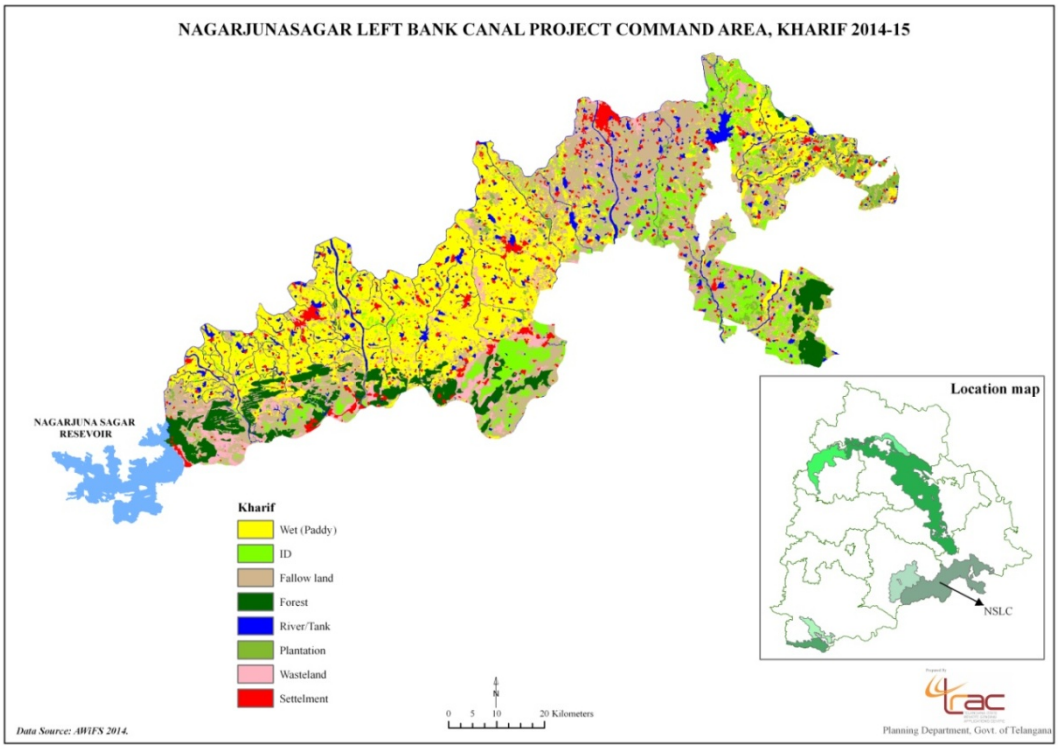



Fig.28 Classification of Nagarjuna Sagar Project Left Bank Canal

Satellite data analysis in the NSLC project command area for the cropping pattern during Kharif period of 2014-15 is shown in Figure-28.

**Results**

- The irrigated area is found to be 2, 11,884 ha out of the total ayacut of 2, 66,257 ha.
- The equivalent Wet area is estimated as 1, 62,201 ha, ID area is estimated as 49,683 ha.
- The total crop area is 80% of the total ayacut area and the Wet crop is 77% and ID crop is 23% of the total irrigated area.
- The kharif crop area, for the current year, 2014-15 is 58% when compared with the previous year 2013-14.

### 6.3.3 ALIMINETI MADHAVAREDDY PROJECT (SLBC)

Alimineti Madhava Reddy Project (SLBC) envisages utilization of 19 TMC of Krishna water from Srisailam reservoir through a deep cut across Mittakondala ridge to provide Irrigation facilities in Drought prone areas of Nalgonda District in addition to drinking water to fluoride affected villages enroute. The Project is later renamed as Alimineti Madhava Reddy Project. This is a Lift Scheme taking off from foreshore of Nagarjuna Sagar Reservoir and consists of two canals. The localized ayacut under AMRP is about 92,152 ha and is covered by 15 mandals / 294 villages. In Krishna Basin of Telangana, out of the total area irrigated by major irrigation projects, AMRP project contributes 21.1%.

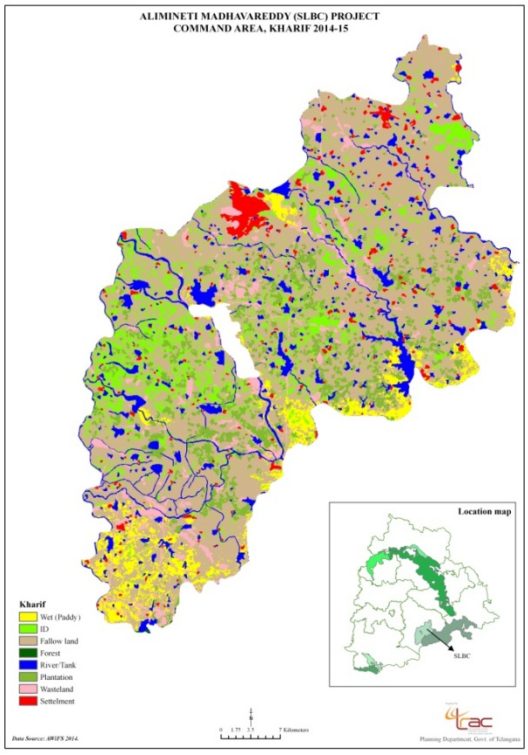



Fig.29 Classification of AMRP

Satellite data analysis in the AMRP project command area for the cropping pattern during Kharif period of 2014-15 is shown in Figure-29.

**Results**

- The irrigated area is found to be 31,321 ha out of the total ayacut of 92,152 ha.
- The equivalent Wet area is estimated as 10,623 ha, ID area is estimated as 20,697 ha.
- The total crop area is 34% of the total ayacut area and the Wet crop is 34% and ID crop is 66% of the total irrigated area.
- The kharif crop area, for the current year, 2014-15 is 22% when compared with the previous year 2013-14.

### 6.3.4 RAJOLIBANDA DIVERSION SCHEME (RDS) PROJECT

The Rajolibanda diversion scheme (RDS) is an inter-state project built across Tungabhadra River about 120km downstream of Tungabhadra dam near Rajolibanda Village, Raichur District and Karnataka state. The area is covered in 6 mandals of Raichur District. The project GCA is 74,500 ha out of which the total ayacut is 35,425 ha and is covered by 6 mandals / 81 villages in Mahabubnagar district. About 14204.49 ha of area is Wet, 19424.94 ha under ID and 1902.025 ha under perennial. The principal Wet crop in the command area is paddy and the predominant ID crops are jowar, maize and groundnut**.** In Krishna Basin of Telangana, out of the total area irrigated by major irrigation projects, Rajolibanda Diversion Scheme project contributes 8.12%.

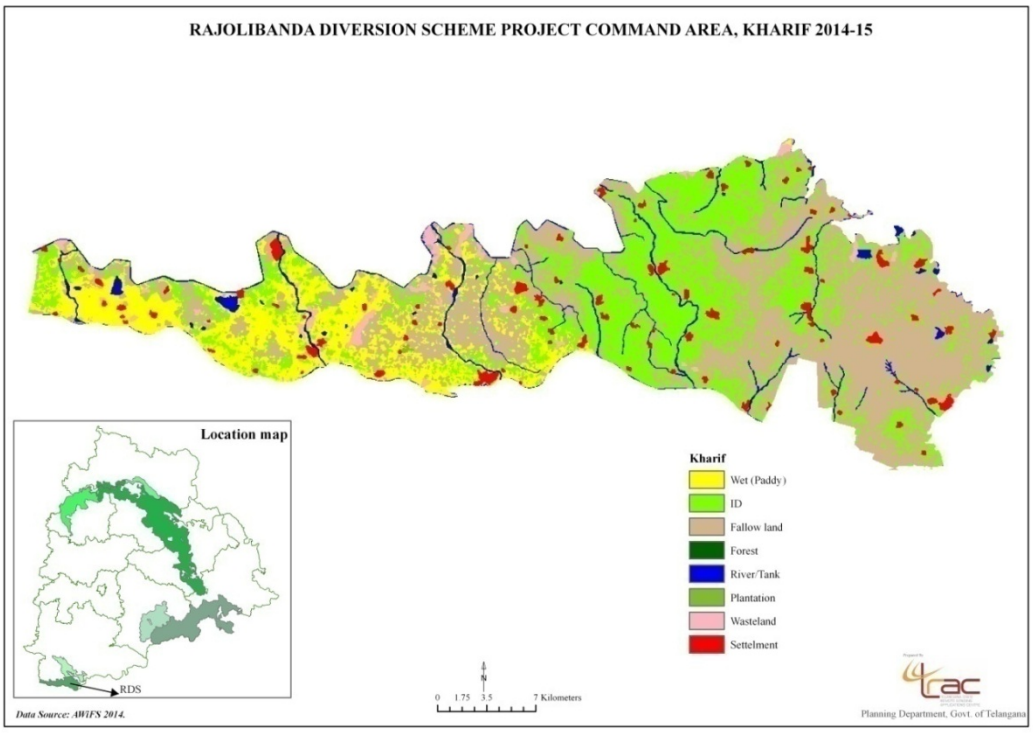



Fig.30 Classification of Rajolibanda Diversion Scheme (RDS)

Satellite data analysis in the Rajolibanda Diversion Scheme project command area for the cropping pattern during Kharif period of 2014-15 is shown in Figure-30.

**Results**

- The irrigated area is found to be 33,844 ha out of the total ayacut of 35,425 ha.
- The equivalent Wet area is estimated as 10,539 ha, ID area is estimated as 23,305 ha.
- The total crop area is 96% of the total ayacut area and the Wet crop is 31% and ID crop is 69% of the total irrigated area.
- The kharif crop area, for the current year, 2014-15 is 67% when compared with the previous year 2013-14.

## 6.4 Krishnabasin - Medium Projects

The Krishna Basin of Telangana has 13 Medium irrigation projects covered with command ayacut 0.54 lakh ha covered by 31 mandals / 209 villages**.** In Telangana State out of the total irrigated area by medium irrigation projects 39% of the irrigated area is contributed by Krishna Basin.

### 6.4.1 BAYYARAM PROJECT

The Bayyaram Project was constructed across Muneru River, near Bayyaram in Khammam District. The gross storage capacity of the reservoir is 397 Mcft at FRL +195.37 m. The designed ayacut under this project is 2,915 ha and is covered by 6 villages in 1 mandal which is Bayyaram. In Krishna Basin of Telangana, out of the total area irrigated by medium irrigation projects, Bayyaram project contributes 5.32%.

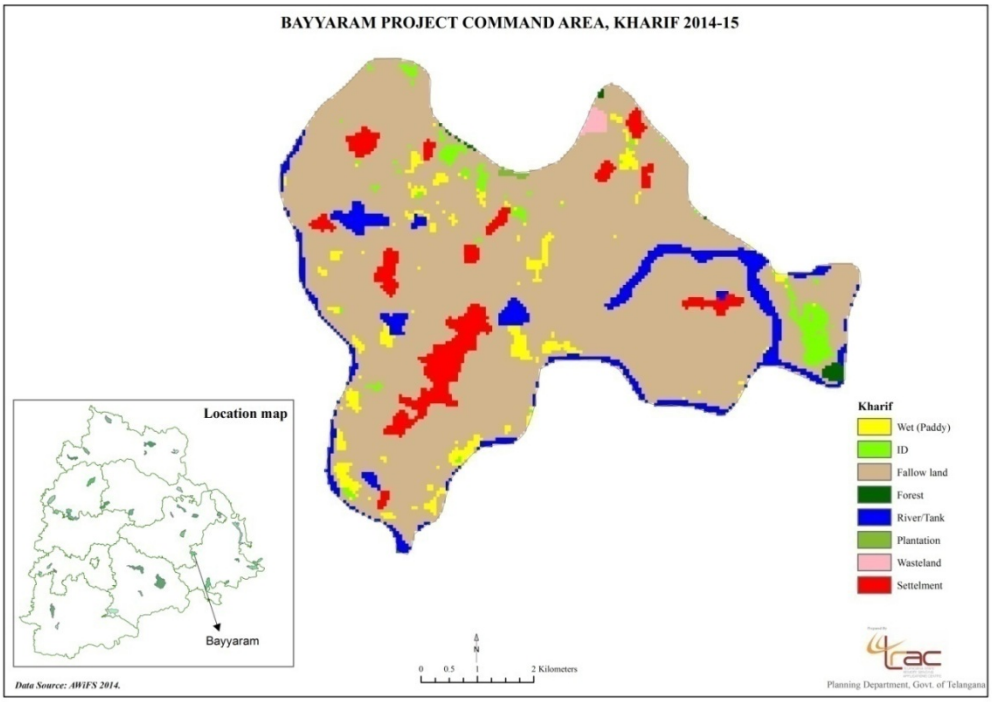



Fig.31 Classification map of Bayyaram Project

Satellite data analysis in the Bayyaram project command area for the cropping pattern during Kharif period of 2014-15 is shown in Figure-31.

**Results**

- The irrigated area is found to be 276 ha out of the total ayacut of 2,915 ha.
- The equivalent Wet area is estimated as 168 ha, ID area is estimated as 108 ha.
- The total crop area is 9% of the total ayacut area and Wet crop is 61% and ID crop is 39% of the total irrigated area.
- The kharif crop area, for the current year, 2014-15 is 7% when compared with the previous year 2013-14.

### 6.4.2 LANKASAGAR PROJECT

The Lankasagar Project was constructed across Kattalair River, which is a tributary of Krishna River near Advimallela village of Penubally Mandal in Khammam District. The gross storage capacity of the reservoir is 665 Mcft at FRL +118.26 m. The designed ayacut under this project is 2,977 ha and is covered by 10 villages in 1 mandal which is Penubally. In Krishna Basin of Telangana, out of the total area irrigated by medium irrigation projects, Lankasagar project contributes 5.44%.

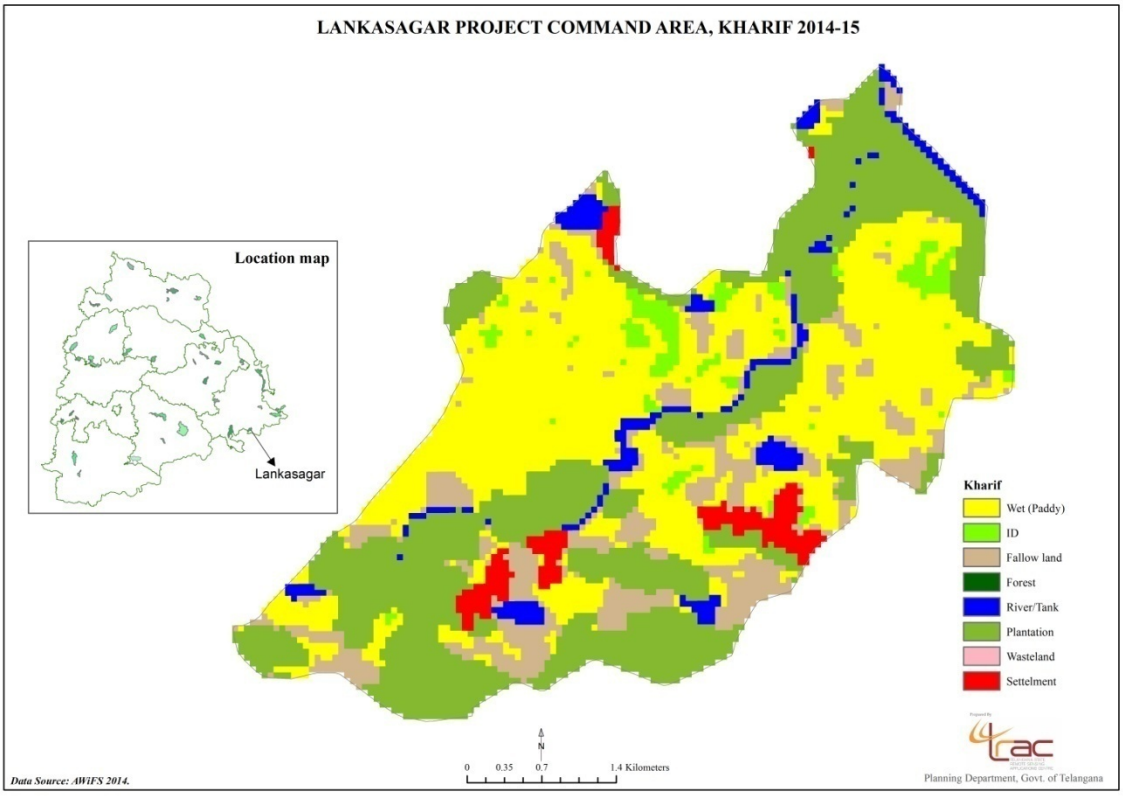



Fig.32 Classification map of Lankasagar Project

Satellite data analysis in the Lankasagar project command area for the cropping pattern during Kharif period of 2014-15 is shown in Figure-32.

**Results**

- The irrigated area is found to be 950 ha out of the total ayacut of 2,977 ha.
- The equivalent Wet area is estimated as 879 ha, ID area is estimated as 71 ha.
- The total crop area is 32% of the total ayacut area and the Wet crop is 93% and ID crop is 7% of the total irrigated area.
- The kharif crop area, for the current year, 2014-15 is 73% when compared with the previous year 2013-14.

### 6.4.3 WYRA PROJECT

The Wyra Project was constructed across Wyra River, near wyra Mandal in Khammam District. The gross storage capacity of the reservoir is 2,112 Mcft at FRL +95.79 m. The project GCA is 9,500 ha out of which the total ayacut is 7,038 ha and is covered by 24 villages of Tallada, Wyra and Bonakal mandals. In Krishna Basin of Telangana, out of the total area irrigated by medium irrigation projects, Wyra project contributes 12.85%.

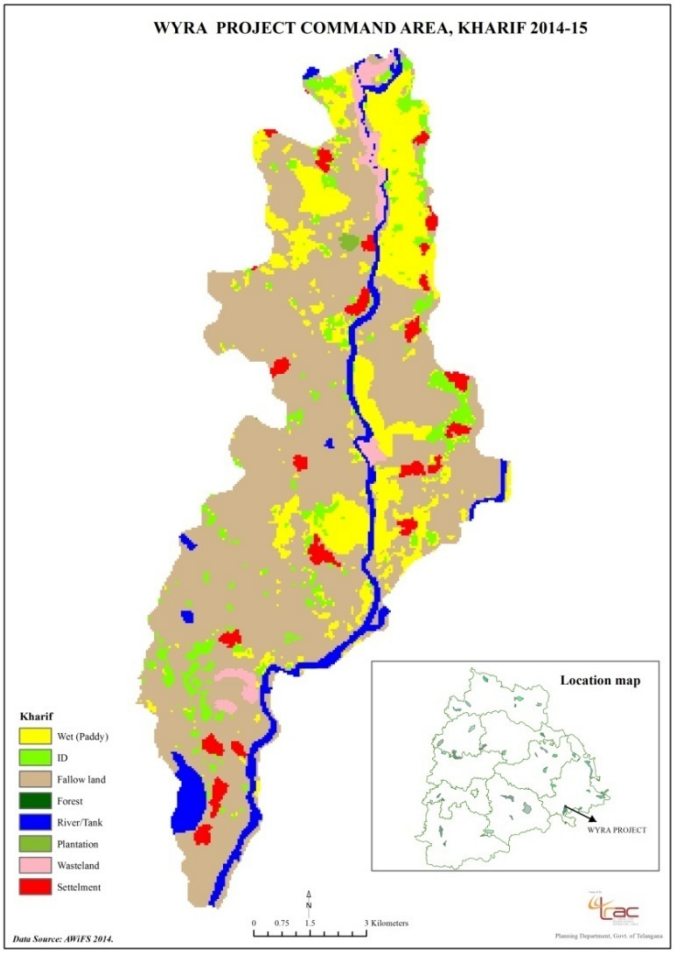



Fig.33 Classification map of Wyra Project

Satellite data analysis in the Wyra project command area for the cropping pattern during Kharif period of 2014-15 is shown in Figure-33.

**Results**

- The irrigated area is found to be 2,456 ha out of the total ayacut of 7,038 ha.
- The equivalent Wet area is estimated as 1,819 ha, ID area is estimated as 638 ha.
- The total crop area is 35% of the total ayacut area and the Wet crop is 74% and ID crop is 26% of the total irrigated area.
- The kharif crop area, for the current year, 2014-15 is 27% when compared with the previous year 2013-14.

### 6.4.4 KOILSAGAR PROJECT

The Koilsagar Project was constructed across Peddavagu River near Koilakonda village of Devarkandra mandal in Nalgonda District. The gross storage capacity of the reservoir is 2115 Mcft at FRL +411.30 m. The project GCA is 22,360 ha out of which the total ayacut is 5,040 ha and is covered by 23 villages of Devarkadra, Koilkonda, Dhanwada and Chinna mandals. In Krishna Basin of Telangana, out of the total area irrigated by medium irrigation projects, Koilsagar project contributes 9.21%.

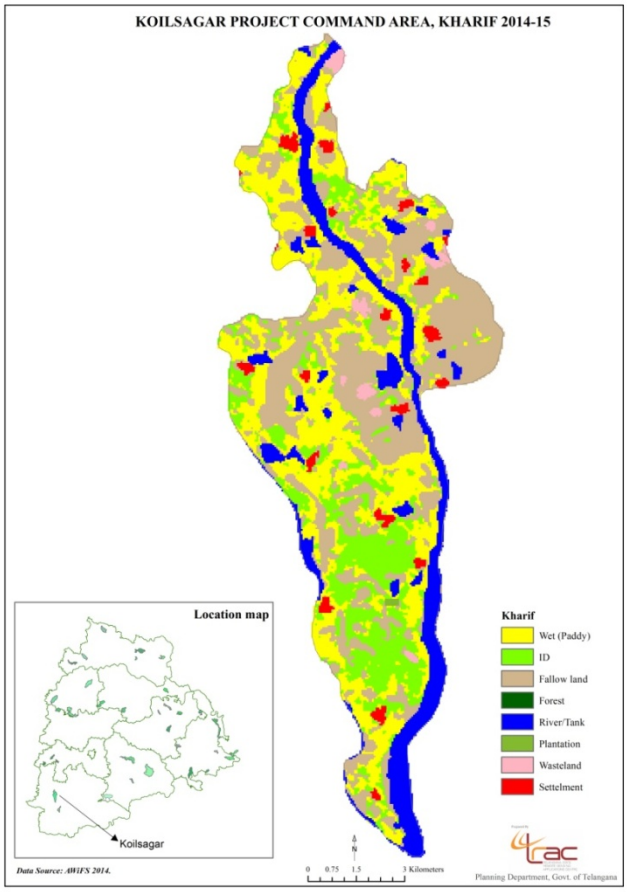



Fig.34 Classification map of Koilsagar Project

Satellite data analysis in the Koilsagar project command area for the cropping pattern during Kharif period of 2014-15 is shown in Figure-34.

**Results**

- The irrigated area is found to be 5,029 ha out of the total ayacut of 5,040 ha.
- The equivalent Wet area is estimated as 3,219 ha, ID area is estimated as 1,810 ha.
- The total crop area is 100% of the total ayacut area and Wet crop is 64% and ID crop is 36% of the total irrigated area.
- The kharif crop area, for the current year, 2014-15 is 70% when compared with the previous year 2013-14.

### 6.4.5 SARLASAGAR PROJECT

The Sarlasagar project was constructed across Chinnavagu, which is a tributary of the Krishna River near Wanaparthy in Mahabubnagar district. The gross storage capacity of the reservoir is 14.12 MCM at FRL +339.90m. The designed ayacut under this project is 1,695 ha and is covered by 10 villages in Atmakur, ChinnaChintaKunta, and Kothakonta mandals. In Krishna Basin of Telangana, out of the total area irrigated by medium irrigation projects, Sarlasagar project contributes 3.10%.

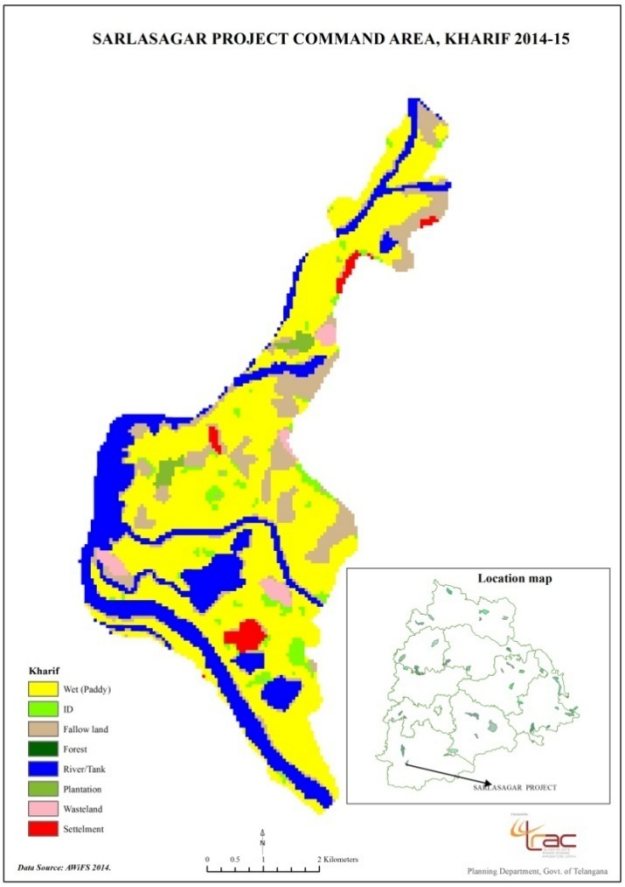



Fig.35 Classification map of Sarlasagar Project

Satellite data analysis in the Sarlasagar project command area for the cropping pattern during Kharif period of 2014-15 is shown in Figure-35.

**Results**

- The irrigated area is found to be 1,686 ha out of the total ayacut of 1,695 ha.
- The equivalent Wet area is estimated as 1,593 ha, ID area is estimated as 93 ha.
- The total crop area is 99% of the total ayacut area and Wet crop is 94% and ID crop is 6% of the total irrigated area.
- The kharif crop area, for the current year, 2014-15 is 85% when compared with the previous year 2013-14.

### 6.4.6 ASIFNAHAR PROJECT

The Asifnahar project was constructed across Musi River near Nemilikalwa village of Vologonda mandal in Nalgonda District. The project GCA is 13,390 ha out of which the total ayacut is 6,172 ha and is covered by 23 villages of voligonda, Ramannapet, Narketpally, Kattangur and Nalgonda. In Krishna Basin of Telangana, out of the total area irrigated by medium irrigation projects, Asifnahar project contributes 11.27%.

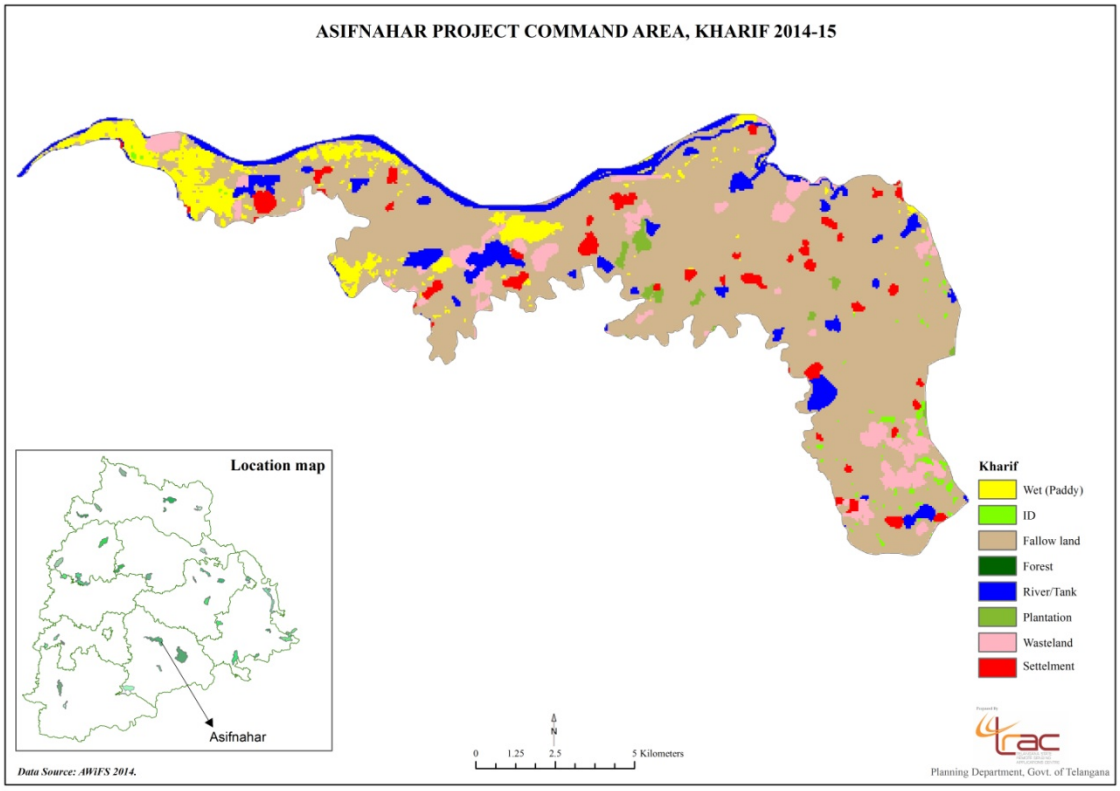



Fig.36 Classification map of Asifnahar project

Satellite data analysis in the Asifnahar project command area for the cropping pattern during Kharif period of 2014-15 is shown in Figure-36.

**Results**

- The irrigated area is found to be 1,014 ha out of the total ayacut of 6,172 ha.
- The equivalent Wet area is estimated as 920 ha, ID area is estimated as 94 ha.
- The total crop area is 16% of the total ayacut area and Wet crop is 91% and ID crop is 9% of the total irrigated area.
- The kharif crop area, for the current year, 2014-15 is 9% when compared with the previous year 2013-14.

### 6.4.7 DINDI PROJECT

The Dindi Project was constructed across Dindi River near Gundlapally in Nalgonda District. The gross storage capacity of the reservoir is 2066 Mcft at FRL +396.545m. The project GCA is 12,720 ha out of which the total ayacut is 5,196 ha and is covered by 22 villages of Dindi and Achampet mandals. In Krishna Basin of Telangana, out of the total area irrigated by medium irrigation projects, Dindi project contributes 9.49%.

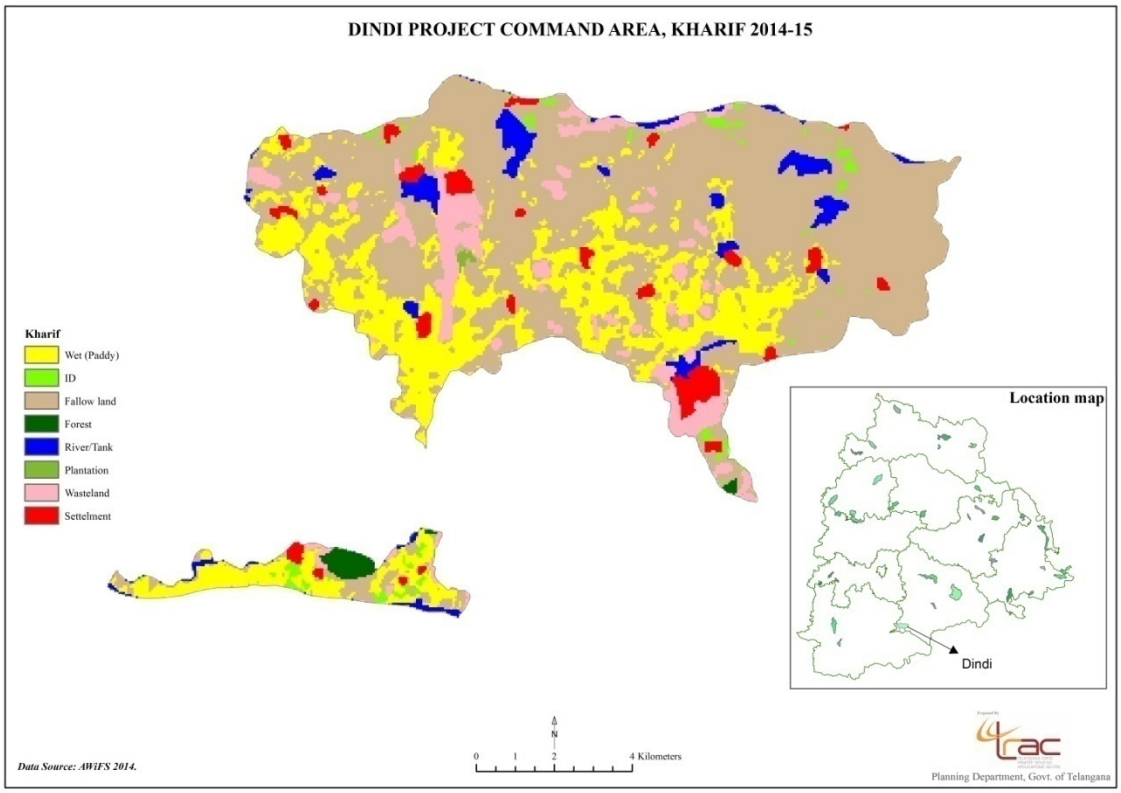



Fig.37 Classification map of Dindi Project

Satellite data analysis in the Dindi project command area for the cropping pattern during Kharif period of 2014-15 is shown in Figure-37.

**Results**

- The irrigated area is found to be 2,945 ha out of the total ayacut of 5,196 ha.
- The equivalent Wet area is estimated as 2,779 ha, ID area is estimated as 166 ha.
- The total crop area is 57% of the total ayacut area and Wet crop is 94% and ID crop is 6% of the total irrigated area.
- The kharif crop area, for the current year, 2014-15 is 31% when compared with the previous year 2013-14.

### 6.4.8 MUSI PROJECT

The Musi Project was constructed across Musi River near Solipet village of Suryapet mandal in Nalgonda District. The gross storage capacity of the reservoir is 4602 Mcft at FRL +196.60. The project GCA is 26,680 ha out of which the total ayacut is 12,216 ha and is covered by 42 villages of Suryapet, Kethepally, Penpahad, Vemulapally, Chivemula and Thipparthy mandals. In Krishna Basin of Telangana, out of the total area irrigated by medium irrigation projects, Musi project contributes 22.31%.

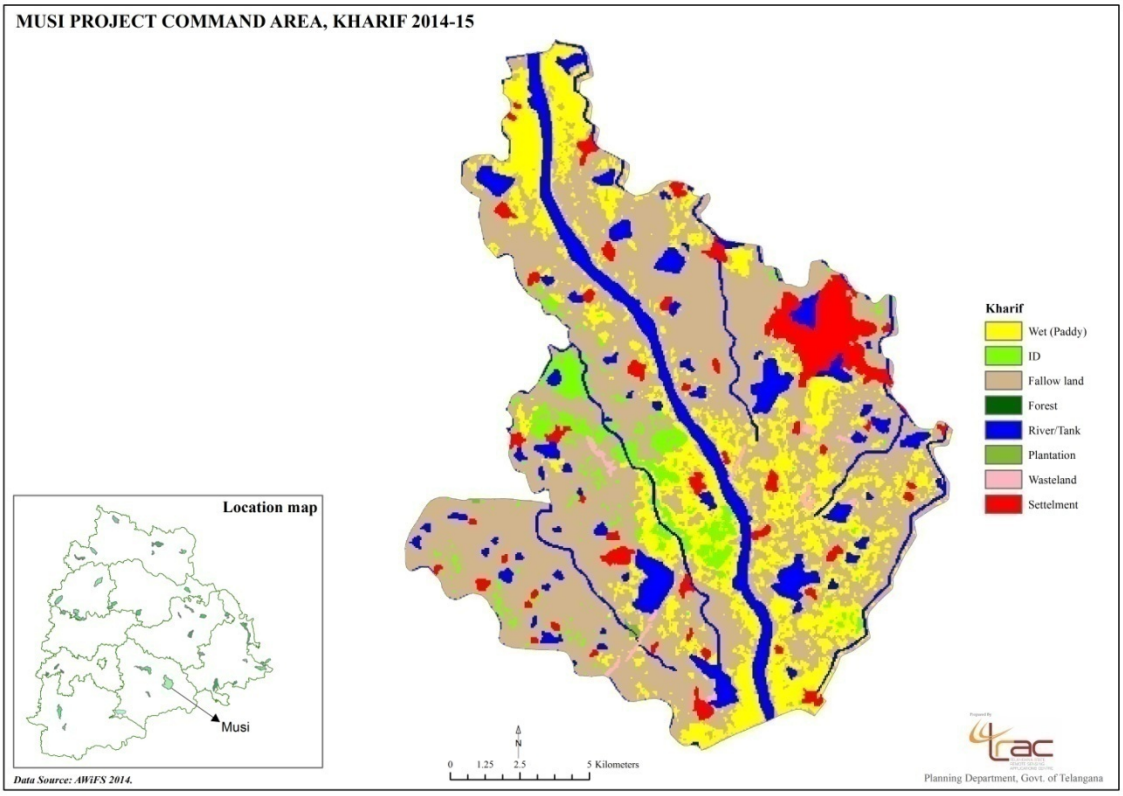



Fig.38 Classification map of Musi Project

Satellite data analysis in the Musi project command area for the cropping pattern during Kharif period of 2014-15 is shown in Figure-38.

**Results**

- The irrigated area is found to be 6,633 ha out of the total ayacut of 12,216 ha.
- The equivalent Wet area is estimated as 5,424 ha, ID area is estimated as 1,209 ha.
- The total crop area is 54% of the total ayacut area and Wet crop is 82% and ID crop is 18% of the total irrigated area.
- The kharif crop area, for the current year, 2014-15 is 31% when compared with the previous year 2013-14.

### 6.4.9 UTKURUMAREPALLY PROJECT

The Utkurumarepally Project was constructed across Halia River near Kangal village in Nalgonda District. The gross storage capacity of the reservoir is 173 Mcft at FRL +186.99 m. The designed ayacut under this project is 592 ha and is covered by 8 villages of Kangal, Nidemanoor and Anumula mandals. In Krishna Basin of Telangana, out of the total area irrigated by medium irrigation projects, Utkurumarepally project contributes 1.08%.

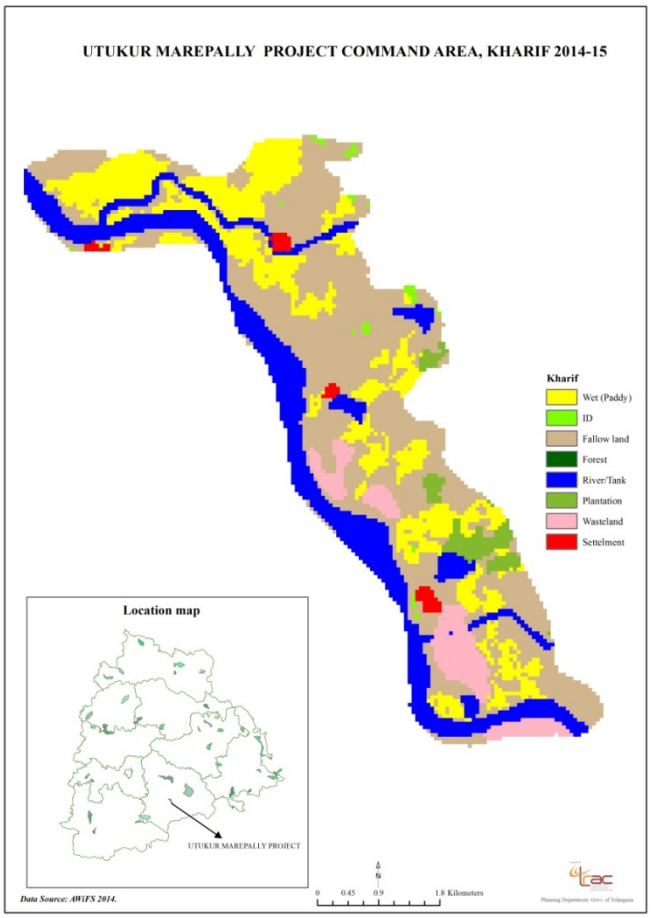



Fig.39 Classification map of Utkurumarepally Project

Satellite data analysis in the Utkurumarepally project command area for the cropping pattern during Kharif period of 2014-15 is shown in Figure-39.

**Results**

- The irrigated area is found to be 581 ha out of the total ayacut of 592 ha.
- The equivalent Wet area is estimated as 567 ha, ID area is estimated as 14 ha.
- The total crop area is 98% of the total ayacut area and Wet crop is 98% and ID crop is 2% of the total irrigated area.
- The kharif crop area, for the current year, 2014-15 is 34% when compared with the previous year 2013-14.

### 6.4.10 JUTPALLY VAGU PROJECT

The Jutpally Vagu Project was constructed across Jutpally Vagu River near Jutpally village of Yalal mandal in Rangareddy District. The gross storage capacity of the reservoir is 280.48 Mcft at FRL +472.44 m. The project GCA is 2,580 ha out of which the total ayacut is 843 ha and is covered by 6 villages of Yalal and Basheerbad mandals. In Krishna Basin of Telangana, out of the total area irrigated by medium irrigation projects, Jutpally Vagu project contributes 1.54%.

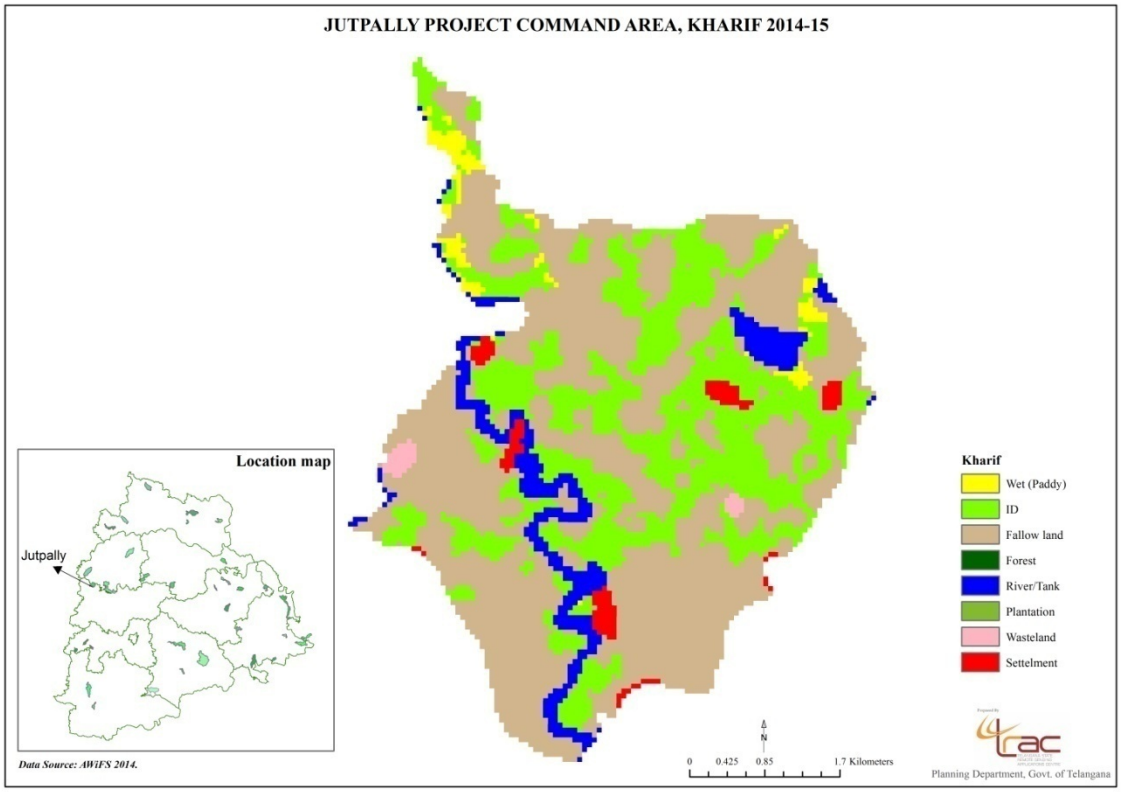



Fig.40 Classification map of Jutpally Vagu Project

Satellite data analysis in the Jutpally Vagu project command area for the cropping pattern during Kharif period of 2014-15 is shown in Figure-40.

**Results**

- The irrigated area is found to be 841 ha out of the total ayacut of 843 ha.
- The equivalent Wet area is estimated as 54 ha, ID area is estimated as 787 ha.
- The total crop area is 100% of the total ayacut area and Wet crop is 6% and ID crop is 94% of the total irrigated area.
- The kharif crop area, for the current year, 2014-15 is 39% when compared with the previous year 2013-14.

### 6.4.11 KOTIPALLY VAGU PROJECT

The Kotipallyvagu Project was constructed across Kotipallyvagu River near Kotopally village of Peddamul mandal in Rangareddy District. The gross storage capacity of the reservoir is 1301.33 Mcft at FRL +514.805 m. The project GCA is 12,190 ha out of which the total ayacut is 3,723 ha and is covered by 16 villages of Peddamul and Dharur mandals. In Krishna Basin of Telangana, out of the total area irrigated by medium irrigation projects, Kotipallyvagu project contributes 6.8%.

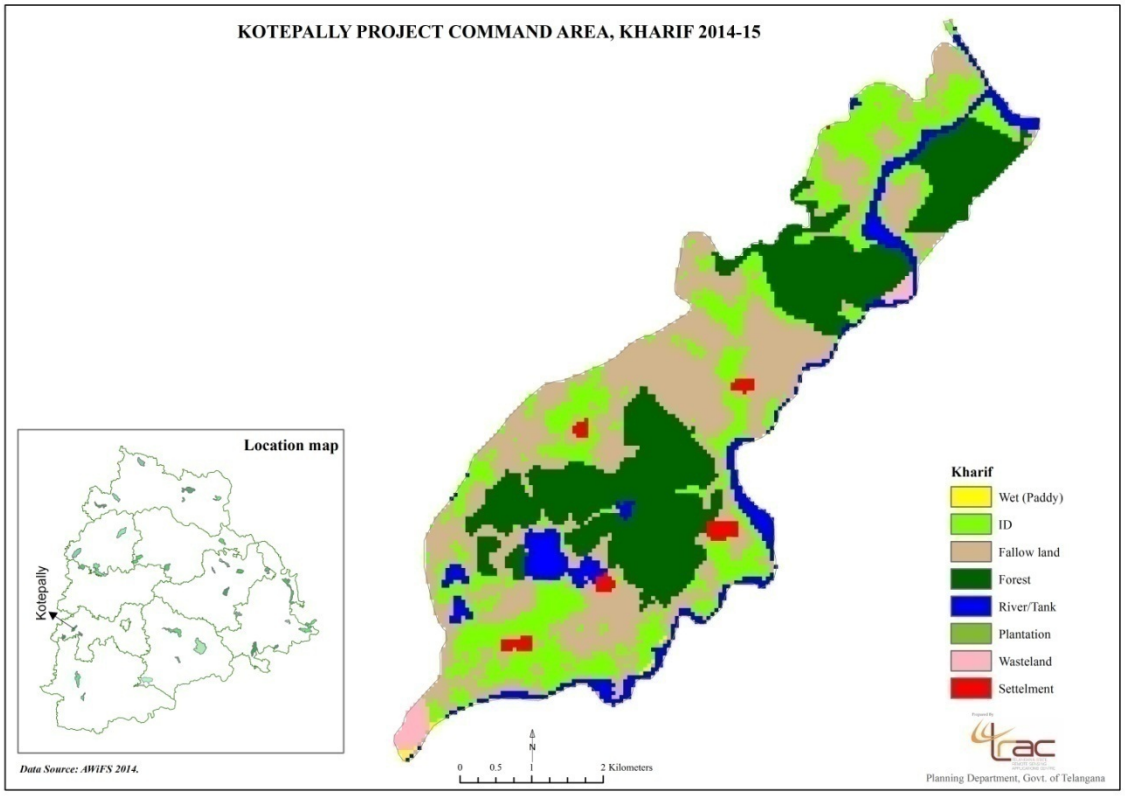



Fig.41 Classification map of Kotipallyvagu Project

Satellite data analysis in the Kotipallyvagu project command area for the cropping pattern during Kharif period of 2014-15 is shown in Figure-41.

**Results**

- The irrigated area is found to be 722 ha out of the total ayacut of 3,723 ha.
- The equivalent Wet area is estimated as 6 ha, ID area is estimated as 716 ha.
- The total crop area is 19% of the total ayacut area and Wet crop is 1% and ID crop is 99% of the total irrigated area.
- The kharif crop area, for the current year, 2014-15 is 40% when compared with the previous year 2013-14.

### 6.4.12 LAKHANAPUR PROJECT

The Lakhanapur Project was constructed across Pargi Nala River near Lakhanapur village of Pargi mandal in Rangareddy District. The gross storage capacity of the reservoir is 280.47 Mcft at FRL +550.47 m. The project GCA is 1,460 ha out of which the total ayacut is 1,071 ha and is covered by 8 villages of Pargi and Dharur mandals. In Krishna Basin of Telangana, out of the total area irrigated by medium irrigation projects, Lakhanapur project contributes 1.96%.

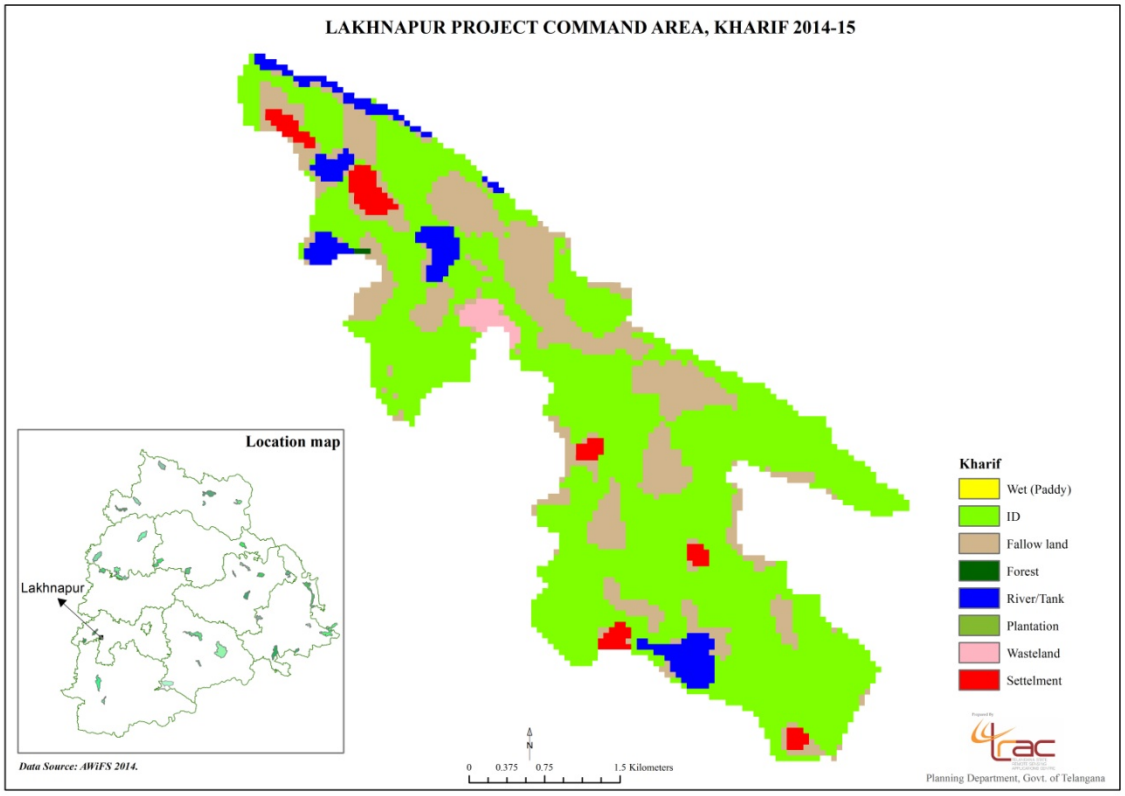



Fig.42 Classification map of Lakhanapur Project

Satellite data analysis in the Lakhanapur project command area for the cropping pattern during Kharif period of 2014-15 is shown in Figure-42.

**Results**

- The irrigated area is found to be 1,047 ha out of the total ayacut of 1,071 ha.
- The equivalent ID area is estimated as 1,047 ha.
- The total crop area is 98% of the total ayacut area and ID crop is 100% of the total irrigated area.
- The kharif crop area, for the current year, 2014-15 is 80% when compared with the previous year 2013-14.

### 6.4.13 PAKHAL LAKE PROJECT

The Pakhal lake Project was constructed across Muneru River, which is a tributary of Godavari River near Ashoknagar village of Khanapur Mandal in Warangal District. The gross storage capacity of the reservoir is 3,386 Mcft at FRL +252.92 m. The designed ayacut under this project is 7,362 ha and is covered by 12 villages in 1 mandal which is Khanapur. In Krishna Basin of Telangana, out of the total area irrigated by medium irrigation projects, Pakhal lake project contributes 9.63%.

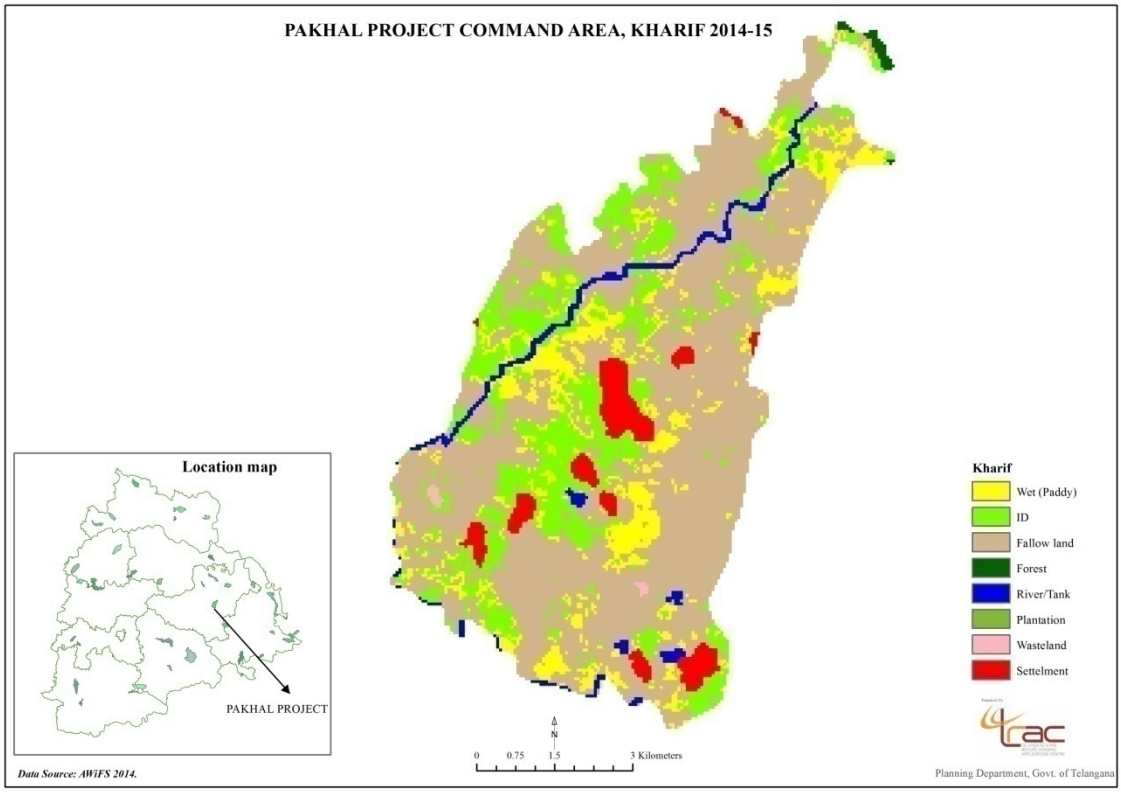



Fig.43 Classification map of Pakhal Lake

Satellite data analysis in the Pakhal lake project command area for the cropping pattern during Kharif period of 2014-15 is shown in Figure-43.

**Results**

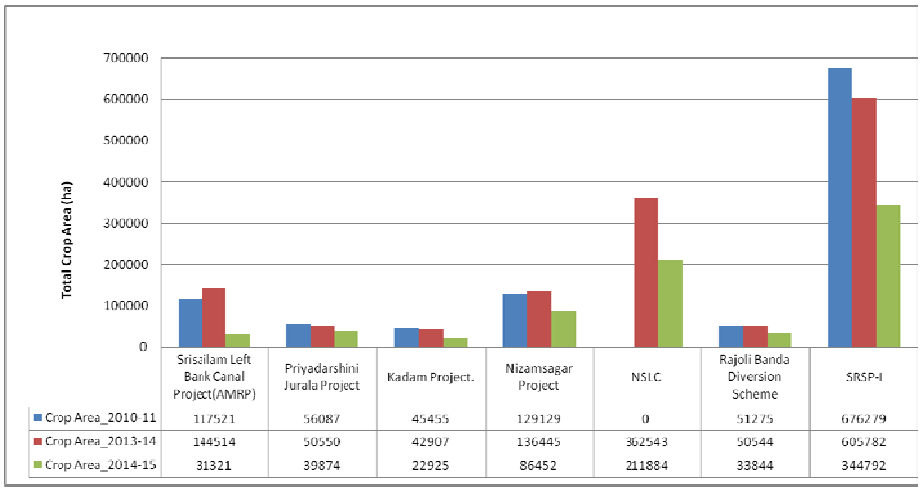
- The irrigated area is found to be 2,022 ha out of the total ayacut of 5,272 ha.
- The equivalent Wet area is estimated as 766 ha, ID area is estimated as 1,256 ha.
- The total crop area is 38% of the total ayacut area and Wet crop is 38% and ID crop is 62% of the total irrigated area.
- The kharif crop area, for the current year, 2014-15 is 36% when compared with the previous year 2013-14.

## 7. Comparitive analysis of Major and Medium Irrigation Projects

### 7.1 Comparitive analysis of Major Irrigation Projects

A comparative analysis of the Satellite Remote Sensing based command area monitoring of Major and Medium Irrigation projects in Kharif season for the years 2010-11, 2013-14 and 2014-15 is prepared (Graph.1)

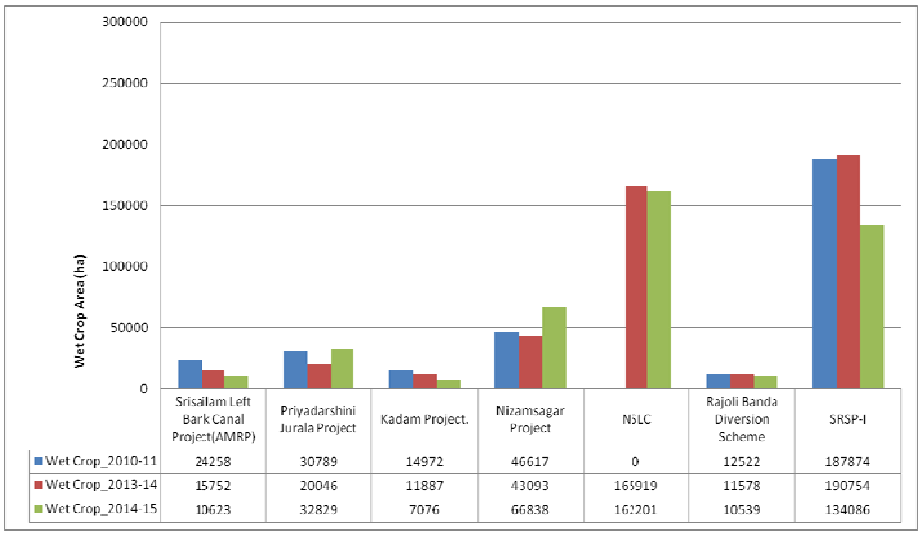
- In the current year, 2014-15 Kharif crop area is very low when compared with previous years of 2010-11 and 2013-14. The reason for the low crop production in the current year is due to deficient rainfall and there by low reservoir water levels.




| | Srisailam Left Bank Canal Project(AMRP) | Priyadarshini Jurala Project | Kadam Project. | Nizamsagar Project | NSLC | Rajoli Banda Diversion Scheme | SRSP-I |
|---|---|---|---|---|---|---|---|
| Crop Area_2010-11 | 117521 | 56087 | 45455 | 129129 | 0 | 51275 | 676279 |
| Crop Area_2013-14 | 144514 | 50550 | 42907 | 136445 | 362543 | 50544 | 605782 |
| Crop Area_2014-15 | 31321 | 39874 | 22925 | 86452 | 211884 | 33844 | 344792 |

Graph.1 Year wise Comparitive analysis of Kharif Crop in Major projects

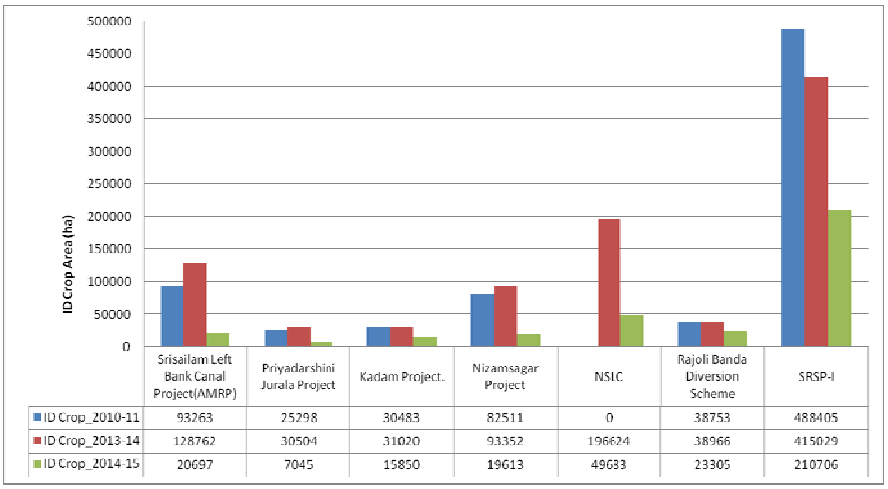
- Comparative analysis of Wet crop, in Kharif season of 2010-11, 2013-14 and 2014-15 has shown that except for Nizam Sagar project the wet crop area is less than the previous years, for all the major irrigation projects (Graph.2).




| | Srisailam Left Bank Canal Project(AMRP) | Priyadarshini Jurala Project | Kadam Project. | Nizamsagar Project | NSLC | Rajoli Banda Diversion Scheme | SRSP-I |
|---|---|---|---|---|---|---|---|
| Wet Crop_2010-11 | 24258 | 30789 | 14972 | 46617 | 0 | 12522 | 187874 |
| Wet Crop_2013-14 | 15752 | 20046 | 11887 | 43093 | 165919 | 11578 | 190754 |
| Wet Crop_2014-15 | 10623 | 32829 | 7076 | 66838 | 162201 | 10539 | 134086 |

Graph.2 Year wise Comparitive analysis of Kharif Wet Crop in Major projects

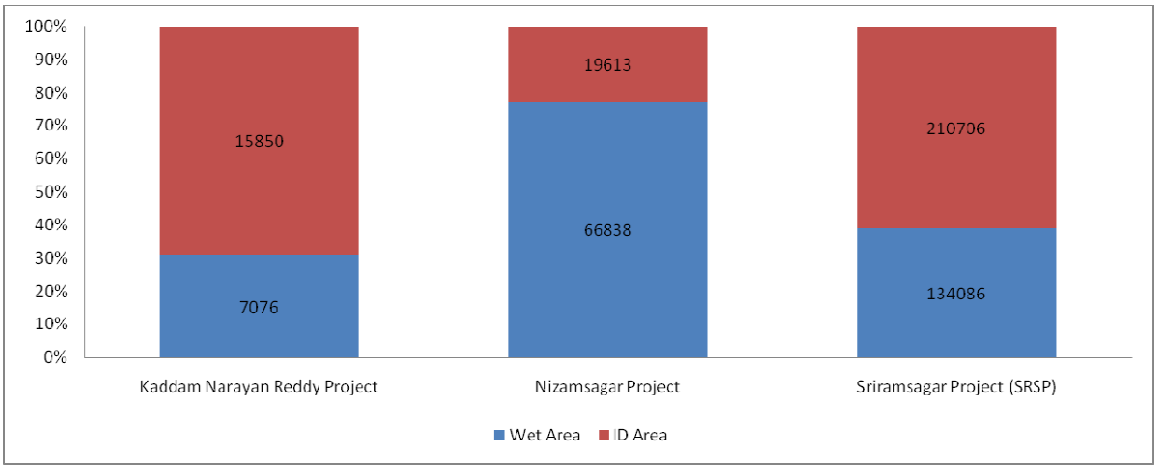
- Comparative analysis of ID crop, in Kharif season of 2010-11, 2013-14 and 2014-15 has shown that the ID crop area is less than the previous years, for all the major irrigation projects (Graph.3).




Graph.3 Year wise Comparitive analysis of Kharif ID Crop in Major projects

**Godavari Basin**

- Comparative analysis of current year, 2014-15, kharif crop area, wet crop and ID crop areas assessed for Major Irrigation Projects of Godavari Basin (Graph.4).




Graph.4 Comparision of Kharif Wet & ID Crop of Major projects in Godavari Basin

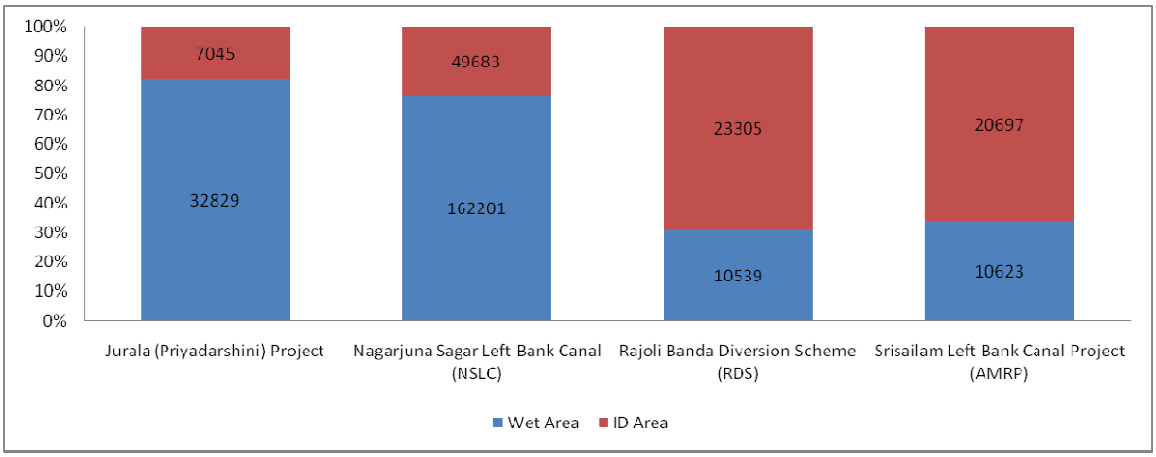
**Kaddam Narayan Reddy Project** – Comparative analysis of total kharif crop area, Wet crop and ID crop over last few years shows that the total kharif crop has reduced, the reduction is in both Wet and ID crop area. The total crop area is 83% of the total ayacut area and the wet crop is 31% and ID crop is 69% of the total irrigated area.

**Nizamsagar Project** – Comparative analysis of total kharif crop area, Wet crop and ID crop over last few years shows that the total kharif crop has reduced mainly because of major reduction in ID crop area rather than the Wet crop area. The total crop area is 92% of the total ayacut area and the wet crop is 77% and ID crop is 23% of the total irrigated area.

**Sriramsagar Project (SRSP-I)** – Comparative analysis of total kharif crop area, Wet crop and ID crop over last few years shows that the total kharif crop has reduced mainly because of major reduction in ID crop area rather than the Wet crop area. The total crop area is 89% of the total ayacut area and the wet crop is 39% and ID crop is 61% of the total irrigated area.

**Krishna Basin**

- Comparative analysis of current year, 2014-15 Kharif crop area, Wet crop and ID crop areas assessed for Major Irrigation Projects of Krishna Basin (Graph.5).




Graph.5 Comparision of Kharif Wet & ID Crop of Major projects in Krishna Basin

**Jurala (Priyadarshini) Project**– Comparative analysis of total kharif crop area, wet crop and ID crop over last few years shows that the total kharif crop has reduced mainly because of major reduction in ID crop area rather than the Wet crop area. The total crop area is 94% of the total ayacut area and the Wet crop is 82% and ID crop is 18% of the total irrigated area.

**Nagarjuna Sagar Left Bank Canal (NSLC)** – Comparative analysis of total kharif crop area, Wet crop and ID crop over last few years shows that the total kharif crop has reduced mainly because of major reduction in ID crop area rather than the Wet crop area. The total crop area is 80% of the total ayacut area and the Wet crop is 77% and ID crop is 23% of the total irrigated area.

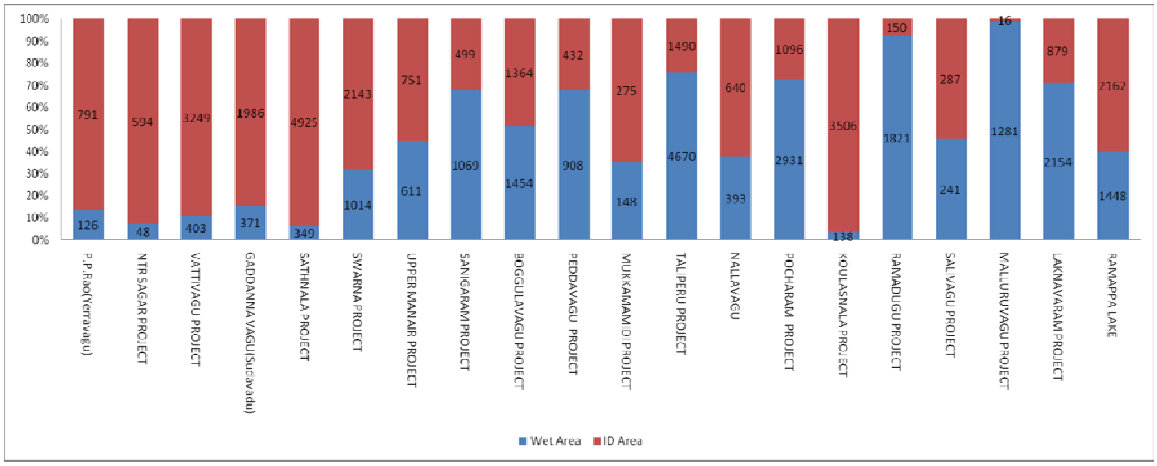
**Rajoli Banda Diversion Scheme (RDS)** – Comparative analysis of total kharif crop area, Wet crop and ID crop over last few years shows that the total kharif crop has reduced mainly because of major reduction in ID crop area rather than the Wet crop area. The total crop area is 96% of the total ayacut area and the Wet crop is 31% and ID crop is 69% of the total irrigated area.

**Srisailam Left Bank Canal (AMRP)** – Comparative analysis of total kharif crop area, wet crop and ID crop over last few years shows that the total kharif crop has reduced mainly because of major reduction in ID crop area rather than the Wet crop area. The total crop area is 34% of the total ayacut area and the Wet crop is 34% and ID crop is 66% of the total irrigated area.

### 7.2 Comparitive analysis of Medium Irrigation Projects

**Godavari Basin**

- Comparative analysis of current year, 2014-15 Kharif crop area, wet crop and ID crop areas assessed for Medium Irrigation Projects of Godavari Basin (Graph.6).

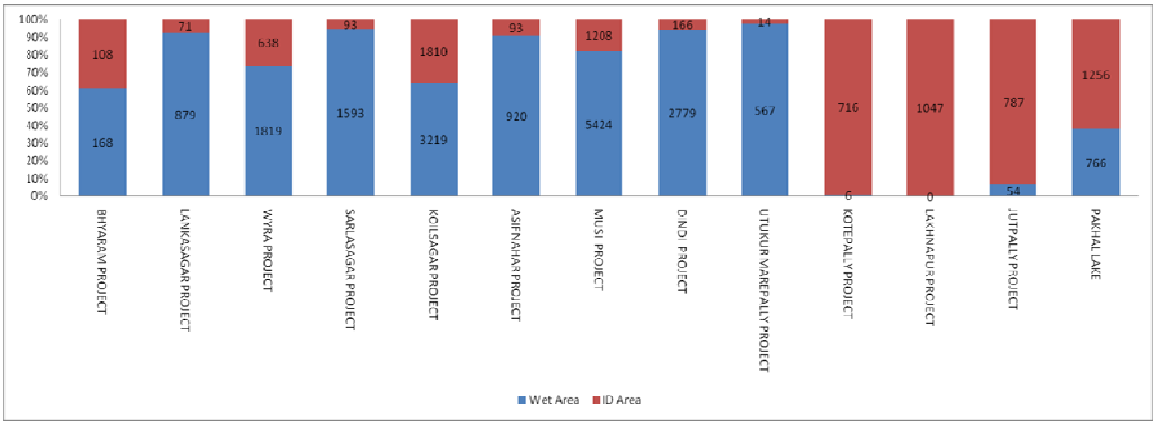



Graph.6 Comparision of Kharif Wet & ID Crop of Medium projects in Godavari Basin

- Out of 20 Medium Irrigation projects about 8 projects, P.P.Rao, NTR Sagar, Vatti vagu, Gaddannavagu, Sathnala, Swarna, Mukkamamidi, Koulasnala, Nallavagu projects has very less wet crop area when compared to ID Crop area.
- The Medium Irrigation projects, Upper Manair, Salivagu, Boggulavagu, Ramappa lake projects have almost equal Wet crop area and ID Crop area.
- The Medium Irrigation projects, Sanigaram, Peddavagu Taliperu Pocharam, Ramadugu, Malluruvagu, Laknavaram projects has very less ID crop area when compared to Wet Crop area.

**Krishna Basin**

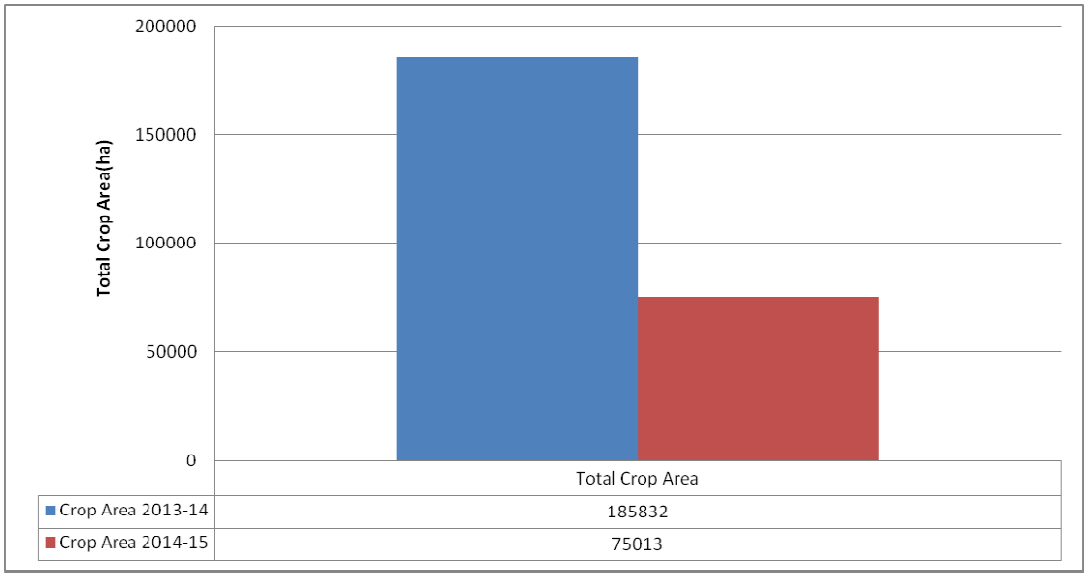
- Comparative analysis of current year, 2014-15 Kharif crop area, wet crop and ID crop areas assessed for Medium Irrigation Projects of Krishna Basin (Graph.7).




Graph.7 Comparision of Kharif Wet & ID Crop of Medium projects in Krishna Basin

- Out of 13 Medium Irrigation projects about 4 projects, Lakhnapur, Jutpally, Kotepally, Pakhal projects has very less wet crop area when compared to ID Crop area.
- The Medium Irrigation projects, Bhyaram, Lankasagar, Wyra, Sarlasagar, Koilsagar, Asifnahar, Musi, Dindi, Utukur Marepally projects has very less ID crop area when compared to Wet Crop area.

Total Kharif crop area of all Medium projects in Telangana State for the years of 2013-14 and 2014-15 is compared (Graph.8). It is observed that the total Kharif crop area of 2014-15 is 60% less than the area observed in 2013-14.




Graph.8 Year wise Comparitive analysis of Kharif Crop in all Medium Projects