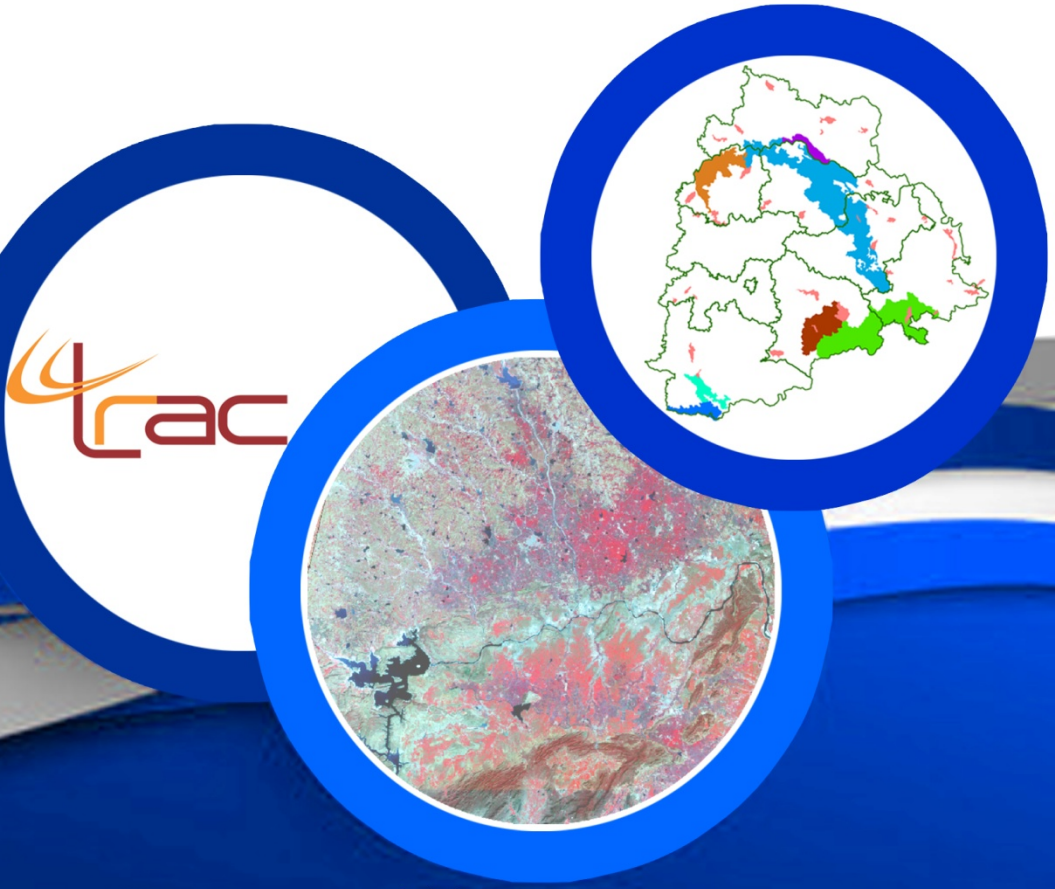
SATELLITE REMOTE SENSING BASED COMMAND AREA MONITORING OF MAJOR AND MEDIUM IRRIGATION PROJECTS

Rabi 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 Rabi 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 22% of the total ayacut area and the wet crop is 48% and ID crop is 52% of the total irrigated area.
- Nizamsagar project - The total crop area is 75% of the total ayacut area and the wet crop is 41% and ID crop is 59% of the total irrigated area.
- SRSP-I - The total crop area is 42% of the total ayacut area and the wet crop is 40% and ID crop is 60% of the total irrigated area.
- 20 Medium projects – Sanigaram, Nallavagu, Pocharam, Ramadugu projects total crop area is above 50% of the ayacut area and the remaining 16 projects total crop area is below 50% of the ayacut area.

Krishna Basin:

- Jurala project - The total crop area is 44% of the total ayacut area and the wet crop is 30% and ID crop is 70% of the total irrigated area.
- NSLC project - The total crop area is 59% of the total ayacut area and the wet crop is 74% and ID crop is 26% of the total irrigated area.
- Rajoli Banda Diversion Scheme (RDS) project - The total crop area is 54% of the total ayacut area and the wet crop is 27% and ID crop is 73% of the total irrigated area.

- SLBC (AMRP) project - The total crop area is 29% of the total ayacut area and the Wet crop is 82% and ID crop is 18% of the total irrigated area.
- 13 Medium projects – Wyra, Koilsagar, Utukur Marepally 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.

Comparision of Current year Crop Area with Ayacut Area:

- Total Rabi crop area is 49% of the total ayacut area for all the Major Irrigation projects in Telangana State for current year, 2014-15.
- Total Rabi crop area is 31% of the total ayacut area for all the Medium Irrigation projects in Telangana State for current year, 2014-15.
- Total Rabi crop area is 46% of the total ayacut area for all Major and Medium Irrigation projects in Telangana State for current year, 2014-15.

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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 Rabi 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.

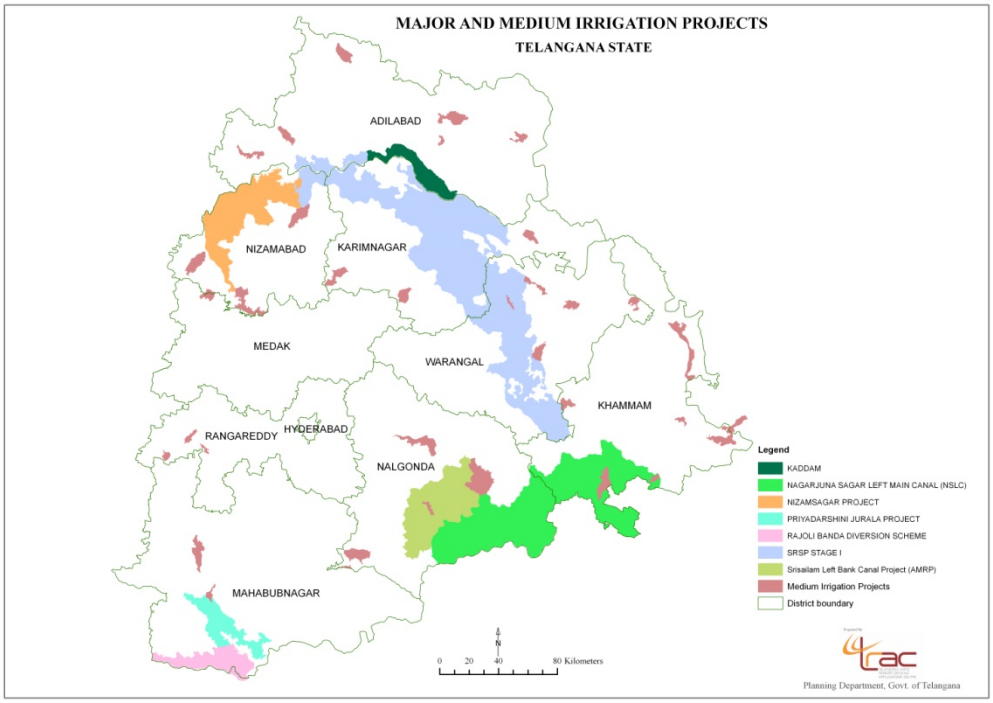


Fig. 1 Command Boundaries of Major and Medium Irrigation Projects

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	Landsat - 8, OLI_TIRS data of 14 th February 2015
	Landsat - 8, OLI_TIRS data of 16 th February 2015
	Landsat - 8, OLI_TIRS data of 23 rd February 2015

5. 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. Landsat - 8, OLI_TIRS data of 14th, 16th February and 23th February 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.

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%.

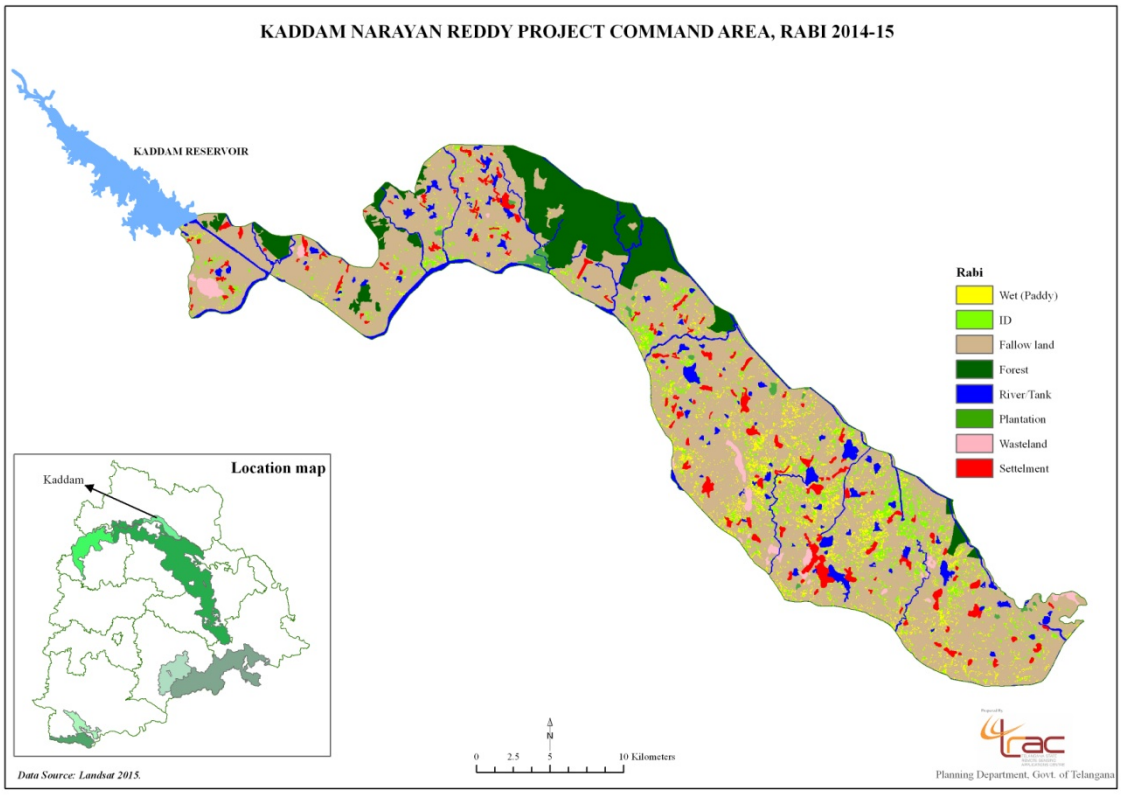


Fig. 4 Classification of Kaddam Project

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

Results

- The irrigated area is found to be 6,113 ha out of the total ayacut of 27,530 ha.
- The equivalent Wet area is estimated as 2,943 ha and ID area is estimated as 3,170 ha.
- The total crop area is 22% of the total ayacut area out of which the wet crop is 48% and ID crop is 52% of the total irrigated area.
- The Rabi crop area, for the current year, 2014-15 is 71% 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%.

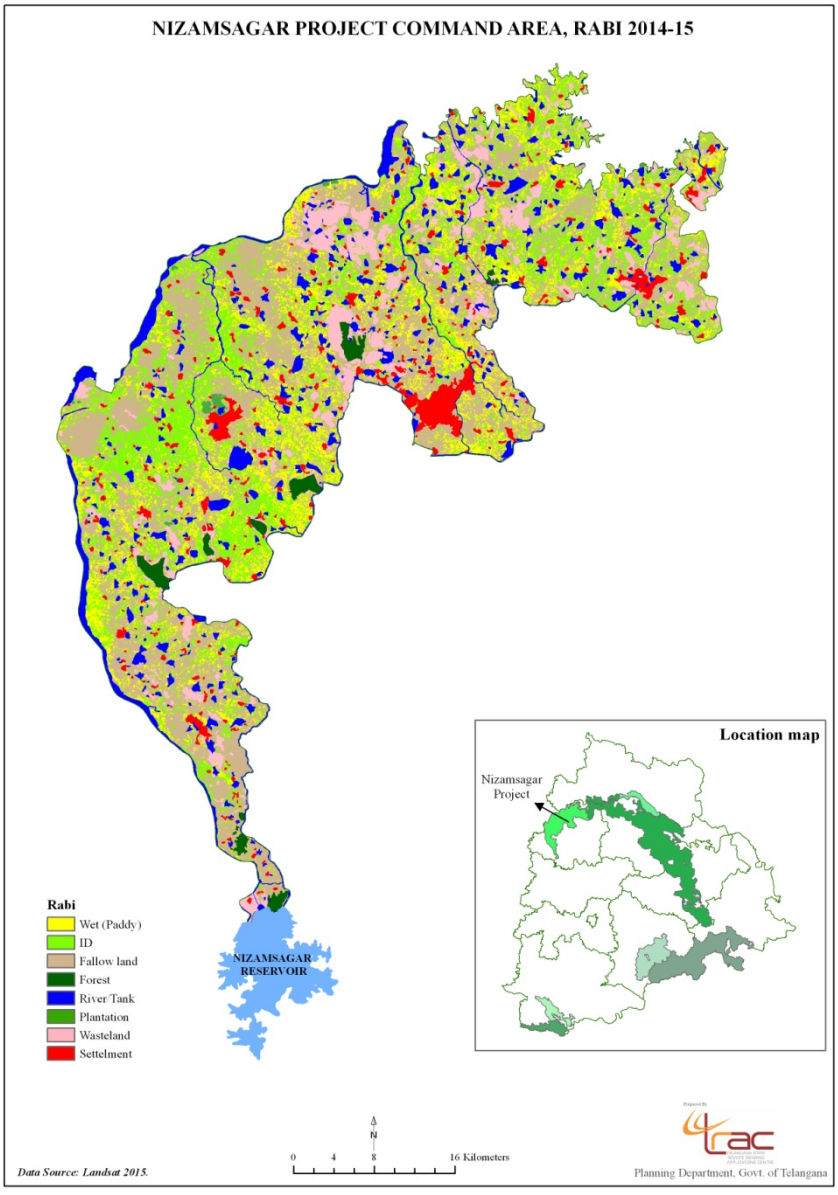


Fig.5 Classification of Nizamsagar Project

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

Results

- The irrigated area is found to be 70,075 ha out of the total ayacut of 93,660 ha.
- The equivalent Wet area is estimated as 28,563 ha and ID area is estimated as 41,152 ha.
- The total crop area is 75% of the total ayacut area and the Wet crop is 41% and ID crop is 59% of the total irrigated area.
- The Rabi crop area, for the current year, 2014-15 is 88% 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 Rabi. 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 Rabi 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 Rabi period of 2014-15 is shown in Figure-6.

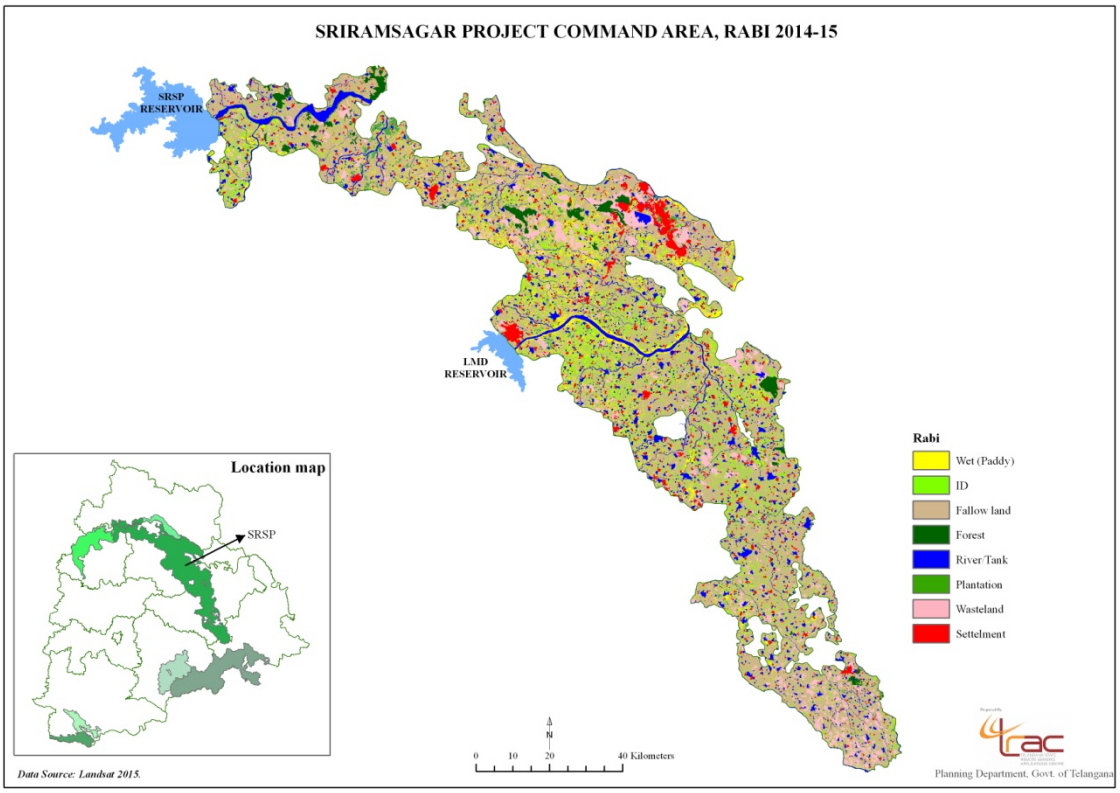


Fig.6 Classification of SRSP

Results

- The irrigated area is found to be 1,62,819 ha out of the total ayacut of 3,87,266 ha.
- The equivalent Wet area is estimated as 64,619 ha, ID area is estimated as 98,170 ha.
- The total crop area is 42% of the total ayacut area and the wet crop is 40% and ID crop is 60% of the total irrigated area.
- The Rabi crop area, for the current year, 2014-15 is 50% 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%.

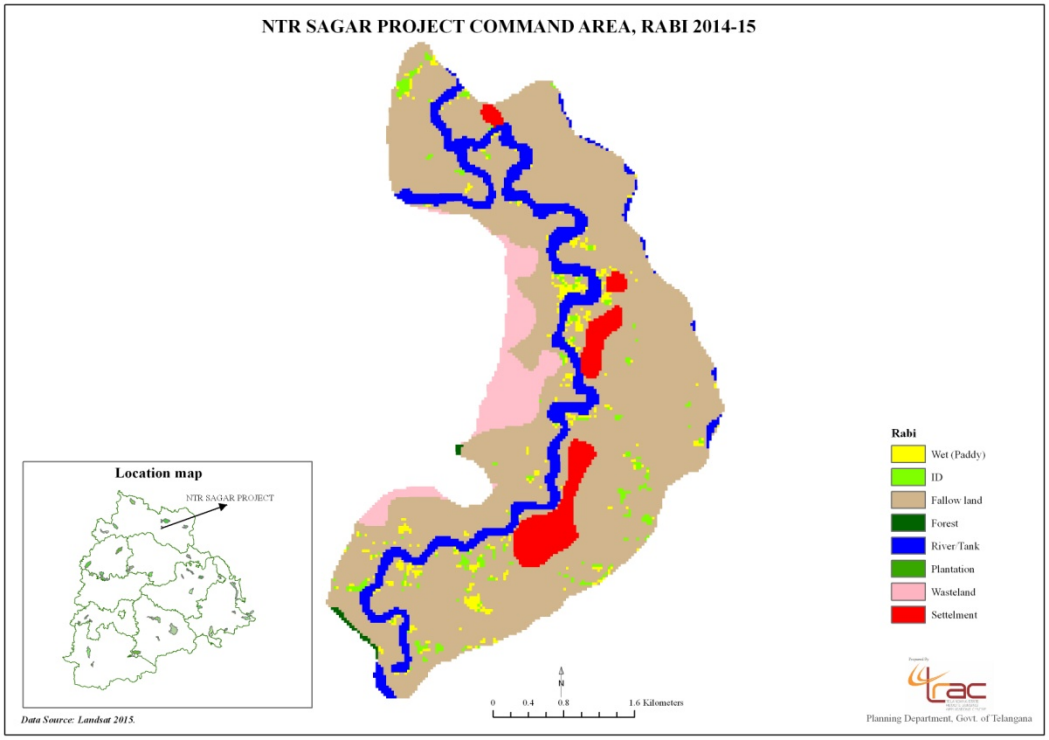


Fig.7 Classification map of NTR Sagar Project

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

Results

- The irrigated area is found to be 74 ha out of the total ayacut of 2,429 ha.
- The equivalent Wet area is estimated as 43 ha, ID area is estimated as 31 ha.
- The total crop area is 3% of the total ayacut area and the wet crop is 58% and ID crop is 42% of the total irrigated area.

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%.

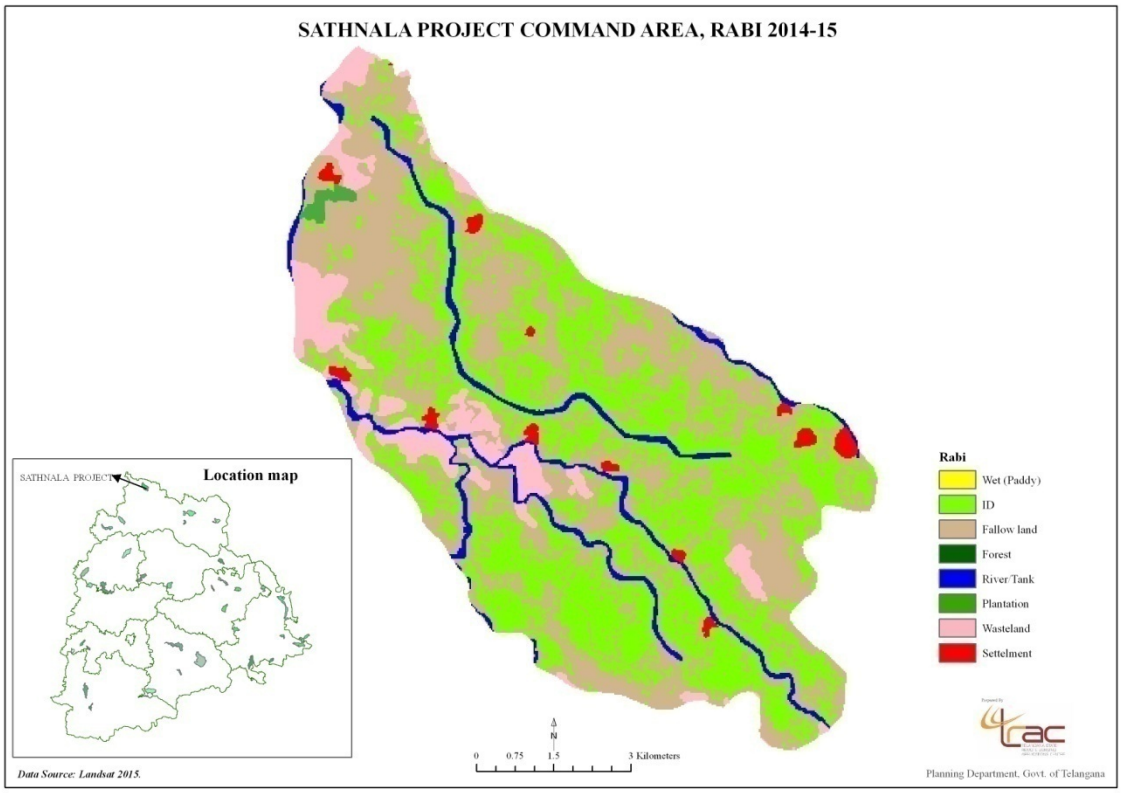


Fig.8 Classification map of Sathnala Project

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

Results

- The irrigated area is found to be 3,204 ha out of the total ayacut of 9,717 ha.
- The equivalent ID area is estimated as 3,204 ha.
- The total crop area is 33% of the total ayacut area and the ID crop is 100% of the total irrigated area.
- The Rabi crop area, for the current year, 2014-15 is above 100% 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%.

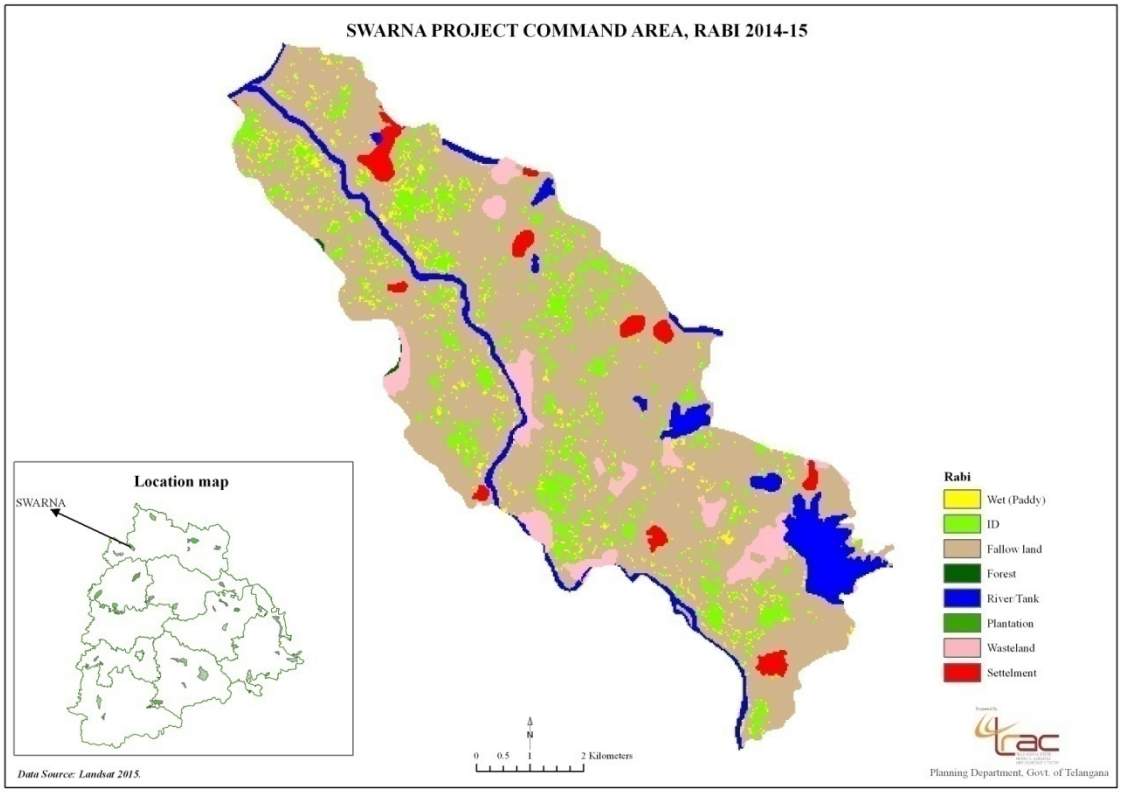


Fig.9 Classification map of Swarna Project

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

Results

- The irrigated area is found to be 862 ha out of the total ayacut of 3,621 ha.
- The equivalent Wet area is estimated as 206 ha, ID area is estimated as 656 ha.
- The total crop area is 24% of the total ayacut area and the wet crop is 24% and ID crop is 76% of the total irrigated area.
- The Rabi crop area, for the current year, 2014-15 is 63% 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%.

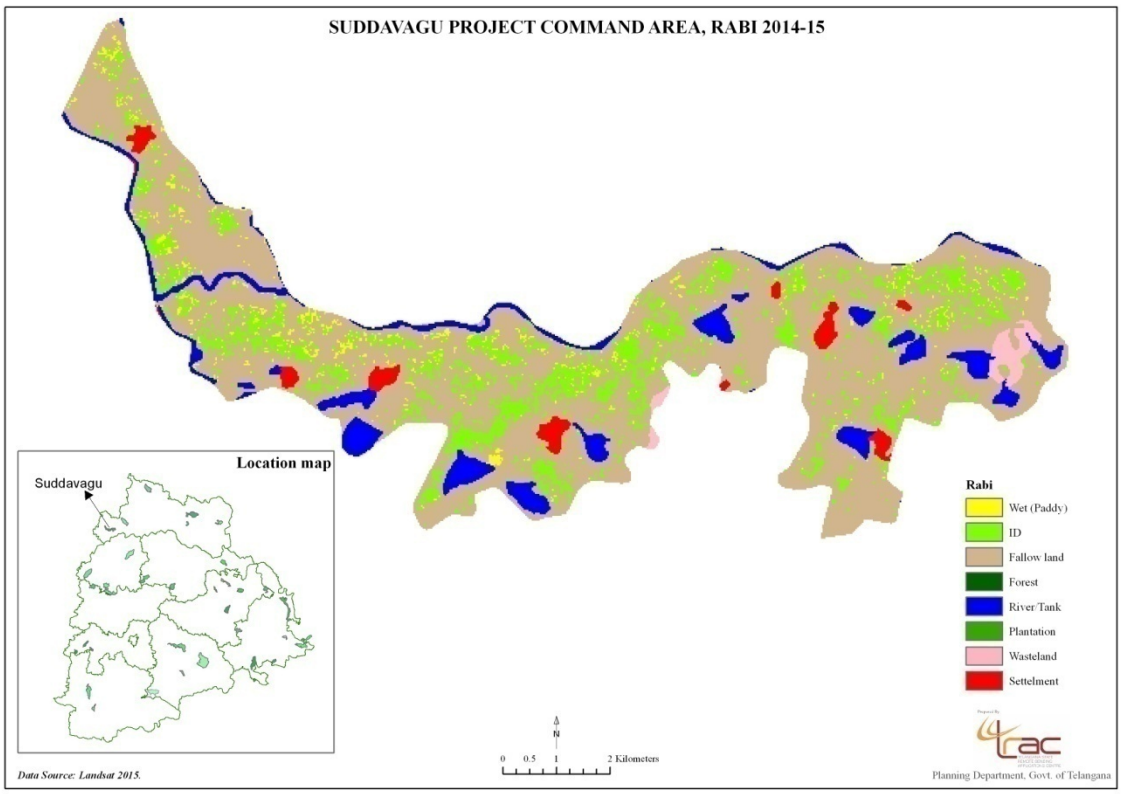


Fig.10 Classification map of Suddavagu Project

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

Results

- The irrigated area is found to be 1,012 ha out of the total ayacut of 5,668 ha.
- The equivalent Wet area is estimated as 146 ha, ID area is estimated as 866 ha.
- The total crop area is 18% of the total ayacut area and the Wet crop is 14% and ID crop is 86% of the total irrigated area.
- The Rabi crop area, for the current year, 2014-15 is 96% 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%.

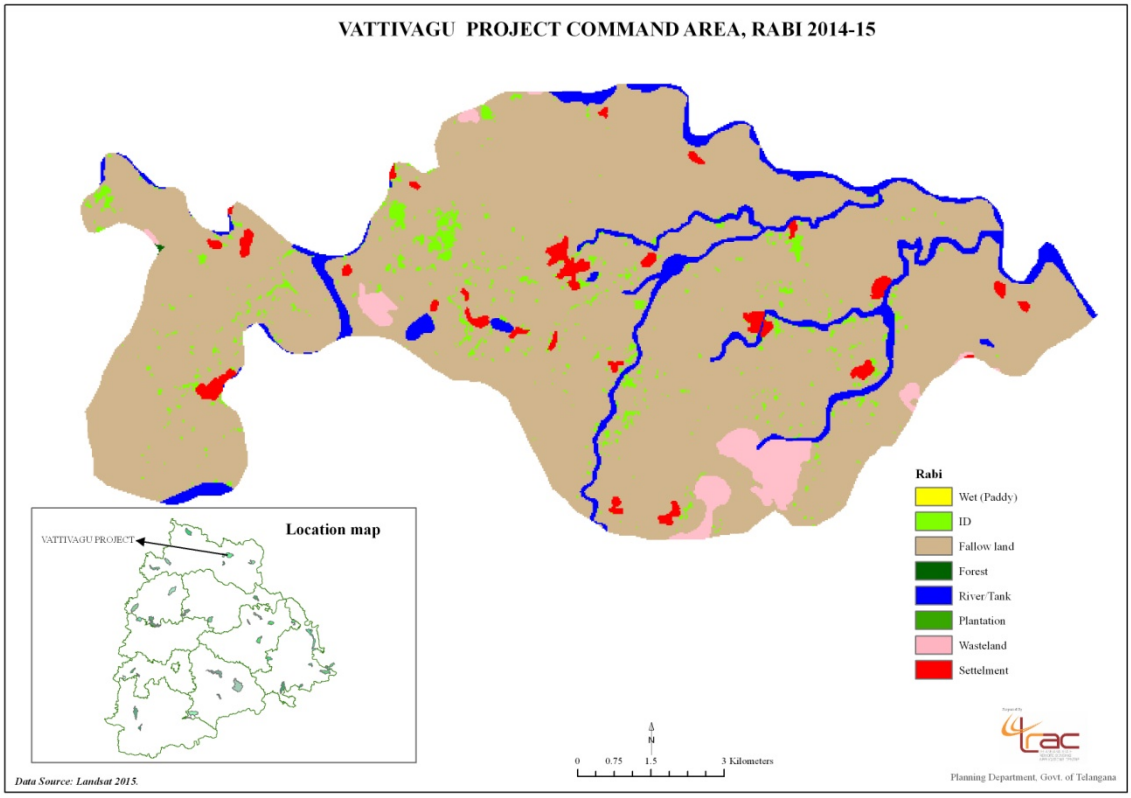


Fig.11 Classification map of Vattivagu Project

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

Results

- The irrigated area is found to be 314 ha out of the total ayacut of 9,919 ha.
- The ID area is estimated as 314 ha.
- The total crop area is 3% of the total ayacut area and the ID crop is 100% of the total irrigated area.
- The Rabi crop area, for the current year, 2014-15 is 70% 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%.

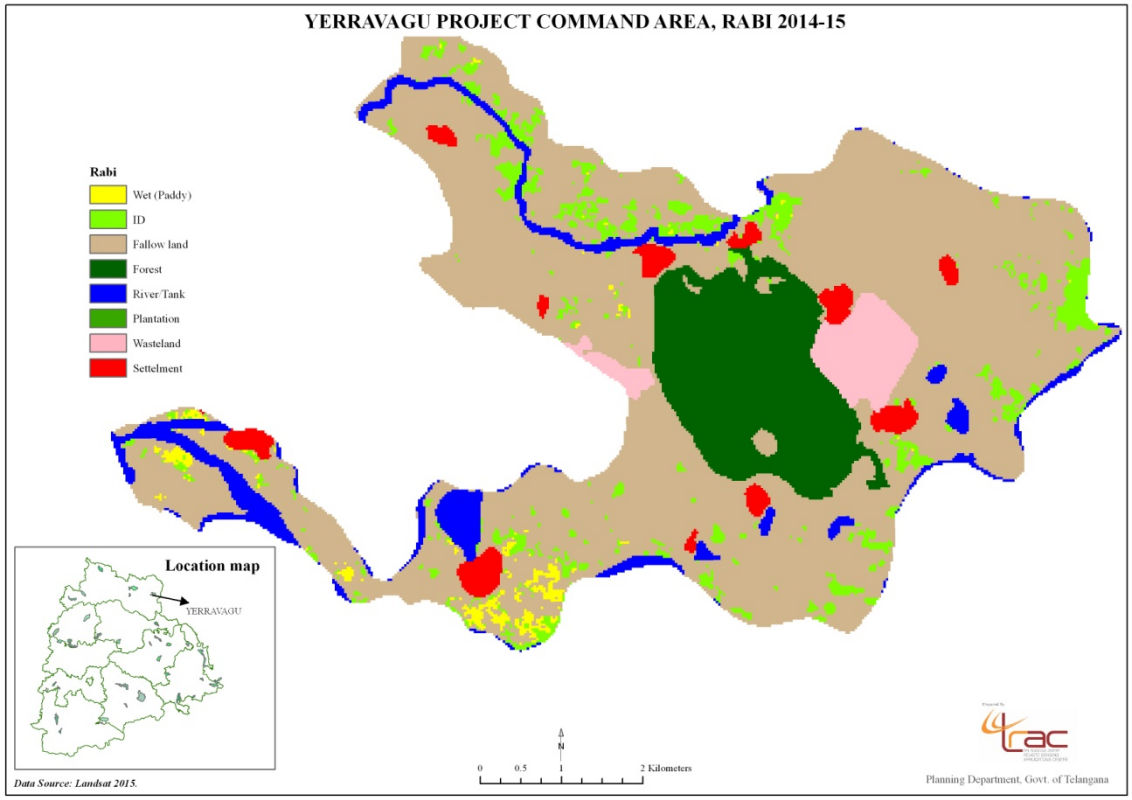


Fig.12 Classification map of Yerravagu Project

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

Results

- The irrigated area is found to be 314 ha out of the total ayacut of 4,453 ha.
- The equivalent Wet area is estimated as 50 ha, ID area is estimated as 264 ha.
- The total crop area is 7% of the total ayacut area and the Wet crop is 16% and ID crop is 84% of the total irrigated area.
- The Rabi crop area, for the current year, 2014-15 is 90% 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%.

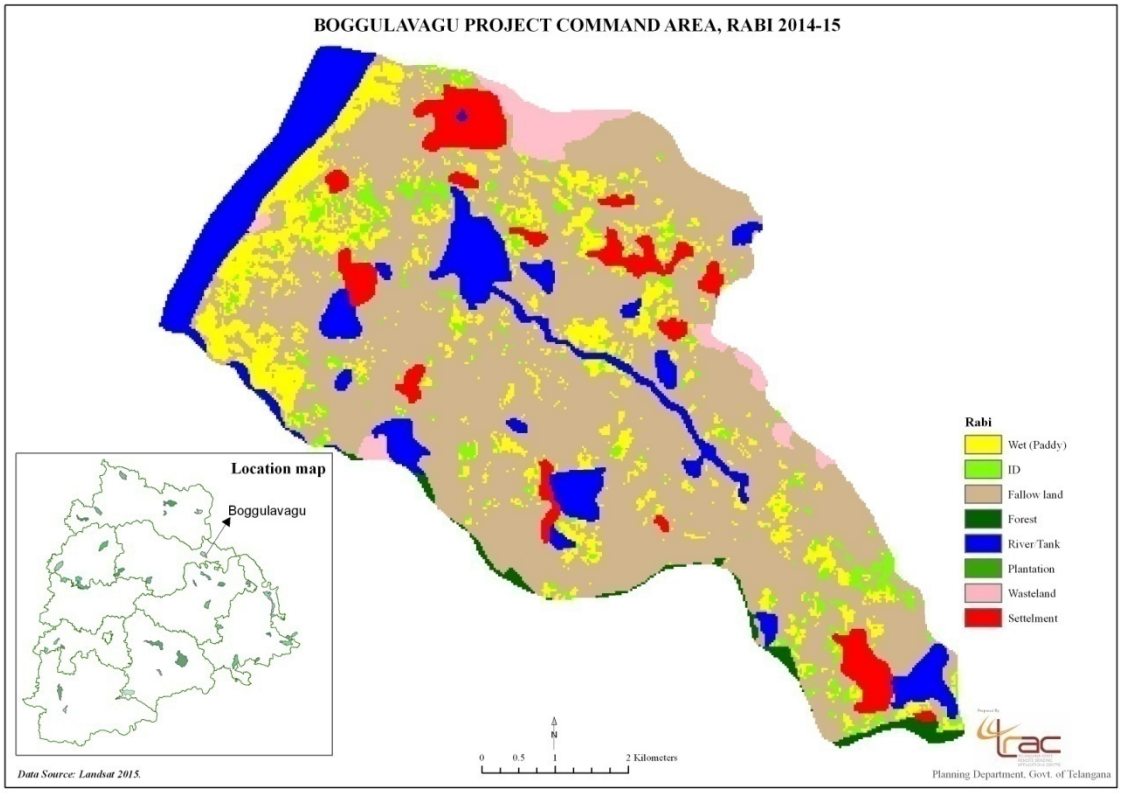


Fig.13 Classification map of Boggulavagu Project

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

Results

- The irrigated area is found to be 836 ha out of the total ayacut of 2,084 ha.
- The equivalent Wet area is estimated as 622 ha, ID area is estimated as 214 ha.
- The total crop area is 40% of the total ayacut area and the Wet crop is 74% and ID crop is 26% of the total irrigated area.
- The Rabi crop area, for the current year, 2014-15 is above 100% 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%.

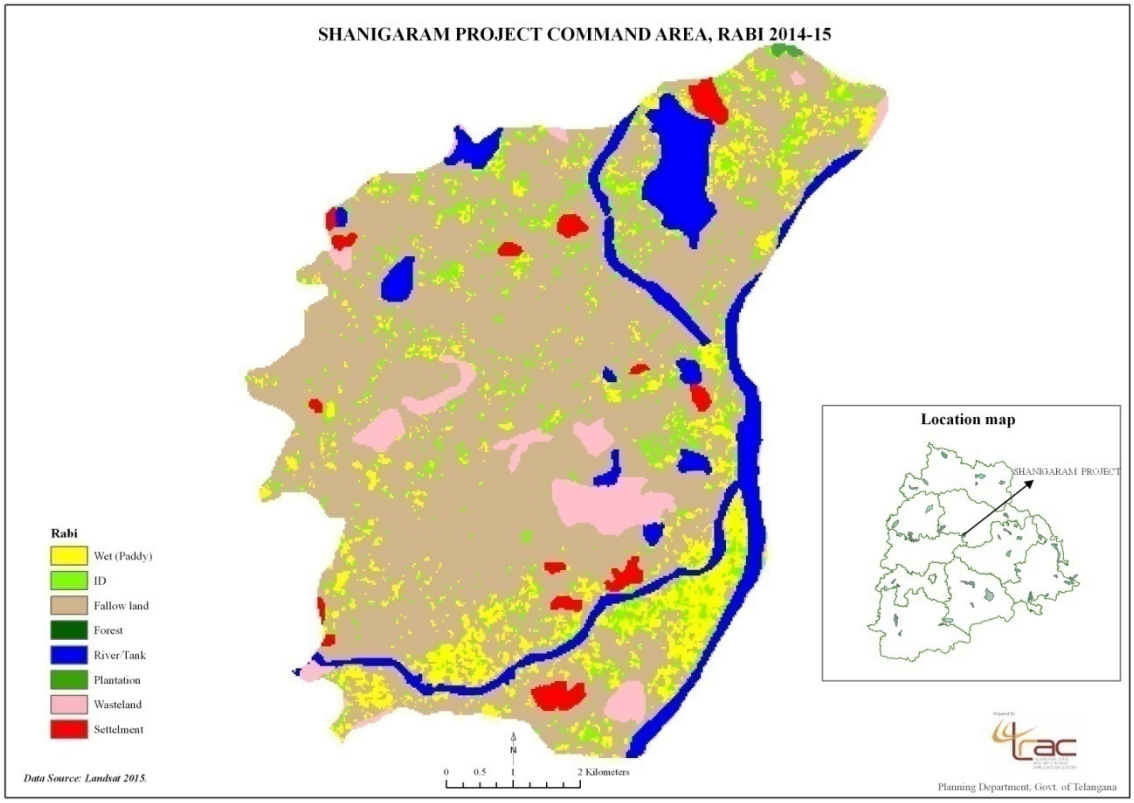


Fig.14 Classification map of Shanigaram Project

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

Results

- The irrigated area is found to be 1,120 ha out of the total ayacut of 2,065 ha.
- The equivalent Wet area is estimated as 634 ha, ID area is estimated as 486 ha.
- The total crop area is 54% of the total ayacut area and the Wet crop is 57% and ID crop is 43% of the total irrigated area.
- The Rabi crop area, for the current year, 2014-15 is 65% 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%.

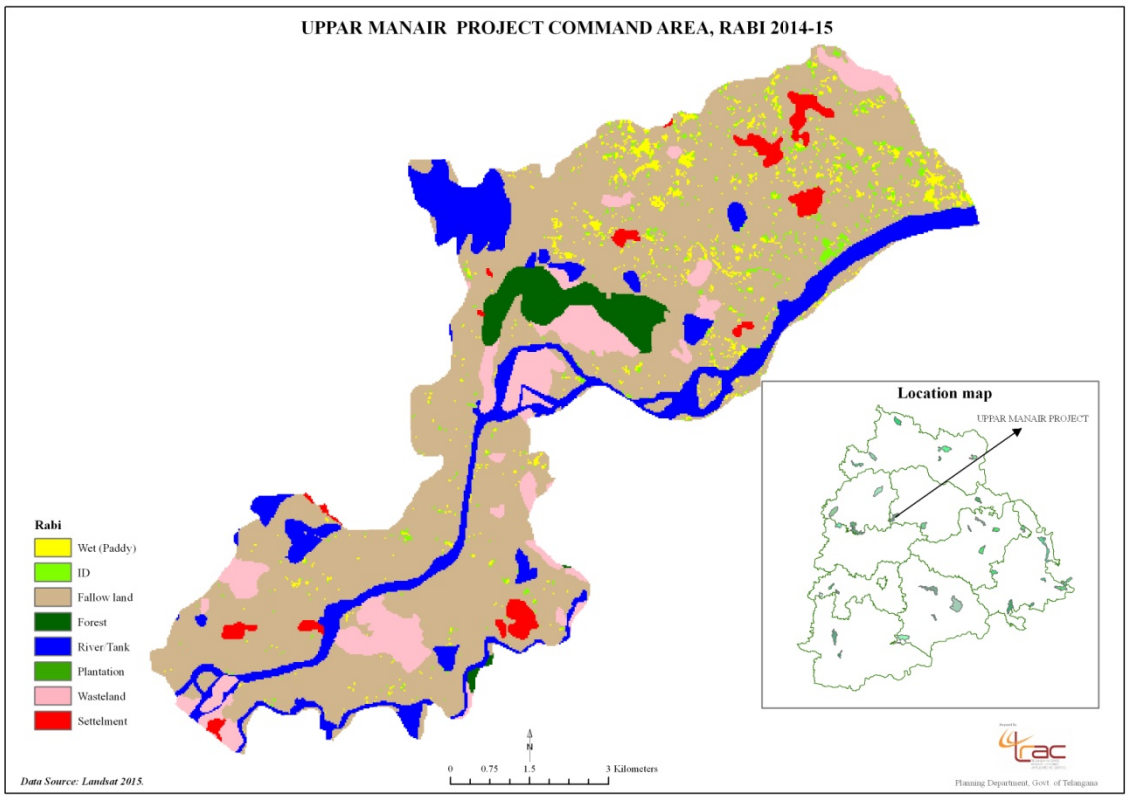


Fig.15 Classification map of Upper Manair Project

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

Results

- The irrigated area is found to be 387 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 7% of the total ayacut area and the Wet crop is 62% and ID crop is 38% of the total irrigated area.
- The Rabi crop area, for the current year, 2014-15 is 20% 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%.

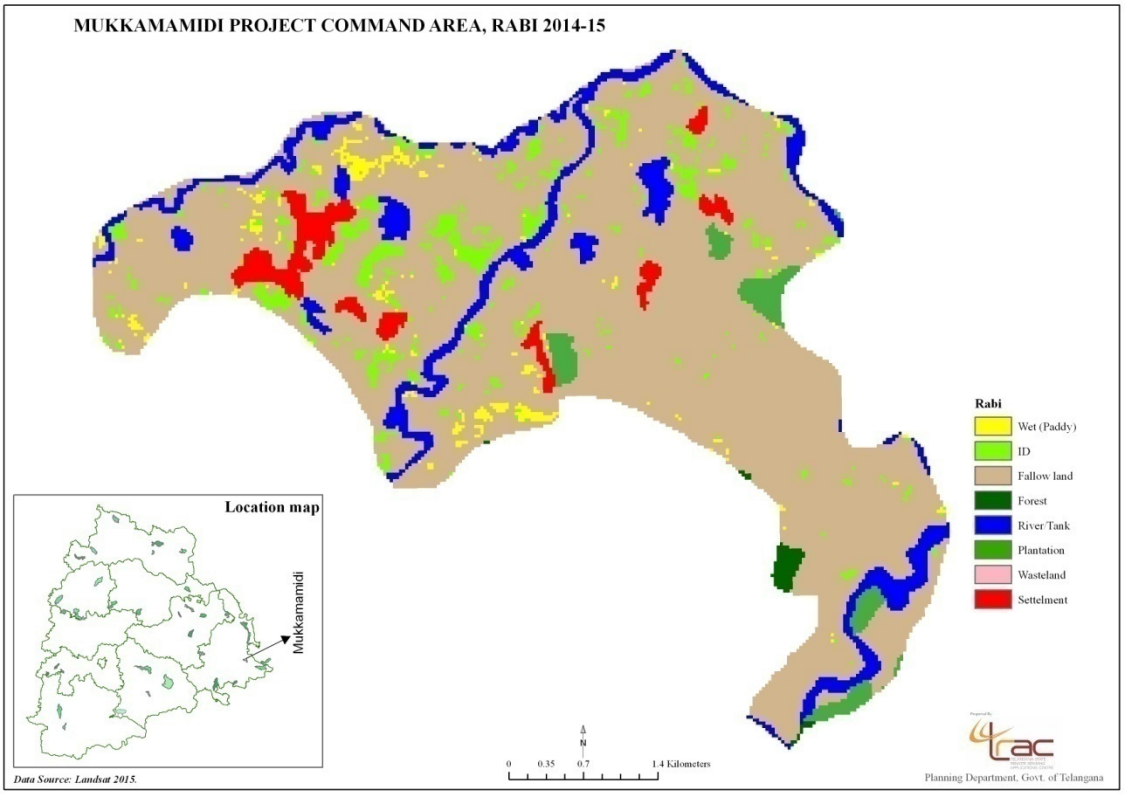


Fig.16 Classification map of Mukkamamidi Project

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

Results

- The irrigated area is found to be 163 ha out of the total ayacut of 1,320 ha.
- The equivalent Wet area is estimated as 41 ha, ID area is estimated as 122 ha.
- The total crop area is 12% of the total ayacut area and the Wet crop is 25% and ID crop is 75% of the total irrigated area.
- The Rabi crop area, for the current year, 2014-15 is 39% 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%.

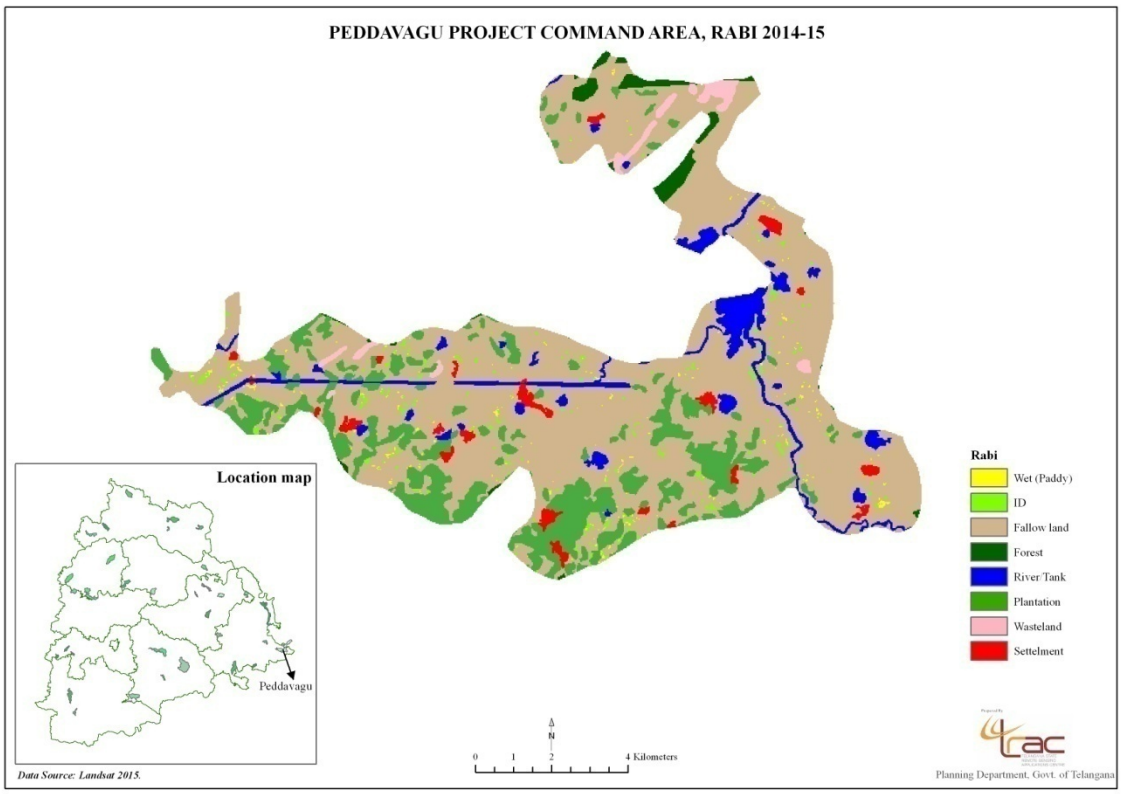


Fig.17 Classification map of Peddavagu Project

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

Results

- The irrigated area is found to be 208 ha out of the total ayacut of 6,478 ha.
- The equivalent Wet area is estimated as 59 ha, ID area is estimated as 149 ha.
- The total crop area is 3% of the total ayacut area and the Wet crop is 29% and ID crop is 71% of the total irrigated area.
- The Rabi crop area, for the current year, 2014-15 is 8% 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%.

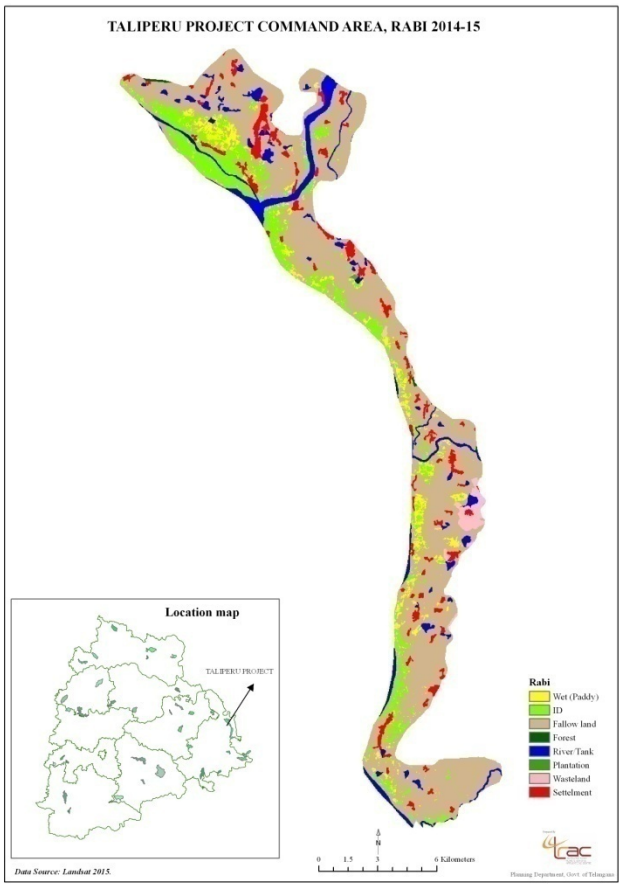


Fig.18 Classification map of Taliperu Project

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

Results

- The irrigated area is found to be 2,796 ha out of the total ayacut of 10,000 ha.
- The equivalent Wet area is estimated as 768 ha, ID area is estimated as 2,028 ha.
- The total crop area is 28% of the total ayacut area and the Wet crop is 27% and ID crop is 73% of the total irrigated area.
- The Rabi crop area, for the current year, 2014-15 is above 100% 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%.

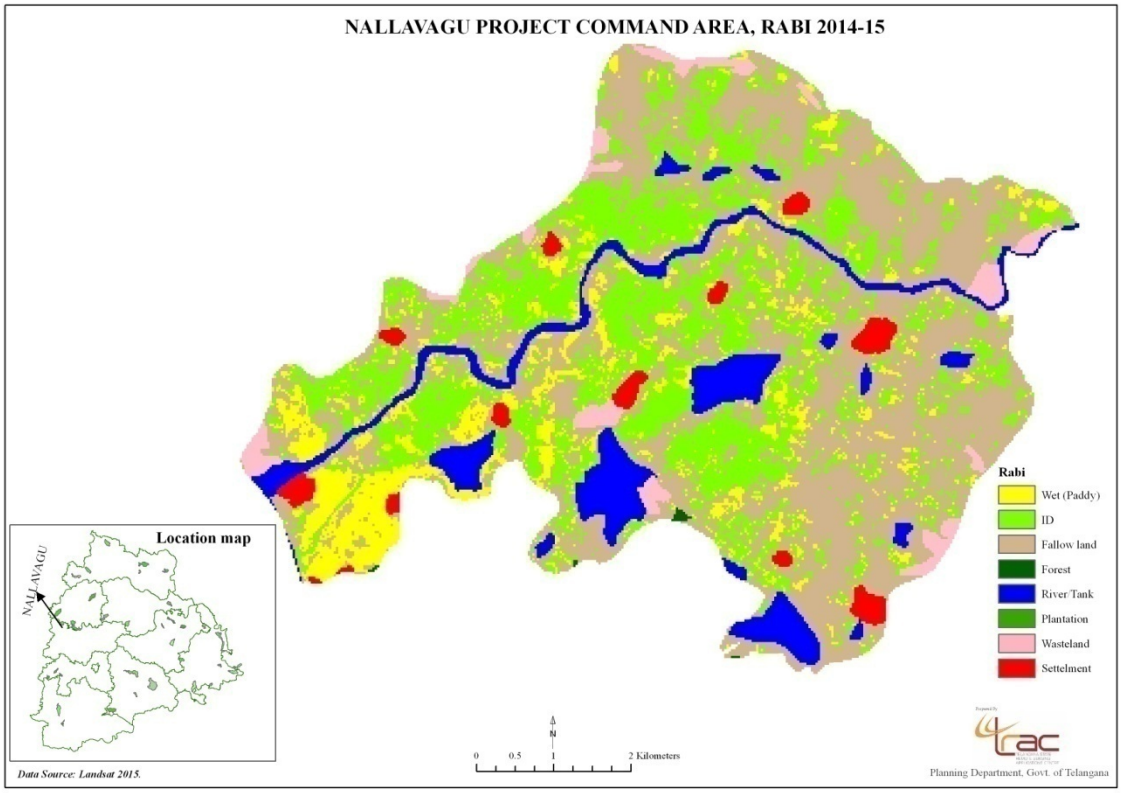


Fig.19 Classification map of Nalla Vagu Project

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

Results

- The irrigated area is found to be 1,911 ha out of the total ayacut of 2,453 ha.
- The equivalent Wet area is estimated as 524 ha, ID area is estimated as 1,387 ha.
- The total crop area is 78% of the total ayacut area and the Wet crop is 27% and ID crop is 73% of the total irrigated area.
- The Rabi crop area, for the current year, 2014-15 is above 100% 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%.

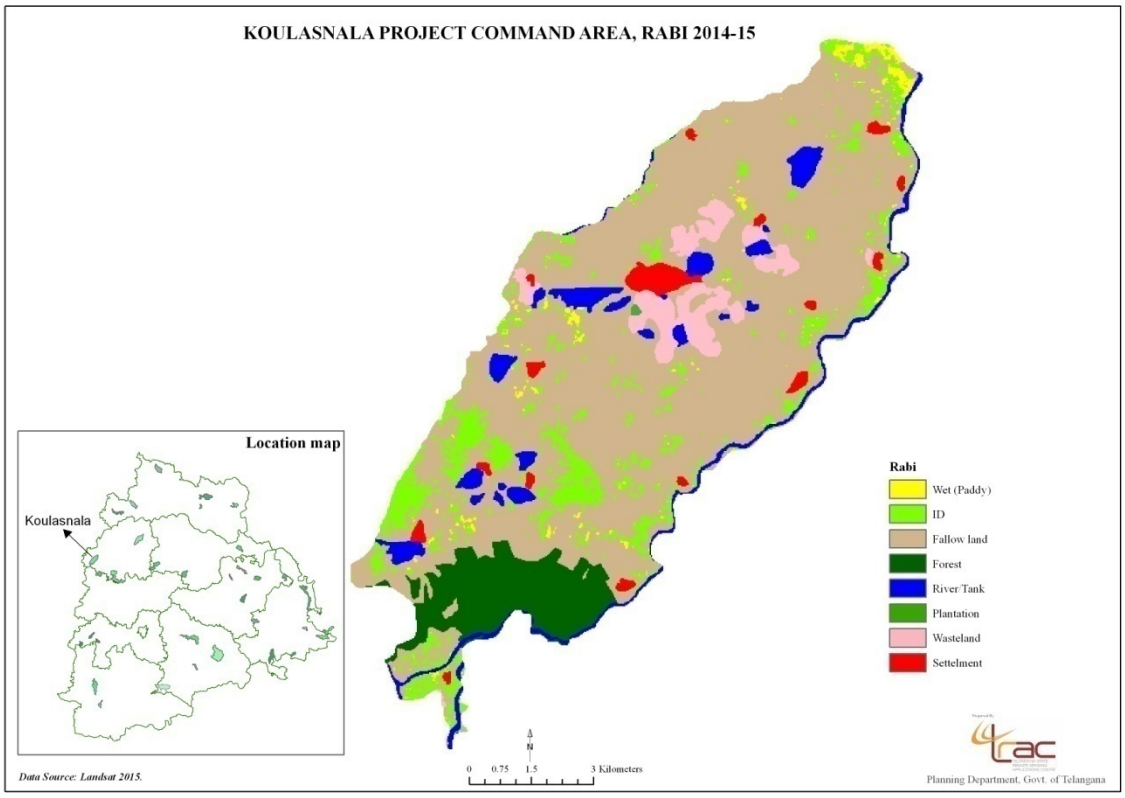


Fig.20 Classification map of Koulasanala Project

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

Results

- The irrigated area is found to be 1,258 ha out of the total ayacut of 3,644 ha.
- The equivalent Wet area is estimated as 136 ha, ID area is estimated as 1,122 ha.
- The total crop area is 35% of the total ayacut area and the Wet crop is 11% and ID crop is 89% of the total irrigated area.
- The Rabi crop area, for the current year, 2014-15 is above 100% 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%.

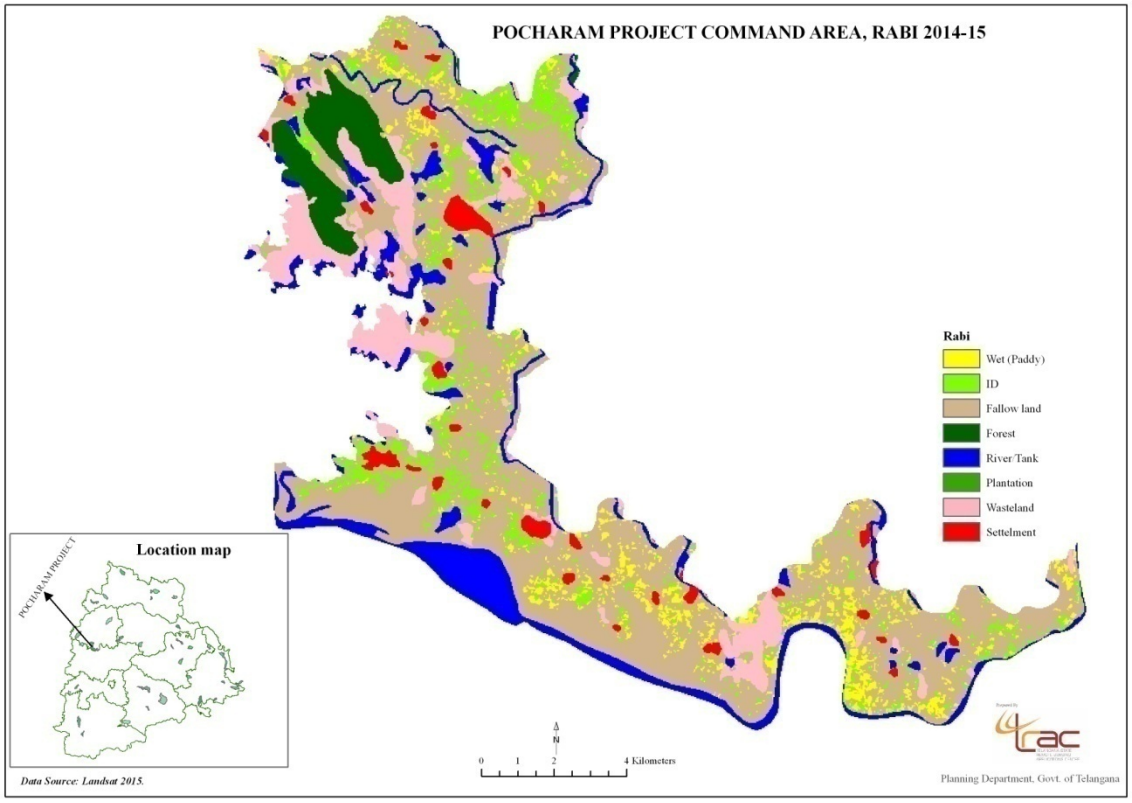


Fig.21 Classification map of Pocharam Project

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

Results

- The irrigated area is found to be 2,136 ha out of the total ayacut of 4,251 ha.
- The equivalent Wet area is estimated as 849 ha, ID area is estimated as 1,287 ha.
- The total crop area is 50% of the total ayacut area and the Wet crop is 40% and ID crop is 60% of the total irrigated area.
- The Rabi crop area, for the current year, 2014-15 is 86% 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%.

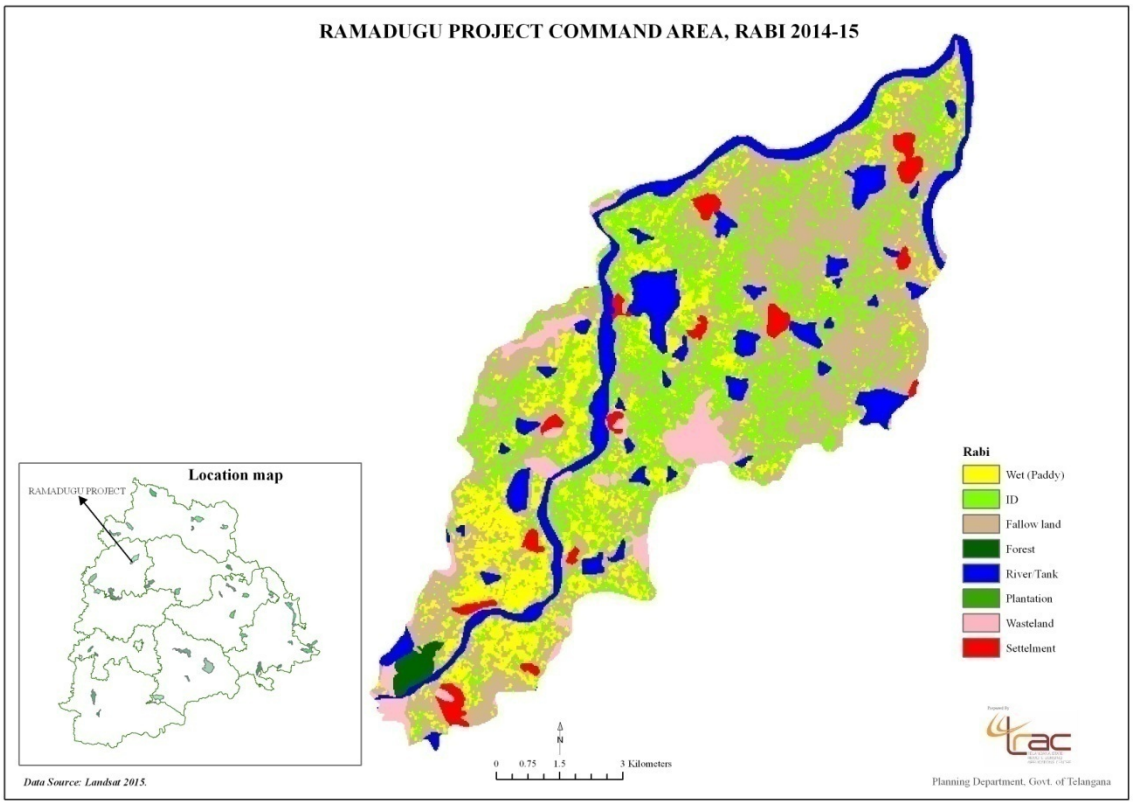


Fig.22 Classification map of Ramadugu Project

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

Results

- The irrigated area is found to be 4,019 ha out of the total ayacut of 2,024 ha.
- The equivalent Wet area is estimated as 1,502 ha, ID area is estimated as 2,517 ha.
- In the total crop area, Wet crop is 37% and ID crop is 63% of the total irrigated area
- The Rabi crop area, for the current year, 2014-15 is above 100% 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%.

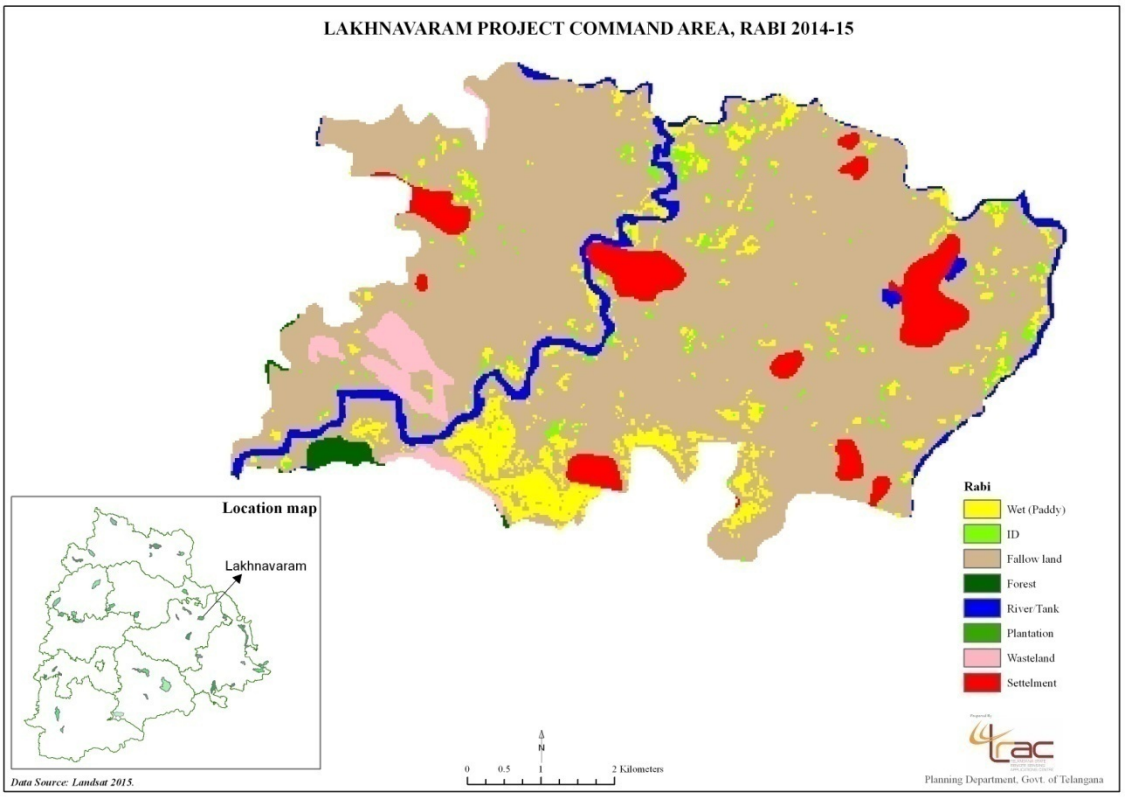


Fig.23 Classification map of Laknavaram Project

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

Results

- The irrigated area is found to be 459 ha out of the total ayacut of 3,522 ha.
- The equivalent Wet area is estimated as 362 ha, ID area is estimated as 97 ha.
- The total crop area is 13% of the total ayacut area and the Wet crop is 79% and ID crop is 21% of the total irrigated area.
- The Rabi crop area, for the current year, 2014-15 is 17% 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%.

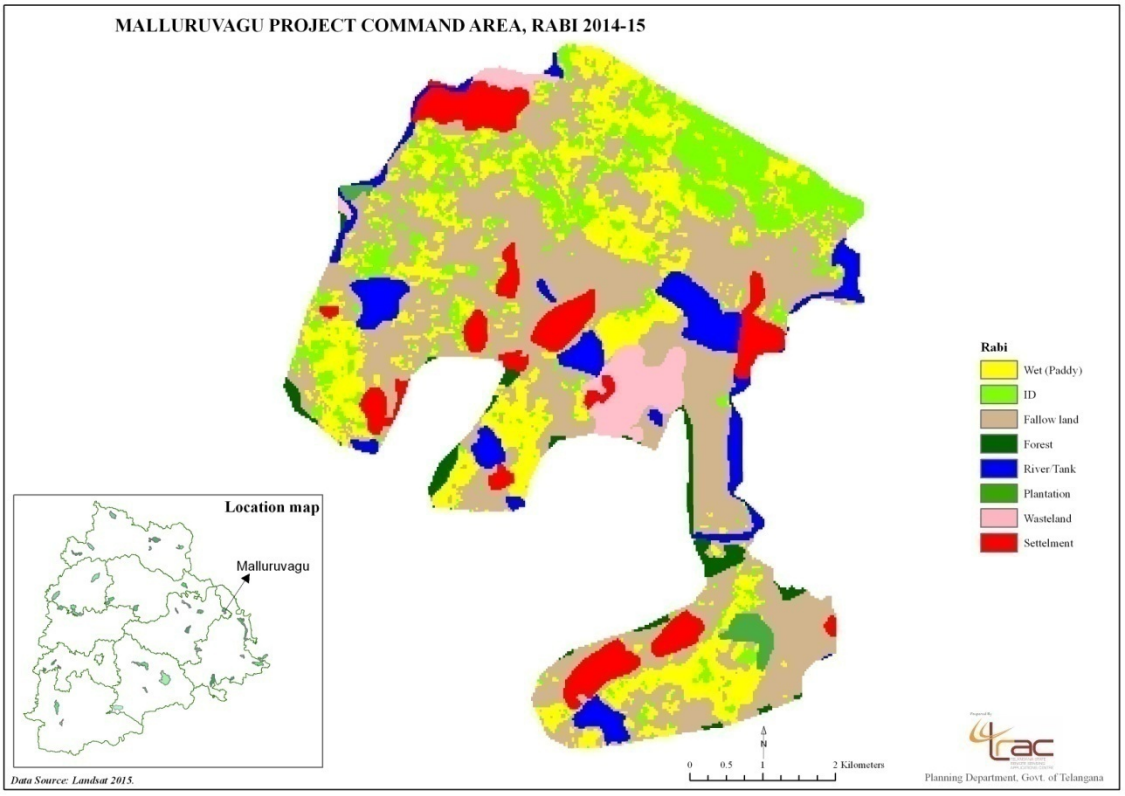


Fig.24 Classification map of Mallurvagu Project

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

Results

- The irrigated area is found to be 1,385 ha out of the total ayacut of 3,036 ha.
- The equivalent Wet area is estimated as 828 ha, ID area is estimated as 557 ha.
- The total crop area is 46% of the total ayacut area and the Wet crop is 60% and ID crop is 40% of the total irrigated area.
- The Rabi crop area, for the current year, 2014-15 is above 100% 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%.

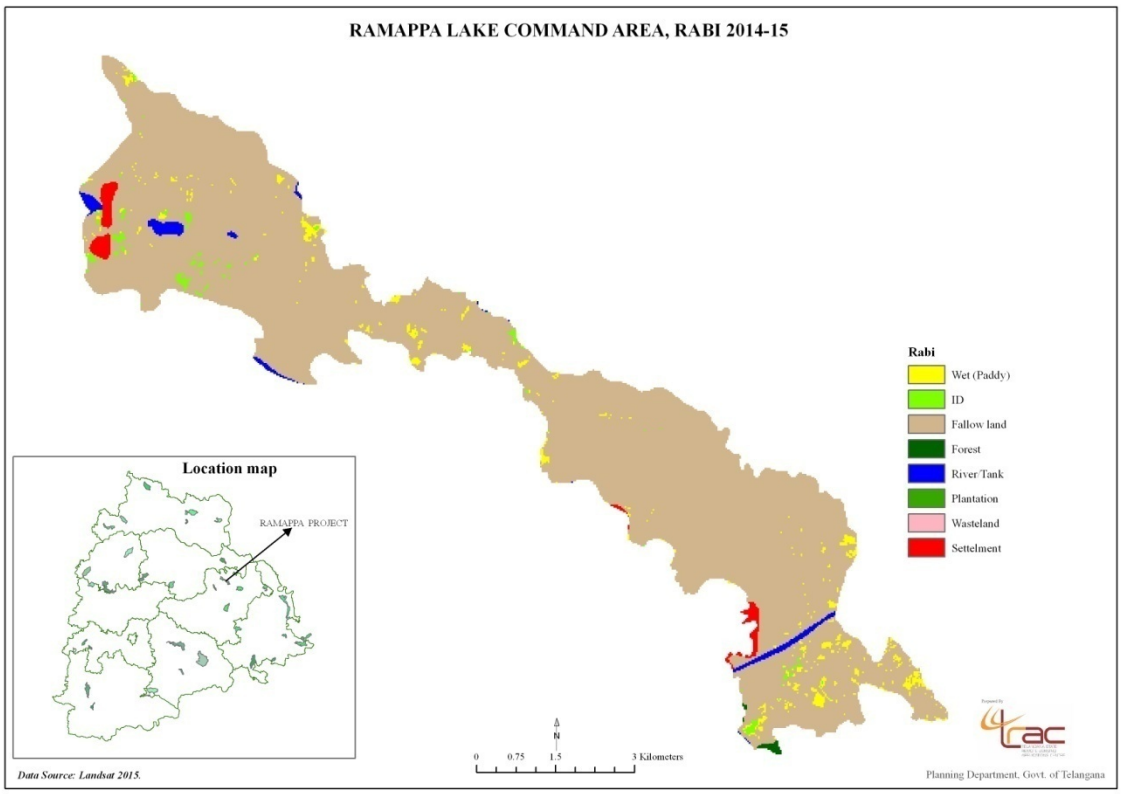


Fig.25 Classification map of Ramappa Lake

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

Results

- The irrigated area is found to be 151 ha out of the total ayacut of 2,024 ha.
- The equivalent Wet area is estimated as 112 ha, ID area is estimated as 39 ha.
- The total crop area is 7% of the total ayacut area and the Wet crop is 74% and ID crop is 26% of the total irrigated area.
- The Rabi crop area, for the current year, 2014-15 is 7% 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%.

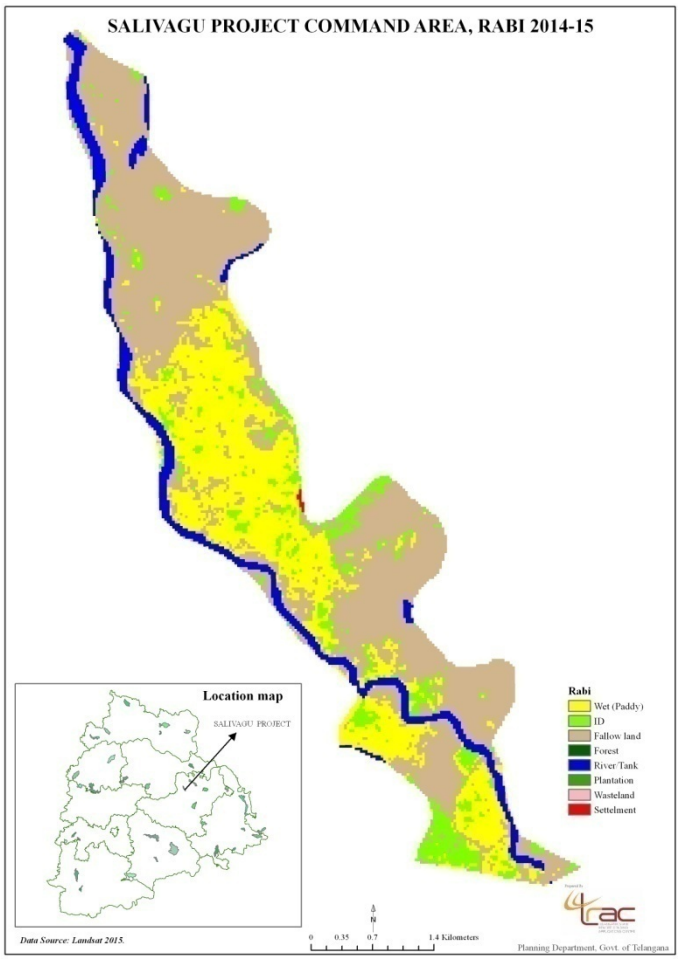


Fig.26 Classification map of Salivagu Project

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

Results

- The irrigated area is found to be 574 ha out of the total ayacut of 1,233 ha.
- The equivalent Wet area is estimated as 439 ha, ID area is estimated as 135 ha.
- The total crop area is 47% of the total ayacut area and the Wet crop is 76% and ID crop is 24% of the total irrigated area.
- The Rabi crop area, for the current year, 2014-15 is above 100% 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%.

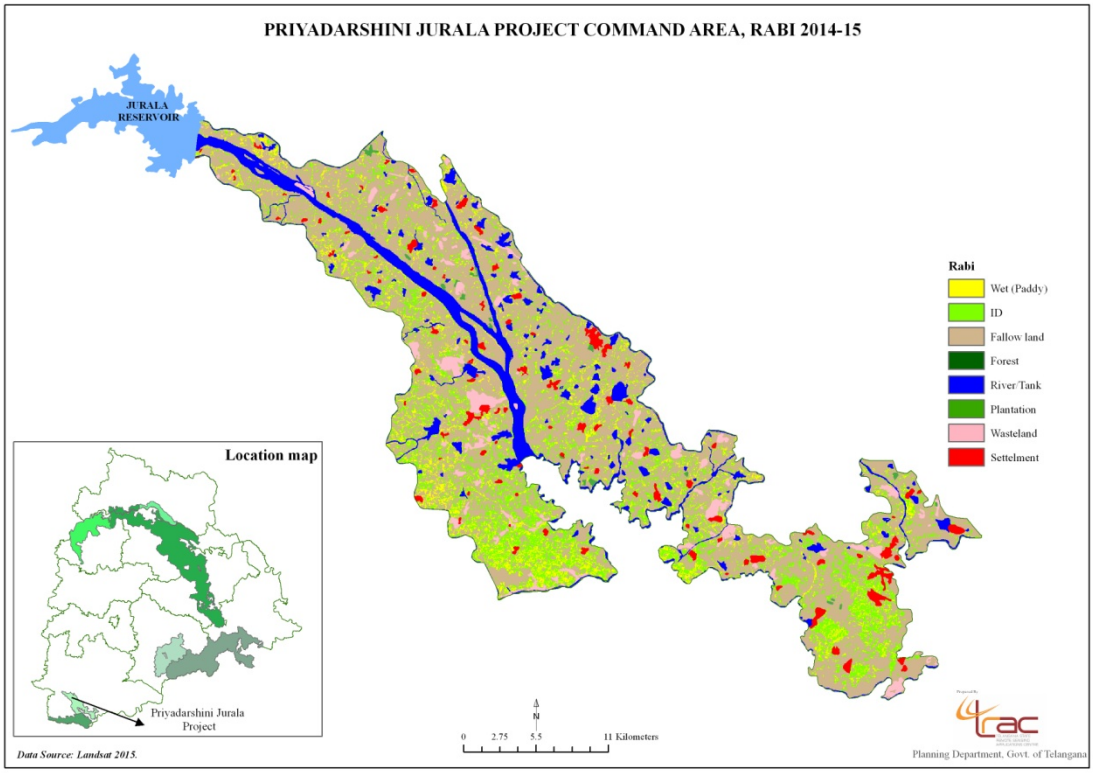


Fig.27 Classification of Jurala (Priyadarshini) Project

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

Results

- The irrigated area is found to be 18,448 ha out of the total ayacut of 42,405 ha.
- The equivalent Wet area is estimated as 5,520 ha, ID area is estimated as 12,928 ha.
- The total crop area is 44% of the total ayacut area and the wet crop is 30% and ID crop is 70% of the total irrigated area.
- The Rabi crop area, for the current year, 2014-15 is 76% 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%.

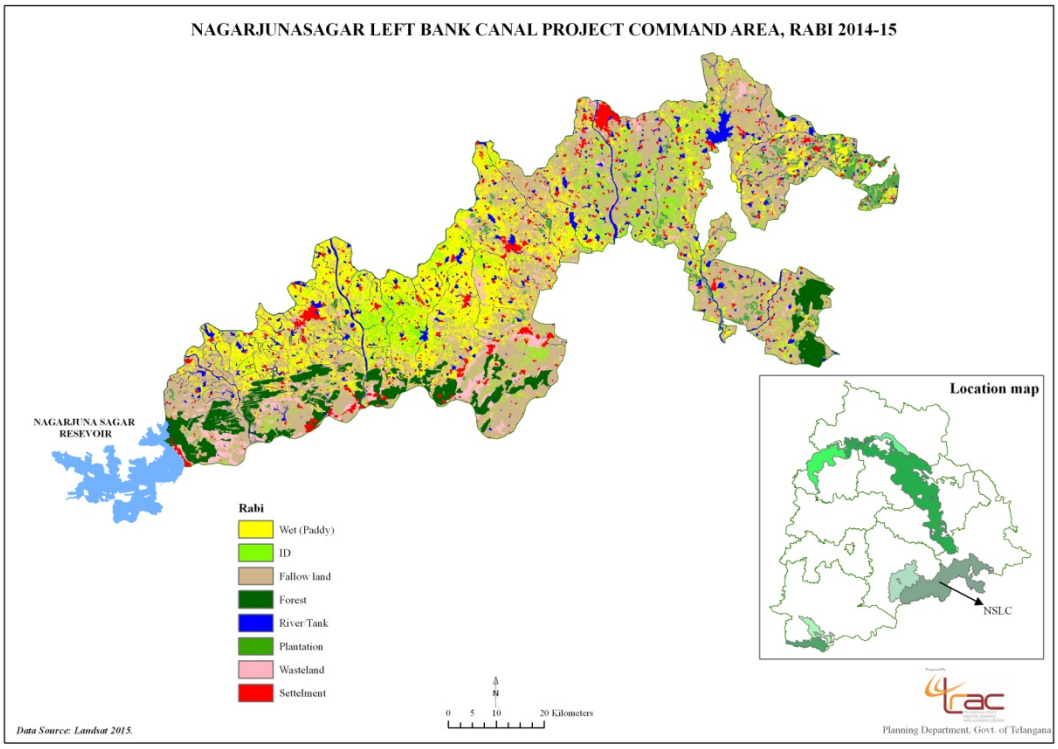


Fig.28 Classification of Nagarjuna Sagar Project Left Bank Canal

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

Results

- The irrigated area is found to be 1,56,356 ha out of the total ayacut of 2,66,257 ha.
- The equivalent Wet area is estimated as 1, 16,415 ha, ID area is estimated as 39,941 ha.
- The total crop area is 59% of the total ayacut area and the Wet crop is 74% and ID crop is 26% of the total irrigated area.
- The Rabi crop area, for the current year, 2014-15 is 64% 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%.

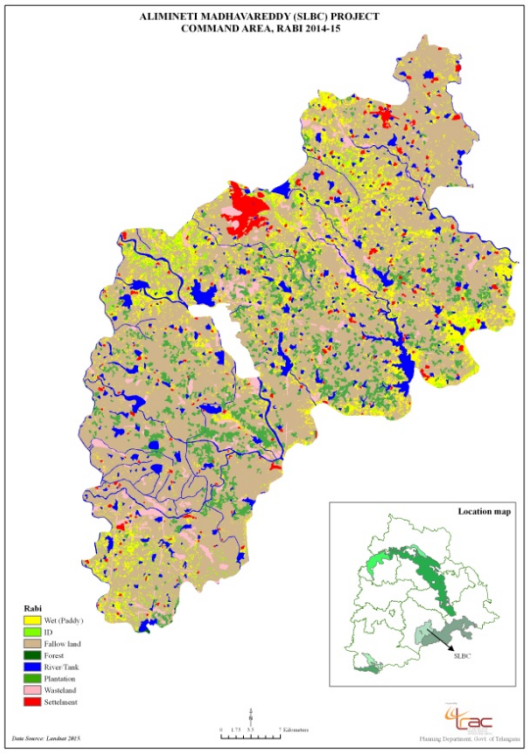


Fig.29 Classification of AMRP

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

Results

- The irrigated area is found to be 27,108 ha out of the total ayacut of 92,152 ha.
- The equivalent Wet area is estimated as 22,346 ha, ID area is estimated as 4,762 ha.
- The total crop area is 29% of the total ayacut area and the Wet crop is 82% and ID crop is 18% of the total irrigated area.
- The Rabi crop area, for the current year, 2014-15 is 50% 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%.

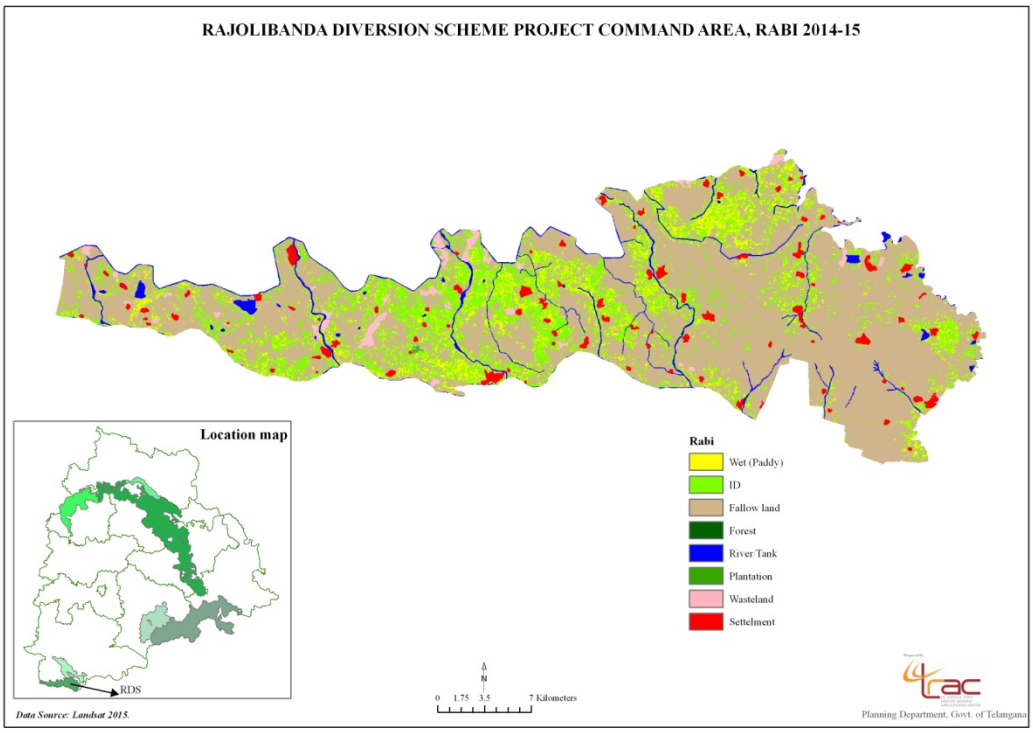


Fig.30 Classification of Rajolibanda Diversion Scheme (RDS)

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

Results

- The irrigated area is found to be 19,223 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 54% of the total ayacut area and the Wet crop is 27% and ID crop is 73% of the total irrigated area.
- The Rabi crop area, for the current year, 2014-15 is above 100% 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%.

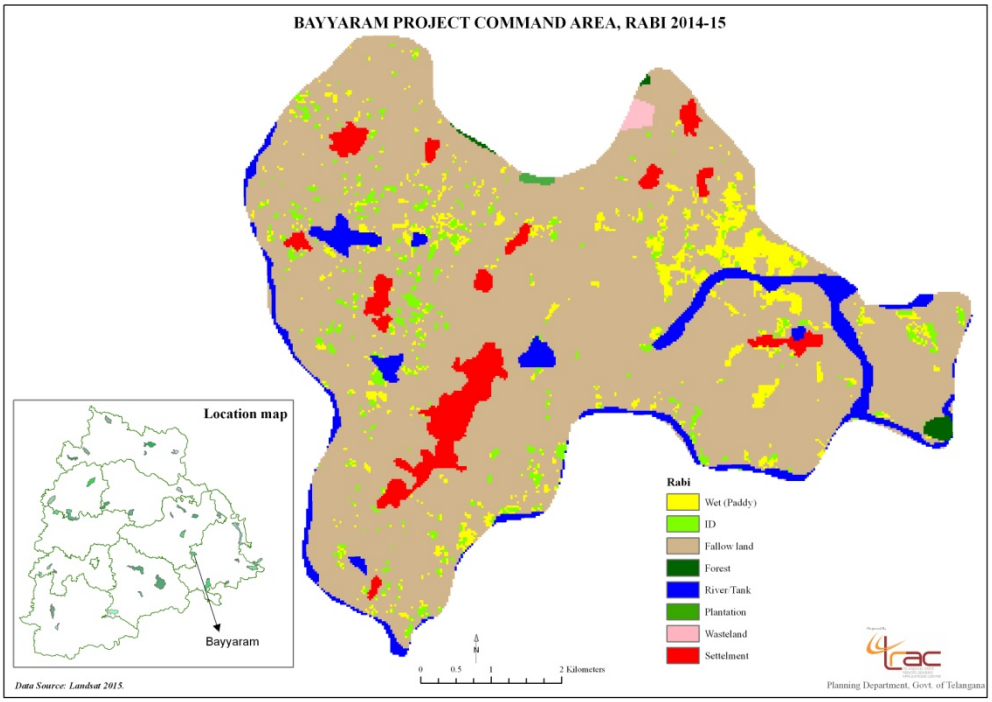


Fig.31 Classification map of Bayyaram Project

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

Results

- The irrigated area is found to be 412 ha out of the total ayacut of 2,915 ha.
- The equivalent Wet area is estimated as 262 ha, ID area is estimated as 150 ha.
- The total crop area is 14% of the total ayacut area and Wet crop is 64% and ID crop is 36% of the total irrigated area.
- The Rabi crop area, for the current year, 2014-15 is 53% 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%.

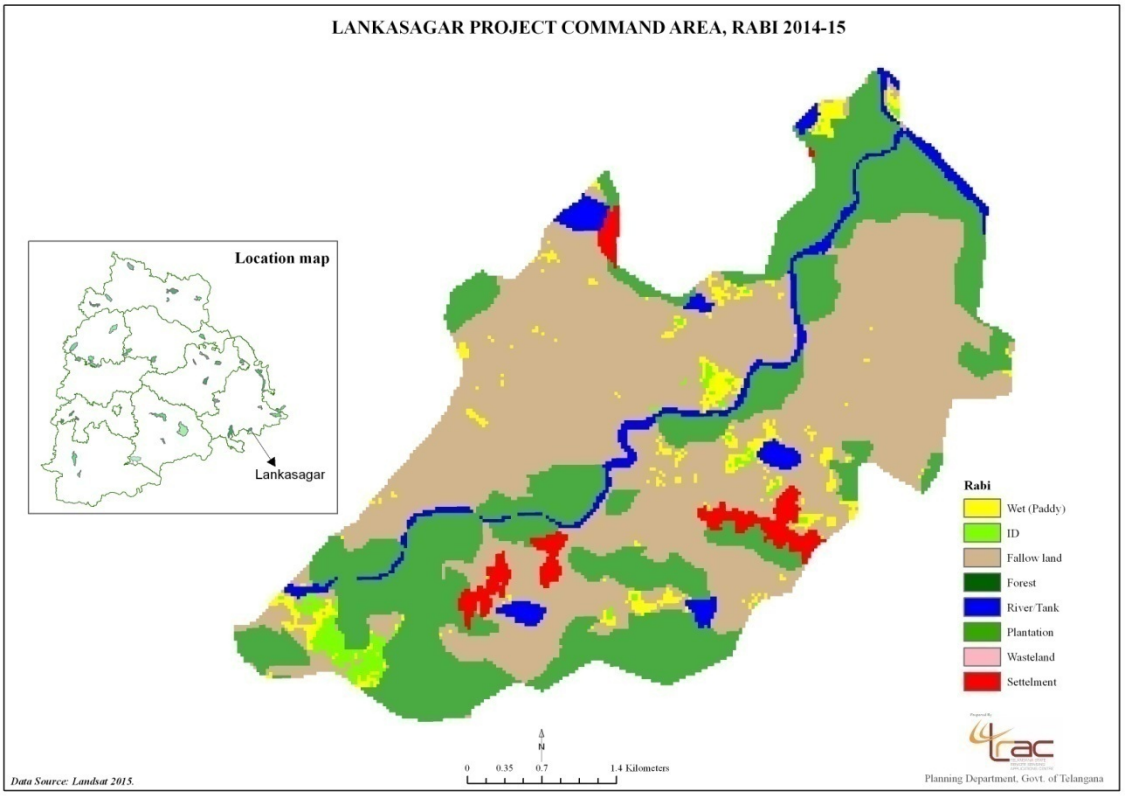


Fig.32 Classification map of Lankasagar Project

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

Results

- The irrigated area is found to be 108 ha out of the total ayacut of 2,977 ha.
- The equivalent Wet area is estimated as 75 ha, ID area is estimated as 33 ha.
- The total crop area is 4% of the total ayacut area and the Wet crop is 69% and ID crop is 31% of the total irrigated area.
- The Rabi crop area, for the current year, 2014-15 is 10% 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%.

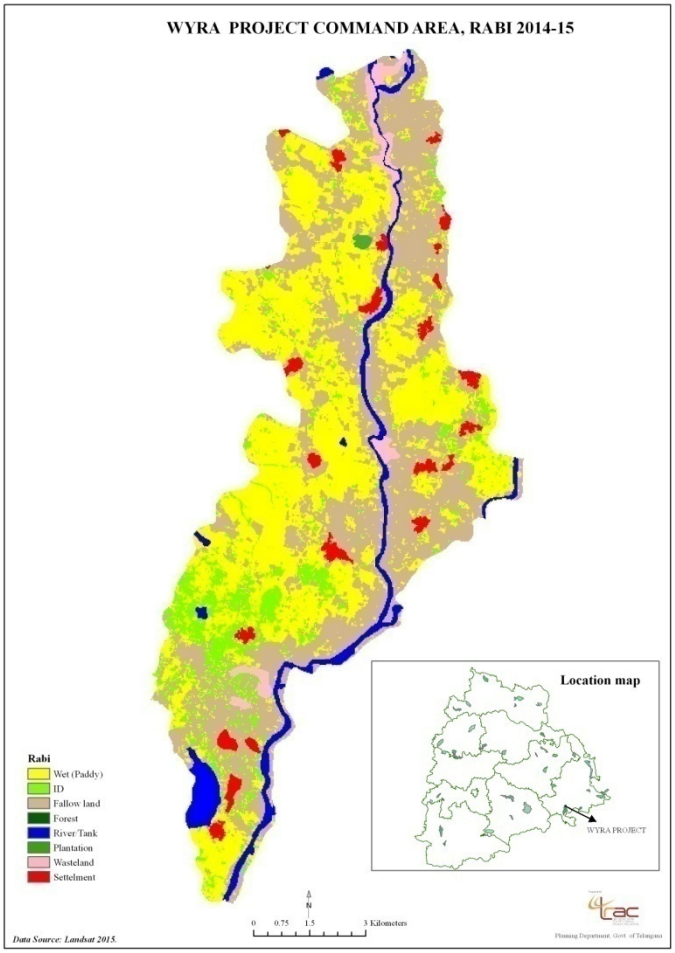


Fig.33 Classification map of Wyra Project

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

Results

- The irrigated area is found to be 5,185 ha out of the total ayacut of 7,038 ha.
- The equivalent Wet area is estimated as 4,265 ha, ID area is estimated as 920 ha.
- The total crop area is 74% of the total ayacut area and the Wet crop is 82% and ID crop is 18% of the total irrigated area.
- The Rabi crop area, for the current year, 2014-15 is above 100% 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%.

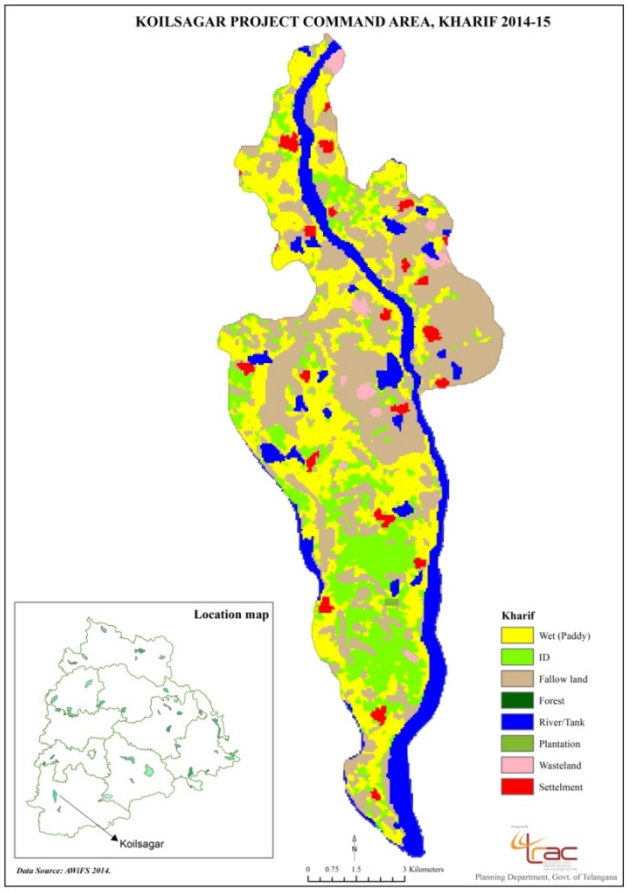


Fig.34 Classification map of Koilsagar Project

Satellite data analysis in the Koilsagar project command area for the cropping pattern during Rabi 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 Rabi 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%.

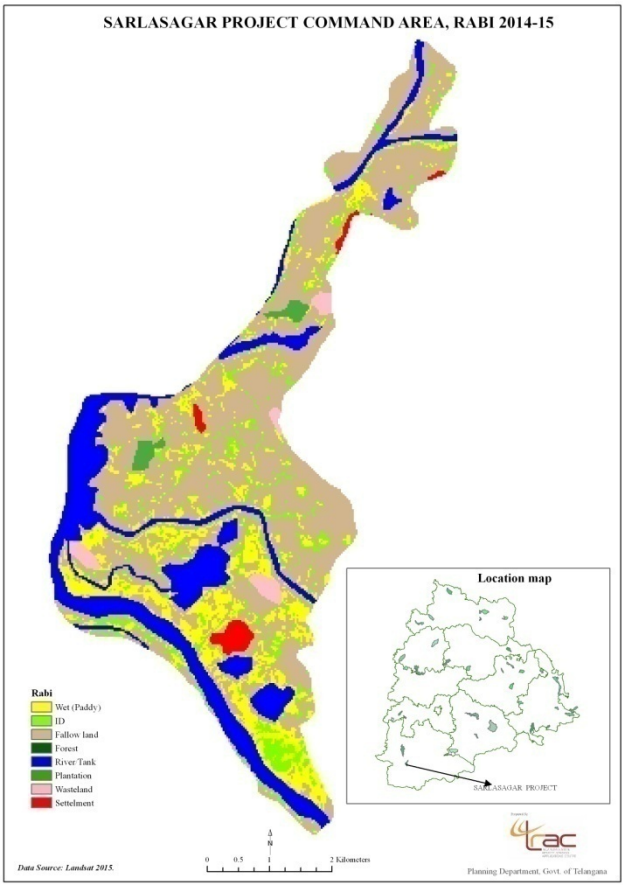


Fig.35 Classification map of Sarlasagar Project

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

Results

- The irrigated area is found to be 636 ha out of the total ayacut of 1,695 ha.
- The equivalent Wet area is estimated as 407 ha, ID area is estimated as 229 ha.
- The total crop area is 38% of the total ayacut area and Wet crop is 64% and ID crop is 36% of the total irrigated area.
- The Rabi crop area, for the current year, 2014-15 is 62% 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%.

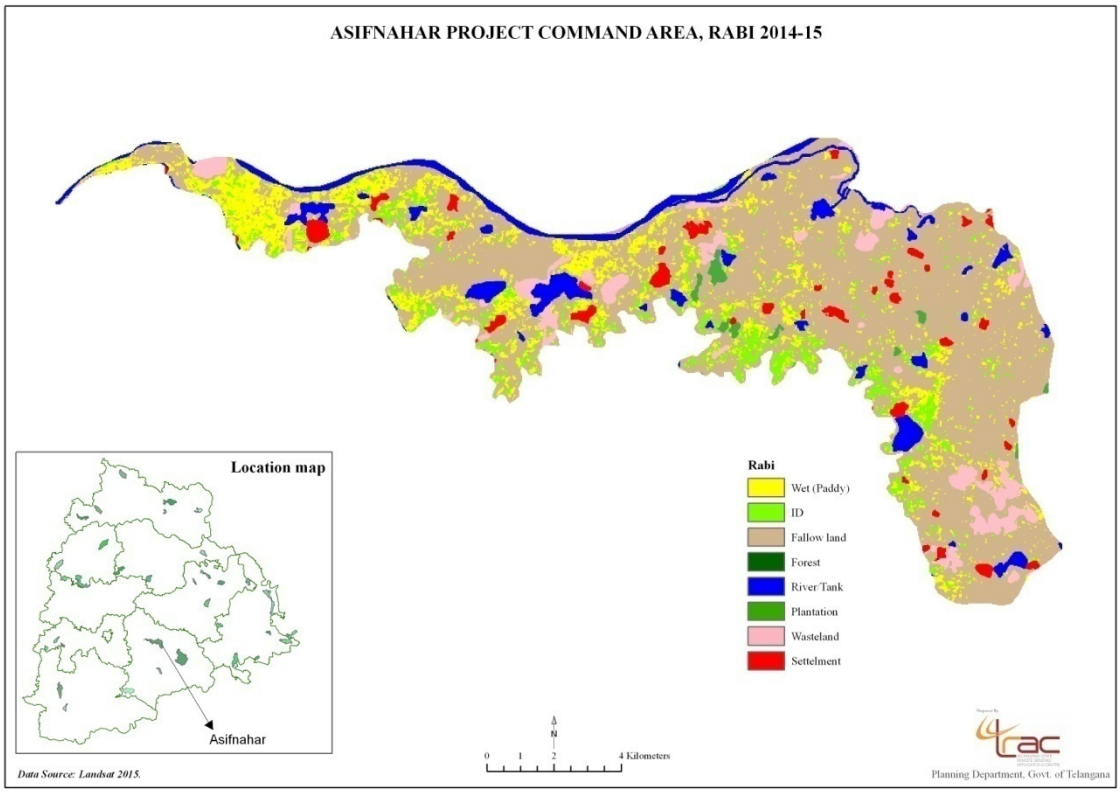


Fig.36 Classification map of Asifnahar project

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

Results

- The irrigated area is found to be 2,681 ha out of the total ayacut of 6,172 ha.
- The equivalent Wet area is estimated as 1,761 ha, ID area is estimated as 920 ha.
- The total crop area is 43% of the total ayacut area and Wet crop is 66% and ID crop is 34% of the total irrigated area.
- The Rabi crop area, for the current year, 2014-15 is 52% 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%.

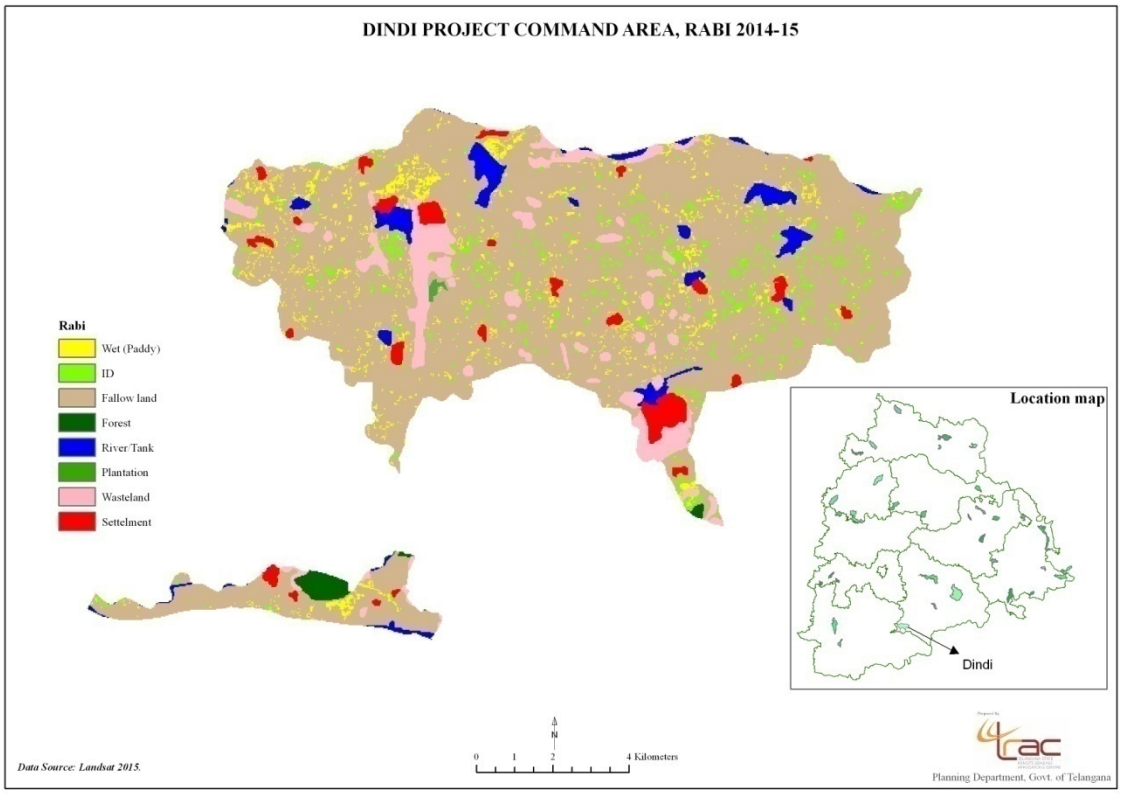


Fig.37 Classification map of Dindi Project

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

Results

- The irrigated area is found to be 1,057 ha out of the total ayacut of 5,196 ha.
- The equivalent Wet area is estimated as 499 ha, ID area is estimated as 558 ha.
- The total crop area is 20% of the total ayacut area and Wet crop is 47% and ID crop is 53% of the total irrigated area.
- The Rabi crop area, for the current year, 2014-15 is 34% 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%.

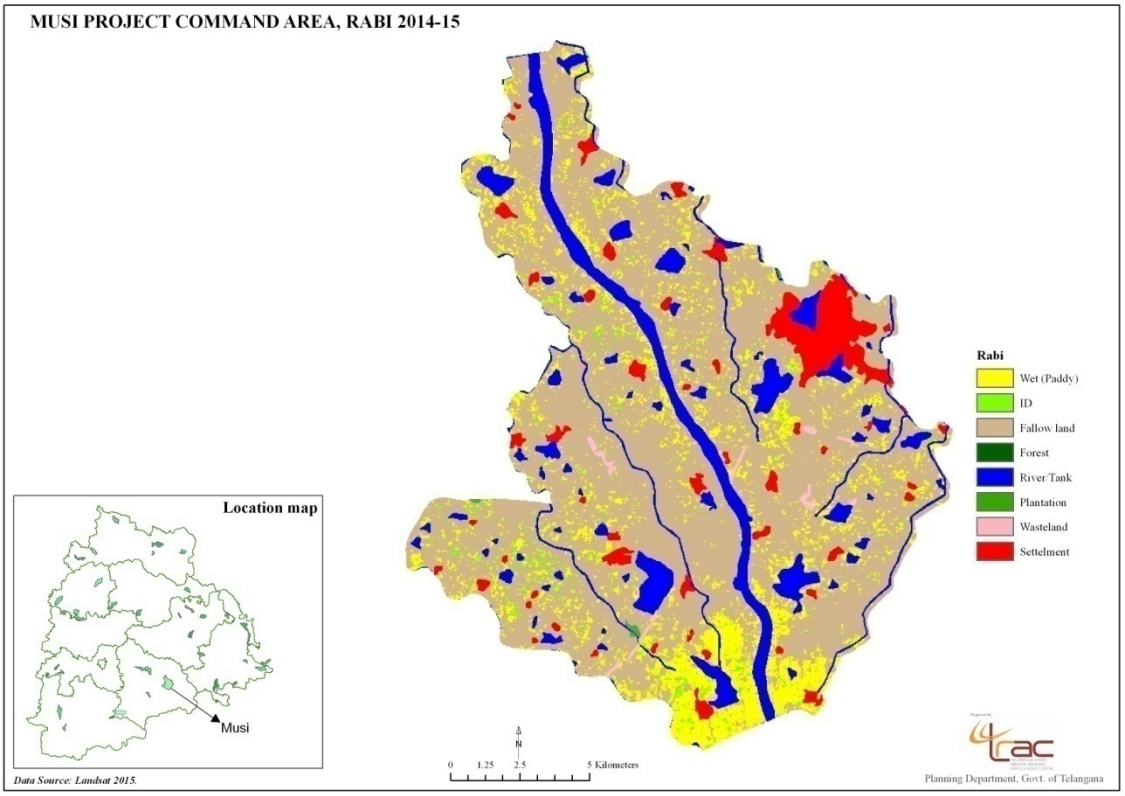


Fig.38 Classification map of Musi Project

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

Results

- The irrigated area is found to be 4,269 ha out of the total ayacut of 12,216 ha.
- The equivalent Wet area is estimated as 3,786 ha, ID area is estimated as 483 ha.
- The total crop area is 35% of the total ayacut area and Wet crop is 89% and ID crop is 11% of the total irrigated area.
- The Rabi crop area, for the current year, 2014-15 is 26% 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%.

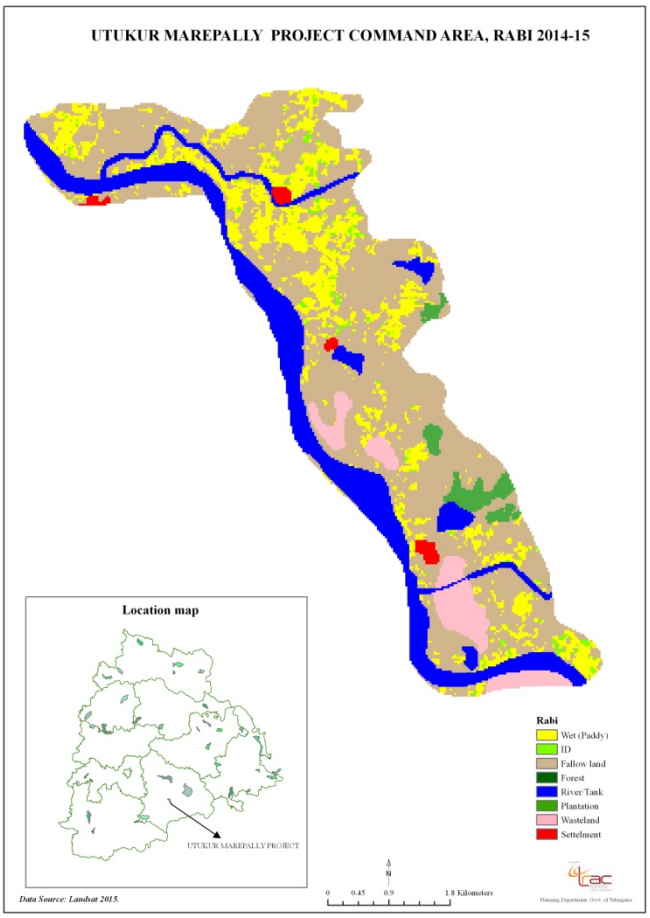


Fig.39 Classification map of Utkurumarepally Project

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

Results

- The irrigated area is found to be 475 ha out of the total ayacut of 592 ha.
- The equivalent Wet area is estimated as 441 ha, ID area is estimated as 34 ha.
- The total crop area is 80% of the total ayacut area and Wet crop is 93% and ID crop is 7% of the total irrigated area.
- The Rabi crop area, for the current year, 2014-15 is 61% 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%.

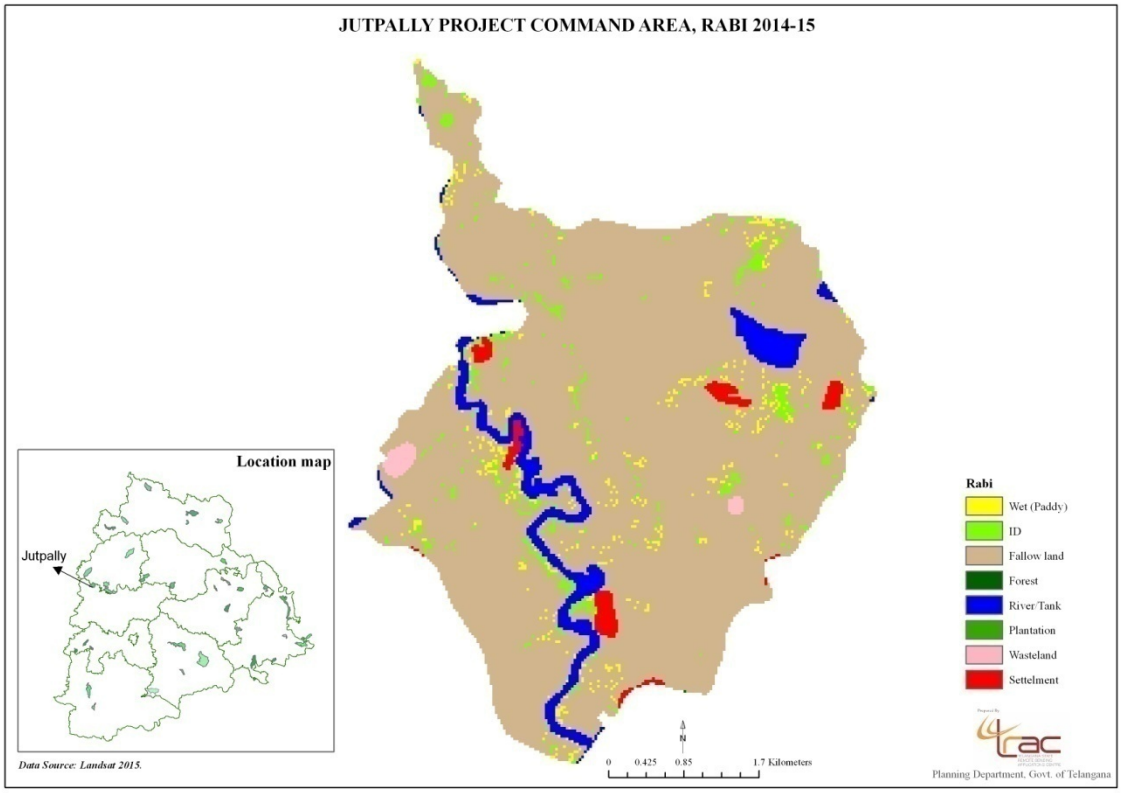


Fig.40 Classification map of Jutpally Vagu Project

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

Results

- The irrigated area is found to be 133 ha out of the total ayacut of 843 ha.
- The equivalent Wet area is estimated as 54 ha, ID area is estimated as 79 ha.
- The total crop area is 16% of the total ayacut area and Wet crop is 41% and ID crop is 59% of the total irrigated area.
- The Rabi crop area, for the current year, 2014-15 is 41% 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%.

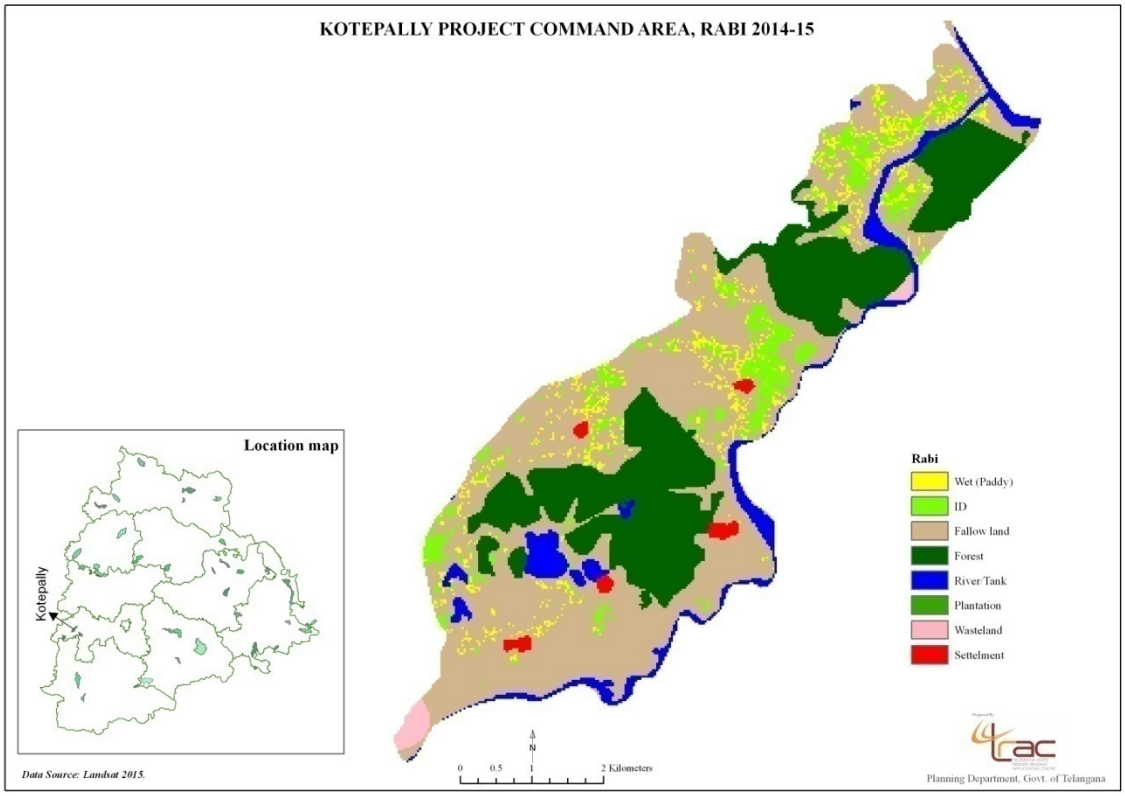


Fig.41 Classification map of Kotipallyvagu Project

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

Results

- The irrigated area is found to be 369 ha out of the total ayacut of 3,723 ha.
- The equivalent Wet area is estimated as 142 ha, ID area is estimated as 227 ha.
- The total crop area is 10% of the total ayacut area and Wet crop is 39% and ID crop is 61% of the total irrigated area.
- The Rabi crop area, for the current year, 2014-15 is above 100% 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%.

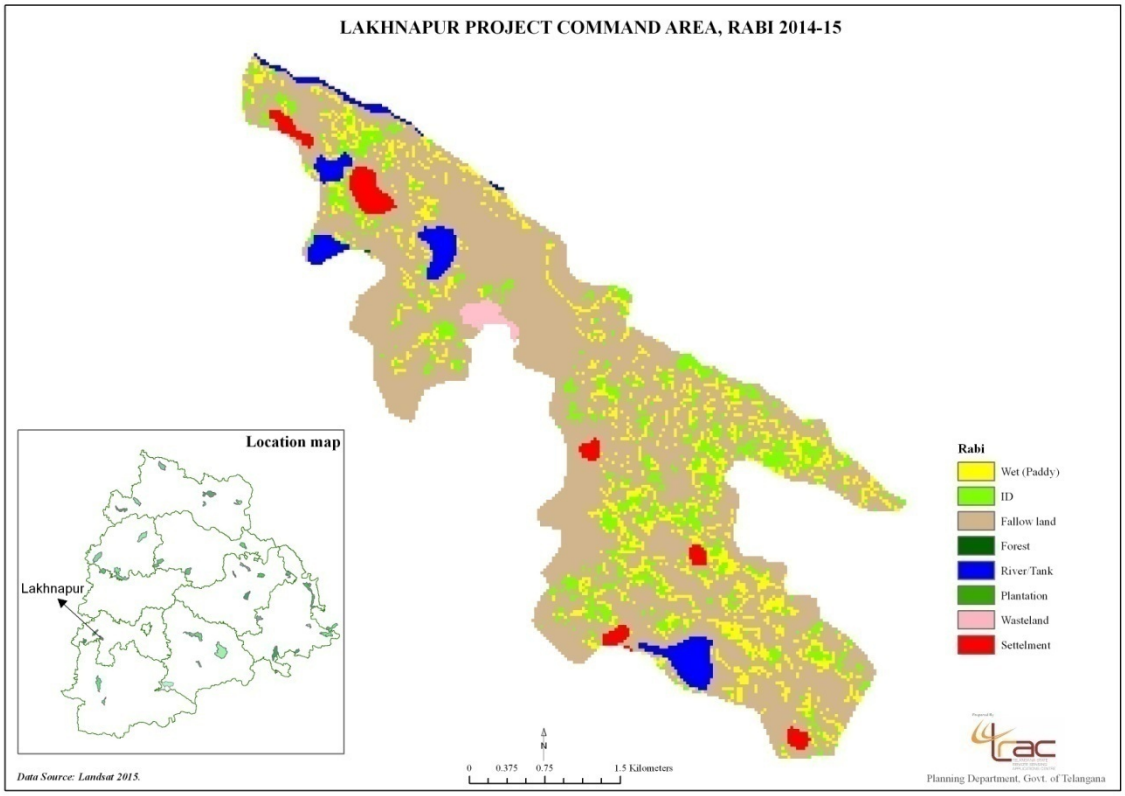


Fig.42 Classification map of Lakhanapur Project

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

Results

- The irrigated area is found to be 315 ha out of the total ayacut of 1,071 ha.
- The equivalent Wet area is estimated as 174 ha, ID area is estimated as 141 ha.
- The total crop area is 29% of the total ayacut area and Wet crop is 55% and ID crop is 45% of the total irrigated area.
- The Rabi crop area, for the current year, 2014-15 is above 100% 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%.

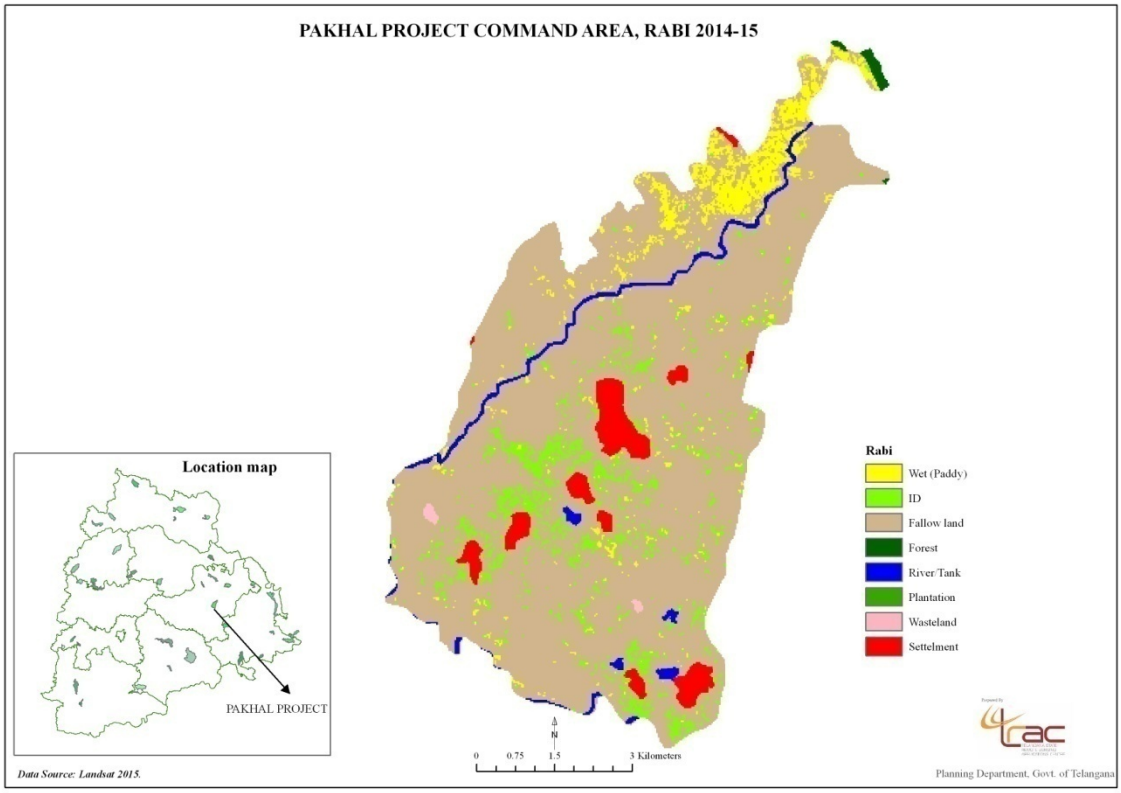


Fig.43 Classification map of Pakhal Lake

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

Results

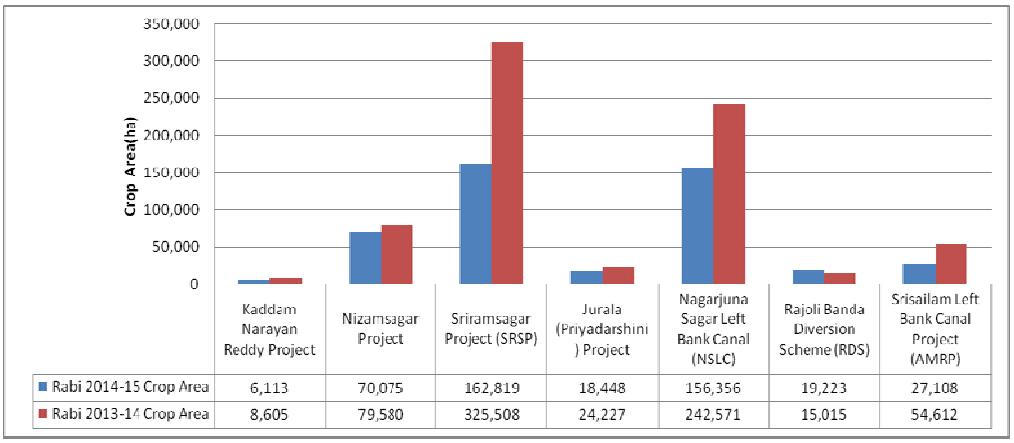
- The irrigated area is found to be 785ha out of the total ayacut of 5,272 ha.
- The equivalent Wet area is estimated as 345 ha, ID area is estimated as 440 ha.
- The total crop area is 15% of the total ayacut area and Wet crop is 44% and ID crop is 56% of the total irrigated area.
- The Rabi crop area, for the current year, 2014-15 is 47% 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

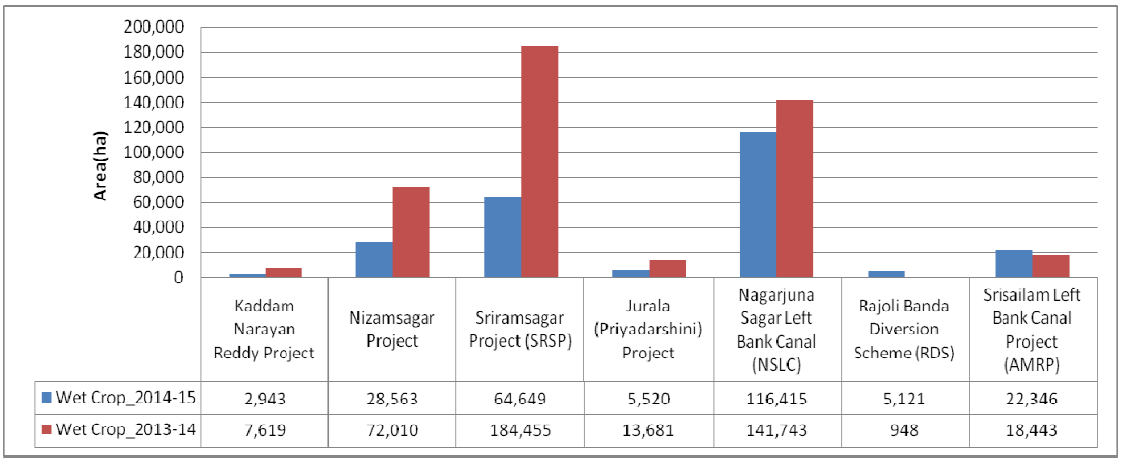
A comparative analysis of the Satellite Remote Sensing based command area monitoring of Major and Medium Irrigation projects in Rabi season for the years 2013-14 and 2014-15 is prepared (Graph.1)

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



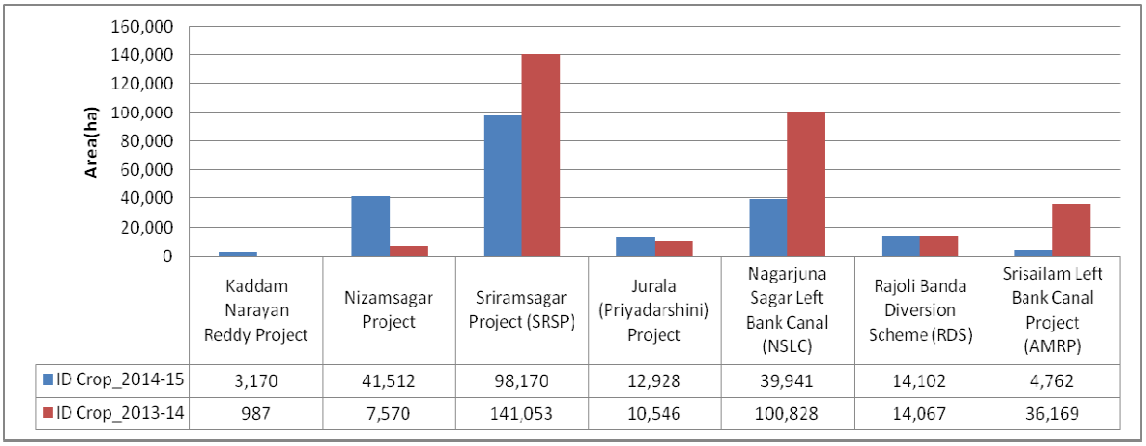
Graph.1 Year wise Comparitive analysis of Rabi Crop in Major projects

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



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

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

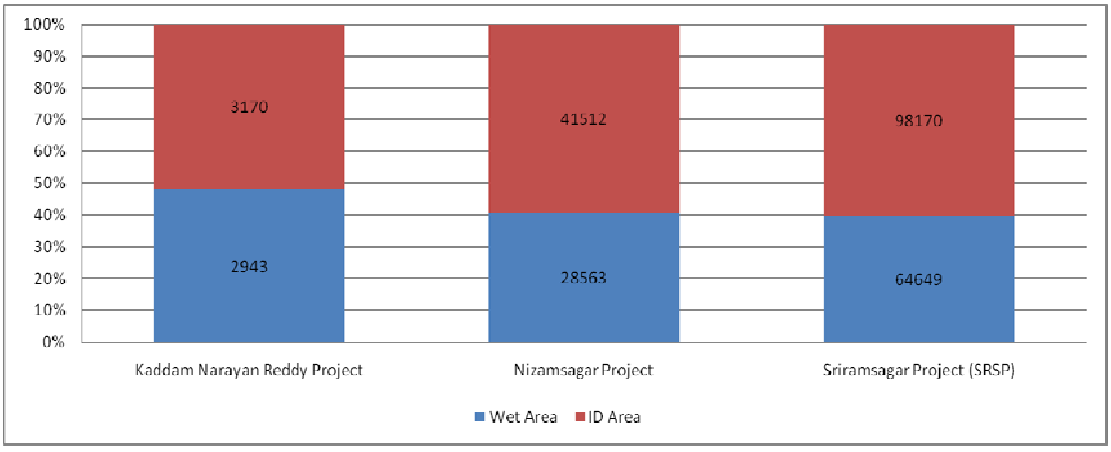


	Kaddam Narayan Reddy Project	Nizamsagar Project	Sriramsagar Project (SRSP)	Jurala (Priyadarshini) Project	Nagarjuna Sagar Left Bank Canal (NSLC)	Rajoli Banda Diversion Scheme (RDS)	Srisailam Left Bank Canal Project (AMRP)
ID Crop_2014-15	3,170	41,512	98,170	12,928	39,941	14,102	4,762
ID Crop_2013-14	987	7,570	141,053	10,546	100,828	14,067	36,169

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

Godavari Basin

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



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

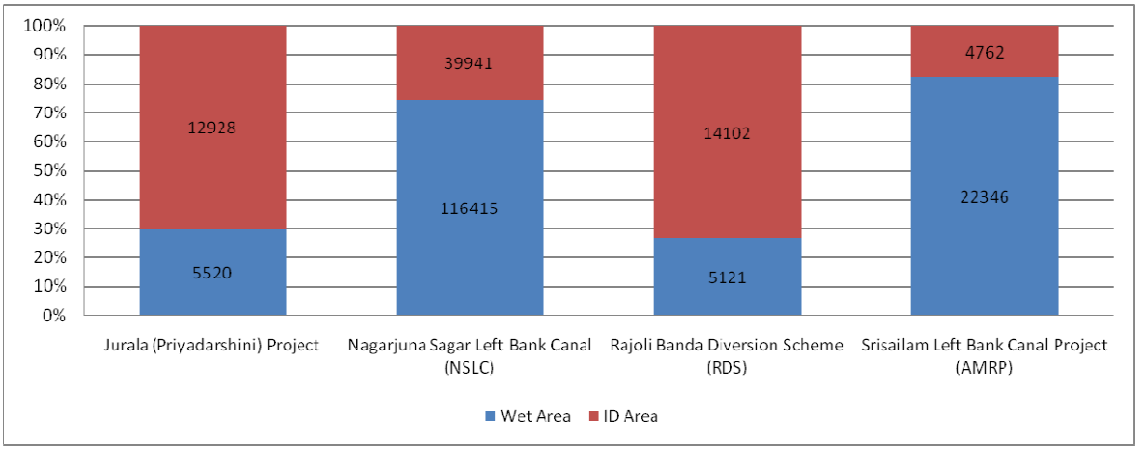
Kaddam Narayan Reddy Project – Comparative analysis of total Rabi crop area, Wet crop and ID crop over last year shows that the total Rabi crop has reduced, the reduction is in Wet crop area. The total crop area is 22% of the total ayacut area and the wet crop is 48% and ID crop is 52% of the total irrigated area.

Nizamsagar Project – Comparative analysis of total Rabi crop area, Wet crop and ID crop over last year shows that the total Rabi crop has reduced mainly because of major reduction in Wet crop area, increase in ID crop area. The total crop area is 75% of the total ayacut area and the wet crop is 41% and ID crop is 59% of the total irrigated area.

Sriramsagar Project (SRSP-I) – Comparative analysis of total Rabi crop area, Wet crop and ID crop over last year shows that the total Rabi crop has reduced mainly because of major reduction in both Wet and ID crop area. The total crop area is 42% of the total ayacut area and the wet crop is 40% and ID crop is 60% of the total irrigated area.

Krishna Basin

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



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

Jurala (Priyadarshini) Project– Comparative analysis of total Rabi crop area, wet crop and ID crop over last year shows that the total Rabi crop has reduced mainly because of major reduction in Wet crop area rather than the ID crop area. The total crop area is 44% of the total ayacut area and the Wet crop is 30% and ID crop is 70% of the total irrigated area.

Nagarjuna Sagar Left Bank Canal (NSLC) – Comparative analysis of total Rabi crop area, Wet crop and ID crop over last year shows that the total Rabi crop has reduced mainly because of major reduction in ID crop area rather than the Wet crop area. The total crop area is 59% of the total ayacut area and the Wet crop is 74% and ID crop is 26% of the total irrigated area.

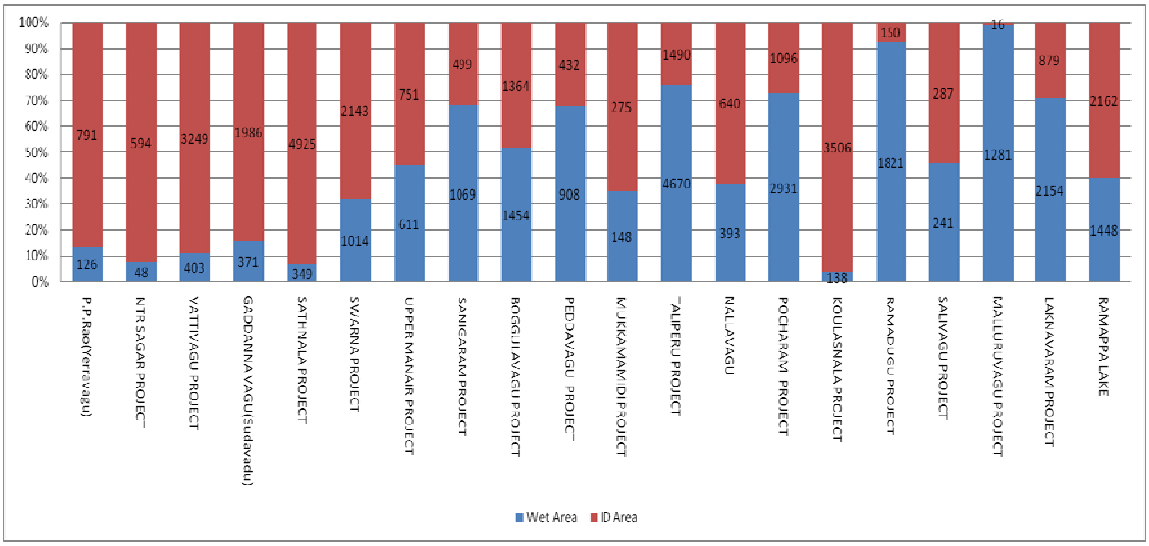
Rajoli Banda Diversion Scheme (RDS) – Comparative analysis of total Rabi crop area, Wet crop and ID crop over last year shows that the total Rabi crop has increase mainly because of major increase in Wet crop area rather than the ID crop area. The total crop area is 54% of the total ayacut area and the Wet crop is 27% and ID crop is 73% of the total irrigated area.

Srisailam Left Bank Canal (AMRP) – Comparative analysis of total Rabi crop area, wet crop and ID crop over last year shows that the total Rabi crop has reduced mainly because of major reduction in ID crop area rather than the Wet crop area. The total crop area is 29% of the total ayacut area and the Wet crop is 82% and ID crop is 18% of the total irrigated area.

7.2 Comparitive analysis of Medium Irrigation Projects

Godavari Basin

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

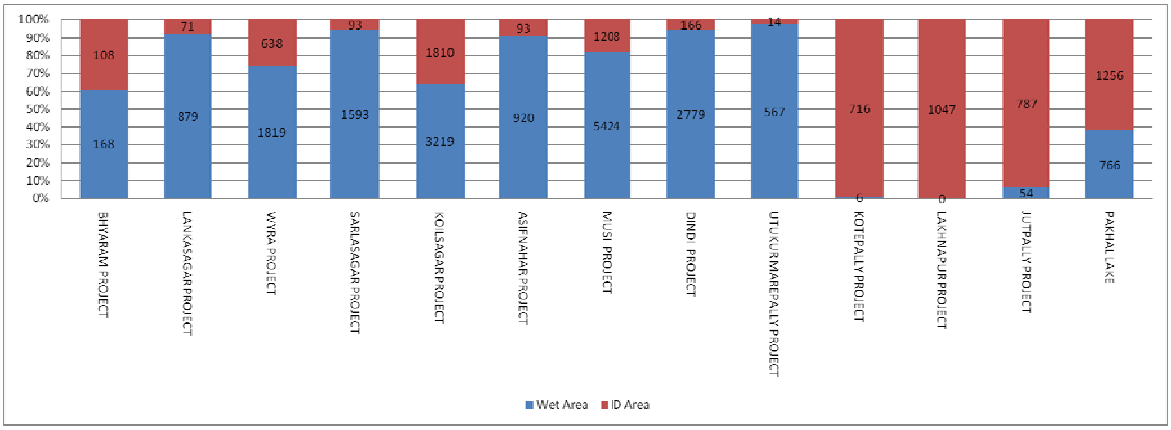


Graph.6 Comparision of Rabi Wet & ID Crop of Medium projects in Godavari Basin

- Out of 20 Medium Irrigation projects, Pocharam , Ramadugu ,Peddavagu, Taliperu, Nallavagu, Mukkamamidi, Swarna, P.P.rao (Yerravagu), Gaddanna vagu (sudavadu), Koulasnala, Sathnala, Vattivagu projects has below 50% wet crop area when compared to ID Crop area.
- The Medium Irrigation projects, Laknavaram, Salivagu , Boggulavagu , Ramappa lake, Upper manair, Malluruvagu, Ntr sagar, Sanigaram projects has below 50% ID crop area when compared to Wet Crop area.

Krishna Basin

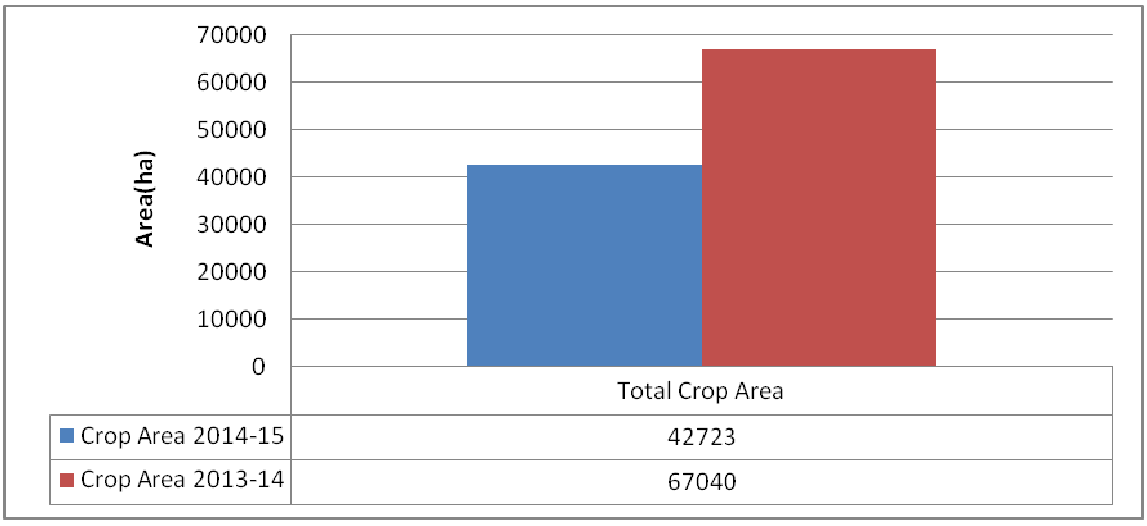
- Comparative analysis of current year, 2014-15 Rabi crop area, wet crop and ID crop areas assessed for Medium Irrigation Projects of Krishna Basin (Graph.7).



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

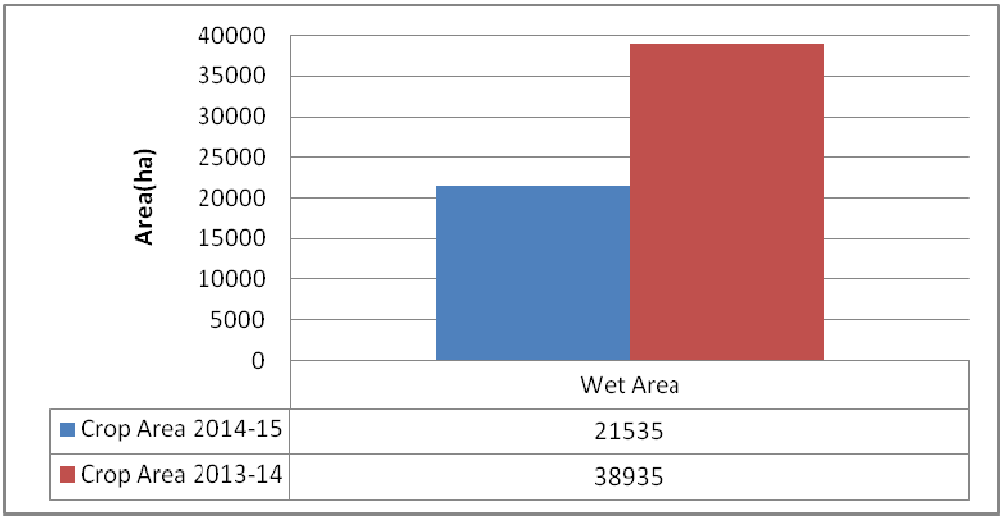
- Out of 13 Medium Irrigation projects about 4 projects, Kotepally, Jutpally, Pakhal Dindi projects have below 50% wet crop area when compared to ID Crop area.
- The Medium Irrigation projects, Bhyaram, Lankasagar, Wyra, Sarlasagar, Koilsagar, Asifnahar, Musi, Dindi, Utukur Marepally projects has below 50% ID crop area when compared to Wet Crop area.

Total Rabi 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 Rabi crop area of 2014-15 is 36% less than the area observed in 2013-14.



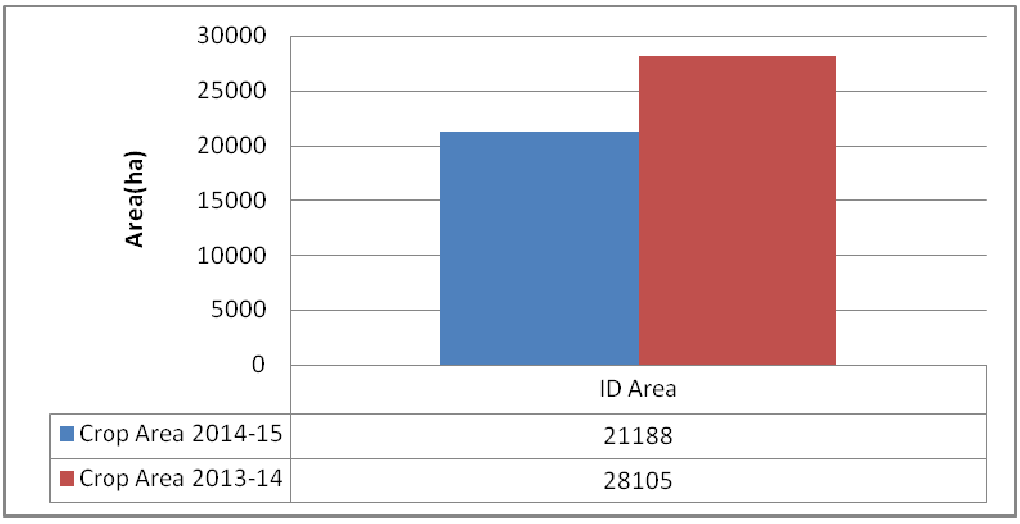
Graph.8 Year wise Comparitive analysis of Rabi Crop in all Medium Projects

- Total Rabi Wet crop area of all Medium projects in Telangana State for the years of 2013-14 and 2014-15 is compared (Graph.9). It is observed that the total Rabi Wet crop area of 2014-15 is 45% less than the area observed in 2013-14.



Graph.9 Year wise Comparitive analysis of Rabi Wet Crop in all Medium Projects

- Total Rabi ID crop area of all Medium projects in Telangana State for the years of 2013-14 and 2014-15 is compared (Graph.10). It is observed that the total Rabi ID crop area of 2014-15 is 25% less than the area in 2013-14.

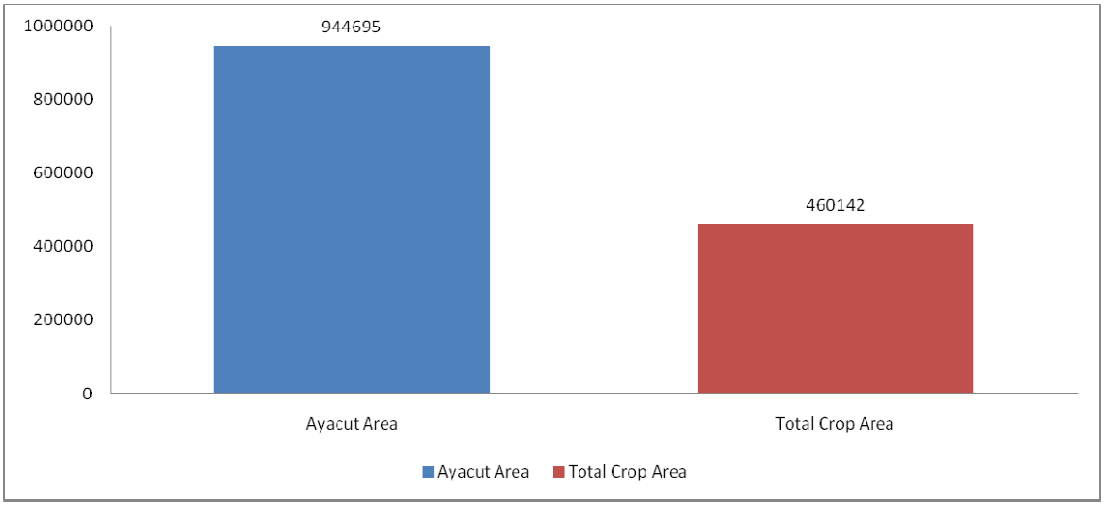


Graph.10 Year wise Comparitive analysis of Rabi ID Crop in Medium Projects

- Comparative analysis of total Rabi crop area, wet crop and ID crop over with previous year for all the medium projects shows that the total Rabi crop has reduced by 26% because of major reduction in Wet crop area of 45% rather than the ID crop area of 25%.

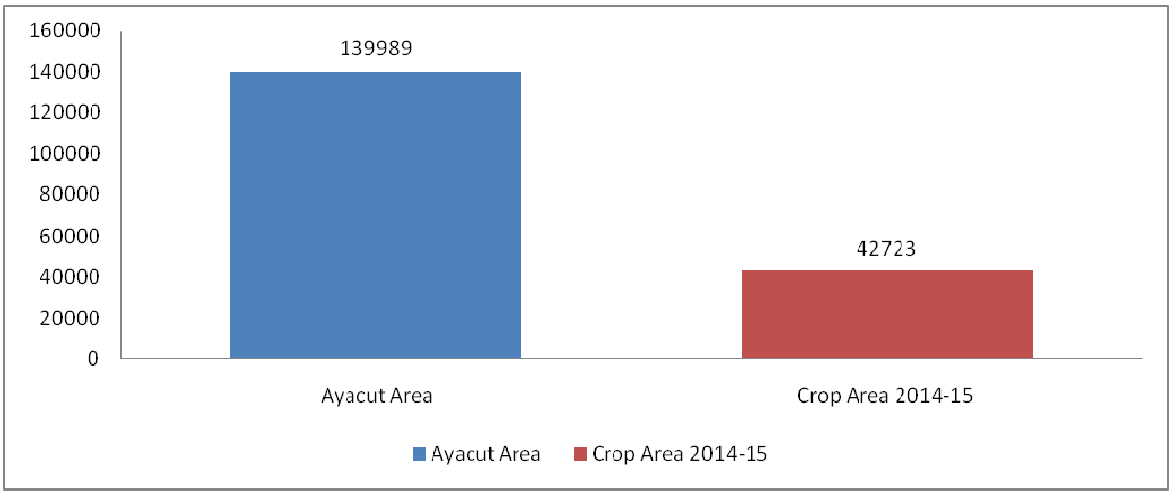
7.3 Comparision of Current year Crop Area with Ayacut Area

- Total Rabi crop area and Ayacut Area of all Major Irrigation projects in Telangana State for the year 2014-15 (Graph.11). It is observed that the total Rabi crop area is 49% of the total ayacut area.



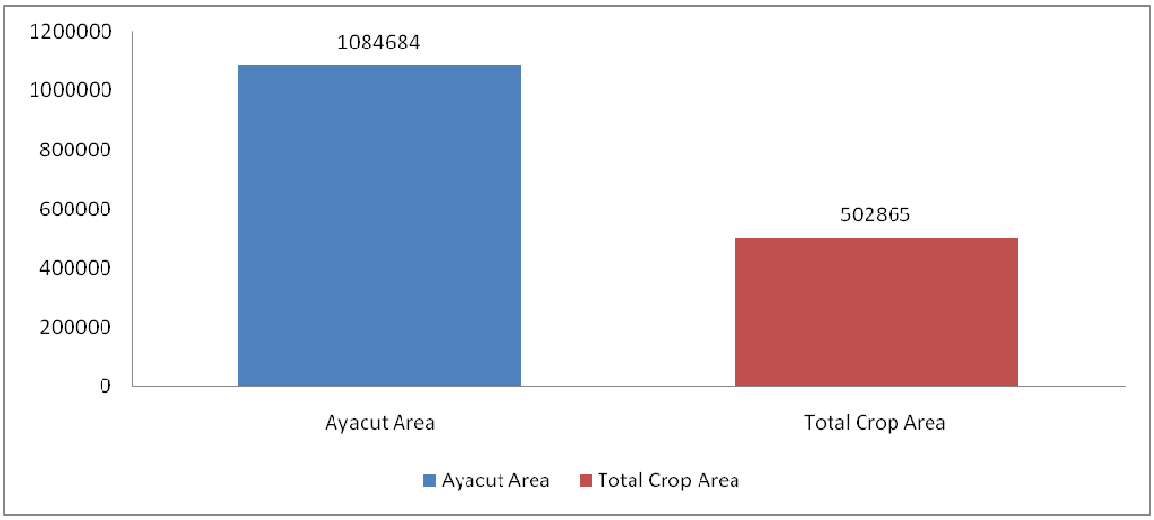
Graph.11 Comparitive analysis of Ayacut area and Crop area of all Major Projects

- Total Rabi crop area and Ayacut Area of all Medium Irrigation projects in Telangana State for the year 2014-15 (Graph.12). It is observed that the total Rabi crop area is 31% of in the total ayacut area.



Graph.12 Comparitive analysis of Ayacut area and Crop area of all Medium Projects

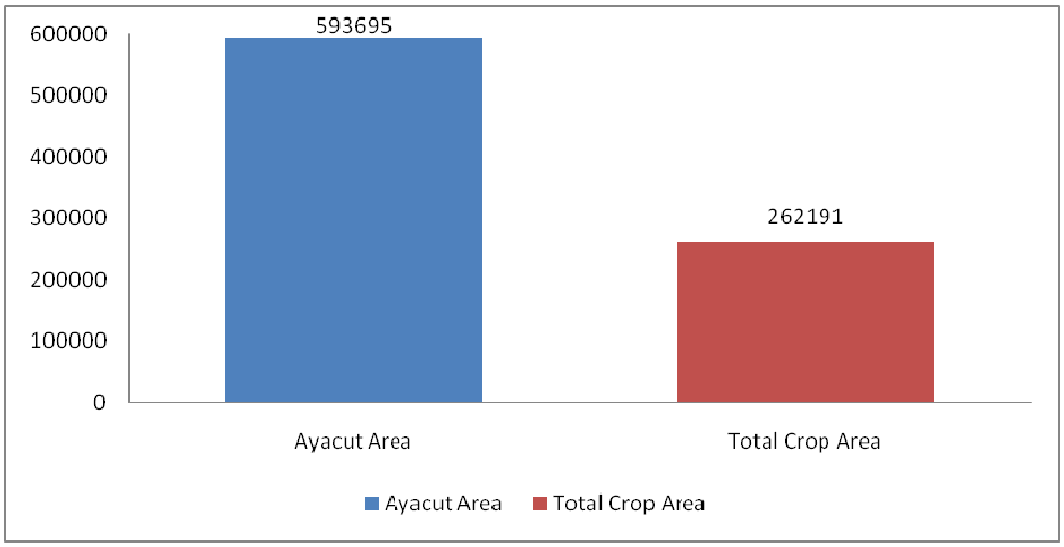
- Total Rabi crop area and Ayacut Area of all Major and Medium Irrigation projects in Telangana State for the year 2014-15 (Graph.12). It is observed that the total Rabi crop area is 46% of in the total ayacut area of Major and Medium Irrigation projects.



Graph.13 Comparitive analysis of Ayacut area and Crop area of all Major & Medium Projects

Godavari Basin

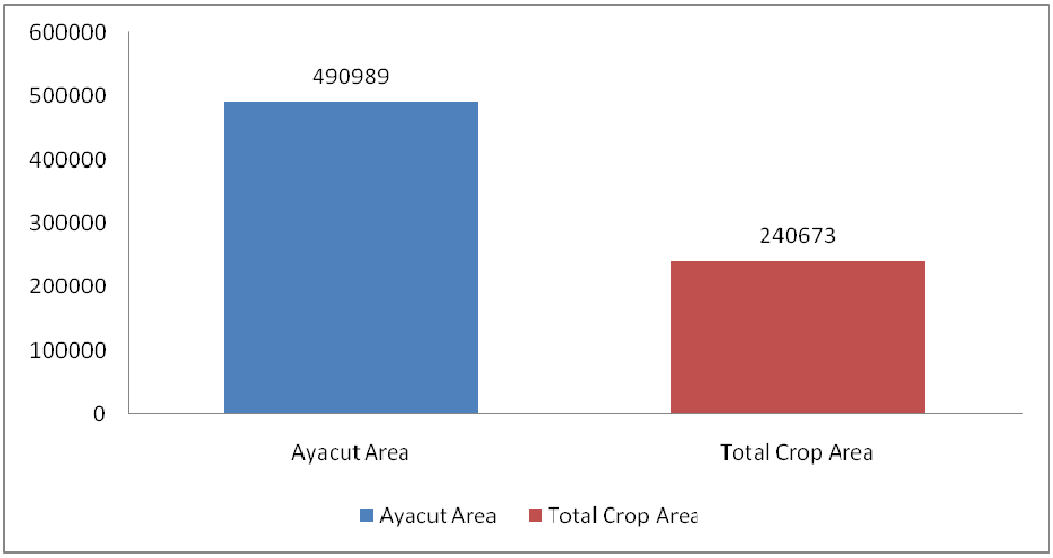
- Total Rabi crop area and Ayacut Area of all Major and Medium Irrigation projects in Godavari Basin part of Telangana State for the year 2014-15 (Graph.14). It is observed that the total Rabi crop area is 44.2% of in the total ayacut area of all Major and Medium Irrigation projects.



Graph.14 Comparitive analysis of Ayacut area and Crop area of all Major & Medium Projects in Godavari Basin

Krishna Basin

- Total Rabi crop area and Ayacut Area of all Major and Medium Irrigation projects in Krishna Basin part of Telangana State for the year 2014-15 (Graph.15). It is observed that the total Rabi crop area is 49% of in the total ayacut area of all Major and Medium Irrigation projects.



Graph.15 Comparitive analysis of Ayacut area and Crop area of all Major & Medium Projects in Krishna Basin

Conclusions

- From the entire study the following conclusions were arrived for the year 2014-15.
- The Rabi crop area is less than the ayacut area for all the major and medium irrigation projects.
- The Rabi crop area, in all the major and medium irrigation projects, for the current year, 2014-15 is 61.5% when compared with the previous year 2013-14.
- The performance of Major and Medium irrigation projects of Krishna basin is comparatively better than that of projects of Godavari basin.
- The performance of command area of both major and medium irrigation projects put together was moderate.
- The major irrigation projects performed well when compared to medium irrigation projects.
- In most of the irrigation projects reduction in ID crop area was more when comapared with reduction in Wet crop area.

Godavri Basin Major and Medium Irrigation Projects:

S.No	Name of the Project	Ayacut Area(ha)	Rabi Crop 2013-14 (ha)	Rabi Crop 2014-15 (ha)	% of Rabi Crop 2014-15 to the Ayacut	% of Rabi Crop 2014-15 to 2013-14
1	*Kaddam Narayan Reddy	27,530	8,605	6,113	22	71
2	*Nizamsagar	93,660	79,580	70,075	75	88
3	*Sriramsagar (SRSP)	3,87,266	3,25,508	1,62,819	42	50
4	NTR Sagar	2,429	0	74	3	---
5	Sathnala	9,717	3,204	2,062	21	64
6	Swarna	3,621	1,372	862	24	63
7	Sudavadu(Gaddanna vagu)	5,668	1,052	1,012	18	96
8	Vattivagu	9,919	448	314	3	70
9	Yerravagu (P.P. Rao)	4,453	347	314	7	90
10	Boggulavagu	2,084	520	836	40	161
11	Sanigaram	2,065	1,715	1,120	54	65
12	Upper Manair	5,298	1,888	387	7	20
13	Mukkamamidi	1,320	423	163	12	39
14	Peddavagu	6,478	2,457	208	3	8
15	Taliperu	10,000	2,535	2,796	28	110
16	Nallavagu	2,453	1,145	1,911	78	167
17	Koulasnala	3,644	776	1,258	35	162
18	Pocharam	4,251	2,479	2,136	50	86
19	Ramadugu	2,024	3,075	4,019	199	131
20	Laknavaram	3,522	2,637	459	13	17
21	Malluruvagu	3,036	1,237	1,385	46	112
22	Ramappa lake	2,024	2,073	151	7	7
23	Salivagu	1,233	563	574	47	102

*****Major Irrigation Projects

Krishna Basin Major and Medium Irrigation Projects:

S.No	Name of the Project	Ayacut Area(ha)	Rabi Crop 2013-14(ha)	Rabi Crop 2014-15(ha)	% of Rabi Crop 2014-15 to the Ayacut	% of Rabi Crop 2014-15 to 2013-14
1	*Jurala (Priyadarshini)	42,405	24,227	18,448	44	76
2	*Nagarjuna Sagar Left Bank Canal (NSLC)	2,66,257	2,42,571	156,356	59	64
3	*Rajoli Banda Diversion Scheme (RDS)	35,425	15,015	19,223	54	128
4	*Srisailam Left Bank Canal (AMRP)	92,152	54,612	27,108	29	50
5	Bhyaram	2,915	772	412	14	53
6	Lankasagar	2,977	1,061	108	4	10
7	Wyra	7,038	3,545	5,185	74	146
8	Koilsagar	5,040	4,119	3,113	62	76
9	Sarlasagar	1,695	1,029	636	38	62
10	Asifnahar	6,172	5,108	2,681	43	52
11	Dindi	5,196	3,064	1,057	20	34
12	Musi	12,216	16,246	4,270	35	26
13	Utukur Marepally	592	783	475	80	61
14	Jutpally	843	329	133	16	40
15	Kotepally	3,723	239	369	10	154
16	Lakhnapur	1,072	271	315	29	116
17	Pakhal lake	5,272	1,670	785	15	47

*Major Irrigation Projects