



# **Water Saving Technologies in Rice Cultivation : Up-scaling at Farmers' Holding in Villupuram district of Tamilnadu**

**PRESENTED BY**

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**Objective :** To improve the water usage efficiency, grain yield and livelihood by implementing water saving technologies for sustaining rice production in the villages of Villupuram District of Tamil Nadu by spreading rice technologies such as System of Rice Intensification (SRI), Alternate Wetting & Drying Irrigation (AWDI) & Direct Seeding using Drum seeder (DSR) to the farmers

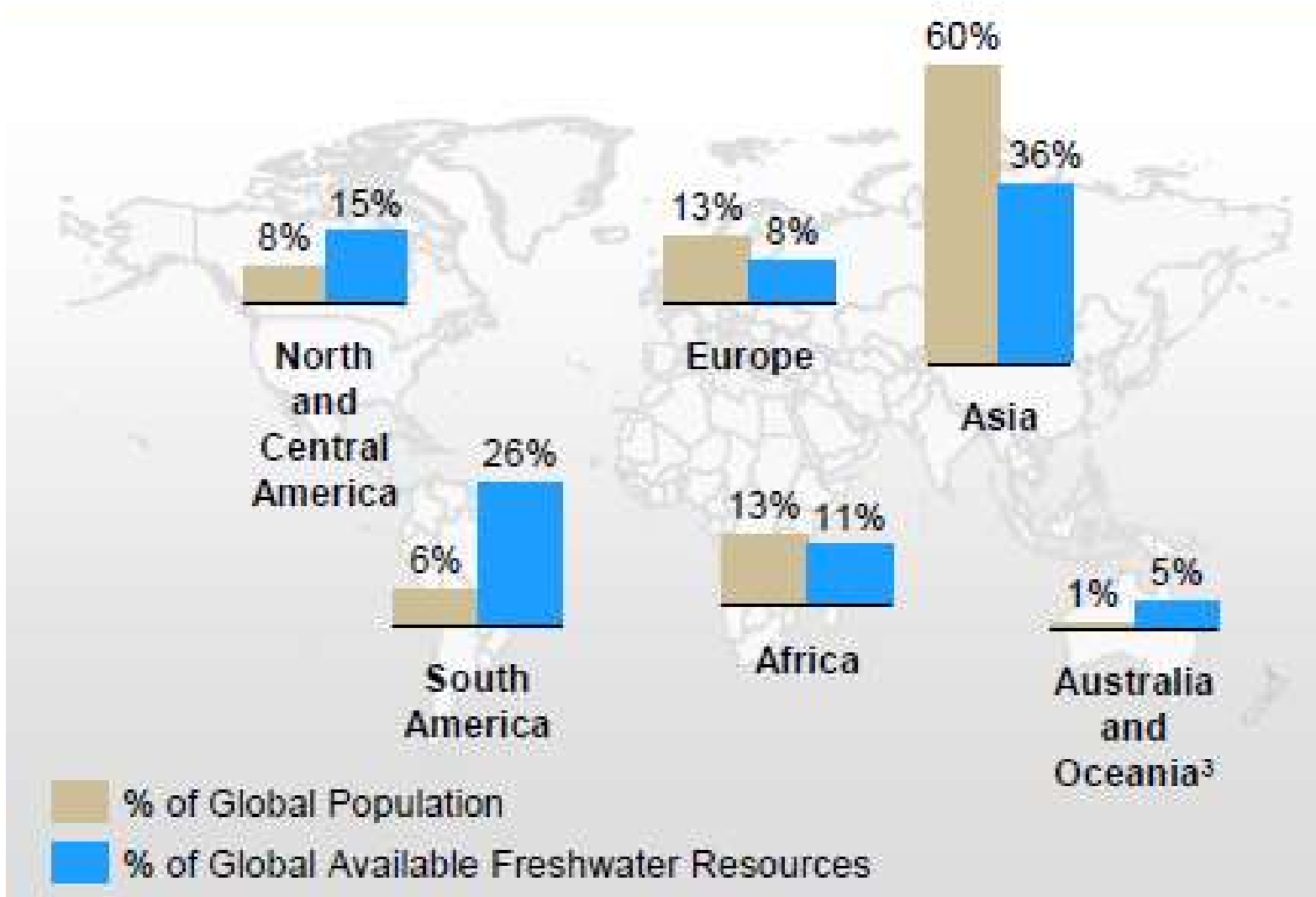
The financial support obtained for implementation at the farmers field by IOCL (SRPL), Chennai as CSR Project is kindly acknowledged.



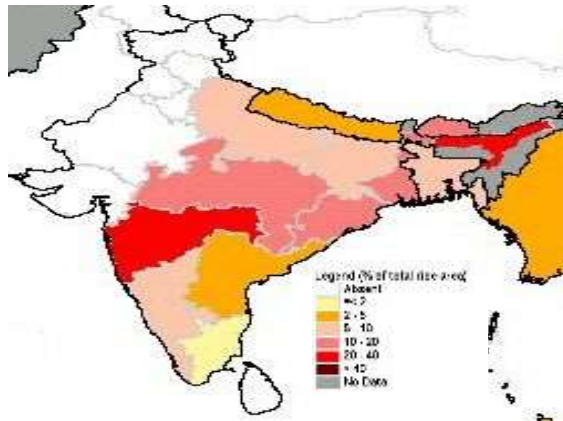
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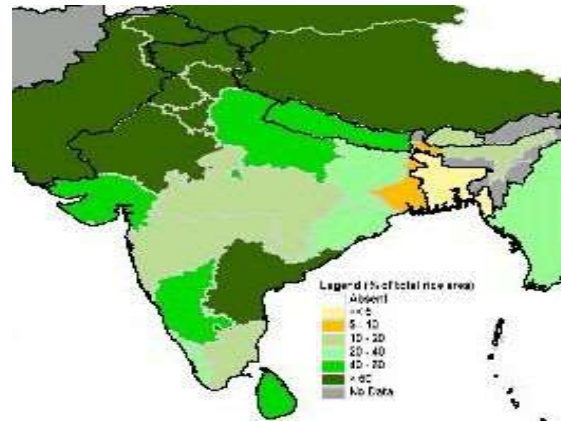
## Global Population Distribution vs. Freshwater Reserves



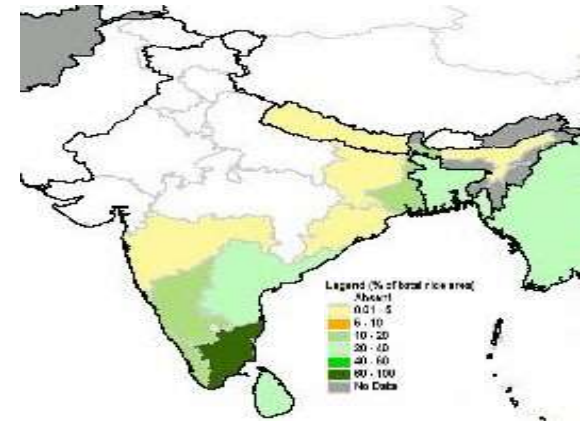
# RICE ECOSYSTEM IN INDIA



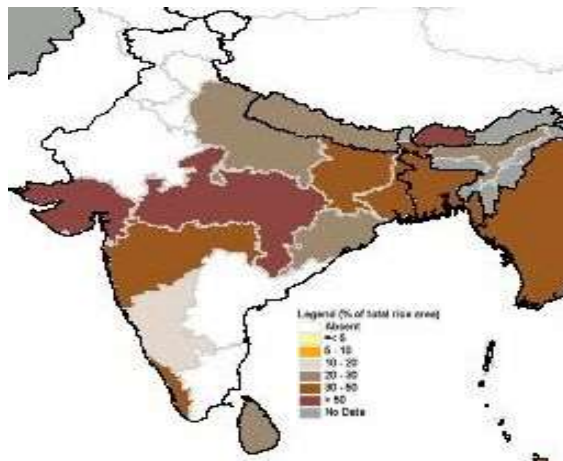
UPLAND



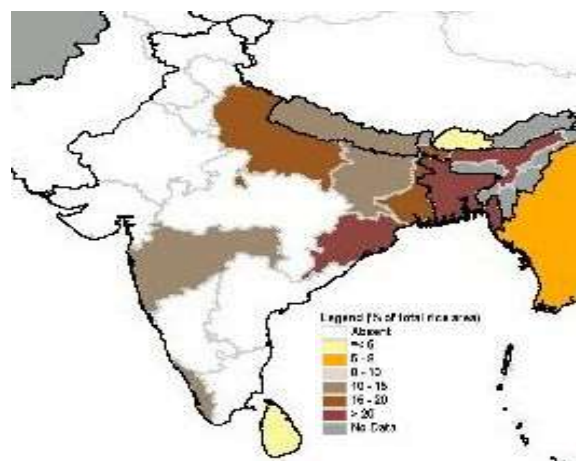
IRRIGATED WET



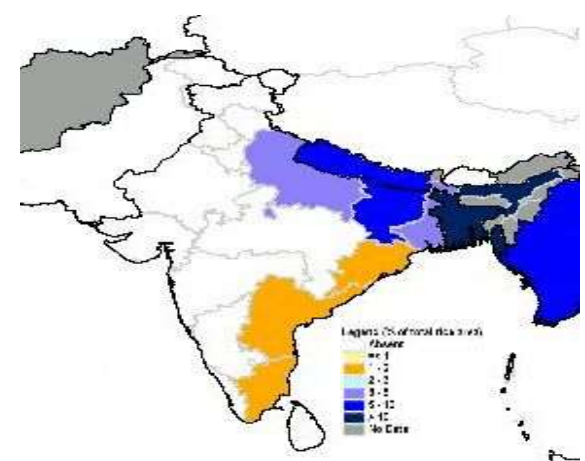
IRRIGATED DRY



SHALLOW RAINFED



INTERMEDIATE RAINFED



DEEP WATER

**More  
Crop Per  
Drop**



**More  
Crop Less  
Drop**



**By  
Improving  
Water  
Use  
Efficiency**

**Improved irrigation methods in groundwater/ lift irrigated areas would address the challenges**



**Adoption of Water  
Saving technologies**



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## More With Less-System of Rice Intensification



**Young Seedlings (14-15 DAS)**



**One Seedling / Hill**



**Square Planting (25 x 25 cm)**



**Conoweeder Operation (10,20,30 Days)**



**Intermittant Irrigation (2.5 cm height)  
(AWDI - Field Water Tube)**

### Benefits :

- **Saving in seeds (80%)**
- **Water saving (25-30%)**
- **Less inputs(Seed/water/labour/fertilizer/energy)**
- **Incorporation of weeds as manure**
- **Aeration and profuse tillering**
- **Increased yield (20-30%)**
- **Drought tolerance**
- **Resistant to Pest & Disease**

Particulars	Yield (Kg/ha)	Net Income (Rs/ha)	Water use (mm)
SRI	6592	58692	885
Conventional Planting	5689	45038	1109

**SRI is Climate Resilient Technology - Conserves Natural Resources**





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## Field Water Tube –Alternate Wetting & Drying Irrigation



- ➡ Install a PVC pipe 20 cm in diameter & 40 cm height with holes (5 mm) .
- ➡ Place it in the rice field ( 15 cm above and 25 cm below the soil surface) after transplanting.
- ➡ Start AWD at 10 days after transplanting and allow the field to dry out.
- ➡ Re- flood the field to a standing water layer of 2.5 cm when the groundwater is 15-20 cm below the soil surface.
- ➡ Continue AWD cycles after flowering until maturity.

AWDI, water savings are in the order of 15- 30%, minimize Nutrients loss & Methane emission



## Direct Seeded Rice- Drum Seeder

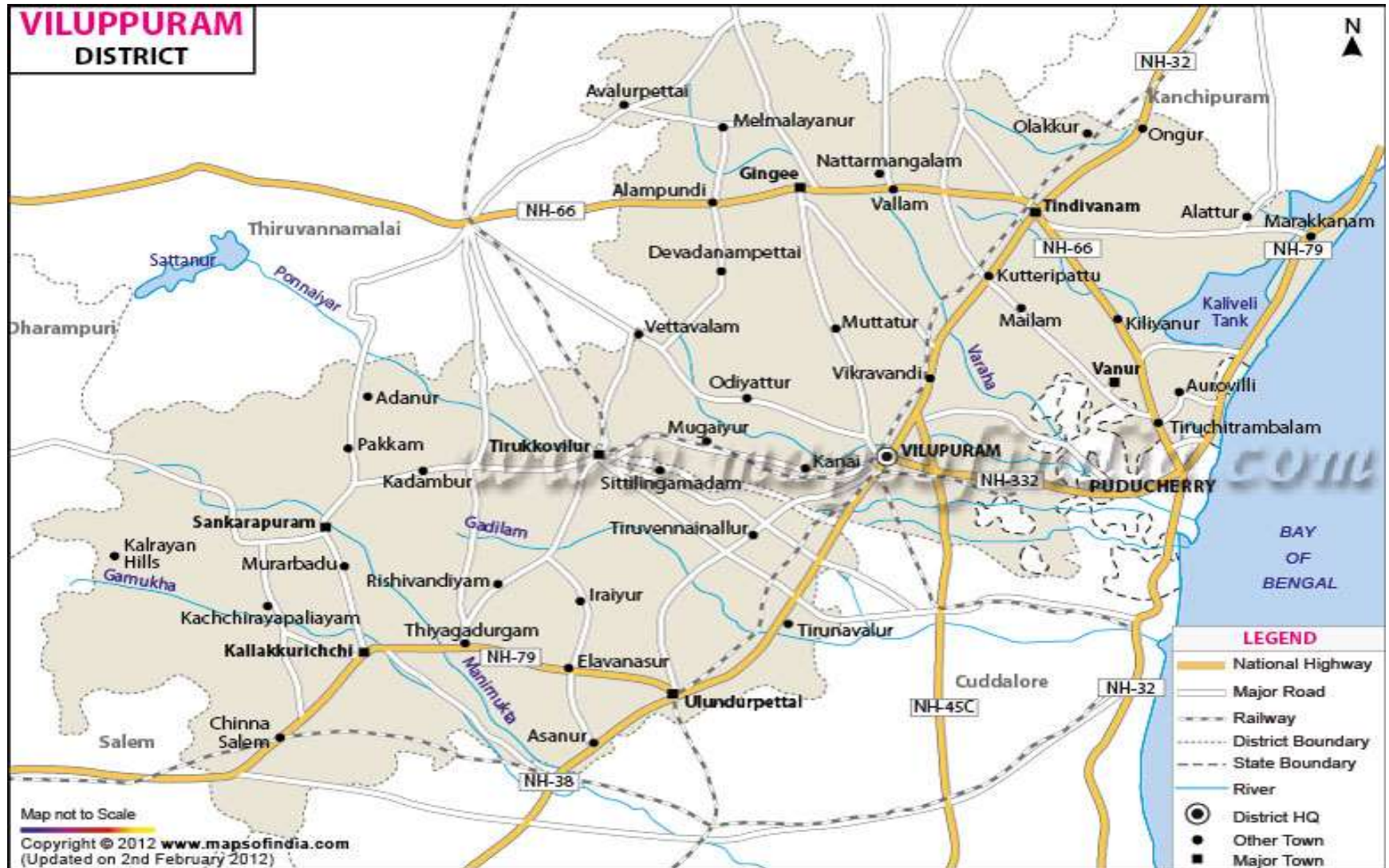


- ➡ **Easier ( Less Drudgery)**
- ➡ **Timely crop establishment**
- ➡ **Reduced labour cost for establishment**
- ➡ **Possible savings in water use (15-20 %)**
- ➡ **Maximizes net profit by 20 %**
- ➡ **Reduce production cost (Rs.4000-5000/ha)**
- ➡ **Early harvest by 7-10 days.**

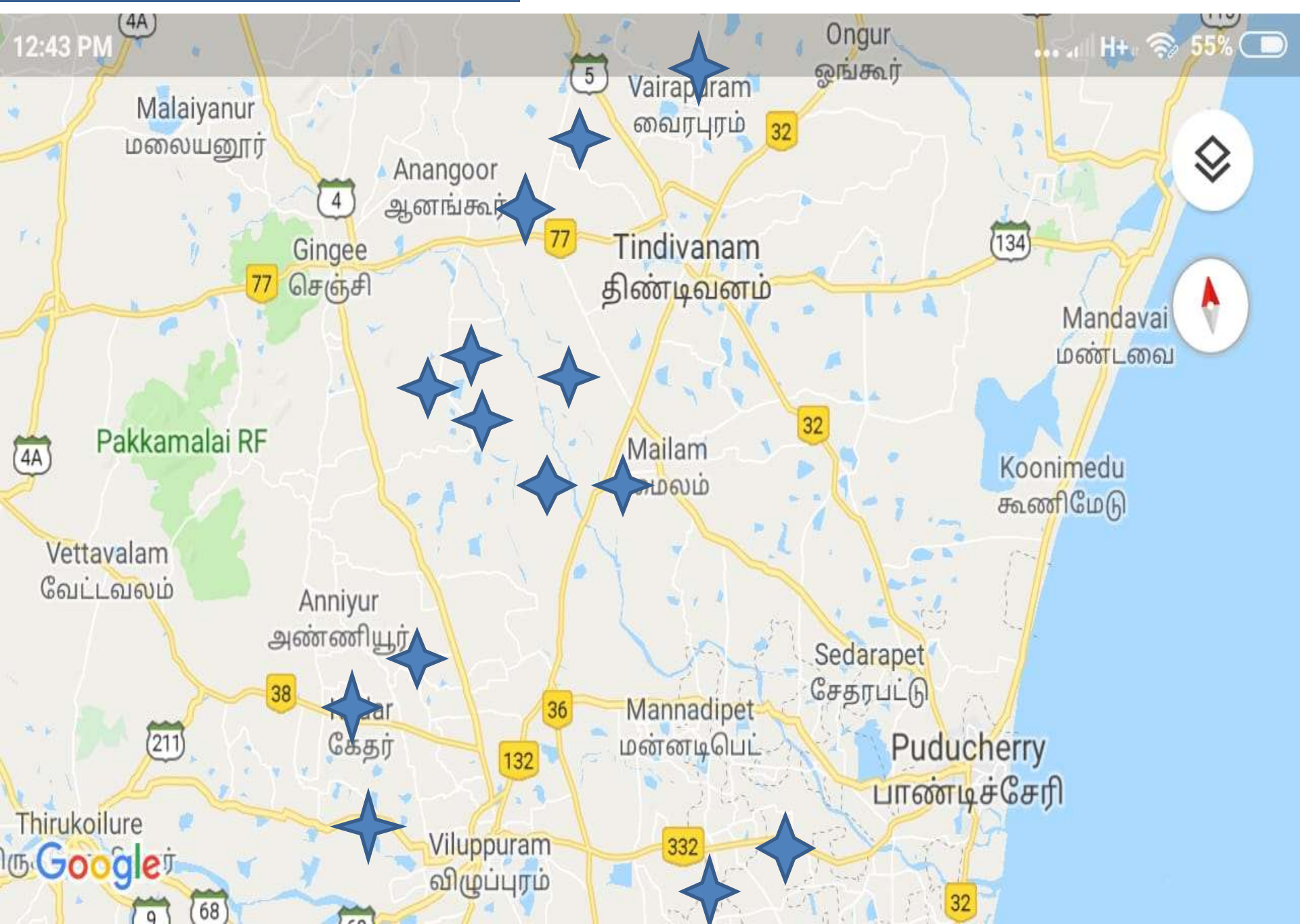
**No** to... Nursery / Pulling out of Seedlings / Transplanting & Labour dependency



# Project Locations – Villupuram District



# Project implementation Villages

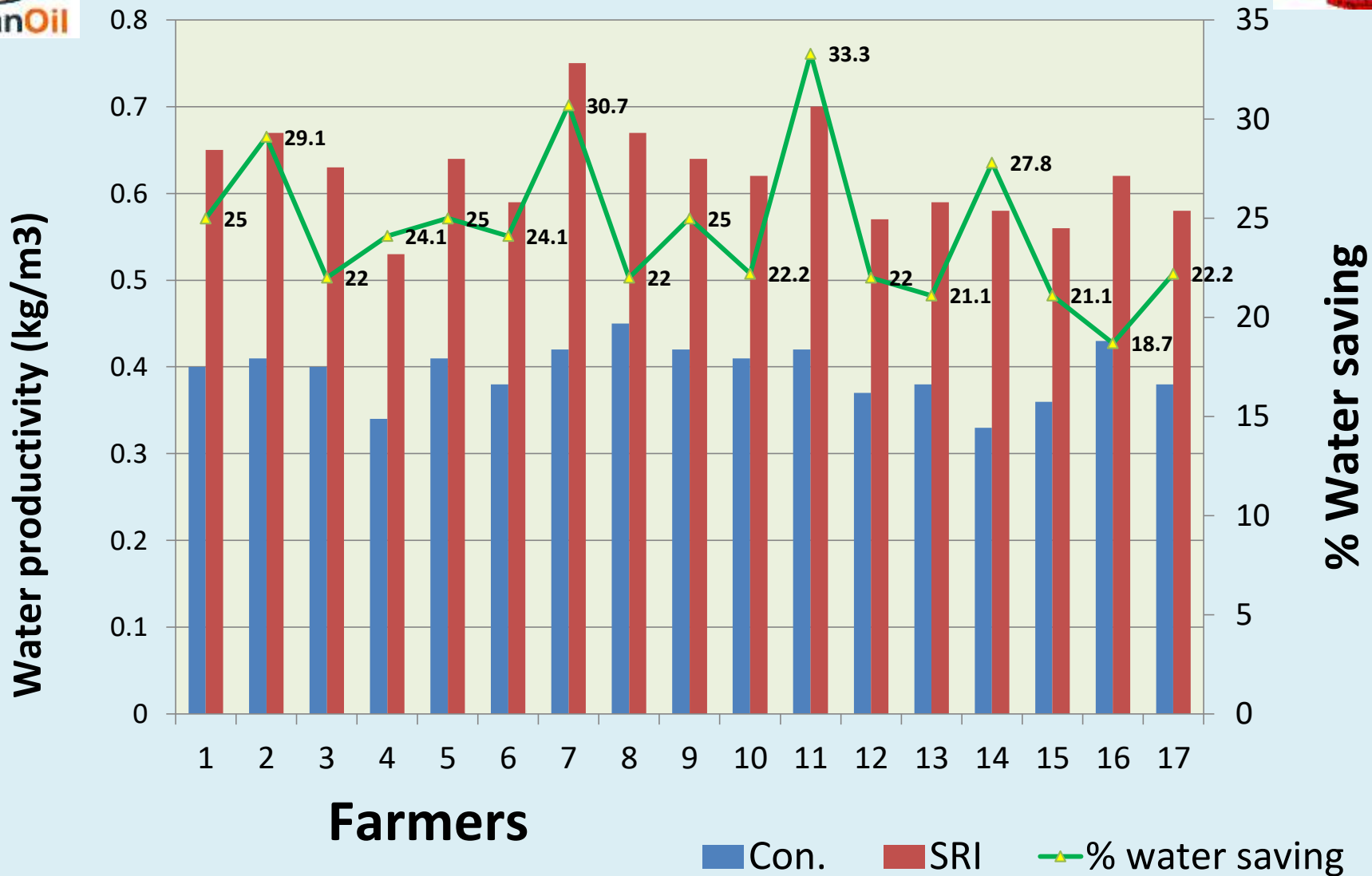




# SRI

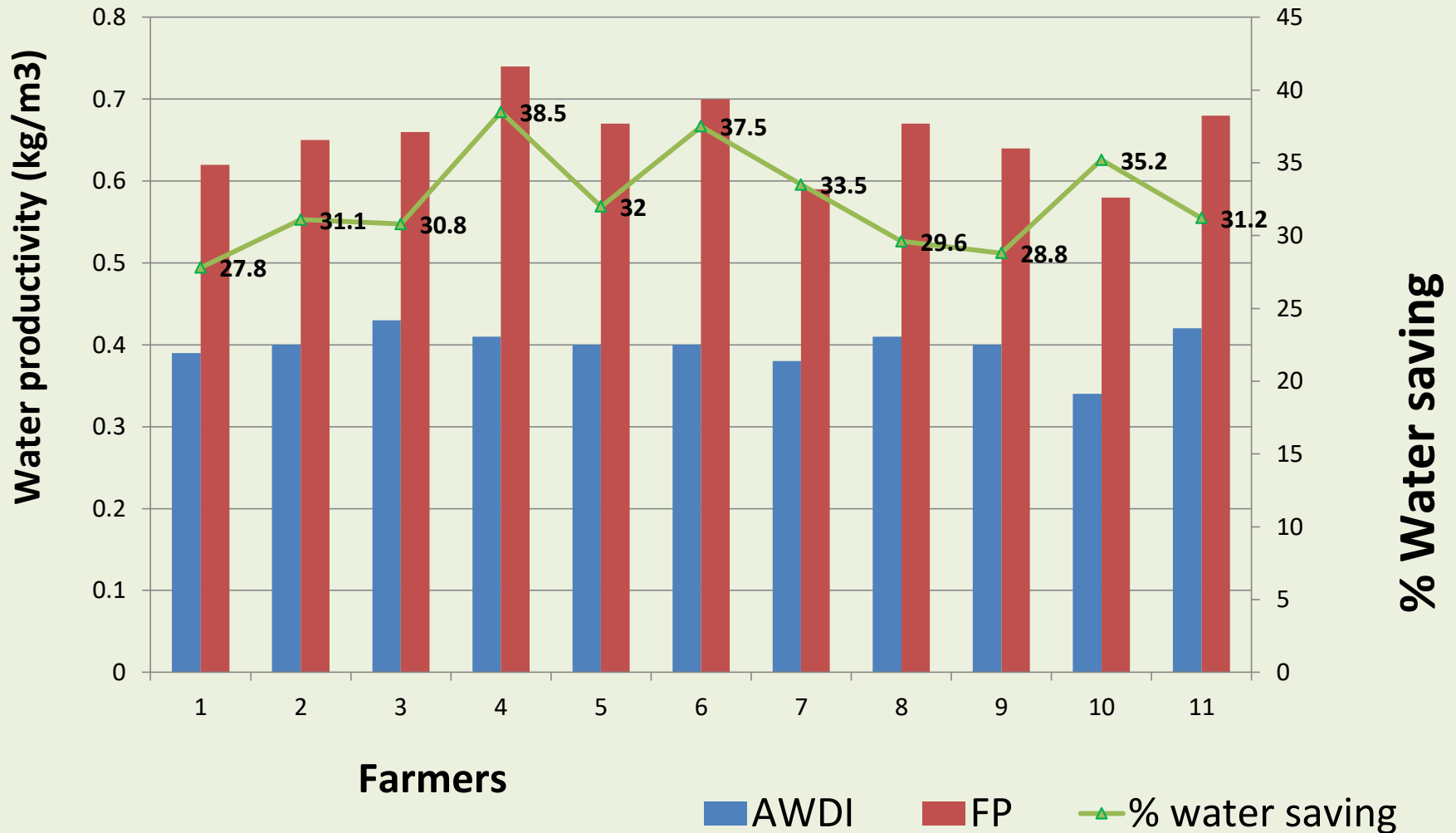


## Water Productivity and saving as influenced by method of rice cultivation





# Water Productivity and % water Saving as influenced by AWDI & Continuous submergence

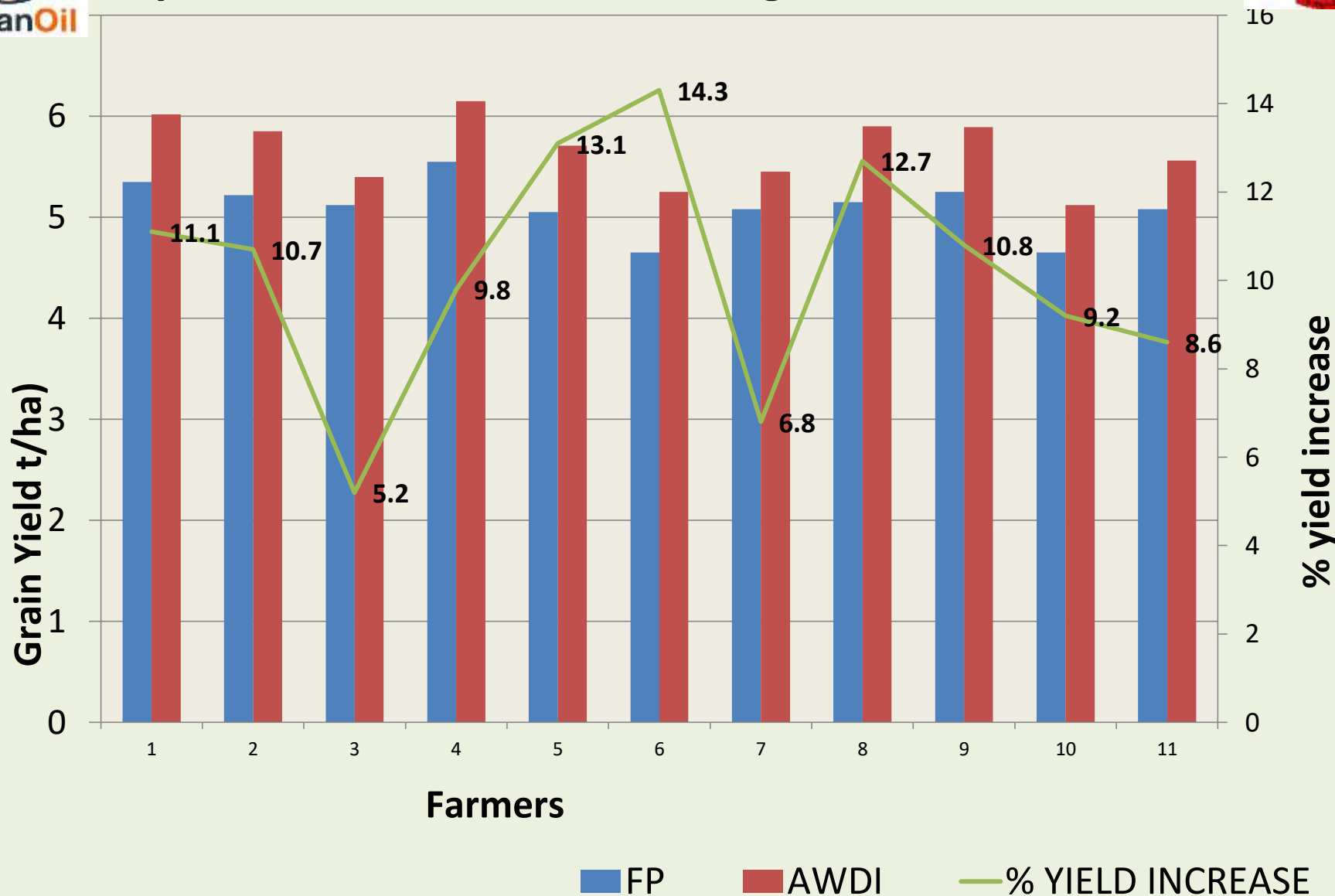


# AWDI





# Crop Productivity and % yield increase as influenced by AWDI & Continuous submergence



## Field day



## Capacity building Programme







## IOCL-Team and Officials Visit:



## Water Requirement Recorded In The Project Area

Conventional planting system : 1200 - 1390 mm

SRI : 940 mm -1050 mm

AWDI : 850 mm -1150 mm

Direct Seeded Rice (DSR) : 950-1100 mm



## Physical target & Achievements with Impact area

S.N	Activities	2018-19			2019-20			2020-21		
		Target (ac)	Achievemet (ac)	Impact (ac)	Target (ac)	Achievemet (ac)	Impact (ac)	Target (ac)	Achievemet (ac)	Impact (ac)
1.	SRI	25	25	78.9	25	25	85.2	25	25	142.5
2.	AWDI	25	25	77.3	25	25	104.7	25	25	127.5

# ABSTRACT

Rice is the principle food crop of Tamilnadu state, cultivated in large area with crop area distribution in all the districts of the state under irrigated or rain fed eco-systems. Among the major cereals grown rice crop consume major amount of water and the water use efficiency is also low compared to other field crops. There are promising technologies on water saving in rice and these were advocated and up-scaled to the farmers in Villupuram district of Tamilnadu State .There techniques were popularised among poor land holding farmers in rice growing locations. The main objective of the study was to bring awareness among rural farmers on water saving technologies in Rice production, thereby increasing water use efficiency and enhanced grain yield. Field demonstrations were carried out in selected locations for different water saving technologies like System of Rice Intensification (SRI), Alternate Wetting and Drying Irrigation (AWDI) and Direct Seeded Rice (DSR) in rice crop cultivation. The observations and bio-metric data were recorded in the tagged area in the demonstration field plots. The average mean data was computed and inferred.

In the demonstrations conducted, the conventional planting system recorded water requirement from 1200 - 1390 mm, 940 mm -1050 mm in SRI, AWDI recorded 850 mm -1150 mm and Direct Seeded Rice (DSR) 950-1100 mm . Simple and affordable field water tube as tool was much useful for irrigation scheduling in rice cultivation with the principle of alternate wetting and drying method, thereby saving a sizable quantity of irrigation water over continuous submergence of water. The knowledge of using the tool was also demonstrated. The shallow depth of irrigation was guided through use of field water tube and it facilitated, the farmers to take decision as to when to irrigate the rice field and how much to irrigate appropriately. The quantity of water required to produce one kilogram of rice was 2200 - 2950 litres in conventional planting compared to 1440-1880 litres in SRI system. In AWDI, it recorded 750 mm - 1050 mm and 950mm - 1100mm in DSR. The grain yield obtained with water use efficiency trend in the different technologies up-scaled is discussed in this paper. Increase in the grain yields obtained with water saving made in rice crop made the farmers confident on the water saving technologies and its adoption in rice cultivation in the District.



***THANK YOU***