

# **Certificate Course on Participatory Irrigation Management (PIM)**

## **Module 14- Use of Information Technology by Water User Associations (WUAs)**

### **Topic 14.2 – Use of information technology in Irrigation Management**

#### **Topic 14.2**

Use of information  
technology in  
Irrigation  
Management

#### **Topics of Module 14:**

- 14.1 Use of information technology in daily uses for WUAs
- 14.2 Use of information technology in Irrigation Management
- 14.3 Use of remote sensing in Agriculture
- 14.4 Importance of weather forecasting for WUA members

#### **1. Use of information technology in Irrigation Management**

Use of information technology is very helpful for daily working of Water Users Association. Information Technology (IT) mainly includes use of Computers, Mobiles, Drone, Satellite & Remote Sensing, Geographical Information System (GIS) including internet. These techniques can be used extensively but only simple uses of IT will be discussed in this chapter which can be adopted by a Water Users Association (WUA) or an individual with basic knowledge or education. Social media applications like WhatsApp, Facebook, Twitter, SMS etc.

can be used for circulating/transmitting the information to large number of people.

## 2. Recovery of Irrigation Charges

Generally, farmers were used to go to the office of Water Users Association or department to know the amount of irrigation charges and for depositing the same. With the use of mobile, now a WUA can send the irrigation demand to the individual farmer by scanning the irrigation charges demand documents or through a SMS.

Similarly, a farmer can also pay the irrigation charges **On Line** through **Net Banking** instead of going to WUA office or department office or to Bank. WUA can also send the **Receipt** of irrigation charges to the farmer through mobile (**Figure 1**). WUA can also send the information/notice to the concern farmer for

**Figure 1: Irrigation Charges Receipt**

रा. मु. अ. 397-7-18-400 बुक ले.पा. 20  
राजस्थान सरकार  
नं. 156 जल संसाधन विभाग  
रसीद 01

पुस्तक संख्या..... दिनांक.....  
रसीद संख्या.....  
नम्बरो मे लिखे गए जल उपयोगकर्ता की पहचान का प्रमाण है।  
पुत्र श्री..... जिला.....  
जिला..... में..... योजना/नहर क्षेत्र.....  
के ग्राम/चक..... की सिंचाई कर की राशि प्राप्त की जिसका निम्न  
विवरण है:-

नाम जमाकर्ता	खतौनी खाना सं.	व्योरा राशि	वर्ष/ समय	कसल	रकम प्राप्त
1	2	3	4	5	6
स्वयं	925	बकाया	2065	950.00	
		चालू			
		अन्य			
		योग....			950.00

रकम शब्दों में रुपये..... केवल अंकों में.....  
प्रथम पङ्क्ति रसीद प्राप्त की।  
ह./निशानी..... जल संसाधन प्रहारी  
हस्ताक्षर

not depositing the irrigation charges and subsequent action which can be taken by the WUA through mobile.

### 3. Irrigation Water Distribution Programme

Irrigation water distribution programme or canal scheduling programme is generally known to the farmers through News Papers or verbal communication. With the use of mobile phone this Canal scheduling programme can be sent to every farmer easily. On irrigation projects where irrigation water is supplied through **Warabandi (Rotational Water Supply System)** where every farmer gets irrigation water at prescheduled time period on the area basis), warabandi programme can be sent to every farmer through mobile (**Figure 2**). Similarly, warabandi slips indicating time period to receive irrigation water can also be sent to every farmer with the use of mobile. Revised Warabandi Schedule, if has to be revised due to canal breach, less availability of irrigation water in dam or due to some unavoidable circumstances can be immediately sent to the farmers along with new warabandi slips. On receiving timely information farmer can utilize his time on some other activities.

**Figure 2: Canal Rotation Programme.**

पाटन ब्रान्च केनाल पाटन ब्रान्च केनाल राजवाह सिरस्टम											
ग्रुप ए				ग्रुप बी				ग्रुप सी			
चालू	दिनांक	से	दिनांक	दिन	चालू	दिनांक	से	दिनांक	दिन	चालू	दिनांक
चालू	11.10.14	से	30.10.14	20 दिन	चालू	09.10.14	से	19.11.14	21 दिन	चालू	11.10.14
चालू	29.10.14	से	17.11.14	20 दिन	चालू	10.11.14	से	09.12.14	21 दिन	चालू	05.11.14
चालू	28.11.14	से	17.12.14	20 दिन	चालू	20.12.14	से	09.01.15	21 दिन	चालू	16.11.14
चालू	25.12.14	से	13.01.15	20 दिन	चालू	20.01.15	से	09.02.15	21 दिन	चालू	06.12.14
चालू	25.01.15	से	13.02.15	20 दिन	चालू	22.02.15	से	14.03.15	21 दिन	चालू	03.01.15
चालू	26.02.15	से	17.03.15	20 दिन						चालू	15.01.15
										चालू	04.02.15
										चालू	06.03.15
										चालू	21 दिन
नहर का नाम				नहर का नाम				नहर का नाम			
1. पाटन राजवाह				1. अनन्तपुरा राजवाह				1. माखीदा राजवाह चैन 85 से टेल			
								2. लवान राजवाह			
ग्रुप ए				ग्रुप बी				ग्रुप सी			
चालू	दिनांक	से	दिनांक	दिन	चालू	दिनांक	से	दिनांक	दिन	चालू	दिनांक
चालू	21.10.14	से	30.10.14	10 दिन	चालू	11.10.14	से	20.10.14	10 दिन	चालू	07.11.14
चालू	19.11.14	से	28.11.14	10 दिन	चालू	11.11.14	से	20.11.14	10 दिन	चालू	16.11.14
चालू	28.12.14	से	06.01.15	10 दिन	चालू	11.12.14	से	20.12.14	10 दिन	चालू	06.12.14
चालू	17.01.15	से	26.01.15	10 दिन	चालू	10.01.15	से	19.01.15	10 दिन	चालू	15.01.15
चालू	15.02.15	से	24.02.15	10 दिन	चालू	10.02.15	से	19.02.15	10 दिन	चालू	05.02.15
चालू	05.03.15	से	14.03.15	10 दिन	चालू	01.03.15	से	10.03.15	10 दिन	चालू	14.02.15
										चालू	06.03.15
										चालू	21 दिन
नहर का नाम				नहर का नाम				नहर का नाम			
1. बूंदी रोड माईनर				1. हीरापुरा माईनर प्रथम				1. पाटन माईनर			
2. इन्द्रपुरिया माईनर				2. बोयाखेडा माईनर प्रथम				2. हस्तिनापुर माईनर			
3. समदपुरिया माईनर				3. कोडक्या माईनर				3. भिया माईनर			
4. रंगराजपुरा माईनर				4. कोटडी माईनर				4. माधोराजपुरा माईनर			
5. बालापुरा माईनर				5. घाटका वराना माईनर				5. सारसला माईनर			
6. बोयाखेडा माईनर द्वितीय				6. चईचा माईनर				6. हीरापुरा माईनर द्वितीय			
				7. चईचा लिंक माईनर				7. कोटा खुर्द माईनर			
				8. डायरेक्ट आउटलेट पाटन ब्रान्च चैन 1388 से 1605				8. डायरेक्ट आउटलेट पाटन ब्रान्च चैन 0 से 955			

अभिषेक  
अभिषेकी अभियन्ता  
बाई मुख्य नहर खण्ड,  
सी.ए.डी. के.पाटन ।

## 5. Geotagging

Generally, outlets are damaged and additional outlets are also fixed by farmers to get extra irrigation water. This causes less availability of water to the farmers at tail end. Location of designed outlets can be fixed and geotagged with the help of mobile. Once these outlets are fixed, and if damaged by any farmer appropriate action can be taken against him.

**Geotagging** refers to adding the current geographic location of the camera or smartphone to an image. The location data contain latitude and longitude, although altitude and bearing (distance from North) may also be included. Using mobile Apps geotagging of any structure etc. can be done and photo including location (latitude, longitude, altitude) and other details printed on photo itself (**Figure 3**) can be saved for further use. Date and time can also be saved on the photograph during geotagging.

All Water Users Associations should use this facility to maintain inventory and record of its resources. All permanent structures should be geotagged.

**Figure 3: Geotagging of Canal with details**





## 6. Assessment of Irrigated Area and Crop wise Area

Crop wise area sown as well as area irrigated is generally assessed manually by a person who may be revenue patwari/water master/President or member of managing committee of WUA. This is done by going to every field and recording the details in a register. Based on this information of crop wise irrigated area by a particular farmer his irrigation demand is calculated and recovered. This procedure is too cumbersome and requires lot of resources and time.

With the use of Information Technology and latest techniques this work can be accomplished easily and in very less time. Now a days **Drones** are used to assess crop wise area sown and irrigated area crop wise (**Figure 4**). **Satellite Imagery** can also be used to assess the crop wise irrigated area.

**Figure 4:** *Assessment of Crop wise Irrigated Area using Drone.*



Pre-developed Apps or pre-developed Forms can also be used to capture crop sown and area irrigated with a mobile by going to every field. This method also requires going to each field, still manual calculations and computation of various information can be done easily. Water Users Associations can use this procedure to assess the crop wise irrigated area.

## 7. Progress of Irrigation

It's very difficult to know the status of irrigation in Major Irrigation Project due to their large area. Someone has to depends on staff working at various locations who sends their report. Many times, irrigation water doesn't reach to tail ends and farmers start agitation. Predeveloped Apps on mobile phone can be used to show the current status of irrigation at all places at any time. WUA member or departmental staff can just upload the position of water reached through his mobile and information can be shared/viewed by higher officials or anyone.

## 8. Progress of Construction Work on Irrigation System

It's very difficult to know the status of on-going construction work in Major Irrigation Project due to their large size. Someone has to depends on staff working at various locations who sends their report to the higher offices. A mobile can be easily used to know the status of on-going construction work. Through Pre developed Apps location, current status of work like ongoing/completed/started/incomplete can be entered by the person available on site along-with date and time of taking photograph (**Figure 5**). Compilation of such information from all over the project can be easily monitored by the higher officials.

**Figure 5: Status of ongoing Construction Work on Irrigation System.**

