Certificate Course on Participatory Irrigation Management (PIM)

Module 7- Water Measurements and Water Distribution by Water User Associations (WUAs)

Topic 7.3 – Implementation of Warabandi in current scenario

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Implementation of Warabandi in current scenario

Topics of Module 7:

7.1 Objective of water measurements, discharge structure and units

7.2 History of Warabandi

7.3 Implementation of Warabandi in current scenario

7.4 Emerging trends in Warabandi

1. Warabandi: Basics

Outlet is the smallest and lower most unit of canal system, therefore Warabandi is carried out at outlet level. Water distribution schedule is prepared generally for a week at a canal system because the channels generally run week wise. The whole week is divided into hours. Thereafter the area under an outlet command is distributed in week hours 24X7=168 hours to calculate the time for a unit area of the outlet which decides the field wise time according to its area. It also decides the day and time slot for the field at which a farmer can irrigate his field saving his time for other works.

2. The pre-requisite for implementation of Warabandi:

- The canal should run with full gauge and for the entire period for which Warabandi cycle is prepared.
- To ensure access of water to each field meaning by there must exist channel to carry water to each field.
- Ensure control gates where necessary.
- To ensure wide dissemination about Warabandi and any change made in it in advance so that they can make their necessary arrangements.
- Strict action against indiscipline.
- Better the Warabandi schedule is published at any central place / places.
- Women and other deprived classes should also be aware the program.

3. Equitable Distribution of Canal Water.

(i) Rostering of Minors and Outlets: -

Generally main canals run full throughout the crop season, but some branches, distributaries and minor system may not run continuous and has to be closed and run one by one. It is due to varied water availability in the river and hence in the canal system. To make the channels run at full gauge to feed the off-taking channels, these are run one by one. This rotation of channels is known as roster. For example, if main canal receives half of its share, there may be two options either run each canal with half discharge or run the channel for half time with full discharge. Running the channels at lower gauge will pose difficulty in feeding the off-taking canals / outlets. Therefore, second option is preferred, and channels are run in roster.

. The minor canal should run with full gauge and full period, but sometimes it is difficult to meet the requirement, in such conditions the outlets are rotated. Some outlets are run at one time and in next turn these outlets are enforced to be closed under strict watch to run the other outlets. This is termed as “Tatil”.

(ii) **Warabandi on outlet:**

Water Resource or Irrigation Department of states prepares Warabandi. As mentioned earlier Warabandi is prepared for outlets individually with following process.

a. Decide command area.

b. Prepare list of all field owners.

c. Fixing turn of each field

(iii) Process of preparing Warabandi;

(1) Calculate water time for unit area in the outlet command dividing total hours of the week i.e., 24X7 = 168 by sum of the command area on the outlet.

(2) Irrigation time of each field will be got by multiplying time for unit area calculated in (1) above with the area of the individual field.

(3) The turn of irrigating fields will be decided according to water movement in field channels. It may be from head to tail or tail to head or may be one time from head to tail and other time from head to tail alternately.

(4) The field approaching first will be provided first turn. The left field of equidistant fields from head or tail will be prioritized.

(5) The time is transferable among the farmers with mutual consent. Consensus should be made before preparing Warabandi.

(6) The WR or Irrigation department may take help of farmers when preparing Warabandi with the help of excel sheet.

(7) A format may be developed for preparing Warabandi on the top of which the time calculated for unit area should be mentioned dividing 168 hours by the total area in command.

Format for preparation of Warabandi

Time for unit area on the outlet ……

Sl. No.	Field No.	Name of Farmer	Area of Field	Time for providing water to the field		Starting day & time for the farmer		Ending day & Time for the Farmer	
				Hour	Minute	Day	Time	Day	Time
1	2	3	4	5	6	7	8	9	10

1. The turn of a farmer will be decided on the basis of position of field in the command.
2. Field number in column 2 , the farmer's name in column 3 and area of field in column 4 will be entered.
3. Areas entered in column 4 will be added at the end.
4. Time period of week hours shall be divided by the area received by adding up above to get time for unit area. This will be entered at the top of the format.
5. Estimation of time for each field shall be calculated by multiplying the time for unit area with the area of the field.
6. The time slot for the field shall be allotted according to the time when water is reached at the outlet head on a particular day and time.
7. Suppose a minor receives water at its head on Thursday at 8:00 am so the first farmer of the first outlet of the minor will be allotted water at 8:00 am on Thursday and adding his time calculated for his field will be the end point of that farmer and beginning of the next.

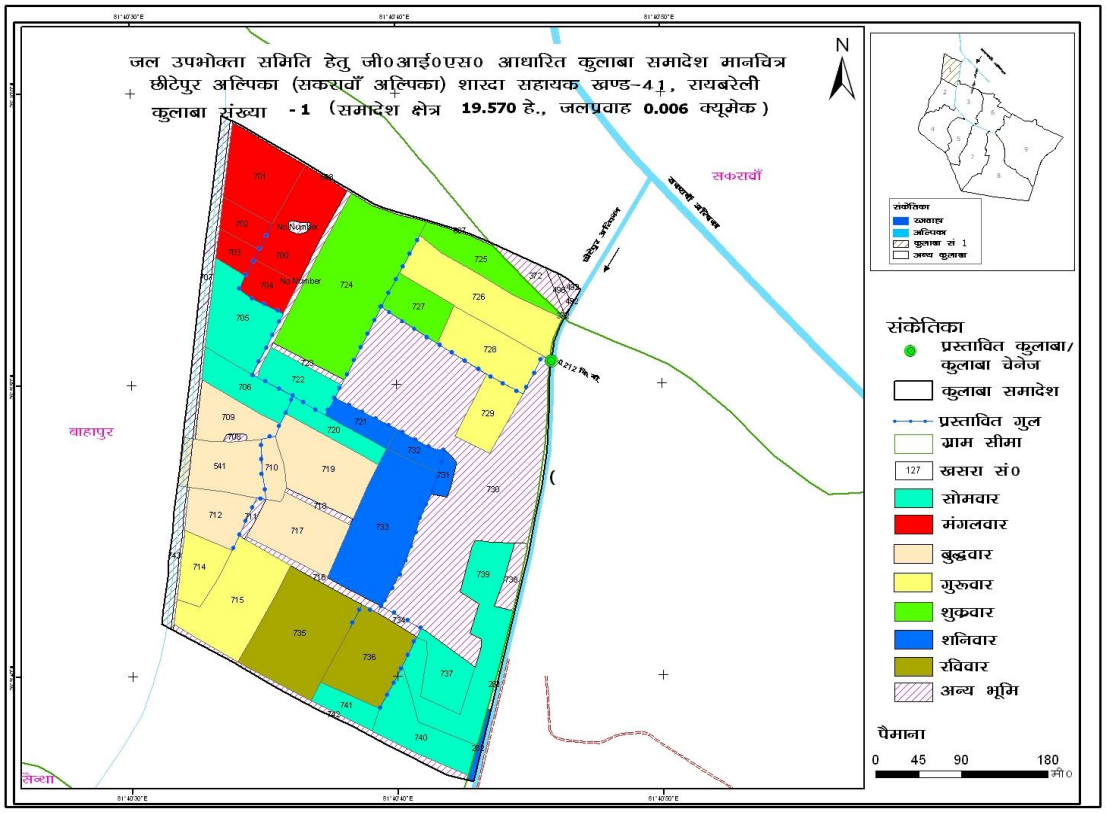
4. Example of Warabandi Explained:

An example is cited below, where the time for unit area is 13.21 or 13 hours 13 minutes is computed. In the example the first field no. 728 having an area of 0.391 hectare will be allotted watering time 13.21X 0,391=5.16 or 5 hours 10 minutes. Because field 728 being first at the outlet receives water at the start of time i.e., on Thursday at 8:00 am adding time computed for field 728 i.e., 5 hours 10 minutes will end up at 8:00 am +5 hours 10 minutes = 13 hrs 10 minutes and so on.

Warabandi Schedule

Time for unit area on the outlet =13.21 hrs

Sl. No.	Field No.	Name of Farmer	Area of Field	Time for providing water to the field		Starting day & time by farmer		Ending day & Time by Farmer	
				Hour	Minute	Day	Time	Day	Time
1	2	3	4	**5**	**6**	**7**	8	9	10
1	728		0.391	5.16	309.60	Thursday	08:00 AM	Thursday	01:09 PM
2	729		0.417	5.51	330.60	Thursday	01:09 PM	Thursday	06:39 PM
3	726		0.763	10.08	604.80	Thursday	06:39 PM	Friday	04:43 AM
4	727		0.298	3.94	236.40	Friday	04:43 AM	Friday	08:39 AM
5	725		0.253	3.34	200.40	Friday	08:39 AM	Friday	11:59 AM
6	724		1.627	21.49	1289.40	Friday	11:59 PM	Saturday	09:28 AM
7	721		0.163	2.15	129.00	Saturday	09:28 AM	Saturday	11:37 AM
8	732		0.137	1.81	108.60	Saturday	11:37 AM	Saturday	01:25 PM
9	731		0.038	0.50	30.00	Saturday	01:25 PM	Saturday	01:55 PM
10	733		1.002	13.23	793.80	Saturday	01:55 PM	Sunday	03:08 AM
11	736		0.598	7.90	474.00	Sunday	03:08 AM	Sunday	11:02 AM
12	735		0.987	13.04	782.40	Sunday	11:02 AM	Monday	12:04 AM



A Map of Warabandi Fixation

Question 1: If an outlet has command area of 24 hectare. How much time will a hectare be provided in a week of 168 hours.

Solution: 168/24 = 7 Hours

Question 2: - How much time a field of 0.5 hectare will be allotted in that command?

Solution : - 7X 0.5 = 3.5 hours or 3hours 30 minutes

Exercise: - An outlet command has 12 hectares area for Warabandi. How much time a hectare will get in a week of 168 hours? How much time a field of 0.3 hectare will be allotted?