

Water & Land Management Institute (WALMI)

Background:

Water, land and soil sustain life on Earth. These natural resources are integral parts of the environment which needs to be conserved and efficiently managed to enhance productivity, achieve economic growth and promote environmental quality. No nation can afford to squander or pollute these natural resources while using them in crop production or other activities. Drought, flood, cyclone and land degradation have been identified to be the major constraints that limit agricultural production in our country and bring misery to people. Hence increasing agricultural production per unit area and per unit volume of water with scientific management of water, land and soil has been accorded to priority. An integrated approach in sustainable development and management of water and land resources is, therefore, imperative to make success in State's efforts to alleviate poverty and mitigate the hardship of the masses. Under the above compelling circumstances, the necessity of establishing an Institution at State level was felt and as per advice of the Government of India, Water and Land Management Institutes (WALMIs) were established in most of the states during 1980's.

About the Institute:

In Orissa, Water And Land Management Institute (WALMI) was established in the 1984 and it functioned as an autonomous Institute in 1986 to impart advanced training in the areas of water and land management with a view to enhancing agricultural production. Currently, there are Faculty Members in various disciplines, viz. Agriculture with specialization in Agronomy Soil & Water Conservation and Sociology as against the sanctioned strength of fourteen Members in the Institute. Besides, there are Assistant Research Officers in the disciplines relating to Irrigation Engineering and



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Agriculture to undertake action research. The institute is well equipped with requisite infrastructure, which includes 4 class rooms (2lecture halls each with a capacity to accommodate 40 trainees and other 2 lecture halls for 80 farmers each), a conference hall for 32 participants, an Auditorium to accommodate 250 persons and a library, an indoor Hydraulic Laboratory, Soil Testing Laboratory, Computer Lab and Hostels to accommodate about 200participants, besides transport and other facilities. The Institute functions under the administrative control of its Governing Council with the Commissioner-cum-Secretary to Government, Department of Water Resources as its President and Director WALMI as its Member Secretary. The Governing Council comprises senior level officers from the Departments of Water Resources, Finance, Agriculture, OUAT, CADA, WTCER, XIMB and CRRI. The institute is located at Pratapnagari, about 7 km to the South of Cuttack and 17 km North of Bhubaneswar on National Highway 5.

Objectives:

1. To provide in service training of multidisciplinary nature to the personnel engaged in Irrigated Agriculture.
2. To undertake action & adaptive research pertaining to irrigation project commands on land, water and crop management.
3. Providing consultancy services, publication of literature, holding seminar sand workshops etc. and organize farmers' training programmes, especially, the capacity building of Pani Panchayats and other Farmers' Organizations of Orissa.

Activities:

The Institute imparted trainings and conducted action research in the fields of (i) Irrigation Engineering and Management (ii) Drainage Engineering (iii) Water Resources Development and Management (iv) Agricultural Planning and Management (v) Watershed Development and Management (vi) Participatory Irrigation Management and (vii) Land Development. Apart from training the Institute has also undertaken micro-planning, entry point activities and action research in adopted Pani Panchayats.

In pursuance of the State Water Policy 2007, strengthening of WALMI was initiated in order to build it as a center of excellence. As per the decisions of the Governing Council the following few steps were taken in this direction.

- (i) The post of Director was filled up through open advertisement and selection by DOWR.
- (ii) WALMI developed collaboration with appropriate NGOs viz. Cooperative Outreach of India (COI), Heifer International, Aragami etc to strengthen social component of training.
- (iii) WALMI also collaborated with other institutions including the Institute of Agricultural Management and extension, Krishi Bigyan Kendras of OUAT, OLIC to achieve the higher target of capacity building of Pani Panchayats of Orissa.

The Institute has also developed linkages with WTCER, CRRI, OUAT, etc. for successfully carrying out its training, action research and adaptive research on water and land management. The trainees are regularly taken to these institutes in exposure visit programmes to gain first hand knowledge in the agro-technologies which are being developed in these institutes. Besides, training is also imparted to the stakeholders of PIM through GRAMSAT programme and exposure visit to other States.

Training

Categories of training imparted by WALMI with subject matter covered and with duration of training are given in Table-1. During last 26 years (1984-85 to 2009-10), the Institute has imparted trainings to 52,697 persons comprising 16,854 Government officers belonging to Water Resources & Agriculture Departments and 35,843 farmers belonging to different irrigation commands of the State (Table- 2). Out of the above, during 2009-10, 532 training programmes were conducted and 1001 employees of Govt. and 17821 office bearers of Pani Panchayats from different irrigation projects were trained. The details are given in the Table- 3.

Table 11.1

Duration of Training Courses conducted for different categories of stakeholders

| Sl. No. | Type of Training Courses | Duration | | |
|---------|---|--------------|-------------|--------------|
| | | Officers | Farmers | NGO & Others |
| 1. | Water and Land Management | 1 to 4 weeks | 1 week | |
| 2. | Participatory Irrigation Management | 1 to 6 days | 1 to 7 days | 7 days |
| 3. | Hydraulic Design of Irrigation Structures | 3 to 6 days | - | - |
| 4. | Command Area Development, Micro Dis-net Planning, On-farm Development. | 3 to 6 days | 3 days | - |
| 5. | Construction Planning & Management | 3 to 7 days | - | - |
| 6. | Administrative & Financial Management | 3 days | - | - |
| 7. | Performance Monitoring & Evaluation | 3 days | - | - |
| 8. | Environmental Management | 1 to 3 days | - | - |
| 9. | Operation & Maintenance | 1 week | 1 week | - |
| 10. | Crop Planning/ Package of Diagnostic Studies. | 3 to 7 days | 4 days | - |
| 11. | Watershed Management & Soil Water Conservation Management/ Catchments Treatment | 3 to 7 days | 4 days | 4 days |

| | | | | |
|-----|--|---------------|---|---|
| 12. | Benchmarking of Irrigation Projects/ Diagnostic Studies. | 3 to 7 days | - | - |
| 13. | Drainage Engineering & Management. | 3 to 7 days | - | - |
| 14. | Enhancing project efficiency, Benchmarking & Water Auditing | 1 to 3 days | - | - |
| 15. | Drought and flood management | 2 to 3 days | - | - |
| 16. | Personal leadership and communication skill development | 1 to 3 days | - | - |
| 17. | Orientation/ Induction training on irrigation engineering, water management and office management including finance | 21 to 30 days | - | - |

Table 11.2

Year-wise Trainings Conducted By WALMI

| Year | No. of trainings conducted | Govt.employees (No.) | Farmers (No.) | Total (No.) |
|-------------------------------|----------------------------------|-------------------------|------------------|----------------|
| Up to 3/93 | 91 | 2323 | 1128 | 3451 |
| 1993-94 | 18 | 349 | 58 | 407 |
| 1994-95 | 19 | 437 | 29 | 466 |
| 1995-96 | 39 | 537 | 32 | 569 |
| 1996-97 | 48 | 1115 | 189 | 1304 |
| 1997-98 | 46 | 804 | 663 | 1467 |
| 1998-99 | 48 | 757 | 538 | 1295 |
| 1999-00 | 31 | 415 | 665 | 1080 |
| 2000-01 | 79 | 1394 | 1507 | 2901 |
| 2001-02 | 64 | 965 | 1409 | 2374 |
| 2002-03 | 72 | 1196 | 1459 | 2655 |
| 2003-04 | 77 | 1692 | 1923 | 3615 |
| 2004-05 | 53 | 1703 | 658 | 2361 |
| 2005-06 | 03 | 87 | - | 87 |
| 2006-07 | 21 | 188 | 729 | 917 |
| 2007-08 | 125 | 899 | 3467 | 4366 |
| 2008-09 | 147 | 992 | 3568 | 4560 |
| 2009-10 | 532 | 1001 | 17821 | 18822 |
| Total | 1513 | 16854 | 35843 | 52697 |
| Target for 2010-11 | 798 | 1735 | 31700 | 33435 |

During 2009-10, the Institute organized three Inter-State training-cum-visit programmes. Farmers and Government Officials from Uttar Pradesh and Tamil Nadu participated in the training and visited different irrigation projects and Research Institutes located in the State. Altogether 69 participants were attended in these training programmes. They made interaction with the office bearers of Pani Panchayats on the functioning of PIM Orissa. Besides, 63 newly recruited Junior Engineers of DOWR were trained through Orientation and Induction training programmes. Apart from these trainings, senior level Engineers of DOWR, Agriculture Engineers and Agriculture Officers of Directorate of Agriculture and CADA were also trained on various aspects of Water Resource Development and Management and Sustainable Agriculture. During 2009-10, greater thrust was laid on capacity building of office bearers of Pani Panchayats in order to achieve success in implementation of Participatory Irrigation Management (PIM) in Orissa.

Decentralised Training

During 2008-09, it was decided to impart capacity building training on a massive scale to office bearers of Pani Panchayats (PPs). To achieve the huge target, WALMI, seek collaboration with Krishi Vigyan Kendras (KVKs) of OUAT. In addition to this a faster mode of capacity building of office bearers of Lift Irrigation PaniPanchayats, use of instructional films has been made.

Training in collaboration with KVKs

In 2009-10, 67 trains were conducted in which 1573 office bearers of PPs were given training on PIM. The WALMI, OUAT collaborative decentralized training has been discontinued w.e.f. from 1st April 2010. Government has decided establish Field Training Centers (FTC) under SEs of different irrigation circle with involvement and supervision of WALMI, which will be functional from October, 2010. It has been programmed to impart training to 5400 office bearers of Pani Panchayat through FCTs during 2010-11.

Training in collaboration with OLIC Ltd.

WALMI – OLIC collaborative decentralized training programme has been planned to impart training to office bearers of large number of L.I. Pani Panchayats of the entire State. For this purpose training manual dealing with various aspects of PIM has been compiled and published by WALMI. Three instructional films have been produced covering the topics on PIM, operation and maintenance of L.I. points and technologies for agricultural productivity enhancement through efficient water management. During 2009-10, 358 training were conducted in to L.I. Sub-division in which 14023 office bearers of L.I., Pani Panchayat were given training through audio visual mode. In this collaborative programme, WALMI imparted training to engineers of OLIC, who in turn imparted training to office bearers of Pani Panchayats. During 2010-11, it has been planned to conduct capacity building training 20,000 office bearers of Pani Panchayat of Lift Irrigation Projects.

Table 11.3

Achievements made by WALMI , Orissa during 2009-10 and programme for 2010-11

| Category of training | Achievements in 2009-10 | | | | Target for 2010-11 | | | |
|---|----------------------------|-----------------------------|---------|-------|----------------------------------|-----------------------------------|---------|-------|
| | No. of trainings conducted | No. of participants trained | | | No. of trainings to be conducted | No. of participants to be trained | | |
| | | Officers | Farmers | Total | | Officers | Farmers | Total |
| National level training for senior level officers | - | - | - | - | 3 | 90 | - | 90 |
| Capacity building of building of office bearers of Pani Panchayats and J.Es | 72 | 460 | 2167 | 2627 | 90 | 555 | 8300 | 6855 |
| Capacity building of WR engineers and agriculture officer | 29 | 434 | - | 434 | 22 | 770 | - | 770 |

| | | | | | | | | |
|--|------------|-------------|--------------|--------------|-----------------|-------------|--------------|--------------|
| Induction/ Orientation of newly recruited engineers of DOWR | 02 | 63 | - | 63 | 3 | 120 | - | 120 |
| Training for OCTMP (World Bank Asst.) | 01 | 33 | - | 33 | To be finalized | | | |
| Training for OIIAWMIP (ADB Asst.) | - | - | - | - | To be finalized | | | |
| Sub Total | 104 | 990 | 2167 | 3157 | 118 | 1535 | 6300 | 7835 |
| Inter-state exposure visit & trining | 03 | 11 | 58 | 69 | - | - | - | - |
| Decentraliz ed training of office bearers of PPs of Major, Medium and Minor IPs through KVKs | 67 | - | 1573 | 1573 | 180 | - | 5400 | 5400 |
| Decentraliz ed training of office bearers of L.I.PPs through audio- visual mode | 358 | - | 14023 | 14023 | 500 | 200 | 20000 | 20200 |
| Grand Total | 532 | 1001 | 17821 | 18822 | 798 | 1735 | 31700 | 33435 |

Action Research Activities

1. Formation of Pani Panchayats:

Action research was undertaken in PaniPanchayat of Indravati Irrigation Project (Left), Indravati Irrigation Project (Right), Upper Kolab Irrigation Project (Right), Rengali Right Main Canal and Bhairpur Branch Canal on PIM with the financial assistance received from the Project Authorities. Twenty six Pani Panchayats were formed. The details of status of Pani Panchayat formation are given in the table below.

Table 11.4
Formation of Pani Panchayats in different projects during 2009-10

| | Area(ha) proposed | Target(No of PPs) | Achievement (P.Ps) | | | No.of DCs formed | Remarks |
|--|-------------------|-------------------|--------------------|--------------|-------------|------------------|-----------|
| | | | Upto 08-09 | During 09-10 | Cummulative | | |
| Upper Kolab IP | 28392 | 72 | 67 | 3 | 70 | 9 Nos | Completed |
| Upper Indravati IP (Mukhiguda) | 22133 | 53 | 53 | - | 53 | 5 Nos | Completed |
| Upper Indravati IP (Kusumkhunti) | 22000 | 60 | 60 | - | 60 | | Completed |
| Bhirpur Branch Canal, Rengali IP | 12100 | 26 | 26 | - | 26 | 1 No | Completed |
| Left Branch Canal-II, Ph-1, Rengali IP | 14600 | 27 | 27 | - | 27 | 1 No | Completed |
| Total | 99225 | 238 | 233 | 3 | 236 | 16 Nos | |

2. Entry Point Activities (EPA):

Entry Point Activities were taken up in the JBIC assisted projects, such as Upper Kolab Irrigation Project and Upper Indravati Irrigation Project. Accordingly, two Pani Panchayats viz. Radhakrishna Pani Panchayat and Birabhairaba Pani Panchayat were selected on pilot basis for micro-planning and implementation of Entry Point Activities, such as Water Management, Capacity Building, Micro-Credit Mechanisms and livelihood improvement plans through Water Users' Associations/ Pani Panchayats. After successful completion of the pilot schemes, WALMI was entrusted to take up entry point activities of 8 other Pani Panchayats in Rengali Irrigation Project. Mass awareness meetings in collaboration with the project Authorities along with JICA members have been conducted to finalize the target Pani Panchayats for taking up the programme in Bhairpur Canal Command. In the mean time, socio-economic base line survey, participatory walk through, formation of self-help group has been completed for Bhairapur Branch Canal.

3. Performance evaluation and water use efficiency studies:

Final report on performance evolution study of Salki Irrigation Project prepared and presented to C.W.C., New Delhi. Proposal for taking up performance evaluation study of two other projects namely Salia & Kanjhari submitted to M.O.W.R. Similarly 20 proposals for taking up water use efficiency studies of selected major and medium irrigation projects namely Mahanadi-Delta Stage-I, Baitarani System, Rusikulya System, Jayamangal, Baldhia, Bhaskel, Haldia, Hiradharabati, Ghodahada, Derjang Stage-I, Salia, Dhanei, Budhabudhiani, Bahuda, Pitamahal, Baghua Stage-I, Uttei, Dahuka, Saipaland Kalo have been submitted to Chief Engineer, PO & MIO, C.W.C. The proposal is under active consideration of CWC, MOWR for sanction.

Adoptive Research

Adoptive Research work in two Pani Panchayats of Lift Irrigation Projects namely Gopinath Jew Pani Panchayat, Bahalpada-LIP- III of Bayalish Mouza Block & Maa Ambika Pani Panchayat, Bawaja L.I. point of Kantapada has been taken up. Baseline survey completed and soil samples were collected from these adopted L.I. Projects and analyzed in WALMI laboratory. Balanced applications of fertilizer were recommended to the farmers after soil test.

Field demonstration: - During Khariff 2009-10, 8 high yields rice varieties namely Apo, Naveen, Lalat, Chandan, Pratikshy, Kalajira, Getanjali, Ketakijuha were introduced. Similarly in Rabi 2009-10 Sunflower varieties KBSH-I and Black gram T-9 varieties were also demonstrated.

Research & Demonstration

During 2009-10, field experiments and demonstrations were conducted in the farm of WALMI both in Kharif and Rabi seasons. Highlights of the research results are given below.

1. Effect of water and fertilizer nutrient management on water productivity and yield of rice (Kharif season of 2009 -10).

.There was no significant difference in yield of rice between two water management treatments such as continues submergence and alternative wetting and drying in dry spill period.

.In the practice of alternate wetting & drying there was a saving of 9cm of irrigation water.

.Among the fertilizer treatments, highest grain yield of 5.72 t/ ha was obtained with balanced application of nitrogen, phosphorus, potash, sulphur, zinc and farmyard manure which was immediately followed by the treatment receiving nitrogen, phosphorus, potash, sulphur, zinc, and green manure.

2. Demonstration of aerobic rice cultivation (Kharif 2009-10).

.Rice variety, Naveen took 115 days, Appo 115 days, Lalat 120 days and Chandan 130 days to mature under the aerobic rice cultivation practice.

.Among the varieties the IRRI variety Appo produced the highest yield of 4.1 t/ha with rainfall of 113.00 cm received during the crop growth period.

3. Demonstration of organic scented rice cultivation (Kharif 2009-10).

.Scented rice variety Geetanjali required 18cm less irrigation water than other varieties because of shorter duration.

.Among the four scented varieties grown under organic farming practice, Kalajeer gave the highest yield of 2.90 t/ ha.

4. Effect of Water and nutrient management on water productivity and yield of sunflower in Rabi 2009-10

.There was no significant difference between the two water management treatments i.e., irrigation given at 10 days interval over the irrigation provided at critical stages of crop growth i.e. at presowing, 20 days after germination, buttoning, flowering and seed setting. The practice giving irrigation at critical stages of crop rotation resulted in saving of 9 cm of water compared to irrigation given at 10 days interval.

.Among the fertilizer treatments, highest seed yield of 2.04 t/ha was obtained with balanced application of recommended doses of nitrogen, phosphorus, potash, sulphur and boron which was immediately followed by treatment receiving nitrogen, phosphorus, potash and farmyard manure.

5. Experiment on development of water saving technologies in rice (Rabi rice 2009-10)

.There was a saving of ranging water from 30.8 cm to 39.2 cm with System of rice Intensification (SRI) practice over the normal practice of transplanted rice cultivation, the yield difference between these two practices being non-significant under the condition of sandy soil texture.

FINANCE

During the year 2009-10, the Institute received Rs.266.69 lakh under Non-Plan and Rs.190 lakh under Plan Head as Grant-in-Aid from State Government to meet the expenditure on Establishment, Training, and Action Research, field experiment on water management, infrastructure development and maintenance of the Institute. In addition to the above, WALMI received funds from other organizations such as Ministry of Water Resources, Government of India and Irrigation Project Authorities of Orissa Government by taking up specialized national and state level trainings, research oriented work such as Performance Evaluation Study, formation of Farmers' Organizations and Entry Point Activities of selected Pani Panchayats.