

2012

Vidarbha Intensive Irrigation Development Programme

Operational Guidelines



DEPARTMENT OF AGRICULTURE AND COOPERATION
MINISTRY OF AGRICULTURE, GOVT OF INDIA
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Vidarbha Intensive Irrigation Development Programme (VIIDP)

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1.0 Background:

Vidarbha region in Maharashtra comprises 11 districts viz. Yavatmal, Akola, Amravati, Wardha, Buldhana, Washim, Nagpur, Chandrapur, Bhandara, Gadchiroli and Gondia. This region has, for various reasons, remained backward industrially as well as agriculturally. Livelihood of around 65% rural population of this region is dependent on agriculture and allied activities. However, agriculture in this region is comparatively less productive than the State and National averages.

Cotton is the most important cash crop of western Vidarbha region. Eight of eleven districts of Vidarbha are primarily cotton growing. Cotton farming is the backbone of the farmers of Yavatmal, Akola, Amravati, Wardha, Buldhana and Washim districts of western Vidarbha. An estimated 12 lakh ha is under cotton production in Vidarbha. However, with about 400-600 mm of annual rainfall and very limited irrigation facilities at disposal, cotton farmers are often exposed to higher risks that many a times result in loss of income. Besides low rainfall condition and scarcity of irrigation, lack of micronutrients in soil, frequent pest attacks and other physical characteristics of this region result in lower productivity of cotton farming (281 Kg /ha) which is about 15% lower than State average (322 Kg /ha) and 46% than National average (518 Kg/ha). Moreover, dependency on rain and greater adoption of Bt cotton which is more sensitive to shortage of water, has made cotton cultivation a high risk –high cost cultivation system in Vidarbha region.

A number of studies, research papers and visit reports identify a multitude of issues in Vidarbha region ranging from limited availability of natural resources to social and economic conditions of farmers. However, relative absence of irrigation facilities and complete dependence on rainfall have been clearly cited as the most important contributing factors for creating risk and income uncertainty in cotton farming.

With such typical parameters of low cotton productivity and poor irrigation coverage; a customized, focused and time

bound attention for creating appropriate infrastructure for irrigation, especially as supplementary sources for saving cotton crops from scanty rainfall, on a high priority basis appears to be the best strategy to hedge risk of rainfed cotton farming in Vidarbha region

2.0 Need for a Special Irrigation Development Programme:

At present only about 8-10% of cotton growing area in Vidarbha region is under protective irrigation. Thus, there is a need for extending irrigation coverage by efficiently managing natural water resources including rain water harvesting.

About 15 to 20 % of the total rainfall received in cotton growing areas of Vidarbha results in runoff. Vidarbha being devoid of any major river source, rain water management is traditionally the best possible alternative to conserve and store maximum run off. One example is the century old Malgajari tanks. Rain Water Harvesting is necessary to ensure that the entire year's monsoon water does not run away. This can be done through schematic interventions for watershed development, creating rainwater harvesting structures through small need-based farm ponds or collective initiatives like low-cost check-dams (like Vanrai bunds) on the rivulets etc. Renovation and restoration of existing Malgajari tanks can also create significant additional rainwater storage capacities. Runoff water conserved through in-situ and ex-situ measures of moisture conservation will be sufficient to provide one to two protective irrigations. In-situ conservation measures maintain high level of available soil moisture in the root zone and increase the ground water availability which is depleting very fast.

Excess run-off harvested in the farm pond and check dams recharges existing wells. Further, with conserved water applied through micro-irrigation systems such as drip and sprinkler irrigation, it will be possible to double the area of protective irrigation. Experiences elsewhere suggest that participatory efforts by Public authorities and farmers for in-situ

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conservation and harvesting of rainwater, provide substantial benefits by not only facilitating lifesaving irrigation at critical periods and creating opportunities for second sowing but also by ensuring effective management of assets created.

Therefore, a renewed focus shifting from creating additional major and medium structures to sustained large scale efforts for water harvesting and popularizing participatory water harvesting and management measures may be useful at this juncture. This will then become a pre-requisite for ensuring that at least one supplementary irrigation is available to the farmers.

3.0 Objectives:

Vidarbha Intensive Irrigation Development Programme (VIIDP) will have following objectives:

- a) *To increase productivity of rainfed cotton farming in Vidarbha region through rainwater harvesting, intensive irrigation and better crop management;*
- b) *To bring maximum cotton growing area under protective irrigation and better soil moisture regime through in-situ and ex-situ conservation measures;*
- c) *To augment/ restore/renovate existing minor/ small scale irrigation resources through provision of water lifting devices for filling of storage; and*
- d) *To enhance water use efficiency through application of drip/sprinkle irrigations.*

4.0 Broad Strategies and Areas of Interventions:

Broad strategy of VIIDP shall be 'value addition' to existing assets and bringing maximum area under protective irrigation at lesser incremental cost avoiding creation of major infrastructures. VIIDP will be implemented in the rainfed areas of Vidarbha (i.e. areas which are not covered under assured

means of irrigation through surface canal or major irrigation projects) having large extent of cultivable land with potential for increasing agriculture productivity.

Major areas of interventions will be as under:

- a) **In situ conservation measures through Broad Bed and Furrows (BBF) and Graded bunding:** Planting of cotton crop either on Ridges and Furrows or Broad Bed and Furrows (BBF) conserves 30 to 40 % of the 1 to 2 TMC (Thousand Million Cubic Feet) run off available on one hectare area depending upon the amount of rainfall, its intensity, slope of soil etc. BBF also protects crop under both excess and deficit soil moisture situation by maintaining optimum level of available soil moisture in the root zone. VIIDP will attempt to bring more cotton crop area under BBF.
- b) **Construction of Farm Ponds including optional provision for plastic lining/plastic cover:** It is seen that substantial runoff is available in cotton growing area in the season to construct one farm pond of 1 to 2 TMC capacity for every 6 to 8 ha of cultivable area. Farm ponds help to provide protective irrigation and increase water level of nearby wells. These farm ponds get filled up 2 to 3 times during the rainy season depending upon the amount, intensity of rainfall and the catchment area. In last 3 years, more than 27,000 farm ponds have been constructed in the cotton growing districts of Vidarbha under various schemes and the results are very promising. There is growing demand for farm ponds in this region as there is good potential for them considering that 14-15 lakh ha area is under cotton crop.
- c) **Construction of Series of Check Dams/Cement Bandhara:** Check dams play a major role in catching runoff and storing rainwater. From one check dam about 4 to 5 ha irrigation potential is created directly or indirectly through surrounding wells. Encouraging trends of

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utilization pattern of check dams constructed under various programmes in recent decades reiterates the need for small-scale harvesting structures in Vidarbha region.

- d) **De-siltation and Deepening of Nala bed in completed Check Dam including optional provision for cement lining/cement bund:** About 9000 check dams were built under PM's Vidarbha Package during the last 5 years. However, to make use of these dams in full and to increase storage and recharge capacity of completed check dams it is proposed to take up de-siltation and deepening of nala bed in upstream side of the bund up to 2 m depth and 500 m length. This work will cover all existing check dams that need these interventions.
- e) **Expansion of Micro Irrigation System and Supply of Water lifting Devices:** There are approximately 3.60 lakh dug wells in the region of which about 60-70% are currently used for protective irrigation to cotton and other crops. However, only about 20,500 ha area is under micro irrigation. Considering the substantial number of existing wells in the region, there is enormous scope for increasing coverage of micro irrigation for cotton and other crops. This will aim at 'end-to-end' solution for efficient utilization of water stored in the farm ponds and /or check dams to encourage farmers to make maximum use of protective irrigation facility newly created on the fields. This intervention will include provision of water lifting devices like pump sets, conveyance systems or pipes and application devices like drip system sprinkler sets etc.
- f) **Minor Irrigation Projects (Ongoing and New Minor Schemes up to 250 Ha command area):** This will aim at completion of already designed ongoing schemes besides creating additional potential through newly proposed schemes..

- g) **Restoration of Minor Irrigation Potential:** There are many minor irrigation (less than 250 ha) schemes, which due to insufficient maintenance, have virtually lost their utilities.
- h) **Lift Irrigation System:** It is often seen that farmers many a times cannot take advantage of micro irrigation or protective irrigation as Farm ponds do not have adequate level of water when they need. This issue can be addressed by lifting water from adjoining rivers and nalas during periods of heavy run offs for filling up these ponds.
- i) **Impounding of streams of existing Kolhapur Type (KT) Weirs:** For increasing storage capacity, arresting silt and increasing underground recharge, the programme proposes to introduce excavated pit in nala portion below nala bed level in submergence in completed Kolhapur Type Weirs.
- j) **Formation of Water Users Associations and Farmer Groups:** The programme also envisages better utilization of created potential through formation of sufficient number of Water Users Associations and Farmers Groups.

5.0 Components and Pattern of Assistance:

VIIDP components and pattern of assistance shall be as per **Appendix-A**. A judicious mix of components may be chosen to cater to location or cluster specific needs.

6.0 Coverage of the Programme:

6.1 Districts and Blocks:

This programme will be implemented in all 11 districts in Vidarbha region of Maharashtra namely Buldhana, Akola, Washim, Amravati, Yavatmal, Wardha, Nagpur, Chandrapur, Gondia, Gadchiroli and Bhandara A **Cluster based approach comprising an area of about 1000 ha, preferably in cotton cultivation, in each cluster would be adopted for planning and implementation of this programme.**

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6.2 Inclusiveness for catering to the weaker sections of the society:

In order to cater to the weaker sections of the society, priority may be given to small and marginal farmers and/or SHG, Cooperatives formed by 'small and marginal farmers', Cooperatives of weaker sections of the society and women. Similarly, special emphasis would be accorded for adopting 'gender friendly' equipments/technologies/practices.

7.0 Planning and Approval:

VIIDP will be implemented as a sub-scheme of Rashtriya Krishi Vikas Yojana (RKVY). Accordingly, the procedure for Planning and Approval will generally follow RKVY pattern.

Perspective/ strategic plan for VIIDP with a horizon of 5 years emanating from Comprehensive -District Agriculture Plan (C-DAP) and State Agriculture Plan (SAP) will be prepared for prioritizing the interventions as per objectives of VIIDP.

Planning process may follow a decentralized approach with Panchayati Raj Institutions or similar Local Govt. Institutions/line departments for selecting beneficiaries and identifying appropriate interventions in the villages/clusters in consultation with SAU's, ATMA, Watershed Committee(WC) and other similar agencies. Respective work plans for the year will be compiled by the District Agricultural Officer / Dy. Director (Agriculture) in consultation with Rural Development & Water Conservation Dept. of the State Government for inclusion in the District Plan (DP).

The DP's will be appraised at the State Level for inclusion in the consolidated State Plan (SP). After finalization, SP will be placed before State Level Sanctioning Committee (SLSC) of RKVY for approval as per extant procedures.

8.0 Implementation:

At the National Level, Dept. of Agriculture & Cooperation, Min. of Agriculture will oversee the activities of the programme and accord approval to the State's Proposal.

Monitoring and periodical review of the programme will be done by High Level Committee (HLC) headed by Chief Secretary, Maharashtra and comprising of Secretary (Agriculture), Secretary (Rural Development), Secretary (Water Conservation) as well as Secretaries of other concerned departments to be decided by this Committee.

Dept. of Agriculture will be the nodal agency at the State Level to implement the programme in collaboration with other State Departments of Rural Development and Water Conservation, Irrigation, Panchayati Raj Institutions etc.

Central Institute for Cotton Research (CICR), National Bureau of Soil Survey and Land Use Planning (NBSS&LUP), Soil and Land Use Survey of India (SLUSI), Nagpur, Directorate of Cotton Development, Mumbai and State Agricultural Universities (SAU's) may also be involved in the process of planning and implementation.

The State Government may further nominate, select or create suitable agencies for implementing the programme at the district level. Such agencies could be line departments, Zilla Panchayats, Agriculture Technology Management Agency (ATMA), NGO's etc.

The programme will be implemented in a '**Project Mode**'. Fund flow mechanism will be similar to that of RKVY.

9.0 Reporting and Periodic Review:

At the field or village level, Gram Panchayats (GP) will be involved in overseeing the process of implementation. At district level, reporting and review will be undertaken by District Agriculture Officer for agricultural activities and by Executive Engineer (MI, Local Sector) for Minor Irrigation

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activities supported by other line departments and respective Zilla Panchayati Raj Institutions.

Divisional Commissioner of Nagpur and Amravati will conduct a quarterly review of VIIDP with Joint Director (Agriculture) and Superintending Engineer (Minor Irrigation, Local Sector)

At State level, activities of the programme will be reviewed by Dept. of Agriculture under the chairmanship of the Secretary (Agriculture)/Agricultural Production Commissioner (APC) with participation from Dept. of Water Conservation (Minor Irrigation, Local Sector).

State Department of Agriculture will ensure submission of Quarterly Progress Report (QPR) which should reach the Department of Agriculture & Cooperation, Ministry of Agriculture within 20 days of completion of the quarter. Similarly, detailed Annual Progress Report (APR) should be sent within two months after the end of the year.

At National level, bi-annual review of the activities of the programme will be undertaken. A combination of periodic desk review, field visits etc. will be adopted for monitoring the efficacy of the programme with the involvement of ICAR and other Institutions.

DAC may also engage Consultant (s) including regionally located State Agricultural University, Soil and Land Use Survey of India (SLUSI) and other knowledge Institutions as nodal agencies/partners for conducting monitoring and evaluation of VIIDP

0.5% of total annual outlay will be earmarked for Administrative expenses at National level viz. for monitoring & evaluation, capacity building and other contingent expenses etc. Similarly, upto 1% of total allocation or as admissible under RKVY norms may also be earmarked by the State for meeting its administrative and other contingent expenses for implementation VIIDP.

10.0 Outcome

VIIDP is expected to bring more areas under protective irrigation besides extending various water harvesting measures to remaining areas for ensuring at least some moisture to the cotton and other crops throughout the crop cycle. Farmers will also have more choices for a second crop due to availability of additional water for irrigation.

VIIDP will also help in augmenting benefits of ongoing efforts of all existing government schemes like RKVY, MNREGS, IWMP, ISOPOM, NHM, MMA, Programmes of AHD&F etc. through convergence at farm level to maximize the returns from the rainfed cotton growing areas of Vidarbha region.

Appendix-A: Components and Pattern of Assistance

Sl. No.	Name of the Intervention/ Components	Quantifiable Unit of Interventions	Pattern of Assistance (Per unit of Interventions)	Beneficiaries
1.	Incentives for adoption of in situ Soil Moisture Conservation measures through Broad Bed with Furrows (BBF) and opening of dead Furrows	Ha	Upto Rs. 1000/- per ha	Individual Farmer/Farmer Group/Cooperative etc.
2	Graded Bunding (GB)	Ha	Upto Rs. 7500/-per ha	Common Pool Resource
3.	Construction of Farm Pond including optional provision for plastic lining/plastic cover (Size: 1-2 TMC, Area coverage for protective irrigation: 1-2 ha)	Number	Upto Rs. 60,000/- per unit. Additional upto 33% of cost for plastic lining/plastic cover of ponds wherever essential.	Individual Farmer/Farmer Group/Cooperative etc.
4.	Construction of Check Dam/Cement Bhandara (Command Area: 4-5 ha)	Number	Upto Rs. 6,00,000/- per unit	Common Pool Resource
5.	De-siltation and Deepening of Nala Bed in existing Check dams including optional provision for cement lining/cement bund (about 2 m depth X upto 500m length)	Number	Upto Rs. 5, 00,000/- per unit	Common Pool Resource
6.	Provision of Drip Irrigation System (Drip Irrigation) (upto 2ha area coverage)	Ha	50% of the total cost subject to a limit Rs 38,000/- per ha OR 75% of the total cost subject to a limit of Rs. 57,000/- per ha for Small and Marginal Farmers.	Individual Farmer/Farmer Group/Cooperative etc.
7.	Provision of Sprinkler Irrigation System (upto 2ha coverage)	ha	50% of the total cost subject to a limit Rs. 15,000/- per ha OR 75% of the total cost subject to a limit of Rs. 22,000/- per ha for Small and Marginal Farmers.	Individual Farmer/Farmer Group/Cooperative etc.
8.	Provision of Water Lifting Devices (Diesel/Electric Pump Set) and delivery pipelines	Number	50% of the total cost subject to a limit Rs. 18,000/- OR 75% of the total cost subject to a limit of Rs. 27,000/- for Small and Marginal Farmers.	Individual Farmer/Farmer Group/Cooperative etc.

Sl. No.	Name of the Intervention/ Components	Quantifiable Unit of Interventions	Pattern of Assistance (Per unit of Interventions)	Beneficiaries
9.	Restoration of Irrigation Potential	Area coverage in ha	Upto Rs. 70,000/- per ha of irrigation potential restored.	Common Pool Resource
10.	Provision of Lift Irrigation Systems for filling existing farm ponds	Number	Upto Rs. 15,00,000/- per unit	Common Pool Resource
11.	Construction of new Farm Pond along with Lift irrigation system (Command Area: 20 -30 ha)	Number	Upto Rs. 65,00,000/- per unit	Common Pool Resource
12	Provision of Stream impounding of existing KT Weirs	Number	Upto Rs. 5,00,000/- per unit	Common Pool Resource
13.	(a) Creation of irrigation potential through New Minor Irrigation (MI) Scheme upto 250 ha command area.	Area coverage in ha	Rs. 3, 00,000/- per ha of irrigation potential created	Common Pool Resource
	(b) Creation of irrigation potential through Ongoing Minor Irrigation (MI) Scheme upto 250 ha command area.		Rs. 2, 50,000/- per ha of irrigation potential created	
14.	Formation of Water Users Associations (WUA)/Farmers Groups (FG)	Number	Rs. 2 lakhs per WUA/FG	