

People's participation in watershed management programmes: Evaluation study of Vidarbha region of Maharashtra in India

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Abstract

People's participation in watershed management programmes is an important strategy of government of India for making watershed programmes successful. Participation of local beneficiary farmers is mandatory in planning, implementation and maintenance of watershed development projects as per common guidelines issued by Ministry of Agriculture, Government of India. National Bank for Agriculture and Rural Development (NABARD) has launched holistic watershed development programmes on 2nd October, 2006 to help farmers in the six distressed districts of Vidarbha region of Maharashtra in India. Therefore there is a need to know the level of participation by the local people in government sponsored watershed management programmes. The study was conducted during 2011 – 2012 in this Vidarbha region of Maharashtra to measure the extent of people's participation in NABARD Supported Holistic Watershed Development Programme (NSHWDP). In this paper a detailed structured three-point-continuum schedule was developed by the investigators regarding various aspects of participation by local people in soil and water conservation for watershed management programme. People's Participation Index (PPI) was also designed to compute the extent of people's participation. Data for this study was gathered through personal interviews from farmers of six selected districts in Vidarbha region of Maharashtra. Findings of this study indicated that the extent of people's participation in planning was 63.7 per cent, in implementation was 57.7 per cent and in maintenance was 75.1 per cent. It shows that the extent of people's participation in NSHWDP in the six distressed districts of Vidarbha region of Maharashtra was moderate during watershed programme planning and implementation phases, whereas, high level of participation was exhibited during maintenance phase.

KeyWords: People's Participation, Soil & water conservation, Watershed development programme

1 Introduction

People's participation is, however, not a new idea in India. In fact, it emerged long ago in the vision and actions of Tagore and Gandhi. Rural masses as development actors were the central feature of their rural reconstruction programmes (Santhanam, 1982).

Verhagen (1980) was of the opinion that "participation is generally presented as the active involvement of target groups in the planning, implementation and control programmes and projects and not merely their passive acquiescence in performing predetermined tasks, not merely their exploitation in order to reduce the labour cost. Participation guarantees that the beneficiaries' own interests are taken into account. This enhances the likelihood that programmes and projects will prove effective in meeting felt development needs and that participants share equitably in all benefits."

Moulik (1978) was of the opinion that "participation in development process implies stimulating individuals to take the initiative and mobilizing people to work for overall societal development". Cohen and Uphoff (1980) described participation as "generally denoting the involvement of a significant number of persons

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in situations or actions which enhance their well-being, e.g. their income, security or self-esteem". According to Banki (1981), "People's participation is a dynamic group process in which all members of a group contribute to the attainment of group objectives, share the benefits from group activities, exchange information and experience of common interest, and follow the rules, regulations and other decisions made by the group".

The major benefits flowing from the participation of the people in development are: In the planning and programming stages and throughout the implementation of development programmes, rural people can provide valuable social-cultural, ecological, economic and technical indigenous knowledge ensuring consistency between objectives of development and community values and preferences; people can mobilize local resources in the form of cash, labour, materials, managerial talent and political support which are critical to programme success; Programmes involving people are more likely to sustain after outside financial and technical support is withdrawn; Participation by the poorer elements of the society may prevent the "hijacking" of programme benefits by wealthier members of the community; People accept more readily the programmes in which they or their recognized leaders have been involved. They feel that it is their programme; Involvement of local people in decision making generates commitment for implementation of the programme; it enhances people's ability to take responsibility and show competence in solving their own problems (Tyagi, 1998).

Stakeholders' participation at the time of planning a watershed development programme is much needed to take decisions because the programme should be according to the basic needs of them. The programme should meet the daily requirements of the majority of the stakeholders like supply of drinking water, fodder for cattle and fuel for kitchen. The watershed development programmes are made for local people; hence the local people should take interest and participate also in implementation of programme by contributing labour and money in construction of soil and water conservation structures on their field and community land. Participation in maintenance stage is required because without protection and care by the local people the programme will not be successful. The involvement of local people in programme evaluation is also necessary, so that it may provide points to be considered for improvement in future programme planning.

According to the Vidarbha Jan Andolan Samiti (VJAS), a social group working among farmers in Vidarbha, the toll of farmer's suicide in Vidarbha reached 59 for the month of September, 2012 and as many as 565 farmers have killed themselves in the region because of the agrarian crisis since January to September, 2012 (The Hindu, Nagapur, September 30, 2012).

Dongre and Deshmukh (2012) reported that farmers' suicides in Vidarbha were caused by the complex interplay of social, political and environmental constraints. Hence, a comprehensive intervention to ensure self reliance and capacity building among farmers in modern farming techniques, monitoring and support system for vulnerable farmers, a village-level, transparent system for disbursement of relief packages is required to prevent farmer suicides in the near future.

NABARD Supported Holistic Watershed Development Programme was launched on 2nd October, 2006 in six distressed (debt stressed) districts of Vidarbha region of Maharashtra. The watershed development activities were implemented in this region to enhance income of farmers by the agricultural development through sustainable management of soil and water resources. The project was not only accounts soil and water conservation measures but also incorporated the overall development of families through various supporting activities of livestock development, Wadi development (horticulture plantation), women welfare activities and improvements in livelihood of landless families. Thus, the present research study was framed to measure the extent of people's participation in various interventions of NABARD Supported Holistic Watershed Development Programme in distressed districts of Vidarbha region of Maharashtra for sustainable agricultural production.

2 Research methodology

The study was conducted during 2011-2012 in six distressed (debt stressed) districts in Vidarbha region of Maharashtra and one watershed cluster was selected from each district such as (i) Asoli watershed cluster in Ghatanjaluka of Yeovatmal district, (ii) Berala-Yeota watershed cluster falls in Chikhali taluka of Buldana district, (iii) Dharmapur watershed cluster situated in the Nandgaon Khandeshwar Taluka of Amrawati district, (iv) Dhudhalam watershed cluster falls in Block and district of Akola, (v) Mothegaon watershed Cluster is located in Risod Tahsil of Washim district and (vi) Dahegaon watershed cluster situated in Arwit aluka of Wardha district (Fig. 1). The term watershed cluster was used in the study, which can be described as "an area

comprised of two or more micro watersheds at a single place adjacent to each other having different drainage channels”. These watershed clusters were selected purposively because NABARD Supported Holistic Watershed Development Programme was launched on 2nd October, 2006 in these six districts of Vidarbha region in Maharashtra. The study was taken with the main objective to find out the extent of people's participation in government sponsored watershed development programmes in Vidarbha region of Maharashtra. The respondents were selected from the beneficiary farmers of watershed clusters with the help of stratified proportionate random sampling plan. Twenty respondent farmers selected from each watershed cluster and thus, in total 120 respondent farmers were selected for the study from six watershed clusters.

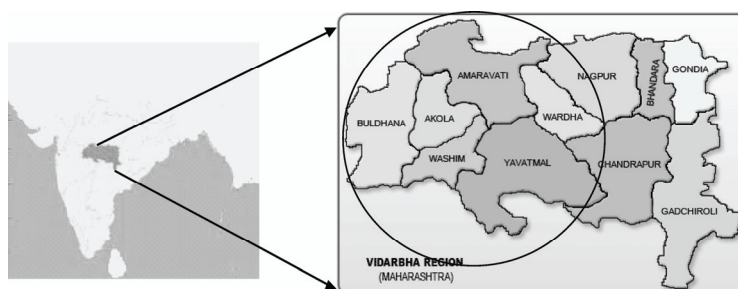


Fig. 1 Micro watershed clusters of Vidarbha region surveyed

A structured schedule for data collection was developed by the investigator to assess the extent of people’s participation in watershed development programme. The responses of the respondents were recorded in the especially developed three-point-continuum in the schedule i.e. great extent, some extent and least extent or never and scores were assigned as 3, 2 and 1 respectively. The extent of people’s participation in watershed development programme was measured with help of People’s Participation Index (PPI) developed by Bagdi (2002) as given below:

2.1 People’s Participation Index

$$PPI = \frac{\text{Mean Participation Score } (P)}{\text{Maximum Participation Score}} \times 100 \quad (1)$$

where,

$$P = \frac{\sum_{i=1}^N P_i}{N} \quad (2)$$

where,

N = Total number of respondents

$$P_i = \sum_{j=1}^K (PP_j + PI_j + PM_j) \quad (3)$$

where,

PP_j = Total scores obtained by a respondent due to participation in programme planning;

PI_j = Total scores obtained by a respondent due to participation in programme implementation;

PM_j = Total scores obtained by a respondent due to participation in programme maintenance;

K = Total number of statements on which responses of the respondents were recorded;

P_i = Total participation scores obtained by individual respondent in planning, implementation and maintenance.

2.2 Categorization of PPI:

The PPI value calculated in a particular watershed development programme can also be categorized into three categories as suggested by the author based on the normal distribution curve values as given below (Table 1).

Table 1 Categorization of people's participation according to normal distribution curve values

Normal distribution curve range	PPI value range	People's participation category
< Mean – S.D.	0 to 34.13	Low level
Mean – S.D. to Mean + S.D.	34.14 to 68.26	Moderate level
> Mean + S.D.	68.27 to 100	High level

S.D. = standard deviation.

3 Results and discussions

3.1 People's Participation in Planning

Table 1 presents the statements regarding watershed programme planning and frequency of respondents towards them. The data revealed that majority about 80 per cent of farmers of Vidarbha region participated in planning meetings of Soil and Water Conservation (SWC) works for watershed development programmes and they also motivated their fellow farmers to participate in planning meetings of SWC for watershed development programmes. Majority two-third of farmers were also shared information or experience about soil and water conservation measures with their fellow farmers after participating in planning meetings of watershed programme. About 70 per cent of farmers suggested information to include in planning of watershed development programmes and also suggested idea in planning of check dams in the watershed areas. More than 60 per cent of farmers participated in planning of various kinds of fruit plants grown in the watersheds and they also contacted to the Programme Implementing Agency (PIA) about their primary needs such as fuel, fodder & food to be taken care of in the planning of watershed programmes. More than fifty per cent of farmers were suggested idea in planning of agricultural crop cultivation and various forest trees plantation in the watershed areas. Only about one-fourth of farmers suggested ideas during planning of land leveling works in the different fields of the watershed areas.

Table 2 further revealed that overall People's Participation Index (PPI) was calculated as 63.66 per cent in planning stage of watershed cluster development programmes. It means moderate level of participation was exhibited by local farmers in planning stage of all the NABARD Supported Holistic Watershed Development Programme (NSHWDP) in the six distressed districts of Vidarbha region of Maharashtra. It was also found out that high level of participation was exhibited by local farmers during planning stages of Berla Yeota (96.5%) and Dehgaon (77%) watershed clusters. The lowest 42.5 per cent participation in planning was exhibited by farmers in Mothegaon watershed cluster. It may be due to that the average literacy rate is 11.00% and around 41% farmers are small & marginal in Mothegaon (Photo 1).



Photo 1 Participation in the watershed planning meeting by local farmers of Asoli watershed cluster of Vidarbha region of Maharashtra, India

Table 2 Statement wise frequency and percentage distribution of farmers regarding their participation in planning of watershed cluster development programmes

Statements	(n=120)						
	Motheगाon	BerlaYeota	Asoli	Dudhalam	Dharmapur	Dehgaon	Pooled
Did you participate in planning meeting of Soil and Water Conservation (SWC) programme?	13 (65)	20 (100)	13 (65)	12 (60)	20 (100)	18 (90)	96 (80.0)
Have you suggested information to include in planning of soil and water conservation programme?	8 (40)	20 (100)	13 (65)	11 (55)	17 (85)	16 (80)	85 (70.8)
Have you suggested any idea in the planning of agricultural crop cultivation in the watershed area?	11 (55)	20 (100)	8 (40)	9 (45)	0 (0)	17 (85)	65 (54.2)
Have you suggested information during planning of various forest trees planted in the watershed?	5 (25)	20 (100)	9 (45)	11 (55)	2 (10)	18 (90)	65 (54.2)
Have you suggested any idea during planning of land leveling works carried out in the different fields of the watershed area?	3 (15)	15 (75)	6 (30)	3 (15)	1 (5)	1 (5)	29 (24.2)
Have you suggested any idea during planning of check dam in the watershed?	11 (55)	18 (90)	9 (45)	15 (75)	12 (60)	19 (95)	84 (70.0)
Did you participate in planning of various kinds of fruit plants grown in the watershed?	7 (35)	20 (100)	6 (30)	10 (50)	16 (80)	19 (95)	78 (65.0)
Did you contact the Programme Implementing Agency (PIA) about your primary needs such as fuel, fodder & food to be taken care of in the programme planning?	8 (40)	20 (100)	14 (70)	3 (15)	18 (90)	11 (55)	74 (61.7)
Do you motivate your fellow farmers to participate in planning of SWC programme?	11 (55)	20 (100)	14 (70)	15 (75)	20 (100)	18 (90)	98 (81.7)
Did you share any information or experience about soil and water conservation measures with your fellow farmers after participating in planning of conservation programme?	8 (40)	20 (100)	13 (65)	12 (60)	20 (100)	17 (85)	90 (75.0)
PPI (%)	42.5	96.5	52.5	50.5	63	77	63.6

Note: Figures in parentheses are in percentage.

3.2 People's Participation in Implementation

The data in Table 3 revealed that majority (95%) of farmers of Vidarbha region were agreed and allowed the Programme Implementing Agency (PIA) to implement soil and water conservation works of watershed cluster development programmes in their fields under the NABARD Supported Holistic Watershed Development Programme (NSHWDP) in the six distressed districts of Vidarbha region. Majority (85%) of farmers contributed labour towards construction of soil and water conservation structures in their fields and about 83 per cent of farmers were also asked their fellow farmers or resource users for labour and money contribution towards construction of conservation structures in their watershed area. A majority (78.3%) of farmers were supervised the construction work any time during implementation stage of watershed development programmes. About 60 per cent of farmers helped during the plantation work of the fruit plants and also participated in training programme organized by the PIA regarding soil and water conservation for watershed development programmes. About only one-third of farmers provided any material in the construction of structures, provided any equipment to the PIA and any helped during purchasing of construction materials for soil and water conservation structures in the Vidarbha region of Maharashtra. Participation through money only one-fourth of farmers contributed any amount of money towards construction of soil and water conservation structures in their fields (Photo 2).

Table 3 further revealed that overall People's Participation Index (PPI) was computed as 57.7 per cent in implementation stage of NSHWDP watershed cluster development programmes. It reflects that moderate level of participation was exhibited by farmers of Vidarbha region of Maharashtra in implementation stage of watershed cluster development programmes. It was also find out that high level of participation was exhibited by farmers of BerlaYeota (69.1%) and Dehgaon (75.4%) watershed clusters and low level (31.8%) people's participation was exhibited by farmers of Motheगाon watershed cluster during implementation stage of watershed cluster development programmes. The poor socio-economic condition of farmers, small land holdings and undulating topography of Motheगाon watershed cluster compelled the farmers for low participation in implementation of watershed development programme (Photo 3).



Photo 2 A big earthen checkdam constructed with labour contribution of beneficiary farmers for rain water harvesting to irrigate crop in Dharmapur watershed cluster of Vidarbha region of Maharashtra, India

Table 3 Statement wise frequency and percentage distribution of farmers regarding their participation in implementation of watershed development programmes

(n=120)

Statements	Mothegaon	BerlaYeota	Asoli	Dudhalam	Dharmapur	Dehgaon	Pooled
Did you allow programme implementing agency (PIA) to implement soil and water conservation programme works in your field?	17 (85)	20 (100)	20 (100)	18 (90)	20 (100)	19 (95)	114 (95)
Did you provide any material in the construction of soil and water conservation structures?	4 (20)	11 (55)	0 (0)	1 (5)	0 (0)	18 (90)	34 (28.3)
Did you provide any equipment to the PIA during the construction of soil and water conservation measures in the watershed?	4 (20)	10 (50)	0 (0)	0 (0)	2 (10)	19 (95)	35 (29.2)
Did you help during the plantation work of the fruit plants?	2 (10)	11 (55)	16 (80)	12 (60)	15 (75)	16 (80)	72 (60)
Did you help in the plantation work of forest plants?	3 (15)	10 (50)	15 (75)	12 (60)	9 (45)	13 (65)	62 (51.7)
Did you provide any help during purchasing of construction materials for soil and water conservation structures?	5 (25)	11 (55)	5 (25)	6 (30)	0 (0)	11 (55)	38 (31.7)
Did you contribute any labour towards construction of soil and water conservation structures?	14 (70)	19 (95)	16 (80)	14 (70)	20 (100)	19 (95)	102 (85.0)
Did you contribute any money towards construction of soil and water conservation structures?	1 (5)	6 (30)	11 (55)	12 (60)	0 (0)	0 (0)	30 (25)
Did you ask your fellow resource users for labour and money contribution towards construction of conservation structures?	5 (25)	19 (95)	20 (100)	17 (85)	20 (100)	19 (95)	100 (83.3)
Did you participate in any training programme organized by the programme implementing agency regarding soil and water conservation programme?	9 (45)	16 (80)	15 (75)	10 (50)	19 (95)	12 (60)	81 (67.5)
Did you supervise any time the construction work during implementation stage of SWC programme?	6 (30)	19 (95)	19 (95)	10 (50)	20 (100)	20 (100)	94 (78.3)
PPI (%)	31.8	69.1	62.3	50.9	56.8	75.4	57.7

Note: Figures in parentheses are in percentage.



Photo 3 A farm pond in the field of a farmer for rain water harvesting to irrigate crop in waterscarcity conditions in Dharmapur watershed cluster of Vidarbha region of Maharashtra, India

3.3 *People's Participation in Maintenance*

The data in Table 4 shows that majority more than 90 per cent of farmers of Vidarbha region motivated their fellow farmers for labour contribution towards repair and maintenance of soil and water conservation structures in their watershed cluster, protected the soil and water conservation structures from natural calamities and also protected the forest plantation done in the watershed area from the animals. Majority about 80 per cent of farmers have consulted with the programme implementing agency to learn about repair and maintenance of conservation structures, contributed own labour towards repair and maintenance of soil and water conservation structure in their fields and also protected the fruit plants grown in their watershed cluster area. About three-fourth of farmers informed to the PIA officers for repair the damaged soil and water conservation structures in their watershed cluster and little less of two-third of farmers motivated their fellow farmers for money contribution towards repair and maintenance of soil and water conservation structures in their watershed. About fifty per cent of farmers have taken care of the forest and fruit plants during summer by providing irrigation water and also contributed money towards repair and maintenance of soil and water conservation structures in their fields. Only one-third farmers contributed labour or material or money towards the desilting of the SWC structures during maintenance stage of six selected watershed clusters in the Vidarbha area of Maharashtra.

Table 4 Statement wise frequency and percentage distribution of farmers regarding their participation in maintenance of watershed cluster development programmes

Statements							(n=120)
	Motheagaon	BerlaYeota	Asoli	Dudhalam	Dharmapur	Dehgaon	Pooled
Do you protect the forest plantation done in the watershed area from the animals?	18 (90)	20 (100)	16 (80)	15 (75)	20 (100)	20 (100)	109 (90.8)
Do you also protect the fruit plants grown in the watershed area?	7 (35)	20 (100)	16 (80)	18 (90)	20 (100)	19 (95)	100 (83.3)
Do you take care of the forest plants and fruit plants during summer by providing irrigation water?	6 (30)	11 (55)	12 (60)	11 (55)	20 (100)	9 (45)	69 (57.5)
Do you inform the PIA officers to repair the damaged soil and water conservation structures in the watershed?	10 (50)	15 (75)	16 (80)	16 (80)	14 (70)	18 (90)	89 (74.2)
Do you contribute own labour towards repair and maintenance of soil and water conservation structure in your field?	18 (90)	15 (75)	20 (100)	16 (80)	20 (100)	17 (85)	106 (88.3)
Do you contribute any money towards repair and maintenance of soil and water conservation structures in your field?	16 (80)	17 (85)	20 (100)	7 (35)	0 (0)	0 (0)	60 (50.0)

Continue

Statements	Mothegaon	BerlaYeota	Asoli	Dudhalam	Dharmapur	Dehgaon	Pooled
Do you motivate your fellow farmers for labour contribution towards repair and maintenance of soil and water conservation structures in the watershed?	19 (95)	20 (100)	20 (100)	19 (95)	20 (100)	20 (100)	118 (98.3)
Do you consult with the programme implementing agency to learn about repair and maintenance of conservation structures?	15 (75)	20 (100)	13 (65)	20 (100)	20 (100)	19 (95)	107 (89.2)
Do you motivate your fellow farmers for money contribution towards repair and maintenance of soil and water conservation structures in the watershed?	12 (60)	20 (100)	20 (100)	18 (90)	0 (0)	7 (35)	77 (64.2)
Do you protect the soil and water conservation structures from natural calamities?	19 (95)	20 (100)	20 (100)	17 (85)	20 (100)	19 (95)	115 (95.8)
Do you contribute labour/material/money towards the desilting of the SWC structures?	10 (50)	12 (60)	9 (45)	10 (50)	0 (0)	0 (0)	41 (34.2)
PPI (%)	68.2	86.3	82.7	75.9	70.0	67.3	75.1

Note: Figures in parentheses are in percentage.

The data in Table 4 further revealed that the overall People's Participation Index (PPI) was computed as 75.08 per cent in maintenance stage of NSHWDP watershed programmes. It means high level of participation was exhibited by farmers of Vidarbha area of Maharashtra in maintenance stage of watershed programmes. It was also found out that high level of participation was also exhibited by farmers of all the selected six watershed clusters during maintenance stage as Mothegaon 68.2%, Berla Yeota 86.3%, Asoli 82.7%, Dudhalam 75.9%, Dharmapur 70.0% and Dehgaon 67.3%. It can be concluded that the farmers of Vidarbha region are maintaining the watershed development interventions very well in their watershed area with high level of participation (Photo 4).



Photo 4 Concrete checkdam constructed and maintained with labour and money contribution of beneficiary farmers for soil and water conservation in Dahegaon watershed cluster of Vidarbha region of Maharashtra, India

3.5 Overall People's Participation in watershed development programmes

The data in Table 5 shows that the overall extent of participation by stakeholder farmers in NABARD Supported Holistic Watershed Development Programmes (NSHWDP) in the six distressed districts of Vidarbha region of Maharashtra was exhibited moderate level as calculated pooled PPI value 65.5 per cent. It was also

revealed that moderate level of participation was exhibited by farmers in planning stage (63.7%) as well as implementation stage (57.7%) little less than planning stage, whereas, high level (75.1%) of participation was exhibited by farmers in maintenance stage of watershed clusters in the region. It shows that the farmers of Vidarbha region were contributed more in maintenance of natural resources conservation structures or interventions implemented during watershed development programme.

Table 5 further also revealed that high level of overall participation of local farmers was exhibited during development of BerlaYeota and Dehgaon watershed clusters with overall PPI indices values computed as 83.9 per cent and 73.2 per cent respectively. It means farmers of BerlaYeota and Dehgaon watershed clusters were participated and contributed more during planning, implementation and maintenance of watersheds development interventions.

Table 5 People's Participation Indices (PPI) in different stages of six watershed cluster development programmes in Vidarbha region of Maharashtra

Watershed programme stages	PPIs values of watershed clusters						Pooled
	Mothegaon	BerlaYeota	Asoli	Dudhalam	Dharmapur	Dehgaon	
Planning	42.5	96.5	52.5	50.5	63.0	77.0	63.7
Implementation	31.8	69.0	62.2	50.9	56.8	75.4	57.7
Maintenance	68.1	86.3	82.7	75.9	70.0	67.2	75.1
Overall PPI (%)	47.5	83.9	65.8	59.1	63.2	73.2	65.5

(n=120)

4 Conclusion

It was find out from the study that in programme planning stage the majority of farmers participated in planning meetings and they also motivated their fellow farmers to participate in planning meetings of watershed development programme and they also shared information or experience with their fellow farmers after participating in planning meetings. In implementation stage majority of farmers contributed labour only towards construction of soil and water conservation structures in their fields and also asked their fellow farmers for labour and money contribution towards construction of conservation structures in their watershed area. In maintenance stage the majority of farmers of Vidarbha region motivated to their fellow farmers for labour contribution towards repair and maintenance of soil and water conservation structures in their watershed and also protected the SWC structures from natural calamities as well as forest plantation from the animals. Further, it was also find out that the farmers of Vidarbha region of Maharashtra have participated moderately in the watershed development programme planning and implementation stages, whereas, high level of participation was exhibited by farmers in maintenance stage of watershed development programme. Therefore, it could be concluded that the stakeholder farmers of Vidarbha region participates more by contributing labour in maintenance of soil and water conservation structures implemented in their fields through government sponsored watershed development programmes to enhance their sustainable agricultural production due to more availability of irrigation water.

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