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Performance assessment of Krishi Bhagya scheme in North Eastern Karnataka region

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Abstract
The present study assessed the relative agricultural sustainability status of two districts in North Eastern Karnataka through component wise performance assessment of *Krishi Bhagya* scheme. The study was conducted in Kalaburagi and Ballari districts. From each selected district, two taluks were selected based on highest number of beneficiaries. From each taluk 45 beneficiaries of *Krishi Bhagya* scheme were selected by following simple random sampling procedure. Thus study comprises of 180 respondents. The overall performance of *Krishi Bhagya* scheme depicts that, nearly half (48.33%) of the beneficiaries found in medium overall performance. The component wise results of the study revealed that, least (1.11%) per cent of the farmers had farm pond (without polythene sheet) before the implementation of *Krishi Bhagya* scheme. But after the implementation of the scheme the possession of farm pond increased to cent per cent as farm pond is one of foremost basic component in this scheme. In case of farm pond utilization pattern, the majority of the beneficiaries (after *Krishi Bhagya* scheme) utilized farm pond for various purposes like provide protective irrigation for crops (100.00%), recharge ground water (42.78%) and store stream water/ borewell water (34.44%). The utilization pattern is least (1.11%) in case of before *Krishi Bhagya* scheme implementation. Whereas, after implementation of *Krishi Bhagya* scheme, nearly fifty (49.44%) per cent of the beneficiaries constructed graded bund followed by trench cum bunding (26.11%), mulching (21.11%) and conservation furrow (19.66%).

Keywords: Krishi Bhagya scheme, farm pond, polythene sheet, diesel pump set, micro irrigation, protective cultivation, *in-situ* soil moisture conservation

Introduction
India is blessed with large arable land of 159.70 m ha with 15 agro-climatic zones having almost all types of weather conditions, different soil types and capable of growing a variety of crops. India is the top producer of milk, spices, pulses, tea, cashew and jute, and the second-largest producer of rice, wheat, oilseeds, fruits and vegetables, sugarcane and cotton. In spite of all these facts, the average productivity of many crops in India is quite low compared to developed nations like China and USA.

Government of India has also taken up several innovative initiatives to improve agricultural sustainability at regional and farm level such as Jal Shakti Abhiyan which focused on water conservation, rainwater harvesting and renovation of traditional water bodies and afforestation; Atal Bhujal Yojana for groundwater management through community participation; Pradhan Mantri Krishi Sinchayee Yojana to improve water use efficiency; Paramparagat Krishi Vikas Yojana to increase soil fertility and to encourage farmers to produce healthy food through organic practices without the use of agro chemicals. Therefore, the government policies and present resource allocations focused on sustainable and resilient agriculture that enhances the income of the farmers on continuous basis and hence, there is a need to focus attention on improving the livelihoods of farmers through promotion of sustainable agriculture.

Karnataka is the important agricultural based state in the country, having 70.00 per cent of cultivable land in rainfed condition. This rainfed area contributes 55.00 per cent of food grains and 75.00 per cent of oilseed production in the state. Most of the small and marginal farmers are in rainfed areas. In recent years dry regions are facing more uncertain situation in the state, resulting in risk of debt by farmers. In recent years, effect of climate change seen in the form of long dry spells and heavy rains in rainfed areas, it caused severe drought and floods in the state. In dry zones, farmers should increase availability of irrigation water through rain water harvesting; it helps to encourage sustainable agriculture development in dry zones of the state. By considering problems in and to convert subsistence agriculture in to sustainable agriculture in dry zones, government of Karnataka implemented a new scheme called "*Krishi Bhagya*

Scheme" in the year 2014 in 105 taluks of 23 districts (45 lakh ha) of the state.

Materials and Method

The present study confined to an Ex-post-facto research design. The study was purposively conducted in Kalaburagi and Ballari districts of North-Eastern Karnataka region during the year 2019-20 as these districts had highest number of beneficiaries in the *Krishi Bhagya* scheme of Government of Karnataka. From each selected district, two taluks were selected based on highest number of beneficiaries. From each taluk 45 beneficiaries of *Krishi Bhagya* scheme were selected by following simple random sampling procedure. Thus study comprises of 180 respondents.

Results and Discussion

1. Overall performance of *Krishi Bhagya* scheme as perceived by the beneficiaries

The results presented in Table 1 revealed the overall performance of *Krishi Bhagya* scheme beneficiaries. Nearly half (48.33%) of the beneficiaries belonged to medium level of performance, followed by high (27.78%) and low (23.89%) level of performance.

At one point of discussion, respondents point out that, distribution of KBS components were not matching at the time of requirements of project beneficiaries such as farm pond, polythene sheet, diesel pump set, micro irrigation systems, protective cultivation, *etc*., coupled with non availability of components in required quantity on time. Further discussion with agro-metrologist the condition for the dry land farmers is not encouraging to take up cultivation in dry land areas due to poor distribution of rain fall over period of time or cropping season.

The medium level of performance as personal by the beneficiaries may also be due to the various factors like the change in cropping pattern, annual income, crop yield, *in-situ* soil moisture conservation practices, micro irrigation methods and protective cultivation. The components performed at medium level.

Table 1: Distribution of beneficiaries according tooverall performance of *Krishi Bhagya* scheme

(n=180)

Sl. No	Category	Frequency	Per cent
1	Low (Mean-0.425*SD)	43	23.89
2	Medium (Between mean ± .425*SD)	87	48.33
3	High (Mean+0.425*SD)	50	27.78
Total		180	100
		Mean = 63.21	SD = 1.74

2. Component wise performance assessment of *Krishi Bhagya* scheme

The data in Table 2 indicated the component wise performance of the KBS beneficiaries. The components of *Krishi Bhagya* scheme were farm pond, polythene sheet, diesel pump set, micro irrigation and protective cultivation.

Farm pond is one of foremost basic component in this scheme. Only 1.11 per cent of the farmers had farm pond (without polythene sheet) before the implementation of *Krishi Bhagya* scheme. While, cent per cent of them had farm pond after *Krishi Bhagya* scheme. Among them 57.78 per cent had farm pond with polythene sheet and 42.22 per cent had farm pond without polythene sheet.

The probable reason behind the polythene sheet is that, this component is not a mandatory for the farmers and also the Department had given polythene sheet based on the soil type, hence the result.

In case of farm pond utilization pattern, the majority of the beneficiaries (after *Krishi Bhagya* scheme) utilized farm pond for various purposes like provide protective irrigation for crops (100.00%), to recharge ground water (42.78%), to store stream water / bore well water (34.44%), provide drinking water facility for animals (28.89%), store water from run-off (18.33%) and raising of nursery seedlings (9.44%). But the utilization pattern is least (1.11%) in case of before *Krishi Bhagya* scheme implementation. In case of diesel pump set, earlier (before *Krishi Bhagya* scheme) the pump set is possessed by 12.78 per cent of the beneficiaries, whereas, after *Krishi Bhagya* scheme implementation the per cent of diesel pump set possessed is increased to 87.22 per cent.

In case of diesel pump set utilization pattern, large majority (98.89%) of the beneficiaries (after *Krishi Bhagya* scheme) utilised for water lifting from farm pond followed by water lifting from stream water (21.67%) and water lifting from open well (12.78%). While, least per cent (9.44%, 2.22% and 1.11%) of them used for water lifting from open well, stream water and farm pond, respectively before *Krishi Bhagya* scheme implementation.

Micro irrigation is another important component of the *Krishi Bhagya* scheme. Among this, Sprinkler irrigation system was practiced by 57.22 per cent and 13.33 per cent (after and before *Krishi Bhagya* scheme) of the beneficiaries. The crops grown under this sprinkler irrigation were groundnut, hybrid jowar and bajra by 32.78, 12.78 and 11.67 per cent of the beneficiaries after *Krishi Bhagya* scheme implementation. Whereas, least per cent of the beneficiaries grown groundnut (7.78%) and hybrid jowar (5.56%) before implementation of *Krishi Bhagya* scheme. Drip irrigation was practiced by 13.33 per cent of the beneficiaries after *Krishi Bhagya* scheme implementation. The crops grown under this sprinkler irrigation were capsicum (6.67%), tomato (4.44%) and guards (2.22%), respectively. It is interesting to note that none of the beneficiaries had drip irrigation system in the study area before *Krishi Bhagya* scheme. The probable reason for low adoption might be due the fact that, this method of irrigation not widely practiced in open condition (field crops). But it's widely followed in case of growing horticultural crops especially vegetables in closed condition (protected cultivation).

In case of protective cultivation, least per cent (9.44% and 1.67%) of the beneficiaries possessed shade net and poly house after *Krishi Bhagya* scheme. The vegetable seedlings raised under shade net were chilli, brinjal and tomato by 7.22, 5.00 and 4.44 per cent of the beneficiaries, respectively. Some of them had grown tomato (5.56%), capsicum (2.78%) as vegetables and marigold (5.00%), chrysanthemum (3.89%) as cut flowers. The crops grown in poly house were chilli and chrysanthemum by least per cent (1.11 and 0.56%) of the

beneficiaries. The fact of having least per cent of shade net and poly house is that, as it requires high budget for establishment and also Department had given subsidy to limited number of farmers in a taluka. The findings were in line with the studies of Manohara *et al.* (2021) [2], Sidram *et al.* (2020) [4], Rajendra and Dolli (2021) [3] and Venu *et al.* (2015) [5].

Table 2: Performance assessment of the beneficiaries (component wise) of Krishi Bhagya scheme

(n=180)

Sl. No.	Components of KBS	Performance			
		Before KBS		After KBS	
		F	%	F	%
I	Farm pond	2	1.11	180	100.00
A	Farm pond with polythene sheet	0	00.00	104	57.78
B	Farm pond without polythene sheet	2	1.11	76	42.22
	Farm pond utilization*				
1	Protective irrigation for crops	2	1.11	180	100.00
2	Raising of nursery seedlings	2	1.11	17	9.44
3	Store stream water / bore well water	2	1.11	62	34.44
4	Store water from run-of water	2	1.11	33	18.33
5	Recharge ground water	2	1.11	77	42.78
6	Drinking water facility for animals	2	1.11	52	28.89
II	Diesel pump set	23	12.78	157	87.22
	Diesel pump set utilization*				
1	Water lifting from farm pond	2	1.11	178	98.89
2	Water lifting from stream water	4	2.22	39	21.67
3	Water lifting from open well	17	9.44	23	12.78
III	**Micro irrigation**				
1	Sprinkler	24	13.33	103	57.22
	Sprinkler irrigation utilization*				
A	Hybrid jowar	10	5.56	23	12.78
B	Bajra	0	0.00	21	11.67
C	Groundnut	14	7.78	59	32.78
2	Drip	0	0.00	24	13.33
	Drip irrigation utilization				
A	Capsicum	0	0.00	12	6.67
B	Snake / Ridge / sponge guard	0	0.00	4	2.22
C	Tomato	0	0.00	8	4.44
IV	**Protective cultivation utilization***				
A	Shade net	0	0.00	17	9.44
	Raising vegetable seedlings				
	Chilli	0	0.00	13	7.22
	Brinjal	0	0.00	09	5.00
	Tomato	0	0.00	08	4.44
	Growing vegetables				
	Capsicum	0	0.00	05	2.78
	Tomato	0	0.00	10	5.56
	Cultivating flowers				
	Marigold	0	0.00	09	5.00
	Chrysanthemum	0	0.00	07	3.89
B	Polyhouse	0	0.00	3	1.67
	Raising vegetable seedlings				
	Chilli	0	0.00	2	1.11
	Cultivating flowers				
	Chrysanthemum	0	0.00	1	0.56

KBS = *Krishi Bhagya* scheme, *Multiple responses recorded

3. Distribution of beneficiaries according *in-situ* soil moisture conservation practices

The *in-situ* soil moisture conservation practices include different soil moisture conservation structures such as graded bunds, trench cum bunding, conservation furrow and mulching. It is observed from Table 3 that, nearly one fourth (23.89%) of beneficiaries before *Krishi Bhagya* constructed graded bunds followed by trench cum bunding (15.56%), conservation furrow (9.44%) and mulching (8.83%) practices. However, after implementation of *Krishi Bhagya* scheme, nearly fifty (49.44%) per cent of the beneficiaries constructed graded bund followed by trench cum bunding (26.11%), mulching (21.11%) and conservation furrow (19.66%). The probable reason for adoption of various soil moisture conservation practices might be for minimize soil and water erosion, recharge ground water table and to conserve soil moisture.

It is worth noting that, at present farmers were not showed interest in this component because they do not know the importance of soil moisture conservation practices and also medium land holdings. Hence, presently this component is neglected in this scheme. The results are in conformity with Deshmukh *et al.* (2017) [1] and Manohara *et al.* (2021) [2].

Table 3: Distribution of beneficiaries according *in-situ* soil moisture conservation practices

(n=180)

Sl. No	*In-situ* soil moisture conservation practices*	Before KBS		After KBS	
		Frequency	Per cent	Frequency	Per cent
1.	Graded bund	43	23.89	89	49.44
2.	Trench cum bunding	28	15.56	47	26.11
3.	Conservation furrow	17	9.44	35	19.66
4.	Mulching	15	8.33	38	21.11

*Multiple responses recorded

4. Utilization pattern of *in-situ* soil moisture conservation practices

It is evident from Table 4 that, nearly one third (31.67%) of the beneficiaries utilized *in-situ* soil moisture conservation practices to recharge ground water table followed by reduce/ minimize soil and water erosion (21.67%), increases soil moisture storage (12.78%), dispose excess rain water (12.22%) and increase percolation and infiltration rate (6.67%). The results are inline with Manohara *et al.* (2021) [2] and Sidram *et al*. (2020) [4].

Table 4: Distribution of beneficiaries according to utilization pattern of *in-situ* soil moisture conservation practices (n=180)

Sl. No	Utilization pattern of *in-situ* soil moisture*	Frequency	Per cent
1.	Soil and water erosion	39	21.67
2.	Increase percolation and infiltration rate	12	6.67
3.	Dispose excess rain water	22	12.22
4.	Increases the soil moisture storage	23	12.78
5.	Recharge ground water table	57	31.67

*Multiple responses recorded

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