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Impact of different activities of KVK, Kutch among the date palm growers

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ABSTRACT

Datepalm is one of the most potential fruit crop for dry arid regions. Kutch district of Gujarat state enjoys monopoly of commercial cultivation of datepalm in India. KVKs are grass root level scientific institution for imparting vocational skill training to the farmers and field-level extension workers, conducting OFT and FLDs on major agricultural technologies. KVK, Kutch was established by ICAR in 1992 at Mundra. Since its inception, KVK, Kutch was carried out numbers of activities for datepalm development in the district. The explicit importance and crucial contribution of KVK activities in datepalm development, the present investigation of impact of KVK activities among the datepalm growers was carried out in major datepalm growing talukas *viz.*, Anjar, Mundra, Mandvi and Bhuj talukas of kutch district. Five villages having highest area under datepalm were selected purposively from each talukas. Two types of respondents' *viz.*, experimental group and control group were selected. For experimental group, village-wise list of those farmers who are benefited by KVK activities was prepared and from this list, 05 datepalm growers from each selected villages were identified by using proportionate random sampling. Thus, total 100 datepalm growers were selected. For control group, similar numbers of those datepalm growers who are not benefited by KVK activities were identified from same selected villages. Thus, 100 such datepalm growers were selected. The experimental research design was used for this study. Major activities carried out by KVK for datepalm development were farmers' trainings 109 (3289*), ex-trainees' meetings and group discussion 173(3544*), 291 method demonstrations conducted on offshoot propagation technique on same numbers of farmers' field, 1000 result demonstrations of performance of tissue culture plants of local elite varieties conducted on 22 farmers' field and 62 demonstrations of plastic fruit covering with same numbers of farmers, 289 (459*) diagnostic visits on different problems of datepalm growers, 10 (3496*) datepalm fruits exhibitions and competitions etc. Regarding the farmers' involvement in KVK activities, more than 80 per cent beneficiary farmers visited KVK more than 10 times and 90 per cent non-beneficiary farmers visited KVK 0 to 10 times. Regarding their participation, beneficiary farmers participated in frequent guidance of KVK scientists (94 %), datepalm fruits competition and exhibitions (92 %), trainings through KVK scientists (90 %), field visits of KVK scientists (88 %), seminars and workshops (82 %) and field demonstrations of KVK (78 %). The total 24559 farmers were participated / benefited

in different activities carried out by KVK. As far as the impact of KVK activities concern, about two-third (71 %) of beneficiary farmers were increased above 300 per cent average numbers of trees in their farm. Also, about 90 per cent of beneficiary farmers adopted improved varieties with more than 50 per cent varietal change. The great majority *i.e.* 85 per cent of beneficiary were got the annual average production of datepalm per tree 51 to 150 per cent. Also a huge majority (96 %) of beneficiary farmers were got the increment in their average annual income of datepalm per tree above 300 per cent.

* Figures in parenthesis indicates numbers of beneficiary

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INTRODUCTION

The role of scientific agriculture can never be under estimated as it contributes about 38 per cent to the GDP and 60 per cent to total export provides employment to 62 per cent of work force (Singh, 2000). The horticultural sector of country makes agriculture more profitable as it covers 8 per cent of total cropped area contributes 24.50 per cent to the GDP and 54.55 per cent to export earning in agricultural sector (Chadha, 2001). The integration of agricultural research, education and extension system has been one of the fundamental foundations which has led to revolutions in agriculture and allied sectors (Venkatasubramanian *et al.,* 2010). As a part of strategy, several TOT programmes were launched in the country *viz.*, NDP, LLP, ORP, KVK and ATMA. These programmes were continuously reviewed and reformulated for their effectiveness (Prasad *et al.,* 1987). Presently, the KVKs have been recognized as an effective link between agricultural research and extension system (Singh, 2005; Pawar, 2012 and Singh, 2012). KVKs are innovative science-based institutions established mainly to impart vocational skill training to the farmers and field-level extension workers, conducting On Farm Testing (OFTs) and Front-Line Demonstrations (FLDs) on major agricultural technologies (Das, 2007). At present, 641 KVKs are working in the country through ICAR. (Prabhu Kumar, 2013 and *http://www.icar.org.in*). KVK, Kutch was established by ICAR in 1992 at Mundra of Kutch district of Gujarat state.

Date palm (*Phoenix dactylifera* L.) is one of the oldest cultivated horticultural crop and one of the most potential fruit crop for dry arid regions. Kutch district of Gujarat state enjoys monopoly of commercial cultivation of date palm in India. The date palm groves of Kutch might be about 200 years old and are believed to have been planted by Turk settlers (Pareek and Sodagar, 1982). The area under date palm cultivation was increased by considerable extent in last 13 years *i.e.* 9994 ha in 2001-02 with production 59046 M.T. to 17000 ha with production of 139995 M.T. in 2012-13 (Murlidharan *et. al*., 2008; Pareek and Chandra, 1995 and Department of Horticulture, Gujarat state website: *www.gswan.gov.in and www.doh.gujarat.gov.in*). The date fruits are nutritious (rich in carbohydrates) with high calorific value *i.e.* one kg. fully ripped fresh fruits provides 3150 calories. It is considered as high energy food due to its sugar content (Nixon, 1969).

Keeping in view the growth and huge budget on KVKs' activities and expectations of the GoI, there is a need to conduct analytical studies on the impact of KVKs systematically and objectively (Chippa, 1987; Kalla, 1988; Singh, 1996; Rathore, 2005 and Jiyawan *et al*., 2012). Islam (1991) defined impact as an effect of a particular programme/project or an assessment of the changes. According to Singh (1990), any activity involves some costs and some benefits to the society and individual entities that carry them out. Also, the diffusion of knowledge is an easy, apply it is the difficult one (Leagans, 1963). In this study the resultant changes occurred among the respondents in the form of income enhancement of date palm growers was taken in to account as impact of different activities of KVK. Therefore, it was measured in terms of major changes *viz.*, increase in average numbers of date palm trees, varietal change in date palm, increase in annual average production and income from date palm per tree.

MATERIAL AND METHODS

The present study was carried out in Anjar, Mundra, Mandvi and Bhuj talukas of Kutch district of Gujarat state,

which occupies 90 per cent area of dateplam cultivation were selected purposively. Five villages having highest area under date palm were selected purposively from each talukas. Thus, total 20 villages were selected purposively for the study. Two types of respondents' *viz.*, experimental group and control group were selected. For experimental group, village-wise list of those farmers who are benefited by KVK activities was prepared and from this list, 05 date palm growers from each selected villages were identified by using proportionate random sampling. Thus, total 100 date palm growers were selected. For control group, similar numbers of those date palm growers who are not benefited by KVK activities were identified from same selected villages. Thus, total 100 such date palm growers were selected. The experimental research design was used for this study.

OBSERVATIONS AND ANALYSIS

The impact of KVK activities among the date palm growers was discussed in two parts;

– Interventions of KVK activities and involvement of beneficiary date palm growers.

- Major activities carried out by KVK, Kutch for date palm development.

- Involvement of date palm growers in different activities carried out by KVK

– Impact of KVK' activities on date palm growers in terms of resultant changes in;

- Average numbers of date palm trees increased per year

- Varietal change in date palm

- Percentage increased in annual average production of date palm per tree

- Percentage increased in annual average income of date palm per tree

Intervention of KVK activities and involvement of datapalm growers :

The major activities carried out by KVK, Mundra (Kutch) for date palm development :

The activities carried out by KVK from the year 1994-95 to 2012-13 are cited in Table 1.

It can be concluded that major activities carried out by KVK for date palm development were 109 farmers' trainings programmes covered 3289 beneficiaries, 173 ex-trainees' meetings and group discussions benefited 3544 beneficiaries, 291 method demonstrations conducted on offshoot propagation technique on same numbers of farmers' field, 1000 result demonstrations of performance of tissue culture plants of local elite varieties conducted on 22 farmers' field and 62 demonstrations of plastic fruit covering with same numbers of farmers. As far as extension activities concern, 289 diagnostic visits on different problems of date palm covered 459 farmers,

Table 1 : Major activities carried out by KVK, Kutch for date palm development. Period: 1994-95 to 2012-13 (19 years)

Sr. No.	Activity	Nos. of activities	Nos. of beneficiaries
Trainings			
1.	Farmers' trainings	109	3289
2.	Ex-trainees' meetings / Group discussion	173	3544
Field demonstration			
1.	Offshoot propagation	291	291
2.	Tissue culture plantlets	1000 T.C. Plants	22
3.	Plastic fruit covering	62	62
4.	PVC hand pollinator	68	68
Other extension activities			
1.	Fruit exhibition and competition	10	3656
2.	Field diagnostic visits	289	459
3.	Literature/Publication / News paper coverage	30	--
4.	Radio talk	20	--
5.	Farmers' seminars / Workshops	14	3496
6.	Film/Slide shows	12	738
7.	Technology week celebration	03	8178
8.	Farmers' exposure tour	02	50

organized 10 date palm fruits exhibitions and competitions benefited 3496 farmers, 30 publications or extension literature on date palm, 20 radio talk delivered from AIR, Bhuj-Kutch, projected 12 video and slideshows covered 738 beneficiaries, organized 3 Kisan Melas in technology week benefited 8178 farmers, organized 02 farmers' tour of outside state with 50 farmers for exposing date palm technologies etc.

Involvement of date palm growers in different activities carried out by KVK :

The involvement of date palm growers in KVK activities was studied under two major sub heads as below;

– Average numbers of visit of date palm growers to KVK per year.

– Participation of beneficiary farmers in different activities carried out by KVK.

Average numbers of visits of date palm growers to KVK per year :

The data regarding the average numbers of visits of date palm growers to KVK are presented in Table 2 indicates that 37 per cent of the beneficiary farmers visited KVK 11 to 20 times followed by 25 per cent and 21 per cent beneficiary farmers visited KVK 21 to 30 times and more than 30 times, respectively. Whereas, 90 per cent and 10 per cent non-beneficiary farmers visited KVK only average 0 to 10 times and 11 to 20 time, respectively. Hence, it concluded that more than 80 per cent of beneficiary farmers and 90 per cent of non-beneficiary farmers visited KVK above 10 times and below 10 times respectively.

Participation of beneficiary farmers in different activities carried out by KVK :

KVK, Kutch has been carried out different extension activities for date palm development since its inception. These activities play a vital role for date palm growers in adoption of recommended date palm cultivation technology in the district. Hence, it needs to analyze the participation of beneficiary farmers in different activities carried out by KVK.

The participation of beneficiary farmers in different activities carried out by KVK observed from Table 3 that 94 per cent remarked the activity frequent guidance by KVK scientists followed by 92 per cent in date palm fruit competitions and exhibitions, 90 per cent with trainings through KVK scientists, 88 per cent with frequent farmers' field visit of KVK scientists, 82 per cent with farmers' seminars and workshops, 78 per cent with field demonstrations through KVK, 72 per cent with

Table 2 : Distribution of the respondents according to their average numbers of visits to KVK per year (n = 200)

Sr. No.	Average numbers of visit	Beneficiary farmers (n = 100)		Non-beneficiary farmers (n = 100)	
		Frequency	Percentage	Frequency	Percentage
1.	0 to 10 times	17	17	90	90
2.	11 to 20 times	37	37	10	10
3.	21 to 30 times	25	25	00	00
4.	Above 30 times	21	21	00	00
	Total	100	100	100	100

Table 3 : Distribution of beneficiary farmers according to their participation in different activities carried out by KVK, Kutch (n = 100)

Sr. No.	Activity	Percentage	Rank
1.	Frequent guidance by KVK scientists	94	I
2.	Trainings through KVK scientists	90	III
3.	Field demonstrations through KVK	78	VI
4.	Frequent farmers' field visits of KVK scientists	88	IV
5.	Timely diagnostic services by KVK scientists	65	X
6.	Make availability of date palm tissue culture plants of local elite varieties	67	IX
7.	Farmers' seminars and workshops organized by KVK	82	V
8.	Date palm fruit competitions and exhibitions organized by KVK	92	II
9.	Farmers' exposures by KVK in Krishi Mela and Krishi Expo. etc.	68	VIII
10.	Promotion of Kutch dates growers association and marketing groups etc.	72	VII

Kutch dates growers association and marketing groups etc., 68 per cent with Farmers' exposures in Krishi Mela and Krishi Expo. etc., 67 per cent with make availability of date palm tissue culture date palm plants of local elite varieties and 65 per cent with activity timely diagnostic services by KVK scientists.

Impact of KVK' activities on date palm growers :

Average numbers of date palm trees increased per year:

The results regarding the average numbers of date palm trees increased per year are depicted in Table 4.

It is apparent from Table 4 that nearly half of the beneficiary farmers (42 %) were increased their average numbers of date palm trees 301 to 600 per cent followed by nearly equal numbers (15 % and 16 %) of beneficiary farmers were increased 601 to 900 per cent and 101 to 300 per cent average numbers of trees on their farm. While 14 per cent and 13 per cent beneficiary farmers were increased above 900 per cent and below 100 per cent average numbers of trees, respectively. While, cent per cent of non-beneficiary farmers were found to

Table 4 : Distribution of the respondents according to their average numbers of date palm trees increased per year (n = 200)

Sr. No.	Average numbers of date palm trees increased per year	Beneficiary farmers (n = 100)		Non-beneficiary farmers (n = 100)	
		Frequency	Percentage	Frequency	Percentage
1.	Upto 100%	13	13	100	100
2.	101% to 300%	16	16	00	00
3.	301% to 600%	42	42	00	00
4.	601% to 900%	15	15	00	00
5.	Above 900%	14	14	00	00
	Total	100	100	100	100

Table 5 : Distribution of the respondents according to their varietal change in date palm (n = 200)

Sr. No.	Varietal change of date palm	Beneficiary farmers (n = 100)		Non-beneficiary farmers (n = 100)	
		Frequency	Percentage	Frequency	Percentage
1.	Upto 25%	00	00	85	85
2.	26% to 50%	12	12	15	15
3.	51% to 75%	53	53	00	00
4.	Above 75%	35	35	00	00
	Total	100	100	100	100

Table 6 : Distribution of the respondents according to their percentage increased in annual average production of date palm per tree (n = 200)

Sr. No.	Annual average production of date palm increased per tree	Beneficiary farmers (n = 100)		Non-beneficiary farmers (n = 100)	
		Frequency	Percentage	Frequency	Percentage
1.	Upto 50%	08	08	85	85
2.	51% to 100%	63	63	15	15
3.	101% to 150%	22	22	00	00
4.	151% to 200%	04	04	00	00
5.	Above 200%	03	03	00	00
	Total	100	100	100	100

Table 7 : Distribution of the respondents according to their average annual income of date palm per tree increased (n = 200)

Sr. No.	Average annual income of date palm increased per tree	Beneficiary farmers (n = 100)		Non-beneficiary farmers (n = 100)	
		Frequency	Percentage	Frequency	Percentage
1.	1% to 150%	00	00	68	68
2.	151% to 300%	04	04	32	32
3.	301% to 450%	44	44	00	00
4.	451% to 600%	27	27	00	00
5.	601% to 750%	20	20	00	00
6.	Above 750%	05	05	00	00
	Total	100	100	100	100

increase below 100 per cent average numbers of trees in their farm.

Varietal change in date palm :

The data observed about varietal change in date palm are shown in Table 5.

The results in Table 5 indicate that more than half (53 %) of the beneficiary farmers had 51 to 75 per cent varietal change in date palm followed by 35 per cent and 12 per cent of beneficiary farmers had varietal change above 75 per cent and below 25 per cent, respectively. In case of the non-beneficiary farmers, majority of them (85 %) had varietal change up to 25 per cent with only 15 per cent of them had 26 to 50 per cent varietal change in date palm.

Percentage increased in annual average production of date palm per tree :

The findings of study regarding the percentage increased in annual average production of date palm per tree are indicated in Table 6.

It is obvious from the Table 6 that 51 to 100 per cent annual average production of date palm per tree was increased in 63 per cent beneficiary farmers followed by 22 per cent beneficiary farmers acquired 101 to 150 per cent increment in their annual average production of date palm per tree. While on the part of non-beneficiary farmers, majority (85 %) of them got below 50 per cent increment in their annual average production of date palm per tree. The rest of percentage increase in annual average production of date palm per tree was negligible both on the part of beneficiary and non-beneficiary farmers *i.e.* 15 per cent only.

Percentage increased in annual average income of date palm per tree :

The results observed about the percentage increased in annual average income of date palm per tree are shown in Table 7.

The data presented in Table 7 clearly indicates that 301 to 450 per cent annual average income of date palm per tree was increased on the part of 44 per cent of beneficiary farmers followed by 27 per cent and 25 per cent beneficiary farmers were got the increment in their annual average income of date palm per tree between 451 to 600 per cent and above 600 per cent, respectively. While, two - third majority (68 %) of non-beneficiary farmers got their increment in annual average income of date palm per tree below 150 per cent with 32 per cent of them were acquired their annual average income enhancement of date palm per tree between 151 to 300 per cent.

Conclusion :

From the above study, it can be concluded that KVK had the significant impact among the date palm growers in term of numbers of tree increased, varietal change, annual average production per tree and annual average income per tree. Major activities carried out by KVK for date palm development were farmers' trainings 109 (3289*), ex-trainees' meetings and group discussions 173 (3544*), 291 method demonstrations conducted on offshoot propagation technique on same numbers of farmers' field, 1000 result demonstrations of performance of tissue culture plants of local elite varieties conducted on 22 farmers' field and 62 demonstrations of plastic fruit covering with same numbers of farmers. 289 (459*) diagnostic visits on different problems of date palm, 10 (3496*) date palm fruits exhibitions and competitions etc. In respect of the involvement of farmers in KVK activities, the study reflected that 37 per cent of the beneficiary farmers visited KVK 11 to 20 times followed by 25 per cent and 21 per cent of them visited KVK 21 to 30 times and more than 30 times respectively whereas, 90 per cent of non-beneficiary farmers visited KVK on an average 0 to 10 times. Regarding the participation of beneficiary farmers in different activities carried out by KVK observed that 94 per cent remarked the activity frequent guidance by KVK scientists followed by 92 per cent in date palm fruit competitions and exhibitions, 90 per cent with trainings through KVK scientists, 88 per cent with frequent farmers' field visit of KVK scientists, 82 per cent with farmers' seminars and workshops, 78 per cent with field demonstrations through KVK and 72 per cent with Kutch dates growers association and marketing groups etc. As far as the impact of KVK' activities concern, about two-third (71 %) of beneficiary farmers and all the non-beneficiary farmers were increased above 300 per cent and below 100 per cent average numbers of trees in their farm. Also, about 90 per cent of beneficiary farmers adopted more than 50 per cent varietal change of improved varieties, while 85 per cent of non-beneficiary farmers adopted varietal change below 25 per cent in date palm. The equal

majorities *i.e*. 85 per cent of beneficiary and non-beneficiary farmers were got the annual average production of date palm per tree 51 to 150 per cent and below 50 per cent respectively and the great majority (96 %) of beneficiary farmers were got the increment in their annual average income of date palm per tree above 300 per cent. While, about 70 per cent non-beneficiary farmers were acquired their annual average income enhancement of date palm per tree below 150 per cent.

Abbreviations used:

ATMA :Agricultural technology management agency
FLDs : Front line demonstration
GDP : Gross domestic product
GoI : Government of India
KVK, Kutch : KVK located at Mundra of Dist. Kutch
LLP : Lab to land programme
M.T.: Metric tons
NDP : National demonstration project
OFTs : On farm testing
ORP: Operational research project
TOT : Transfer of technology

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