Journal of AgriSearch, 6(2):96-98
An Open Access International Peer Reviewed Quarterly
ISSN : 2348-8808 (Print), 2348-8867 (Online)
https://doi.org/10.21921/jas.v6i02.15759

Impact of Technology Demonstration Component on Quality Fodder Production, Fodder Availability and Milk Yield

DEOKARAN, MANDHATA SINGH, RAMKEWAL, BP BHATT AND RK ROY[1]

ARTICLE INFO

Received on	:	16/12/2018
Accepted on	:	20/05/2019
Published online	:	05/06/2019

ABSTRACT

A study was conducted during 2013-14 to 2015-16 under NICRA Project at KVK, Buxar to demonstrate the quality seed of fodder crop along with best management practices and its impact on fodder yield, expansion of area, availability of fodder, milk yield of cow and economics of fodder. Demonstration of different fodder crop during *kharif* and *rabi* seasons 2013-14 to 2015-16 indicated that fodder yield of sorghum, cowpea, berseem and oat was increase from 16.8 to 38.5% over farmers practices. Net return and benefit cost ratio was also higher under demonstration and berseem produced higher net return and benefit cost ratio of 3.11. Expansion of fodder area after demonstration recorded maximum with cowpea 83.1% followed by oat, sorghum and berseem. Availability of fodder in villages was very impressive and recorded 22.58 to 100 % in different crops. Milk yield of cow was increased from 8.5 to 11.7%. Higher milk percentage increases was recorded with cow feeding with berseem followed by cowpea.

KEYWORD
Fodder, economics, milk, yield

INTRODUCTION

India is mainly agriculture dominant country. About 67 percent of the population lives in villages and their main occupation is agriculture and animal husbandry. Since climate change poses complex challenges like multiple abiotic stresses on crops and livestock, shortage of fodder, water, land degradation and loss of bio diversity a focused is required to find solution to the problems specific to our country. At the same time, there is a scope to enhance green fodder production to the resilience of fodder production by the application of existing technology and knowledge on farmer's field as a holistic package, the livestock sector constitutes the most important resource for livelihood security of the rural area. The animal products depend on the feed and fodder given to them. The growth rate of livestock 0.55 percent per year in India and total livestock population become 781 million up to 2050.Today the area for fodder production is 4.4 percent of the total area. The area under permanent pastures and cultivable waste land is approximately 13 to 15 million hectares, respectively. Similarly out of 2.51 crore hectare lands, only 2.1 crore hectare is open to grazing animals only during season. But for the remaining periods of the year, the animals have to be maintained on the crop residues or straws of jowar, bajra, ragi, wheat, barley, etc. either in the form of whole straw of *Bhusa*, supplemented with some green fodder or as sole feed. The semi-arid climate in many parts of India and the pressure on land use have made tree and shrub fodders a more important component of feeds for ruminants compared to grasses grass-legume pastures. Dry, deciduous vegetation is mostly found in semi-arid regions and is confined to the north –west area of the subcontinent. Many of the fodder trees are not cultivated and the landless population which owns small herds of sheep and goats depends on shrubs and tree feed resources growing near the villages, roadsides and community lands (Raghavan,1990).When the sources in the vicinity of villages are depleted the rural women frequently reserve forest areas in the hills to obtain the daily requirements of their livestock. Front Line Demonstration (FLD) is an appropriate tool to demonstrate recommended technologies among the farmers. This new concept of field demonstration was evolved by the Indian Council of Agricultural Research. The technologies developed at the agricultural universities and research stations through research activities are demonstrated under actual field conditions through FLDs as this is one of the most powerful tools of extension because farmers in general are driven by the perception that 'seeing is believing'. The main objective of FLDs is to demonstrate newly released crop production, quality fodder production and protection technologies and its management practices at the farmer's field under different agro-climatic regions and farming situations to improve yield levels, make availability of quality to adverse situation and make awareness to the livestock holders, front line demonstrations (FLD) were conducted. In the present study, Impact of technology demonstration component on quality fodder production under changing climate scenario was evaluated in front line demonstrations conducted at farmers field during *kharif* and *rabi* seasons 2013, 2014 and 2015

MATERIALS AND METHODS

The present study was carried out under Technology Demonstration Component of National Innovation on Climate Resilient Agriculture, Project at village Kukurha, adopted by KVK, Buxar district of Bihar and its three hamlet village, Surondha, Gheoria and Yadav Dera were selected purposely in which demonstration of quality fodder seed and other cultural and plant protection

[1]KVK, Goplaganj, Dr RPCAU, Pusa Bihar, India
Krishi Vigyna Kendra, Buxar, (ICAR Research Complex for Eastern Region, Patna), Bihar, India
*Corresponding Author Email: devkaran_s@rediffmail.com

practices were followed as per the recommendation, during Kharif and *rabi* season of the year 2013-2014, 2014-15 and 2015-16. For selection of respondents by interaction basis, a list of farmers to whom FLD on quality fodder production had been allotted. Undertaken demonstration with control trial was selected for the study. Randomly, ten farmers from each village were selected making a total sample size of Thirty (30). Observations on green fodder yield of first to three cutting in Oat, Sorghum, and up to six cutting in Berseem. Fodder yield sample were collected from per meter square area at 5 places randomly in each crops. After feeding of green fodder milk yield data of cows were recorded two times a day (morning and evening).The economics was computed on the basis of prevailing market price of inputs and outputs for each demonstration. The total cost of cultivation of crop was calculated on the basis of different operations performed and materials used for raising the crop including the cost of fertilizers and seeds. The cost of labour incurred in carrying out different operations was also included. Basic data of the respondents was collected from KVK. Expansion of area, availability of green fodder and milk yield data were collected after completion of two year demonstration in 2015-16 by surveying the field and personal interview technique with the help of interview schedule developed for the study. The interview schedule was developed through discussion with experts, scientist and extension officers working in the district. Under these FLDs at 30 farmer's field, an area of 20.75 ha was covered.

RESULTS AND DISCUSSION

Fodder yield

Data presented in table 1 showed that during 2013-14, 2014-15 and 2015-16 fodder crop sorghum, barseem, cowpea and oat was demonstrated with improved variety. Demonstration yield of sorghum (MP chari) during 2013-14, 2014-15 and 2015-16 was 26.56%, 27.6% and 28.2%, respectively higher over local variety under farmer's practices. In case of berseem during 2013-14 demonstration yield (Vardan) was 28% higher over local variety in farmer's practices and farmers got higher number of cuts compared to local variety in farmer's practices. Oat demonstration with variety JHO 822 and Kent both are suitable and produced higher fodder yield over farmers' practices. Oat demonstration yield during 2013-14, 2014-15 and 2015-15 was 38.5%, 26.8% and 16.8%, respectively higher over farmer's practices. Cowpea demonstration with variety UPC8705 produced the higher fodder yield over local variety of cowpea. Cowpea recorded 17.8% higher fodder yield over local cowpea variety.The yield of demonstration fodder crop was higher mainly due to availability of good quality fodder seed. These results are conformity with the Taipodia and Nabam (2013), Roy and Khazdoker (2010) and Luikham *et al.* 2015.

Table1: Effect of technology demonstration component on fodder yield

Fodder crop and variety	Milk yield (kg/day/ cow)			Milk yield (kg/day/ cow)			Percent increase
	Before TDC			After TDC			
	Morning	Evening	Total	Morning	Evening	Total	
Sorghum (MP Chary)	6.9	6.9	13.8	7.1	7.9	15.0	8.5
Cowpea (UPC 8705)	7.1	6.9	14.0	7.6	7.9	15.5	11.1
Barseem(Vardan)	6.4	6.9	13.3	7.9	6.9	14.8	11.7
Oat (Kent)	6.2	6.0	12.2	6.2	7.1	13.3	9.9
Oat (JHO822)	6.3	5.3	11.6	6.4	6.3	12.7	10.5

Expansion of area

Fodder production area increased after demonstration. Before demonstration of fodder crop during *kharif* season area of sorghum (MP Chari) and cowpea was very less i.e. 7.75 ha in sorghum and 0.80 ha in cowpea (Table 2). After successful demonstration of kharif fodder crop with improved variety area was increased 22.5% in sorghum and 83.1% in cowpea. In *rabi* seasons area under berseem and Oat was very low and after demonstration 11.94% area increase under berseem, 41.6% in oat var. Kent and 48.57% in oat var. JHO 822. Fodder area expansion mainly due to availability of good quality fodder seeds at farmer and other farmers are interested to get higher fodder yield.

Table 2: Impact of technology demonstration component on expansion of area, availability of green fodder

Fodder crop and variety	Area in (ha)			Availability of fodder (qt)		
	Before TDC	After TDC	% Increase	Before TDC	After TDC	% Increase
Sorghum (MP Chary)	7.75	25.25	22.5	3247	10580	22.58
Cowpea (UPC 8705)	0.80	7.50	83.1	224	2475	100.4
Barseem(Vardan)	11.6	25.46	11.94	8700	24442	18.0
Oat (Kent)	2.80	14.45	41.60	960	6286	55.4
Oat (JHO822)	2.80	16.40	48.57	960	7954	72.8

Fodder availability

Availability of fodder after demonstration increases 22.58 to 100.0% in different crops. Per cent increase in fodder availability in sorghum was 22.58%, cowpea 100%, berseem 18%, Oat (Kent) 55.4% and oat (JHO822) 72.8% after TDC (Table 2). Fodder availability is directly related to expansion of

fodder area andavailability of good quality seed at farmers increase the productivity of fodder crop. Results are conformity with the findings of Abou-Amer *et al*., 2014 and Aliputra *et al*., 2013.

Milk yield

Availability of fodder also increased the milk yield of cow per day. Feeding of cow with green fodder increases the cow yield in both morning and evening time. Feeding with cowpea and berseem increases the 11.1 and 11.7% milk yield, respectively (Table 3). Feeding with sorghum increases 8.5% milk, oat var. Kent 9.9% and oat JHO822 10.5%. Cowpea and berseem both are leguminous crop and fodder are very nutritious and animal prefer to eat more resulting increase in milk yield.These observations are in close conformity with observations made by Sanyal (2001), Yadav*et al* 2015 and Taipodia and Nabam (2013).

Table 3: Impact of technology demonstration component on Milk yield

Fodder crop and variety	Milk yield (kg/day/ cow)			Milk yield (kg/day/ cow)			Percent increase
	Before TDC			After TDC			
	Morning	Evening	Total	Morning	Evening	Total	
Sorghum (MP Chary)	6.9	6.9	13.8	7.1	7.9	15.0	8.5
Cowpea (UPC 8705)	7.1	6.9	14.0	7.6	7.9	15.5	11.1
Barseem(Vardan)	6.4	6.9	13.3	7.9	6.9	14.8	11.7
Oat (Kent)	6.2	6.0	12.2	6.2	7.1	13.3	9.9
Oat (JHO822)	6.3	5.3	11.6	6.4	6.3	12.7	10.5

Economics

Economic analysis of data showed that cost of cultivation recorded maximum under demo yield over farmers practice. This was mainly due to cost of seed and production of more fodder. Gross return of fodder crop was higher under demonstration compared to farmer's practices. Higher gross return recorded with berseem crop in both demonstration and farmers practice (Table 4). Net return and benefit cost ratio was also recorded higher with demo over farmers practices. Higher net return Rs 65200 and B:C ratio 3.11 recorded under berseem crop. Oat and sorghum next best crop recorded to produce the higher net return and B:C ratio.

Table 4: Effect of technology demonstration component on economics of fodder production

Year	Fodder crop and variety	Cost of Cultivation (Rs/ha)		Gross return (Rs/ha)		Net return (Rs/ha)		B:C Ratio	
		Demo	FP	Demo	FP	Demo	FP	Demo	FP
2013-14	Sorghum (MP Chari)	21400	20600	40500	32000	19100	11400	1.89	1.55
	Barseem(Vardan)	30800	26800	96000	75000	65200	48200	3.11	2.79
	Oat (JHO 822)	23400	22600	47800	34500	24400	11900	2.04	1.52
	Sorghum (MP Chari)	22 200	21350	45760	35860	23560	14510	2.06	1.68
2014-15	Cowpea (UPC8705)	20400	18600	39600	33600	19200	15000	1.94	1.80

REFERENCES

Abou-Amer AI and Kewar KZ. 2014. Effect of NP fertilization levels on sorghum (*Sorghum bicolar*) yield and fodder quality for animals.*Alex J. Agric Res*. **59**(1) :51-59.

Alipatra A, Kundu CK, Mandal MK, Banerjee H and Bandopadhyay P. 2013. Yield and quality improvement in fodder oat (*Avena sativa*) through split application of fertilizer and cutting management. *J. crops and weed*. **9**(2):193-195.

Luikham E, Rolling PS and Anal M. 2015. Effect of phosphorus and potash on yield, quality and economics of oat fodder (*Avena sativa* L.). *Agric. Sci. Digest* **35** (2): 161-162.

Raghavan GV. 1990. Availability and use of shrubs and tree fodder in India .In :Devendra , C. (ed .), Shrubs and tree fodders for farm animals . proceeding of a workshop in Denpasar , Indonesia , 24-29 July 1989 .IDRC-276e, Ottawa Onatario pp196-210.

Roy PRS and Khandaker ZH. 2010. Effect of phosphorus fertilizer on yield and nutritional value of sorghum (*Sorghum bicolar*) fodder at three cuttings. *Bang J. Animal Sci*. **39**(1 & 2):106-115

Taipodia R and Nabam AT. 2013. Impact of time of sowing, spacing and seed rate on potential seed production and fodder quality of cowpea (*Vigna unguiculate*). *IOSR Journal of Agriculture and Veterinary Science* **4**(4):61-68.

Yadav PS, Vijay D and Malaviya DR. 2015.Effect of cutting management on seed yield and quality attributes of tetraploid berseem. *Range Mgmt & Agroforestry* **36**(1):47-51.

Citation:

Deokaran, Singh M, Ramkewal, Bhatt BP and Roy RK. 2019. Impact of Technology Demonstration Component on Quality Fodder production, fodder availability and milk yield. *Journal of AgriSearch* **6** (2): 96-98