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RESEARCH ARTICLE

KNOWLEDGE AND ADOPTION GAP IN BERSEEM FODDER PRODUCTION TECHNOLOGIES IN BUNDELKAHND REGION OF MADHYA PRADESH

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ABSTRACT

Forage crops play vital role in rearing of livestock production. The commonly available fodders are Berseem, Oats, and Lucerne, Maize Pearl millet, Cowpea, Sorghum, tree leaves and shrubs. Extension system had played a crucial role in enhancing milk production. However, there still exists a wide gap between the technology available with the research system and its' adoption at farmers' fields. Therefore, an effort was made to find out the adoption gap in fodder production in Bundelkhand region. The data was collected from 100 respondents by interview method with the help of pre -tested schedule from two districts of MP part of Bundelkhand. It was found that the 90% of respondents grow berseem as a fodder in rabi season while 60.0 percent grow sorghum fodder in kharif and other crops like oats, barley, maize, guar etc grown by some respondents in the study area. The **adoption gap** in berseem fodder production was varied in different activities as a minimum for land preparation (10.0%) and maximum for Weedicide use as 95.83% and harvesting of fodder as (96.83%) with average adoption gap was observed as (71.63%.) The main reason for non adoption of fodder production technologies in Berseem was small land holdings followed by less irrigation and less priority of fodder crops. The study further indicated that there was significant difference between knowledge and adoption gap with regard to adoption of fodder production practices.

INTRODUCTION

Livestock production is backbone of Indian agriculture and contributes about 4% of national GDP. India supports 20% of the world's livestock on only 2% of the world's geographical area. The Country holds 16% cattle, 55% buffalo, and 20% goats and sheep population of the world. Owing to limited production from arable lands and the grasslands (the denuded grassland having grazing pressure 3.42 ACU/ha), it is a challenge to feed the increasing a fast change in resources, if comes from two sources. The first one is forage from arable lands i.e., cultivated forage which is not going beyond 4.9% of cultivated lands and Secondly from non-arable lands i.e., rangelands and grasslands including the forest areas. Thus, the total area including cultivated forages, rangelands and grasslands is much higher than the area under cultivated crops. Hence, technological innovations in the direction of improving productivity and sustainability of these grasslands and rangelands and that of cultivated forages are likely to have significant impact on economic conditions of the poor and marginal farmers.

In India,100 million ha is presently underutilized which includes 25-30 million ha of degraded forest lands, 45-50 million ha agricultural lands unsuitable of crops production, 9-10 million ha sodic wastelands and the rest ravines, pasture land and revenue wastelands. Grasslands in India have existed as natural eco-systems as far as 50 million years ago as evidenced by fossil records. However, many of the natural grasslands have degraded due to overgrazing. Large area has been converted to plantations/ protected areas/industrial establishment. In past the nomadic pastoralists were sedentarized, and the grasslands to wastelands they depend on were converted to agriculture which has lead to once productive grasslands to wastelands. A large proportion of Indian farmers are still dependent on 80.51 m ha or 535, 441 sq km^2 (17.32%of total land area) under grasslands 4.9% of the cultivated lands under cultivated forages for their livelihood.

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Berseem or Egyptian clover is a leguminous winter (Rabi) season, forage crops cultivated in about 2 million hectares of North west zone, Hill zone and part of Central and Eastern zones of India. Besides many forage quality traits like high crude protein (20%) digestibility (65%) and palatability it is also multicut in nature providing high quantum green fodder for a long duration. (Malviya, D.R. 2018).

The forage crops play an important role in the production from animals. The commonly available fodders with rich nutritive value are like Lucerne, Berseem, Maize, Oats, Pearl millet, Cowpea, Sorghum, tree leaves and shrubs. Extension system had played a crucial role in enhancing milk production. However, there still exists a wide gap between the technology available with the research system and its' adoption at farmers field particularly in the sphere of livestock feeding. Therefore, an effect was made to find out the adoption gap in fodder production in cultivation of animals rearing farmers in Bundelkhand region.

MATERIAL AND METHODS

This paper is based on studies, observation and experiences during the author's involvement in M.P. region of Bundelkhand. The research study was conducted in the purposively selected districts of Madhya Pradesh part of Bundelkhand. Out of 6 districts, 2 districts were selected purposively to represent all the regions of Bundelkhand on the basis of different land use, Agro-climatic condition, soil and livestock density. The data collected from 100 respondents with the help of structured schedule from two districts of M.P part of Bundelkhand that is Datia and Tikamgarh district. Two stage purposive random sampling was used; two villages were selected from each district as first stage sampling units. Twenty five fodder growing farmers were selected from each village as second stage sampling units. The data were collected in year 2014 -2015. This paper focuses on aspects related to farmers' knowledge on improved fodder production technology and adoption gap. The data were collected compiled, tabulated and subjected to the appropriate statistical tools to draw meaningful conclusions.

Socio-economic analysis of the study area

Madhya Pradesh region of Bundelkhand

The analysis in table1 reveals that 18.75 % of the respondents were uneducated, followed by 20.0%, 32.92 %, 20.83 % and 6.67 % farmers had primary, Junior high school and Intermediate. Only 0.83 % of the respondents were post graduate. On the basis of caste categories in studied area, 10.42 % respondents belonged to General category followed by 57.5 %, 32.08 % OBC and Scheduled castes. It was found from the table that average young age group of the respondents up to 30 years were 12.95 %, followed by 20.42%, 38.75% 30 to 40 years, respondents (middle age) and old age only above 60 years respondents were 9.16% . Majority of the joint families are found as 70.0 % in the selected villages. Majority of the farmers had land size up to 2 ha. That is 80.0 % and herd size of respondents are 2.1 buffalo /household and 1.0 cow /h in M.P. part of Bundelkhand. Majority of the farmers had used sources of information (under extension activities) in the fodder production technology like, Farmers Goshthi 29.0%, demonstration 10.42% regularly, field day/Kisan Mela/ field trip 10-15% and training only 5.0% regularly. Majority of the farmers had participated (20 to 35 %) in the Social activities like Gram Sabha, Co-operative Society/Milk co-operative**,** Youth Club, Farmers Co-operative and, Recreation Club and Radio listener.20 to 38.33 %.The results are indicated in Table1, 2 and 3.

RESULT AND DISCUSSION

It was found that all the respondents grow Berseem as a fodder in rabi season while (60.0) percent grow sorghum fodder in kharif, other crops like oats, barley, maize, guar etc grown by very few respondents in study area. For adoption of berseem production for fodder, the adoption gap was varied in different activity as observed a minimum for land preparation (10.0%) and maximum for Harvesting (96.83%) and Weedicide use (95.53%) intercultural operation of fodder (90.67%) with average adoption gap was observed as (71.63%) (Suman *et.al*.2017 and 2018 a & b). Similar findings were reported by Amtulwaris (1999), Nikhade 1997). The main reason for non adoption of fodder production technologies was small land holdings followed by Less priority of Fodder crops and less irrigation & Anna-pratha (Uncontrolled grazing). The study further indicated that there was significant difference between knowledge and adoption gap with regard to adoption of fodder production practices. It was found from that the correlation between knowledge gap and adoption gap was highly significant and positive (range as 0.794 to 0.949). A few observations are indicated in Table-3. Thus, to improve aware the new fodder verities & grow non-conventional fodder like: cactus, Sugarcane fodder, sugar beet to increase the availability of fodder area in the bundelkhand region, efficient irrigation methods should be adopted and more training programmes should be initiated to motivated farmers about the role and importance of fodder crops to their livelihood and alternated source of income. A Results are indicated in Table 4,5 and 6.

CONCLUSION

In the conclusion, it can be concluded that small land holdings followed by last priority of fodder crops & less irrigation are the major reasons for less adoption of fodder production technology in area. The gap in knowledge and adoption regarding various activities in fodder production technology from sowing to harvesting and storage varied (land preparation and seed rate for sowing lowest gap and storage of fodder crops knowledge in technology highest gap in both district of M.P.part Bundelkhand. The increase in knowledge gap leads in increase in the adoption gap in fodder crops for berseem fodder. With the increase in the knowledge as (Face to face interaction)personal interaction method, Demonstration, group discussion and Mass media and digital app, (Mkisan app) etc, adoption of fodder technology gap may be reduced.

Table 1 Socio-economic analysis of the respondents in the study area of MP region of Bundelkhand

Table No.	Sl.	Age (Yrs.)	In percentage (in adopted respondents)
1	a.	0-30	12.92
	b	30 - 40	20.42
	C	40 -50	38.75
	d	50 -60	18.75
	e	60 above	9.16
T-2.		**Education based**	
	a	Illiterate	18.75
	b	Primary	20.00
	C	J.High school	32.92
	d	Intermediate	20.83
	e	Graduate	6.67
	f	Post Graduate	0.83
T-3		**Cast based**	
	a	General	10.42
	b	Other Backward Classes	57.5
	C	Schedule Castes	32.08
	d	Schedule Tribes	0.0
T-4		**Family based**	
	A	Nuclear	30.83
	b	Joint	69.17
T-5		**Land based classification**	
	A	Up to 5 Acres	49.59
	b	5-10 acres	27.08
	c	10-15 acres	9.58
	d	15-20 acres	10.42
	e	Above 20 acres	3.33
T-6		**Family income (Rs)**	
	A	Up to Rs. 5 thousand	51.08
	b	5-10 thousand	26.75
	c	10-15 thousand	18.17
	d	Above 20 thousand	4. 00

Table 2 Extension Participation of the respondents in MP region of Bundelkhand.

Sl.No. & Item	Source of information	Percentage
1. Demonstration		
a	Regular	10.42
b	Occasionally	**15.42**
c	Never	**74.16**
2. Exhibition		
a	Regular	10.58
b	Occasionally	25.00
c	Never	64.42
3. Field Day		
a	Regular	15.0
b	Occasionally	23.75
c	Never	61.25
4 Farmers Goshthi		
a	Regular	28.75
b	Occasionally	27.92
C	Never	43.33
5. **Mahila Goshthi**		
a	Regular	15.42
b	Occasionally	20.42
c	Never	64.16
6. Kisan Mela		
a	Regular	15.0
b	Occasionally	46.66
C	Never	38.34
7. Field Trip		
a	Regular	0.83
b	Occasionally	10.41
c	Never	88.76
8. Training		
a	Regular	5.0
b	Occasionally	10.41
c	Never	84.59
9. Group Meeting		
a	Regular	1.33
b	Occasionally	56.25
C	Never	42.42

Table 3 Social Participation analysis of the respondents in M.P. region of Bundelkhand

Sl.	Particular	Percentage
1. Gram Panchayat		
A	Regular	5.42
b	Occasionally	22.08
c	Never	72.5
2. Gram Sabha		
A	Regular	6.25
b	Occasionally	37.5
c	Never	56.25
3- Co-operative Society		
a	Regular	11.67
b	Occasionally	26.25
c	Never	62.08
4- Milk Co- operative		
A	Regular	18.75
b	Occasionally	34.58
c	Never	46.67
5- Farmers Co-operative		
a	Regular	19.58
b	Occasionally	29.58
c	Never	50.84
6- Youth Club		
a	Regular	16.66
b	Occasionally	31.26
c	Never	52.08
7- Recreation Club		
a	Regular	30.0
b	Occasionally	29.58
c	Never	40.42
8- Radio listeners		
a	Regular	38.33
b	Occasionally	27.5
c	Never	34.17

Table 4 Technological gap (%) in fodder production technology according to various activities for Berseem in M.P. region of Bundelkhand

S.No.	Activities	M.P.	
		Knowledge Gap (%)	Adoption gap (%)
1.	Land Preparation	6.83	10.00
2.	Crop Varieties	41.00	70.67
3.	Sowing of fodder crop	61.22	76.78
4.	Seed rate	30.00	49.00
5.	Seed treatment	59.00	87.67
6.	Irrigation	31.50	48.17
7.	FYM and fertilizer application	41.67	62.92
8.	Intercultural operation	44.00	90.67
9.	Weedicide and Pesticide	73.11	95.83
10.	Harvesting	43.17	96.83
11.	Storage	70.00	89.00
	Overall gap	49.09	71.63

Table 5 Constraints suggested by farmers regarding Less –adoption of fodder production technologies in Berseem in Bundelkhand

SL.	Items	%	Rank
1	Non availability of good quality of seed	54.0	V
2	Lack of Irrigation	76.25	III
3	Anna Pratha	62.6	IV
4	**Small size of land holding s**	**82.5**	**I**
5	High cost of seed	34.8	VIII
6	Lack of Guidance/Knowledge	44.5	VI
7	Shortage of Inputs	37.9	VII
8	Less priority to fodder crops	80.5	II

Table 6 Correlation between knowledge gap and adoption gap in fodder production technology in berseem

Sl. No.	District	Berseem crop, r (Co-relation)
1	Datia	0.621
2	Tikamgrah	0.748
	M.P.	0.794

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