Knowledge level of fodder cultivating farmers about berseem production technology

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Abstract

Berseem or Egyptian clover (*Trifolium alexandrinum L.)* is an annual winter season fodder legume widely adapted in central and Northwest India. One of the ways to augment the huge forage deficit in the country is knowledge building of the farmers about the advantages and scientific production practices of growing forages. Present paper reports the knowledge level of 120 berseem growers in Lalitpur district of Bundelkhand region of Uttar Pradesh regarding berseem production technology. A 'knowledge index' consisting of 10 dimensions was prepared to measure the knowledge level. The study revealed the poor knowledge about high yielding varieties, land preparation and bio-fertilizer, while majority of them had more knowledge about critical stages of irrigation. The socio-economic, communication and psychological factors had significant positive relationship with knowledge level. Farmer's exposure, attitude towards berseem production technology along with some other factors had direct and indirect effect on knowledge of berseem growers.

Key words: Berseem, Fodder, Knowledge level, Path analysis.

Introduction

Traditionally, Indian agriculture has been a mixed farming system integrating crop and livestock production as functional and complementary farm enterprises. The problems of low productivity of livestock and huge forage deficit can be tackled by creating awareness and knowledge building of the farmers about the advantages of growing forages on one hand and maximizing forage production through adoption of appropriate forage species, varieties and management techniques to sustain forage yields and soil fertility on the other.

The greater potential productivity, longer period of quality fodder availability and monetary benefits are the reasons for preferring berseem by the farmers. Berseem or Egyptian clover (*Trifolium alexandrinum L.)* is a widely adapted winter season fodder legume in irrigated condition.

It provides green nutritious fodder for 6-7 months from November to May in 4 to 6 cuts. Being a leguminous fodder, berseem has got a soil building characteristics and improves the physical, chemical and biological properties of the soil. In this context, it is of great importance to study the farmers' knowledge level about the berseem production technology. Suman (2005) illustrated that the medium category of farmers and farm women are more concerned about knowledge level of fodder. Farmers lacked knowledge for the common feeds and fodder (Sonone *et al*., 2008; Singh *et al*., 2010). Lioutas *et al*., (2010) highlighted the weakness of agricultural education/training programmes offered to meet farmers' demand for specific knowledge about the fodder production and livestock feeding. Patel and Chauhan (2009) found that the farmers had a medium to high level of knowledge regarding improved animal husbandry practices and knowledge of tele-viewing farmers were found to be significantly correlated with improved animal husbandry practices. Biswas and Goswami (2008) also observed that in the absence of adequate awareness and knowledge, the farmers are not making efficient use of fodder resources. Sharma *et al*. (2010) reported that landless, marginal and small farmers were feeding less fodder than the requirement of livestock due to insufficient knowledge. The fodder crops were not popular, thus seasonal grasses and weeds were the main sources of green fodder. Satyapriya *et al*., (2010) reported that most of the respondents had a poor knowledge in the field of animal health care (2.70%) followed by fodder production (6.13%). Hence, a study was conducted to analyze the knowledge level of farmers about berseem production technology.

Materials and Methods

The study was conducted in Lalitpur district of Bundelkhand. Ten mouja (hamlets) of Kadesarakala village from Talbehat block were selected. From each selected hamlet, twelve berseem growers were selected randomly. Thus, a total of 120 berseem grower

were selected as respondents. The data were collected with the help of a pre-tested interview schedule through personal interview. A 'knowledge index' was prepared after thorough review of literature and discussions with scientists and other experts. It had 10 dimensions *i.e.,* knowledge of high yielding varieties, land preparation, seed rate per hectare for different varieties, seed treatment, bio-fertilizer and its applications, method of seed sowing, recommended spacing, critical stages of irrigation, manure and fertilizer and insect-pest disease and control. For each of the knowledge dimensions, except method of sowing, a maximum score of 2 was given for the farmer who had complete knowledge of the recommended practice; a score of 1 was assigned when the farmer expressed awareness but did not know the details and a score of zero was assigned when the farmer expressed total ignorance. For the dimension 'method of sowing' the scores ranged from 1 to 3. One for knowledge confined to broadcasting followed by irrigation method and 2 for field compartmentation depending upon the field gradient, then broadcasting followed by irrigation and 3 for knowledge about compartmentation and sowing in puddled field. Thus, the total knowledge score could range from 1 to 21. The total score of knowledge for each respondent was computed by adding up the scores of ten dimensions. The knowledge level was categorized as low, medium and high on the basis of mean SD (±). The correlation analysis was carried out to find out the relationship between socio–economic, communication and psychological variables with knowledge. Besides, a stepwise multiple regression analysis was made to find out the significant and maximum contribution of the selected factor.

Results and Discussion
Practice-wise knowledge of the respondents:
Knowledge of the berseem growers about berseem cultivation practices was analysed for ten practices of improved berseem production technology (Table 1). The analysis highlighted that majority of berseem growers (70.00%) had complete knowledge about critical stage of irrigation followed by recommended method of sowing (38.33%). However, only 2.5% to 4.16% respondents had complete knowledge about high yielding varieties and seed rate. An overwhelming majority (96.66%) of the respondents had awareness about recommended doses of manure and fertilizers, followed by bio-fertilizer (94.16%). The 46.66% respondents had no knowledge about land preparation, high yielding varieties and biofertilizer. Training on the above aspect can be given to the farmers of this region.

Distribution of respondents according to their knowledge level: The respondents were categorized into three groups as low (score<11), medium (11-14) and high (>14) level of knowledge (Table 2). The data revealed that majority (80.00%) of the respondents possessed medium level of knowledge about berseem production technology while, 18.33 and 1.67% per cent of farmers were possessing low and high level of knowledge respectively.

Relationship between knowledge and berseem production technology: The total scores of knowledge about improved berseem production technology for each respondent were correlated with socio-economic, communication and psychological attributes of the respondents. Among the 13 variables studied (Table 3), ten variables *viz.,* education, social participation, total annual income, information source utilization, extension participation, mass media exposure, farmers exposure, economic motivation, attitude towards berseem production technology and scientific orientation were positively and significantly correlated with knowledge about berseem production technology (p<0.01). The path analysis indicated that the farmers exposure had maximum direct effect (0.431) on knowledge followed by attitude towards berseem production technology (0.235), information source utilization (0.224) and scientific orientation (0.175), while other factors had minor effect. Education exerted maximum total indirect effect (0.752) on knowledge through other factors, followed by attitude towards berseem production technology (0.672). Out of thirteen factors, eleven factors had maximum indirect effect through farmers exposure. Thus, it can be concluded that farmers exposure, attitude, scientific orientation, extension participation, economic motivation, mass media exposure and information source utilization were the important factors which had direct and indirect effect on knowledge of berseem growers.

The multiple regression analysis identified five variables *viz.,* social participation, information source utilization, farmers exposure, attitude towards berseem production technology and scientific orientation as having significant contribution to the knowledge about berseem production technology (Table 4). The data further revealed that out of these five variables, the percent contribution of farmers exposure was highest (41.04%) followed by attitude towards berseem production technology (22.60%). All the predictor variables taken together explained the variation in the level of knowledge about berseem production technology to the extent of 94.13 percent.

Table 1: Practice-wise knowledge of the respondents about berseem production technology

Practice	No knowledge	Awareness	Complete knowledge
Improved varieties	4 (3.33)	111(92.5)	05 (4.16)
Land preparation	56 (46.66)	64 (53.33)	0 (0)
Critical stage of irrigation	0 (0)	36 (30)	84 (70)
Seed rate	0 (0)	112 (93.33)	08 (6.66)
Seed treatment	0 (0)	108 (90)	12 (10)
Bio-fertilizers	4 (3.33)	113 (94.16)	03 (2.5)
Method of seed sowing	0 (0)	74 (61.66)	46 (38.33)
Recommended spacing	0 (0)	84 (70)	36 (30)
Manure and fertilizer	0 (0)	116 (96.66)	04 (3.33)
Insect, pest and diseases	0 (0)	108(90)	12(10)

Figures in parenthesis are percentage of the total sample

Table 2: Knowledge level of berseem growers about berseem production technology

Categories	Frequency	Percentage of total respondents
Low (<11score)	22	18.33
Medium (11-14 score)	96	80.00
High (>14 score)	02	1.67

Table 3: Correlation and path analysis of socio-economic, communication and psychological factors with knowledge level of berseem growers

Variables	Factor	Correlation coefficient 'r'	Direct effect	Total indirect effect of other factors	Maximum Indirect Effect through
X_1	Age	0.084	-0.021	0.105	X_{10} Farmers exposure
X_2	Education	0.757**	0.005	0.752	X_{10} Farmers exposure
X_3	Operational land holding	0.065	0.033	0.032	X_{12} Attitude towards berseem production technology
X_4	Social participation	0.284**	0.072	0.212	X_{10} Farmers exposure
X_5	Total annual income	0.211**	0.015	0.196	X_{10} Farmers exposure
X_6	Farm mechanization	0.161	-0.058	0.219	X_{10} Farmers exposure
X_7	Information source utilization	0.892**	0.224	0.668	X_{10} Farmers exposure
X_8	Extension participation	0.433**	0.015	0.418	X_{10} Farmers exposure
X_9	Mass media exposure	0.431**	-0.023	0.454	X_{10} Farmers exposure
X_{10}	Farmers exposure	0.936**	0.413	0.523	X7 Information source utilization
X_{11}	Economic motivation	0.382**	-0.045	0.427	X_{10} Farmers exposure
X_{12}	Attitude towards berseem	0.907**	0.235	0.672	X_{10} Farmers exposure to production technology
X_{13}	Scientific orientation	0.825**	0.175	0.650	X_{10} Farmers exposure

** Significant at p = 0.01

Step-down regression analysis was also carried out to find out the maximum contribution of selected variables towards the extent of knowledge (Table 5). The variables *viz.,* information source utilization, farmers exposure, attitude and scientific orientation were included in the final set of multiple regression equation, which taken together explained 93.47% variation in knowledge of berseem production technology.

Conclusion

The study revealed that the berseem growers had poor knowledge about soil-treatment, high yielding varieties, and bio-fertilizer and having good degree of awareness regarding recommended doses of manures and fertilizer, bio-fertilizer, seed rate, improved varieties, spacing and method of sowing. Four variables *viz;* information source utilization, farmers exposure, attitude towards berseem production technology and scientific orientation have high predictive value as these account for 93% of total variation in the knowledge level of berseem growers.

Table 4. Regression analysis of selected characteristics of berseem growers with their knowledge about berseem production technology

Factors	Percentile contribution	Regression coefficient "b"
Socio- economic factors		
Age	-0.195	-0.005
Education	0.455	0.011
Operational land holding	0.232	0.166
Social participation	2.175	0.092*
Total annual income	0.327	0.000
Farm mechanization	-0.938	-0.002
Communication factors		
Information source utilization	21.221	0.145**
Extension participation	0.708	0.003
Mass media exposure -	1.067	-0.040
Farmers exposure	41.038	
Psychological factors		0.417**
Economic motivation	-1.832	-0.54
Attitude towards berseem production technology	22.597	0.147**
Scientific orientation	15.324	0.147***

Significant at p = 0.05, ** Significant at p = 0.01

Table 5. Step-down regression analysis of main characteristics of berseem growers with their knowledge about berseem production technology

Factors	Percentile contribution	Regression coefficient
Information source utilization	20.46	0.138**
Farmers exposure	39.48	0.398**
Attitude towards berseem production technology	24.12	0.156**
Scientific orientation	15.93	0.152**

** Significant at p = 0.01

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