Socio- economic characteristics of livestock farmers and their relationship with crop residues management practices

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Abstract: The present study was taken up in paddy growing Kalghatagitaluk and Sorghum growing Dharwadtaluk of Dharwad district. The criteria for selection of farmers were they must possess both land and livestock. The study villages were selected by assigning random numbers. Six villages from each taluk and in all study covered 12 villages. Sixty farmers from each taluk were sampled for the study. The sample size for the study was 120 farmers. The ex-post facto research design was used for the study. The data was collected by personal interview method. Results of the study revealed thatmore than half (55.8 per cent) of the respondents belonged to middle age category and 42.2 per cent belonged to old aged (42.2%) category. Majority of the respondents (90.00%) received primary education. As high as 82.5 per cent of the respondents' belonged to big family and the rest 17.5 per cent had small family.Non significant relationship was found between selected demographic characteristics (age, education, family type, family size, land holding, annual income and herd size) and crop residue produced; and its economic value. However highly significant relationship was found between education and cost of crop residue production; land holding and cost of crop residue production. With other variables such as age, family type, family size, annual income and herd size, non significant relationship was found with cost of crop residue production.

Key words: Crop residues, Farm implements, Socio-economic status

Introduction

India being an agriculture-dominant country produces more than 500 million tons of crop residues annually. These residues are used as animal feed, for thatching of homes and as a source of domestic and industrial fuel. A large portion of unused crop residues are burnt in the fields primarily to clear the left-over straw and stubbles after the harvest. Non availability of labour, high cost of residue removal from the field and increasing use of combines in harvesting the crops are main reasons behind burning of crop residues in the fields. It is a paradox that burning of crop residues and scarcity of fodder coexists in this country, leading to significant increase in prices of fodder in recent years.

Thus, the Fodder and Feed resources in the country in general and Karnataka in particular are gradually decreasing owing to many factors. Shrinking of common and pasture lands and increased cultivation of hybrids and commercial crops by the cultivators are the important reasons. On contrary, demand for forage is increasing due to rearing of high yielding livestock by the farm households. Fodder availability needs to be ensured if livestock is to be sustained at farm level. Systematic management of fodder and feed resources thus needs to be attended in today's scenario so that not only livestock sustenance is ensured but also the livelihood of large majority of small and marginal livestock holders. Nearly 70 per cent of our livestock are sustained on crop residues. The grazing resources have almost become non productive in many parts of the country. Crop residues hence are not only a cheap source of feed to the livestock but also have become the only source of feed to the livestock. This source hence needs to be managed and utilized properly for the survival of many village animals. Management of crop residues at farmers' level thus attains importance for livestock rearing at village level and for inclusive growth of all categories of farmers in the country.

Material and methods

The transitional belt of Karnataka is known for mosaic of crops. Dharwad district that falls under northern transitional zone of the state was selected for the study. List of villages falling under each selected taluks was obtained and study villages were selected by assigning random numbers. Gungargatti, Kadalikop, Marewad, Karlvad, Munagundi and Ramapur of Dharwad taluk and Ganjigatti, Hullambi, Devikop, Tambur, Basavanakoppa and Linganakoppa of Kalaghatgitaluk were selected. This forms 6 villages from each taluk and in all study covered 12 villages.

The ex-post facto research design was used for the study. The present study was taken up in paddy growing Kalghatagi taluk and Sorghum growing Dharwad taluk of Dharwad district. One of the criteria for selection of farmers was they must possess both land and livestock. Sixty farmers from each taluk were sampled for the study. Out of sixty farmers per taluk, 20 farmers each from big (>2 ha), medium (1-2 ha) and small (<1 ha) land holding categories were selected randomly. So, the sample size for the study was 120 farmers.

Results and discussion

The socio-economic characteristics of the respondents were depicted in Table 1 and are presented hereunder.

The data projected with regard to age indicated that 43.16 per cent of the respondents belonged to old age category (>50 years). About 56.84 per cent of the respondents were middle

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Particulars	Categories	Respondents	
		Frequency	Percent
Age (years)			
Young	18-30	0	0
Middle	30-50	67	56.84
Old	>50	53	43.16
Mean	48.61		
SD	4.26		
Education			
Illiterate	0	12	10.00
Primary school	1-7	108	90.00
Mean	0.9		
SD	0.30		
Family type			
Joint family	1	8	6.70
Nuclear family	2	112	93.30
Family size			
Small	4 members	73	60.84
Big	>4 members	47	39.16
Mean	4.23		
SD	1.05		
Land holding (ha)			
Small	<2	35	29.20
Medium	2-4	54	45.00
Large	>4	31	25.80
Mean	2.75		
SD	1.48		
Annual income (₹)			
Low	Up to 60,000	12	10.00
Medium	60,000-1,20,000	105	87.50
Large	Above 1,20,000	3	2.50
Mean	83283.33		
SD	50497.99		
Herd size (Adult ca	ttle units)		
Small	mean-0.425 x SD	33	27.50
Medium	mean ±0.425 x SD	49	40.84
Large	mean+0.425 x SD	38	31.66
Mean	3.44		
SD	1.03		

aged (30-50 years) and none of the respondents belonged to young age group (18-30 years). The average age of the respondent was 48.61 years and standard deviation was 4.26 years. There is a large scale migration of rural youth from farming to urban areas and many youth even though they stay in rural areas are not taking up full time farming. This could be the reason for none of the respondents in young age category. Middle and old aged respondents have more experience in farming and livestock management. They are skillful in management of farm resources including crop residues. These could be other reasons for the present result. Similar results were reported by Grover and Kumar (2012).

Ten per cent of the respondents were illiterates and 90.00 per cent of the farmers completed primary schooling. The average education received by the farmers was only 0.9 years and the standard deviation was 0.30 years of formal schooling. The reason for lower education in the study area could be lack of access for higher education in the vicinity, in some cases

lack of resources to pursue more education and/or lack of interest on the part of the respondent for further study. Similar results were reported by Savita (2004).

As high as 93.30 per cent of the respondents' belonged to nuclear family and the rest 6.70 per cent had joint family. The system of joint family system slowly got decayed over the years not only in urban areas but even in rural areas which is evident from the results of the present study. After the urbanization and the economic development of the country, India has witnessed break up of traditional joint family into more nuclear like family. Cohen (1981), said that households have reportedly been shrinking in size for ten thousand years or more, right up to the present and this is a result of an evolving technology that requires fewer co-operating people to secure food, rear children and look after them. Similar findings were reported by Manay and Farzana (2000) and Raju *et al.* (2006).

As high as 60.84 per cent of the respondents belonged to small size family and the rest 39.16 per cent had big size family. The average family size was 4.23 members and the standard deviation was 1.05 members. The probable reason could be the prevalence of nuclear family system in the study area. The results were similar with the findings reported by Raju *et al.* (2006).

Forty five percent of respondents belonged to medium landholding category. One fourth of them belonged to large land holding category and 29.20 percent of them had small land holdings. Respondents were drawn both from plain and hilly regions for the present study which could have influenced variation in landholdings of respondents. Also upon applying conversion factor of one acre of irrigated land is equivalent to 2.50 acres of dry land, many would belong to medium and big land holding categories. These could be the reasons for the present finding. Similar findings were reported by Ray and Chowdhary (1996) and Manay and Farzana (2000).

Majority of the respondents (87.5per cent) had medium annual income (₹ 60,000- ₹ 1,20,000) followed by 10 per cent and 2.5 per cent of the respondents had low (up to ₹ 60,000) and large annual income (>₹.1,20,000), respectively. The average annual income of the total respondents was ₹ 83283.33 and the standard deviation was 50497.99 rupees. Reasons for majority belonging to medium annual income group could be having obtained better prices for their agricultural commodities in recent years and also the income they might have derived from other subsidiary enterprises by other members of the family as most of the respondents had big family size. The findings were in contrast with the findings reported by Sathyanarayana *et al.* (2010).

The results indicated that, 27.50 per cent of the respondents had small herd size, 40.83 per cent of the respondents had medium herd size and 31.66 per cent of the respondents had large herd size. Reasons for about two third respondents having small to medium herd size could be attributed to various reasons like lack of adequate space to house more number of animals, high cost of animal maintenance, restricting herd size in accordance with the

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availability of labour, feed and fodder. Similar findings were reported by Pushpa (2006) and Singh *et al.* (2006).

Farm implements possessed by respondents

Cent percent of the respondents possessed hand operated knife-a sharp manually operated blade to cut fodder to feed livestock. Plough was possessed by 38.30 per cent respondents and tractor by one fifth (20.00 per cent) of the respondents. Five percent each possessed threshing machine and harrow (Table 2). Hand operated knife to cut fodder is affordable for majority of the respondents as it does not cost much and also it's a very useful device for livestock keepers. So the present finding. Plough and tractors were not possessed by majority of the respondents might be due to the prevalence of terrace terrain in paddy growing areas for plough and high cost for tractor. The results were in contrast with the findings reported by Pushpa (2006), who found that Elagi, a sharp manually operated blade to cut fodder was owned by 56.25 percen trural and 80.00 percent peri urban respondents.

Extension participation

Majority of the respondents never contacted agriculture officers (66.68 per cent) and Assistant Agriculture Officers (62.50 per cent). Probable reasons could be less accessibility to them and also availability of required information from other sources like private company field staff as more than half of them (57.50 per cent) reported that they did contact them whenever required. Veterinary doctor was contacted by two third of the respondents when needed as all the respondents own livestock. Scientists from agricultural university or research stations were contacted when needed by nearly half of them (48.34 per cent) and never contactedby remaining half (51.66 per cent). Study area has Agriculture University and extension wing of it conducts several programs in the district that helps to develop linkages with the farmers. This could be the reason for nearly half of the respondents' reporting that they visited them when ever required.

More than half of the respondents (55.84 per cent) expressed that they visited AHVS department whenever it was needed and the remaining (44.16per cent) expressed that they never visited the department. Farmers in need of getting technical advice and/or other services might have visited the department and others would have availed the services through the department staff visiting farmers' houses especially to treat the minor ailments of livestock. Majority of the respondents' (80.77 per cent) mentioned that they visited Krishi Vigyan Kendra (KVK) when needed and 15 per cent of them visited it once in a fortnight. KVK conducts various extension programs on campus

Table 2 . Implements possessed by the respondentsn=120

Implements type	Respond	Respondents	
	Frequency	Per cent	
Hand operated knife (Elagi)	120	100.0	
Plough	46	38.30	
Tractor	24	20.00	
Threshing machine	6	5.00	
Harrow	6	5.00	

like trainings and field days and has very extensive contacts with the farmers of the region which could be the reason for present findings. About one third of the respondents' mentioned that they visited Agricultural Research Station (32.50%) and Regional Research Station (30.84%) when needed. These are the centers involved mainly in research activities and farmers' might have visited them to get technical advice about crop management and for seeds in some cases. Large majority of farmers (89.17%) mentioned that they never visited NGOs as very few NGOs are involved in agriculture related activities. In contrast, seed companies were visited by 80 percent of the farmers when needed as seed is the crucial input for farmers. Similar is the case with visit to merchants, fertilizers and insecticide shops as 81.66 per cent visited them when needed.

Almost all the farmers (94.16%) never participated in demonstrations and only 5.84 per cent participated when needed. Demonstrations are conducted in individual fields and are usually done in limited numbers which could be the reason for the finding. More than three fourth (77.50%) of the respondents participated in field visits as they might have been conducted regularly as a part of the field days. All the respondents participated in Krishimela when needed, as Krishimela conducted in the district on an average visited by more than 8 lakh farmers reflecting its popularity in the region. Only 3.33 per cent farmers had participated in study tour (Table 3), the reasons could be study tours are conducted for limited number of farmers as it involves more cost and many farmers might not be willing to participate as they need to leave homes which could affect their routine works. The findings were in contrast with the findings reported by Angadi (1999) who found that, majority of the respondents (65.62%) had contact with Agricultural Assistant whenever there was a problem, while 62.50 per cent of the respondents had no contact with Assistant Agricultural Officer. Only 13.12 per cent had contact with Scientists whenever there was a problem. And the similar findings were reported by Gopinath (2005) and Madhushekar (2009).

Mass media participation

Reading of general news in news paper was regularly followed by 13.34 per cent, occasionally by 37.50 per cent respondents and 49.16 per cent respondents never read news paper. Less than one fourth (22.50 per cent) of respondents mentioned that agriculture news was occasionally read by them and 77.50 per cent reported that they never read them. While 11.66 per cent respondents occasionally read agricultural magazines for agricultural news and 88.34 per cent respondents never read agricultural magazines for getting agricultural news. Radio listening of general programmes was regularly followed by 12.5 per cent, occasionally by 26.66 per cent respondents and 60.84 per cent respondents never listen to radio. Radio listening of agricultural programmes was regularly followed by 5.84 per cent, occasionally by 6.67 per cent and 87.50 per cent respondents never listen to the radio for agricultural programmes. Watching of general programmes in televisions

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Table 3.Participation of res	pondents in extension	activities and c	contacts with	extension	personnel and	l organization ((n=120)
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Particulars	Frequency of contact				
	Once in a week	Once in a fortnight	When needed/When conducted	Never	
A) Extension personnel					
AO (Agril. Officer)	-	17(14.16)	23(19.16)	80(66.68)	
AAO (Assistant Agril. Officer)	-	31(25.84)	14(11.66)	75(62.50)	
Vetarinary doctor	-	-	89(74.16)	31(25.84)	
Agricultural University scientist/					
Research professional	-	-	58(48.34)	62(51.67)	
Private company field staff	-	-	69(57.50)	51(42.50)	
B) Organization					
AHVS	-	-	67(55.84)	53(44.16)	
KVK	-	18(15.00)	97(80.77)	5(4.23)	
ARS	-	-	39(32.50)	81(67.50)	
RRS	-	11(9.16)	37(30.84)	72(60.00)	
NGO	-	-	13(10.83)	107(89.17)	
Seed companies	-	8(6.66)	96(80.00)	16(13.34)	
Others- merchants, fertilizer and insecticide she	ops -	-	98(81.66)	22(18.34)	
C) Extension Activities					
Demonstrations	-	-	7(5.84)	113(94.16)	
Field visit	-	-	93(77.50)	27(22.50)	
Krishimela	-	-	120(100)	-	
Study tour	-	-	4(3.33)	116(96.67)	
* Figures in parameters are percentage					

Table 4. Extent of participation of respondents in mass media

Mass media Frequency of use (Read/Listen/Watch/Search) General programs Agricultural programs Regular Occasional Never Regular Occasional Never News paper 59 (49.16) 93 (77.50) 16 (13.34) 45 (37.5) 27 (22.50) Agril. Magazines 106 (88.34) 14 (11.66) 15 (12.5) Radio 32 (26.66) 73 (60.84) 7 (5.84) 105 (87.50) 8 (6.66) Television 43 (35.84) 77 (64.16) 46 (38.34) 74 (61.66) 17 (14.16) Mobile phone 59 (49.16) 61 (50.84) 103 (85.84) Computer 120 (100) 120 (100)

* Figures in parameters are percentage

was regularly followed by 35.84 per cent and occasionally by 64.16 per cent respondents and watching of agricultural programmes was regularly followed by 38.34 per cent and occasionally by 61.66 per cent respondents. Reading of messages for general news in mobile phone was occasionally followed by 49.16 per cent respondents, 50.84 per cent respondents never read messages of general news. Reading of messages for agricultural news was occasionally followed by 14.16 per cent respondents, while 85.84 per cent respondents never read messages on agricultural news. Cent per cent of the respondents never use computer for searching information on internet both for general and agricultural information (Table 4). It was also observed that less than one fourth (22.50 per cent) respondents occasionally read agricultural information in news paper as compared to general information. Agricultural magazines/journals were read by only 11.66 per cent of farmers to seek agricultural information. Lack of accessibility and affordability coupled with the lack of time and interest might have resulted in limited use of magazines. The television viewing and radio listening were done for purposes other than agricultural programmes which might be due to the improper broadcasting time and less attractive and useful programs. The findings were in line with findings of Shaila (2011), Moulasab (2004) and Sunil Kumar (2004).

Relationship between selected demographic characteristics with cost residue produced, its cost of production and economic value

(n=120)

Education expressed positive and significant relationship with cost of production of crop residue at 1 per cent level of probability (Table 5). This means that higher the education higher will be the cost of production of crop residues. To make more rational decisions about cost savings one need to have education of primary schooling at-least. Economic gains can

 Table 5. Relationship between selected demographic characteristics

 with crop residue produced, its cost of production and

economic	value

Variables	r-value			
	Crop residue	Cost of	Economic	
	produced	production	value	
Age	005	139	.072	
Education	.082	.319**	.081	
Family type	029	061	.048	
Family size	017	.001	124	
Land holding	020	241**	118	
Annual income	.005	139	.062	
Herd size	169	116	040	

** Significant at 0.01 percent level (2 tailed)

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be realized with some level of education. However in the present study the average formal schooling of respondents was less than 1 year which is not adequate to influence rational decisions. Lesser number of years of formal schooling has added risk involved as person might become less receptive to others suggestions for cost saving methods. Land holding showed

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negative and significant relationship with cost of production of crop residue. Higher the land holding lower the cost of production of crop residue. This might be because of the economy of scale due to size of operations observed in large landholdings. Cost per unit of output generally decreases with increasing scale.

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