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Comparative Feeding Practices For Small and Large Ruminants in Punjab, Pakistan

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ABSTRACT

This study was conducted to investigate the land holding of the female farmers and to analyze the information regarding feeding practices of large and small ruminants. For this purpose, a sample of 30% rural union councils from each of the three tehsils of District Okara, Punjab-Pakistan was drawn at random. There were 324 respondents comprising of female livestock farmers who constituted the sample. It was observed that one fourth (25.6%) of the respondents were landless and focused more on livestock farming. More than two third (71.8%) of female farmers had up to 12.5 acres, while a small number (4.6%) of respondents owned 12.5-25 acres of land. Vast majority of the respondents grew guawara, maize and oats as summer fodders, while berseem, taramera and lucern were grown as winter fodders for feeding large and small ruminants. An over whelming majority (96.6% and 72.1%) respondents fed their animals through stall feeding, 3.4% and 27.9% grazed while 10.5% and 24.3% fed both by stall feeding and grazing to their large and small ruminants, respectively. A great majority 67.6% and 68.5% of the respondents fed cotton seed cake, 35.2% and 50.5% fed wanda and 49.7% and 46.8% offered domestic mixture to their large and small ruminants, respectively. Water frequency was 3-4 times/day water during summer and twice or once a day during winter both in large and small ruminants. The study indicated that majority of respondents fed large and small ruminants through stall feeding using guawara, berseem and maize as major fodders along with concentrate source.

KEYWORDS Feeding, practices, large, small, ruminants, Punjab.

Introduction

Feed is one of the major factors in successful livestock production. Usually, combinations of different feeds and fodders are fed to animals to meet their nutritional requirements. Main feed resources include fodder crops, range vegetation, crop residues, non-conventional feeds and industrial by-products. A wide variety of leguminous and non-leguminous crops are being used for feeding animals throughout the world. However, Fodders of high nutritional value are essential for good animal health and for optimum milk and meat production.

Most of the nutritional requirements of animals in Pakistan are being met from fodder crops. Farm by-products like corn stalks, wheat straw, rice husk and rice bran are common in small livestock holdings (Thomas and Sastry 2000; Adeokun 2004)). Salt and minerals which have significant contribution in animal health are also added in their diets. However, need for water increases due to the provision of salt and minerals in animal diet.

Extension workers play an important role in transferring the technology to the livestock farming community. Without their active participation, it is not be possible to implement latest technologies and livestock business practices at farm level. Migration is another aspect in livestock production which is related to feed management. Desta and Coppock (2004) reported that the grazing area might be divided according to wet and dry seasons. In dry season, most of the pastoralists migrate towards green areas to manage the problem of feed shortage. The main constraints of feed resource are seasonal and low productivity of natural grasslands. Furthermore, lack of proper management of the grazing area including serious overgrazing, inherent communal land-tenure systems and mode of harvest and transport have been limiting their efficient utilization (Urio 2007; FAO 2011).

Women have traditionally been involved in fodder collection and livestock rearing in Pakistan. Women activities related to livestock husbandry are much higher (Afzal et al. 2009; Nosheen et al. 2010). Mostly women cut and fetch fodder, graze their animals, clean animal sheds, offering of water and milking (Jamali 2009). Due to their active contribution, women are not only consulted but they also have chief role in decision making for livestock rearing and associated activities. The objective of the present study was to investigate the land holding of the female farmers and to analyze the information regarding practices of feeding and managing large and small ruminants followed by female farmers.

Materials and Methods

The present study was conducted in Punjab province, Pakistan having altitude 31.33ºN and latitude 74.21º E. District Okara was purposely selected, a sample of 30% rural union councils from each of the three tehsils of District Okara was drawn at random. The study period was during Jan-2010 to March 2011. Female livestock farmers, defined as females between age group of 25-60 years who were directly involved in livestock farming, were selected from these union councils through their consent in the study. There were 324 respondents comprising of female livestock farmers. All of them owned large ruminants whereas, only 111 of them also had sheep and goat. Informations regarding their land holding, types of fodder offered during winter and summer, feeding pattern and watering frequency of large and small ruminants

were collected. Size of land holding was defined as the ownership of agricultural land by individual female farmer and her family for crop and livestock production. Based on the size of farm/land holding, the respondents were categorized as: (i) no land, (ii) <12.5 acres, and (iii) >12.5-25 acres. The data were collected through structured, pre-tested and validated interview schedules and analyzed using Statistical Package for Social Sciences (SPSS). Association of feeding practices in large and small ruminants was drawn through z-test and chi-square.

Results and Discussion

Land holding is an important factor to consider while making policy decisions regarding the development of farming enterprise. Technology transfer is easier on larger farms as compared to small farms. Farmers having large land holding adopt an innovation earlier than the small land holdings. In the present study, one fourth (25.6%) of the respondents had no land, because they focused more on livestock farming only (Table 1). A large majority of female farmers (71.8%) had less than 12.5 acres, while only 4.6% of the respondents owned 12.5-25 acres of land (Table 1). These results are in close agreement with those of Arshad et al. (2010), who found that majority (57.5%) of the female respondents in Jhung were small land holders (up to 12.5 acres), only 4.4% of them had 12.5-25 acres of land.

Feeding practices for large and small ruminants

Effective feeding management programme is essential for profitable livestock farming. This means effective supply chain management. Adequate feeding and watering ensures good animal health and hence maximum production. According to different agro-climatic conditions of the world, there are diverse types of crops, trees, shurbs and grasses being used to feed the animals (Khan 2008). Normally fodder production has close association with livestock rearing because it fulfills 80-90 % of their nutrients requirement (Afzal 2009). These are cheaper source of nutrients and help in reducing the feed cost.

Our results revealed that guawara, maize and oats were grown as summer fodders by a vast majority of the respondents (96.9, 93.2 and 88.9%, respectively), while about one third of the respondents had grown sadabahar (36.4%) and barley (31.2%) for small and large ruminants. However, janter, mott grass, sudan grass and moth were grown by only a few of the respondents (Fig. 1).

In winter season, berseem, taramera, and lucern were grown by a vast majority of female farmers (96.9, 90.4, and 77.2%, respectively). However, very few of the respondents had grown senji and shaftal as winter fodder (Fig. 2). Mixed fodder comprising berseem & sugar cane and berseem & jai was also grown by one fifth (21.3 and 18.8%, respectively) of the respondents. These results are partially in line with the finings of other researchers (Muhammad 2008) who reported that maize and guawara were grown as summer fodder and berseem, taramera and janter were sown as winter fodder in district Pakpatten.

Feeding pattern for large and small ruminants

Feeding patterns determine the style through which feed ingredients are offered to the animals. There are three types of feeding patterns prevailing in the country viz. a) stall feeding: in this pattern fodder is cut in small digestible pieces and offered to the animals; b) grazing: animals are permitted open in the field and they take their feed freely (Khan 2008); c) combination of both: in this pattern animals graze throughout the day and fodder is also offered as stall feeding in the evening.

Processed feeds such as cotton seed cake, wanda and domestic mixtures are offered to the animals on routine basis. Supplementation of concentrate to grazing animals improves production (Ferris et al. 2003) indicating that there is strong association among khal, wanda and domestic mixture for small and large ruminants (Polan et al. 1986:Berzaghi and Polan 1992). According to the present study, majority of the respondents (96.6%) fed their animals through stall feeding. Only 3.4% of the respondents grazed their animals (Table 2). However, about one tenth (10.5%) of the respondents fed their animals both by stall feeding and grazing. A significant difference existed between small and large ruminants for stall feeding and grazing. The majority of the farmers offered chopped fodder to large ruminants and small ruminants grazed. Majority (67.6%) of the respondents also fed cotton seed cake to their animals and about half (49.7%) of them gave domestic mixture to their animals, while more than one third (35.2%) of the respondents also gave the wanda (Table 3).

An overwhelming majority (96.6%) of the respondents gave table salt to their animals (Table 3). In case of small ruminants, a large majority (72.1%) of the respondents fed their animals through stall feeding, less than one third (27.9%) grazed, and about one fourth (24.3%) of the respondents fed their animals both by stall feeding and grazing (Table 2). About 68.5% respondents offered cotton seed cake, while 50.5 and 46.8% fed wanda and domestic mixture to small ruminants, respectively. However, almost all (98.2%) of the respondents gave table salt to sheep and goats (Table 3). Bilal (2006) also mentioned that wanda and cotton seed cake are essential nutrients for good health of small ruminants.

The relationship between land holding of the respondents and different feeding patterns they used for their animals revealed strong association between stall feeding, offering of cotton seed cake and wanda and land holding. It clearly indicates that offering of cotton seed cake, wanda and stall feeding depended upon the ownership of the land due to the availability of chopped fodder and better financial resources and management in case of cotton seed cake and wanda which are costly otherwise. Bakshi et al. (2012) also stated that a vast majority of the respondents offered table salt to their animals as salt and other minerals are essential for the better health of animal. Cotton seed cake and wanda are essential to get maximum productivity from the animals.

Watering

Majority of the respondents keep large (96.0%) and small ruminants (93.7%) had an access to fresh water (Table 4). Regarding summer water frequency, 64.8% of the respondents offered water to large ruminants 3-4 times a day. While in winter season again a great majority (96.6%) of the respondents offered water twice or less in winter season. In case of small ruminants, vast majority (94.6%) of the respondents offered water to their animals less than twice in winter season. Regarding summer season, majority (55.9%) of the respondents offered water 3-4 times per day. Water acts as a medium for physical and chemical energy transfer for evaporative cooling and intermediary metabolism (Konandreas and Anderson 1982; Kirda and Reichardt 1986). Schillhorn van veen (1984) mentioned that free access to fresh water reduces the animals' disease attack and enhances milk production. Watering frequency has an inverse relation with disease attack. No seasonal differences in access to fresh water were noticed in this study. However, offering of water to large ruminants was more frequent than those of small ruminants. This was associated to the perceived higher economic importance of large animals than those of small animals. The impact was even bigger in winter season when small ruminants were offered water even less frequently. The data was in agreement with other researchers (Jamal et al. 2012) who reported that majority of the respondents had free access to fresh water and animals followed the summer and winter watering frequency per recommendations. Increased water intake during summer is due to the reason that body fluids are lost through perspiration so the body needs more water to compensate for the lost water in body.

Conclusions

Majority of respondents fed their animals through stall feeding. Guawara, berseem and maize are used as major fodder

crops for feeding the large and small ruminants while cotton seed cake, wanda domestic mixture and common salt are also fed to the animals. Land holding is important feature which determines feeding pattern and also mode of nutrition of the animal. Water frequency increases during summer than winter season due to its greater requirement.

Table 1: Distribution of respondents according to their land holding in acres

Land holding (acres)	Frequency	Percent
No land	83	25.6
<12.5 acres	226	71.8
<12.5-25 acres	15	4.6
Total	324	100.0

Fig. 1: Distribution of the respondents according to the fodder they offered to their animals in summer

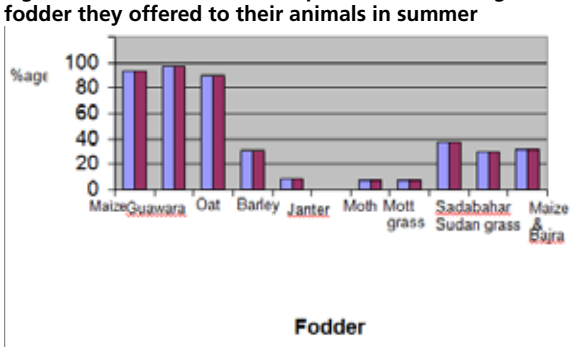


Fig. 2: Distribution of the respondents according to the fodder they offered to their animals in winter

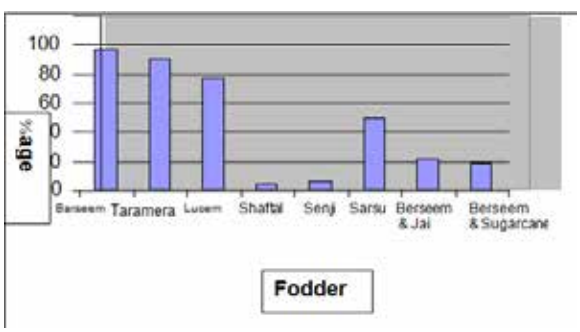


Table 2: Distribution of respondents according to their feeding patterns

Feeding patterns	Large Ruminants		Small Ruminants		Z value	P value
	No.	%	No.	%		
Stall feeding	313	96.6	80	72.1	5.61**	0.000
Grazing	11	3.4	31	27.9	5.61**	0.000
Both (grazing + stall feeding)	34	10.5	27	24.3	3.13**	0.002
Total	324	100	111	100		

Table 3: Distribution of respondents according to their feeding technology

	Large Ruminants		Small Ruminants		Z value	P value
	No.	%	No.	%		
Cotton seed cake	219	67.6	76	68.5	0.17	0.864
Domestic mixture	161	49.7	52	46.8	0.52	0.604
Wanda	114	35.2	56	50.5	2.81**	0.005
Table salt (Sodium Chloride)	313	96.6	109	98.2	0.99	0.324
Total	324	100	111	100		

Table 4: Distribution of respondents according to their watering

Feeding patterns	Large Ruminants		Small Ruminants		Z value	P value
	No.	%	No.	%		
Fresh water access	312	96.0	104	93.7	1.03	0.304
Summer watering Frequency (3-4)	210	64.8	62	55.9	1.66	0.098
Winter watering Frequency (1-2)	313	96.6	6	5.4	38.47**	0.000
Total	324	100	111	100		

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