

Livestock Economy of India with Particular Reference to Punjab

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Abstract

The present paper tries to capture the overtime changes in performance of livestock sector in Indian economy with particular reference to Punjab, the state aptly known as grain bowl of India. The study is based on secondary data extracted from official data sources of Government of India (GOI). The study highlighted that Punjab with 1.5 per cent of India's geographical area, 1.6 per cent of livestock population, 2.2 per cent of poultry population and 2.5 per cent of cattle and buffalo population contributes 7 per cent to milk production, 5.4 per cent to eggs and 3.4 per cent to meat production. In TE 2016-17, the contribution of milk group to the value of Punjab's total livestock output recorded at 82.2 per cent was way above that observed in case of India at large (68 %). The comparison of value of milk output with that of paddy and wheat together highlighted that an impressive increase in the value of milk output over the study period could not undermine the importance of wheat and paddy in Punjab's agri economy. The falling share of Punjab in value of output from livestock sector of India at large and that in case of milk, meat and egg, the pillars of livestock economy of Punjab point towards convergence amongst Indian states on one hand and need for ensuring better prices to livestock producers of Punjab to make livestock rearing more remunerative.

Keywords: Livestock Sector, Production Performance, Value of Output

Introduction

Animal husbandry has been an integral component of Indian agriculture since the times immemorial due to its multifarious contributions to the society in the form of nutrient-rich food products, clothing, draught power, income and employment. Livestock enterprises form an integral part of predominantly smallholder diversified crop-livestock farming systems. Livestock have a synergistic relationship with crop production - they obtain their feed and fodder requirements from crop residues and by-products, and in turn provide draught power and manure for cropping activities (Kataria, 2009 and Birthal and Negi, 2012). Despite its smaller output compared to that of staple crops, productivity and income growth in the livestock sector have strong income multiplier and poverty reduction impacts (Ali, 2007). During the post-independence period, the dairy sector showed an impressive growth (Ashish, 2017 and Shree and Prabu, 2019).

Approximately 70 per cent of India's population lives in rural areas and 69 per cent of them depend on agriculture and allied activities, including animal husbandry and fisheries, for their livelihood (FAO-FAOSTAT). Livestock sector generates a continuous stream of outputs and are a regular and stable source of income for farm households. Livestock resources are a natural capital, which can be reproduced or multiplied quickly to generate wealth and also being valued as a source of food and income. Livestock especially small stock such as poultry, pigs, sheep and goats are particularly important assets for rural women, whose role in agriculture is often unappreciated. The demand for animal food products, driven by sustained economic and income growth and a fast-growing urban population, continues to accelerate (Delgado *et al.*, 1999; Kumar and Birthal, 2004 and Rao and Birthal, 2008). Global demand for animal food products is also growing fast, particularly in developing countries (Delgado *et al.*, 1999 and Singh and Kataria, 2017). It has been well documented that livestock wealth is more equitably distributed compared to land and the expansion in demand for animal food products generates significant opportunities for rural poor to escape poverty through intensification (Rana and Kataria, 2016).

Livestock enterprises are also being considered as one of the viable options for diversifying the agricultural economy along enterprise dimensions and more in case of Punjab, where the monoculture of wheat-rice system, an offshoot of the Green Revolution has proved both as a boon and a bane for the agricultural sector (Sidhu and Johl, 2002). It is against this backdrop; the present study is a modest effort to capture the overtime changes in the contribution of Punjab to India's livestock economy in terms of livestock production and its economic facets.

Materials and Methods

The formulations of the study are based on the secondary data extracted from the official website of Department of Animal Husbandry and Dairying; Ministry of Fisheries, Animal Husbandry & Dairying; Government of India, Reports of Ministry of Statistics and Programme Implementation; Government of India. Apart from this, the data have been culled from the various issues of Statistical Abstract of Punjab and various reports of National Accounts Statistics. The time period for the presentation of the results has been selected so as to coincide with the livestock census of 1997, 2003, 2007 and 2012. The five selected periods presented in the form of triennia were TE 1996-97, TE 2002-03, TE 2006-07, TE 2011-12 and TE 2016-17.

Results and Discussion

Livestock enterprises are an integral component of agriculture in India and make multidimensional contributions to the growth and development of the agricultural sector. The role of livestock in improving food and nutritional security by providing nutrient-rich food products, generating income and employment and acting as an insurance cover against crop failure, providing draught power and farmyard manure to the crop subsector and contributing to foreign exchange through exports, cannot be denied.

Section I: Livestock Population

The livestock population of the country has increased from 344 million in year 1966 to 512 million by the year 2012, registering a growth rate of 0.87 per cent per annum (Table 1). Various central and state government sponsored programs, such as Integrated Rural Development Program (IRDP), Special Livestock Production Program (SLPP), Tribal Development Program (TDP), etc. helped to popularize dairy farming in rural areas and to increase the livestock population in India (Vetrivel and Chandrakumarmangalam, 2013). A thorough perusal of livestock

population figures reveals that livestock population of India has increased consistently from 344 million in 1966 to reach 420 million by 1982. The highest increase (13.65 %) in livestock heads was attained in the period intervening 5th livestock census (1977) and the 6th one (1982). Livestock population of the country recorded at 446 million in 1987 increased to touch 471 million in 1992, the magnitude of increase (5.51 %) being comparatively lower than experienced in previous census. The rate of growth in livestock population of India has been slower thereafter. The livestock population of country increased sharply by 45 million from year 2003 to 2007, declined by 18 million thereafter to 512 million.

Table 1: Livestock population in India and Punjab

Census	Livestock Population			
	India		Punjab	
	No. million	% change over census	No. million	% change over census
1966	344	-	7.5	-
1972	353	2.74	8.6	15.58
1977	369	4.44	9	4.05
1982	420	13.65	NA	-
1987	446	6.39	NA	-
1992	471	5.51	9.7*	-
1997	485	3.08	9.8	1.86
2003	485	-0.08	8.6	-12.69
2007	530	9.22	7.4	-14.13
2012	512	-3.32	8.1	9.84
2019	536	4.69	#	-
Growth Rate, % (1966-2012)	0.87		0.18	

**The figures pertain to census conducted in 1990; # Figures awaited*

A thorough analysis of livestock population of Punjab reveals that livestock population of Punjab has increased from 7.5 million in 1966 to 8.6 million in 1972 with a maximum per cent change of 15.58 from the previous period. The livestock population of Punjab has further increased to 8.9 million by 1977 with a change of only 4.05 per cent. The livestock population of the state was recorded thereafter in 1990 at 9.7 million and experienced 1.86 per cent increase by 1997. The livestock population of the state showed a declining trend thereafter. It declined from 9.8 million in 1997 to 8.6 million by 2003 and further to 7.4 million as recorded in livestock census of 2007. From the period 2007 to 2012, the livestock population of the state has increased from 7.4 million in 2007 to 8.1 million by 2012, with an increase of 9.84 per cent from the previous period. Considering the 46-year period from 1966 to 2012, the livestock population of Punjab increased at a comparatively lower pace (0.18 % per annum) relative to that experienced in the case of country at large (0.87 % per annum).

The information presented in Table 2 throws light on the livestock composition for India and Punjab for the four latest livestock census periods. The perusal of the figures presented therein highlights that, proportion of cattle population in India's livestock population has decreased from 41 per cent in 1997 to 37.3 per cent in 2012 with a fall in cattle population by eight million. Out of the total cattle population, the share of crossbred cattle has been reported as 21 per cent in 2012 up from only 10.1 per cent in 1997. Increasing preference for crossbred cattle can also be observed in startling increase in the number of crossbred cattle from 20 million in 1997 to 39.7 million by 2012. The buffalo population increased from 89 million in 1997 to 108 million in 2012, the per cent share of buffalo to the total livestock population of country hovering between 19 to 21 per cent for all the study periods. The ovine population (sheep and goat) contributed approximately 39 per cent to the total livestock population reported in 2012 census. The per cent share of sheep in the country's livestock population has decreased from 13.5 per cent in 2007 to 12.7 per cent in 2012 and that of goat from 26.5 per cent in 2007 to 26.4 per cent in 2012. Other species which include pigs, mules, donkeys and camels etc., contributed only 2.4 per cent to the total livestock population of the country as per 2012 census.

On the other hand, the livestock population of Punjab recorded at 9.8 million in 1997 declined to 8.6 million in 2003

and further to 7.4 million in 2007. The total livestock population in the state in 2012 was recorded at 8.1 million. As per the livestock census of 2012, Punjab accounted for only 1.58 per cent of livestock population of India. The number of crossbred animals in Punjab has increased from 1.8 million in 1997 to 2.1 million in 2012. The proportion of crossbred cattle in total cattle population in Punjab (85 %) was comparatively much higher than that recorded in the case of India (20.8 %) for census 2012. An increase of 2.3 lakh cross bred animals has been observed from 1997 to 2012 in Punjab. The proportion of buffalo in total livestock population of Punjab (63.6%) is also significantly higher than that observed in case of India (21.2 %). Punjab is home to 2.5 per cent of India's bovine (cattle and buffalo) population. The bovine population of Punjab constitutes approximately 93.5 per cent of the total livestock population. The ovine population of the state accounted for only 5.6 per cent and other species (camels, mules, yaks and donkeys) nearly one per cent of Punjab's livestock population.

Table 2: Composition of livestock population in India and Punjab, 1997-2012

Species	1997		2003		2007		2012	
	India							
	No. '000	%	No. '000	%	No. '000	%	No. '000	%
Cattle	198881	41	185181	38.2	199074	37.6	190905	37.3
Crossbred	20099	10.1#	24687	13.3#	33060	16.6#	39732	20.8#
Indigenous	178782	89.9#	160494	86.7#	166014	83.4#	151173	79.2#
Buffalo	89918	18.5	97922	20.2	105343	19.9	108702	21.2
Sheep	57494	11.8	61469	12.7	71558	13.5	65071	12.7
Goats	122721	25.3	124358	25.6	140537	26.5	135170	26.4
Others*	16371	3.4	16070	3.3	13186	2.5	12211	2.4
Total Livestock	485385		485000		529698		512059	
Poultry	347611		489014		648830		729210	
Punjab								
Cattle	2639	26.8	2039	23.7	1763	23.9	2428	29.9
Crossbred	1829	69.3#	1531	75.1#	1260	71.5#	2065	85.0#
Indigenous	810	30.7#	508	24.9#	503	28.5#	363	15.0#
Buffalo	6171	62.6	5995	69.7	5054	68.4	5160	63.6
Sheep	436	4.4	220	2.6	211	2.9	129	1.6
Goats	414	4.2	278	3.2	291	3.9	327	4
Others*	198	2	75	0.9	72	1	74	0.9
Total Livestock	9858		8607		7391		8118	
Poultry	11456		10534		18900		16069	

% of cattle population of respective census; *others include donkeys, mules and camels

Section II: Livestock Production

India is the global leader in milk production. Indian dairy industry has made a magnificent progress both in milk production as well as per capita availability over a period of last 25 years. From a mere 55.6 million t in 1991-92, it has reached the level of 165.4 million t in 2016-17 depicting a CAGR of 4.4 per cent while per capita availability of milk increased from 178 grams/day in 1991-92 to 355 grams/day in 2016-17 with a CAGR of 2.8 percent (GoI, 2017). The present section portrays production performance of different livestock products in India as well as in Punjab.

Milk production of the country recorded at 65.9 million t in TE 1996-97 has been increasing consistently at a growth rate of 4.3 per cent per annum to reach 155.2 million t by TE 2016-17 (Table 3). The milk production in Punjab recorded a comparative lower rate of growth (2.4 %) notwithstanding the increase in production to the tune of 4.4 million t from TE 1996-97 to TE 2016-17. The share of the state to country's milk output recorded at 9.8 per cent at the beginning of the study period declined to 9.1 per cent by TE 2006-07 and thereafter to 7 per cent by TE 2016-

17. Despite of increasing trend in Punjab's milk production, the declining share of Punjab in country's milk production is indicative of the fact that other states have also started to come up in a big way (Kashish and Kataria 2018).

Table 3: Production performance of different livestock products in India and Punjab

Particulars	Milk, '000 t			Meat, '000 t			Egg, No. billion		
	India	Punjab	R#	India	Punjab	R#	India	Punjab	R#
TE 1996-97	65867	6452 (9.8)	2 nd	1700	5 (9.5)	22 nd	26.9	2.6 (0.29)	4 th
TE 2002-03	83722	7961 (9.5)	2 nd	1962	6 (7.9)	24 th	38.4	3.0 (0.31)	4 th
TE 2006-07	97377	8877 (9.1)	3 rd	2284	26 (7.7)	17 th	47.4	3.7 (1.14)	3 rd
TE 2011-12	122057	9454 (7.7)	4 th	4983	168 (5.5)	9 th	63.2	3.5 (3.37)	6 th
TE 2016-17	155166	10803 (7.0)	6 th	7113	245 (5.4)	10 th	83.2	4.5 (3.44)	8 th
CAGR*, %	4.3	2.4		8.5	26.5		6	2.7	

*1994-95 to 2016-17; #R- Rank; Figures in parentheses indicate percentage to corresponding figure for India

The growing affluence and increasing awareness about nutritious food and response to the increase in global meat demand has given a much-needed boost to the meat economy of India. In the recent past, the meat production has increased by nearly 2 million t from TE 2011-12 to TE 2016-17 in comparison to only one fourth of a million t during the period TE 1996-97 to TE 2002-03. Meat economy of Punjab has made rapid strides as portrayed by the growth rate of 26.5 per cent achieved during the study period 1994-95 to 2016-17. The meat production in Punjab recorded a higher rate of growth (26.5 %) in comparison to the national level (8.5 %) for the period 1994-95 to 2016-17. The state has been successful in improving its rank from 22nd in TE 1996-97 to 10th in TE 2016-17.

India is on the world map as the third largest egg producing country of the world, the first and the second place being occupied by USA and China respectively. In recent years, backyard poultry production has been extremely emphasized in sustaining and enhancing rural livelihoods. Due to these efforts, the egg production in the country has increased by three times from 26.9 billion in TE 1996-97 to 83.2 billion by TE 2016-17, whereas poultry population increased by 1.4 times during the same period. A marked increase in egg production over time points towards enhancement in productivity over time. The growth rate observed in case of poultry production has even surpassed the growth rate of agricultural crop production (Mehta and Nambiar, 2002). The egg production in Punjab increased by nearly 2 billion over the study period (1994-95 to 2016-17) with CAGR being only 2.7 per cent as against all India figure of 6 per cent. The comparatively lower rate of growth of poultry population in the Punjab being the reason for slipping down to 8th position asks for concerted efforts in promoting poultry in the state.

Section III: Value of Output from Livestock Sector

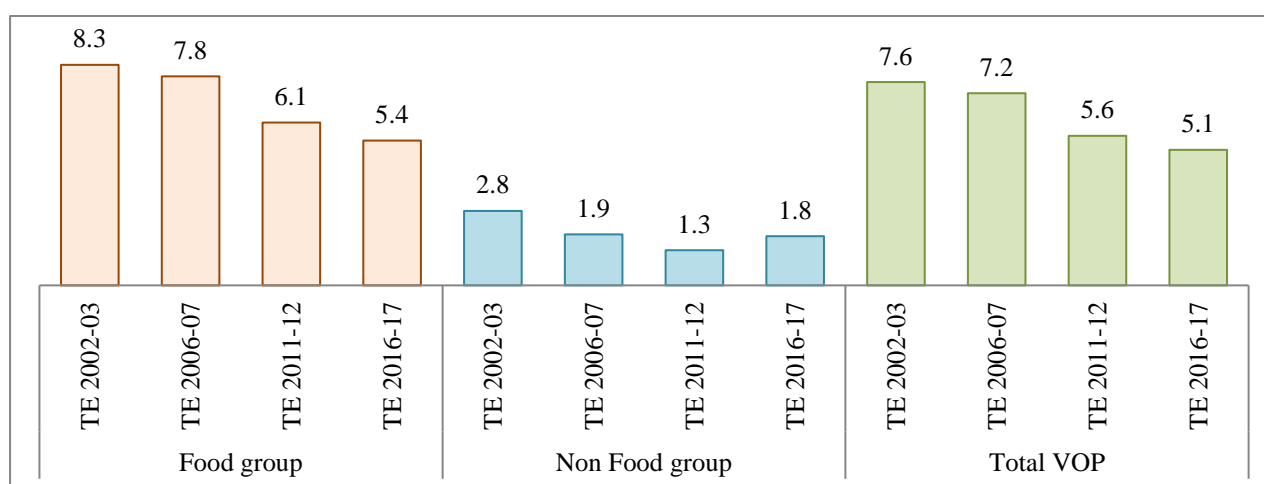
In the present section an effort has been made to study the overtime changes in value of output from India's livestock sector in relation to that in the case of Punjab. The value of output from livestock sector of India increased by 5.7 times from Rs 1468 billion in TE 2002-03 to Rs 8424 billion in TE 2016-17 registering a growth rate of 11.8 per cent per annum (Table 4). For thorough study of the components of value of output, the items have been divided in to mainly two groups i.e. food group and non-food group. The food group encompasses milk, meat and egg. The contribution of food group to total value of output during TE 2002-03 was 88 per cent while that of non-food group was only 12 per cent in case of India. Among the food group, milk group has always been the highest contributor followed by meat group and eggs. In absolute terms, the value of output from milk group has increased from Rs 998 billion in TE 2002-03 to Rs 5619 billion in TE 2016-17, contributing close to two third to India's total value of output from livestock sector. The value of output of meat group increased at the rate of 13.56 per cent, which was higher than that observed in the case of milk (11.63%) and egg (12.05 %). The per cent contribution of eggs varied between 3.2 and 3.7 per cent for the selected periods. The per cent contribution of non-food group items has declined from 11.8 per cent in TE 2002-03 to 9.0 per cent in TE 2016-17. Among non-food group items, dung has been the highest contributor. The value of dung output has increased from Rs 115 billion in TE 2002-03 to Rs 492 billion by TE 2016-17, registering a growth rate of 9.9 per cent per annum.

Table 4: Value of output from livestock sector in India and Punjab (At current prices)

Particulars	TE 2002-03		TE 2006-07		TE 2011-12		TE 2016-17		Growth Rate*, %
	Rs. Billion	% [@]	Rs. Billion	%	Rs. Billion	%	Rs. Billion	%	
India									
Milk group	998	68	1339	68.2	2734	66.4	5619	66.7	11.63
Meat group	248	16.9	349	17.8	803	19.5	1777	21.1	13.56
Eggs	49	3.3	65	3.3	151	3.7	269	3.2	12.05
Food group	1295	88.2	1753	89.3	3688	89.6	7665	91	12.05
Wool and hairs	3	0.2	3	0.2	5	0.1	6	0.1	4.13
Dung	115	7.8	170	8.7	283	6.9	492	5.8	9.89
Silk worm & cocoons	17	1.1	20	1	38	0.9	78	0.9	10.51
Increment in stock	38	2.6	16	0.8	102	2.5	183	2.2	11.43
Non-Food group	173	11.8	210	10.7	429	10.4	759	9	10.06
Total	1468		1963		4117		8424		11.84
Punjab									
Milk group	90	81.3	116	82.5	200	82.9	340	82.2	8.7
Meat group	13	11.3	16	11.1	28	11.6	48	11.7	9.19
Eggs	4	3.1	5	3.6	7	3.1	12	2.9	8.3
Food group	107	95.7	137	97.2	235	97.7	400	96.8	8.75
Wool and hairs	0.1	0.1	0.1	0.01	0.1	0.01	0.01	0.0007	1.49
Dung	4	3.5	5	3.7	6	2.6	10	2.4	5.75
Silk worm & cocoons	0.013	-	0.22	0.002	0.5	0.2	1	0.3	34.13
Increment in stock	1	0.7	-2	-	-1	-	2	0.5	-
Non-Food group	5	4.3	4	2.8	6	2.3	13	3.2	5.85
Total	112		141		241		413		8.64

@ % of respective total; *2000-01 to 2016-17

On the other hand, value of output from livestock sector in Punjab state recorded at Rs 112 billion in TE 2002-03 more than trebled (Rs413 billion) by TE 2016-17 registering a CAGR of 8.64 per cent. Nevertheless, the share of state in country's value of output from livestock sector has come down from 7.6 per cent in TE 2002-03 to 5.1 per cent in TE 2016-17 (Fig. 1) connoting convergence amongst the states.

**Figure 1:** Contribution, % of Punjab to India's value of output

The contribution of food group to the total value of output from livestock sector in case of Punjab has been more than 95 per cent all through the study period. As regards the share of Punjab in country's food group value of output,

it has come down from 8.3 per cent in TE 2002-03 to 5.4 per cent in TE 2016-17 in spite of absolute increase of Rs 293 billion over the said period. The contribution of milk group to the total value of output in case of Punjab recorded at nearly 82 per cent all through, has been quite higher in comparison to that observed in case of India at large, which remained somewhere between 66 to 68 per cent.

The contribution of Punjab to value of output of milk at the country level stands at 6 per cent down from 9 per cent recorded for TE 2002-03 (Fig. 2). As highlighted earlier, Punjab, with merely 2.5 per cent of country's bovine population has 7 per cent share in country's milk output, speaking volumes about high productivity profile of Punjab's milch animals. The share of Punjab in country's attainment through value of milk output recorded as 6 per cent is comparatively lower than the respective share in output and points towards the ailing milk marketing system and asks for corrective action in this regard.

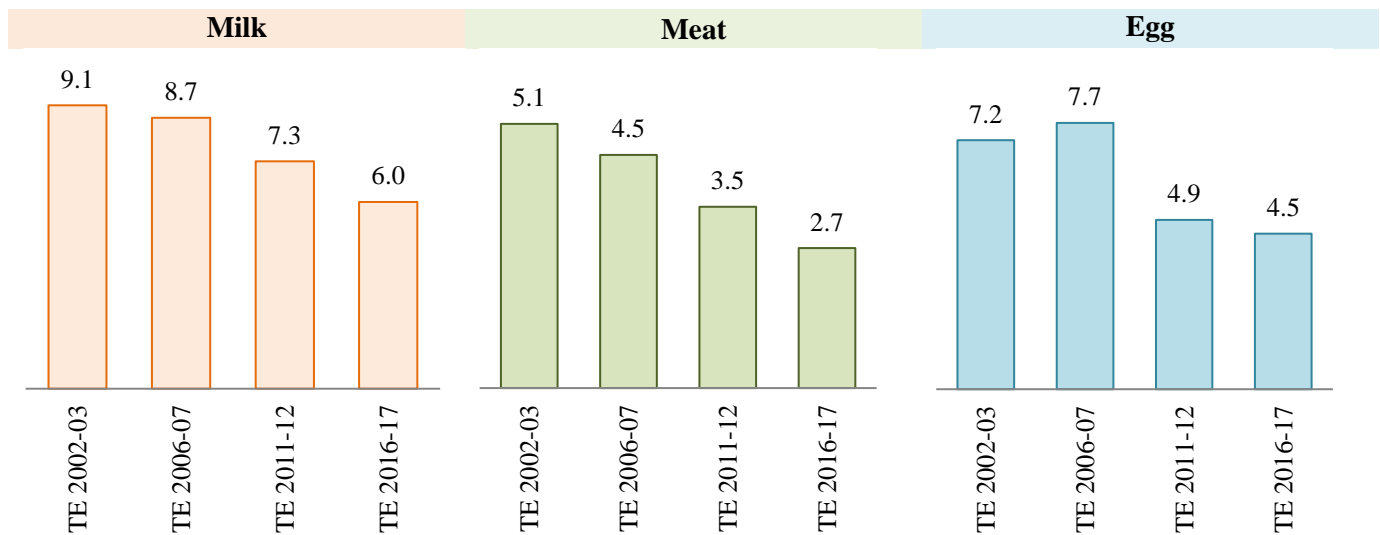


Figure 2: Livestock product wise contribution of Punjab(%) to the India

The share of Punjab to the country's value of output from meat has declined from 5.1 per cent in TE 2002-03 to 2.7 per cent in TE 2016-17 but in absolute terms the value of output from meat has been increasing all through with a growth rate of 9.2 per cent. The share of Punjab to the country's value of output from egg has declined from 7.2 per cent in TE 2002-03 to 4.5 per cent in TE 2016-17 although the value of egg output in absolute terms has been increasing all through with a growth rate of 8.3 per cent. The falling share of Punjab in value of output from livestock sector of India at large and that in case of milk, meat and egg, the pillars of livestock economy of Punjab point towards convergence amongst Indian states on one hand and need for ensuring better prices to livestock producers of Punjab to make livestock rearing more remunerative.

In order to endorse the claims of the researchers that livestock sector has over the years become a sunrise sector of the economy, a modest effort has been made to compare the performance of livestock and crop sector with respect to the value of output originating from these two sectors. A quick perusal of the table presented hereunder highlights the growth performance of livestock sector in relation to crop sector with respect to the value of output. It can be readily observed that in case of both Punjab and India at large, the rate of growth in value of output, for the period spanning past decade and a half, was higher in livestock sector than that observed in the crop sector and more so in case of India at large. In order to make the dynamism in agricultural economy experienced in the past two decades more lucid and hence easier to comprehend, the indices for value of output series for crop and livestock for Punjab and India level were worked out with the year 2000-01 as base (Table 5). The value of output index for livestock sector of Punjab increased to 431.1 by 2016 in comparison to 327.3 for crop sector pointing towards better performance of livestock sector. The same trend has been observed for all India figures as well.

Table 5: Comparative performance of livestock and crop sector of India and Punjab

Particular	Value of output							
	India				Punjab			
	Rs Billion		Index (2000-01=100)		Rs Billion		Index (2000-01=100)	
	Livestock	Crop	Livestock	Crop	Livestock	Crop	Livestock	Crop
2000-01	1391	3732	100	100	107	229	100	100
2001-02	1472	3987	105.8	106.8	113	230	105.4	100.4
2002-03	1541	3570	110.8	95.7	116	220	109.1	96.1
2003-04	1630	4022	117.2	107.8	122	229	114.2	100.1
2004-05	1800	4585	129.5	122.9	130	276	121.4	120.3
2005-06	1935	5234	139.1	140.3	138	288	129.6	125.5
2006-07	2154	5861	154.9	157.1	156	331	146.4	144.3
2007-08	2472	6816	177.8	182.7	178	399	166.5	174.2
2008-09	2921	7570	210.1	202.8	195	453	182.3	197.7
2009-10	3461	8588	248.9	230.1	216	497	202.2	216.8
2010-11	4012	10519	288.5	281.9	239	539	224.3	235.1
2011-12	4878	11915	350.8	319.3	267	599	249.8	261.5
2012-13	5649	13296	406.3	356.3	297	643	278.2	280.5
2013-14	6462	15334	464.7	410.9	329	702	308.4	306.2
2014-15	7428	15955	534.2	427.5	367	683	343.5	298
2015-16	8335	16372	599.4	438.7	412	724	386.3	316
2016-17	9509	18087	683.8	484.7	460	750	431.1	327.3
CAGR*, %	13.81	12.02			10.02	9.41		

*2000-01 to 2016-17

The literature is replete with the studies quoting the case of India, wherein the role of white revolution in farm income has won accolades by surpassing the gains of the green revolution (Birthal and Taneja, 2006 and Damodaran, 2017). The present analysis has given a detailed comparison of the value of milk output and that of paddy and wheat collectively for India and Punjab for possible approval of this point (Table 6).

Table 6: Value of milk group in relation to paddy and wheat

Particulars	Value of output					
	India			Punjab		
	Milk (Rs Billion)	Paddy +Wheat (Rs Billion)	Value of milk relative to paddy + wheat, %	Milk (Rs Billion)	Paddy +Wheat (Rs Billion)	Value of milk relative to paddy + wheat, %
2000-01	946	1117	84.6	86	166	52
2001-02	1005	1228	81.8	92	166	55.1
2002-03	1043	1015	102.9	95	162	58.6
2003-04	1104	1199	92.1	100	171	58.2
2004-05	1239	1209	102.4	106	182	58
2005-06	1328	1348	98.5	115	189	60.7
2006-07	1450	1571	92.3	129	219	58.8
2007-08	1653	1904	86.8	148	276	53.5
2008-09	1950	2255	86.5	161	319	50.5
2009-10	2287	2289	99.9	181	336	53.9
2010-11	2638	2551	103.4	199	360	55.2
2011-12	3278	2887	113.5	219	397	55.1
2012-13	3722	3300	112.8	241	442	54.5
2013-14	4232	3632	116.5	266	473	56.1
2014-15	4958	3557	139.4	300	452	66.3
2015-16	5608	3741	149.9	339	502	67.5
2016-17	6292	4162	151.2	379	529	71.5
CAGR*, %	13.56	9.99		10.05	9.01	

*2000-01 to 2016-17

It can be observed that, it was in year 2002-03, when the value of milk output in India for the first time had surpassed that of paddy and wheat taken together, by 28 billion. Thereafter in year 2004-05, the value of milk output exceeded that of paddy and wheat but the lead was not sufficient enough to attract the attention of policy makers. As indicated by the value of milk relative to paddy and wheat expressed in percentage terms, the milk group has been maintaining

its lead since 2010-11 and the gap has widened to Rs 2130 billion by 2016-17. In case of Punjab, where paddy wheat rotation is the mainstay of agriculture, the value of milk output did increase at an impressive rate of 10.0 per cent but could not undermine the importance of wheat and paddy in Punjab's agri economy.

Conclusion

The present study concluded that livestock sector remains the cardinal pillar of Indian agriculture. The analysis conclusively establishes the contribution of Punjab in livestock production. The overtime decline in the share of Punjab in country's livestock output reaffirms that the rest of Indian states are also making inroads into the livestock sector in a big way. The study further delineates that value of output from livestock sector has been increasing at a higher pace in comparison to that from agriculture sector in country at a large and state in particular. The comparison of value of milk output with that of paddy and wheat together highlighted that an impressive increase in the value of milk output over the study period could not undermine the importance of wheat and paddy in Punjab's agri economy thus bringing forth the need for ensuring better prices to livestock producers of Punjab to make livestock rearing more remunerative.

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Conflict of Interests

There is no conflict of interest.

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