
A COMPARATIVE ANALYSIS OF MEAT PRODUCTION IN SELECTED INDIAN STATES

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Abstract

Healthy food consumption is the basic for making healthy country both vegetarian and non vegetarian foods are followed by people in the world. The present study has been exploring the non vegetarian food hobbies and meat production in India. Meat production in India is gradually increasing from past two decades. Presently India is one of the largest meat producers in the world. It's very important to improve the meat sector in India because of its important role in generating income, employment and nutrients. The present study is an attempt to find out the importance of the meat sector in India and identify the factors which affecting meat production. It also attempts to analyse the growth pattern of meat production in selected Indian states.

Keywords: Meat Production, Growth Pattern, Food.

Introduction

The domestication of animals was carried out during Neolithic times along with the cultivation of cereals. First Goats and Sheep, second cattle and pigs and finally other animals such as horses and asses were domesticated (Indian Journal of Animal Sciences, 1980). India has the privilege of processing a wowing 45 percent of the total animal population of the world but its contribution to the world meat production is meager comparatively (Bangalore Sheep and Goat Farm Training and Consultancy report, 2013). Indian meat production is mainly from cattle, buffalo, sheep, goats, pigs and poultry. Due to the genital make up and other conditions meat production in India has not reached the expected level yet. Animal husbandry sector has undergone a lot of transformation in the last two decades and has been contributing enormously in

providing animal-based food to the people. As per the recommendations of the World Health Organization, the annual average requirement of meat per individual in India is 11Kgs, whereas the percept availability of meat in India is only 5Kgs. There is a gap of 6Kgs per person per year. That means to say the availability of animal protein per person in India is only 1.7grams.

The consumption of meat makes the considerable contribution of protein, vitamins and fat into the human body and these nutrients are the most important for the healthy life. Different types of consumption pattern have been followed by the human according to their taste, preference and religion. In the world some people follow the vegetarian food habit and some of them are non vegetarian. India is one of the largest meat producers in the world. Meat production in India has been gradually increasing. Meat is a prime eaten food in the world and varies worldwide according to the cultural and economic condition. The present study is an attempt to study the growth of meat production in India and the comparative analysis of meat production differences among the selected states of India. In order to fulfill the objectives, secondary data regarding the meat production of different Indian states for the period 2009-10 to 2013-14 has been used and analyzed by using Two-way ANOVA method.

Hypothesis

H₀: there is no difference in meat sources and production level among the selected states in India.

H₁: there is a difference in meat sources and production level among the selected states in India.

Analysis and Data Interpretation

For the purpose of the comparative study, five Indian states viz., Bihar, Goa, Karnataka, Maharashtra and Tamil Nadu have been selected and the meat production of five categories of animals namely cattle, buffalo, sheep, goat and pig have been selected.

Table 1: Annual Meat Production in selected states of India, during 2009-10 to 2013-14 (in 000' Tonnes)

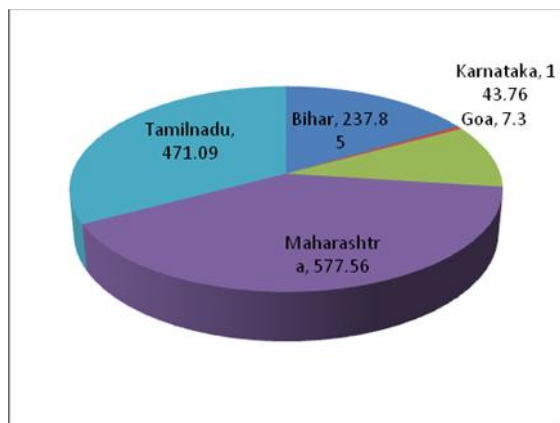
Sl. No	States	Year				
		2009-10	2010-11	2011-12	2012-13	2013-2014
1	Bihar	218.36	222.57	227.78	228.28	292.28
2	Goa	6.32	6.70	10.08	8.29	5.12
3	Karnataka	119.25	123.85	139.58	166.06	169.87
4	Maharashtra	544.89	562.98	584.66	590.68	604.63
5	Tamilnadu	501.98	466.28	460.36	462.34	464.51

The above table reveals that the total meat production in India during 2009-10 to 2013-14 (000' tonnes).

The average meat production in Bihar is 237.85 (000' tonnes) and the CAGR (compounded annual growth rate) is 6% for five years, for Goa, average and CAGRs are 7.3 and -4.12% respectively, it shows meat production in Goa is decreased at 4.12

percent. The average and CAGR of Karnataka meat production are 143.76 (000' tonnes) and 7.33%, it shows the Karnataka meat production is gradually increasing at 7.33% over the five years at 577.56 (000' tonnes) and 2.1% of average and CAGRs are recorded in the state of Maharashtra, and the average and CAGRs of Tamilnadu states are 471.09 (000' tonnes) and -1.53% respectively, it shows CAGR of Tamilnadu has been decreased by 1.53%.

Graph 1: Average Meat Production in Selected states of India, during 2009-10 to 2013-14



Univariate Analysis of Variance Between-Subjects Factors

		Value Label	N
Selected Indian States	1.00	Bihar	25
	2.00	Goa	25
	3.00	Karnataka	25
	4.00	Maharashtra	25
	5.00	Tamil Nadu	25
Sources of Meat Production	1.00	Cattle	25
	2.00	Buffalo	25
	3.00	Sheep	25
	4.00	Goat	25
	5.00	Pig	25

Above graph shows the average meat production in selected states of India and it also reveals that Maharashtra state has recorded highest average rate whereas Goa state has recorded the low average meat production. Following analysis has been carryout on the basis of meat production in selected states in India (source: Animal Husbandry Department report)

Descriptive Statistics

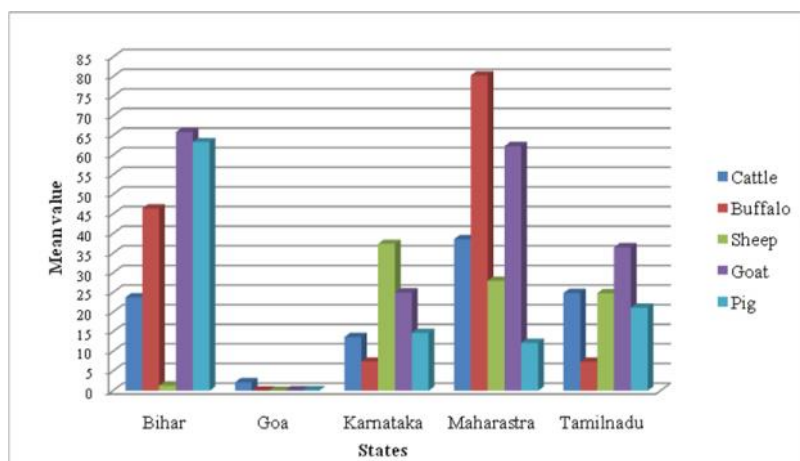
Dependent Variable: Meat Production during 2009-10 to 2013-14 (000' tonnes)

Selected Indian States	Sources of Meat Production	Mean	Std. Deviation	N
Bihar	Cattle	23.8020	6.18491	5
	Buffalo	46.4080	7.94217	5
	Sheep	1.3140	.18407	5
	Goat	65.9260	8.55967	5
	Pig	63.3420	4.88941	5
	Total		40.1584	25.72190
Goa	Cattle	2.1320	1.06458	5
	Buffalo	.0340	.04219	5
	Sheep	.0000	.00000	5
	Goat	.1300	.21012	5
	Pig	.0860	.04159	5
	Total		.4764	.95534
Karnataka	Cattle	13.6700	2.94391	5
	Buffalo	7.4220	1.47388	5
	Sheep	37.4260	5.01569	5
	Goat	25.0300	2.97605	5
	Pig	14.7300	2.38865	5
	Total		19.6556	11.13242

Maharashtra	Cattle	38.5800	4.15296	5
	Buffalo	80.3380	22.58852	5
	Sheep	28.0060	7.50387	5
	Goat	62.3120	5.14065	5
	Pig	12.1760	6.49137	5
	Total	44.2824	26.90733	25
Tamil Nadu	Cattle	24.8860	12.72293	5
	Buffalo	7.3620	1.24017	5
	Sheep	24.8280	8.99224	5
	Goat	36.5300	9.14095	5
	Pig	21.1400	19.49950	5
	Total	22.9492	14.46548	25
Total	Cattle	20.6140	13.86492	25
	Buffalo	28.3128	32.82128	25
	Sheep	18.3148	16.17564	25
	Goat	37.9856	25.53255	25
	Pig	22.2948	23.71989	25
	Total	25.5044	24.11923	125

The above table shows the mean and standard deviation of the meat production in five states of India. The mean values of the analysis show that there is a difference in the meat production in the selected states. Out of five states, Maharashtra has been recorded with highest mean values both in cattle meat and buffalo meat production (38.58 and 80.33) and Karnataka has been producing highest meat in sheep.

In the meat production of goat and pig, highest average value is recorded in the state of Bihar. In the table the mean values in meat production shows that Maharashtra has the highest production and Bihar, Tamil Nadu, Karnataka and Goa have been followed.



Graph 2: Mean of the Selected Indian States

The above graph-2 shows the mean of the selected Indian states in meat production, Maharashtra has highest mean value in buffalo meat production and Bihar is in goat meat and in pig meat production. Goa has least in all sources of meat production.

Tests of Between-Subjects Effects

Dependent Variable: Meat Production during 200-10 to 2013-14 (000' tonnes)

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	37101.666(a)	8	4637.708	15.356	.000
Intercept	81309.302	1	81309.302	269.223	.000
States	30862.282	4	7715.571	25.547	.000
Meat sources	6239.384	4	1559.846	5.165	.001
Error	35033.750	116	302.015		
Total	153444.718	125			
Corrected Total	72135.416	124			

a. R Squared = .514 (Adjusted R Squared = .481)

Both the main effects and the interaction term are significantly affecting the mean production of meat among different states because their respective p-values are extremely small and are less than the level of significance. However we can reject the null hypothesis and accept the alternative hypothesis. Therefore there is a difference in meat sources and production level among the selected states in India.

Post Hoc Tests

Selected Indian States

Multiple Comparisons

Dependent Variable: Meat Production during 200-10 to 2013-14 (000' tonnes)

Bonferroni

(I) Selected Indian States	(J) Selected Indian States	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Bihar	Goa	39.6820(*)	4.91541	.000	25.6155	53.7485
	Karnataka	20.5028(*)	4.91541	.001	6.4363	34.5693
	Maharashtra	-4.1240	4.91541	1.000	-18.1905	9.9425
	Tamil Nadu	17.2092(*)	4.91541	.007	3.1427	31.2757
Goa	Bihar	-39.6820(*)	4.91541	.000	-53.7485	-25.6155
	Karnataka	-19.1792(*)	4.91541	.002	-33.2457	-5.1127
	Maharashtra	-43.8060(*)	4.91541	.000	-57.8725	-29.7395
	Tamil Nadu	-22.4728(*)	4.91541	.000	-36.5393	-8.4063
Karnataka	Bihar	-20.5028(*)	4.91541	.001	-34.5693	-6.4363
	Goa	19.1792(*)	4.91541	.002	5.1127	33.2457
	Maharashtra	-24.6268(*)	4.91541	.000	-38.6933	-10.5603
	Tamil Nadu	-3.2936	4.91541	1.000	-17.3601	10.7729
Maharashtra	Bihar	4.1240	4.91541	1.000	-9.9425	18.1905
	Goa	43.8060(*)	4.91541	.000	29.7395	57.8725
	Karnataka	24.6268(*)	4.91541	.000	10.5603	38.6933
	Tamil Nadu	21.3332(*)	4.91541	.000	7.2667	35.3997
Tamil Nadu	Bihar	-17.2092(*)	4.91541	.007	-31.2757	-3.1427
	Goa	22.4728(*)	4.91541	.000	8.4063	36.5393
	Karnataka	3.2936	4.91541	1.000	-10.7729	17.3601
	Maharashtra	-21.3332(*)	4.91541	.000	-35.3997	-7.2667

Based on observed means

* The mean difference is significant at the .05 level.

From the above table it reveals that the multiple comparisons of selected states of India based on meat production. However the table shows the meat production is differed significantly from each other's due to the geographical difference and preference of the consumers.

Sources of Meat Production

Multiple Comparisons

Dependent Variable: Meat Production during 200-10 to 2013-14 (000' tonnes) Bonferroni

(I) Sources of Meat Production	(J) Sources of Meat Production	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Cattle	Buffalo	-7.6988	4.91541	1.000	-21.7653	6.3677
	Sheep	2.2992	4.91541	1.000	-11.7673	16.3657
	Goat	-17.3716(*)	4.91541	.006	-31.4381	-3.3051
	Pig	-1.6808	4.91541	1.000	-15.7473	12.3857
Buffalo	Cattle	7.6988	4.91541	1.000	-6.3677	21.7653
	Sheep	9.9980	4.91541	.442	-4.0685	24.0645
	Goat	-9.6728	4.91541	.515	-23.7393	4.3937
	Pig	6.0180	4.91541	1.000	-8.0485	20.0845
Sheep	Cattle	-2.2992	4.91541	1.000	-16.3657	11.7673
	Buffalo	-9.9980	4.91541	.442	-24.0645	4.0685
	Goat	-19.6708(*)	4.91541	.001	-33.7373	-5.6043
	Pig	-3.9800	4.91541	1.000	-18.0465	10.0865
Goat	Cattle	17.3716(*)	4.91541	.006	3.3051	31.4381
	Buffalo	9.6728	4.91541	.515	-4.3937	23.7393
	Sheep	19.6708(*)	4.91541	.001	5.6043	33.7373
	Pig	15.6908(*)	4.91541	.018	1.6243	29.7573
Pig	Cattle	1.6808	4.91541	1.000	-12.3857	15.7473
	Buffalo	-6.0180	4.91541	1.000	-20.0845	8.0485
	Sheep	3.9800	4.91541	1.000	-10.0865	18.0465
	Goat	-15.6908(*)	4.91541	.018	-29.7573	-1.6243

Based on observed means.

* The mean difference is significant at the .05 level.

The above table shows the multiple comparison of meat production of cattle, buffalo, sheep and pig according to their mean differences. The buffalo meat production has been recorded the highest mean difference as compared to rest of the sources of meat production in selected Indian states. There has been a significant difference in meat production in different sources it states there is no inter dependency in meat production of cattle, buffalo, sheep, goat and pig.

Factors affecting meat production in India

1. Preference towards vegetation and non vegetarian foods.
2. Cultural and religious also the socio-economic conditions of the people.
3. Diet habits and health conditions.
4. Conditions of the slaughter houses and the meat shops have less demanded for the frozen meat.
5. Disease from meat consumption such as mouth and foot disease etc...

Conclusion

Meat production plays an important role in Indian economy it also contributes to the development of live stock. The meat sector providing the more number of employment opportunities in India. Most of the Indians are depending on meat sector for their income and it improving their living slandered. India following the traditional meat production system, the modern and scientific production methods are needed to meet present demand in domestic and international markets.

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