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Structural Changes in Milk Production of Uttar Pradesh

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A B S T R A C T

This paper has focused into the structural changes of milk production in Uttar Pradesh. The state is highest milk producer of India with the change in production from 14.648 million tonnes in 2001-02 to 25.198 million tonnes in 2014-15. Growth rate of milk production in the state was found 4.27 per cent per annum and the per capita availability of milk grew at the rate of 2.39 per cent per year. Population of different milch animals has increased from the year 2003-07 to 2007-12. There is large percentage increase in cross-bred population of cattle *i.e.* 109.8 per cent, but contribution of buffalo milk in total milk production of the state was found highest.

Introduction

India is largest producer of milk and ranks first in milk production in world. Total milk production of India is 146.3 million tonnes and per capita availability is 322 gm per day in the year 2014-15 (NDDB). Livestock sector contributes 3.9 percent in national GDP.

Among all the states Uttar Pradesh is highest producer of milk in India with 25.19 million tonnes milk production. Uttar Pradesh contributes 17.2 percent in national milk production in the year 2014-15. Milk production has increased tremendously from 14.64 to 25.19 million tonnes in the year 2001-02 to 2014-15. Large proportion of breedable buffaloes in Uttar Pradesh compared to the country as whole, suggested that buffaloes were the major milch animals in the state. The milk yield per cow was 1.83 litres and that of buffalo 3.15 litres per day was also more than the national average for the country as a whole (Payasi *et al.*, 2015). The per capita availability of milk in the state was 318 gm per day in 2013- 14, as against 307 gm for the country (NDDB). Most important and nodal agency of dairy development in the state is Pradeshik.

Cooperative Dairy Federation (PCDF), which was established in the year 1962 for achieving multiple objectives of increasing milk production, processing and marketing of milk/milk products and development of infrastructure to promote dairy industry within the state (Nishi *et al.*, 2011). The dairy sector has shown a significant structural change over time with respect to change in

milk production, per capita availability and composition of dairy species. Keeping in view the above facts into consideration this study was undertaken to know the process of structural changes in terms of trends in milk production, per capita availability, share of different milch animals in milk production and composition of dairy species of Uttar Pradesh.

Materials and Methods

The study was conducted in Uttar Pradesh based on the data taken from different published sources. Data on milk production and per capita availability of Uttar Pradesh were taken from the site of National Dairy Development Board. Data on number of milch animals and milk production by different milch animals were taken from Basic Animal Husbandry Statistics, published by the Department of Animal Husbandry, Government of India. Simple percentage was used to know the share of different milch animals in total milk production and change in number of milch animals. Besides this, to find the growth rate of milk production and per capita availability following functional form was used:

$$Y = A (1+r)^t$$

$$\ln Y = \ln a + b\, t \quad [b = \ln (1+r)]$$

Growth rate was calculated by using following formula:

$$r = [\text{antilog } (b)-1] \times 100$$

Where,

Y = milk production / per capita availability of milk
a = constant term
b = regression coefficient
r = growth rate of Y

Results and Discussion

Trends in milk production and per capita availability of milk

The milk production of Uttar Pradesh is increasing over the years as shown in figure 1. Share of Uttar Pradesh in total milk production of the country is shown in table 1, which is almost constant because milk production of country also shows increasing trend same as the state.

Milk production of the state is increasing from 14.648 million tonnes in the year 2001-02 to 25.198 million tonnes in 2014-15 and the growth rate during this period was found 4.27 per cent per annum which is almost same as country's growth rate i.e. 4.44 per cent.

Table 2 shows per capita availability of milk in Uttar Pradesh and India. It also shows increasing trend from 241 gm per day in 2001-02 to 318 gm per day in 2013-14 and growth rate was found to be 2.39 per cent per annum.

Share of milk production by different animals

Table 3 shows per cent share of cow, buffalo and goat milk in total milk production. This table concludes that contribution of buffalo milk was highest over the years followed by non-descript cows, cross-bred cows and goat.

Milk production by different milch animals has increased from 2007-08 to 2012-13. Share of different animal type in total milk production of Uttar Pradesh during 2007-08 and 2012-13 is shown in figure 2 and 3. The change in share of each animal type in total production is not much, contribution of cross-bred cows, non-descript cows, buffalo and goat changes from 7.72 to 7.27, 17.78 to 18.18, 68.69 to 69.37 and 5.80 to 5.18 per

cent respectively.

Table.1 Share of Uttar Pradesh in total milk production of India

Year	Milk production (in million tonnes)		Percent Share
	Uttar Pradesh	India	
2001-02	14.648	84.400	17.36
2002-03	15.288	86.200	17.74
2003-04	15.943	88.100	18.10
2004-05	16.512	92.500	17.85
2005-06	17.356	97.100	17.87
2006-07	18.095	102.600	17.64
2007-08	18.861	107.900	17.48
2008-09	19.537	112.200	17.41
2009-10	20.203	116.400	17.36
2010-11	21.031	121.800	17.27
2011-12	22.556	127.900	17.64
2012-13	23.330	132.400	17.62
2013-14	24.194	137.700	17.57
2014-15	25.198	146.300	17.22

Source: computed from nddb data

Table.2 Per capita availability of milk

Year	Per Capita Availability of Milk (gm per day)	
	Uttar Pradesh	India
2001-02	241	225
2002-03	245	230
2003-04	250	231
2004-05	254	233
2005-06	262	241
2006-07	267	251
2007-08	274	260
2008-09	278	266
2009-10	283	273
2010-11	289	281
2011-12	310	290
2012-13	312	299
2013-14	318	307

Source: NDDB

Table.3 Share of cow, buffalo and goat milk

Year	Per Cent Share in Total Milk Production			
	Cross-bred Cows	Non-descript Cows	Buffalo	Goat
2007-08	7.72	17.78	68.69	5.80
2008-09	7.73	17.74	68.76	5.78
2009-10	7.76	17.69	68.81	5.74
2010-11	7.77	17.64	68.93	5.67
2011-12	7.68	18.19	68.94	5.19
2012-13	7.27	18.18	69.37	5.18

Source: Computed from BAHS (2010, 2014)

Table.4 Change in population of livestock during 2003-07 and 2007-12

Animal type	Population during 2003-07 and 2007-12					
	2003	2007	% change	2007	2012	% change
Cross-bred cows	642	791	5.36	791	1660	109.8
Non-descript cows	4901	5537	3.10	5537	6595	19.12
Buffalo	10379	10565	0.44	10565	13950	32.04
Goat	12941	14793	3.40	14793	15586	5.4

Source: BAHS (2010, 2014).

Fig.1 Milk production of UP during 2001-02 to 2014-15

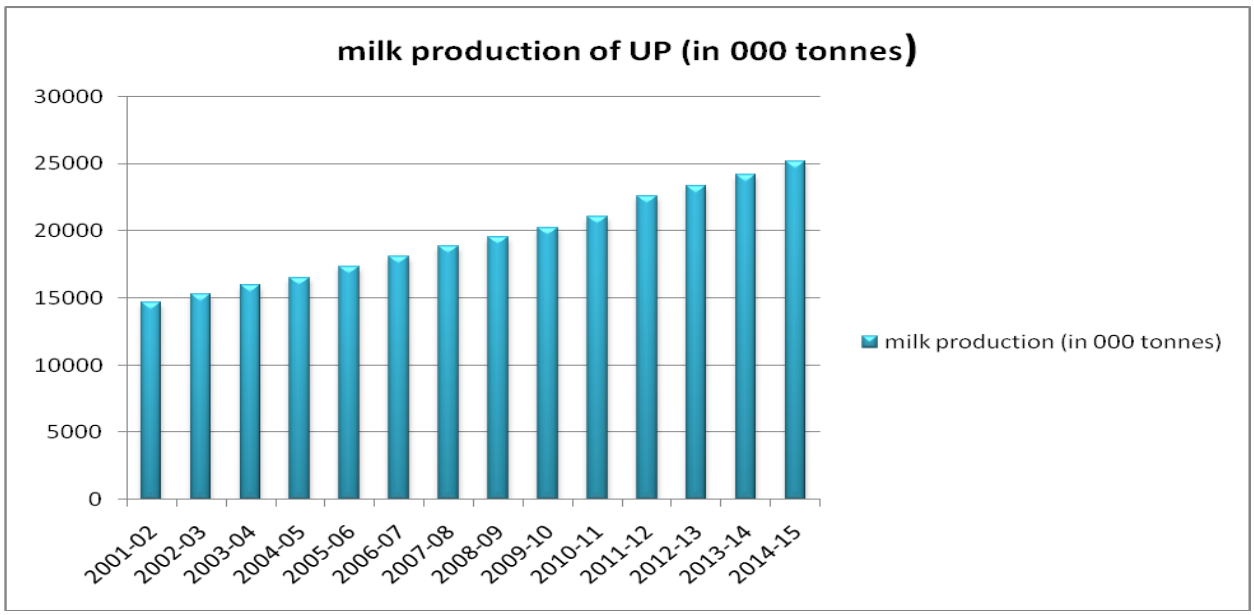


Fig.2 Share of different animal type in total milk production during 2007-08
Note: CB - Cross-bred cow, ND - Non-descript cow

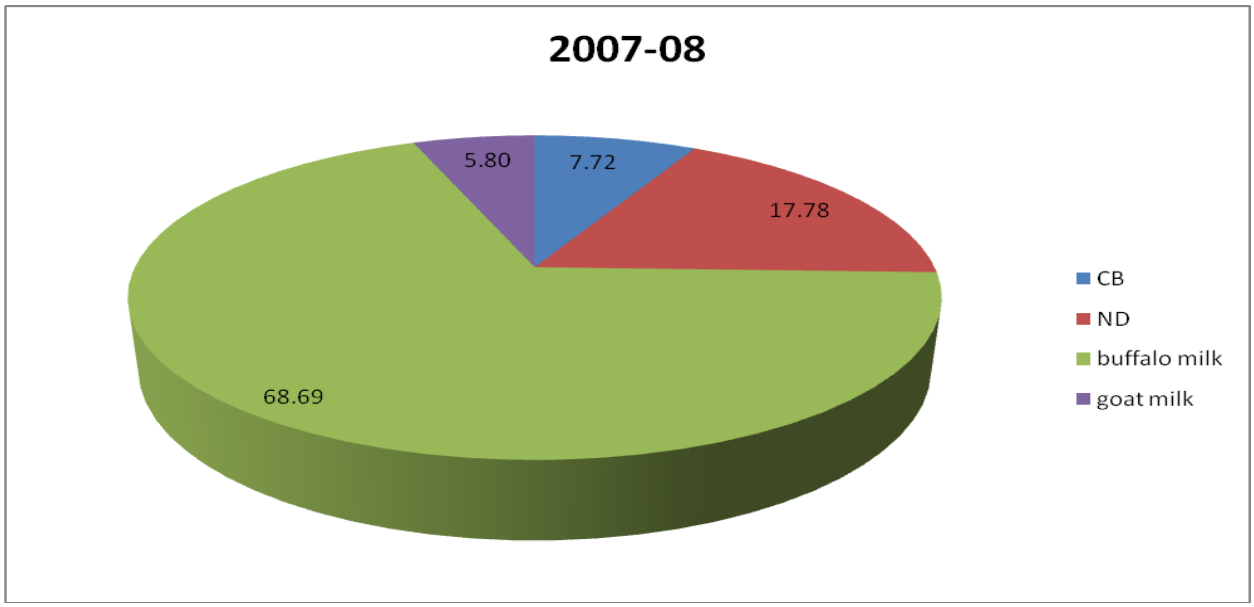
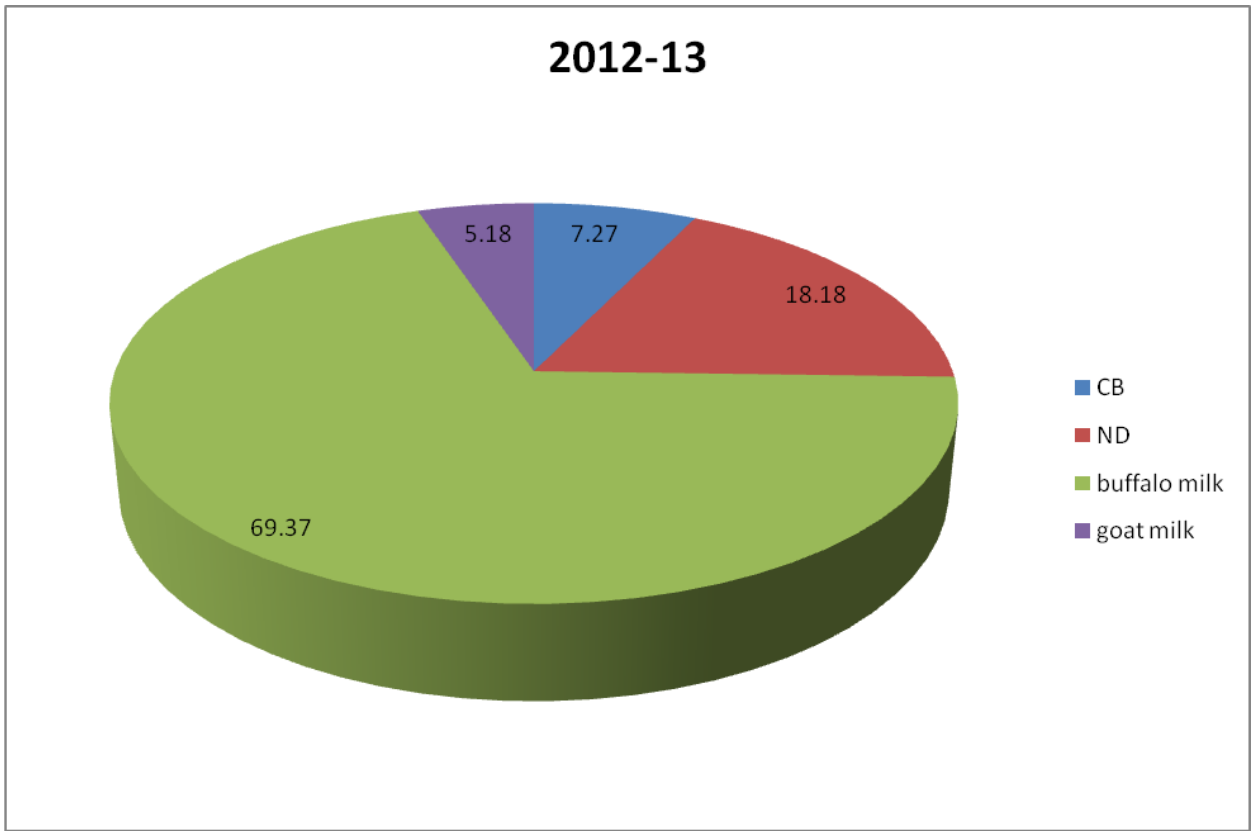


Fig.3 Share of different animal type in total milk production during 2012-13



Change in population of livestock during 2003-07 and 2007-12

Another dimension is change in dairying population. The results have suggested that, from 2003 to 2007, about 5.36 per cent increment in cross bred cows, 3.10 per cent in non descript cows, 0.44 per cent in buffalo and 3.40 per cent in goat. During 2007 to 2012, about 109.8, 19.12, 32.04, and 5.4 per cent increment in the population of cross bred cows, non descript cows, buffalo and goat respectively (Table 4). Per cent increase in the population of different animals was high during the year 2007-12. Increase in cross-bred population was considerable and this is due to increase in awareness among farmers.

In conclusion, the study has revealed that milk production in Uttar Pradesh is increasing over the years with growth rate of 4.27 per cent and the growth rate of per capita availability of milk is 2.39 per cent per annum.

In the state, contribution of buffalo milk in total milk production is highest due to large population of buffalo followed by non-descript cows and cross-bred cows. Besides this, goat population is much more than other milch animal but contribution is low. The reason for this could be low average milk yield of goat which was 0.76 kg per day during 2012-13 (BAHS, 2014).

Another important issue is that, change in cross-bred population was highest among other milch animals but contribution is still low. This could be due to low milk yield variety. Therefore there is need of breed improvement program in the state.

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