

MILK PROBLEM

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by
J. N. MANKAD

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IMPORTANCE OF MILK AS A DIET

The potency and efficiency of milk has been universally acknowledged; and in a lacto-vegetarian country like India, its importance as the daily diet for the people is supreme. As observed by scientists and food experts, "Milk is a mysterious fluid containing 101 substances combined in a suitably proportioned mixture. It cannot be synthesised. It has, therefore, no effective substitute and some of the nutritious components of whole milk are not yet identified. In its 8 proteins there are 19 amino acids, in its butter 11 fatty acids, 6 vitamins, 8 enzymes, 25 minerals, 1 sugar (lactose), 4 phosphorus compounds, 14 nitrogenous substances and some more unknown components, some sustained and some dissolved in its natural content."

SUPERIORITY OF COW'S MILK

India's milk supply is now mainly drawn from cows and buffaloes, though in the past when cows flourished and were heavy milkers, cows' milk was used for direct consumption while buffaloes' milk was used for dairy products like butter and ghee. Cow's milk being much nearer to human milk in dietetic values is more nourishing and digestible. Scientific experiments in the laboratory and actual dietetic experiments on the human system combine to prove concurrently the superiority of cows' milk over that of the buffalo especially in the following matters:

1. In cow's milk proteins are easier of digestion being softer than those in buffaloes' milk.
2. Cows' milk contains sufficient fats to digest the

proteins and hence is more useful to children and invalids. Buffaloes' milk fat is inferior in comparison.

3. The vitamin contents in cows' milk are higher than that in buffaloes' milk. Cows' milk fat is the richest source of vitamins under the sun, especially vitamins A, B and D.
4. Enzymes which help digestion and promote elimination of poisons known as toxins and ptomaines in the system are more abundant and suitable in cows' natural raw milk than in that of the buffaloes.
5. Salts in cows' milk are also in a more soluble and assimilable form than in buffaloes' milk.

In spite of this, partly due to the deterioration of cows as milkers and partly due to changed habits, cows are being replaced by buffaloes as dairy animals in most of the provinces of India. Perhaps in no other country in the world is buffalo milk so freely used as in India. In view of the fodder resources of the country different cattle for different purposes cannot be supported such as buffaloes for milk supply, bullocks for agriculture and cows for bullocks and manure. However, to-day there is a keen competition between buffaloes and cows for milk supply which is not desirable from considerations of the health and of the agricultural needs of the country, 85 per cent of the population of which has to depend upon agriculture.

SHORTAGE OF MILCH CATTLE

Even with the replacement and addition of buffaloes in place of cows, the milk supply of the country is very poor and both the milch cattle and milk supply

are being reduced from year to year. The following figures of our population and livestock are such as to cause anxiety to any thinking person :

	1920	1940	
Cows	4,38,60,000	3,94,60,000	10.1/2 per cent decrease
Population	27,45,40,000	33,32,20,000	21.1/2 per cent increase

As against this, consider the following livestock position of other countries.

	1935	1940	Increase
South Africa	1,05,75,000	1,20,60,000	14 per cent
England	97,59,000	1,05,54,000	8 "
Germany	1,89,38,000	1,99,00,000	5 "

Thus, when the number of cows in our country should have increased with the increase in population, they have, as a matter of fact, decreased by about 13 per cent. This has further reduced our average consumption of milk, low as it was in comparison with other countries.

MILK CONSUMPTION PER CAPITA

New Zealand	56 ozs.	Germany	35 ozs.
Australia	45 "	Holland	35 "
Norway	48 "	Belgium	35 "
Denmark	40 "	France	30 "
England	39 "	Switzerland	29 "
Canada	35 "	Poland	22 "
America	33 "	India	6 "

There is no wonder that with six ounces as the average consumption of milk, our death-rate should be higher than in other countries. The following figures tell their own tale :

Death-rate per 1000.

	Infants under one year	Adults
England	172	17
Denmark	136	15
New Zealand	32	12
Scotland	145	17
INDIA	260	38.2
Norway	102	15
Sweden	102	16
Holland	50	17

It should be noted that 26 per cent of the deaths of infants under one year are from entirely preventible causes such as malnutrition of babies and mothers. Due to increased mortality, the average of life in India which was 40 years about a century back has now come down to 23 years whereas in England it is 33 years while in Japan it is 44 years.

TOTAL PRODUCTION OF MILK IN INDIA

We have in our country at present about 4,50,00,000 cows and 2,03,00,000 buffaloes and 88,00,000 goats giving annually 74,36,00,000 maunds of milk. Deducting out of this about 12,38,00,000 maunds of milk consumed by calves, the net amount of milk available for consumption by the people comes to about 62,98,00,000 maunds per year giving an average for consumption of about 6 ozs. per head. Compare this with the normal daily consumption of one pint (20 ozs.) recommended by the experts. To produce so much more milk, we would need about three times as many milch cattle of the existing category as we have now or we should have to increase the milk yields of the present cows to that extent. In any case, the shortage of milch cattle in the country is glaring.

CONDITIONS IN BOMBAY PROVINCE

As has been noted in the report of the Marketing of Milk in India, the average daily *per capita* consumption of milk including milk products is estimated at 5.8 ozs. It varies considerably from tract to tract according to the production of milk and density of population, the condition of the people as well as their dietetic habits as will be seen from the undermentioned

figures of *per capita* consumption per day in various areas :

AREA	PER CAPITA IN OZS.	AREAS	PER CAPITA IN OZS.
Kashmir State	4.7	Sind	18
N. W. F. Province	6.8	BOMBAY PROVINCE	5.5
Punjab	15.2	Mysore State	4.4
Delhi	15.2	Madras Province	3.7
Rajputana	11.2	Hyderabad State	3.9
Central India	7.4	Central Provinces	1.8
United Provinces	7.0	Bihar	4.2
Orissa	3.4	Bengal	2.8
Assam	1.3		

Thus, in the Province of Bombay, though it leads other provinces in many respects, the consumption of milk is far below the minimum average need as recommended by experts.

Looking to the actual consumption of milk, it is found that the intake of milk and milk products in urban areas is almost twice the daily average consumption in India as a whole.

It is due to this that out of the total number of cows and buffaloes in the country roughly 4 to 6 per cent are maintained in urban areas for the production of milk and they are usually the best milch cattle. One-half the requirements of fluid milk is met by these, while the rest is drawn from the milk produced in rural areas.

PROVINCE OF BOMBAY

In the Province of Bombay, there are about 77,220 cows and 119,203 buffaloes in urban areas, while the rest are in rural areas as under. The whole of the milch cattle are distributed in various areas as under :

	COWS (in lakhs)		BUFFALOES (in lakhs)	
Urban	19.46	4 p.c.	12.75	5.9
Rural	47.4	96 p.c.	201.61	94.1

INADEQUACY OF MILCH CATTLE

The number of milch cattle both in urban and rural areas is inadequate to meet the minimum requirements of milk and milk products in the country. The production of cattle has not kept pace with the increase in population. For example, whereas the population has increased by about 17 per cent, the cattle have increased only by 5 per cent. Consequently, the supply of milk should have also decreased to that extent. The undermentioned figures of comparative increase or decrease in cattle in the Province of Bombay in the years 1929-30 and 1939-40 supply much food for thought :

YOUNG STOCKS (in thousands)

1929-30	1934-35	1939-40	Increase	Decrease
2,796	3,109	2,925	-4.6	-3.9

CATTLE FOR WORK ONLY

3,408	3,637	3,262	+0.1	-9.7
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(From Season and Crop Report of the Bombay Province, 1939-40.)

Considering the figures of slaughter and figures of increase or decrease in cattle and young stock referred to above, it can be concluded that (1) the production of cattle is much less than the loss of cattle by slaughter, (2) the number of cows that is the foundation stock for future production of cattle is much lower than required to supplement the losses, (3) and that even now a large number of working bullocks is being slaughtered. This makes a strong case for the preservation of all cows capable of regeneration, useful bullocks and young stock.

CAUSES OF MILK SHORTAGE

Considering the causes responsible for the inadequacy of milk supply in the Province, it has to be pointed out that apathy amounting to callous indifference on the part of the State and the people is the main reason for the general deterioration in quality and depletion in quantity of the milch cattle in the Province and also in the country. Only looking as far back as the times of Moghul Emperors when cows with an average of 32 lbs. of milk per day and bullocks travelling 80 to 90 miles per day at a stretch were commonly found, as recorded in *Ai-Ni-Akbari*, it is noticed that cattle in those days were of good dairy and draught quality and the number also was comparatively greater than now. But with the beginning of foreign rule in India, cattle began to be depleted in number and deteriorated in quality. The main factors that brought about the present condition of cattle are: (1) Conversion of grazing areas into cultivable lands encouraged partly by the increase in population and partly by the craze for raising money crops and by reservation of large areas for forests, (2) insufficiency of good stud bulls and promiscuous breeding through scrub bulls, and (3) indiscriminate slaughter of cattle in the cities.

INADEQUACY OF FODDER AND GRAZING

Here, the situation is so serious that it is difficult to find sufficient grazing even in rural areas. This has told upon the cattle breeding industry which flourished in the past through professional breeders. In certain areas, the fodder shortage is so great that even the cultivators and private cattle-keepers find it difficult

to maintain their cattle in certain parts of the year. This, along with the poverty of the people, induces them to sell their cattle in the cattle markets. In certain paddy areas like the Kolaba, Ratnagiri and Thana Districts, it has almost become a rule with the cultivators to sell away part of their cattle every year as during part of the year the bullocks have little work. Very frequently, they are compelled to do so to pay land revenue for the *sowcar's* dues and meet social expenses. Thus, from year to year good stock is being sold away and when the monsoon sets in, the cultivators raise loans and purchase bullocks of inferior quality with the result that inferior cattle take the place of superior ones. Cows, neglected and crossed by scrub bulls, have deteriorated to such an extent that they yield just enough milk to support their calves and are merely meant to produce draught cattle of an inferior type.

SLAUGHTER OF CATTLE

On the other hand, the demand for beef having increased, butchers and their agents regularly haunt cattle markets and villages to exploit rural areas for getting cattle for slaughter. As they offer better prices than ordinary cattle-keepers do, needy cultivators are induced to sell their spare animals for slaughter. As a matter of fact, the paddy-growing areas of Thana, Kolaba and Ratnagiri and districts like Ahmednagar, Sholapur, Satara, and Belgaum and parts of Khandesh which abound in non-descript cattle, supply cattle for beef to the great detriment of their own agricultural needs and the supply of milk, so that the production and use of milk in these areas is negligible. In these

parts, buffaloes have begun to take the place of cows as milkers but they are also of an inferior breed and the fodder being coarse and feeding scanty, their yield of milk is poor.

CRIME OF THE CITIES

As pointed out above, the cities exploit the best milch cattle from the rural areas and then destroy them on their running dry. Besides, other cattle from the country-side are drafted to the slaughter house to supply the huge demand from the cities for fresh foods. As a rule, the best milch cattle are brought to the cities from breeding zones, kept under unnatural conditions till they give milk and then slaughtered on running dry after about 8 months. The young calves that accompany their dams also succumb to neglect and malnutrition. Thus the best milch cattle and their calves are destroyed within one year of their entry into the cities. The following figures of slaughter of cattle at slaughter houses in Bombay bear out the above statement:

ANIMALS	1937-38	1938-39	1939-40	1940-41
Bandra Buffaloes ...	10,486	11,278	11,112	11,753
Kurla ..	6,598	6,768	6,382	7,664
	17,084	18,046	17,494	19,411
Cows and Bullocks at Bandra ...	51,555	50,142	55,456	65,854

Thus, while the systematic breeding of better cattle is neglected, useful existing young cattle and their progeny are ruthlessly destroyed in the cities from year to year, with the result that the milk supply in the cities as well as in rural areas is being steadily reduced. Several thousands of villages are almost dry villages so far as milk is concerned, and its use in

daily diet is unknown to a majority of the rural population except the few rich middle classes who can afford to keep good milch cattle. In cities, the supply is inadequate and beyond the reach of men of average means. It is inevitable that with the present rate of destruction of useful milch cattle and young stock, the dearth of cattle should increase and the rates of milk should also correspondingly increase. This will be seen from the undermentioned approximate figures of rise in prices of milk in Bombay according to the rise in the prices of cattle in past years :

YEAR	Price of Milch	Price of Milch	Price of Milk in Bombay
	COW	BUFFALO	Per Bombay Seer (80 Tolas)
	Rs.	Rs.	Rs.
1918	65/-	110/-	0 3 9
1915	150/-	170/-	0 4 6
1918	250/-	250/-	0 7 6
1928	180/-	800/-	0 7 6
1941	175/-	200/-	0 7 6
1943	350/-	500/-	0 10 0
1944	350/-	700/-	0 14 0

During the last two years, the price of cattle feeds has also increased, but the main factor responsible for such an abnormal rise in the price of milk is the rise in the prices of milch cattle and their inadequacy.

On a brief review of the position of milch cattle and milk in Bombay it is found that Bombay usually maintains about 55,000 to 60,000 milch cattle, out of which about 20,000 buffaloes are in the City and the rest are in the suburbs producing daily about 8,000 maunds of milk. Adding about 2,000 maunds available from other sources, the average daily *per capita* consumption of milk hardly comes to about 1.5 tolas,

taking the present population figure at about 25 lacs of people.

To keep up even this standard of supply, Bombay has to import some 55,000 to 60,000 fresh milch buffaloes every year apart from about 10,000 buffaloes salvaged in the suburbs, while it annually exports only 12,000 dry buffaloes for salvage outside Bombay as will be seen from the undermentioned figures of export and import of milch cattle :

	IMPORTS	EXPORTS
1939—40	52,688	12,800
1940—41	54,280	12,480

Thus, Bombay needs about 40 to 45 thousand fresh milch cattle every year apart from the salvaged buffaloes to keep up its normal milk supply even at the poor *per capita* rate of 1.5 tolas.

It is also evident that out of such a large number imported from year to year, more than 50 per cent are destroyed and lost for further breeding. This huge economic loss is mainly responsible for shortage of milk supply both in the city of Bombay and in rural areas.

To-day the position is more anxious than ever before, as the normal supply of milch buffaloes from breeding areas has almost been cut off due to bans placed on their export by various Provinces and States. The quotas of buffaloes obtained hardly supply 15 per cent of the monthly needs, while about 10 per cent are obtained out of salvaged buffaloes coming to milk and about 10 per cent may be smuggled. Even then the supply falls short by about 60 per cent which is bound to reduce milk production, to encourage adulteration and to inflate prices.

MEASURES TAKEN

The various steps so far taken by the Government to correct this situation could be summarised as follows :

1. Reducing the slaughter of buffaloes especially in Bandra and Kurla;
2. Prohibiting the slaughter of other cattle including cows and buffaloes in the Province;
3. Encouraging the salvage of buffaloes through the Bombay Humanitarian League and on Government Farms by subsidising the transport of dry buffaloes for salvage and allotting permits for fresh milch buffaloes to replace the salvaged buffaloes;
4. Registering all stocks and controlling their movement;
5. Rationing and controlling prices of *chuni*, *guvar* and hay and regulating their supplies;
6. Protecting cattle from epidemics;
7. Prohibiting misuse of milk and milk products;
8. Distributing milk to children at subsidised rates;
9. Controlling wholesale prices of milk;
10. Encouraging imports of pasteurised milk from rural areas and milk powder from foreign countries.
11. Prohibiting use of milk by restaurants and catering houses.

Examining the above measures and the present situation of milk supply, it should be said that they have so far failed to improve the situation to any appreciable extent. It is evident that neither has the quantity of production increased nor have the rates

been reduced, while the consumption of milk has decidedly been reduced partly due to insufficiency and partly due to high rates.

Government have failed to secure the salvage of all useful dry buffaloes. If the actual number of buffaloes slaughtered has gone down, the quality of the animals slaughtered is still of the best since there is no inspection before slaughter of buffaloes as of other cattle. The present methods of salvage are also uneconomic, though subsidised to the extent of 50 per cent of the transport charges of dry buffaloes. There is no uniformity of system and permits for the return of salvaged buffaloes are unusually delayed. Lack of honest co-operation with Government on the part of the Gavlis and other agencies and the absence of co-operation between Government and the States in making the various measures successful is also responsible for the process of improvement in the situation being very slow. Government have so far failed to encourage the import of pasteurised milk from rural areas or to improve the present uneconomic, insanitary and unnatural methods of keeping cattle and of the production and handling of milk or the unorganised and wasteful system of marketing. No effort has yet been made to rear the calves and to cross all buffaloes in the City with approved bulls on coming to heat. There are no adequate grazing areas in the vicinity of the present salvage centres and no attempt is made to have salvage centres where grazing and watering facilities are available. Neither Government nor the public associations of cattle-owners and dairymen have made any efforts to obtain fresh buffaloes under quotas at fair prices by eliminating unscrupulous middlemen

and the competition of purchases for military dairies. The capitalists and the educated classes have so far kept themselves unconcerned with the present state of the cattle industry and the milk trade and hence the difficulty of getting easy finances for the small dairy-men also hampers progress. Lastly, the apathy of the people and leaders of society is responsible in no small degree for the present disgraceful situation of our milk supply, endangering the physical interests of society.

HOW TO REMEDY THE SITUATION

Whatever may be the reasons for the anxious situation of milk supply and milch cattle, it is always the duty of the State in the first instance, to secure the co-operation of those concerned in the trade and the actual consumers of milk and to leave nothing undone to improve the situation. Grandiose schemes, half-hearted measures, insignificant provision of finances and the pampering of vested interests have so far failed to achieve desired ends. This is a question of the health and vitality of the people, of building up a healthy and strong nation able to defend itself and recoup the effects of the strain of war-time conditions and as such it deserves highest attention. With harmonious and sincere endeavours the situation is bound to improve. When foreign countries have succeeded in building up their dairy and cattle breeding industry, in which, by the way, Indian pedigree cattle have no small share, by undertaking long range schemes for mass improvement supported by generous subsidies and enforcement of protective and preferential measures necessary for their success, there is no reason why such efforts cannot succeed in a country known for its cattle. It will be interesting to note that in the

U.S.A. in the year 1850 the average yield of milk per cow was 718 lbs. With the efforts of the State and the people to improve the milch quality of cows, it went up to 2,250 in 1925 and to-day it has almost been doubled. In India, also, it has been found on various farms that the first improved progeny of cows has shown an improvement of 10 to 15 per cent in milk yields and that the dry periods are also shortened. Thus, it is possible to achieve cent per cent improvement in the fifth generation or in about 20 years. It may be noted, however, that buffaloes are not responsive as cows in the matter of improvement.

FUTURE PROGRAMME

In view of all this and the immediate needs for more milk and milch cattle, the following measures are suggested:

SHORT-RANGE MEASURES

1. Prohibition of the slaughter of all useful buffaloes and cows capable of regeneration and of useful bullocks above 10 years of age. This must be in addition to the present restrictions;
2. Reduction in the supply of flesh foods by observing two non-beef days in a week, as is done by the Governments of Bengal and Sind;
3. All dry useful buffaloes to be sent out for salvage compulsorily and loans on easy terms to cover the prices of dry buffaloes to be advanced to needy cattle owners (*gavlis*) to enable them to purchase fresh buffaloes;

4. Permits for the import of fresh buffaloes to be given only to those who send all their dry buffaloes for salvage;
5. The establishment of one recognised central agency for salvage both at Bombay and in the districts where salvage centres are located and only approved or licensed agents to be given buffaloes for salvage.
6. Permits for salvaged buffaloes to be made obtainable without delay;
7. Subsidies for transport of dry buffaloes for salvage to be granted on submission of railway receipts certified by a recognised salvage agency;
8. Grazing facilities to be given in areas where salvage centres are located and new centres to be opened only where such facilities are available;
9. Cattle-keepers in Bombay to be compelled to keep buffalo bulls and to cross buffaloes on coming to heat;
10. Rearing of female calves of buffaloes to be subsidised. These should be allowed to stay in stables by the Municipalities till they are one year of age.
11. Larger quotas of milch buffaloes to be obtained from States against dry buffaloes sent for salvage in their areas.
12. Purchase of new buffaloes under quotas to be done through the staff of the official Marketing Department so as to make them economic and to secure quality cattle.

13. Government should supply some buffaloes per month at subsidised rates on certain conditions.
14. Imports of pastuerised milk in large quantities from rural areas should be encouraged and even subsidised, if necessary.
15. All cattle foods including hay should be rationed and controlled.
16. Experts should be appointed to supervise groups of stables and advise dairymen on economic and hygienic production and handling of milk by milk recording, regulating, feeding, etc.
17. The use of milk for domestic purposes should be controlled by prescribing maximum *per capita* consumption.
18. Non-officials should be nominated to ensure the protection of useful cattle from premature slaughter.

LONG-RANGE MEASURES

1. The sale of useful female cattle and young stock should be prohibited in all districts;
2. Select breeding bulls should be supplied in rural areas according to the number of cows, and their use should be extended by establishing co-operative cattle breeding societies or regular bull centres;
3. Grazing facilities should be provided, especially in areas which breed quality cattle and to recognised professional breeders;

4. In areas where premium bulls are placed, all principles of breeding such as registration of cows for breeding, elimination of scrub bulls and weak cows, selection, grading, proper feeding, compulsory castration should be enforced through bull centres or co-operative cattle breeding societies. Foundation stock and new progeny should be preserved in the same area for further improvement;
5. Government should start or encourage the starting of dairy farms like military dairies in rural areas near cities and supply milk to the urban population;
6. The rearing of buffalo-female calves should be subsidised and Government farms for young stock should be opened;
7. The raising of cash crops should be restricted and irrigated fodder crops should be encouraged.
8. Silage pits in villages should be constructed and green fodder silaged;
9. All cattle in villages should be protected from epidemics;
10. There should be schemes for colonising the breeders in suitable areas and settling them on the land. They should be encouraged to go in for mixed farming, agriculture along with dairying. There should be a regular programme of instruction for the colonists.
11. The use of chaff-cutters should be introduced in villages to stop the wastage of fodder and certain

kinds of straw like that of wheat, paddy, etc., should be a regular programme of instruction for the colonists.

It will be seen from what has been said above about the position of milk and cattle in India and the Province that the consumption of milk is very low, that the quality and quantity of milch cattle is disappointing and that the State and the people are apathetic to this vital question. While European countries have taken rapid strides in the improvement of their cattle, India is satisfied with the destruction, deterioration and extinction of the best breeds of cattle she possessed in the past. It is high time that both the people and Government took immediate steps and spent money generously till improvement in cattle and milk supply was achieved. The economic and political emancipation of the country depends on its agriculture and on the physical strength of a people capable of self-defence. It is hoped that measures as suggested above will be promptly taken and the situation improved before it gets altogether out of hand.

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