

DRAFT MEMORANDUM

ON

**Human Nutrition *vis-a-vis* Animal
Nutrition in India**

by

**The Nutrition Advisory Committee of the Indian Council of
Medical Research and the Animal Nutrition Committee of the
Indian Council of Agricultural Research**

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PREFACE

The memorandum contains an integrated plan for human and animal nutrition in India. In preparing it the Joint Committee have taken into consideration the current practices in agriculture and animal feeding and human dietary habits in India. The plan as suggested in the memorandum has required certain modifications in all the three aspects mentioned above. The recommendations have been based primarily on the available statistics regarding human population, animal population, agricultural production and area under cultivation. The Joint Committee did realize that there may be some differences in the figures given if they had been obtained from other sources but they felt that the variations between the figures of different origin were not of such a magnitude as to materially affect the conclusions reached in the memorandum. In making their recommendations for the integrated plan, the Joint Committee have suggested certain modifications in the utilization of the arable acreage. In doing this, they have not suggested any revolutionary changes. They were guided by the practical considerations of utilization to the fullest possible extent of the available resources in the country. The Joint Committee did not dispute the fact that our food production and also the dietary habits of people may have to be changed substantially to reach the ideal of self-sufficiency commensurate with adequate nutrition, but they have kept in their minds the feasibility of putting the various suggestions into practice. They hope that the suggestions made by them, if given effect to, would result in relieving to a considerable extent the acute situation with regard to food in the country and would form the basis of more extensive plans which could be undertaken in the future.

The memorandum has been considered by the Indian Council of Medical Research and the Indian Council of Agricultural Research. It has been decided that the memorandum should be widely circulated with a view to obtaining suggestions and criticism from various sources. The comments received would be considered at a joint meeting of the Nutrition Advisory Committee of the Indian Council of Medical Research and the Animal Nutrition Committee of the Indian Council of Agricultural Research and the memorandum finalised for presentation to the parent bodies. The remarks made on the memorandum by the Advisory Board of the Indian Council of Agricultural Research at its meeting held in

December, 1951 are given below :—

“Tracing the history of the case Dr. Sen said that in 1949 the Animal Nutrition Committee recommended that the question of human feeding problem *vis-a-vis* animal feeding problem in India might be discussed at a joint meeting with the Nutrition Advisory Committee of the Indian Council of Medical Research which had been agreed to by the Board. As a result of this decision a joint meeting was held in June 1950 at Bangalore. They discussed the general question relating to the requirements of human folks and also the requirements of animals in relation to the possibility of the production of food for both in this country. It was decided to set up a sub-committee to prepare a memorandum which would again be considered by the joint committee. This work had taken six months and they had consulted a large number of specialists. The memorandum had then been adopted at another joint meeting. This memorandum had already been circulated to members about three months back for comments and views.

Detailing the recommendation of the memorandum Dr. Sen said that they had taken into account the minimum requirement of food for human beings, as accepted by medical workers and specialists. The Health people had several times impressed upon animal husbandry workers to increase the production of items of foodstuffs which were considered essential for human consumption. For instance, they had always been told that so much milk was required and that foodstuffs of biological value in the form of meat, ghee or other articles were also needed. But no one had bothered to ask the experts whether it was possible to increase production of such foodstuffs of animal origin. When they started discussing this question they immediately found that in order to meet the requirements of human folks in this country, especially of products of the type of milk or meat or eggs, it would be practically impossible within any reasonable period of time to fulfil the target programme as laid down by the medical authorities. Therefore it had been decided to revise the standard as recommended by the medical authorities. Here again it was found that there were certain inevitable difficulties for meeting the target requirements, with the result that the specialists had to suggest certain alternatives. They had to formulate certain tentative ideas as to how they could meet the requirements of the existing population of animals so that they could produce that much amount of milk, meat, etc.

Continuing Dr. Sen said that he wanted to take the members over the memorandum as circulated. The first few pages thereof dealt with the actual requirements of human beings in this country, based on certain assumptions. Those assumptions had been accepted by the human nutrition workers for a long time. The observations made in the memorandum were as follows :

They might have the total human population in this country of about 375 million by 1956. It was suggested in 1944 by the Indian Research Fund Association (now Indian Council of Medical Research) that there should be a certain minimum target of requirements for each person. Referring to page 3 of the memorandum Dr. Sen said that the target figures were about 14 oz. cereal ; but they were more interested in the milk target of 10 oz. and fish and meat target of about 3 oz. and one egg per head per day so that the total requirements on that basis came up to about 43 million

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tons of cereals. So far as milk was concerned about 31 million tons, fish and meat about nine million tons and for eggs, there was a very huge number. That was roughly the target. Dr. Sen continued that they then set themselves to the task of trying to find out how many animals were needed in this country and whether they could at all produce that target figure of milk, meat and eggs.

Dr. Sen said that the next section in the memorandum referred to animals that were in the Union of India which roughly included about 60 millions of breeding cows and buffaloes, 56 million heads of bullocks and roughly about the same number of young stock, besides certain amount of sheep, goat and pig. They had then proceeded to calculate how much foodstuffs of ordinary type would be required to produce that 31 million tons of milk, nine million tons of meat, etc. He added that taking into account the present way of feeding of animals, as per Table 4 of the memorandum, it was impossible to produce that amount of milk or *ghee*. In that connection they had taken into consideration not only the foodstuffs of the type of bran, maize, barley, oilcakes, grass and rice straw that could be needed to maintain those animals but also to give the required production. They had also taken into consideration all the foodstuffs that they needed to maintain the young stock which would replace the old stock. Having found that it was impossible to produce that amount of extra milk, meat or eggs with any reasonable success, they had later on tried to find out what would be the land required and the position in regard to the rightful agricultural planning if they tried to produce all the material from the land. That was shown in Table 5 and they had found that if they expected to carry on some sort of statistics with all the figures that they had taken here it was quite possible that in some cases their figures might not be correct. At present they had 38 million tons of cereals produced in the country. The total area under crops of one type or another was 248 million acres and if they wanted to meet the target of human requirements, they would have to increase the area to about 391 million acres, *i.e.* an increase of 58 per cent. That was based on the current production and current acreage. After doing that they tried to find out that, assuming that they had produced that human food grain, there would be certain amount of other material and how much that would be sufficient to produce the required amount of milk or meat. It was found that it was impossible to produce 31 million tons of milk, and nine million tons of meat if they agreed to expect a target set by the human nutrition workers. They decided that they could not achieve any degree of success on the target set by the human nutrition workers. Therefore they anticipated a different target which was not so much different as far as the other crops were concerned, like cereals, but slightly different in the case of milk. They had suggested that 10 oz. of milk could certainly be supplied to 25 per cent of the total population in the country and 5 oz. (the present quantity available) to the rest of the population. That would be under the revised plan. They could also produce sufficient meat for the 55 per cent of the population to the extent of about 1-2 oz. a day. They could not however hope to bridge the entire gulf in the near future. Having come to that basis, they had tried to show how that could be achieved. The main point suggested in the programme was that they were going to produce certain amount of extra milk and extra meat and if it was proposed

to maintain the bullock efficiency to the present strength and to still increase their efficiency by better feeding, then they had to set apart about 11·5 acres of irrigated land for the fodder production in the country. Moreover another eight million acres of the so called rain-fed land was required where the *kharif* crop would be grown entirely for the feeding of the cattle. That was their suggestion so far as the immediate programme in regard to the animals was concerned. Incidentally quite a number of other problems had also been discussed here, *viz.*, question of oil seed production in the country, whether the oil could be taken out—at least some of that for human consumption and they felt that there was a possibility of getting certain amount of extra oil from oil cakes which was used as manure. If that oil could be extracted, assuming it to be about ten percent, it meant that they were losing about 80,000 to 100,000 tons of oil of the market value of Rs. 25 crores. That amount could be utilized for other purposes in this connection. Their suggestion was that it was possible to obtain certain amount of feeding material for cattle from outside at a much less cost compared to what they paid in this country. If that could be adhered to, they would achieve something. Another point was that their present system in regard to the use of certain foodstuffs even for human consumption was entirely wrong. For instance, they were now-a-days insisting on milling wheat to the extent of 98 percent in the country. Such milling deprived the country so far bran was concerned, which could easily be used for milch stock for producing more milk.

These were some of the facts brought out in the memorandum. So this memorandum had been in circulation in the Indian Council of Medical Research and it was also now before the members of this Board. He added that he had no resolution to move on the memorandum, but that if some criticism was offered on it to improve its utility, it might serve a more useful purpose and the sponsor of the memorandum would be prepared to accept the criticism. Unfortunately very few criticism had so far been received—only two in number and they did not know where they stood. If the memorandum could be circulated to more people and some useful criticism could be offered on it, this might be revised to be of more value.

Dr. Datta said that he had some discussion with the medical authorities on the statement made by some medical scientists in the country that sufficient quantity of vegetable protein could be produced in the country. According to his view, there was no such thing as a vegetable protein of a high biological value. As far as his little knowledge was concerned, that was a thing that needed little more information before it could be accepted and since the Committee had gone into the question from different angles with so many experts, he had no doubt that Dr. Sen would be able to enlighten the members on the subject.

Mr. Sivaraman said that since the Directors of Agriculture of all the States were here and having regard to the suggestion made out in this memorandum he suggested that oil cakes might not be used for manurial trials. In his view only such material should be used as manure which could not be used for feeding purposes. Some alternative methods should be found for manuring the land, if the oil cakes were to be used for *human* food by extracting oil from the cake.

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Dr. Pal said that the whole account given by Dr. Sen was such which was essential in the nature of a long range scheme, although the idea was to tide over the present difficulty in food both for animals and men and the whole thing depended on the increase in food production in the country of which Dr. Sen had given us an idea. He was of opinion that if the recommendations, as enumerated by Dr. Sen, were to be put into practice they would have to correlate them with the land transformation plan which had also been drawn up by the Ministry of Agriculture and the Indian Council of Agricultural Research together. In his opinion this subject was out of the purview of the Board, but they would have to think about the agriculture side. However, there were one or two things which he would like to remark. The first was regarding the milling of wheat into flour and the wastage therein, as said by Dr. Sen, and the other was that unless the cattle were improved there would be no improvement in agriculture.

Anybody who was interested in the problem of production of food both for cattle and human being, was very well aware and for him the memorandum under circulation should not be the basis on which he could take any particular action. Therefore he thought it would be perfectly in order if they discussed and indicated the action in the matter. The first point in that connection was that they had to cast a very careful consideration whether in any of the land reclamation programmes and extension of the so called areas, how much land was being devoted towards pasture. That was a problem which required a careful consideration of an authoritative opinion. The other point was regarding the oil cakes. While it was a problem about which they had some experimental data and he would like to know what was more advantageous : oil cakes to the animal through the soil or feeding the soil through the animal.

Taking the problem as a whole, they should base their calculations in such a way that the minimum requirements of the people were met. After having arrived at minimum standards required for animal nutrition and human nutrition, there could be some increase gradually and then they might be in a better position to solve the problem. Secondly he did not feel confident about the importance of the vegetable protein or animal protein. He was of opinion that the memorandum being important, it might be circulated to other interested parties.

Shri Nanda said that the memorandum was circulated in July for criticism and only two replies had been received. The replies were with the Indian Council of Medical Research for publication in the form of a pamphlet and they would be circulated to members for criticism.

Dr. Vishwanath said that he would like to consider the encouraging part of the memorandum. He would also like the Board to explore the matter further and not only to record the proceedings.

Another member said that they had been seriously trying to think out a method of using the existing land in Madhya Pradesh for rearing the cattle and to get the maximum out of cattle, milk and manure. On a 7,000 acre land 50 heads of cattle were being maintained but after reading the memorandum and studying other data about 450-500 heads of cattle were being maintained. After paddy, it has been decided to start the growing of berseem on a very extensive scale. This was one of the instances

which was being quoted to show as to how important the memorandum was and how by giving better nutrition to the cattle, more return was possible and also bullocks for draught animals instead of the poor. Of course tractors were also used but the cultivators in India had to fall back upon the cow and the bullock in many parts of the country in this modern age.

The Chairman said that the best course would be to reprint the memorandum and circulate it to different people for their criticism and opinion and the Committee may again discuss the matter.

The Board recommended that the memorandum should be printed for circulation with a view to obtaining suggestions and criticism from various sources. When all the comments have been received the Committee should meet again and then submit a final report".

APPENDIX

1. In the preparation of this Memorandum, the data in regard to the classification of land areas and their acreage, the acreage under principal crops and the production of principal crops have been collected from :—

- (a) *Estimates of Area and Yield of Principal Crops in India (1936-46)*. Issued by the Economic and Statistical Adviser, Ministry of Agriculture, Government of India.
- (b) *Technological possibilities of Agricultural Development in India* by W. Burns. Published by the late Department of Education, Health and Lands, Government of India, 1944.

2. The data on the classification of animals and their numbers and quantitative milk production in the Indian Union have been taken from :

- (a) *The Role of Livestock in the Economy of India*. Issued by the All-India Cattle Show Committee, 1949.
- (b) *A brief review of the progress and present position regarding the productivity of livestock in India*, issued by the Ministry of Agriculture, Government of India, for submission to the F. A. O. Conference on Livestock Breeding at Lucknow, 1950.
- (c) *Brochure on the marketing of milk in the Indian Union*.—Issued by the Marketing Adviser to the Government of India, Ministry of Agriculture, 1949.

The data on the quantitative availability of by products, such as, straw and *kadbi* gram husk, *dhal-chunni*, bran, oilcake etc. have been estimated by multiplying the respective crop yield with commonly agreed factors. In some instances, however, certain assumptions based on the personal experience of some members of the Committee have been made. The factors are mentioned below :—

- (i) Straw from cereal grains :—In the ratio of straw : grain as 3 : 1 ;
- (ii) *Kadbi* from *Jowar*, *bajra*, and maize :—In the ratio of *kadbi* ; grain as 3.5 : 1 ;
- (iii) Mixed green fodder grown under perennial irrigation @ 50,000 lbs. per acre ;
- (iv) Mixed green fodder grown under barrani condition @ 20,000 lbs. per acre ;
- (v) Production of grass from forests, uncultivated areas, etc. @ 9,000 lbs. green per acre ;
- (vi) Production of *dhal-chunni* including the husk @ 15 per cent of the weight of the whole grain ;
- (vii) Production of bran : Wheat bran @ 15 per cent of the grain ; Rice bran @ 5 per cent of the grain ;

(viii) Production of oilcakes :—

- Groundnut cake @ 55 per cent of the kernal
- Mustard and rape cake @ 66 per cent of the seed
- Linseed cake @ 68 per cent of the seed
- Sesamum cake @ 57 per cent of the seed
- Coconut cake @ 74 per cent of the copra.

NOTE (a) Estimates of items (iii) & (iv) have been kept intentionally low to include all conditions of growth as also the variable types of fodder crops.

(b) The estimate of item (v) has been taken from Williamson, Kartha and Ram Sarup (1947) *Indian J. Vet. Sci.* Vol. 17, p. 23.
