

# CURRENT SCIENCE

Vol. XIII]

SEPTEMBER 1944

[No. 9

	PAGE		PAGE
<i>Breeding Goats and Sheep for Milk Production</i> .. .. .	221	<i>Technical Personnel for Post-War Development</i> .. .. .	227
<i>Man's Most Creative Years—Then and Now</i> .. .. .	222	<i>The Seventh Wright Brothers Lecture</i> .. .. .	228
<i>Estimation of Crop Yields.</i> BY V. G. PANSE AND R. J. KALAMKAR .. .. .	223	<i>The Indian Scientific Mission</i> .. .. .	228
<i>A Rapid Method for the Mechanical Analysis of Soils for Extensive Soil Survey Work.</i> BY N. D. VYAS AND K. C. BATRA .. .. .	225	<i>Letters to the Editor</i> .. .. .	229
		<i>Reviews</i> .. .. .	240
		<i>Science Notes and News</i> .. .. .	241

## BREEDING GOATS AND SHEEP FOR MILK PRODUCTION

THAT India produces milk much below her requirements is now a well-accepted fact. One of the main contributing factors is insufficiency of fodder to maintain the country's comparatively large cattle population. This has gradually led to the steady degeneration of cattle. This state of affairs is reflected in the acute shortage of milk which is being universally experienced during the present emergency, when, even the small supply of milk available to the general public is of very doubtful quality. The two alternatives for remedying this are either to import large quantities of dried and condensed milk which is bound to further deteriorate the milk problem of the country, or to devise ways and means for lowering the cost of production. The best way in which the latter can be achieved is to keep smaller animals than the cow and the buffalo, which are more efficient as milk producers. An average village cow may be estimated to consume a minimum of about 30 lbs. of roughages and 2 lbs. of concentrates per day and produce 2½ lbs. of milk. On the other hand a small animal like the goat consuming about one-fourth this quantity of food will give, if not the same quantity of milk, relatively much better yields. Thus there is a distinct possibility of easing the milk problem of the country with the available quantities of fodder. The problem of fodder production is such that apart from the present war conditions, no immediate solution can be expected even in the post-war period. It cannot of course be suggested that goats should entirely replace cows and buffaloes. What is implied is that only the better quality of bigger animals should be maintained, and with the food that is saved probably the maintenance of two or three smaller animals would prove more economical. Further, there are many waste lands where big animals like the cow and the buffalo cannot thrive and this can be profitably employed for rearing goats.

Normally India maintains a good size of goat population, viz., about sixty million goats. Of these, many are of the meat variety but a few breeds like the Surti, the Jumana Pari, the Bar-Bari, the Kamori and the Cutchi, possess good milking potentialities. Most of these animals are not properly maintained and looked after. Although goat-keeping has been practised since the earliest time, breeding according to a definite plan does not seem to have received adequate attention. On an average, country goats yield about a pound of milk per day over a lactation period of about 160 days. With reasonable care this output can at least be increased threefold in a short period. The goat has been commonly termed "the poor man's cow". However, if let free by itself it may well prove a poor man's ruin. Under village conditions goats are left grazing in the open and this is supplemented by leaves of trees and shrubs. Goats love browsing and if left without any supervision they will destroy all vegetation. But this accusation may be directed against almost any animal and it is quite essential that their movements should be controlled.

Though goat is a browser, it can easily be accustomed to stall-feeding. Further, goats will take a wide variety of feeds normally not consumed by other animals, e.g., leaves of trees. A goat is a hardy animal which can be accommodated in a small space and two good milking goats will well serve the needs of an average family. Many of the city dwellers cannot possibly keep a big animal like a cow, but can manage to find place for a goat. Should this suggestion be widely accepted and put into practice, it will go a long way to supply an important part of the nutritional requirements of families with low incomes. In every city or town there are small plots of land on which some fodder can be grown and utilised for keeping goats, thus saving a portion of the wages earned, which would be



otherwise spent on what now happens to constitute one of the most expensive items of diet. Thus goat-keeping can play a vital part in building up the health and vitality of the nation, which have been undermined through years of malnutrition and disease.

Systematic breeding of milk-goats has long been neglected in India. In Central Europe, where milk-goats are very popular, an average yield of 1,600 lbs. of milk per annum is considered as the normal output. Good milch goats with an annual milk yield of 3,000-4,000 lbs. are not uncommon. In India some work on improving the milking qualities of goat has been taken up recently by Government organizations. The number of agencies, the number of animals and the duration of the work are so small that hardly any effects of these enterprises will be felt by the public at large. What is needed is that milk-goat breeding should be taken up as a national and vital necessity by the middle classes all over the country. The results of the few experiments that have been carried out are quite encouraging. Country goats by selective breeding have given about 40 per cent. more milk in the third generation. In a few cases as high as 1,100 lbs. of milk covering a lactation period of 210 days has been recorded. Thus, it is possible to improve the performance of our goats with a little care and attention. The principal and immediate object of any scheme to further goat-keeping and breeding should be to obtain animals with as high a yield as possible rather than standardising their form and colour. In the beginning cross-breeding with imported stock may also prove useful.

In some cases, prejudice exists against the use of goat milk. One of the commonest is attributed to flavour. This is largely due to unhygienic conditions in which milk is produced rather than to any inherent defects. The nature of food given will also play some part. Nutritionally, goat milk is as valuable as, if not more than, that from cow or buffalo. On an average

it is richer in fat than cow's milk. There is also a belief that domesticated goats are very susceptible to diseases. But here again there is no scientific evidence to support this conclusion. Goat milk is well-known to be normally free from tuberculosis germs. Besides, milk-goats have been kept under domesticated conditions in other countries and there is no reason why India should be an exception.

There is yet another animal whose possible potentialities for milk production have not been explored in this country and that is sheep. India has a sheep population of nearly thirty millions. Of these the Lohi, the Kuka, the Kathiawar, the Hashtnagri, the Gurez and the Balkhi are known to be good yielders and regularly milked. Ewes of these breeds yield on an average 1-2 lbs. of milk per day and yields as high as 8 lbs. per day have been recorded. From the above breeds the Kuka, and the Lohi are the best and their average daily yield will easily come to 2-3 lbs. If these breeds are systematically developed they will prove as profitable as goats. Sheep milk is also very rich in fat.

For meeting the immediate milk requirements of the country the rearing of goats and sheep should be taken up seriously. The initial cost as well as the maintenance cost of these animals will probably amount to one-fifth of the money spent after bigger animals for whose maintenance it is difficult to find enough food. To make a start in this line the object should be high milk production even though resort has to be taken to cross-breeding. If rearing of these animals is taken up by the poorer classes in urban centres on a co-operative basis, the possible benefits that can be obtained are unlimited. Besides milk, these animals yield wool or hair, mutton, skin and manure. Thus they will repay their cost in a very short time. We have no doubt that this problem will receive the attention of the Imperial Council of Agricultural Research.

## MAN'S MOST CREATIVE YEARS—THEN AND NOW

**A**T what age do eminent men make their most significant contributions? Is this age the same for various periods in the history of thought? Lehman approached these questions by plotting age-of-best-production curves for 15 different fields. His study of physicists is typical. He chose 89 deceased physicists listed in a source book of physics, and found that 45 of them were born before 1785, and the other 44 between 1785 and 1867. He then plotted the number of major contributions made by each group in successive decades of life. To compensate for early deaths, he converted the data to percentages. The early group of physicists made its highest percentage of great contributions between the ages of 40 and 50, and then showed a rapid decline in quality of work. But the more recent group reached its crest between 30 and 40. In fact, the "recent"

curve is almost identical with the "early" curve, except that it is shifted ten years ahead.

Similar results were obtained for geology, mathematics, inventors, botany, pathology, "Description of Diseases", medicine, philosophy, literature, education, economics and political science. In all 12 fields the greatest contributions of the most eminent men seem to come at an earlier age than they did a century ago. This also held true for a group of 250 minor economists and political scientists. But in chemistry and oil painting the age curves for the two periods coincide. Lehman has no certain explanation of his findings, but thinks speedier publication, stimulation and better opportunities favour the more recent men. At least his results show clearly that young contributors have just as good a chance now as they ever did.

(By courtesy of *Science*, 1943, 98, 393-99.)