

# The Big Picture: A new churning



Amul's Gen-Next farmers sell 100 litres and more daily to its village societies. Mechanisation and larger herds have pushed up milk supplies. (Source: Express Photo by Bhupendra Rana) –

Written by [Harish Damodaran](#) | Posted: January 25, 2015 12:33 am | Updated: January 25, 2015 8:33 am

Remember Manthan, the 1976 Shyam Benegal film that half-a-million farmers of Gujarat financed by contributing Rs 2 each? Manthan was essentially about people owning one or two buffaloes, whose lives changed with the setting up of a village cooperative society that paid a fair price for their milk after testing for its fat content. It was both their story and also of the organisation we know as Amul or the Gujarat Cooperative Milk Marketing Federation (GCMMF).



## THE PRICING FORMULA

- The milk price paid to GCMMF's farmers is linked to the total solids content (fat and SNF or solids-not-fat) and the fat rate declared by member-unions.
- Both fat and SNF are expressed in equivalent fat units (EFUs), with the former assigned two-thirds the value of the latter. Thus, "full-cream" buffalo milk containing 6% fat and 9% SNF will have 12 EFUs ( $6 + 2 \times 9/3$ ), while it is 8.67 EFUs ( $3 + 2 \times 8.5/3$ ) for "toned" cow milk with 3% fat and 8.5% SNF.
- Now, given 6 kg fat in 100 kg of full-cream milk, a Rs 590 per kg fat rate translates into a milk price of Rs 3,540/100 kg. That comes to Rs 35.40 per kg or Rs 36.46 for every litre (one litre = 1.03 kg) of full-cream buffalo milk.
- The price for toned milk is derived from that payable on full-cream milk with 12 EFUs. For this, the above Rs 36.46/litre price is first divided by 12 to arrive at a per-EFU rate (Rs 3.04). The toned milk price is, then, obtained by multiplying this rate by the number of EFUs (8.67) in it. That works out to Rs 26.34 a litre.

Amul is still very much there: GCMMF and its district unions are expected to gross sales of Rs 30,000 crore in the current financial year. There are 32 lakh-plus farmer-members, pouring an average 125 lakh litres per day (LLPD) of milk into its 17,000-odd affiliate societies.

But the last 10 years or so have also been witness to a different kind of churning or manthan. The new manthan's central characters aren't Bindu and Bhola, the Dalit smallholder livestock rearers famously portrayed by Smita Patil and Naseeruddin Shah. Instead, they are Amul's Gen-Next farmers who sell not 4-5 but 100 litres and more daily to its village societies.

GCMMF's records, at last count, show that there are 4,293 farmer-members across Gujarat who own at least 30 milch cows or buffaloes each. Assuming each of these cows gives 10 litres daily — the fact that not all would be "in milk" at any given point is probably offset by farmers keeping far more than 30 animals — the 4,293 "progressive milk producers" would be supplying roughly 13 LLPD. This represents over a tenth of Amul's average procurement, a share that is only growing.

The Gen-Next farmers are mostly in the dry northern Gujarat districts of Banaskantha and Mehsana, as opposed to the fertile central-southern agricultural belt that is home to the older milk unions such as Kaira and Surat.



The majority of Amul's milk producers continue to be small farmers who own one or two buffaloes, but that model is now changing.

Banaskantha, which is GCMMF's largest union, procures about 32 LLPD from 3.3 lakh producer-members. That works out to an average of almost 10 litres per farmer, compared to less than four litres for all the unions. In 2003-4, the Banaskantha union collected just 7.5 LLPD from 1.7 lakh farmers, that is, an average of 4.4 litres.

"The average milk poured per producer has clearly gone up. Today, we have around 10,000 farmers, each supplying 75-80 litres daily on an average and 100 litres-plus in the peak winter months. They account for a quarter of our overall procurement," says Sanjay Karamchandani, managing director, Banaskantha District Cooperative Milk Producers' Union.

There are three main drivers of this increasing trend of large dairy farms, also called tabelas.

The first is prices. Between 2003-04 and 2013-14, the average price paid to milk producers by GCMMF unions has gone up from Rs 185 to Rs 535 per kg of fat. The Banaskantha union paid Rs 590/kg last year, translating into a producer price of Rs 36.46 per litre for "full-cream" buffalo milk and Rs 26.34 for "toned" cow milk (see 'The Pricing Formula'). That's roughly three-fourths of the consumer price.

But it is not simply remunerative prices as much as a second factor — the assured market for milk provided by the cooperative system — that has encouraged expansion in herd sizes. "No other business gives you cash payment on the 1st and 16th of every month. There is no marketing uncertainty unlike for cotton, castor or saunf (fennel-seeds), where prices fluctuate. Here, you just need to bother about production; the union will take all the milk that is supplied," says Mohammadbhai Naseerbhai Parbadiya, who owns a 67-animal tabela at Bhagal Pimpli village in Palanpur taluka of Banaskantha.

The third major driver has been electricity. Gujarat has 24-hour power in rural areas, including guaranteed three-phase supply for eight hours. This has made it feasible for the societies to install bulk milk coolers of capacities ranging from 1,000 to 10,000 litres. These chill the milk to four degrees Celsius within three-four hours of collection at the society.

In the pre-cooler era, the milk from the societies had to land at the dairy dock by 8.30 in the morning to prevent any spoilage. Procurement, then, had to begin by 6 am so that the tanker from the union could cover all the six-seven village societies on its scheduled milk route. It also meant farmers had to milk from 5 am, if not earlier, lest they missed the tanker. The sheer need to hurry through the process effectively limited the number of animals that could be milked. But with bulk milk coolers, the milk is chilled at source, thereby avoiding spoilage and allowing the tanker to reach the society by 11-11.30. Farmers, in turn, have time till 8 am or so to deliver their milk. “That way, they can keep more animals and milk more. And because there is power, they can also use milking machines,” says Karamchandani.

Currently, a quarter of GCMMF’s milk societies have bulk milk coolers. That ratio is nearly 80 per cent in Banaskantha, where there are such coolers in 1,060 of the union’s 1,356 societies.

What are the defining features of Amul’s growing “progressive milk producer” community — the new Bholas and Bindus?



Farmers on their way to deliver milk. With bulk milk coolers, farmers now have until 8 am or so to take their milk to the societies.

The first is that they maintain larger animal herds — and mainly cross-bred cows that yield approximately 4,000 litres of milk annually, as against 2,000 litres for buffaloes and 1,500 litres for indigenous cattle breeds such as Kankrej and Gir. Besides, a newly-born cross-bred

calf takes only 25-30 months to start giving milk, whereas the age at first calving is 44-46 months for buffaloes and desi cows.

Secondly, the Gen-Next producers are mostly “pure” dairy farmers for whom this isn’t a subsidiary activity to regular crop agriculture. They, in fact, tend to devote their land exclusively for growing fodder crops that are harvested every 45-50 days. Parbadiya, for instance, cultivates napier-bajra hybrid, African Tall maize and oats as green fodder on his entire 7.5-acre holding. The steady income from milk has led to his exiting farming of mustard, castor, wheat and bajra. His family’s labour and managerial resources are now concentrated towards feeding, cleaning and milking the animals in the tabela.

The owners of tabelas are also more inclined towards mechanisation, especially milking machines and sprinkler irrigation to save on labour. In the last two years alone, some 5,100 milking machines have been sold through GCMMF unions at subsidised prices. A farmer who would normally pay Rs 1-1.1 lakh for a four-bucket milking machine can now get it for Rs 60,000 with 40 per cent subsidy.

Where does all this leave the milk producers owning one or two buffaloes fed on agricultural crop residues? Would it entail the marginalisation of the old Bholas and Bindus?

No, asserts Jethabhai P Patel, chairman of GCMMF and also of the Sabarkantha milk union: “There is space for both models to co-exist. The small adivasi producer and the new commercial dairy farmer will both pour milk to Amul”.

Nevertheless, this changing profile of producers is something that the cooperative’s original founders, Tribhuvandas Patel and Verghese Kurien, may not have really foreseen.

### **Abdul Rashid Nazir**

*Semodra village, Palanpur taluka, Banaskantha*

This 60-year-old’s day starts at 3.45 am at his tabela housing 55 cows and four buffaloes — including calves and pregnant heifers — in his backyard.

He does this primarily to see if any animal is showing heat symptoms (bellowing, mounting other cattle, swelling/reddening of vulva, etc). If they do, they will have to be artificially inseminated within 24 hours: “Missing this means waiting for the next heat cycle after 20-21 days, leading to delayed pregnancy and income loss”.

A Class IV pass, Nazir worked in Saudi Arabia from 1977 to 1985, before returning to set up a motor rewinding-cum-electrical workshop at Vadgam, about 15 km from Palanpur. In 2010, he left that business to his son.

“Today, milk is my main business. Although there is no rest — the animals have to be washed, fed and milked everyday — it gives regular income without the hassles of having to pay sales tax or producing bills,” he says.

Nazir supplies an average 300 litres daily to the Semodra village cooperative, which “I hope to double, Insha’Allah, in the next two years”. His income from milk sales topped Rs 20 lakh in 2013-14. The profits from this business are “25 per cent if you use only hired labour and 35 per cent if you don’t”.

Nazir currently has three hired hands and three milking machines. His next investment plan: A milking parlour where 10 animals can be milked simultaneously, with the milk from the machines being conveyed via pipelines to a 500-litre bulk cooler. "This milk can then be lifted directly by the dairy union tanker, without my having to go and sell," he says.

**Ishabehn Lakhubhai Menat**

*Salempura village, Palanpur taluka, Banaskantha*

She has a Volkswagen Polo to drive her around, apart from a Mahindra Bolero Maxi Truck for transporting milk, cattlefeed and animals to and from her 67-cow, 18-buffalo tabela.

In 2013-14, Ishabehn supplied 1.77 lakh litres out of the total 11.36 lakh litres poured by the 283 members of the Salempura milk producers' society. Her annual income of Rs 53 lakh from milk — besides another Rs 2.25-odd lakh through sale of 150 trolley-loads of dung at Rs 1,500 each — is reason enough to be a full-time dairy farmer, which she has been since 2004.

"Previously, we grew castor, mustard, wheat and bajra on our five acres, whereas now it's just lucerne, oats, chicory, maize and makkhan (a high-protein winter forage grass). We produce our entire green fodder requirement; only the dry fodder (wheat, bajra or groundnut straw) and compounded cattlefeed have to be bought," says Maheshbhai, Ishabehn's son.

The 36-year-old Maheshbhai, a B.Com pass who had also done a Chartered Accountant articleship, is the sarpanch (village head) of Salempura. His mother — they are Leva Patels, accounting for a third of Salempura's 300 families — has had no formal education.

"The main problem here is getting labour. We now engage one driver and 10 labourers, who have been paid Rs 1 lakh in advance. They are Rabaris (an indigenous cattle-raising community) and do everything from harvesting and chopping fodder to dung collection. But they need to be properly supervised," Maheshbhai says.

And that's what Ishabehn is particularly good at.

**Devansh Bhupendrabhai Patel**

*Bochasan village, Borsad taluka, Anand*

"Starting a tabela is easy, but running it is difficult. It's 365 days of work because you can't ask the animals to stop giving milk," says the 35-year-old who supplied about 2.5 lakh litres worth Rs 60 lakh in 2013-14 to the Bochasan cooperative affiliated to GCMMF's oldest Kaira union.

Devansh and his elder brother Nimesh started their tabela in 2006 with 25 cows. It has since grown to 60 animals, employing six labourers and two milking machines. They bought the first 25 Holstein Friesian-Gir crossbreds from the Kaira union with a concessional 6.5 per cent interest-bearing loan, while the rest were reared from the calves born in the tabela.

"We had some six cows even earlier, but the income from milk sales was subsidiary to that from regular farming," says Devansh, who has studied up to first year B.Com. His brother is a Class XII pass, while their sister Mamta lives in Texas where her husband works at a convenience store (the Charotar belt, of which Bochasan is part, has many Patels settled in the US).

The family continues to grow tobacco, green chilli and paddy on its 11-acre land, but now it's Devansh's father Bhupendrabhai Mangalabhai Patel who manages it. "Theabela has to be a separate business for it to be viable. That's why my brother and I decided to put all our efforts into it. Thankfully, we don't have to worry about marketing of the milk," he says.

The Patel brothers, unlike other progressive milk producers, do not cultivate any fodder. "You need extra labour for that. We source our entire feed and fodder requirements from the market," says Devansh.

**Jayeshbhai Shambhubhai Patel**  
*Zarola village, Borsad taluka, Anand*

The first thing that strikes any visitor to Jayeshbhai's dairy farm is the neat ear tags on every cattle, bearing their unique identification numbers.



Jayeshbhai does hydroponics maize fodder cultivation — planting seeds in trays supplied with nutrient-rich solution.

Further, there is a board displaying each cow's tag number along with the dates of its artificial insemination, pregnancy diagnosis and calving. The calves have separate tags also identifying their birth dates and mothers.

In 2010, Jayeshbhai procured imported semen of 100 per cent "pure" Holstein Friesian (HF) bulls from ABS, an American bovine genetics company. He used this to inseminate normal crossbred cows with 62.5 per cent HF and 37.5 per cent Gir blood levels. The resultant 'F1' cows, with 75 per cent HF blood, were further inseminated with the 100 per cent HF semen. The 'F2' animals from it had 87.5 per cent HF blood.

"My idea was to raise milk yields from 4,000 litres annually in normal crossbreds to 5,000 for F1 and 6,000 litres for F2 cows. 100 per cent HF animals aren't desirable, as they cannot stand the high humidity here and are prone to mastitis", he notes in a manner more of a scientific cattle breeder.

Jayeshbhai has 10 cows and six calves: “Instead of blindly increasing herd size, I would prefer 10 optimally-bred animals producing the milk of 20”.

But Jayeshbhai’s experiments aren’t confined to breeding. He has taken up hydroponics maize fodder cultivation — growing seeds in trays supplied with nutrient-rich solution. The trays are stacked in racks inside a greenhouse.

“With 1 kg seed, I can produce 7 kg of green fodder in each tray at Rs 2.5/kg cost and 20 per cent protein content, which is as much as in compounded cattlefeed costing Rs 17/kg.”