



WHITE REVOLUTION AND INDIA - GS III MAINS

Q. The White Revolution 2.0 signifies a transformative phase in India's dairy sector, addressing nutritional deficiencies and doubling farmer's income. (15 marks, 250 words)

News: *How to bring about White Revolution 2.0*

What's in the news?

- The government's latest Household Consumption Expenditure Survey (HCES) for 2022-23 shows milk emerging as India's top food spend item, both in rural and urban areas.
- The monthly value of milk and dairy products consumed by an average person in rural India, at Rs 314, was ahead of vegetables (Rs 203), cereals (Rs 185), egg, fish & meat (Rs 185), fruits (Rs 140), edible oil (Rs 136), spices (Rs 113) and pulses (Rs 76).

Key takeaways:

- The dairy sector in India plays a significant role in the country's economy, accounting for a quarter of the total income generated in the agricultural sector, a proportion that has been on the rise.
- Remarkably, India's per capita milk production has surpassed the recommended dietary allowance (RDA).
- With a quarter of the world's milk production, India stands as the world's leading milk producer.
- Over the past two decades, the per capita consumption of milk and dairy products in India has nearly doubled. This serves as an introduction to the robust and growing dairy sector in India.

Operation Flood (White Revolution 1.0):

- The successful implementation of the Green Revolution paved the way for India to initiate Operation Flood.
- Operation Flood was launched in 1970.

Role of National Dairy Development Board:

- The National Dairy Development Board introduced Operation Flood with the aim of establishing a national grid to streamline the production and distribution of milk across the country.

Aim:

- The primary goal was to boost milk productivity and ensure competitive market prices for milk.



Objectives:

- The operation aimed to increase milk production (often referred to as “a flood of milk”), improve rural income, and provide affordable milk to consumers.

Role of Dr Verghese Kurian:

- Known as the Father of the White Revolution, Dr Verghese Kurian played a crucial role in the success of Operation Flood. He is also the founder of Amul, the largest milk producer in India.

Phase I (1970–80):

- The first phase of Operation Flood was financed by the **European Economic Community (EEC)** through the **World Food Program (WFP)** to establish milk cooperatives.

Phase II (1981-85):

- The second phase led to the development of the dairy industry in the states of Karnataka, Rajasthan, and Madhya Pradesh.

Phase III (1985-96):

- The third phase emphasized veterinary care and better breeding practices.

Outcome of Operation Flood:

- The operation transformed India from a dairy-deficient nation into the global leader in milk production.
- Women dairy farmers played a crucial role in this transformation.
- According to a World Bank report, “Operation Flood can be viewed as a 20-year experiment confirming the rural development vision”.

Need for White Revolution 2.0:

1. Inflation in Milk Prices:

- Over the past five years, the modal price of milk across India has seen a substantial increase, rising from Rs 42 to Rs 60 per litre.

2. Reduction in Milk Demand:

- The escalation in prices may lead consumers to reduce their milk consumption, which could have a significant impact on the overall demand for dairy products.

3. Rise in Production Costs:

- The costs associated with fodder, feed, and raw materials have witnessed a considerable increase.
- This has led dairies to raise the procurement prices paid to farmers.



4. Impact on Consumers:

- The burden of inflation and increased production costs ultimately falls on the consumers.
- There is a threshold to how much more consumers can pay for milk before it leads to demand destruction.

Challenges in India's Dairy Sector:

1. International Market Share:

- Despite being the world's leading producer, India's share in the global dairy export market is less than 1%, compared to other major exporters like Germany (14.4%), New Zealand (12.9%), Belgium (7.6%), the Netherlands (6.69%), and France (6.65%).
- India faces stiff competition in terms of sanitary standards and certification challenges, particularly in developed markets.

2. Low Productivity:

- The productivity per animal in India is notably low.
- This is primarily due to the limited availability and affordability of quality feed and fodder, traditional feeding practices, a lack of veterinary services, a limited supply of quality animals, and ineffective cattle and buffalo breeding programs.

3. Production Inefficiency:

- Factors such as inadequate farm management, limited access to finances, a lack of affordable technology, and limited access to information contribute to low production efficiency in India.

4. Safety and Quality Issues:

- India grapples with quality issues stemming from contaminated water, milk adulteration, the use of pesticides, mycotoxins, heavy metals, and veterinary drugs.

5. Cold Chain Infrastructure:

- There is a significant lack of necessary infrastructure, such as chilling plants and bulk coolers, to prevent contamination and spoilage at the village level.

6. Power Availability:

- Many chilling plants are affected by electricity shortages, leading to suboptimal operation and consequently, poor quality and shelf life of milk.

7. Quality Testing Infrastructure and Workforce:

- There is a lack of adequate quality testing infrastructure at milk collection centres.
- This issue is further exacerbated by the shortage of trained personnel to conduct quality testing.

8. Greenhouse Gas Emissions:

- The doubling of the female bovine population has led to a doubling of greenhouse gas emissions by dairy animals over the last 50 years.



9. High Antibiotic Usage:

- The indiscriminate use of chemicals in the commercial dairy sector adversely affects the quality of livestock and milk.
- The urine and dung of animals treated with these chemicals can harm soil microbes.

Measures Taken by Government for Dairy Sector:

1. Rashtriya Gokul Mission:

- Launched in 2014, this initiative focuses on the conservation and development of indigenous breeds and the improvement of their genetic makeup.

2. E-Pashu Haat:

- This is an e-market portal that connects breeders and farmers, providing quality, disease-free bovine germplasm.

3. Pashu Sanjivni:

- This is an Animal Wellness Programme that provides animal health cards along with UID identification.

4. National Animal Disease Control Programme:

- Launched in 2019, this programme aims to control and eradicate the Foot & Mouth Disease (FMD) and Brucellosis amongst livestock.

5. Animal Husbandry Infrastructure Development Fund (AHIDF):

- This fund aims to incentivize investments to establish dairy and meat processing and value addition infrastructure, as well as animal feed plants.

6. National Dairy Development Board:

- Launched in 1965, this premier institution was established to accelerate the pace of dairy development on cooperative lines in the country.

7. National Program for Dairy Development:

- This program aims to strengthen infrastructure for the production of high-quality milk, as well as for the procurement, processing, and marketing of milk and milk products.

WAY FORWARD:

1. Breeding Technologies and Centres:

- New genetic improvements like sex sorted semen, embryo transfer, and in vitro fertilisation can produce more female calves and high yielding cows.
- Bovine breeding centres breed a nucleus herd of high-genetic-merit bulls and cows through the production of superior semen and in vitro-fertilized embryos.



2. Animal Nutrition and Feed Cost:

- Farmers are encouraged to cultivate high-yielding protein-rich green fodder grasses.
- Lowering feed costs can be achieved by reducing reliance on expensive compounds like cattle feed and oil-meal concentrates.

3. Balanced Diet and Lower Overall Cost:

- Implementation of Total Mixed Ration (TMR) plants provides a balanced diet in a ready-to-eat form, saving farmers the cost of purchasing and storing fodder separately.
- The government should focus on lowering the overall costs of producing milk at the farm-gate.

4. Investments and Market Expansion:

- Investments in the milk value chain and tapping markets of high-end developed countries are crucial for the growth of India's dairy sector.

5. Milk as a Nutritional Solution:

- Milk should be promoted as a critical input for addressing nutritional deficiency and improving health outcomes in India, especially among children and women.

6. Export Competitiveness and FTAs:

- India's dairy industry needs to increase its competitiveness to confidently compete with imports and capture overseas dairy markets.
- This includes dealing with FTAs that involve liberalisation of trade in dairy products.

7. Value-Added Products and Quality:

- The focus should be on exporting value-added and processed products rather than liquid milk alone.
- Compliance with high sanitary & phyto-sanitary standards is essential.

8. Livestock Health:

- Promoting vaccination and disease-free areas, like foot-and-mouth disease-free areas, is important as some developed countries require this.

9. Adopting a Food Systems Approach:

- Integrated livestock and crop systems are organised in a complementary and synergistic manner.
- Transitioning to natural & organic farming, where animal dung and urine are critical inputs, benefits both the dairy and crop sectors.

10. Dairy Pricing and Sustainability:

- There is a need to develop measurements and standards around other traits like solid-not-fats in milk.



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- Monitoring the presence of antibiotics and other chemicals in milk is crucial for the sustainability of the dairy sector.

The White Revolution 2.0 signifies a transformative phase in India's dairy sector, building on the success of the original White Revolution. It aims to address challenges such as low productivity, production inefficiencies, and quality issues through advanced breeding technologies, improved animal nutrition, and enhanced infrastructure. The revolution also emphasizes the importance of milk in addressing nutritional deficiencies, making it a critical component of India's health and economic strategies.

