



White Revolution 2.0

For Prelims: [White Revolution 2.0](#), [Malnutrition](#), [Operation Flood](#), [NABARD](#), [National Dairy Development Board \(NDDB\)](#), [National Programme for Dairy Development \(NPDD\)](#), [Primary Agriculture Credit Societies \(PACS\)](#), [ET technology](#), Total Mixed Ration (TMR).

For Mains: Need of White Revolution 2.0 and technologies to achieve its objectives.

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Why in News?

Recently, the Ministry of Cooperation unveiled **standard operating procedure (SOPs) for [White Revolution 2.0](#)**, aimed at **empowering women farmers** and creating job opportunities.

What are the Key Facts About White Revolution 2.0?

- **About White Revolution 2.0:** It is an initiative to **increase milk production** along with empowerment of women and the fight against [malnutrition](#).
 - It is in line with **White Revolution** launched in **1970** by **Dr. Verghese Kurien** that transformed the dairy-deficient nation into the global leader in milk production.
 - White Revolution is also known as **'Operation Flood'**.
- **Target under White Revolution 2.0:** Dairy cooperatives are projected to **procure 100 million kilograms** of milk daily by the end of the **5th year** of the initiative.
 - It aims to **increase procurement** led by cooperatives from the present **660 lakh litres per day to 1,000 lakh litres**.
- **Launch of Margdarshika (SOPs):** Margdarshika (SOPs) has been launched to **form 200,000 new [multipurpose primary agricultural cooperatives \(MPACs\)](#)**.
 - It will foster new cooperatives in **panchayats** that don't have one for agricultural, fisheries and dairy-related activities.
 - It has been prepared by the **Ministry of cooperation** in collaboration with [NABARD](#), and [National Dairy Development Board \(NDDB\)](#).
 - **Women Empowerment:** Maximum women are engaged in the dairy sector, generating business worth **Rs 60,000 crore** in Gujarat alone.
 - The initiative will empower women by absorbing them in **formal employment** as the money will be deposited in their **bank accounts**.
- **Tackling Malnutrition:** With the increase in **availability of milk**, the biggest benefit will pass on to the **poor and malnourished children**.
 - It will strengthen the fight against **malnutrition** by ensuring adequate **nutrition** for children.
- **Integration with Existing and Upcoming Schemes:** The plan will build on existing government schemes such as the **Dairy Processing and Infrastructure Development Fund (DIDF)** and the [National Programme for Dairy Development \(NPDD\)](#).
 - A new phase, **NPDD 2.0**, is also proposed under the Department of Animal Husbandry and Dairying to further the **cooperative agenda**.

- **Expansion of 'Cooperation Among Cooperatives' Initiative:** The government launched the **nationwide expansion** of the 'Cooperation among Cooperatives' initiative, which was piloted successfully in **Gujarat**.
 - It allows dairy farmers to access **interest-free cash credit** via [RuPay Kisan Credit Cards](#) and will distribute [micro-ATMs](#) to bring financial services to rural areas.
- **PACS Computerisation: Standard operating procedures (SOPs)** for the computerisation of [Primary Agriculture Credit Societies \(PACS\)](#) was launched to **modernise PACS**, ensuring more efficient and transparent operations.

What is the Current Status of Milk Production in India?

- **Global Ranking:** India is the **world's top milk producer**, with production having reached **231 million tonnes during 2022-23**.
 - In **1951-52**, the country produced just **17 million tonnes** of milk.
- **Top Milk-Producing States:** As per the Basic Animal Husbandry Statistics (BAHS) 2023, the **top five** milk producing states are **UP (15.72%), Rajasthan (14.44%), Madhya Pradesh (8.73%), Gujarat (7.49%), and Andhra Pradesh (6.70%)**, which together contribute 53.08% of the country's total milk production.
- **Per Capita Availability of Milk:** The national per capita availability of milk is **459 grams/ day**, which is higher than the global average of **323 g/day**.
- However, it varies from **329 g in Maharashtra** to **1,283 g in Punjab**.
- **Milk Production by Animal Type:** Almost **31.94%** of the total milk production comes from **indigenous buffaloes**, followed by **29.81% from crossbred cattle**. The share of goat milk is 3.30%, and that of exotic cows, 1.86%.
- **Contribution of Dairy to the Agriculture and Livestock Sector:** The **milk group** (milk, ghee, butter, and lassi) contributed approximately **40%** of the **total output value** from agriculture, livestock, forestry, and fishing sectors in 2022-23.
 - This amounted to **Rs 11.16 lakh crore**, making it a much larger contributor than cereals to the agricultural sector.

What is the Need of White Revolution 2.0?

- **To Increase Milk Productivity:** The **average yield** is **only 8.55 kg per animal per day for exotic/crossbred animals**, and **3.44 kg/animal/day for indigenous animals**.
 - The yield in Punjab is **13.49 kg/ animal/ day (exotic/ crossbred)**, but only **6.30 kg/ animal/ day in West Bengal**.
- **Reversing the Decline in Annual Growth Rate of Milk Production:** The growth rate decreased from **6.47%** in 2018-19 to **3.83%** in 2022-23, indicating a **deceleration** in the rate of increase in milk production.
- **Formalisation of Milk Consumption Pattern:** About **63%** of the total milk production comes to the **market**; the remaining is kept by producers for their **own consumption**.
 - About **two-thirds** of the marketable milk is in the **unorganised sector**.
 - In the **organised sector**, cooperatives account for the major share.
- **Milk as the Top Food Expenditure in India:** In **rural India**, the average monthly expenditure on milk per person was **Rs 314**, surpassing other food items like vegetables, cereals, and eggs.
 - Similarly, in **urban India**, milk expenditure was **Rs 466**, higher than fruits, vegetables, cereals, and meat.
- **Checking Rising Milk Prices:** The **all-India modal price** of milk increased from **Rs 42 to Rs 60 per litre** over the past five years due to **rising input costs**, including fodder and feed.
 - There is concern that further price increases may lead to **demand destruction**, as consumers may find milk **unaffordable**.
- **Methane Emissions:** Livestock emissions from manure and gastroenteric releases account for roughly **32% of human-caused methane emissions** which is a major cause of global warming.

How can Milk Production be Increased Under White Revolution 2.0?

- **Genetic Improvement:** The introduction of **sex-sorted (SS) semen** can increase the probability of **female calves with higher milk productivity, such as Kankrej and Gir, being born to 90%**, thereby boosting the number of future milk-producing cows.
 - Sex-sorted (SS) semen allows for the production of offspring of a **desired sex** e.g., only female calves.
- **Embryo Transfer (ET) Technology:** **ET technology** can further enhance the productivity of **high-genetic-merit (HGM) cows** by allowing **multiple embryos** to be produced and implanted into different **surrogate cows**.
 - Through this method, a single HGM cow can potentially produce **12 calves per year**, compared to 5-7 calves over its lifetime through normal breeding.
- **In Vitro Fertilisation (IVF) Technology:** In **IVF technology**, immature ova are extracted, **fertilised in a lab**, and then implanted in surrogate cows.
 - It can produce **33-35 calves per donor cow per year**, allowing for a **quicker scaling** of the cow population with **high milk yields**.
- **Nutrition and Feed Intervention at Low Cost:** Along with genetic improvement, interventions in **animal nutrition** are essential to reduce feed costs.
 - **Amul** is setting up a **Total Mixed Ration (TMR)** plant in Gujarat, which will produce **affordable ready-to-eat fodder** mixes consisting of maize, jowar, and oat grass for animals.
 - TMR is a feeding method that combines forages, grains, proteins, minerals, vitamins, and additives into a single nutrient-rich feed for cows.
- **Improved Diet Quality:** Providing easily digestible forages like **legumes and grains** reduces fermentation time, lowering methane production.
 - **Specific feed additives** can directly **inhibit the microbes** responsible for methane production.
 - Released methane can be further used for **biogas production**.

What are the Related Schemes for the Livestock Sector?

- [Animal Husbandry Infrastructure Development Fund \(AHIDF\)](#)
- [National Animal Disease Control Programme](#)
- [Rashtriya Gokul Mission](#)
- [National Artificial Insemination Programme](#)
- [National Livestock Mission](#)

Conclusion

White Revolution 2.0 aims to transform **India's dairy sector** by enhancing milk production, empowering women farmers, and lowering production costs through **genetic improvements**, embryo transfer (ET), and in vitro fertilisation (IVF). With a focus on reducing feed expenses and increasing milk yield, it ensures **sustainable growth** while maintaining **affordability**, boosting farmer incomes, and strengthening the **rural economy**.

Drishti Mains Question:

What role can technology play in enhancing dairy production in India under White Revolution 2.0?

UPSC Civil Services Examination, Previous Year Question (PYQ)

Mains

Q. Explain various types of revolutions, took place in Agriculture after Independence in India. How have these revolutions helped in poverty alleviation and food security in India? **(2017)**

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