



Climate Change and Indian Dairy Sector

For Prelims: [Artificial Insemination](#), [Dairy Sector](#), [Heat Stress](#), [Milk production](#)

For Mains: Impact of increasing temperature and Heat Stress on Dairy Sector

Source: [DTE](#)

Why in News?

In 2022, a study published in '**Lancet**' estimated that increasing temperatures could reduce [milk production](#) in India's arid and semi-arid regions **by 25% by end century in 2085**.

- This estimation for arid and semi-arid areas is the **second highest in India**, after Pakistan (at 28.7%). In humid and sub-humid areas, this reduction was estimated at 10%.

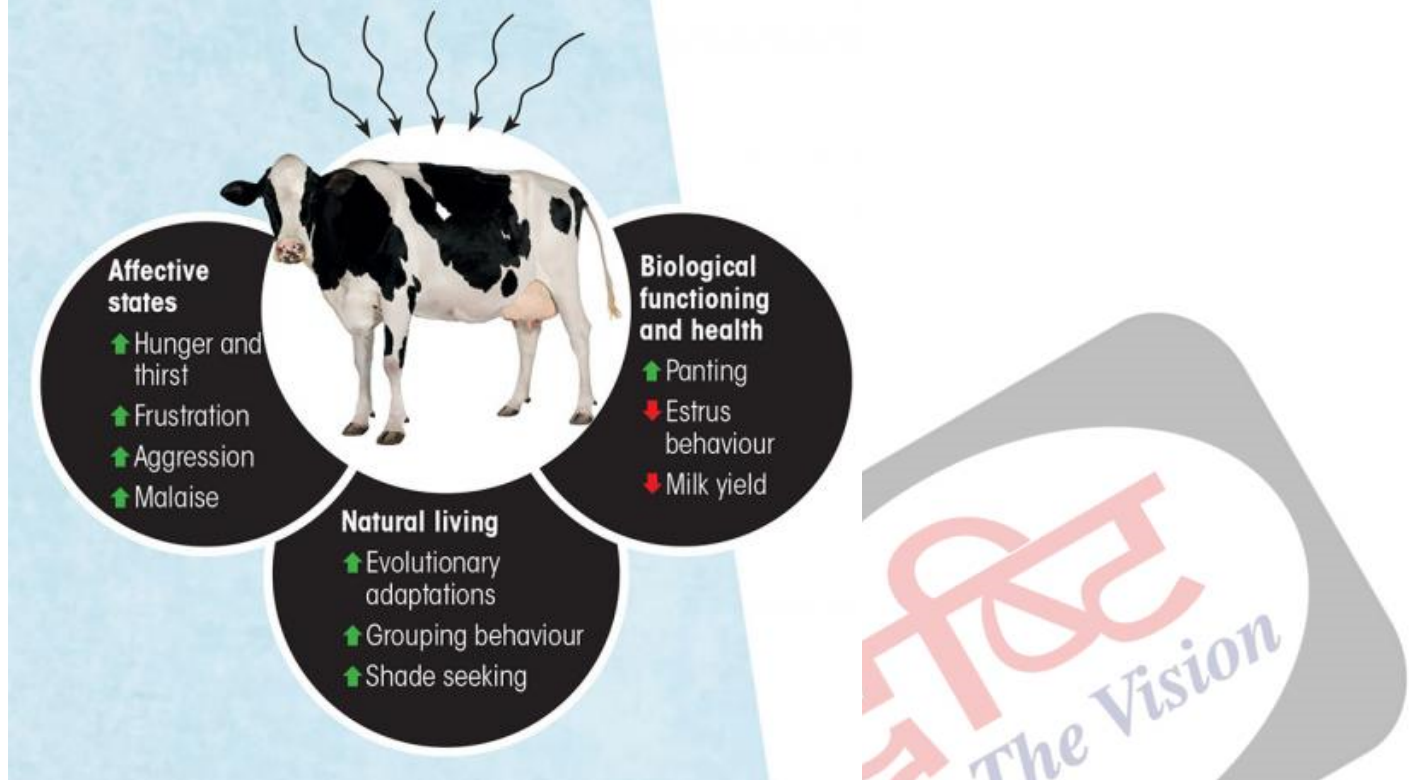
What is the Impact of Heat Stress on Cattles?

- Elevated temperatures affect the cow's ability to display **natural mating behaviour**, as it **reduces both the duration and intensity of oestrus** (female animal's readiness to mate) **expression**.
 - The decrease in conception rates during summer seasons can range between 20 and 30%, as per the study.
- Lancet Study also shows that **lactating dairy cows have an increased sensitivity** to heat stress compared with nonlactating (dry) cows.
 - Moreover, because of the **positive relationship between milk yield and heat production**, higher yielding cows are more challenged by heat stress than lower yielding animals.
- The country's milk production has been steadily increasing. However, the impact of rising temperatures, especially on cross-bred cows will **make the task of meeting domestic demand difficult** and could eventually lead to a decline in per capita consumption.
- The dairy sector is likely to be affected both **directly and indirectly by climate change**.
 - **Direct Impact:**
 - Stress to animals caused by changes in temperature-humidity index would directly affect milk production.
 - **Indirect Impact:**
 - Indirect effects include **feed and water availability** being impacted by adverse climate events.

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Heat distress

Impact of elevated environmental temperatures on cattle health



What is the Status of Milk Production in India?

- According to '**Basic Animal Husbandry Statistics 2022**', total milk production in India was **221.06 million** tonnes in 2021-2022, keeping it the **largest milk producing country** in the world.
 - The **Indigenous cattle contribute 10.35% of the total milk production in the country** whereas non-descript cattle contribute 9.82% and **non-descript buffaloes contribute 13.49%** of the total milk production in the country.
- Top five major milk producing States are **Rajasthan (15.05%), Uttar Pradesh (14.93%), Madhya Pradesh (8.06%), Gujarat (7.56%)** and Andhra Pradesh (6.97%).
- India's milk production is contributing around 23% of global milk production.

What are the Issues Being Faced by Dairy Farmers?

- **Issues Faced :**
 - Farmers allege that the government, instead of addressing the core issues, has introduced policies that further threaten to bring down milk productivity of the country.
 - One such policy is **sex-sorted semen production, which aims to produce only female calves up to "90% accuracy"**. This has been done to enhance milk production and limit stray cattle population.
 - Over the **next five years, 5.1 million pregnancies** will be established under the programme that **offers a subsidy of Rs 750 or 50%** of the cost of sex-sorted semen on assured pregnancy.
 - This policy has the **repercussions of overlooking and eliminating male cattle**

slowly.

▪ **Growth in Female Cattle Population:**

- In artificial insemination and natural service, 50% of the calves are male and 50% are female calves. Under this policy, **female cattle are going to grow.**
- The government has ignored that male cattle can be used in farming as an energy source.
- There is also the issue of utility of female animals after they become unproductive, because it has become difficult to sell cows **due to the anti-slaughter rules across many States.**

What is Artificial Insemination?

▪ **About:**

- Artificial insemination is a novel method of bringing about impregnation in female breeds.
- It prevents the spread of certain diseases which are genital in nature, thereby enhancing the efficiency of the breed.

▪ **Shortcomings:**

- Bypassing and preventing natural mating, and artificially reproducing as a principle/policy is cruel, not to mention the cruelty or pain inflicted by the artificial insemination process.

Way Forward

- Encourage **research and innovation in cattle breeding and management practices** to mitigate the impact of climate change.
- Promote **sustainable farming practices and the use of renewable energy sources for dairy operations.**
- Advocate for policies that consider the welfare of both male and female cattle.
- Explore options for the responsible management of unproductive female cattle.
- As climate change is a challenge that impacts all of us, our dairy sector must not only evolve adaptation strategies but also help in mitigation by **contributing to reduction in [greenhouse gas emissions](#)** from the dairy sector.

UPSC Civil Services Examination, Previous Year Question (PYQ)

Q. Consider the following statements: (2014)

1. Animal Welfare Board of India is established under the Environment (Protection) Act, 1986.
2. National Tiger Conservation Authority is a statutory body.
3. National Ganga River Basin Authority is chaired by the Prime Minister.

Which of the statements given above is/are correct?

- (a) 1 only
- (b) 2 and 3 only
- (c) 2 only
- (d) 1, 2 and 3

Ans: (b)