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1. Need for 'balanced fertilisation'

Introduction

Balanced fertilisation — discouraging farmers from applying too much urea, di-ammonium phosphate (DAP) or muriate of potash (MOP), which only have primary nutrients in high concentrations — is likely to be a key policy goal for the government taking over after the Lok Sabha elections.

The fiscal ended March 2024 saw urea consumption hit a record 35.8 million tonnes (mt), 16.9% higher than the 30.6 mt in 2013-14. The consumption of urea, containing 46% nitrogen (N), actually fell during 2016-17 and 2017-18, which was attributed to the mandatory coating of all urea with neem oil from May 2015.

Neem coating was intended to check illegal diversion of the highly-subsidised urea for non-agricultural uses, including by plywood, dye, cattle feed and synthetic milk makers. Neem oil supposedly also acted as a mild nitrification inhibitor, allowing more gradual release of nitrogen. Improved nitrogen use efficiency, in turn, brought down the number of urea bags required per acre.

All-India Consumption of Fertiliser Products (in lakh tonnes)

	Urea	DAP	MOP	NPKS	SSP
2003-04	197.67	56.25	18.41	47.57	25.44
2013-14	306.00	73.57	22.80	72.64	38.79
2014-15	306.10	76.26	28.53	82.78	39.89
2015-16	306.35	91.07	24.67	88.21	42.53
2016-17	296.14	89.64	28.63	84.14	37.57
2022-23	357.25	104.18	16.32	100.74	50.17

2023-24	357.80	108.12	16.45	110.73	45.44
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Source: Fertiliser Association of India.

Despite compulsory neem-coating, and the government reducing the bag size from 50 to 45 kg in March 2018, the consumption of urea has only gone up during the last six years.

Nutrient-based subsidy

Fertilisers are basically food for crops, containing nutrients necessary for plant growth and grain yields. Balanced fertilisation means supplying these primary (N, phosphorus-P and potassium-K), secondary (sulphur-S, calcium, magnesium) and micro (iron, zinc, copper, manganese, boron, molybdenum) nutrients in the right proportion, based on soil type and the crop's own requirement at different growth stages.

The nutrient-based subsidy (NBS) system, instituted in April 2010 was expected to promote balanced fertilisation. Under it, the government fixed a per-kg subsidy for N, P, K and S. The subsidy on any fertiliser was, thereby, linked to its nutrient content. The underlying idea was to induce product innovation and wean away farmers from urea, DAP (18% N and 46% P content) and MOP (60% K), in favour of complex fertilisers containing N, P, K, S and other nutrients in balanced proportions with lower concentrations.

NBS achieved its objective initially. Between 2009-10 and 2011-12, DAP and MOP consumption declined, while that of NPKS complexes and single super phosphate (SSP: 16% P and 11% S) rose. But NBS failed simply because it excluded urea. With its maximum retail price (MRP) being controlled, and cumulatively raised by just 16.5 per cent – from Rs 4,830 to Rs 5,628 per tonne – post the introduction of NBS, consumption of urea increased.

The challenge

The last couple of years have seen even non-urea fertilisers being brought under price control, first informally and formally since January 2024 in the run-up to the elections. The MRPs of these fertilisers were earlier set by the companies selling them, with the government merely paying a fixed per-tonne subsidy linked to their nutrient content.

The restoration of controls, industry sources say, has worsened the nutrient imbalances.

Relevance: GS Prelims & Mains Paper III; Economics

Source: Indian Express

2. Chocolate industry meltdown: What led to the rise in prices of cocoa beans

Why in News?

Chocolate the most sought after edible indulgence in the world. But now, the chocolate industry is in a meltdown. The price of cocoa beans, the most important raw material in chocolates, has skyrocketed, hitting a record \$12,000 a tonnes in April, around four times last year's price. Cocoa processors — who turn the beans into butter and liquor that are then

converted to chocolate by companies — have thus reduced production because they cannot afford the beans.



Reasons for skyrocketing prices

The immediate reason for the ongoing crisis is the bad harvest season in West African countries Ghana and Ivory Coast, where 60% of the world's cocoa beans come from. Due to the development of El Niño — a weather pattern, which refers to an abnormal warming of surface waters in the equatorial Pacific Ocean — in 2023, West Africa experienced heavier-than-usual rainfalls.

This created an ideal ground for the spread of black pod disease, which causes cocoa pods (a case that holds a plant's seeds) to rot on the branches of cocoa trees. The consequence is the

drop in crop yield.

Climate change is also a driving factor. With rising temperatures, rainfall in the region has become erratic — a problem for moisture-sensitive cocoa trees. Moreover, extreme weather events such as heat waves, droughts, and heavy rainfalls, have made these trees more vulnerable.

Low income of farmers

The underlying issue is that the big chocolate companies do not pay enough to the cocoa farmers in West Africa. These farmers earn on average as little as less than \$1.25 a day, which is well below the United Nations' absolute poverty line of \$2.15 per day.

At the same time, the four biggest chocolate companies have made huge profits from chocolate sales. While Lindt, Mondelez, and Nestlé together raked in nearly \$4 billion last year, Hershey's confectionery profits totalled \$2 billion, according to the latest report. Despite such financial gains, these companies have not done much to help raise farmers' income.

Experts believe that the prominent chocolate companies have the room to redistribute wealth down the supply chain. Unless they do that the scarcity of cocoa beans is likely to persist, leading to further exploitation of farmers and a rise in chocolate prices.

Relevance: GS Prelims; Economics

Source: Indian Express

3. Why are Indian spices facing the heat?

Why in News?

At least five countries — including Singapore, Hong Kong and the U.S. — have announced an investigation into possible contamination of spice mixes sold by Indian brands, MDH and

Everest. The complaints cite the presence of ethylene oxide (EtO), a toxic chemical used as a food stabilizer, beyond permissible limits. The Spices Board of India in response has initiated mandatory testing of products shipped abroad and is reportedly working with exporters to identify the root cause of contamination.



Which countries have flagged safety of Indian spices?

The domino first shook on April 5, when Hong Kong's Centre for Food Safety suspended the sale of three MDH spice blends (Madras curry powder, Sambhar masala and Curry powder masala) and Everest Fish curry masala. The spice mixes had high levels of ethylene oxide, the regulator said, and advised

consumers against purchasing these products. Days later, Singapore ordered a recall of the Everest spice mix, stating that it is unfit for human consumption.

What are the health concerns?

MDH and Everest's spice mixes allegedly contain high levels of EtO, a prohibited pesticide. EtO is a colourless, flammable gas that was originally intended for sterilising medical devices. It is used as a chemical in industrial settings, agriculture, and as a sterilising agent in food products, including spices, dried vegetables and other commodities. The chemical lends life to the spice industry — it reduces microbial contamination, and in turn, extends products' shelf life.

However, this process is not always airtight. The improper and excessive use of EtO may leave behind residues, causing toxic and even carcinogenic compounds to form, thus contaminating the product. One such compound is ethylene glycol, an ingredient which was found in Indian-made cough syrups that were linked to the deaths of more than 300 children in Cameroon, Gambia, Indonesia and Uzbekistan. Long-term exposure to ethylene oxide is associated with cancers including lymphoma and leukaemia, some evidence shows.

Is there a history of rejections in U.S.?

A scrutiny of FDA's import refusal report, for the calendar year 2023, cites at least 30 instances wherein entry was refused because the products appeared to contain salmonella. These are agents known to cause salmonellosis — a common bacterial food-borne illness. Other than this, there have been at least 11 counts of products being rejected because of misbranding, adulteration, artificial colouring or incorrect labelling.

The U.S. Dept of Agriculture had in February 2022 stated that India and Mexico were the top sources of pathogen-based food import refusals.

Relevance: GS Prelims & Mains Paper III; S&T

Source: The Hindu