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Reporter**



MK Yadav Sir

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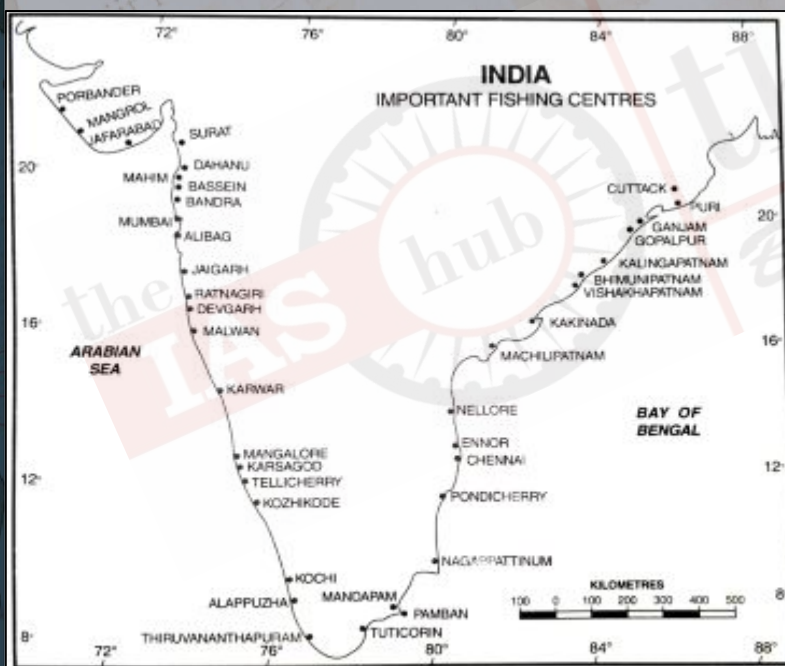
FISHING SECTOR

(Syllabus: GS Paper 3 - Economy)

Odisha's fish stocks are depleting, courtesy warming seas; here's how

Rampant catching of baby fish, migration routes changing thanks to climate impact compounding problems

By Ashis Senapati
Published: Friday 05 May 2023



Context: The **fisherfolk of Odisha** are paying the price for the warming world and seas.

- Combined with multiple low pressures areas and regular extreme weather events, fishing communities in coastal Odisha report scanty catches amid frequent fishing bans.
- The state has enormous **fishery resources** thanks to a coastline of 480 kilometres.
- **Shrimp is the biggest earner**, and commercial shrimp farming has become a vital source of income for nine coastal districts.

Key Points

- **El Niño events are associated with a band of warm ocean water** that develops in the central and east-central equatorial Pacific.
- Further **warming of seas** may impact the livelihood of fishing communities even more.
- The **warming seas are also affecting the movement of fish**, particularly in the shore areas.
- The marine animals are **cold-blooded creatures** and can't regulate their body temperature.
- **Fish movements are diurnal** and seasonal according to the temperature, which impacts the near-shore catch during warmer days.
- **Depletion of fish combined** with unpredictable weather conditions is compounding the troubles for the fishing community.

India's Fisheries Sector

- Fishing Sector in India, with about 7.7% of the global fish production, is the **third largest fish producing country** and the second largest aquaculture fish producer in the world.
- The country is also home to **more than 10% of the global fish biodiversity** and is one of the 17-mega biodiversity rich countries.
- Fisheries sector has been recognized as a '**Sunrise Sector**' and has demonstrated an outstanding double-digit average annual growth of 10.87% since 2014-15.

Govt may allow FDI in nuclear power industry

REUTERS

New Delhi, 5 May

The government is considering overturning a ban on foreign investment in its nuclear power industry and allowing greater participation by domestic private firms, two government sources told *Reuters*, as part of a push for cleaner energy.

The measures have been recommended by a government panel, set up by think-tank NITI Aayog which is headed by Prime Minister Narendra Modi.

Under India's Atomic Energy Act 1962, the government plays a central role in developing and running nuclear power stations. Domestic private companies are allowed to participate as "junior equity partners" by supplying components and helping build them.

The panel has recommended changes to the act and to India's foreign investment policies so that both domestic and foreign private companies can complement nuclear power generation by public companies.

The aim is to reduce carbon emissions and nuclear is in focus because it can supply energy 24/7, unlike solar energy, said the officials, who declined to be named as they were not authorised to talk to the media.

The Department of Atomic Energy has said previously that several foreign companies including Westinghouse Electric, GE-Hitachi, Electricite de France and Rosatom were interested in participating in the country's nuclear power projects as technology partners, suppliers, contractors and service providers.

India does not allow foreign investment in the nuclear power sector.

The officials said the emphasis was on private participation through small modular reactors (SMRs) to fast-track nuclear energy generation, which accounts for 3 per cent of India's total power production. Coal fires three quarters of it.

The Department of Atomic Energy, which works directly under the prime minister, and Niti Aayog did not respond to emails and messages seeking comment.



The aim is to reduce carbon emissions; nuclear is in focus because it can supply energy 24/7, said officials

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NUCLEAR POWER SECTOR (Syllabus: GS Paper 3 - Infrastructure)

Context: The government is considering overturning a **ban on foreign investment** in its nuclear power industry and allowing greater participation by domestic private firms as part of a push for cleaner energy.

- India does not allow foreign investment in the nuclear power sector.

Key Points

- The measures have been recommended by a **government panel**, set up by thinktank NITI Aayog which is headed by Prime Minister.
- The panel has recommended changes to the **India's Atomic Energy Act 1962** and to India's foreign investment policies so that both domestic and foreign private companies can complement nuclear power generation by public companies.
- Under **India's Atomic Energy Act 1962**, the government plays a central role in developing and running nuclear power stations.
- Domestic private companies are allowed** to participate as "junior equity partners" by supplying components and helping build them.

Nuclear Power sector

- Nuclear energy is the **fifth-largest source** of electricity for India.
- It contributes **about 3% of the total electricity generation** in the country.
- India has over 22 nuclear reactors in 7 power plants across the country which produces 6780 MW of nuclear power.

INDIA PLANNING HUGE INCREASE IN NUCLEAR POWER

India is making nuclear power one of its key policy initiatives, with plans to build 48 new reactors and boost output to 63,000 megawatts by 2032- an almost 14-fold increase on current levels. The country's existing 20 nuclear reactors generate about 4,700 megawatts



PM praises initiative by Border Roads Organisation Project Dantak to commemorate 64th Raising Day

Context: The Prime Minister has praised the initiative by **Border Roads Organisation** Project Dantak to commemorate 64th Raising Day.

- In 2021, **Project DANTAK** completed 60 years in Bhutan.

Project DANTAK

- **About:** It was established on April 24, 1961, as a result of the visionary leadership of His Majesty the Third King of Bhutan and then Prime Minister Jawaharlal Nehru.
 - The project was tasked to **construct the pioneering motorable roads** in the Kingdom.
- **Achievements:**
 - DANTAK completed the **road connecting Samdrup Jongkhar to Trashigang** in 1968.
 - Some other notable projects executed by the project include the **construction of Paro Airport, Yonphula Airfield, Thimphu - Trashigang Highway, Telecommunication & Hydro Power Infrastructure, Sherubtse College, Kanglung and India House Estate.**
 - The famous **Takthi Canteen midway between Phuentsholing and Thimphu** has been a compulsory stop for travellers.
- **Significance:**
 - It Identified the **utmost importance of connectivity** in spurring the socio-economic development and growth of Bhutan.
 - Over the years, DANTAK has met the **myriad infrastructure requirements** in Bhutan in accordance with the vision of Their Majesties and the aspirations of the people in a **symbiotic manner.**
 - The **medical and education facilities** established by DANTAK in far flung areas were often the first in those locations.
 - The **food outlets** along the road introduced the Bhutanese to Indian delicacies and developed a sweet tooth in them.

World food prices rise for first time in a year

The UN Food and Agriculture Organisation's (FAO) world price index rose in April for the first time in a year, but is still some 20% down on a record high hit in March 2022 following Russia's invasion of Ukraine.



The FAO price index, which tracks the most globally traded food commodities, averaged 127.2 points last month against 126.5 for March, the agency said on Friday. The March reading was originally given as 126.9.

The agency said the April rise reflected higher prices for sugar, meat and rice, which offset declines in the cereals, dairy and vegetable oil price indices.

"As economies recover from significant slowdowns, demand will increase, exerting upward pressure on food prices"

MAXIMO TORERO
FAO CHIEF ECONOMIST

Context: The United Nations food agency's world price index rose in April for the first time in a year, but is still some 20% down on a record high hit in March 2022 following Russia's invasion of Ukraine.

- The **Food and Agriculture Organization's (FAO) price index**, which tracks the most globally traded food commodities, averaged 127.2 points against 126.5 for March.

FAO Food Price Index (FFPI)

- The FAO Food Price Index (FFPI) is a **measure of the monthly change** in international prices of a basket of food commodities.
- It consists of the **average of five commodity group price indices** weighted by the average export shares of each of the groups over 2014-2016.

Food and Agriculture Organization

- It is a **specialized agency** established by the United Nations in 1945 that leads international efforts to defeat hunger.
- It is headquartered in **Rome, Italy**.
- It strives to **provide information and support sustainable agriculture** through legislation and national strategies, with a goal of alleviating hunger.
- It works to **achieve food security** for all and make sure that people have regular access to enough high-quality food to lead active, healthy lives.

Major Publications released by FAO

- The State of World Fisheries and Aquaculture (SOFIA).
- The State of the World's Forests (SOFO).
- The State of Food Security and Nutrition in the World (SOFI).

Govt. programme for non-communicable diseases renamed

Bindu Shajan Perappadan
NEW DELHI

The addition of many new diseases or disease-groups and new health initiatives have prompted the Union government to widen and rename its programme for control and prevention of non-communicable diseases (NCDs).

The Ministry of Health and Family Welfare has also decided to rename the portal which enables population enumeration, risk assessment, and screening for five common non-communicable diseases, including hypertension, diabetes, and oral, breast and cervical cancers of the population above 30 years.

'Adhere to changes'

The Ministry communicated its decision to the States on Wednesday through a one-page letter and asked them to adhere to the changes.

In its communication, it said that since there has been an addition of diseases

to the National Programme for Prevention and Control of Cancer, Diabetes, Cardiovascular Diseases and Stroke (NPCDCS), such as non-alcoholic fatty liver disease, chronic kidney disease etc., "there is a need that the Scheme in its present form may subsume all types of NCDs under a new name".

"To this effect, MoHFW has decided to rename 'NPCDCS' as 'National Programme for Prevention & Control of Non-Communicable Diseases [NPNCD]'", it noted.

The NPCDCS is being implemented under the National Health Mission (NHM) across the country.

Meanwhile, the letter added that the application or software named Comprehensive Primary Healthcare Non-Communicable Disease rolled out under the programme for screening and management, will now be renamed 'National NCD Portal'.

Context: The addition of many new diseases or disease-groups and new health initiatives have prompted the **Central government to widen and rename** its programme for control and prevention of **non-communicable diseases (NCDs)**.

- The **Ministry of Health and Family Welfare (MoHFW)** has also decided to rename the portal which enables population enumeration, risk assessment, and screening for five common NCDs, including hypertension, diabetes, and oral, breast and cervical cancers of the population aged above 30 years.

Key Points

- A study '**India: Health of the Nation's States - The India State-Level Disease Burden Initiative in 2017**' by Indian Council of Medical Research (ICMR) estimated that the proportion of deaths due to NCDs in India have increased from 37.9% in 1990 to 61.8% in 2016.
- The four major **NCDs are cardiovascular diseases (CVDs), cancers, chronic respiratory diseases (CRDs)** and diabetes which share four behavioural risk factors - unhealthy diet, lack of physical activity, and use of tobacco and alcohol.
- Under **National Programme for Prevention and Control of Cancer, Diabetes, Cardiovascular Diseases and Stroke (NPCDCS)**, 677 NCD district-level clinics, 187 District Cardiac Care Units, 266 District Day Care Centres and 5,392 NCD Community Health Centre-level clinics have been set up.
 - NPCDCS is being implemented under the **National Health Mission (NHM)** across the country.

Noncommunicable diseases (NCDs)

- NCDs, also known as **chronic diseases**, tend to be of long duration and are the result of a combination of genetic, physiological, environmental and behaviours factors.
- The main types of NCDs are **cardiovascular diseases** (like heart attacks and stroke), **cancers, chronic respiratory diseases** (such as chronic obstructive pulmonary disease and asthma) and **diabetes**.

REFORMS STREAMLINED APPROVAL PROCESSES: REPORT

'India Emerging as a Top Destination for Clinical Trials'

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New Delhi: India is emerging as a favourable destination for conducting clinical trials, according to a joint report by PwC India and US-India Chamber of Commerce (USAIC).

The report, titled 'Clinical Trial Opportunities in India', said regulatory reforms since 2013 and the New Drugs and Clinical Trial Rules of 2019 have streamlined the approval processes, reducing timelines 30-40%, resulting in India becoming a favourable destination for clinical trials. Covid-19 also helped increase awareness about the significance of clinical trials in India, it said.

"Clinical trial activity in India has been increasing steadily since 2014 due to several key regulatory reforms aimed towards global harmonisation, enabling open access to clinical trials in India," said Sujay Shetty, partner and global health industries leader, PwC. "The country's diverse population, combined with its rapidly advancing healthcare infrastructure, provides a fertile ground for clinical trials to flourish. This is an opportunity for top biopharma companies to develop a long-term strategy that focuses on the key enablers of innovation and strategic partnerships in India."

Despite its large population, India's contribution to the global clinical trials has averaged only about 4% per year from 2010 to 2022, the report said, adding that of all the trial participants globally, India's contribution is only 3% compared to 30% of the US.

Among the top 20 pharma companies: AstraZeneca, Novartis, Eli Lilly, Pfizer, and J&J are the top sponsors of clinical trials in India, the report said.

Clinical trial activity in India was historically low until 2014 due to



ISING AWARENESS

Covid-19 also helped increase awareness on the significance of clinical trials in India, the report pointed

unfavourable regulations, it said. "While bulk of the sponsored trials are phase III, phase IV trials have grown at 4% annually over the last decade following the new regulations," said the report.

India has introduced several exemptions and provisions to improve the overall efficiency of conducting clinical trials. According to the report, the total number of investigators doubled between 2015 and 2020, with the majority of the increase occurring in the internal medicine and oncology specialisations.

Targeting tier-2 and tier-3 cities as sites for clinical trials can result in higher access to patients and investigators, according to experts.

"Disease prevalence, density of investigators, and number of patients accessing healthcare is significantly higher in tier-1 cities. In addition, majority of public and private sector tertiary care hospitals are located in tier-1 cities," said the report.

Context: India is emerging as a favourable destination for conducting clinical trials, according to a joint report by PwC India and US-India Chamber of Commerce (USAIC).

- The report, titled **Clinical Trial Opportunities in India**, said regulatory reforms since 2013 and the New Drugs and Clinical Trial Rules of 2019 have streamlined the approval processes, reducing timelines 30-40%, resulting in India becoming a favourable destination for clinical trials.

Clinical Trial

- **About:** A clinical trial is a **research study** conducted on human participants to evaluate the safety, efficacy, and/or effectiveness of an intervention such as a drug, device, or behavioural therapy.
- **Objective:** Clinical trials are an **essential component of the drug development process** and are necessary to determine the benefits and risks of new treatments.
- **CTRI:** The **Clinical Trials Registry - India** (CTRI) a national clinical trial registry in India.
 - It was established in 2007; maintained by **ICMR (under the Ministry of Health and Family Welfare)**.
 - It is **mandatory** to register for every trial at CTRI before commencing
 - CTRI is a **free online public record system** for the registration of clinical trials (both public and private research) conducted in India.
- **Laws and Regulations:** Clinical trials in India are governed by **Drugs and Cosmetics Act, 1940, Medical Council of India Act, 1956 and Central Council for Indian Medicine Act, 1970.**

Covid-19 no longer a global health emergency: WHO

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Covid-19, which claimed millions of lives around the world over the past three years, is no longer a public health emergency of international concern (PHEIC), WHO declared on Friday. The virus, instead, is now an established and ongoing health issue, it said.

WHO director-general Tedros Adhanom Ghebreyesus told reporters in Geneva that the decision was taken following a recommendation from the UN agency's emergency committee that met Thursday. He, however, cautioned it doesn't mean the pandemic is over as a global health threat. "(Even) last week, Covid-19 claimed a life every three minutes and that's just the deaths we know about," Ghebreyesus said.

“This doesn't mean Covid-19 is over as a global health threat. **This virus is here to stay.** The worst thing a country could do now is to use this news as a reason to let down its guard, to dismantle the systems it has built, or to send the message to its people that Covid-19 is nothing to worry about — **TA GHEBREYESUS | WHO CHIEF**

ut,” Ghebreyesus said.

WHO designated Covid-19 as PHEIC — the highest level of alarm under international law — on January 30, 2020, weeks after the outbreak of SARS-CoV2 was reported from central China's Wuhan city before it spiralled into a pandemic.

► 'Mustn't let down', P 11

Context: Covid-19, which claimed millions of lives around the world over the past three years, is no longer a **public health emergency of international concern (PHEIC)**, WHO declared.

Public Health Emergency

- **About:** A Public Health Emergency of International Concern (PHEIC) is the **WHO's highest alert level.**
 - It is part of the **international health regulations(IHR)** which have been the governing framework for global health security since 2007.
- **Definition:** A PHEIC is defined in the **International Health Regulations (IHR, 2005)** as, “an **extraordinary event** which is determined to **constitute a public health risk** to other States through the international spread of disease and to potentially require a coordinated international response”. This definition implies a situation that is:
 - Serious, sudden, unusual or unexpected;
 - Carries implications for public health beyond the affected State's national border; and
 - May require immediate international action.
- **Implication:** The definition implies that the situation is **serious, sudden, unusual or unexpected** and carries implications for public health beyond the affected country's border.
- **Condition:** The WHO reserves the designation for only those diseases that need a **coordinated international response** to prevent them from potentially escalating into a pandemic.
- **Previous instances:** The alert has previously been issued for **Ebola**, H1N1 Swine Flu, Poliovirus, **Monkeypox** and Zika Virus.

International Health Regulations (2005)

- **About:** IHR (2005), represents a **binding international legal agreement** involving 196 countries across the globe, including all the Member States of the WHO.
- **Objectives:** Their aim is to help the international community **prevent and respond to acute public health risks** that have the potential to cross borders and threaten people worldwide.

PM hails inaugural run of vessel from Syama Prasad Mookerjee Port to Sittwe Port Myanmar developed under Kaladan Multi Modal Transit Transport Project

Context: The Prime Minister has hailed the inaugural run of vessel from Syama Prasad Mookerjee Port to Sittwe Port Myanmar developed under **Kaladan Multi Modal Transit Transport Project**.

Kaladan Multi Modal Transit Transport Project

- About:** The Kaladan Multi-Modal Transit Transport Project is a **bilateral agreement between India and Myanmar**.
 - It involves the **connecting of Aizawl in Mizoram with the deep-water Sittwe Port** in Myanmar.
 - The project was **launched under the 'Look East Policy'**, which dates back to 1991, and is being pursued by the present government under 'Act East Policy', its remodeled version of the policy.
- Objectives:** The project seeks to **ease India's access to Southeast Asia through Myanmar** and provide an alternate route between the landlocked Northeast and the rest of India, a purpose currently only served by the narrow Siliguri corridor.
- Connectivity:** KMTTP connects **Kolkata to Sittwe port**, which is further linked to Paletwa in Myanmar through a waterway route along the river Kaladan
 - From Paletwa, a 110 km road is being built to **connect to Zorinpui at Mizoram** on the Indo-Myanmar border.
 - Zorinpui is further connected to Lawngtlai** through a 100 km road.
 - From **Lawngtlai, an existing highway connects it to Aizawl**, which in turn is linked to other northeastern cities including Guwahati.



Strange flip-flop behavior of black hole binary star system in Milky Way attributed to its changing mass accretion rate

Context: Scientists probing a relatively obscure **black hole binary consisting of a collapsed star** and a normal star located in the Milky Way that shows rapid flux change in a small intervals of time have found that the clue to its strange behavior lies in the change in rate at which particles are accumulated into the **stellar system - mass accretion rate**.

Key Points

- **Swift J1658.2–4242, the Galactic X-ray binary** discovered by the Burst Alert Telescope instrument on board Swift observatory of NASA in 2018, is a black hole transient that spent most of its life in quiescence and was discovered when it entered into outbursts characterized by abrupt changes in their X-ray luminosity by several orders of magnitudes.
- Such **binary systems**, in which the black hole pulls the material from the companion star and forms a disk around the compact object, are visible in all wavelengths, from radio to gamma rays.
- Scientists studied the **spectral and temporal properties** of the black hole X-ray transient source, Swift J1658.2–4242 in Milky Way galaxy using observation from AstroSat - **India's first multi-wavelength astronomy satellite**, to understand its parameters and geometry.

Stellar system

- A star system or stellar system is a **small number of stars** that orbit each other, bound by gravitational attraction.
- A **large group of stars bound by gravitation** is generally called a star cluster or galaxy, although, broadly speaking, they are also star systems.
- Star systems are **not to be confused with planetary systems**, which include planets and similar bodies (such as comets).
- A star system of two stars is known as a **binary star**, binary star system or physical double star.
- If there are **no tidal effects, no perturbation from other forces, and no transfer of mass** from one star to the other, such a system is stable, and both stars will trace out an elliptical orbit around the barycenter of the system indefinitely.
 - Examples of binary systems are Sirius, Procyon and Cygnus X-1, the last of which probably consists of a star and a black hole.

Fungal flood: Increasing disease, aided by climate change, risk to global food security

Practising monoculture in modern agriculture provides ideal grounds for fungi

By Himanshu Nitnaware
Published: Friday 05 May 2023



Fungal pathogens	Disease	Crops
<i>Alternaria trititica</i>	Leaf blight	Wheat
<i>Fusarium oxysporum</i> f. sp. <i>lycopersici</i>	Fusarium wilt	Tomato
<i>Rhizoctonia solani</i>	Sheath blight	Rice
<i>Sclerotium rolfsii</i>	Wilt	Potato
<i>Pythiumaphani dermatum</i>	Damping off	Tomato
<i>Sclerotinia sclerotiorum</i>	Head rot	Sunflower
<i>Alternaria solani</i>	Early blight	tomato, potato
<i>Alternaria alternate</i> f. sp. <i>lycopersici</i>	Early blight	Tomato
<i>Ceratocystis paradoxa</i>	Pine apple disease	Sugarcane
<i>Phytophthora infestans</i>	Late blight	Potato

Types of Microbes

Microbe	Virus	Bacteria	Protozoa	Fungus	Algae
Size/ Genetic Material	1. Very small, just a protein membrane with RNA or DNA inside it 2. Not considered as living organism	1. Prokaryotic, single cell with defined DNA 2. No nuclear membrane 3. Bigger than virus	1. Single cell Eukaryotic, DNA with cell membrane 2. Bigger than bacteria	1. Eukaryotic multicell- DNA with cell membrane	1. Eukaryotic single or multicellular 2. Chlorophyll synthesis like plants
Cell division	Inside the host cell	Inside or outside the host cell	Inside or outside the host cell	Inside or outside the host cell	-
Diseases	Corona, Influenza, HIV, Dengue, etc	TB, Leprosy, Pneumonia, etc	Plasmodium- Malaria	Athlete's foot	Contaminated sea food poisoning

Context: A rapid surge in **fungal attacks on the world's most important crops**, worsened by climate change, could become a "catastrophe" for the world's food supply, scientists have warned.

Key Points

- The **Food and Agricultural Organization** has identified hundreds of fungal diseases that affect 168 crops crucial to provide nutrition to humans.
- The five most important crops for humanity - rice, wheat, maize, soybeans and potato - are vulnerable to fungal diseases such as **rice blast fungus, wheat stem rust, corn smut, soybean rust and potato late blight**, all caused by water mould oomycete.
- The oomycetes, also known as "**water molds**", are a group of several hundred organisms that include some of the most devastating plant pathogens.

Fungus

- Fungus, which is **primarily a pathogen**, produce massive amounts of spores which can remain active in the soil for up to 40 years, they added.
- Higher temperatures encourage the development** of new fungal pathogen variants. Extreme weather conditions such as storms or tornadoes can spread the spores in wider geographic ranges, they stated. For instance, wheat stem rust produces airborne spores that can travel across continents.
- Practising monoculture** in modern agriculture had become ideal grounds for fungus to feed on entire crops and breed. Such cropping patterns have enabled the fungus to quickly evolve and develop resistance to the fungicides.
- The **use of antifungals** has spiked in agriculture, leading to more fungicide-resistant pathogens.
- Introducing **plant diversity and seed mixtures** with multiple resistance against pathogens can reduce fungus evolution.
- The researchers also **recommend collaborating with farmers and using technologies** such as AI and remote sensing to monitor and manage pathogens early.

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