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From the Editor's

Dear Readers,

In the December issue of our Newsletter, we received several popular articles from diverse fields. All the authors deserve great appreciation for sharing articles in huge numbers. Please continue sending articles to our Publication team and share published newsletter with your friends also.

I would like to thank the Editorial team including Print, Designer and Publication committee for their efforts throughout the edition.

Your suggestions are always welcomed for improvement.

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FROM AWARENESS TO ACTION: THE PATH OF TRUE ENVIRONMENTAL STEWARDSHIP

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Introduction

Environmental stewardship represents a collective ethical and practical responsibility to safeguard natural resources and ecosystems for present and future generations. It encompasses a broad spectrum of actions, behaviours, technologies, and governance mechanisms aimed at conserving biodiversity, restoring degraded ecosystems, and ensuring sustainable resource use (Worrell and Appleby, 2000). Stewardship actions are inherently context-specific, ranging from habitat restoration through the removal of anthropogenic stressors and reintroduction of native species to species protection measures such as population regulation and ex situ conservation programmes.

The implementation of environmental stewardship across local, regional, and national scales enables societies to address complex and interconnected environmental challenges. These initiatives are often driven by a combination of community-led efforts and regulatory frameworks, underscoring the shared responsibility of individuals, institutions, and governments in achieving sustainability outcomes (Bennett et al., 2018).

Conceptual Framework of Environmental Stewardship
Environmental stewardship is commonly understood through four interrelated dimensions: context, actors, actions, and outcomes (Bennett et al., 2018). The context includes social, cultural, economic, biophysical, and governance conditions that shape the feasibility and effectiveness of stewardship interventions. Actors range from individuals and communities to corporations, institutions, and policymakers, each contributing at different scales. Actions involve conservation, restoration, sustainable management, and policy interventions, while outcomes focus on ecological integrity, biodiversity conservation, and ecosystem resilience.

Importantly, stewardship outcomes also extend beyond ecological benefits to include improved water and food security, public health, employment generation, and livelihood support, reinforcing the link between environmental sustainability and human well-being (McLeod et al., 2024).

Growing Environmental Awareness: Achievements and Gaps
Over recent decades, global awareness of environmental issues has increased markedly. Scientific assessments, documentaries, educational reforms, and grassroots activism have elevated concerns such as climate change, biodiversity loss, and land degradation to the forefront of public discourse. Environmental education has become increasingly embedded in academic curricula, while digital media platforms have expanded the reach of sustainability campaigns across geographical boundaries (Bennett et al., 2018).

Despite this heightened awareness, action often lags behind concern. Many individuals and organizations recognize the severity of environmental problems but struggle to translate this understanding into consistent, every day practices. This awareness–action gap remains a critical challenge in advancing effective environmental stewardship.

Barriers to Translating Awareness into Action
Several structural, economic, and socio-cultural barriers impede the transition from environmental awareness to proactive stewardship. A widespread sense of helplessness in addressing large-scale global challenges—such as climate change and biodiversity loss—can lead to apathy or disengagement. Inadequate infrastructure and weak enforcement of environmental policies further constrain the adoption of sustainable practices.

Economic limitations also play a crucial role. Restricted access to renewable energy, green technologies, and financial incentives can make environmentally responsible choices less viable for individuals, farmers, and industries alike. Additionally, entrenched social norms, behavioural inertia, and resistance to change often slow the uptake of innovative and sustainable practices (McLaren and Markusson, 2020). Addressing these barriers is essential for fostering a supportive environment in which stewardship behaviours can flourish.

Pathways from Awareness to Action
Effective environmental stewardship operates across multiple scales. At the individual level, actions such as conserving energy, reducing waste, adopting sustainable diets, and supporting eco-friendly products contribute cumulatively to environmental protection. At the community level, collective initiatives including local conservation programmes, citizen science, watershed management, and recycling systems enhance both environmental outcomes and social cohesion.

The corporate sector plays a pivotal role through responsible resource use, sustainable supply chains, adherence to environmental, social, and governance (ESG) principles, and transparent sustainability reporting. Meanwhile, policy and governance frameworks are essential for enabling stewardship through strong legislation, economic incentives, and international cooperation focused on long-term planetary health (Worrell and Appleby, 2000; Bennett et al., 2018).

Conclusion
True environmental stewardship extends beyond awareness to encompass deliberate, sustained, and collective action. By aligning scientific knowledge, ethical responsibility, inclusive governance, and community participation, societies can effectively bridge the gap between concern and commitment. Transforming awareness into action is not only an environmental necessity but also a pathway toward resilient ecosystems, sustainable livelihoods, and a more equitable future (Tassell-Matamua, 2024).

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VANISHING VULTURES: THE SILENT GUARDIANS OF OUR ECOSYSTEM

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Nimesulide banned on animals after vultures die in experiment

Forest gua trampled death b jumbo in

Kanwardeep Singh
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Jalpaiguri: A forest guard who a team driving e of elephants, t to death on Bana Tiger Res In the incid information four to five had strayed tea estate. A ters from Range of sponded to While dan Kumb round in hant sta Dewat fire an rearm runnin and fo Dew pers wit Kri rec

Barrelly: Centre has banned the manufacture, sale, and distribution of all formulations of Nimesulide—widely used as a painkiller for animals—after studies conducted at Indian Veterinary Research Institute (IVRI) in Bareilly confirmed its toxicity to vultures. The decision was based on controlled experiments in Haryana, where two Himalayan griffon vultures—Gyps himalayensis—were exposed to doses of Nimesulide, comparable to those found in the carcasses of treated livestock.

In the experiment, two vultures were given Nimesulide, while two others were treated with saline as controls. The birds exhibited elevated uric acid levels, a well-documented indicator of kidney failure, and both died within two days of receiving the drug.

"This rapid effect is consistent with poisoning caused by other non-steroidal anti-inflammatory drugs (NSAIDs) like diclofenac and ketoprofen," said a researcher. Dr Abhijeet Pawde, who led the research during 2023-24, highlighted the significance of the findings. "It's time such toxic drugs were banned so that these species can be saved from extinction. Our research demonstrated that Nimesulide is highly lethal to vultures when they consume carcasses containing the drug."

Even though the Central Drugs Standard Control Organisation enforced the ban under the Drugs and Cosmetics Act, 1940, on Monday through a gazette notification, reports suggest the drug continues to be available in rural areas, raising concerns about enforcement challenges. Veterinary experts have repeatedly called for stricter monitoring to ensure compliance with such bans. Nimesulide is widely used as a painkiller for animals, including cattle, pigs, and horses. While formulations differ for human and animal use, Nimesulide has already been banned for children in many countries due to safety concerns. "Animal-use formulations may have impurities that human drugs do not, making them potentially more dangerous," Pawde added. Experts have recommended safer and affordable alternatives, such as meloxicam and tolfenamic acid, which are both effective and affordable. "When safer options are available, it is entirely reasonable to replace highly toxic drugs like Nimesulide," said Dr M Karikalan, another researcher involved in the project.

Further studies on the toxicity of other drugs, including paracetamol, are planned as part of the next phase of the research. This initiative aims to safeguard vultures and other scavenger species vital to maintaining the ecosystem's balance.

TOXIC REVELATION

India is home to nine species of vultures, many of which are under threat due to habitat loss, poisoning, and declining food availability. These species can be broadly categorized into two groups: resident vultures and migratory vultures. Vultures play a crucial role as scavengers, efficiently disposing of animal carcasses and preventing the spread of diseases. The absence of vultures has led to an increase in feral dogs and other scavengers, contributing to the spread of diseases like rabies and anthrax. Increased carcass disposal costs for communities and governments. Efforts to protect these birds are crucial for India's biodiversity conservation.

Resident Vultures (7 species)
These species are native to India and live year-round in various parts of the country:

White-rumped Vulture (*Gyps bengalensis*)

Status: Critically Endangered

Once widespread, their population has drastically declined due to the veterinary drug diclofenac.
Indian Vulture (*Gyps indicus*)

Status: Critically Endangered
Found in central and peninsular India.
Slender-billed Vulture (*Gyps tenuirostris*)

Status: Critically Endangered
Inhabits the northern and northeastern regions of India.
Himalayan Griffon Vulture (*Gyps himalayensis*)

Status: Near Threatened
Found in the Himalayan range; can occasionally migrate to the plains.
Red-headed Vulture (*Sarcogyps calvus*)

Status: Critically Endangered
A striking species with a red head; found in forests and open grasslands.
Egyptian Vulture (*Neophron percnopterus*)

Status: Endangered
Known for its smaller size and yellow face; widespread across India.
Long-billed Vulture (*Gyps indicus*)

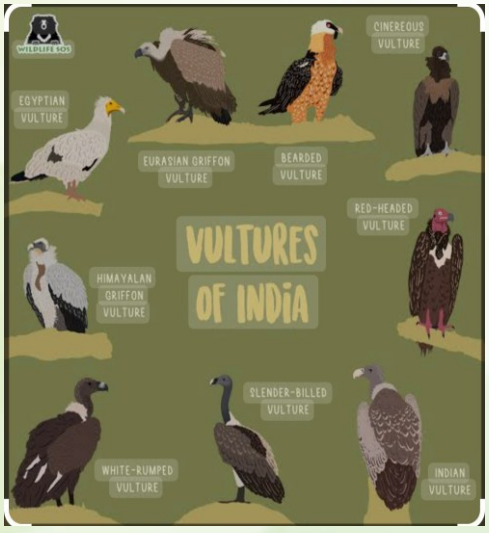
Status: Critically Endangered
Common in central and southern India.
Migratory Vultures (2 species)
These species visit India during certain seasons.

Cinereous Vulture (Aegypius monachus)

Status: Near Threatened
A large, solitary vulture seen in the northern plains during winter.
Eurasian Griffon Vulture (*Gyps fulvus*)

Status: Least Concern
Migrates to northern India during the winter months.

Population Decline
The vulture population in India saw a catastrophic decline in the 1990s, primarily due to the use of diclofenac in



livestock. When vultures consumed the carcasses of animals treated with this drug, they suffered fatal kidney damage. Steps like banning diclofenac in veterinary use and setting up Vulture Conservation Breeding Centres (VCBCs) have been implemented to save these species. Urbanization, deforestation, and reduced availability of food sources are additional ongoing threats. The alarming decline of vulture populations across India, often referred to as the "vulture crisis," is attributed to several interrelated factors:

The primary driver of the vulture population collapse in India is the widespread use of the veterinary drug diclofenac. Vultures feeding on carcasses of livestock treated with diclofenac suffer from acute kidney failure, leading to their death. This has led to declines of over 95% in some vulture species. The destruction of natural habitats due to urbanization, agriculture, and deforestation has reduced nesting and foraging areas for vultures, exacerbating their decline. Changes in livestock disposal practices, such as the shift to carcass burial or incineration, have reduced the availability of carrion, their primary food source.

Vultures may also ingest toxic substances from carcasses of animals exposed to pesticides or other chemicals, further contributing to mortality. Human activities near nesting sites, such as logging, infrastructure development, and tourism, disrupt breeding and nesting behaviors. Vultures sometimes ingest poison intended for other animals, such as predators like leopards or jackals, which can be fatal. Altered weather patterns and extreme climatic conditions affect the availability of food and suitable nesting habitats.

Consequences of Vulture Decline:

India has implemented various measures, such as banning the veterinary use of diclofenac in 2006, establishing vulture breeding centers and conservation programs, promoting safer alternatives to diclofenac, such as meloxicam, and raising awareness about the importance of vultures in ecosystems. Despite these efforts, ongoing monitoring and stricter enforcement are needed to reverse the population decline and ensure the survival of vulture species in India.

Some of the challenges of successful vulture conservation are slow breeding rates. Vultures reproduce slowly, with long intervals between chicks. Habitat destruction, poisoning, and human-wildlife conflict persist; together with dependencd on limited funding. While progress has been made, particularly in India and Europe, vulture breeding programs still face challenges in fully restoring populations to sustainable levels. However, they play a critical role in ensuring the survival of these vital scavenger species.

Vulture Breeding Program

The vulture breeding program is a conservation initiative designed to protect and increase the population of critically endangered vulture species.The Vulture Conservation Breeding Programme, initiated by the Bombay Natural History Society (BNHS) in collaboration with the Government of India, has set up breeding centers in places like Haryana, West Bengal, Rajasthan and Madhya Pradesh. The key objectives of vulture breeding programs have been to study vulture ecology and implement measures to mitigate threats, spread education and awateness about vultures among the publuc and their importance to our ecosystems, establish healthy vulture populations under captivity and their subsequent release in the wild.

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"The Earth is what we all have in common."— Wendell Berry

"Look deep into nature, and then you will understand everything better." — Albert Einstein

"The earth is always changing...readjusting to our existence. Each era is full of unique challenges" — Val Uchendu

"Land really is the best art." — Andy Warhol

NEW SOYBEAN GENES DISCOVERY PROTECTS CROPS FROM DEVASTATING PEST - CYST NEMATODE

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Soybean cyst nematode (SCN) is a microscopic roundworm that infects soybean roots, stealing nutrients and water from plants and reducing soybean production. SCN is one of the most damaging pests affecting soybean production worldwide, first detected in the Japan in the 1915, but later spread in different continents. In United States it was first reported in the North Carolina in 1954, and currently it has now detected in all soybean-growing regions of North America.

For past three decades farmers have been dependent on soybean varieties carrying resistance from a single resistance genetic source namely, PI 88788. Currently about 95% of SCN-resistant commercial soybean varieties still rely on this PI 88788 source. However, with continuous cultivation of PI 88788-mediated resistance varieties, the SCN populations keep evolving and many can now overcome this resistance, making it harder to control the pest and increasing risks for soybean production. Identifying new resistance sources is essential to protect the future harvest of soybean.

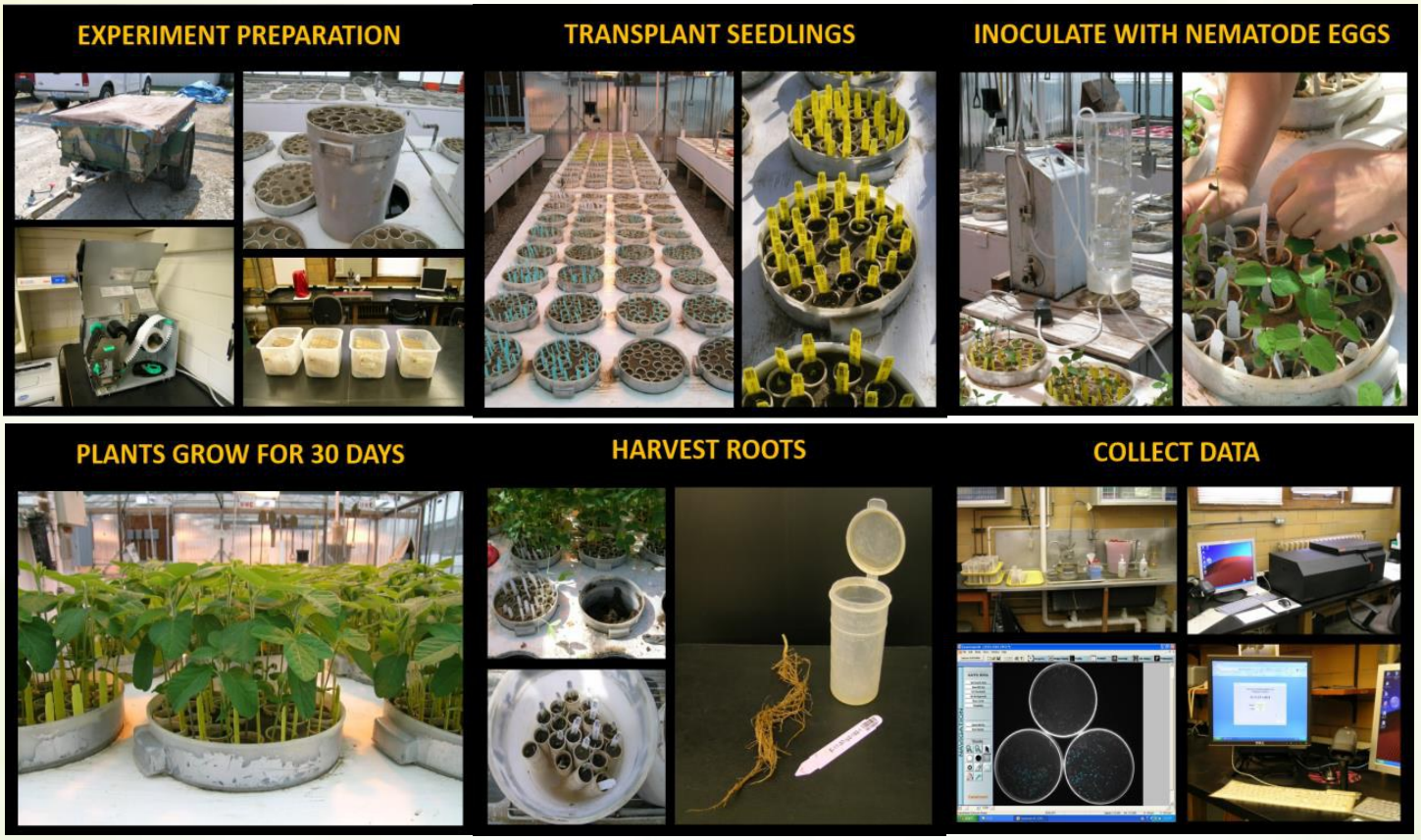

Fig.1: SCN phenotyping facility to screen and identify resistant soybean accessions.

Our research group at University of Missouri holds state of art SCN phenotyping facility to screen and identify resistant soybean accessions for multiple nematode populations (Figure 1). The facility contains 6 different nematode populations including HG Types 2.5.7 (race 1), 1.2.5.7(race 2), 0 (race 3), 2.5.7 (race 5), 1.3.6.7 (race 14), and 1.2.3.4.5.6.7 (LY1).

We identified a new unexplored soybean accession called PI 567516C, which naturally exhibits strong resistance to multiple SCN populations (race types). Unlike traditional resistance sources that target specific SCN race, this soybean accession shows broad protection, meaning fewer nematodes can infect and reproduce on their roots. This suggested that PI 567516C may use a completely different defense strategy. Our team confirmed a previously discovered quantitative trait locus (QTL) *qSCN10* from PI567516C accession shows resistance to various SCN types. After further fine- mapping, we narrowed down the genomic region to 379-kb, and 51 genes were identified in this region. Out of 51, four genes were identified as defense related genes, and they were regulated by SCN infection,

this indicates the potential role of those genes in providing SCN resistance. The haplotype and phylogenetic analysis suggest that this *qSCN10* locus is unique from previously reported resistance QTL or genes. On the positive note, no yield drags and other negative traits were found linked with this QTL when near-isogenic lines (NIL) with and without *qSCN10* were trial in a SCN-free field. These QTL regions hold new genes and genetic resistant pathways that help to control plant defense signaling, immune response and cell division. These genes also play role to limit penetration, multiplication of nematodes, and formation of feeding sites inside the roots. This is essential because SCN builds special feeding structures called syncytia, which allow the nematode to consume nutrients from the plant.

Fig. 2: Susceptible soybean roots heavily infected with SCN cysts.

This breakthrough discovery could support plant breeders to develop the new soybean varieties that remain resistant even as SCN continues to be evolving. These genes could be introduced into a high-yield soybean variety through biotechnology tools or modern breeding, helping farmers to maintain productivity as well as reducing crop loss due to SCN. Our discoveries represent an important step toward more sustainable soybean production. Through increasing the number of resistance genes available to breeders, the soybean industry can lower the reliance on a single resistance source and stay ahead of one of agriculture's most persistent pests.

ANCIENT REMEDIES, MODERN RELEVANCE: INDIA'S HEALING FLORA

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India is one of the world's richest countries in medicinal plant diversity, supporting traditional healthcare systems such as Ayurveda, Siddha, Unani, and folk medicine. However, the conservation of medicinal plants faces several serious challenges.

Overharvesting and Unsustainable Collection: Many medicinal plants are collected excessively from the wild to meet growing commercial and pharmaceutical demand. Unsustainable harvesting threatens rare and slow-growing species.

Habitat Loss and Deforestation: Urban expansion, agriculture, mining, and infrastructure development are destroying forests and natural habitats where medicinal plants thrive.

Climate Change: Changing rainfall patterns, rising temperatures, and extreme weather events affect the growth, survival, and geographic distribution of medicinal plant species.

Lack of Cultivation Practices: Most medicinal plants are still sourced from the wild due to limited organized farming, inadequate technical knowledge, and low economic incentives for farmers.

Illegal Trade and Biopiracy: Unauthorized collection, smuggling, and exploitation of indigenous knowledge without fair benefit-sharing threaten both biodiversity and local communities.

Loss of Traditional Knowledge: Modernization and generational shifts are leading to the gradual decline of traditional medicinal knowledge held by tribal and rural communities.

Invasive Species: Invasive plants compete with native medicinal species, reducing their populations and altering ecosystems.

Weak Policy Implementation: Although conservation laws exist, enforcement is often inadequate due to limited funding, manpower, and coordination among agencies.

Poor Documentation and Research Gaps: Many medicinal species lack scientific documentation, population assessments, and conservation status evaluations.

Market Pressure and Commercialization: Rising global demand for herbal medicines increases pressure on natural populations, encouraging exploitation without sustainability.

Conserving India's medicinal plant wealth requires sustainable harvesting, habitat protection, cultivation programs, stronger legal frameworks, scientific research, and community-based conservation. Protecting these plants ensures both biodiversity preservation and the survival of India's traditional healthcare systems.

INDIA'S BIDI INDUSTRY: SMOKE, WORK, AND SURVIVAL

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Bidis (also spelled bidi, biri) are small, hand-rolled smoked products made from local tobacco (*Nicotiana tabacum*) wrapped in a leaf (typically tendu) in India. Cheroots / regional "Indian cigars" (*e.g.*, Trichinopoly cheroot, Pataka bidi) are a different traditional product made from whole tobacco leaves and rolled tobacco; both have long local histories and form an important low-cost segment of India's tobacco market. The bidi industry is overwhelmingly small-scale and geographically dispersed, concentrated in a handful of states where tobacco and tendu leaves are available; annual production estimates range in the hundreds of billions. Anual bidi stick production estimates range widely (≈320 billion — 1.2 trillion sticks) due to informal production measurement challenges.

A bidi typically weighs around ~0.2 g of dark, sun-dried and processed tobacco flakes (finely cut/crumbled tobacco) wrapped in a tendu (*Diospyros melanoxylon*) or similar leaf and fastened with a thread or adhesive at one end. Some bidis are flavored or sweetened commercially, but the basic components are tobacco, the wrapper leaf, and the binding. Cheroot / regional "cigar" (*e.g.*, Trichinopoly in Tamil Nadu and Pataka bidi in West Bengal): larger, often hand-made rolls of tobacco (sometimes whole-leaf wrappers), produced in specific regions and closer to small cigars in construction. These use aged tobacco leaf and different rolling techniques than bidis.

Bidi manufacturing operates across many Indian states; but, production is highly concentrated. Studies and surveys show operations across ~17 states with >95% of output concentrated in about 10 states. Major producing / processing states include West Bengal, Uttar Pradesh, Bihar, Maharashtra, Andhra Pradesh, Karnataka, Tamil Nadu, Odisha, Gujarat, Madhya Pradesh, Kerala among others — many of these overlap with major tobacco-growing areas. Production also occurs in numerous small units and home-based workshops.

These places peovide the necessary raw materials such as availability of tendu leaves (for wrappers) and local tobacco crops (Andhra Pradesh, Karnataka, Gujarat, etc.) makes many states natural manufacturing centres. Tobacco curing and local leaf supply reduce transport costs. Low-cost labour and cottage industry model has helped bidi rolling is largely labour-intensive, often performed by home workers (frequently women) or small units; this makes it economically viable in areas with cheaper labour and established rolling traditions. The industry's cottage-scale structure keeps capital requirements low.

Huge volume, low unit price: bidis are produced in the hundreds of billions of sticks annually by several estimates. Recent back-of-envelope and peer-reviewed estimates place annual bidi production anywhere from ~320 billion sticks up to nearly 1.2 trillion, depending on method and data source — the wide range reflects difficulties measuring informal, home-based production. Historically bidis have accounted for a large fraction of India's smoked-tobacco consumption (NTCP/WHO reports cited bidis as ~40–48% of tobacco consumption in some assessments), though cigarette share and smokeless products also matter.

India's overall tobacco market is large (industry reports put tobacco production at hundreds of thousands of tonnes; market-value and tonnage estimates vary by year). Organized tobacco (cigarettes, exports) is concentrated in different states than much of bidi rolling. Mostly small firms and home workers: the bidi sector includes many small manufacturers, contractors, and extensive home-based rolling networks. Large employers are rare; most production is in small/unregistered units. Studies estimate millions of workers dependent on bidi rolling and allied activity (estimates vary by source/year but commonly cite multi-million employment due to cottage production). This creates a strong livelihood component that sustains the industry despite health/regulatory pressures. Bidis are subject to government regulation and taxation, but enforcement is complicated by the informal nature of production. Public-health agencies (NTCP/MoHFW) highlight bidis' major role in India's tobacco consumption.

The bidi smoke contains many of the same harmful chemicals as cigarette smoke; because bidis often deliver more tar and carbon monoxide per stick and lack filters, they are not a safe alternative. Chemical analyses of mainstream bidi smoke document toxic constituents. Bidis are a high-volume, low-value, labour-intensive tobacco product made from local tobacco and tendu leaves; manufacturing is concentrated in states with raw material and low-cost labour, and production largely occurs in small/home units. The scale is enormous (hundreds of billions of sticks annually by many estimates), which has large public-health and economic livelihood implications. Any policy or commercial analysis must account for the informal, home-based nature of production and the multiple states involved.

Photo credit: **Saikat Kumar Basu**

GREEN GOLD OF INDIA: MEDICINAL PLANTS THAT HEAL NATURALLY

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Medicinal Plants are type of Nature's great gifts to mankind. Since ancient and tribal times, humans have relied on plants to cure diseases and maintain their health. Medicinal Plants contain natural chemical compounds in their roots, stems, leaves, flowers or fruits, which have healing properties in them and are used as medicines for human treatment. Even in today's era of modern medicine, medicinal plants give a huge contribution to healthcare and medical systems all over the world. They are not valuable only for the healing properties and curing effects but also considered essential natural resources that contribute to economic, social, and environmental well-being.

Medicinal Plants are those type of plants that have therapeutic or healing properties and are used to treat various ailments and diseases in humans and plants also often used in traditional or alternative medicine. They own bioactive compounds such as alkaloids, glycosides, tannins, flavonoids, and essential oils. These substances act as natural medicines, capable of curing or preventing diseases.

Medicinal Plants have been the foundation of many ethnomedicines, including Ayurveda, Unani, Siddha and Homeopathy. Even modern allopathic medicines use extracts or chemical compounds extracted from plants. For Example, the painkiller aspirin was developed from the bark of the willow tree, and quinine used to cure malaria was obtained from the bark of the 'Cinchona' tree. Thus, medicinal plants help to fill the gap between traditional wisdom knowledge and modern science.

India is known as the "botanical garden of the world" because of its own rich variety of Medicinal Plants. Some common and daily-life examples are:

Tulsi (Holy Basil): Tulsi is considered as a sacred plant in India and Hinduism. It is often grown in homes.It is used to treat cough, cold, fever, and respiratory problems.

Neem: Neem is known for its strong medicinal properties and its leaf taste is bitter. It's leaves, bark, and oil are used to treat skin diseases, heal wounds of our body and purifying the blood. Neem also acts as a natural antiseptic and used in making soaps, toothpaste, and medicines.

Aloe Vera: Aloe Vera is widely used for its soothing and healing properties. It's gel is applied on skin burns, cuts, and allergies. It is also used in cosmetics and as a natural

remedy for digestive and liver problems. Raw Aloe Vera gel is also directly applied to our hair and scalp for hair growth and hydration.

Turmeric (Haldi): Turmeric is one of the oldest known medicinal spices .It has anti - inflammatory, antiseptic, and antioxidant properties. It helps heal wounds and improves our immunity system and is being studied for its potential role in preventing cancer.

Ashwagandha: Often called "Indian Ginseng", Ashwagandha is used to relieve stress, improve energy levels, reducing cough and cold and strengthen the immune system. It is an important Herb in Ayurvedic system for maintaining physical and mental health.

Ginger: Ginger is used to treat nausea (the feeling that you are going to vomit),sore throat and cure digestive system's problems. When Ginger is dried and crushed it is called Ginger Sonth which is used to make medicines. It is also used in curing cough and cold.

These are just a few examples out of thousands of medicinal plants that grow across India's diverse climate and geography.

Importance of Medicinal Plants as Natural Resources
Medicinal Plants are considered an important natural resource due to of their contribution to human health, economic development and prosperity and environmental sustainability. Their importance can be explained through the following points as explained further below:

Source of Natural Medicines: Medicinal Plants are the necessary raw materials for both traditional and modern medicines. It is the basic component of medicinal system in making medicines. Around 25% of all modern drugs are made directly or indirectly from plants. They provide natural medication that are often safer and have fewer side effects compared to synthetic and modern medicines.

Economic Value: The global demand for herbal products and medicines is increasing rapidly day by day. India exports a large variety of Medicinal Herbs and essential oils to other countries, which contributes significantly to the economy of India. Many Rural communities depend on the cultivation and collection of medicinal plants for their livelihood.

Cultural and Traditional Importance: Medicinal Plants are deeply associated in our Indian Culture and Traditional healing systems like Ayurveda and Unani. They represent centuries of knowledge passed down from generation to generation. Using Medicinal Plants helps us to preserve our cultural heritage of India.

Affordable and Accessible Healthcare: Herbal Medicines made from medicinal plants are practically cheaper and more accessible than synthetic drugs. For People living in rural or remote areas, where proper cure and treatment is not available; medicinal plants often serve as the only form of primary Healthcare.

Environmental Benefits: Medicinal Plants are renewable and eco friendly sustainable natural resources. Cultivating

and protecting them is our duty and it also promotes biodiversity and helps maintain the balance of ecosystems. Unlike chemical - based industries, Herbal Medicine and Traditional medicine production causes minimal pollution.

Scientific and research Value: Medicinal Plants provide Valuable materials for scientific research and pharmaceutical development. Scientists even today; continue to discover new compounds from plants that can be used to develop and engage modern drugs for diseases like cancer, diabetes and heart problems.

Need for Conservation

Despite their importance, medicinal plants are in threat due to deforestation, over harvesting, pollution, over grazing and most importantly the climate change (Global warming). Many species are becoming rare throughout the world or endangered. Therefore we have to promote sustainable cultivation and conservation of of these plants through awareness programs, herbal gardens, botanical gardens and government agencies and initiatives.

Conclusion

Medicinal Plants are precious natural resources that play a vital role in human health care, country's economy and prosperity and environmental sustainability and balance. They connect us to nature's healing power and beauty and hold the key to many cures that modern science also couldn't cure and continues to discover. Even in today's era of modern medicine, medicinal plants give a huge contribution to healthcare and medical systems all over the world. They are not valuable only for the healing properties and curing effects but also considered essential natural resources that contribute to economic, social, and environmental well-being. Protecting and promoting the use of Medicinal Plants ensures a sustainable and safe future for our next generations where nature and humans coexist in harmony. Thus, I want to end this discussion with this Last note that Medicinal Plants are not just herbs -- they are life saving treasures of our planet Earth'.

Photo credit: ***Saikat Kumar Basu***

"Plant a tree and keep the flood at bay".

"Save the forests and change the climate".

"It is our collective and individual responsibility to protect and nurture the global family, to support its weaker members, and to preserve and tend to the environment in which we all live."

— Dalai Lama

Let's clear the air for Earth's future.

NESA Members are requested to share articles / write up for publications in NESA Newsletter
- Editor-in-Chief

NESA Members are requested to please send / share a short article on ***Agriculture / Environment and other related fields*** for the NESA Newsletter which is published monthly to circulate among the ***NESA Members and scientific / academic community***.

Chief Editor

Plant Tree **Save Environment**

Abstract Submission Date is extended to 15st January, 2026

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National Conference
on

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