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## Food Security issues: Serious Challenges for India

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Food security is an important issue that has been impacting global life and establishment cutting across all the continents excluding Antarctica. As a developing nation with substantial human population, none the less, the food security issues are extremely important from an Indian perspective. Being the second largest population nation of the world

and projected to take over as the largest populous nation of the world in the not so distant future; India stands at the cross roads of global food security dilemma. Recently on the basis of critical analysis of global hunger levels, India has been shamefully ranked 97 among a total of 118 countries in 2016 Global Hunger Index (GHI) following strict evaluation parameters of the International Food Policy Research Institute (IFPRI). The report suggests that one in every three children in India is facing stunted growth and around 15% of the India population is seriously under nourished due to lack of proper nutritious foods. Among the two Asian giants, India and China, the



latter has been placed at 29th place along with other Asian nations such as Mongolia, Malaysia, Thailand, Timor Leste occupying prominent rankings due to very low hunger level.

There are several factors highlighted below to identify few of India's perennial failures in addressing nationwide hunger issues:

1. Inadequate infrastructure across the nation almost seven decades post-independence, preventing faster distribution of food materials from one part of the nation to the other. The worst impacted regions are borders areas, tribal dominated and forested parts of the nation, small islands, remote locations, remote district towns and villages, desert and hilly areas, high altitude human settlements and other farthest corners of the nation.
2. Most prominent agricultural areas lack proper storage facilities, warehouses as well as cold storages. As a consequence, India is acutely suffering in gross wastage of vast amount of agricultural produce in spite of high annual agri-productions.
3. The extremely poor maintenance and conditions of the government storage facilities either under the Central or the various State Governments is a matter of deep concern. Whatever food grains are being stored here after collecting them from various production centers are devoured by both avian and rodent pests in significant amounts. Furthermore, improper handling and poor storage further results in other forms of pest infestations like various storage insects as well as bacterial and fungal infections of the food grains and other food materials.
4. Furthermore, huge corruption exists in the food distribution and rationing system across the nation. The available good quality grains are either smuggled out of the highly vulnerable, poorly stored and maintained; and ill monitored storage centers or are stolen during their transportation or dissemination to various food centers and ration shops across the country.
5. All the stakeholders in this national loot of food materials and food grains including politicians, bureaucrats, police, members of the food

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## Each One Plant One



Save Papers  
Save Trees  
& Save Money

## Native Herbs of Food and Ornamental interest in the Neotropics: Challenges for Conservation, Management and Sustainable Production

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The Botanic Gardens Conservation International (BGCI) estimated that the total number of plants is in the order of 400,000 species; however, the catalog of The Plant List includes over 1 million plant

species names, of which around 350,000 are accepted names and 240,000 names remain to be resolved into accepted names or synonyms. Of these 400,000 species, the Food and Agriculture Organization of the United Nations (FAO) estimated that the number of plant species used for medicinal purposes around the globe is over 50,000; while Khoshbakht and Hammer (2008) estimated 28,000 plant species with various ornamental uses. However, the number of herbs with potential uses in the world is still quite uncertain. According to Natural Resources Conservation Service (USDA), a herb is defined as "... vascular plant without significant woody tissue above or at the ground ...".

The native herbs in developed tropical countries has enormous potential for use, which can be deduced from the level of traditional knowledge held by rural communities in each region,



which come to recognize that about 90% of the plants have edible uses, medicinal, ornamental, melliferous, feed, veterinary, applications for construction, handicrafts, fuel etc.

However, there is still no certainty what proportion of these uses are assigned to wild herbs, although a large percentage of the flora is found in the tropical countries around the planet. Nevertheless,



the conservation and sustainable use of these plant resources are limited due to very destructive anthropogenic impacts like high rates of global deforestation and environmental degradation,

which lead to the loss of flora in all the countries across both Eastern and Western hemispheres. It therefore becomes quite alarming for the conservation of native flora, and it is absolutely urgent to establish guidelines for their successful long term conservation. A viable low-cost option is the establishment of *ex situ* genebanks, where the maximum genetic diversity of flora, including a high number of representative populations of the species of interest can be conserved.

Furthermore, aimed at safeguarding the genetic material of economically important species for breeding, agriculture, livestock, food, medicine; and for obtaining



ornamentals, medicinal herbs, antiparasitic plants, endangered or vulnerable or endemic species as well as species with restricted distribution. The stored germplasm will be the basis for future genetic improvement, since it can count on useful individuals for the production of crops resistant to pests and diseases and as a strategy for food security and conservation of global biodiversity. For example, in Mexico projects are being developed to generate knowledge about these native Neotropical herbs of substantial economic and nutritional interests for long term conservation, management and sustainable production; and as a measure for food security and to provide alternative additional income to the indigenous rural communities.

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**Publication Division, NESA**

## Dye Plants in the World: Knowledge, Culture and Diversity Conservation

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Currently, the knowledge and use of dye plants for staining of craft products are being displaced by synthetic dyes. However, natural dyes have great cultural and economic values for global human populations from the perspective of

traditional or indigenous knowledge and uses that dates back to ancient times. The first traces of dyed fabrics have been reported from ancient Egypt, China and Indus Valley Civilizations. Meanwhile, chemical based dyes were discovered in the mid-19th century. Dye plants are those plant species with specific compounds that contribute to the pigmentation of many parts of the plant. For example phenolic alcohols are responsible for the red, orange, blue, purple or violet colors; tanins for orange, red, reddish yellow, red violet colors; anthraquinones for red; anthocyanins for red; and flavonoids for orange and red. All these compounds are present at different concentrations in the roots, stems, leaves, flowers, fruits and seeds, which are procured from the specific plants through different time tested traditional or indigenous techniques around the globe by several indigenous or aboriginal communities.

A wide variety of dye plants were used in the past to paint murals, codices and costumes for performing magic and various religious rituals. These plants are still used by indigenous



communities in different parts of the world having extensive knowledge of their dyeing properties as it is part of their culture and traditional identity; and are transferred from one generation to the next. Many of these synthetic chemical dyes do not degrade quite naturally in the environment and have detrimental impacts on the ecosystem from a long term ecological health perspective. These are mostly toxic compounds containing arsenic, barium, lead, copper, chromium, cadmium, mercury, zinc or tin. On the other hand, the traditional plant based dyes being natural, non-toxic biologically active chemical compounds that degrade quite



efficiently in the immediate environment with much lesser negative environmental impacts and hence can be considered as eco-friendly chemical dyes. Some important species in the world are mainly

legumes as *Indigofera suffruticosa* "indigo, añil", *Haematoxylum campechianum* (Fabaceae), *Bixa Orellana* "annatto, achiote" (Bixaceae) to mention only a handful.

However, due to modern innovations in the synthetic dye industry; much of the traditional (natural plant based) dyes are being rapidly replaced across the globe with synthetic chemical dyes. While it is



not easy to compete with modern synthetic dyes produced industrially, it is important to protect the use of natural plant dyes and the livelihood of many traditional communities as they are rapidly losing their

traditional knowledge and livelihood due to modernization. The unique art form and the traditional livelihood of indigenous people intimately associated with their immediate natural ecosystems; and hence could not be under estimated and need conservation efforts to protect this decaying art form and traditional livelihood of using natural plant based dyes by several indigenous communities.

The dissemination of knowledge of these dye plants and their associated techniques can contribute to the economy of rural communities and the conservation of the species, as some are in acute danger of extinction; which can lead to loss of species and as well as traditional knowledge. Hence, an initiative of dyeing with natural dyes, should aim to recover traditional techniques and at the same time allow a new opportunity for artisans; ensuring best prices and recognition of their work from being forgotten and replaced with artificial colorings and synthetic fibers. It is therefore absolutely necessary to rescue and preserve this traditional knowledge and its promotion as a source of added value for the handicrafts prepared and /or designed by different indigenous communities around the globe, particularly in the developing and under developed nations.

"Heal the world, make it a better place, for you and for me and the entire human race. There are people dying if you care enough for the living. Make it a better place for you and for me."

"Imagine if trees gave off Wifi signals, we would be planting so many trees and we'd probably save the planet too. Too bad they only produce the oxygen we breathe."

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storage, management and transportation staffs, security agencies, food inspectors, ration shop dealers, food quality testing agencies, local state agency members associated with food storage, management and transportation, panchayat members, porters and laborers. From the creamy top to the most under privileged lowest level workers, every person involved in this chain gets a big or small share of this awesome booty; and hence the disastrous food deficiency across the nation.

6. The food grains distributed from the Central and State Government storage facilities often represents extremely poor quality and are often not at all suitable for human consumption or even consumption by livestock or domestic animals due to low quality, poor nutrition level and serious threats of mycotoxicosis.
7. The ration supply should not be made open to all sections of the populations; particularly to the economically affluent sections that do not even care to collect their weekly ration quotas based on their high average annual income. However, the ration supplies are being made open and available to all sections of the society from the rich and privileged to the poor, under privileged and acutely deserving communities posing a serious threat to the sustainability of this system from a long term perspective.
8. Malpractices and corruption at the micro-levels is damaging and disrupting food supplies across the nation severely cutting down the much needed supply to those living under and/or near poverty levels.
9. Abject poverty among several communities within the nation restricts their ability to access nutritious food directly from the market; severely depleting them of essential nutrients and makes them a vulnerable section of the population with respect to food security.
10. No nation can make progress with an uncontrolled population. India's global population share is huge and alarming. Unless the government does something serious in regulating this substantial population, no matter how much efforts and investments goes into the food and agri-industries, India will never be able to address the food security issues comprehensively.
11. India needs a comprehensive Food Policy for the nation and also needs to develop several modern storage facilities and proper distribution system and infrastructure across the nation to avoid indiscriminate wastage of precious agricultural produce. India has very little opportunity to increase additional acreages under agri-productions; hence it is absolutely important to store the annual productions so that it



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can be used judiciously across the nation and to successfully cater to the needs of the poorest of the poor of India to address the hunger issue.

One must wonder what is the problem with India with respect to addressing acute hunger levels within the nation when it is one of the most prominent and major agricultural nations of the world! Agricultural production does not necessarily always correlate with growing hunger levels. Hence high agricultural production with poor storage and distribution issues are severely contributing towards rising hunger levels across the length and breadth of the nation. Combined with improper management and high level of corruptions, the matter is rapidly turning from bad to worse for India. While China with a substantial population has been able to successfully address food security across their vast nation and huge population, India is lagging light years behind with significant portion of the rural and urban poor becoming unfortunate victims of the situation and are extremely vulnerable to fluctuations to food price rises and poor distribution system.

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