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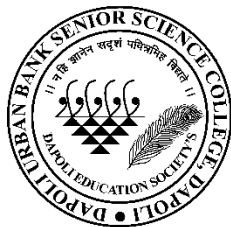
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Principal & Chief Editor:

Dr. Sandesh Jagdale

Front Page Concept & Design:

Mr. A.V. Mulukh

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Dr. Sandesh Pandurang Jagadale

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Address:-

Principal,

Dapoli Urban Bank Senior Science College, Dapoli

Dist. Ratnagiri -415712

Phone- 02358 283256

3. Name & Address of Principal:

Principal Dr. S. P. Jagadale

Dapoli Urban Bank Senior Science College, Dapoli

Dist. Ratnagiri -415712

Phone- 02358 283256

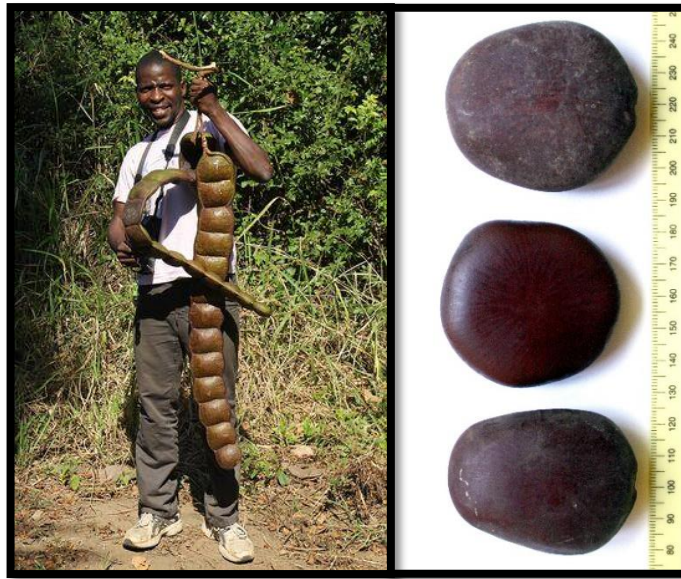
I, Shri Dr. S. P. Jagadale hereby declared that the particulars given above are true to the best of my knowledge and belief.

Sign /-

(Dr. S.P. Jagadale, Principal)

(The editor and publisher may not agree with the views expressed in articles.)

Entada rheedii - Largest pod with high medicinal value



Botanical name : *Entada rheedii* Spreng.
Family : Fabaceae
Common name : Garambi, African dream herb.

Description

The *Entada rheedii* plant is a very interesting giant climber/liana. It is reported as endangered liana from Barki, Chandgad, Gaganbawada, Palsambe, Petgaon, and Tilarinagar from Kolhapur district and Chandoli Sanctuary of Sangli district. The stems twine clockwise and anti-clockwise around other trees for support. The vine can grow as long as 120 meters (393.7 feet). Leaves are bipinnate, oval in shape. Flowers are pleasantly fragranced, yellowish white or greenish yellow. It flowers in mid-summer, from December to January. Seeds are massive and they are housed in pods which grow to an impressive size once they reach maturity. They can be almost as long as the height of a grown man. The pod is enormous flat, woody and segmented pod, that measure up to 2 m long and 150 mm wide. Seeds are shiny, hard, dark brown, ±

50 × 35 mm. Their seeds have a thick and durable seed coat which allows them to survive lengthy periods of immersion in seawater.

Origin and distribution: Tropical and South Africa, Sri Lanka, India to China, Malaysia to Australia. It is reported in few sacred groves of Dapoli with least number of plants.

Chemical constituents: *E. rheedii* are antigenic acids, fatty acids, **entamide A**, B, and C, phaseolidine, echinosystic type saponin, saponin, saponin III, triglycerides, triterpenes and triterpenoids can be found in all parts of *E. rheedii*.

Traditional Medicine: It is useful in the treatment of jaundice, diarrhoea, musculoskeletal problems, and mumps. In South-East Asia, bark and seeds are used to relieve pains and itching. It is useful as a narcotic emetic, also used as a remedy for cerebral haemorrhage and oral contraceptive. On the other hand, *Entada*

rheedii is made into a thickened salve or poultice that is applied to swollen hands, feet, and limbs, as well as painful joints and expedite the healing process. A strong tea is made from the leaves to induce vomiting in patients with stomach aches, abdominal pains, and diarrhea. A weaker tea is made from the bark and used to help reduce the high temperature in fever patients. In the Philippines, it is believed that a tea made from the whole plant, roots, bark, leaves and seeds can treat the after effects of a stroke and improve blood flow to the brain.

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Article by
Mr. Ajinkya Mulukh
Department of Botany

Crisp Packets Made of a New Material Could Be Much Easier to Recycle



Crisp packets aren't widely recyclable

When people took to posting their crisp packets back to manufacturer Walkers to protest that they weren't easily recycled, the firm took notice and launched collection points for recycling. But the reality is the special scheme has addressed just a tiny fraction of the waste mountain – 3 million of the 4 billion bags the company sells annually just in the UK – and they still aren't accepted by household recycling schemes.

Researchers say crisp makers may have to come up with a new, greener alternative. The metallised films used for today's crisp packets, chocolate bars and much other food packaging are great for keeping the contents dry and cool, but hard to recycle as they are made from several layers of plastic and metal fused together.

“The crisp packet is quite a hi-tech piece of polymer packaging,” says Dermot O’Hare of the University of Oxford. However, recycling it is difficult. While technically the metallised films can be recycled at an

industrial level, says UK waste agency WRAP, it isn't economically viable to do so widely yet.

O’Hare and his team’s proposed alternative is a very thin layer, called a nanosheet, made from amino acids and water, applied to a film of plastic (polyethylene terephthalate, or PET, which most plastic water bottles are made of). The benign building blocks of amino acids and water appear to make a material safe for use with food, says O’Hare: “In terms of the chemistry, that was the breakthrough, making synthetic nanosheets using non-toxic materials.” But he says there will be a long regulatory process, and we shouldn't expect to see the material in packaging for at least four years.

Part of the challenge in designing the material was meeting industry demands for a good barrier to gases, to avoid contamination and keep the product fresh. To make the nanosheets effective, O’Hare’s team created a tortuous pathway, a sort of maze at a nano level that makes it hard

for oxygen and other gases to diffuse through.

As an oxygen barrier, it appears to perform around 40 times better than metallised film, and the material also fared well in the industry's crumple test, which involves flexing and twisting it. The film also has the big advantage of being monomaterial packaging, in other words only having one material, the PET, which can be widely recycled.

The new film is up against rivals, including clay-based materials that are mined, though their natural origin means they suffer from concerns over impurities. The race is on to be the greener material of the future, with companies such as Walkers promising fully recyclable or biodegradable packaging by 2025

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Article by
Mr. Kailas Gandhi
Department of Chemistry

Women Empowerment and analysis of Government schemes for Women Entrepreneurship

India treats women and men equally. They can vote, run for office, and serve in the military, and they receive the same treatment. Additionally, they are shielded from prejudice and assault by the law. Furthermore, women have made great achievements in elevating their position during the last few decades.

The prosperity of India's economy depends on the empowerment of women. The likelihood of women investing in their education, taking care of their families and communities, and contributing to the economy is higher than that of men. To increase the productivity and competitiveness of the nation and close the gender wage gap, it will be necessary to find creative solutions and to give attention to several different concerns.

Women have had the opportunity to start their businesses and contribute to the economy. Women have gained the ability to start their businesses in the last few years, giving them the means to support themselves financially and advance their education. Women who might have otherwise been forced to stay at home now have more career choices because of the expansion of women-owned businesses. However, many women still encounter obstacles when attempting to launch and run their businesses. These obstacles include a lack of credit, a dearth of accessible, inexpensive business financing, and insufficient insurance coverage.

The lack of empowerment of women is a major problem facing the world today. This issue not only affects the well-being of women, but also the health and prosperity of society as a whole. For this purpose, women need to be empowered. When women are denied access to positions of power, it leads to lower levels of productivity and achievement for society as a whole. This is because women bring a unique perspective and skillset to the table that is essential for driving innovation and progress. When women are denied opportunities to lead, everyone suffers. Below we have provided a list of government schemes for start-up business loans for women entrepreneurs:

1. Mudra Loan for Women-

This plan, while not expressly geared toward women, can still assist female entrepreneurs in opening up small enterprises like salons or shops. With this option, you can obtain financing for any amount between ₹ 50,000 and ₹ 100,000 without putting up any collateral

2. Stree Shakti Yojana

This commercial loan program gives women business owners a discount on the amount borrowed. At that interest rate, a woman business owner receives a 0.50 percent reduction on her loan if it exceeds Rs. 20 lakhs. The majority of SBI Bank branches have served as the conduit for the central government's Stree Shakti Packages.

3. Dena Shakti Scheme

You might try choosing this plan if you intend to launch a business in the areas of manufacturing, microcredit, housing, or education. 20,000,000 yen is the maximum loan amount, and the interest rate is 0.25 percentage points lower than the base rate. Please be aware that the amount you may request is based on the industry to which your business belongs. You can go to a Dena Bank location to register for this program.

4. Mahila Udyam Nidhi Yojana

The Mahila Udyog Nidhi Yojana is a business loan program for women launched by Punjab National Bank (PNB). The goal of this program is to lend money to women-owned businesses operating in small-scale industries. Women business owners can easily pay back the loan balance over ten years. The Mahila Nidhi program also includes several financing programs for auto rickshaws, daycare centers, and beauty salons. Under the Mahila Udyam Nidhi Scheme, a loan can only be for a maximum of Rs. 10 lakh.

5. Bhartiya Mahila Bank Business Loan -

Commercial loans are available to female business owners who seek to launch a new property-based or retail SME. The maximum loan amount for female business owners is up to Rs. 20 crore and this business loan program also offers a 0.25 percent refund. Despite their limited financial resources, it makes it simpler for them all to get more affordable loans.

6. Orient Mahila Vikas Yojana Scheme

The Oriental Bank of Commerce initiated the scheme, and women with a 51 percent shareholding in a specialized concern can apply for a loan through Orient Mahila Vikas Yojana. For loans ranging from 10 lakhs to 25 lakhs, collateral is required. The loan has a seven-year repayment period. This Scheme furthermore offers an interest rate reduction of up to 2%.

7. Cent Kalyani Scheme

The Cent Kalyani Yojana is a business grant available to self-employed women and entrepreneurs of all stripes. Businesses that are micro/small, like those in farming, village industries, and retail trade, can apply for the Cent Kalyani Program. For this loan, you don't need security in the form of guarantors or collateral. The interest rate for the loan is based on current market rates. You will have a maximum of seven years to repay the loan.

8. Udyogini Scheme

Women between the ages of 18 and 45 are eligible for loans up to Rs. 1 lakh under the Udyogini Scheme. These loans are available to people who work in the business, agricultural, retail, and small company sectors. Only a woman entrepreneur can obtain funding through the Udyogini plan if her family's annual income is less than Rs. 45,000. For loans up to Rs. 10,000 made to SC and ST women who are widows, poor, or disabled, a 30% subsidy is also granted.

9. Sukanya Samriddhi Yojana

Women who operate small businesses, like tutoring facilities, tailoring shops, or beauty salons, can get loans from the SSY Business Loan Scheme. The Mudra Card, which works in a similar way to a credit card, will be given to women when their loan is approved. The limit on this card is 10 percent of the loan. Additionally, the loan amount ranges from Rs. 50,000 to Rs. 5 lakh. The Tarun component of the Mudra Scheme's loan amount is Rs. 10 lakh.

To help the nation reach its intended goal, women should be included in its development strategy. They should be included as co-developers because empowerment is the end goal of development. This guarantees their complete involvement in all dimensions of the social development of a nation. The level of productivity of women must grow as a result of training and development. Women's empowerment would thereby increase individual women's options and production levels and even the combined involvement of women groups.

It is concluded that women's entrepreneurship is needed for women's empowerment. As a culture, we must develop ways to help women realize their full potential to solve the issue of the empowerment of women. Women are gaining strength in the workforce and as a result, they are altering the world. They do have to be given more power, though, to keep this momentum going.

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*Article by
Ms. Siddhi S. Salgaonkar,
Department of Commerce*

Evolution of computer

Computers in the form of personal desktop computers, laptops and tablets have become such an important part of everyday living that it can be difficult to remember a time when they did not exist. In reality, computers as they are known and used today are still relatively new. Although computers have technically been in use since the abacus approximately 5000 years ago, it is modern computers that have had the greatest and most profound effect on society. The first full-sized digital computer in history was developed in 1944. Called the Mark I, this computer was used only for calculations and weighed five tons. Despite its size and limited ability it was the first of many that would start off generations of computer development and growth.

First Generation Computers

First generation computers bore little resemblance to computers of today, either in appearance or performance. The first generation of computers took place from 1940 to 1956 and was extremely large in size. The inner workings of the computers at that time were unsophisticated. These early machines required magnetic drums for memory and vacuum tubes that worked as switches and amplifiers. It was the vacuum tubes that were mainly responsible for the large size of the machines and the massive amounts of heat that they released. These computers produced so much heat that they regularly overheated despite large cooling units. First generation computers also used a very basic programming language that is referred to as machine language.

Second Generation Computers

The second generation (from 1956 to 1963) of computers managed to do away with vacuum tubes in lieu of transistors. This allowed them to use less electricity and generate less heat. Second generation computers were also significantly faster

than their predecessors. Another significant change was in the size of the computers, which were smaller. Transistor computers also developed core memory which they used alongside magnetic storage.

Third Generation Computers

From 1964 to 1971 computers went through a significant change in terms of speed, courtesy of integrated circuits. Integrated circuits, or semiconductor chips, were large numbers of miniature transistors packed on silicon chips. This not only increased the speed of computers but also made them smaller, more powerful, and less expensive. In addition, instead of the punch cards and the printouts of previous systems, keyboards and monitors were now allowing people to interact with computing machines.

Fourth Generation Computers

The changes with the greatest impact occurred in the years from 1971 to 2010. During this time technology developed to a point where manufacturers could place millions of transistors on a single circuit chip. This was called monolithic integrated circuit technology. It also heralded the invention of the Intel 4004 chip which was the first microprocessor to become commercially available in 1971. This invention led to the dawn of the personal computer industry. By the mid-70s, personal computers such as the Altair 8800 became available to the public in the form of kits and required assembly. By the late 70s and early 80s assembled personal computers for home use, such as the Commodore Pet, Apple II and the first IBM computer, were making their way onto the market. Personal computers and their ability to create networks eventually would lead to the Internet in the early 1990s. The fourth generation of computers also saw the creation of even smaller computers

including laptops and hand-held devices. Graphical user interface, or GUI, was also invented during this time. Computer memory and storage also went through major improvements, with an increase in storage capacity and speed.

The Fifth Generation of Computers

In the future, computer users can expect even faster and more advanced computer technology. Computers continue to develop into advanced forms of technology. Fifth generation computing has yet to be truly defined, as there are numerous paths that technology is taking toward the future of computer development. For instance, research is ongoing in the fields of nanotechnology, artificial intelligence, as well as quantum computation.

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*Article by
Ms. Shravya Pawar,
Department of Commerce*

Textile waste an emerging issue



Almost a decade after Japan's Fukushima Dai-ichi Nuclear Power Plant was destroyed by the Tohoku-Oki earthquake and tsunami, which caused the release of radioactivity into the ocean like never before, radiation levels have dropped to safe levels in all but the waters nearest to the closed power plant. Currently, fish and other seafood captured in waters further than all but a restricted region have been identified to be well within the country's stringent limits for radioactive contamination. However, a new threat is present and has been burgeoning daily in the number of storage tanks on the land around the power plant, which contains contaminated wastewater. An article published in the Science journal on August 7th, 2020, analyzes a few of the several radioactive elements included in the tanks and recommends that there is more work to be done to comprehend the possible threats of discharging wastewater from the tanks into the ocean.

The researcher is more worried about the greater than 1,000 tanks located on the grounds of the power plant, which have been loaded with cooling water and groundwater that have become contaminated via contact with the reactors and their containment buildings.

Advanced cleaning processes have helped eliminate several radioactive isotopes and measures to deflect groundwater flows around the reactors have immensely reduced the amount of contaminated water being collected to below 200 metric tons per day. The global demand for fashion and clothing has risen at an unprecedented rate that the fashion industry now accounts for 10% of global carbon emissions, becoming one of the biggest environmental problems of our time. Fashion alone produces more greenhouse gas emissions than both the aviation and shipping sectors combined, and nearly 20% of global wastewater, or around 93 billion cubic meters from textile dyeing, according to the UN Environment Programme. Textile waste is produced in every phase of the textile manufacturing process like spinning, weaving, dyeing, finishing, garment manufacturing and even at the consumer end. What are the various types and what is their effect on the ecosystem? Global production of clothing and its consumption has increased in the last fifty years. With time, clothing has gained more importance as people associate every occasion, mood, season and status with clothing. It has become a way of making an impression and non-verbal communication. Textiles is the second

biggest polluting industry. The average life span of a garment is roughly three years, and so, textiles generate a huge amount of waste. Five per cent of all global landfills is being taken up by dumped textile waste. It is not possible to avoid wastage during production or usage of textiles. Besides, a sensible analysis on the shopping behaviour and life cycle of a product among the consumers is essential. The huge quantity of textile waste dumped in landfills and incinerated can be reduced to a great level by understanding the dimensions of a product and its compatibility with nature. Textile waste is produced in every phase of the textile manufacturing process like spinning, weaving, dyeing, finishing, garment manufacturing and even at the consumer end.

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<https://www.fibre2fashion.com/industry-article/8696/harmful-effects-of-textile-waste>

Article by -

Mr. Aniruddha V. Sutar

Department of Environment Science

Salmonella Infection



Salmonella is a genus of the family Enterobacteriaceae. It is a Gram-negative, non-spore-forming, rod-shaped and facultative anaerobic bacterium. They are 2–5 μm long by 0.5–1.5 μm wide and, depending on the serotype, the *Salmonella* genome ranges from 4460 to 4857 kb. The bacterium was first identified in a veterinary laboratory in the 19th century in the USA. The genus is classified into two species: *Salmonella enterica* and *Salmonella bongori*. Biochemical and genomic analysis of *Salmonella enterica* has led to further classification into subspecies, including *enterica*, *salamae*, *arizonae*, *diarizonae*, *houtenae* and *indica*. The clinically important *Salmonella* species are classified under *Salmonella enterica*, which is further classified into more than 2,579 serovars on the basis of their antigenicity. *Salmonella* species are harboured in the intestinal tract of humans and farm animals. Reptiles and insects also act as *Salmonella* reservoirs. Moreover, eggs, poultry meat, pork, beef, dairy products, nuts, vegetables and water act as sources of *Salmonella*. The bacterium can be transmitted through faecal–oral routes, where susceptible hosts may acquire *Salmonella* through contaminated foods and water and therefore transmissions can be controlled through foods and water. Moreover, infection with *Salmonella* from food or water can also be prevented with vaccination. *Salmonella* vaccines include killed whole-cell, Vi, live oral Ty21a and Vi-rEPA. The use of vaccine may reduce infections, but availability, efficacy, safety and cost are some of the issues that hamper its use and effectiveness. Infection of humans with *Salmonella* results in three main infectious diseases, namely typhoid fever, paratyphoid fever and non – typhoidal *salmonella* (NTS). Typhoid and paratyphoid fevers are caused by *S. Typhi* and *Salmonella enterica* serovar Paratyphi (*S. Paratyphi*), respectively, and are characterized by gastroenteritis and complications such as septicaemia, immunological symptoms, leukopenia and neurological symptoms. *Salmonella* bacteria are found in contaminated foods and do not have to show signs of corruption as a change in odour, texture or colour. To prevent *salmonella* infection in factories, homes, restaurants or elsewhere, bacteria should

be prevented from growing and multiplying to large numbers, if any. Food must be cooked enough to kill the microbe.

Typhoid fever:-

Typhoid fever is known as typhoid. It is common in developing countries due to lack of health awareness among individuals. It is said to be transmitted from infected persons, especially those working in restaurants, due to lack of hygiene, neglect of hand washing or the preparation of contaminated food. From the hands of the injured, and lives in the bag of the gallbladder in the infected, and is usually diagnosed by taking a sample of the patient's faeces, and examination, and through the procedure widal test, which reveals the presence of antibodies. Typhoid fever reaches the intestine, penetrates the intestinal mucosa, reaches the tissues behind it, and then proliferate when the immune system cannot control it, reaching the bloodstream, leading to the emergence of the first symptoms of fever, it can penetrate the channels Gallbladder, bone marrow and liver, where the secretion of germ secretions in the intestine, penetrates the immune tissues of the small intestine, and symptoms begin to appear on the stomach. Symptoms of typhoid includes Increase body temperature, Feeling general tired, Acute pain in the abdomen, Decreased appetite Long-term fever, Diarrhoea, Pain in the bones. Prevention for typhoid fever includes hygiene awareness and the need to wash hands before and after eating.

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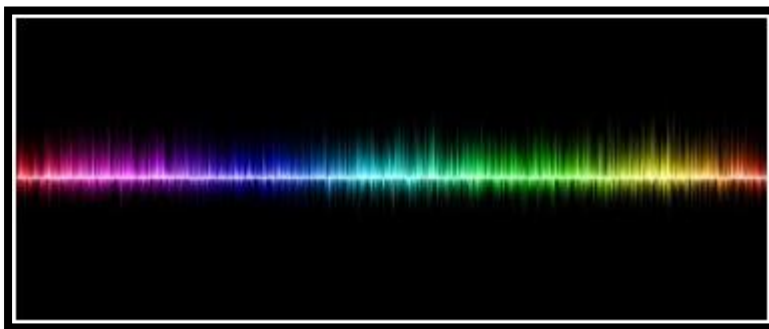
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Article by:

Miss. Priyanka Salvi

HOD, Department of Microbiology

Sound



Vibrating bodies generate sound in the form of energy. But do all vibrating bodies make a sound that humans can hear? NO, is the response. Sound comes in two forms: audible sound and inaudible sound. These sounds are categorized on the basis of their frequency ranges.

Inaudible sound

The human ear cannot distinguish sound frequencies below 20 Hz or 20 vibrations per second. Therefore, any sound below this frequency won't be audible to humans. The amplitude of the wave would depend on how loud the sound was because the human ear cannot hear frequencies beyond 20000 vibrations per second (20 kHz) in the high-frequency range. Therefore, the range of frequencies that are inaudible is between 20 Hz and 20 kHz. Therefore, the range of frequencies that are inaudible is between 20 Hz and 20 kHz. Therefore, the range of frequencies that are inaudible is between 20 Hz and 20 kHz. Infrasonic sound is a term used to describe low-frequency sounds that are too high for the human ear to hear. However, ultrasonic sound is also a term for the higher range of inaudible frequency.

Some animals, such as dogs, are capable of hearing noises at frequencies higher than 20 kHz. Only dogs can hear the police department's whistles since they have frequencies greater than 20 kHz. There are several uses for inaudible frequencies. These are employed in a variety of sectors,

including science and medicine. The ultrasonic technology used to track and analyse a variety of medical issues operates at frequencies higher than 20 kHz.

Audible sound

Frequencies between 20 Hz and 20 kHz are easily audible to the human ear. As a result, audible sound is defined as sound waves having a frequency between 20 Hz and 20 kHz. If they are in the audible frequency range, every tiny fluctuation in air pressure may be detected by the human ear. Less than one billionth of an atmospheric pressure change can be detected.

The top limit of hearing frequencies diminishes as we become older and are exposed to sound for prolonged periods of time. The maximum frequency that a typical middle-aged adult can hear well is between 12 and 14 kilohertz.

Here I have listed some species with their audible limits

Species	Approximate Range (Hz)
Human	64-23,000
Dog	67-45,000
Cat	45-64,000
Cow	23-35,000
Horse	55-33,500
Sheep	100-30,000
Rabbit	360-42,000
Rat	200-76,000

Mouse	1,000-91,000
Gerbil	100-60,000
Guinea Pig	54-50,000
Hedgehog	250-45,000
Raccoon	100-40,000
Ferret	16-44,000
Opossum	500-64,000
Chinchilla	90-22,800
Bat	2,000-110,000
Beluga Whale	1,000-123,000
Elephant	16-12,000
Porpoise	75-150,000
Goldfish	20-3,000
Catfish	50-4,000
Tuna	50-1,100

Article by:
Prof. D.D. Kulkarni
HOD, Department of Physics

The Importance of Insects in Agricultural Ecosystems



The production of enough food to feed the world's expanding population is becoming a major challenge. The world's arable land areas cannot be greatly increased because nearly all of the world's productive land is already in use. Securing high and quality yields while making agricultural production ecologically friendly is a global challenge. In terms of both species richness and abundance, insects have achieved phenomenal success. The most abundant group of organisms on Earth, comprising about 66% of all animal species, insects are widespread, play a significant role in every ecosystem, and play an essential role in our food supply chains. They are also excellent dispersers and exploiters of virtually all types of organic matter. These systems need to be maintained so that insects providing important ecosystem services are also integrated into the system. Future food security will be greatly increased by doing this, which will provide stable, resilient, and sustainable systems in a continuously changing environment. Insects normally play a significant part in ecosystems, and this essay explores how their services can benefit agricultural ecosystems.

Pests have destroyed crops for as long as people have participated in agricultural agriculture, and insects have generally been seen as rivals in the struggle for existence. About 50% of insect species are herbivorous, with most herbivorous species feeding on plants in one or a few related plant families. The insect-plant relationship is the primary biotic interaction. 18% of global agricultural productivity is damaged by herbivorous insects, which are primarily controlled chemically. Despite these harms, fewer than 0.5 percent of the known bug species are classified as pests. Insects are not considered pests in an ecological or evolutionary context, except from anthropocentric perception and social prejudice.

Considering crops cannot be produced without the ecosystem services supplied by insects, insects are essential to human survival. Insects are required to pollinate about 72% of all crops worldwide. Three-quarters of all crop kinds worldwide—or one-third of the volume of global crop production—have improved or stabilized yields thanks to pollinating insects. Numerous insect taxa have been connected to rising seed set. Hundreds of different species of solitary bees, bumblebees, flies, beetles, and butterflies are among the insect pollinators. In some crops, wild bee species are more crucial for pollination than the honeybee, *Apis*

mellifera. Insect pollination services are thought to contribute 9.5% of the world's crop production yield.

Agriculture will require sustained pest control. By removing pest insects from cultivated crops, predatory insects contribute significantly to ecosystem services. Ground beetles are the dominant generalist predators in arable crops and effectively reduce population sizes of economically significant agricultural pests such as aphids, slugs, root feeding flies, and phytophagous beetles. It has been shown in 75% of field studies that generalist predators significantly reduce pest populations in arable farmland. Additionally essential to improving agricultural soil are insects. Dung beetles work in the soil to raise its levels of nitrogen, phosphorus, potassium, calcium, magnesium, and total proteins, which considerably boosts wheat plants' production in comparison to chemical fertilizers.

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Article by

Mr. Swati Moreswar Depolkar

Department of Zoology

मुंबई विद्यापीठ



UNIVERSITY WITH POTENTIAL FOR EXCELLENCE

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Academic Year 2016-2017

Rural Area

is conferred upon

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Dapoli Urban Bank,

Senior Science College

Dapoli, Dist – Ratnagiri 415 712

in recognition of valuable academic
achievements and participation of the college
teachers in the university system through
various mechanism of the University.

Mumbai, 26th January, 2018

