

Criterion – 2

Teaching-Learning and Evaluation

NAAC- SSR (2nd Cycle)



ETERNAL UNIVERSITY

BARU SAHIB, SIRMOUR-173101
HIMACHAL PRADESH

2.3.1(2)

Participative Learning



ETERNAL UNIVERSITY

BARU SAHIB, SIRMOUR-173101
HIMACHAL PRADESH

Participative Learning

One day training by FSSAI (Food safety and Standard authority of India)/FoSTaC (Food Safety Training and Certification)

Training of 62 candidates (students and faculty members) was successfully conducted on 16th October 2019 on "World Food Day". Mr. Vikash Kumar, FSSAI FOSTAC trainer / Auditor was the resource person for all sessions of this training. He delivered lectures on various aspects of food safety.



Swachhta Pakhwada

An awareness programme on “Swachhata and its role in human health” was organized at village Bagroti under Swachhta Pakhwada (2019-20). Students and faculty members actively participated in cleanliness drive in which single-use plastic wastes, papers, bottles etc. were collected and disposed in specific dustbins. The importance of hand washing, household hygiene, routine brushing, sanitation, disinfection, mosquitoes control, vaccination, deworming practices etc. in ensuring protection against germs and communicable infectious diseases was emphasized. Active participation of the local residents, students and faculty members made the awareness programme successful.



An awareness programme on “Swachhata and its role in human health”

Visit of B.Tech. EEE 4th year students to Akal Charitable Hospital, Baru Sahib

Students of B.Tech. EEE 4th year along with faculty of ETE had visited to Akal charitable hospital Baru Sahib on 13th August 2019. They visited the X-ray room to show different parts of the X-ray machine and Electrocardiogram (ECG) room.



X-Ray Machine at Akal Charitable Hospital, Baru Sahib



Electrocardiogram (ECG) and Electrodes at Akal Charitable Hospital, Baru Sahib

Celebration of 75th Independence Day

On the occasion of 75th Independence Day, Hon'ble Vice Chancellor hoisted National Flag at 9:00 AM on 15th August 2021 with guard of honor by NCC cadets. After the flag hoisting ceremony, the students of Akal college of Arts and Social Sciences presented patriotic songs.



International Ozone Day

On 16th September 2021, the International Ozone Day was celebrated by active participation of the students. Resource person Dr. Agrawal emphasized the the importance of the ozone layer preservation by collective efforts of all stake holders.

INVITATION
For
International Ozone Day
September 16, 2021

Eternal University, Baru Sahib celebrating International Ozone Day
Venue: EU Auditorium Time: 9:40 AM

Convenor  Dr. A. S. Ahluwalia Pro-vice Chancellor Eternal University, Baru Sahib	Organising Secretary  Dr. Mahesh Tripathi Assistant Professor (Agri. Engg.) Eternal University, Baru Sahib	Resource Person  Dr. Madhoolika Agrawal FNA, FNASc, FNAAS, Professor,, BHU, Varanasi
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National Mathematics Day

Eternal University in collaboration and financial support of Rs. 1 lakh from HIMCOSTE, Shimla celebrated National Mathematics Day commemorating Sri Srinivasa Ramanujan's birthday on 22nd December 2021 and making students aware regarding the importance & applications of mathematics. The students at Eternal University and adjoining schools participated in the event. Various activities like mathematics Olympiad, sudoku puzzles, poster preparations, skit and slogan writing were conducted.




Good Governance Day

Nehru Yuva Kendra, Nahan (Ministry of Youth affairs and sports, GOI) organized a workshop on Good Governance Day as a part of Azadi ka Amrit Mahotsav@ 75 at Eternal University on 25th Dec. 2021.



साथ साथ
कल की ओर...

नेहरू युवा केंद्र, नाहन (हिमाचल प्रदेश) *Nehru Yuva Kendra, Nahan (HP)*
कार्यालय, जिला युवा अधिकारी
Office of the District Youth Officer
नेहरू युवा केंद्र संगठन *Nehru Yuva Kendra Sangathan*
स्वायत्तभारती संस्था *an Autonomous Body under the*
युवा कार्यक्रम एवं खेल नंदालय *Ministry of youth Affairs& Sports*



आजादी का
अमृत महोत्सव

Ref./NYK/NHN/ Good Governance Day/2021-22/614 Date: -09-12.2021

To

Vice Chancellor
Eternal University
Baru Sahib, Sirmour H.P


Sub: Regarding organizing Good Governance day on 25th December 2021 as a part of Aazidi ka Amrit Mahotsav @75

Sir

Government of India always focus on youth to be well aware of Constitution of India. For this, we Nehru Yuva Kendra Nahan, (Ministry of youth Affairs& Sports) took initiative to celebrate Good Governance Day. As per our discussion with Mr. Balraj Singh (Director, Placements), we have decided to organize Good Governance Day as part of Aazidi ka Amrit Mahotsav @75 at Eternal University, Baru Sahib on 25th Dec,2021.

Also, we have planned to organize workshop on 'Youth and democracy' under the umbrella of Good Governance Day.

This is for your kind information and further necessary action please.

Sincerely,

Anil Ku. Dogra
District Youth Officer
Nehru Yuva Kendra Nahan

Republic Day: Republic Day was celebrated with great enthusiasm on 26th January 2022. Faculty, students, staff, members and officials were present during the occasion. After the flag hoisting ceremony, the students of ACASS presented the patriotic songs.



World Consumer Right Day: The day is celebrated every year on 15th March. The events such as quizzes, debate, declamation, and group discussion were organized for the students.



National Science Day

Eternal University in collaboration and financial & support from HIMCOSTE, Shimla celebrated National Science Day to mark the discovery of the Raman effect by Indian Physicist Sir C.V. Raman on 28th February 2022. Students from Eternal University and Govt. Girls Senior Secondary School, Paonta Sahib actively participated in the event. Various activities like easy writing competition, declamation, science model competition, quiz and poster making competition were the main highlights of the day.



International Women Day

The day is celebrated every year on 8th March. Being an exclusively girl's university, celebrated the day by honoring our female faculty, staff and students. Students performed skits, dramas, and poems. Online Lecture was delivered by Prof. Pam Rajput on "Women empowerment in Academic World".



**Eternal University, Baru Sahib
is Celebrating International Women's Day**

Theme: Women Empowerment in Academic World

Date & Timing:
March 08, 2022, from 02:00 PM onwards
02:00 PM - Competition at Bhai Gurdas Hall
03:00 PM- Webinar at University Auditorium

Invited Speaker: Prof. Pam Rajput

Webinar Link: meet.google.com/kzf-aubu-oja



Prof. Pam Rajput
Former Head,
Women Studies
Panjab University,
Chandigarh

International Day of Forests: This International Day of Forests is celebrated globally on 21st March every year to create awareness for the protection of forests. To make the students understand the importance of forests, a clean forest and tree plantation drive was organized on 21st March 2022. Besides this a poster preparation & presentation was also organized in which a total of 225 students participated.



World Water Day

This day is celebrated across the globe on 22nd March every year. It is basically celebrated to value potable water. Eternal University celebrated World Water Day by organizing a poster preparation & presentation on the different themes. A total of 200 students and faculty members participated in the event.



Kisan Mela (Baisakhi Festival)

With active involvement of the students of DKSGACA, the Kisan Mela was organized by Eternal University, Baru Sahib on 13th and 14th April, 2022 for the benefit of farming community of Sirmour district. In this Kisan Mela about 500 farmers from the surrounding areas participated in this event. The Kisan Mela was inaugurated on 13.04.2022 by Dr. Baldev Singh Dhillon, Former Vice Chancellor, Punjab Agricultural University, Ludhiana in the presence of Baba Dr. Davinder Singh Ji, Honorable President Kalgidhar Trust and Chancellor & Vice Chancellor of Eternal University. In the inaugural address the chief guest appreciated the technologies developed by the university for the benefit of farmers. Dr. B.S Dhillon along with other dignitaries of the university made a visit to 24 stalls put up by students and line Departments of the state government and the private seed companies. The 1st prize was given to the stall put up by the Department of Agronomy and the 2nd prize was given each to the Department of Entomology and Akal College of Economics, Commerce and Management.



Dr. BS Dhillon, Former Vice Chancellor, PAU, Ludhiana delivering inaugural address



Sh. Om Prakash farmer of Kujji receiving cash award & gold medal from the chief guest on 13.04.2022



Dr. BS Dhillon inaugurating the exhibitions put up by the university on 13.04.2022



A farmer receiving 1st prize in vegetable category from the Chief Guest, Dr N K Dhiman on 14.04.2022

Tree Plantation Day: Every year the University celebrates the Tree Plantation Day on 26th April by planting trees in the nearby forest areas and botanical garden. In 2022, this day was inaugurated by the Hon“ble Pro Vice Chancellor by planting the first plant.



International Nurses Day

Akal College of Nursing & Drexel University celebrated International Nursing Day on 12.05.2022. Dr. Jane Greene Ryan was the main organizer. In this event fifteen faculty members, 21 M.Sc. (N) & 234 B.Sc. (N) students were the participants.



World Hypertension Day: As a part of Eternal University Sustainable Development Outreach Activities SDG Goal 3: Good Health and Well Being Akal College of Health and Allied Sciences Organized “**World Hypertension Day**” on 20th May 2022. World Hypertension Day was organized at Machher, Lana Bhalta & Bonglikhech rural villages by department of community Health Nursing, Faculty, M.Sc.(N) 1st Year & B.Sc.(N) 2nd Year students were involved in the program. During the Program Blood Pressure monitoring and Health Awareness about Hypertension & complications related information was sensitized among the people.

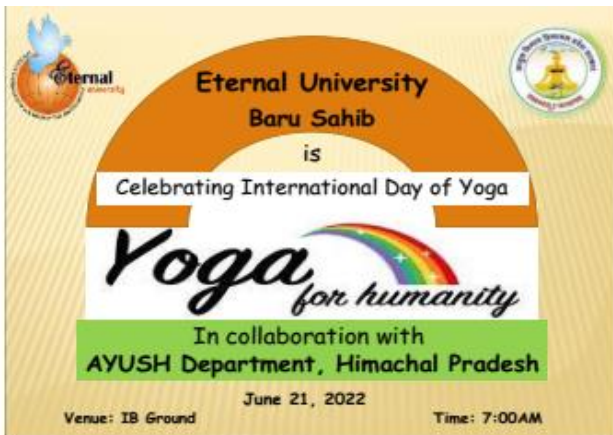


World No Tobacco Day

World No Tobacco Day is celebrated every year on 31st May. As a part of Eternal University Sustainable Development Outreach Activities SDG Goal 3: Good Health and Well Being Akal College of Nursing Organized “World No-Tobacco Day” on 31st May 2022. The World No-Tobacco Day Awareness programme (Puppet Show and Health Education) was organized at Government Primary school Rajgarh. Department of Community Health Nursing faculty and B.Sc. Nursing 4th Year students were involved in the program. During the Program Health Awareness about Tobacco Abuse related information was sensitized among the school children.



International Yoga Day: International Yoga Day was celebrated by Eternal University on 21st June, 2022 in collaboration with the Ayush Department of Himachal Pradesh. Honorable Vice Chancellor, Dr. Davinder Singh Ji graced this occasion as Chief Guest. A total of 300 faculty, staff and students assembled beneath Darwar Sahib at 7.00 am due to bad weather. Yoga session was performed under the guidance and direction of Dr Vinod Kumar. Various *asans* were performed. By participants following Dr Vinod. Dr Rajinder Singh, a medical officer, Ayurvedic Health Centre Lana Bhalta also made aware the participants about benefits of Yoga.



Induction Programme & Fresher's party for Students: Eternal University organized an induction programme for the Fresher students of the batch 2021-22. This programme was graced by all the newly admitted students. The guest on this occasion was Dr. A.S. Ahluwalia who addressed the students and made them aware about the Academic rules and regulations of the University. All the Deans of different Colleges welcomed the students, and the faculty members had a warm interaction with the students. After light refreshment, the students were taken for campus round in small groups of different colleges under the supervision of the teachers.

Fresher's party: The purpose of Fresher's Party is to welcome new students in a friendly atmosphere and to encourage their creative impulses to boost their confidence. It is the day where seniors and juniors finally bond and unite to celebrate being part of the university. Students of First Year (batch: 2021-22) were welcomed by the seniors. Ribbon cutting was done by the Fresher's and they were welcomed with "Tilak" in the Auditorium of the University. The program was hosted by second year students. The program started with "Saraswati Vandana". Different cultural activities were performed by seniors. Finally, Miss Fresher, Runner up I &II, Miss Eve and Miss Personality titles were given to the selected students from freshers.



Farewell to Outgoing Students

Farewell is basically a get-to-gather kind of celebration organized by juniors to wish their seniors a good luck for their future and who are to pass their degree and step out of the University for their new responsibilities in life. They perform various activities like singing, dancing, motivational speeches, games etc. to felicitate them. At the end the final year students are asked to give their opinion about the University. In 2022, it was nostalgic to them and presented their thoughts with mixed feelings. Every ending has a new beginning therefore the event was closed with group photographs and filling the scrap books.



Annual Sports Meet

Eternal University, Baru Sahib, organized Annual Sports Meet on 24th June 2022 in the University Sports ground. The students of seven colleges participated in different events. Hon'ble Vice Chancellor, Dr. Davinder Singh ji was chief guest of the day. He joined the event and motivated the students to participate in athletics. More than 100 students participated in various events of Annual Sports Meet and total gathering comprising students & faculty was more than 500. At the end, Prize Distribution Ceremony was organized for the winners.



Alumni Meet

The Eternal University has a strong Alumni Association. The Alumni are regularly informed and are kept in touch with the University activities and latest developments. An Alumni meet is organized every year in the University before the convocation. The Alumni participate in placement opportunities, project trainings and industrial collaborations. Many Alumni have gone for higher studies to Canada, Australia and in European countries. Some of our Alumni joined Armed Forces, Technology and Management Sector.

Annual Convocations: Eternal University holds its Annual Convocation for all graduating students who had completed the eligibility requirements of the different programmes. Due to COVID, Eighth and Ninth Convocation ceremonies were held after a gap of two weeks on 7th May, 2022 and 21st May, 2022 respectively.

During the 8th convocation 416 degrees were awarded and Dr R. C Sobti former Vice Chancellor of Panjab University, Chandigarh was the chief guest.

Similarly, in the 9th convocation 347 degrees were awarded and Padma Shri (Dr) Mahesh Verma, Vice Chancellor of Guru Govind Singh Indraprastha University, Dwarka, Delhi was the chief guest. The outstanding students were awarded gold medals. Anchal Sharma and Karamjeet Kaur of Physics and Botany Department students received university Gold Medal for outstanding achievements for PG -2020 and PG 2021, respectively.



Independence Day

Independence Day is celebrated annually on 15th August in India in the remembrance of freedom fighters who fought till death to free India. Keeping in view, Eternal University, Baru Sahib, celebrated 76th Independence Day on 15th August, 2022 in front of the University's main entrance. gate. Hon'ble Vice Chancellor, Dr. Davinder Singh ji was Chief Guest of the Day. He hoisted the national flag on this auspicious day in the campus. While hoisting the flag, people stood up and recited the national anthem. People celebrated this day by paying tributes to the freedom fighters. The students of seven colleges, faculty members and many senior persons of trust participated in this celebration. The students of Akal College of Arts and Social Sciences presented patriotic songs and plays. Sweets were distributed among the participants after the celebrations.



World Aids Day

In commemoration of World AIDS Day on December 1, 2022, the students and staff of Akal College of Nursing and Akal Centre for Public Health Administration united for a significant rally. The event, organized by Akal College of Nursing at Eternal University, Baru Sahib in Himachal Pradesh, mainly aimed to emphasize AIDS awareness as a pivotal means of prevention. A total of 100 participants joined to spread the critical message. The rally, commenced under the guidance of Dr. Mehmooda Regu, traversed the entirety of the University campus, and extended its reach to the village of Bagroti within a 2 km radius from the campus. The students performed a Street Play at Bagroti Village and benefited 500 individuals, reinforcing the significance of informed choices in combating AIDS. Furthering commitment to AIDS awareness, a dedicated awareness program was also conducted at the Indira Gandhi Medical College and Hospital (IGMCH) and Ridge areas. These sessions were aimed to enlighten patients and the general public about AIDS's severe health, social, and economic consequences.



Street Play at Bagroti Village



Community Wide Awareness at Shimla

Republic Day

India's Republic Day is celebrated on 26 January every year. The first Republic Day was dedicated in 1950. Constitution of India was implemented on this day for the first time to run the country. Keeping in view, Eternal University, Baru Sahib, celebrated 74th republic day on 26th January, 2023 in front of the University premises. Hon'ble Vice Chancellor, Dr. Davinder Singh ji was the Chief Guest of Republic Day. He hoisted the national flag on this occasion. While hoisting the flag, people stood up on their place and joined in reciting the national anthem. Students and staff members were present during this celebration. Patriotic songs and skits were presented by the students of Akal College of Arts & Social Sciences. The event was witnessed by faculty, staff and students of the university and senior staff and residents of Kalgidhar Trust. Sweets were distributed among participants after the celebration.



World Cancer Day: The World Cancer Day event was successfully organized by Akal College of Nursing on 11th February, 2023, at IGMC, Shimla. The Cancer Awareness Programme was successfully conducted at the Day Care Center of the Oncology Ward in IGMC, Shimla. The program aimed to disseminate vital information about cancer, its types, symptoms, diagnosis, treatment options, and preventive measures. The event proved to be an enlightening session, actively attended by both students and patients. The participants of the program included a mix of students and patients, totalling 50 attendees.



World Kidney Day

Akal College of Nursing's B.Sc.(N) and M.Sc.(N) students and faculty actively organized World Kidney Day celebrations on 9th March, 2023 across several locations in Himachal Pradesh including Baru Sahib, Bonglikech, Rajgarh, Kheri, Nahan, and Shimla. The event encompassed various activities to create awareness about kidney health among diverse populations and health screening was also in three locations: Baru Sahib, Kheri, and Rajgarh.





World Tuberculosis Day: Department of Microbiology in collaboration with EU-Alumni Association commemorated the World TB Day on 24th March 2023 by organizing a lecture on “Tuberculosis Eradication in India: Challenges and Progress” which was delivered by Dr. Nasib Singh, Associate Professor & HOD, Department of Microbiology. On this occasion, Prof. A. S. Ahluwalia emphasized the need for collective efforts by government institutions, scientific community, NGOs, ASHA workers, corporate sector and general public to eradicate TB from India by 2025. Dr. Nasib Singh elaborated the efforts made by centre and different states towards TB eradication and made the audience aware about Nikshay Poshan Yojana, Active TB case finding, Diagnosis, Treatment, DOTS, and Nikshya-mitra initiative.





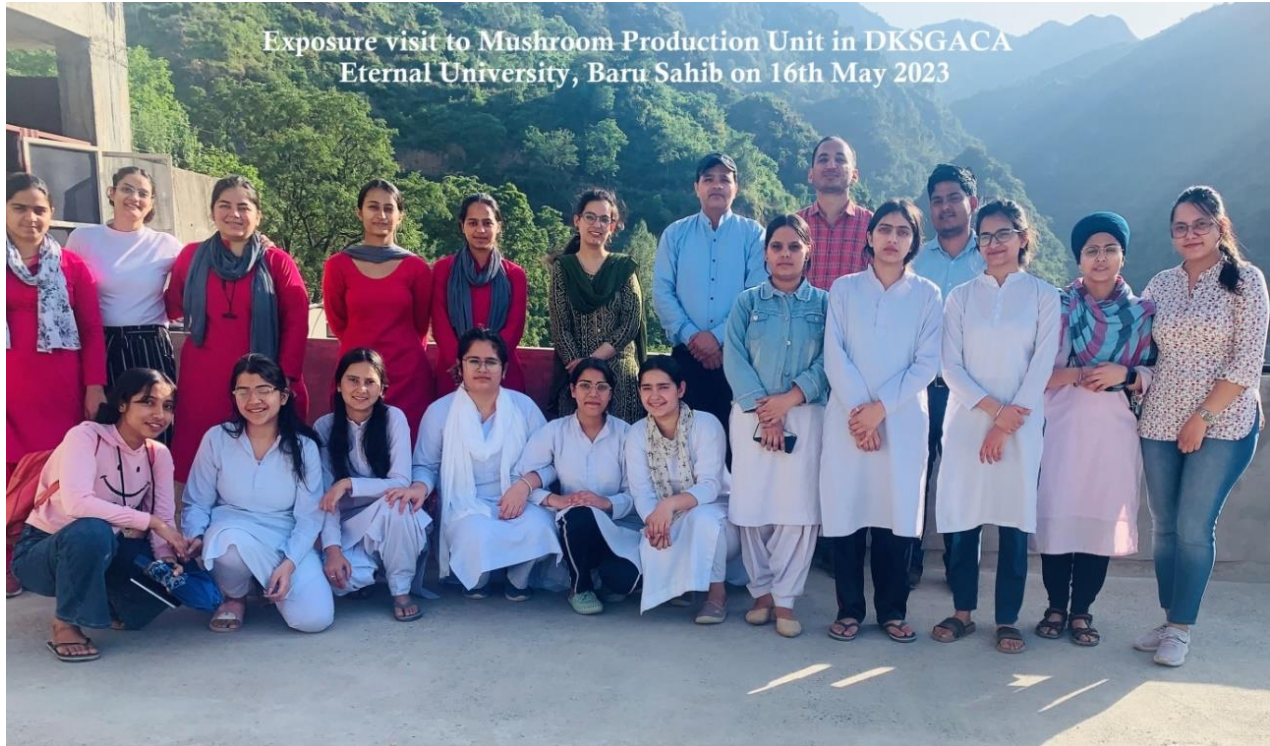
World Health Day

The Department of Community Health Nursing at Akal College of Nursing organized a comprehensive health awareness program on April 7, 2023, in commemoration of World Health Day to promote health awareness and education within the community. The theme for this year's event was "Health for All," focusing on equal access to high-quality health services without financial barriers. The program targeted M.Sc. Nursing 1st and 2nd year, and B.Sc. Nursing 1st and 2nd year students from Akal College of Nursing, Baru Sahib. The program featured a variety of activities such as yoga session, marathon & health awareness programme to engage and educate participants on important health topics.



Exposure visit to Mushroom Production Unit

Department of Microbiology organized an exposure visit to Mushroom Production Unit situated in new building of DKSG Akal College of Agriculture, Eternal University on 16th May, 2023. The students learned about the cultivation process, species variability, harvesting and disease control in *Pleurotus* spp. (Oyster mushroom).




Educational Visit to Akal Food Safety and Quality Control Laboratory

Department of Microbiology, Akal College of Basic Sciences organized an Educational Visit to Akal Food Safety and Quality Control Laboratory on 26/11/2022 at 3:00 PM to familiarize the students with the principle, functioning and applications of sophisticated instruments viz. FTIR, GC-MS, LC-MS and UP-HPLC. Dr. Naseer Ahmad from Department of Food Technology explained the technical aspects of the instruments. The lab visit was very interactive, informative and knowledge-enhancing experience for the microbiology students.



Invited lecture on topic "Beneficial Microbes for Sustainable Development"

Department of Microbiology organized an invited lecture on "Beneficial Microbes for Sustainable Development" on 18/09/2021 through online mode. Prof. Joginder Singh from Department of Microbiology, Lovely Professional University, Punjab was the distinguished speaker.



ETERNAL UNIVERSITY
AKAL COLLEGE OF BASIC SCIENCES
Baru Sahib (Himachal Pradesh)
Established under the Himachal Pradesh Government Act No.3 of 2009. Recognized by UGC, AICTE, INC, NCTE, DSIR, DBT and DRDO

World Peace Through Value Based Education

DEPARTMENT OF MICROBIOLOGY

INVITED LECTURE
Sept. 18, 2021 at 11:00 AM

"Beneficial Microbes for Sustainable Development"

Invited Speaker

Prof. Joginder Singh
Department of Microbiology
School of Bioengineering & Biosciences
Lovely Professional University
Phagwara- 144411 (Punjab)



Dr. Joginder Singh Panwar is presenting

Biofertilizer
Nutrients inputs of biological origin for plant growth

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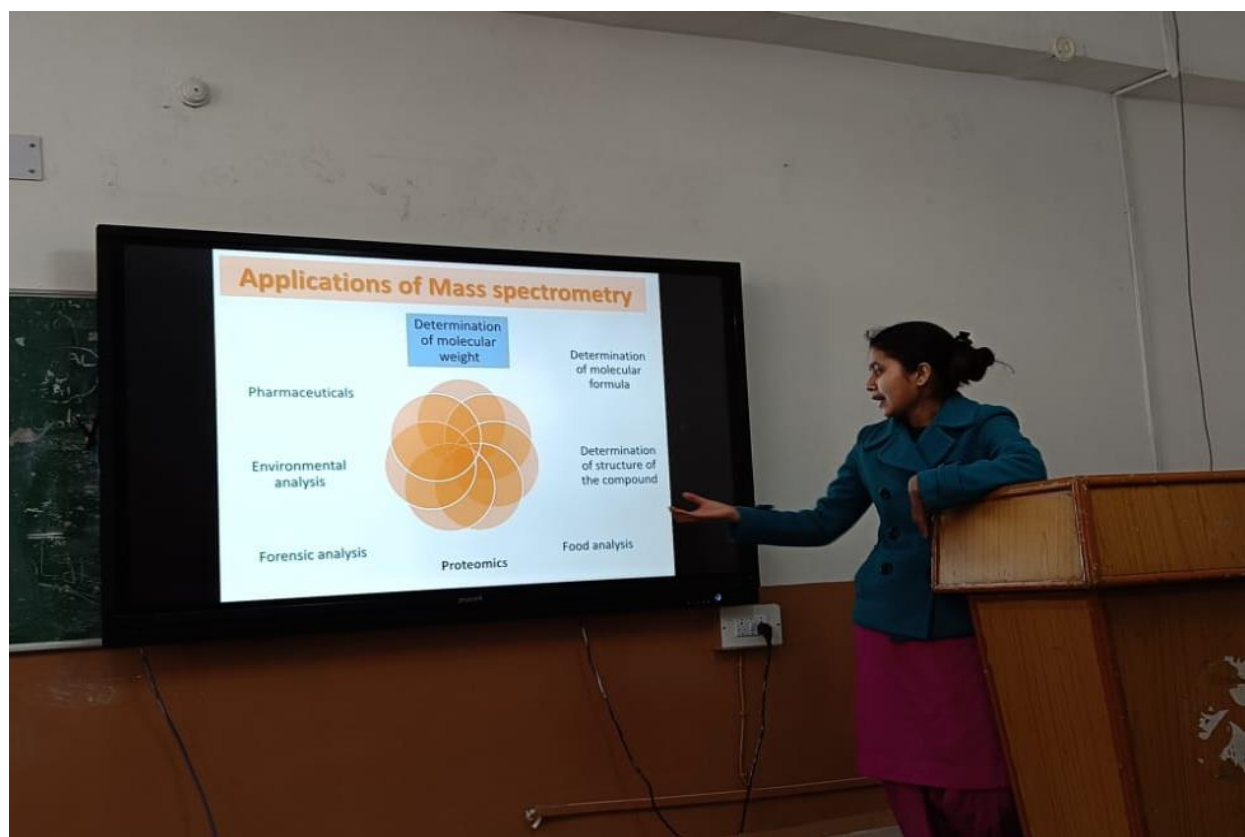
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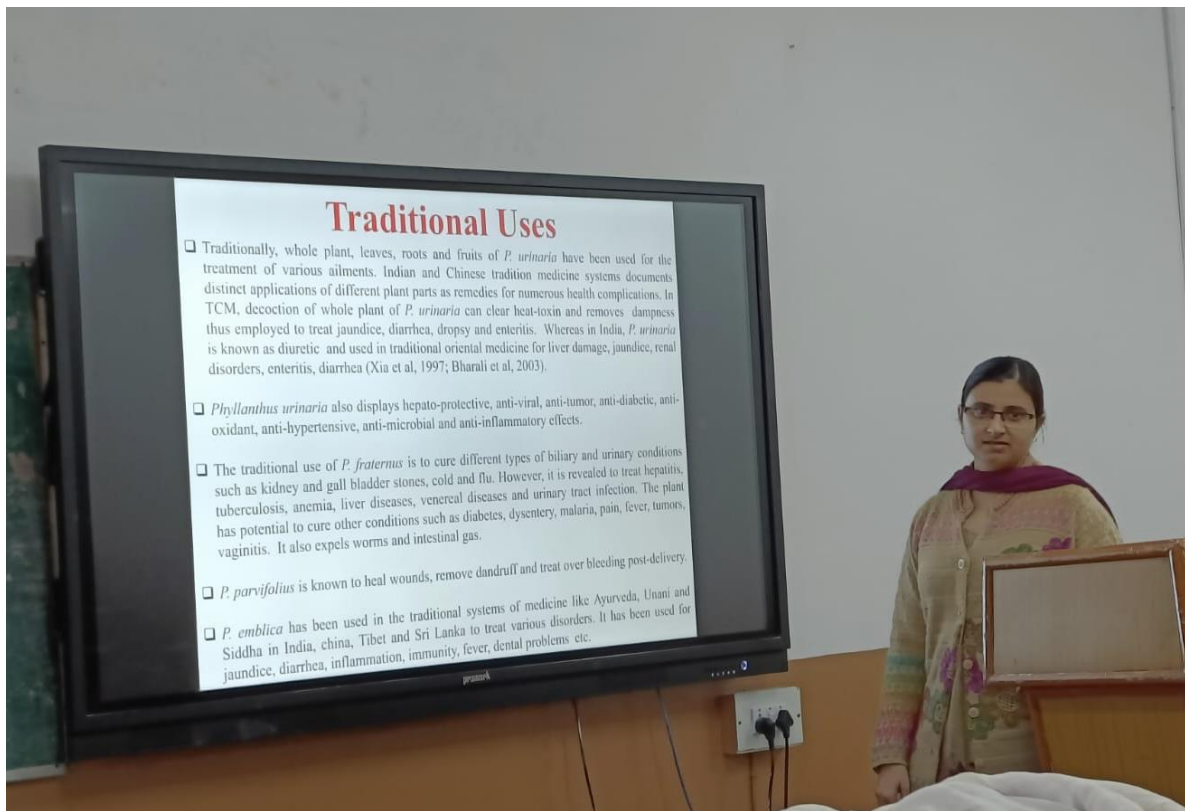
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Smart classroom with projectors or/and interactive panels





LUMPY SKIN DISEASE: PATHOLOGY, SYMPTOMS AND PREVENTION



SHILPA SHARMA
Ph.D. Research Scholar



DR NASIB SINGH
Associate Professor

Lumpy skin disease is a highly contagious viral disease of cattle and buffalo. It is caused by lumpy skin disease virus (also called Neethling virus), a DNA virus of genus *Capripoxvirus* from the family *Poxviridae*. This disease is known to occur in Asia, Africa, Middle East and Europe. Lumpy skin disease is transmitted through blood, saliva, lacrimal secretions, nasal discharge, milk glands and semen. It is more prevalent and severe in rainy and humid summer months and mainly transmitted by the bites of blood-feeding insects such as mosquitoes, biting flies and ticks. The incubation period of lumpy skin disease is 1-2 weeks and onset of disease is characterized by high fever (up to 41°C) in infected animals which last for 2-7 days. This is followed by formation of multiple skin nodules measuring 2-5 cm in diameter. Skin nodules are present on the neck, head, eyes, nose, mouth, udder, vulva, scrotum and perineum. These nodular lesions either resolve rapidly or may persist as hard lumps on the skin. In some cases, the lesions become deep ulcers filled with necrotic material and result in further transmission of the virus to other uninfected animals. The diseased animals also show symptoms such

as swelling of limbs, excessive salivation, enlarged lymph nodes and lameness. As a result, the affected animals show reduced milk yield, infertility, abortion, chronic debility and sometimes death. Due to permanent damage to animal skin, the commercial value of their hide also decreases significantly.

Lumpy skin disease was reported in India for the first time in 2019 from Odisha. Earlier it was restricted to the eastern part of India only but in June - August, 2022, an outbreak of this disease was reported from Rajasthan, Haryana, Uttar Pradesh and other northern states. According to official data, lumpy skin disease affected about 11.2 lakh cattle and caused more than 50,000 deaths across India with a mortality rate of approx. 15%. More than 7800 animals died due to lumpy skin disease in Himachal Pradesh according to the official reports. There is, however, no scientific evidence of transmission of lumpy skin disease from animals to human so far.



Incubation period
4-14 days



- Symptoms**
- High fever
 - Skin nodules
 - Swollen lymph nodes
 - Excessive salivation
 - Anorexia
 - Rhinitis
 - Abortion
 - Reduced milk yields

Sheep pox virus and goat pox-based vaccines are usually authorized by central and state governments to protect the cattle and buffaloes against lumpy skin disease in India. Recently, in a significant achievement, ICAR-National Research Centre on Equines, Hisar and ICAR-Indian Veterinary Research Institute, Izatnagar have launched a homologous live-attenuated LSD vaccine named 'Lumpi-ProVacInd' against this disease on August 10, 2022. This vaccine is currently in pipeline for commercialization by ICAR and governmental agencies.

COLOUR PRODUCING MICROBES AND THEIR POTENTIAL BIOTECHNOLOGICAL APPLICATIONS



BABITA SHARMA



DEEPIKA GABBA



DIVJOT KOUR



AJAR NATH YADAV

Introduction

Endophytes are widespread in plants, and research on their capacity to shield plants against pathogens that cause illness, particularly in the agricultural sector, is constantly emerging. The capacity of endophytes to colonise a plant's interior tissues gives them an advantage over other biocontrol agents. Despite these advantages, both efficiency and commercialization still depend on a thorough knowledge of the process by which endophytes shield the plant from pathogens. Endophytes are known to be a storehouse of numerous bioactive metabolites such as phenolics, alkaloids, quinones, steroids, saponins, tannins, and terpenoids, making them a promising candidate for anticancer, antimalarial, antituberculosis, antiviral, antidiabetic, anti-inflammatory and immunosuppressive properties among many others.

Natural colouring alternatives are in high demand due to growing concerns about the negative impact of synthetic colorants on both consumers and the environment. As a result, the demand for natural colorants in the food, cosmetic, and textile industries is rising fast, globally. The principal source being utilized by contemporary businesses is the pigments and colorants produced by plants and microbes. Among other non-traditional sources, filamentous fungus, notably ascomycetous and basidiomycetous fungi are known to create a remarkable array of hues, including a number of chemical classes of pigments like melanins, azaphilones, flavins, phenazines, and quinines.

Diversity of pigment producing endophytes

Bioresources like plants, microbes and insects have been exploited to create natural pigments or colourants for use in food applications. Microbes have been regarded as the superior source to study biosynthetic pathways and to be modified for high pigment yields due to their simpler genetic makeup than plants reported

antimicrobial activity of red pigment endophytic fungi against multi-drug resistant bacteria. The endophytic fungus, *Spissiomycetes endophytica* produced a brown-black pigment in the mycelia isolated and characterized the melanin pigment from *endophytic Phoma* sp. The pigment producing *Monascus ruber* was isolated from healthy leaves of the medicinal herb *Origanum majorana*.

Role of pigments in industrial sector

Due to a growing desire to create innovative goods which are safe and sustainable, natural pigments have caught industry's attention. This is due to the potential harm caused by artificially derived pigments used in industry. In light of this, fungal pigments look to be an appealing niche for new biotechnological applications, ranging from the manufacturing of functional foods to the development of novel medications and biomedical therapies.

Canthaxanthin, astaxanthin, prodigiosin, phycocyanin, violacein, riboflavin, alpha-carotene, melanin, and lycopene are the principal representatives of the chemically structured biopigments which are employed in the food sector. In addition to its proposed usage in candles, soaps, ballpoint pens, salmon, yoghurt and highlighter pens, microbial pigments are already utilized for food and textile colouring. However, the uses of microbial pigments are not just limited to colouring. Some of these substances also exhibit other activities such as antioxidant, antiparasitic, antibacterial, and antitumor.

Conclusion

The need for natural ingredients is growing as the trend in the industrial sector which drives consumers toward more natural, organic, and clean label products. Over the past few years, there has been a steady rise in the popularity of creating dishes with natural colours. Among the many natural sources, microbial colorants are a natural choice for commercial goods that are offered to the food sector.

DENGUE (BREAK-BONE FEVER)



SHILIPREET KOUR
Ph.D. Research Scholar



DR NASIB SINGH
Associate Professor

Dengue is a serious vector-borne viral infection caused by dengue virus (family Flaviviridae). Dengue is transmitted by the bites of *Aedes aegypti* female mosquitoes and related species. This disease is also known as break-bone fever and dandy fever. Dengue is found in urban and semi-urban areas of the Americas, South-East Asia and Western Pacific regions of the world. Four serotypes of dengue virus namely DENV-1, DENV-2, DENV-3 and DENV-4 are known to cause disease to human beings. Dengue has severe effects on both human health and the global economy. Severe dengue is a leading cause of serious illness and death in Asian and Latin American countries. An estimated 100-400 million infections occur each year of which approx. 80% are generally mild and asymptomatic.

In recent times, the cases of dengue have grown and about half of the world's population is at risk now. Risk of dengue exists in more than 100 countries of the world. However, 70% of total cases are reported from Asian countries. In 2019, the largest number of dengue cases were reported globally. Highest number of dengue cases are prevalent in Bangladesh, Malaysia, Philippines, Vietnam, India, Brazil, Indonesia, Maldives, Nepal, Singapore, Sri Lanka, Sudan, Thailand, Colombia, Fiji, Kenya, Paraguay and Peru. In India, dengue cases are reported in every state and UTs. However, a maximum number of cases are reported from Delhi NCR region, Haryana, Punjab, Uttar Pradesh, Rajasthan, Madhya Pradesh, Telangana, Karnataka and Maharashtra.

Symptoms

After the bites of infected *Aedes* mosquitoes, symptoms appear in the infected person within 5-6 days and can last for 2-7 days. Dengue is categorized into two types: dengue

fever and severe dengue. Dengue fever is characterized by symptoms such as fever, headache, muscle pain, eye pain, joint & bone pain, nausea, vomiting and measles-like skin rash. On the other hand, severe dengue involves dengue shock syndrome (DSS) and dengue haemorrhagic fever (DHF) conditions which are life-threatening. These serious complications of dengue require urgent medical attention. Generally, the patient's temperature starts dipping and can even lead to death due to plasma leakage, low blood pressure, severe bleeding, respiratory difficulties and organ failure. Dengue infection is usually diagnosed by RT-PCR, ELISA and rapid diagnostic tests. DENV-2 is known to be the most common serotype causing infection in South-East Asia. Thrombocytopenia (low blood platelet count) is also reported in most of the dengue cases.



Fig. 1. Symptoms of dengue (Source: CDC, USA).

ALTERNATIVE ENERGY: A GLOBAL CHALLENGE FOR SUSTAINABLE DEVELOPMENT



DR PUNEET NEGI
Assistant Professor and HoD



GAGANDEEP KAUR
Ph.D. Research Scholar

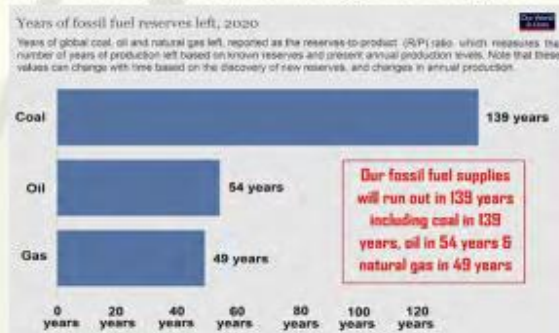


NISHA DEVI
M.Sc. Physics

The population of the planet is continually growing and according to UN estimates the population of the globe has surpassed 8 billion on November 15, 2022. This results in an increase in energy demand and consumption globally. Further, increase in energy consumption is globally increasing the carbon emission and hence global warming. "...Only in the Net Zero Emissions by 2050 (NZE) Scenario, do we work back from specific goals, the main one in this case being to cap global warming to 1.5 °C and show how they can be achieved..." -World Energy Outlook 2022 by International Energy Agency (IEA).

What is Energy demand??

How much energy is required for human activities is referred to as "Energy Demand". Energy demand can be split up into three categories: power, transportation and heat. Most of the electricity is still produced from non-renewable energy sources with the ever-growing population due to that need for energy has become a serious challenge over the years.

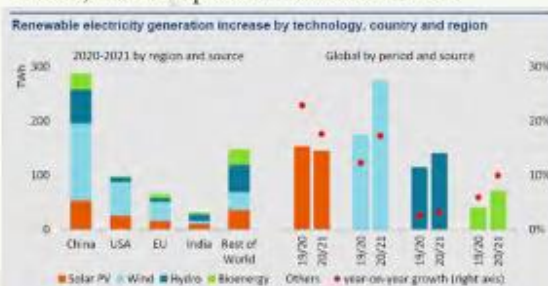


Source: <https://ourworldindata.org/fossil-fuels> (Edited)

One of the key components for the nation's economic growth is energy. Fossil fuels including coal, oil and natural gas are still used to meet the world's energy needs. According to Our World in Data taken from BP Statistical Review of World Energy, our fossil fuel supplies will run out in 139 years including coal in 139 years, oil in 54 years and natural gas in

49 years. When the final drop of oil, coal, or cubic foot of natural gas will be extracted from the earth is a mystery. Everything will depend on how efficiently we can manage our energy consumption as well as generate and utilize renewable energy sources. As a result, there has been a lot of discussion and interest in alternative energy needs in recent years.

As per the Global Energy Review 2021 by IEA- "Renewable electricity generation in 2021 is set to expand by more than 8% to reach 8300 Terawatt hour (TWh), the fastest year-on-year growth since the 1970s. Solar PV and wind are set to contribute two-thirds of renewable growth. China alone should account for almost half of the global increase in renewable electricity in 2021, followed by the United States, the European Union and India".



Source: Global Energy Review 2021 by IEA

Alternative Energy??

Alternative energy is an energy that shows very less or negligible greenhouse emissions and is derived from sources other than fossil fuels. Although many renewable energy sources can also be thought of as alternatives, but alternative energy should not be mistaken with renewable energy. For instance, solar power is a renewable as well as an alternative energy source because it never runs out and also doesn't produce greenhouse emissions. However, nuclear power is a non-renewable alternative because it depends on uranium which is a limited resource. However, a sustainable renewable energy source may

EFFECT OF PLANT BIO REGULATORS ON FLOWER CROPS



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SKUAST-K

Plant growth refers to the quantitative increase in the plant body, such as the length of the stem and root, the number of leaves, and so on, whereas development refers to the entire series of changes that an organism goes through during its life cycle (Development = Growth + Differentiation). Multicellular plants are complex organisms and their orderly development necessitates a high level of cell coordination, cells may be able to communicate with one another in order to coordinate their activities and for that hormones (chemical messenger) are the primary means of communication between plants. Hormones are signal molecules that direct the development of particular cells or transport information between cells, allowing growth and development to be coordinated. In 1905, the British physician E. H. Starling introduced the term hormone to describe these chemical messengers.

Phytohormones

These are the hormones produced by plants which in low concentrations regulate plant physiological process. These usually move within the plants from a site of production to a site of action.

Plant growth regulators

It may be defined as any organic compounds which are active at low concentrations (1-10 ml) in promoting, inhibiting or modifying growth and development in plants. The naturally occurring (endogenous) growth substances are commonly known as plant hormones, while the synthetic ones are called growth regulators.

Classification of plant hormones

Plant hormones are identified as promoters (auxins, gibberellin, and cytokinins), inhibitors (abscisic acid and ethylene) and other hypothetical growth substances (Florigen, death hormone etc.).

AUXINS: (IAA: endogenous auxin)

The word Auxin is derived from the Greek word which means to increase. The chemical

isolation and characterization was done by Kogi. Auxins are the first identified hormones of which IAA seems to be the major naturally occurring endogenous Auxin in plants and crops. Besides IAA, plants contain three other compounds which are structurally similar and elicit many of the same response as that of IAA, Chloro indole acetic acid (CIAA), Phenylacetic acid (PAA), Indole butyric acid (IBA). IBA is the most commonly used auxin followed by NAA and IAA.

Site of Auxin synthesis

Auxins are synthesized in the meristematic region (stem tips and in young tissues) and move mainly down stem (Basipetal movement) i.e., from shoot tip to root.

Role of Auxin

1. Cell division and enlargement: IAA + GA, example - cambial growth in diameter.
2. Tissue culture: Shoot multiplications (IBA and BAP), callus growth (2, 4-D), root multiplication IAA and IBA (1-2 mg) in Orchid, Anthurium, Gerbera, Carnation etc.
3. Breaking dormancy and **apical dominance** (inhibition of lateral buds): NAA
4. Shortening internodes
5. Rooting of cutting: (IBA, IAA and NAA are extensively used for rooting of cuttings of gulmohar (difficult-to-root plant), rose, chrysanthemum, carnation, gerbera, bougainvillea etc)
6. Prevent lodging: NAA develops woody and erect stems.
7. Prevent abscission: premature leaf, fruit and flower fall (NAA, IAA and 2,4-D).
8. Flower initiations.
10. Weed eradication: 2, 4-D (mainly dicot).

GIBBERELLINS

It is isolated from the soil borne fungus *Gibberella fujikuroi*. The concentration of GA₃ is usually the highest in immature seeds, but it decreases rapidly as the seeds mature. In general, roots contain higher amounts of GA₃ than shoots. Gibberellins have also been found effective in overcoming both kinds of

IMPORTANCE OF ECONOMICS



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Economics plays a significant role around the globe throughout our life. Economics plays a very vital role in the allocation and efficient utilization of scarce resources at household as well as at national level. The importance of Economics came to be known when its need was felt by people of the society in the context of day to day life.

'Economics' is a term that involves not only how things work in a village or society by utilizing the scarce resources in an efficient manner but it also explains the positive economics which means "What is prevailing in an economy" and normative economics explains "What ought to be" for the benefit of region or area or nation. To gain from whatever the activities we are doing in our life involves Economics whether it is regarding the business, household management and others.

Economics makes us learn not only the moral, ethical but also guides us about a standard way of doing things by maintaining an equitable balance in an individual's life. It provides a systematic way for maintaining our spending habits i.e. to understand about losses and profits or satisfaction which we derive after spending our money. It is applicable in everything like transactions related to shares, bonds and commodities. Study of economics provides a good

understanding to solve different problems of the economy by allocation of resources in an efficient manner on priority basis which works to benefit an economy by increasing production, consumption and national income. Economics helps us to know the economic status of the country in the world by using economic tools. Poor economic condition of a country can be improved through framing better policies by the economists to tackle the difficult phases of the economy.

Economics is supported with empirical evidence. Economics works in cost-benefit analysis, different market structure, types of trade with other countries and provides an analytical framework for growth and development of any country. Economics is used for knowing optimum production relationships, teaches us to use resources sustainably by making use of scarce resources with the help of cost-effective tools in production, distribution and consumption channels which maximizes benefit of each individual by many times if there is multiplier and accelerator effect working in an economy. By using different branches of economics like business economics, managerial economics, applied economics etc. in a right way one can raise the standard of living of the people of economy by bringing prosperity.



NANOFERTILIZERS: AS A SUSTAINABLE APPROACH FOR GROWING WORLD DEMANDS



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Nanotechnology is a growing field of science which deals with matter at nanoscale (10⁻⁹) level. Nanotechnology provides vast applications for improving agriculture by increasing production, maintaining soil ecosystems, and benefiting farmers/producers. There are several metal or metal oxides nanoparticles used as nanofertilizers which including carbon nanotubes, Ag, Cu, Fe₂O₃, Mn, MnSO₄, Mo, SiO₂, TiO₂, ZnO, and ZnS nanoparticles. These nanofertilizers improve plant growth and crop productivity both at growing and productive stages. The nanofertilizer is a best source of alternative for chemical fertilizers. The chemical fertilizers were introduced for enhancing crop productivity, but as per their use, they show negative impact on soil fertility and disturb its mineral quality. The prolonged use of chemical fertilizer damages soil structure, mineral cycle, microbes, and plants. Nanotechnology is an expanding field, and it finds its applications in agriculture and plant science as nanofertilizers. Nanofertilizer improves crop production by enhancing its seed germination, photosynthetic activity, metabolism of nitrogen and synthesis of carbohydrates and proteins. The high surface to volume ratio of nanoparticles makes them efficient towards preventing microbial infestation. The controlled release system of nanoparticles for their target site makes them a proper smart delivery system in agriculture. Nanofertilizers are efficient as they slowly release nutrients throughout the plant's life cycle. They reduce the risks of adsorption, decomposition, leaching and surface runoff. There are three main classes of nanofertilizers- nanoscale additives (mixing of nanoscale additives with traditional

fertilizers), nanoscale coating (fertilizers coated with nanoparticles) and nanoscale fertilizers (nutrient-containing nanomaterials). Nanocoated fertilizers have the property of low dissolution in the soil, by which their availability for plants increases and fulfills plants and soil demands. There were several reported nanofertilizers that increased crop production.

The nanoparticles as nanofertilizers offer plants a better nutrient which nourishes them and improves their nutrient deficiency. They are mainly used to limit the adverse effect of inorganic fertilizers on the environment as chemical fertilizers are highly reactive and can penetrate deep into the epidermis. The slow release and targeted distribution of nanofertilizers improve soil fertility, plant nutrition and efficiency.

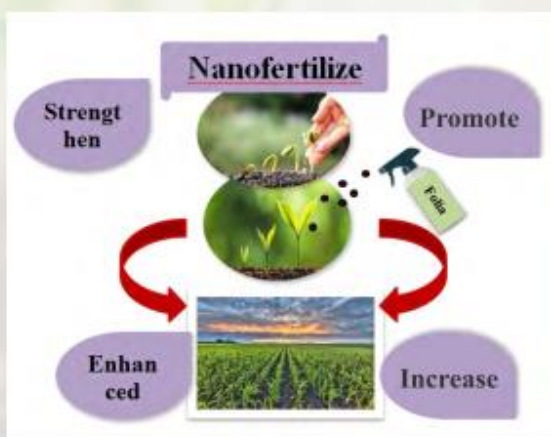


Figure1: Role of Nanofertilizers.

TRADITIONAL USES OF *MURRAYA KOENIGII* & *MURRAYA PANICULATA* IN INDIA



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Medicinal plants are as old as human civilization. Medicinal and aromatic plants play a vital role in alleviating human sufferings. Plants have been utilized as therapeutic agents since time immemorial in both organized (Ayurveda, Unani) and unorganized (folk, tribal, native) forms. These medicines are made from the plants taken in different forms of crude drugs like powder, teas, tinctures and various other herbal formulations.

Murraya (L.) belongs to the Rutaceae (Citrus family). Genus *Murraya* contains fourteen species on a global level out of which two are found in India in Himachal Pradesh i. *Murraya koenigii* (L.) Spreng and ii.



Murraya koenigii (L.) Spreng Girinimbine

Murraya koenigii (L.) has different vernacular names in India. In Hindi, it is known as Meetha neem, Karipatta, Bursunga and Kathnim; in Sanskrit, it is named Girinimba. *M. koenigii* is used in different forms e.g. essential oil, extract or used directly because of the presence of different biochemically active constituents such as murrayanine, mukoenine-A, B and C; murrayanine-A, girinimbine, mahanimbine for traditional healing purposes.

Leaves are useful in cooling and itching, seasoning and flavoring, memory enhancing,

and act as stimulants of hair-growth and hair-tonic, also used to cure night-blindness, vomiting, bruises and eruption, bites of poisonous animals. Curry plant leaves also contain vitamin A, vitamin B and B2, vitamin C, calcium and iron. It is also used to cure morning sickness, vomiting caused due to indigestion, stomach upsets. Roots reduce itching and inflammation and its chemical compound mukoline is used for the cytotoxic activity. Stem is used as datun (wooden brush) for strengthening and cleaning of gums and teeth. Fruits are used as an astringent. In seeds, Kurryam, Koenoline, Koenimbine and Koenine are used for the anti-diarrheal activity. Its essential oil is utilized in the cosmetic and soap aromatherapy industries as an important ingredient in bath oils, perfume oils, facial steams, massage oils, lotions, air fresheners, body fragrance, towel scenting and many more. Essential oil in leaves is fungi toxic. Its oil is rich in calcium and vitamin-A, and is used for bone strengthening

Murraya paniculata (L.) vernacular names are jasmine, satin-wood, orange jasmine, mock orange, honeybush and limoneria. Various chemical compounds such as alkaloids, flavonoids, coumarins and essential oils etc. are extracted from different plant parts of *M. paniculata* like from roots, stem, leaves, fruits and flowers. Leaf oil is rich in methyl palmitate and also contains (E, E)- geranyl linalool, benzyl benzoate, isopathulenol, β -caryophyllene, γ -elemene, germacrene B and D and selin-6-en-4-ol in GC-MS analysis.

DIETARY FIBRE IN FOODS



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Dietary fibre is that part of plant material in the diet which is resistant to enzymatic digestion which includes cellulose, non-cellulosic polysaccharides such as hemicellulose, pectic substances, gums, mucilages and a non-carbohydrate component lignin. Diets rich in fiber such as cereals, nuts, fruits and vegetables have a positive effect on health since their consumption has been related to decreased incidence of several diseases. Dietary fiber can be used in various functional foods like bakery, drinks, beverages and meat products. Influence of different processing treatments (like extrusion-cooking, canning, grinding, boiling, frying) alters the physico-chemical properties of dietary fibre and improves their functionality. Dietary fibre can be determined by different methods, mainly by: enzymic gravimetric and enzymatic—chemical methods. This paper presents the recent developments in the extraction, applications and functions of dietary fibre in different food products.

Dietary fibre has a long history, its term originating with Hipsley who coined dietary fibre as a non-digestible constituents making up the plant cell wall and further its definition has seen several revisions. Botanists define fibre as a part of the plant organs, chemical analysts as a group of chemical compounds, consumer as a substance with beneficial effects on human health and for the dietetic and chemical industries dietary fibre is a subject of marketing. Later dietary fibre was defined as a ubiquitous component of plant foods and includes materials of diverse chemical and morphological structure, resistant to the action of human alimentary enzymes. The most consistent definition that is now accepted is

from Trowell et al. (1985): “Dietary fibre consists of remnants of plant cells resistant to hydrolysis (digestion) by the alimentary enzymes of man”, whose components are hemicellulose, cellulose, lignin, oligosaccharides, pectins, gums and waxes. American Association of Cereal Chemists (AACC) in 2000 defined dietary fiber as the edible parts of plant or analogous carbohydrates that are resistant to digestion and absorption in the human small intestine with complete or partial fermentation in the large intestine. Dietary fibre includes polysaccharides, oligosaccharides, lignin and associated plant substances. In 2001, Australia New Zealand Food Authority (ANZFA) defined dietary fibre as that fraction of the edible part of plants or their extracts, or analogous carbohydrates, that are resistant to digestion and absorption in the human small intestine, usually with complete or partial fermentation in the large intestine. The term includes polysaccharides, oligosaccharides and lignins. The panel on the definition of dietary fibre constituted by National Academy of Science during the year 2002 defined the dietary fibre complex to include dietary fibre consisting of non-digestible carbohydrates and lignin that are intrinsic and intact in plants, functional fibres consisting of isolated, non-digestible carbohydrates which have beneficial physiological effects in humans and total fibre as the sum of dietary fibre and functional fibre. Dietary fibre, although not always defined as such, has been consumed for centuries and is recognized for having health benefits. Soluble and insoluble fibres make up the two basic categories of dietary fibre. Cellulose, hemicellulose and lignin- are not soluble in

WEED MANAGEMENT IN CONSERVATION AGRICULTURE



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Conservation agriculture is proposed to ensure more sustainable land use. Conservation agriculture is based on the minimum soil disturbance and diversification of the crops for better productivity of the crops.

Weed control strategies are largely dependent on the soil type, site-specific conditions and dominant weed species. Weeds are controlled in the CA system through crop rotation, selection of suitable varieties with optimum seed rate, tillage with proper land leveling, cover crops and proper water management. Proper weed control under CA should be integration of this practice. So, integrated weed management is highly recommended in the CA system.

Keywords:-CA (Conservation Agriculture)

Due to the degradation problems in conventional agriculture, deteriorating soil fertility and development of the soil salinity hazards more people are shifting to conservation agriculture for better crop productivity and for better soil health. CA are more efficient, use less inputs and improve production and income. CAs are designed to achieve agricultural sustainability that minimize environmental degradation.

CA has 3 principles:-

- Minimum soil disturbance.
- Permanent organic soil cover.
- Diversification of crop species.

In conventional farming, tillage is a major way to control the weeds. Burning of the crop residues also stimulates the growth of some types of weeds. CA reduces the weed density in several ways. Adoption of zero tillage under CA makes an inappropriate environment for weed.

Zero tillage improves the soil structure, increases the nutrient cycling, and decreases greenhouse gas emission. The cover on the soil under the CA system smoothers weeds and prevents them for growing. Weeds under the

CA system are controlled when the cover is harvested or killed by herbicides. Eventually rotating crops that are the third main pillar of the CA system prevents the certain type of weeds from multiplying.

In conventional farming, farmers usually use tillage equipment to improve the soil structure and to control weeds. But they actually damage the soil structure and contribute to reduced soil fertility in the long term. In conservation agriculture (CA) systems, however, tillage is reduced or totally eliminated. The use of CA is widely increasing in the world due to several advantages, such as conserving the soil and water resources, regenerating the soil fertility, protecting the soil from erosion, and reducing labor needs. This system, due to combined effects of the elimination or reduction of tillage, maintaining residues on the soil surface, and employment of diversified crop rotations, has led to wide variations in germination, emergence and growth of weeds and has caused variations in the density and diversity of weeds under such systems. The increasing reliance on herbicides and usage of herbicide-resistant crops in CA can also lead to changes in weed population dynamics and occurrence of herbicide-resistant weed biotypes. So weeds are overwhelming problems, especially in the early years of the CA adoption and will require special control strategies.

Weeds in CA System

Reduction in tillage intensity results and frequency under CA system generally increases the weed infestation. Changes from conventional to conservation farming practices lead to weed flora shift in crop yield, which dictate the requirement of new weed management technologies. Weed control in CA largely depends upon herbicides and agronomic practices. The post-emergence and broad-spectrum herbicides control weeds in the CA system.

IMPORTANCE OF BEES IN THE ECOLOGICAL SYSTEM



VAISHALEE TOMAR



MADHIMA THAKUR

It takes more than soil, water and sunshine to make the world green. At least 30% of the world's crops and 90% of all plants require cross-pollination to spread and thrive and here in Canada, bees are our most important pollinators. Unfortunately, bee population here and around the world is in decline.

Climate change causes some flowers to bloom earlier or later than usual, leaving bees with fewer food sources at the start of the season. Bees suffer habitat loss from development, abandoned farms and the lack of bee-friendly flowers. Some colonies collapse due to plants and seeds treated with neonicotinoid pesticides or harmful parasites like mites.

Even one of Ontario's most common species of bumble bee recently became an endangered species.

The good news is that there are ways gardeners can help bee populations to bounce back. Planting a bee-friendly garden will not only lead to healthy and vibrant plants, it will ensure that bees continue to play their critical role in our ecosystem.

Let's explore five of the reasons why bees are important to the environment:

1. Pollination

What's your favourite summer crop? If you love apples, melons, cranberries, asparagus or broccoli, you should tip your sun hat to our fuzzy, insect friends.

To germinate, these plants require the transfer of pollen from the male part of the flower (the anther) to the female part (the stigma). As bees move from flower to flower in search of nectar, they leave behind grains of pollen on the sticky surface, allowing plants to grow and produce food.

Bees earn their reputation as busy workers by pollinating billions of plants each year, including millions of agricultural crops. In fact, pollinators like bees play a key role in one out of every three bites of food we eat. Without them, many plants

we rely on for food would die off.

2. Wild Plant Growth

It's not just farm-grown fruits and vegetables that rely on pollinators to thrive. Many species of wild plants depend on insect pollinators as well. Bees are responsible for the production of many seeds, nuts, berries and fruit, which serve as a vital food source for wild animals.

3. Food Source

Bees produce honey to feed their colonies during the cold winter months. Humans have harvested honey for thousands of years, but we aren't the only ones who consider it a sweet snack. Creatures like birds, racoons, opossums and insects will raid beehives for a taste of nutritious honey (and bee larvae).

Bees themselves are also a part of the food chain. At least 24 species of bird, including the blackbird, ruby-throated hummingbird and starling prey on bees. Many spiders and insects, like dragonflies and praying mantises relish bees as well.

4. Wildlife Habitats

Bees are known for their elaborate hives, but they also help build homes for millions of other insects and animals. Their role as pollinators is vital in the growth of tropical forests like savannah woodlands and temperate deciduous forests. Many tree species, like willows and poplars cannot grow without pollinators like bees.

Even your own garden serves as a home for hundreds of tiny creatures, from birds and squirrels to thousands of tiny insects. If bees disappear, the animals that depend on these plants for survival will also vanish as well.

5. Biodiversity

As pollinators, bees play a part in all aspects of our ecosystem. They support the growth of trees, flowers and other plants, which serve as food and shelter for creatures, large and small. Bees contribute to complex, interconnected ecosystems that allow a diverse number of different species to coexist.

TRANSFORMATION FROM INORGANIC TO ORGANIC FARMING



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With the increase in human population most of the farmers have shifted to inorganic farming. Farmers use agro-chemicals to increase their crop yield, demand of food and raw material in the market and also to increase their profit from the market. For that reason they use fertilizers in excess.

Inorganic farming has an adverse impact on the environment as well as on human health. It is an agriculture production method which involves the use of manmade products. Farmers use hybrid seeds, pesticides and chemical fertilizer to increase the production of land. Inorganic fertilizers contain salts that can burn plants and also affect the physical properties of the soil. They are toxic to the plants. Due to excessive use of chemicals this can cause acute mortality to foraging bees which helps in the pollination of crops and fruits.

Farmers choose inorganic farming to increase their production to earn profit in the short-term period, wherein the farmers focus only on how to fulfil the demand of the humans and not about the healthy production. To fulfil the demand of present and future generations it is important to stabilize agricultural products but also to increase them in a sustainable manner. Scientists have realized that the 'Green Revolution' with high input use has reached a large high area of flat land and is now sustained with diminishing returns of falling dividends. Thus, a natural balance needs to be maintained at all cost for the existence of life.

Therefore, there is need to shift inorganic to organic farming

Agriculture was practiced for thousands of years without the use of artificial chemicals. These chemical fertilizers were cheap, powerful and easy to transport in bulk. The new agricultural techniques, while beneficial in the short-term, have serious longer-term side-

effects such as soil compaction erosion and declines in overall soil fertility. Organic farming is known as ecological/biological and sustainable farming.

In organic farming we use fertilizers of organic origin such as compost manure, green manure, and bone meal and place emphasis on techniques such as crop rotation etc. Terms such as organic fertilizers, organic manure and bulky organic manures are often used interchangeably to describe a wide variety of diverse products which can serve as nutrient sources. In most cases these are derived from plants, animals, humans and industrial by-products generally described as wastes. Organic manures primarily consist of usable crop residues, farm yard manure (FYM), various types of animal waste, non-edible oil cakes, kitchen/restaurant waste, wastes from various food processing industries, by products from sugar factories, distilleries, sewage/sludge etc.

Organic farming is a slow process. When we shift from inorganic farming to organic farming it takes years to improve soil health. In organic farming, chemical herbicides cannot be used. Weeding can be done only manually. Different cultural practices like tillage, flooding, mulching, crop-rotation and hand-weeding practices can be used to manage the weed. Besides, biological (pathogen) methods can be used to manage the loss due to weeds. When the ground is fallow, a cover crop can be planted to suppress weeds and build soil quality. Weeds growth can also be limited by using drip irrigation whenever possible, which restricts the distribution of water to the plant line.

Plant diseases are major constraints for reductions in crop yield and quality in organic and low input production systems. Occurrence of insects and diseases are less in organic

HYDROPONICS



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NIKHITA KAUR



PRIYANKA SHARMA

Introduction: Hydroponics stands for the science of growing plants in water or some other substances than soil. Hydroponic word is taken from the Greek language in which “hydro” means “water” and “ponos” means “labor”. Hydroponics is a contemporary method of horticulture or growing plants, usually farm produce without using soil. The earliest recorded mention of hydroponics grown was in the year 1627 by Francis Bacon in his book, ‘A Natural History’. After the discovery of Hydroponics, research work progressed rapidly on this technique. In recent years, NASA is experimenting with hydroponics for growing plants on long-term space missions. The program is called “Controlled Ecological Life Support System” (CELSS).

Hydroponics became popularized by the news media in the 1920s when a scientist named Dr. William F. Gericke of the University of California put laboratory experiments in plant nutrition on a commercial scale.

Hydroponics did not reach India until 1946. In the summer of that year the first research studies commenced at the Government of Bengal’s Experimental farm at Kalimpong in Darjeeling District. India still imports the majority of exotic fruits and vegetables while the central government promotes subsidies for hydroponics.

Hydroponics farming is done in some regions of Himachal Pradesh (Shimla, Dharamshala, Una, Palampur). Hydroponics is also called soilless culture, aquaculture, nutriculture, tank farming, where the stems and the roots of the plant are supported. Hydroponics technology is a green technology that makes use of the natural plant growth phenomena in obtaining better results from plants. Industries such as the

airlines and fast food chains use hydroponically grown vegetables. Cut flower industry, nurseries and pharmaceutical industry and in some other sectors this technology is being practised successfully.

Growing plants hydroponically allows for a faster and larger production rate in small areas. Hydroponically grown food has many benefits. Generally they taste better and have a greater nutritional value. Hydroponically grown foods pollute less because it reduces our food waste and usage of pesticides. Hydroponics uses less than 1/10th -1/5th of the water as used in soil cultivation. The plants under hydroponics receive only what you give them and nothing else. You have complete control over the pH, nutrients content and the nutrients strength. In the soil, you have no idea but plants are getting nutrients from the soil. It saves a lot of water and no weeds to deal with. It covers less space and has higher yields.

Nutrients used for the plant growth are provided in the solution surrounding the roots. All plants cultivated under hydroponics need oxygen, hydrogen, and carbon available from either air or water. Hydroponics are also dependent on thirteen essential elements, these nutrients are normally obtained from the soil.

There are two types of nutrient which are macronutrients and micronutrients. Macronutrients are taken by the plants in large amounts, whereas in other situations only trace amounts of elements are necessary. Macronutrients are nitrogen, phosphorus, magnesium, sulphur, potassium and calcium. Micronutrients are iron, chlorine, boron, manganese, zinc, copper and molybdenum. In hydroponic culture these elements are provided to plants by adding salts that contain them to the solution surrounding the roots. To begin a hydroponic culture medium, a nutrient solution

EFFECT OF CONSERVATION AGRICULTURE AS SYSTEM TO ENHANCE ECOSYSTEM SERVICES



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INTRODUCTION

Conservation agriculture (CA) is considered a sustainable practice with the potential to maintain or increase crop productivity and improve environmental quality and ecosystem services. It typically improves soil quality and water conservation; however, its effect on crop productivity is highly variable and dependent on local conditions/management. Crop residue retention plays a crucial role in CA and can help to improve overall soil health and ultimately crop productivity and sustainability. Conservation Agriculture/ no till farming has been widely adopted and practiced (about 180 M ha of cropland, ~12.5% of total global cropland area in 2015/16 and an increase of 69% globally since 2008/09 as it provides various benefits to agricultural production driven by soil and water conservation and improvement in soil health.

Ecosystem services can be defined as the direct as well as indirect benefits human beings obtain from ecosystems and can include provisioning (e.g., provision of food and Fiber), regulating (e.g., regulation of air quality, flood control, and crop pollination), supporting (e.g., providing plants and animals with living space and supporting biodiversity), and cultural services (e.g., non-material benefits from ecosystems such as cultural identity and spiritual well-being).

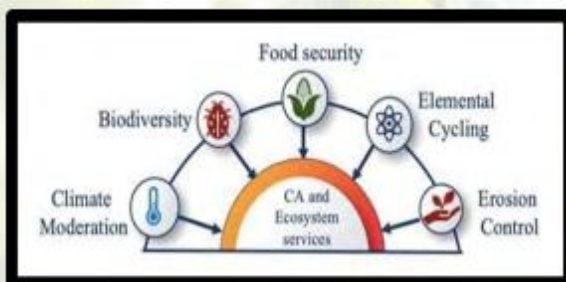


Fig.1 A schematic diagram depicting the main ecosystem services delivered through conservation agriculture

Ecosystems can highlight the links between the natural and social system that can help in developing. CA is designed in such a way that cultivation is minimized to avoid land degradation, while still maintaining the sustainability of agricultural production.

These changes can affect a number of ES (Table 1 and Figures 1), including:

Provisioning services — CA can have influence on yield and productivity and, thus, the provision of food and fibre. In addition, it can have a significant influence on soil water storage.

Regulating services — CA has numerous important impacts on erosion, soil fertility, greenhouse gas emission, air and water quality and the moderation of extreme events (floods/drought).

Supporting services — CA can impact soil biological community structure and diversity.

Conservation Agriculture and Water: From Erosion to Eutrophication

To feed the growing human population (~7.9billion), natural ecosystems are being increasingly converted to cultivated areas. This agricultural expansion leads to more soil disturbance and soil erosion, which degrades soil quality, leads to pollution of waterways, and damages infrastructure.

Soil erosion under conventional agriculture is mainly attributed to greater soil disturbance and non-adoption of site-specific soil and water conservation measures. The inclusion of crop residue retention under CA can increase surface roughness and reduce runoff and soil losses. Improvement in soil aggregate stability and water storage under CA also directly or indirectly affects runoff and soil losses. The effectiveness of CA in reducing soil water erosion varies according to the climate, cropping system and experimental duration, although in comparison to conventional systems, and particularly those incorporating extended periods of bare fallow, CA can reduce annual soil loss by over 90%.

ANTI-TRANSPIRANTS AND THEIR EFFECT ON CROPS



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Anti-transpirants are the substances applied to the leaves of the plants for the purpose of reducing water loss (transpiration) by reducing size and number of stomata without causing a significant change in the various important processes of the plant such as growth and photosynthesis. Nearly 99 percent of the water absorbed by the plant is lost in transpiration. Antitranspirants are chemical compounds, their role is to practice plants of hardening to stress, as a method of reducing the impact of drought due to salinity. They have also been used to protect the plant from fungal diseases.

The scope of using anti-transpirants is

- To reduce water losses through transpiration under dry land areas.
- In costly irrigation, for extending the irrigation interval.
- In areas having poor quality of soil- water or irrigation water, to reduce the uptake of salts.
- For reducing transplanting shock of nursery plants.

Depending upon the mode of action the antitranspirants are divided into 4 types viz, stomata closing, film forming, reflecting and growth retardant types.

1. Stomata Closing Type

These antitranspirants reduce the closure of stomata and reduce the rate of transpiration. Fungicides like PMA and herbicides like atrazine in lower concentration serve as antitranspirants by inducing stomata closing. PMA was found to decrease transpiration than photosynthesis but it has a disadvantage that it is toxic to fruits and vegetables. ABA is a plant hormone, nontoxic with increase in ABA level confirming its role in stomata closure. A little rise in CO₂ concentration from the natural 0.03% to 0.05% induces partial closure of stomata. E.g. PMA, ABA, 2,4-D, Atrazine, Simazine, Triazine and High CO₂.

2. Film Forming Type

This type forms a thin film coating on the surface of the leaf and inhibits the loss of water vapour from the leaf. But they allow CO₂ to pass into the leaf through lower epidermis. Application to leaves induces stomatal closure and thus reduces transpiration losses of water from plants. The water proof films on leaf surface reduce the escape of water vapour from transpiring surface e.g. waxes, silicone oils, plastic films, mobileaf, octadecanol, folicote, vapour guard, hexadecanol etc.

3. Reflectance Type

The reflective coating may persevere for more than 10 days. It lowers the leaf temperature and reduces the vapour pressure gradient from leaf to atmosphere. Reflecting materials reduce the energy load on the leaf by increasing the albedo. Light reflection for the reflectant coated upper surface of leaves within the canopy may cause an increased light penetration in the canopy. The reflectant may improve the distribution of light within the canopy and may prove useful in increasing the photosynthesis e.g. kaolin, lime water, calcium bicarbonate, china clay.

4. Growth Retardant Type

These chemicals reduce shoot growth and increase root growth and thus enable the plants to resist drought. They may also induce stomatal closure e.g. cycocel. It is useful for improving water status of the plant and delaying the leaf senescence processes.

Pusa Hydrogel

It is a super absorbent polymer developed by IARI, New Delhi. It is a water absorbing hydrogel which absorbs water 300 times of its own size. Hydrogel also reduces water requirement for crops, improves seed germination and helps the farmers in arid regions.

ORGANIC FARMING



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Need of organic farming

Organic farming is acknowledged as a crop production system which can sustain health of soils, ecosystems and people by combining tradition, innovation and improved farm technology. Major components generally adopted by farmers include untreated seed, bio manures and biofertilizers, biopesticides, manure compost/ vermicompost and crop diversification. Availability of organic farm inputs, certification and marketing network being the constraints for an average farmer, Indian government launched the movement by establishing national centres and regional sub-centres. In the coming years, with changing patterns in consumerism, organic farming may help in providing people with foods and food products without chemicals and toxins.

Organic farming is a method of farming which primarily aims at cultivating the land and raising crops in a natural way. It aims to keep the soil alive and in good health with the use of organic wastes (crop, animal and farm wastes, aquatic wastes) and other biological materials along with beneficial microbes (biofertilizers) to release nutrients to crops for increased sustainable production in an eco-friendly pollution free environment. Organic Farming is a system which avoids or largely excludes the use of synthetic inputs (such as fertilizers, pesticides, hormones, feed additives etc.) and to the maximum extent feasible rely upon crop rotations, crop residues, animal manures, off-farm organic waste, mineral grade rock additives and biological system of nutrient mobilization and plant protection.

Role of Organic Farming in agriculture

Organic methods of farming are beneficial for maintaining soil health. Soil health refers to the capacity of soil to function within ecosystem

boundaries to sustain biological productivity, maintain environmental quality and promote plant and animal health. In the context of agriculture, it may refer to its ability to sustain plant and animal productivity and diversity. A healthy soil would ensure proper retention and release of water and nutrients, promote and sustain root growth, maintain or enhance water and air quality, maintain soil biotic habitat, respond to management and resist degradation. International Federation for Organic Agriculture Movements (IFOAM) definition of Organic agriculture is based on:

- The principle of health
- The principle of ecology
- The principle of fairness
- The principle of care

Components of Organic Farming

- Maintaining genetic diversity
- Managing soil health
- Selection of variety
- Nutrient management
- Water management
- Weed management
- Pest and Disease management
- Livestock management

Characteristics of organic farming

- Protecting the long-term fertility of soils by maintaining organic matter levels, encouraging soil biological activity, and careful mechanical intervention.
- Providing crop nutrients indirectly using relatively insoluble nutrient sources which are made available to the plant by the action of soil microorganisms.
- Nitrogen self-sufficiency through the use of legumes and biological nitrogen fixation, as well as effective recycling of organic materials including crop residues and livestock manures.
- Weed, disease and pest control rely

CONSERVATION AGRICULTURE IMPACT ON SOIL HEALTH AND CARBON SEQUESTRATION



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Conservation agriculture involves minimum soil disturbance, continuous ground cover, and diversified crop rotations or mixtures. Conservation agriculture production systems have the potential to improve soil quality if appropriate cropping systems are developed. Conservation agriculture practices over a long-run have generated a number of challenges for sustainability of agriculture, i.e., soil degradation, depletion of ground water level, declining soil organic matter, loss of soil biodiversity, subsurface compaction, and greenhouse gas emissions. Soils health can be defined as the continued capacity of soil to function as a vital living system, within ecosystem and land use boundaries, to sustain biological productivity, maintain the quality of air and water environment and promote plant, animal and human health.

Most important soil health indicator is soil organic carbon, especially the concentration of soil organic carbon at the surface. Soil organic carbon plays a great role in holding nutrients, reducing soil erosion, and improving water infiltration. The distribution of soil organic carbon in the profile is affected by tillage practices and initial soil organic carbon content. The process of transfer of carbon dioxide from the atmosphere to the soil system in the form of long-lasting pools of carbon is defined as carbon sequestration.

Carbon sequestration is the long-term storage of carbon in oceans, soils, vegetation and geologic formations. Soil organic carbon sequestration is affected by various factors such as land use and natural vegetation, soil texture, climatic conditions, and topographic position. Conservation agriculture has been seen as an option to maintain the soil health and improve soil organic carbon storage, amongst other collateral benefits which may ensure agricultural sustainability. Conservation agriculture modifies soil hydro-physical properties such as an increase in water infiltration, reductions in runoff, evaporation and soil loss, thus it helps in reverting soil

degradation and sustaining the soil health.

There are reports on improved soil chemical and biological properties on different agro-ecologies under conservation agriculture throughout the globe. Potential impacts of conservation agriculture on soil health and soil organic carbon sequestration through various practices such as minimal soil tilling, residue management, and diversified crop rotation from the field studies have been widely reported in the literature.

The amount of soil organic carbon added in the soil profile, enumerated as a function of carbon input from crop residue addition, bulk density, and protection by aggregates relative to soil particles fraction, soil organic carbon concentration, and depth, is considered as soil organic carbon accumulation. Encouragement of carbon sequestration in soil is greatly considered as a potent approach of the reduction of greenhouse gases emission and climate change mitigation. Several factors, carbon input, tillage, crop rotation, climate and fertilization, greatly affect the rate of soil organic carbon sequestration. This stated that increased carbon inputs are the most efficient way to uplift soil organic carbon Sequestration. In the coarse soil textures or soils with rapid decomposition rates of organic matter with low inherent soil organic matter, the addition of carbon in soil surface is a typical key of conservation agriculture practices even though it is sometimes likely to attain momentous soil organic carbon sequestration with increased deepness in some soils. Soil organic matter and its quality are among the key indicators of soil quality, and are determinants of biological activity. The amount, diversity and activity of soil fauna and microorganisms are directly related to soil organic matter. The soil matter content and the biological activity and generate has a major influence on the physical and chemical properties of soil. Principal process of carbon sequestration in soil includes humification, aggregation and sedimentation while the processes that decrease soil organic

IMPACT OF CLIMATE CHANGE ON AGRICULTURE



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Agriculture is a primary and most important sector of the Indian economy. Nearly two-third of the population is dependent upon the agricultural sector for their livelihood. In India, the agriculture sector is highly vulnerable to climate change. Even a small climatic change affects agriculture adversely by decreasing the crop production rate. Now-days due to increase in average atmospheric temperature, CO₂ concentration and precipitation by greenhouse gasses viz. carbon dioxide, methane, nitrous oxide, hydrochlorofluorocarbons (HCFCs), hydrofluorocarbons (HFCs) resulting in global warming which affects the crop production. Higher temperature tends to reduce crop yield and favours weeds and pest proliferation. Due to extreme and unsuitable weather conditions, there are high chances of soil infertility which leads to decline in crop quality and quantity. The impact of excessive rainfall causing floods or no rainfall resulting in drought can be extremely detrimental to crop production. In the dry season below temperature, slows down or even damages crop growth which ultimately leads to decline in crop production. Food supply also depends on climatic and weather conditions.

According to the International Food Policy Research Institute (IFPRI) Global Food Policy 2022 report, warned that due to climate change it may push 90 million Indians towards hunger by 2030 by decline in agricultural production and disruption in food supply chain. Due to climate change there is change in different sectors of agriculture i.e. in field crops sector, in horticultural sector and in livestock, poultry and fishery sector. It is projected by the scientists and researchers that 2.5 to 4.9 degrees Celsius increase in temperature across the country could lead to a decrease the wheat

yield by 41%-52%, rice yield by 32%-40% and maize yields by 18-23%.

It is found that in the previous six years from 2015-2021, the country lost 33.9 million hectares of the cropped area due to floods and excessive rain and 35 million hectares due to drought. It is estimated that rain fed rice yield in India will be reduced marginally by more than 2.5% in 2050 and irrigated rice yields by 7% in 2050. Unseasonal heavy rain damaged nearly 20% of the 1.3-million-hectare crop area under paddy in Haryana.

Both global warming and erratic rainfall might affect the nutritional quality of grains. Due to increase in carbon dioxide (CO₂) levels in the atmosphere will have an adverse effect on the nutritional value of crops and increase in CO₂ level interferes with the processes that are important for the synthesis of protein in plants. A decline in the nutritional quality of grains could exacerbate "hidden hunger" which is a form of undernutrition where a person's energy intake may be high enough, but their intake of nutrients like iron and zinc is so low that affects their health and development negatively.

Indian Council of Agricultural Research (ICAR) has initiated a network project NICRA during 2011 to address the impact of climate change on Indian agriculture. The NICRA project is being reviewed by a High Level Monitoring Committee (HLMC) under the Chairmanship of Secretary, DARE & DG, ICAR with invited members representing different Ministries from the Government of India. This committee recommends measures to be taken through NICRA for making Indian agriculture more resilient to changing climate. Besides an expert committee periodically review the project and advise on various aspects

MARIGOLD



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Flowers play an important role in people's lives. Every flower in nature is a soul blossoming. People become happier and more helpful as a result of this. For many, these are like sunshine, nourishment and medicine. The Compositae/Asteraceae family of ornamental plants includes marigolds (*Tagetes* spp.). Marigold (*Tagetes* spp.), the most widely used loose flower in India, is one among the most frequently cultivated flowering plants. It is grown around the world, including some regions of India. In gardens, marigold is frequently cultivated as a border plant. Yellow, red, orange, dark orange and orange brown are just a few of the different flower kinds and hues that are offered.

The two common marigold species, which are both annuals and endemic in Mexico and Guatemala, are called French marigold (*T. patula*) and African Aztec (*T. erecta*), respectively. About 50 species of annual or perennial herbaceous plants belong to the genus *Tagetes*. *Tagetes erecta*, *Tagetes tenuifolia*, and *Tagetes patula*, *T. minuta* all have diploid chromosome numbers of $2n = 24$ and 48, respectively. Locals refer to the plant *Tagetes erecta* L. as Genda Phool (Marigold). It is grown as a potted plant, a decorative crop, and for landscaping purposes.

Marigold is an Indian native spice. In the past, marigold was used as a spice and medicine in Indonesia, China and India. Marigold is a flavour-enhancing spice that serves as the foundation of most Indian curries. Curry recipes have included marigold for more than 5000 years.

Mexican marigold is a native of Central and South America. Beginning in Mexico, it spreaded around the world in the first decades of the 16th century. The demigod Tages, who was renowned for his beauty, inspired the name *Tagetes*. Early in the 16th century, the African marigold was first imported into Spain, where it quickly gained popularity. Similar steps were taken by the French marigold (*T. patula*),

another well-known kind of marigold.

In 2017-18 loose flowers were about 3,24,000 hac. with production of about 19,62,000 MT. In 2018-19, area under floriculture decreased to 3,13,000 hac. with estimated production of about 20,59,000 MT. The production of cut flowers was 8,17,000 MT during 2017-18 and estimated production was 8,07,000 MT in 2018-19. The area under flower cultivation in India is about 1,10,000 hectares. The total area and production of flowers during the 2018-19 was about 3,39,386 hac. with production of 19,91,381 MT. The total export of floriculture produced in India was Rs. 571.38 crores /81.94 USD million in 2018-2019.

Marigold occupies two thirds of the total area under cultivation. The major flower growing states are Karnataka, Tamil Nadu and Andhra Pradesh in the South, West Bengal in East, Maharashtra in West and in Rajasthan, Delhi and Haryana. In northern India in Himachal Pradesh, small scale farmers are growing marigold and other flower crops for garlands and decoration. In India, the total area under marigold cultivation is 255 thousand hectares with production of 1754 thousand MT loose flowers.

The growing season for this crop is three times in a year, throughout the rainy, winter, and summer seasons, marigolds can be grown. The ideal soil is deep, fertile, friable, good at holding water, well-drained, and close to pH 7.0-7.5. Sandy loam that is fertile is the best type of soil for marigold growth. Acidic and saline soils are not good for growing things. It is a robust annual branching herb that is widely cultivated in temperate climates. It is around 60 to 90 cm tall and upright. The warm environment during the growing season (14-200C) is substantially improving, however higher temperatures (26-360C) have a negative impact on flower production. The optimal temperature range is from 15-200C at night and from 18-220C during the day. It is primarily seed grown. The two methods of propagation

SYNTHETIC DNA SYNTHESIS AND ASSEMBLY



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Introduction

The chemical synthesis of DNA oligonucleotides and their assembly into synthase, genes, circuits, and even entire genomes by gene synthesis method has become an enabling technology for modern molecular biology and enables the design build, test, learn, and repeat cycle underpinning innovations in synthetic biology. In this perspective, synthesis of DNA oligonucleotides have sought to reduce synthesis cost and increase sequence fidelity. The development of lower cost methods to produce high-quality synthetic DNA will allow for the exploration of larger biology hypotheses by lowering the cost of use and help to close the DNA read- write cost gap.

Synthetic DNA delivery systems:-

The ability to safely and efficiently transfer foreign DNA into cells is a fundamental goal in biotechnology. Towards this end, rapid advances have recently been made in our understanding of mechanisms for DNA stability and transport within cells. Current synthetic DNA delivery systems are versatile and safe, but substantially less efficient than viruses. The effectiveness of gene expression is also dependent on several additional factors, including the release of intracellular DNA, stability of DNA in the cytoplasm,

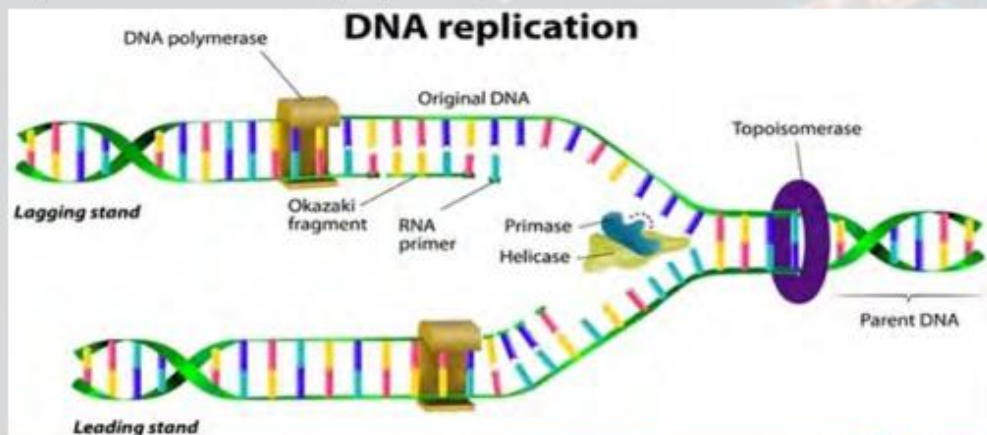
unpackaging of the DNA-vector complex and the targeting of DNA to the nucleus. Delivery system of the future must fully accommodate all this processes to effectively shepherd DNA across the Plasma membrane, through the hostile intracellular environment, and into the nucleus.

Synthetic DNA minor groove- binding drugs:-

Both cationic and neutral synthetic ligands that bind in the minor groove of DNA are discussed. Certain bis-distamycins and related lexitropsins show activities against HIV-1 and HIV-2 at low Nano molar concentration. Berenil can also exhibit intercalative as well as minor groove binding properties depending on sequences. The cross linking efficiency of PBD dimers is much greater than that of other major groove cross linkers, such as cisplatin, melphalan etc. Neothramycin is used clinically for the treatment of superficial carcinoma of the bladder.

Polymorphism of a synthetic DNA in solution:-

Early work on the X-ray diffraction of DNA fibres showed that DNA can adopt different conformations and up to now at least four different double helical models have been described.



ROLE OF GRAFTING IN ABIOTIC STRESS MANAGEMENT OF VEGETABLE CROPS



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Grafting is a method of propagation where two living plant parts are joined together to develop a single plant. The below ground portion of plant i.e. rootstock is selected for its genetic ability to resist/tolerate biotic & abiotic stress. The above ground portion of the plant i.e. scion is selected for fruit quality & improved yield. Since grafting is an integrative reciprocal process, both the scion and the rootstock can influence tolerance of grafted plants to adverse environmental conditions.

History of Vegetable Grafting: The production of grafted vegetable plants was first begun in Japan and Korea in the late 1920s with watermelon (*Citrullus lanatus*) grafted onto pumpkin (*Cucurbita moschata*) rootstock. After that, to solve the yield drop issues brought on by soil-borne diseases in 1930, watermelon (*Citrullus lanatus*) scions were grafted onto bottle gourd (*Lagenaria siceraria*) rootstocks. To prevent damage from soil-borne diseases such as bacterial wilt, Fusarium wilt, Verticillium wilt and nematodes, large-scale scions of brinjal were grafted onto rootstocks of *Solanum integrifolium* in 1959. In order to increase low temperature tolerance and resistance to fusarium wilt, cucumber grafting was first practised in Japan in 1960. In Japan and Korea, the production of grafted plants used to produce fruit-bearing vegetables (such as tomato, brinjal, cucumber and melons) was 59% and 81% in 1990.

Methods of Grafting

1. Cleft Grafting: Cleft grafting has been employed in cucurbits for a long time in some countries, but it is most commonly utilized in Solanaceous crops. The rootstock seeds are planted 5-7 days earlier than the scion seeds. The scion's stem is cut at a straight angle, leaving 2-3 leaves on the stem. At the four to five leaf stages, the rootstock is cut at right

angles, leaving 2-3 leaves on the stem. The scion's stem is wedged and the tapered end is inserted into a cleft made in the rootstock's end. A plastic clip is then used to keep the graft in place. Example: tomato, eggplant, cucumber, watermelon.

2. Tongue Grafting: Seedlings from scion and rootstock must have identical heights and stem diameters. To achieve uniformity in the diameter of the hypocotyls of the scion and rootstock, cucumber seeds are sown 10-13 days before grafting and pumpkin seeds 7-10 days before grafting in this approach. The rootstock's growth tip should be carefully removed to prevent the shoot from developing. Rootstock grafting should be done in a downward direction and scion grafting should be done in an upward manner at an angle of 30°–40° to the perpendicular axis, so that they tongue into one another. Grafting clips are placed to secure graft positions at the graft union site. Example: tomato, eggplant, bitter gourd.

3. Hole Insertion Grafting: It is also known as terminal insertion grafting. Fujii first outlined this strategy in 1970, and nurseries have just recently adopted it. This strategy is simple to implement, has a high percentage of success and is less susceptible to illness transmitted through the soil. The size of scion seedlings must be less than that of rootstock seedlings. 7-8 days after sowing gourd rootstock seeds or 3-4 days after spreading squash rootstock seeds, watermelon seeds are planted. Watermelon seeds are sown and grafted 7-8 days later. A hole is drilled at a slant angle to the longitudinal direction in the removed bud region using a bamboo or plastic gimlet or drill. Slant cutting the hypocotyl portion of the watermelon scion to a tapered end makes it easier to insert into the rootstock hole. After that the grafted plant is placed into a healing chamber. Example: cucumber, watermelon,

ROLE OF PLANT GROWTH REGULATORS AGAINST ABIOTIC STRESSES



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INTRODUCTION

Plant growth regulators are naturally biosynthesized chemicals in plants that influence physiological processes. The biochemical and physiological processes are involved in the growth and development of plants. Nowadays, due to changing climatic scenarios, numerous biotic and abiotic stresses contain seed germination, seedling growth, and plant development leading to a decline in biological and economic yields. However, plant growth regulators (PGRs) can potentially play a fundamental role in regulating plant responses to various abiotic stresses and hence, contribute to plant adaptation under adverse environments. The major effects of abiotic stresses are growth and yield disturbance, and both these effects are directly overseen by the PGRs.

Different types of PGRs such as abscisic acid (ABA), salicylic acid (SA), ethylene (ET), and jasmonates (JAs) are connected to boosting the response of plants to multiple stresses. In contrast, PGRs including cytokinins (CKs), gibberellins (GAs), auxin, and relatively novel PGRs such as strigolactones (SLs) and brassinosteroids (BRs) are involved in plant growth and development under normal and stressful environmental conditions. Besides, polyamines and nitric oxide (NO), although not considered as phytohormones, have been included in the current review due to their involvement in the regulation of several plant processes and stress responses. These PGRs are crucial for regulating stress adaptation through modulating physiological, biochemical, and molecular processes and activation of the defense system, upregulating transcript levels, transcription factors, metabolism genes, and stress proteins at cellular levels. The current review presents an acumen of the recent progress made on different PGRs to improve plant tolerance to abiotic stress such as heat,

drought, salinity, and flood.

Abiotic stresses (heat, drought, salinity, water logging, heavy metals toxicity, soil erosion etc.) adversely affect the growth, development, and yield of plants resulting in higher economic losses at the expense of global food. The combined effects of different abiotic stresses on the biological and economic yield of numerous crops are greater than individual stress. Plant growth regulators (PGRs) are naturally biosynthesized by plants which modify growth (increase in branching and re branching, shoot and root growth, alter or trigger fruit maturing, reproduction etc.) of crop plants and play a significant role in mitigating abiotic. PGRs also have an important role during stress conditions such as being thermos protectants, reactive oxygen scavengers, improving photosynthesis, accumulation of stress proteins and many other regulatory functions related to metabolisms.



Phytohormones mediated abiotic stress tolerance in plants

• **Auxin Induced Physiological and Biochemical Mechanisms for Stress Tolerance**
Auxins are vital due to having multiple roles in plant growth and development by influencing

WEED BIOLOGY AND WEED ECOLOGY



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NEHA

What is weed?

Weed is a plant growing out of its proper place that is an unwanted guest growing as a companion with other field crops. It interferes in the agricultural operations and has a negative value.



Weed biology

Weed biology is the study of the establishment, growth, reproduction and life cycles of weed species and weed societies/vegetation. Weed biology is an integrated science with the aim of minimizing the negative effects, as well as using and developing the positive effects of weeds.

Life Cycle: Weeds are categorized as annuals, biennials or perennials based on their life cycles.

Annuals- Annuals go from seed to maturity in less than a year. Annuals come in two varieties: summer and winter. Spring-sown seeds of summer annuals grow to maturity, produce blooms and seeds and then perish before they fall. Winter annuals are plants that are born in the fall, grow, produce flowers and seeds, and then die in the spring or early summer when still in a seedling or rosette stage. Annual weeds are often simple to manage because they are in the seedling stage. Lowbush blueberry fields typically only include a small number of annual weeds.

Biennials: In most cases, biennials go through their entire life cycle in two years. Seeds develop a basal cluster of leaves and a tap root in their first year of germination. In this stage, the plants overwinter, weed from a flower stalk in its second year, then set seed and perish. Evening primrose and wild carrot are a few examples of biennial weeds.

Perennials: Weeds that are perennial can persist for over two years. These weeds are the most prevalent in blueberry fields and are typically the most challenging to eradicate. When it comes to reproduction, perennial weeds can either be primarily vegetative (like daisies) or be both vegetative and reproductive (like sheep sorrel, bunchberry). Similar to how the blueberry plant grows, many perennial weeds do as well. As a result, many of the production methods encourage blueberry development. As a result, many production techniques that encourage the growth of blueberries, such as pruning also encourage the growth of these weeds. The most challenging perennials to manage are those with low growth rates and vegetative spread caused by interwoven subsurface root systems. Wiping or spot treatments with approved herbicides are effective ways to get rid of perennial weeds that are above the blueberries. Both woody and herbaceous kinds of weeds are perennial.

Weeds are divided into four groups based on their growth characteristics: grasses, broadleaf weeds, ferns, and herbaceous or woody weeds.

Broadleaf: Broadleaf weeds are annual, biennial, or perennial plants that typically sprout two leaves (cotyledons) at the time of germination. Normally, the blooms have distinct petals and the leaves contain a branching network of veins.

Rushes, Sedges, and Grass: Annual or perennial plants both make up grasses. Typically, they have upright, parallel-veined

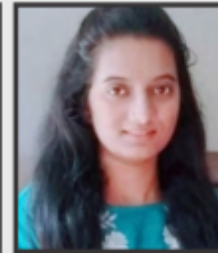
BASE EDITING IN DNA



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Introduction

Base editing: advances and therapeutic opportunities

The introduction of single – nucleotide variants into DNA or RNA in living cells – is one of the most recent advances in the field of genome editing, as around half of known pathogenic genetic variants are due to SNVs, base editing holds great potential for the treatment of numerous genetic diseases through, either temporary RNA or permanent DNA base alternation. Recent advances in the specificity, efficiency, precision and delivery of DNA and RNA base editors are revealing exciting therapeutic opportunities for this technology.

Current advances, limitations and future and implications

Targeted mutagenesis via genome-editing technologies holds great promise in developing improved crop varieties to meet future demands. Point mutations or single nucleotide polymorphisms often determine important agronomic traits of crop among the genome editing- editing technologies, base editing has emerged as a novel and efficient genome- editing approach which enables direct and irreversible conversion of one target base into another in a programmable manner. A base editor is a fusion of catalytically inactive CRISPR-Cas 9 domain and cytosine or adenosine deaminase domain that introduces desired point mutations in the target region enabling precise editing of genomes. The review also sheds light on the limitations associated with this technology. Finally, the future perspectives of this emerging technology towards crop improvement have been highlighted.

Current status and challenges

Genome editing technology has revolutionized the field of plant science by enabling targeted modifications of plant genomes and is emerging as a powerful tool for both plant gene functional analyses and crop improvement, although homology- directed repair (HDR) is a feasible approach to achieve precise gene replacement and base substitution in some plant species, the dominance of the non-homologous end joining

pathway and low efficiency of HDR in plant cells have limited its application. We review current applications of these technologies in plant species. Finally, we address the challenges and future perspectives of this emerging technology in plants.

Challenges of DNA base editing tools

CRISPR- mediated DNA base editors, which include cytosine base editors (CBEs) and adenine base editors (ABEs), are promising tools that can induce point mutation at desired sites in a targeted manner to correct or disrupt gene expression. Their higher editing efficiency, coupled with their ability to generate a targeted mutation without generating a DNA double-stranded break (DSB) or requiring a donor DNA template, suggests that DNA base editors will be useful for treating genetic disease, among other applications. In this review, we summarize information about the DNA base editors that have been developed to date, introduce their associated potential challenges, and describe current efforts to minimize or mitigate those issues of DNA base editors.

Conclusion

BEs exhibit plenty of advantages compared to classical approaches of genome editing based on designer nucleases. The low frequency of DSBs generated by BEs is undoubtedly one of the most significant advantages, placing base editing in the top spot amongst the different genome editing tools in terms of safety. Avoiding p53-mediated apoptosis that can result from DSBs formation allows the safe genetic manipulation of p53-sensitive cells, such as HSCs and therefore the safe treatment of genetic blood disorders. Moreover, the low frequency of DSB formation prevents the generation of large chromosomal rearrangements, thus maintaining DNA integrity. Importantly, the multiplex editing of two or more loci is feasible with base editing and has been proved very promising in the case of blood disorders. Last but not least, the delivery of BEs as mRNA or RNP in clinically-relevant cells needs to be further optimized to allow base editing therapeutic approaches to enter the clinical realm.

IMPACTS OF CONSERVATION AGRICULTURE ON NUTRIENT AVAILABILITY



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INTRODUCTION:

Conservation agriculture is defined as a system that combines minimum or no tillage (NT) with permanent soil cover (that leaves at least 30% of the soil covered between harvest and planting) and diversified crop species that includes legumes. Other companion practices, such as integrated pest and nutrient management, are also often incorporated into the CA system on a site specific basis to help ensure its success. Overall, CA is a farming system designed to enhance the sustainability of agricultural production by conserving and protecting soil, water and biological resources so that external inputs can be kept to a minimum. Conservation agriculture and its components have been associated with many benefits including greater soil water storage, improved soil quality, decreased erosion and in some instances, greater yield and net farm income. These benefits have led to the identification of CA as an important tool to help ensure future food production and help buffer agricultural productivity against extreme climate events, such as drought and heat waves, which are likely to increase in frequency under climate change. One of the key drivers of the improvements observed under CA is the greater soil organic matter (SOM), particularly at the surface of the profile, and the associated improvements in soil structural stability, fertility, and biological diversity relative to conventional agricultural systems

Tillage Management

It has been well-established that tilling the soil leads to losses of SOC as cultivation breaks up the soil and exposes organic matter previously protected within soil macro aggregates to microbial decay. Cultivation also incorporates and fragments plant material, increasing its vulnerability to microbial attack. Decreasing the amount of tillage or introducing no-till (NT) thus has the potential to decrease the amount of SOC lost from the profile by decreasing the turnover rate of macro aggregates, increasing the physical protection

of particulate organic material and reducing soil to residue contact.

Residue Management

Crop residues can be defined as biomass remaining on the soil's surface after harvest. In some systems, linear increases in SOC stocks can be observed with increasing rates of residue addition. Thus, in CA systems, which emphasize the retention of residues on the soil surface, greater residue input can potentially lead to greater SOC storage. However, where residue production is low e.g., due to low soil fertility or the presence of soil constraints, there can be insufficient residue retention under CA to positively impact SOC stores.

Crop Rotation

Different crops may have different effects on the quantity, quality and periodicity of C inputs and can modify the soil in different ways (e.g., rates of water extraction, nutrient use), which can influence mineralisation rates and the growth of subsequent crops. Thus, differences in crop rotation between CA and conventional agricultural systems also have the potential to impact SOC values.

Net Effects of CA on SOC

The exact magnitude of the difference in SOC between CA and conventional agricultural systems varies greatly and is influenced by many factors, including climate, soil type, baseline SOC crop management, time since management change and sampling depth and methodology. This means that estimates of the magnitude of the change following conversion to CA vary widely. For example, estimates ranging from -0.15 Mg/ha/year in areas such as the Midwestern USA to $+0.93$ Mg/ha/years in tropical Brazil have been recorded. However, it is clear that in regions where soil and climatic conditions are favourable for biomass production and where negative yield impacts are not observed, then CA systems will often have higher amounts of SOC relative to conventionally managed systems, particularly in the surface of the soil profile.

RESOURCE CONSERVATION TECHNOLOGY (RTC) FOR SUSTAINABLE FOOD PRODUCTION



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Introduction

RTC refers to the practice that enhances the resources or input-use efficiency such as zero-tillage or reduced tillage, new varieties, laser land levelling, bed and furrow configuration for planting crops etc. The term Conservation agriculture refers to a system of raising crops without tilling the soil while retaining crop residue on the soil surface.

Conversational Agriculture useful for meeting future food and also contributing to sustainable agriculture. Conservation agriculture helps to minimize the negative environment effect and equally important to increase income to help the livelihood of those employed.

RTC conserves the resources and produces more output with less input. It aims at reversing the process of degradation inherent to the conversational agriculture practices like intensive cultivation, burning or removal of crop residue, aggressive seed bed preparation with heavy machinery leading to declining fertility, biodiversity and erosion.

Benefits of Resources Conservation Technology

RTC refers to any management approach or technology that increases factor productivity including land, labour, capital and inputs. The RTC producer will see an increase in organic matter. Conversational Agriculture is an improvement of soil structure and rooting zone that deals with residue management and crop diversification and has potential for improving productivity and soil quality.

RTC conserves the resources and produces more output with fewer inputs. RCT increases factor productivity including land, labour, machinery and agricultural inputs such as fertilizer and pesticides. Commercial and non-commercial factors require resource allocation through resources management. Conservation means management of human use of natural

resources to provide the maximum benefit to current generation while maintaining capacity to meet the needs of future generations.

Resource Conservation Technology in Crop Production

- **Minimum Tillage:** The aim of minimum tillage is to reduce soil erosion, improve water holding capacity, rapid germination, a satisfactory stand and favourable growing conditions.
- **Zero Tillage:** It helps in early sowing, saves water, labour cost reduced, increases fertilizer use efficiency, reduces soil erosion, improves soil organic carbon and increases crop yield up to 30%.
- **Rotation Tillage:** It refers to addition of new crops or cropping systems to agricultural production, a shift crop or cropping system to another e.g. cereal to pluses and improve water infiltration, increasing productivity and net return.

Various Techniques of Resources Conservation Technology

- **Precision Agriculture:** It is referred to as site specific farming, smart farming and GPS based farming system that reduces in cost of cultivation, increased in inputs efficiency and reduction in pollution.
- **Brown Manuring:** It is a technique to grow Sebanina crop in standing rice crop and



ORGANIC FARMING



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Organic Farming

Organic farming, also known as ecological farming or biological farming, is an agricultural system that uses fertilizers of organic origin such as compost manure, green manure, and bone meal and places emphasis on techniques such as crop rotation and companion planting.

Scope of Organic Farming

Success of organic movement in India depends upon the growth of its domestic market. India has traditionally been a country of organic agriculture but the growth of modern scientific, inputs intensive agriculture has put it to a wall. But with increasing awareness about safety and quality of food, a long term sustainability system and accumulating evidence of being equally productive, organic farming may merge as an alternative system of farming which addresses the quality and sustainability concern.

Principle of Organic Farming

Principle of Health: Organic Agriculture should sustain and enhance the health of soil, plant, animal, human and planet as one and indivisible. This principle points out that the health of individuals and communities cannot be separated from the health of ecosystems - healthy soils produce healthy crops that foster the health of animals and people.

Principle of Ecology: Organic Agriculture should be based on living ecological systems and cycles, work with them, emulate them and help sustain them. This principle roots organic agriculture within living ecological systems. It states that production is to be based on ecological processes, and recycling. Nourishment and well-being are achieved through the ecology of the specific production environment. For example, in the case of crops this is the living soil; for animals it is the farm ecosystem; for fish and marine organisms, the aquatic environment.

Principle of Fairness: Organic Agriculture should build on relationships that ensure fairness with regard to the common

environment and life opportunities. Fairness is characterized by equity, respect, justice and stewardship of the shared world, both among people and in their relations to other living beings.

Principle of Care: Organic Agriculture should be managed in a precautionary and responsible manner to protect the health and well-being of current and future generations and the environment

Organic farming methods

Fertilizers

Since synthetic fertilizers are not used, building and maintaining a rich, living soil through the addition of organic matter is a priority for organic farmers. Composted manure that has been turned 5 times in 15 days and reached temperatures between 55 and 77.2 °C (131 and 171 °F) has no restrictions on application times.

Pest control

Organic pesticides are derived from naturally occurring sources. These include living organisms such as the bacteria *Bacillus thuringiensis*, which is used to control caterpillar pests or plant derivatives such as pyrethrins (from the dried flower heads of *Chrysanthemum cinerariifolium*) or neem oil (from the seeds of *Azadirachta indica*).

Crop rotation

It is a successive cultivation of different crops in a specified order on the same fields, in contrast to a one-crop system or to haphazard crop successions.

Advantages of Organic Farming

Economical: In organic farming, no expensive fertilizers, pesticides, or HYV seeds are required for the plantation of crops. Therefore, there is no extra expense.

Good return on Investment: With the usage of cheaper and local inputs, a farmer can make a good return on investment.

High demand: There is a huge demand for organic products in India and across the globe, which generates more income through export.

Nutritional: As compared to chemical and fertiliser-utilised products, organic products

ORGANIC FARMING WITH RESIDUE FREE PRODUCTION



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After the independence, a challenging phase of food shortage and famines came that forced the nation to develop the food aid practices with the determination to become self-reliant in food production by modernizing agriculture. That was a phase when the birth of the Green Revolution became the saviour for an ailing famine prone country like ours.

With the advent of Green revolution, India witnessed tremendous increase in crop productivity as result of introduction of high yielding varieties that require large amounts of chemical fertilizers and pesticides and fulfilled the dream of transforming India from food importing to food exporting nation. But this achievement came with the cost of compromising environment friendly farming and well-being of humans as it was affecting ecosystem and human health drastically due to residual effects of these harmful chemical fertilizers and pesticides.

Organic farming is the best known approach to meet the objectives of sustainable agriculture based on traditional farming and is one of the alternatives for conventional farming. Organic farming emphasizes on residue free farming with the use of organically driven biocides and bio-fertilizers to manage the crops, which in broad term is known as integrated nutrient management and integrated pest management. Integrated pest management prevents and reduces the infestation of economically damaging pests in an eco-friendly way without the accumulation of any harmful chemical residues in the crop through the practices which includes cultural, physical, mechanical, biological and chemical methods. Major setbacks in adopting residue-free organic farming are lack of awareness, high input cost, inadequate supporting infrastructure and marketing of organic produce.

Why Organic Farming

Organic farming helps to provide long-term benefits to people as well as to the environment. Besides the potential to alleviate poverty and

economic gains, organic farming proves to be valuable in a number of ways. Organic Farming protects the environment from harmful effects, which arise from the use of synthetic inputs, especially pesticides and fertilizers.

Fertilizers and pesticides release dangerous toxic chemicals into soil and water. Some pesticides can cause harm to the environment or on direct exposure, they can prove to be toxic and dangerous to human health. The high cost of the machine necessitated high profits, which in turn put pressure to raise productivity. Pesticides harm useful organisms in the soil.

The monoculture of high yielding seeds requires external inputs of chemical fertilizers. The fertilizers also destroy soil organisms. They damage the rhizobia that fix nitrogen and other microorganisms that make phosphorus available to plants. Organic farming systems don't use toxic agrochemical inputs (pesticides, fungicides, herbicides and fertilizers). Organic Farming system provides greater biodiversity as compared to the traditional farming system due to decreased soil changes and chemical application. Organic crops use 97% less pesticides and yield 95-100% higher along with 50% lesser expenditure on energy and fertilizer. Hence, organic agriculture consumes zero pesticides and less energy. High prices that consumers disburse for organic products along with decreased cost of pesticide inputs and synthetic fertilizers add to increased profits.

Organic farms have always been found to be more profitable as compared to conventional farms. Organic farming maintains the ecology and is the avoidance of all pollution spreading practices. Organic farming not only produces fine and healthy food products but also improves the fertility and quality of soil. Organic farming provides employment opportunities and economic benefits to local communities. The agriculture and allied sectors in India provide employment to 65% of the workers and account for 30% of the national income.

EMERGING TRENDS AND CHALLENGES IN HORTICULTURAL CROP



Ruksana
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Horticulture is the branch of agriculture concerned with intensively cultured plants directly used by man for food, medicinal purposes and aesthetic gratification. In simpler words, it is the cultivation, production and sale of vegetables, fruits, flowers, herbs, ornamental or exotic plants.

The term Horticulture is derived from the Latin words hortus (garden) and cultura (cultivation)

L.H. Bailey is considered the Father of American Horticulture and M.H. Marigowda is considered the Father of Indian Horticulture.

Classification-

- **Pomology:** Planting, harvesting, storing, processing, and marketing of fruit and nut crops
- **Olericulture:** Producing and marketing vegetables
- **Arboriculture:** Study, selection and care of individual trees, shrubs or other perennial woody plants
- **Ornamental Horticulture:** It has two subparts-
 - **Floriculture:** Production, use and marketing of floral crops
 - **Landscape Horticulture:** Production and marketing of plants used to beautify the outdoor environment

Features of Horticulture in India-

- Horticulture sector has become one of the major drivers of growth as it is more remunerative than the agricultural sector (food grains mainly).
- This sector provides employment possibilities across primary, secondary and tertiary sectors.
- Horticulture crops, fruits are more resilient to change in weather conditions and the vegetables augment the income of small and marginal farmers.

- Water utilization is very low, minimizing the risk of crop failure and it can be done on smaller farms.

- Multiple crops are planted simultaneously to get more yield and to use the maximum of the fertilizers.

- This sector enables the population to eat a diverse and balanced diet for a healthy lifestyle.

- It became a key driver for economic development in many of the states in the country where Division of Horticulture of Indian Council of Agricultural Research is playing a pivotal role.

Recent Trends in Horticulture-

● Arka Cucurlure

- A novel kairomone blend for effective trapping of male melon flies, *Zeugodacus cucurbitae*.

- This technology is based on a combinative plant volatile from cucurbitaceous fruits and cue lure.

- Attracts a large number of males (~50%) over conventional cue lure traps.

● Arka Sasya Poshak Ras:

- A Liquid Nutrient Formulation for Soilless Vegetable Production.

- The liquid nutrient formulation (comprising solutions A & B) is a unique balanced blend of the macro (N, P, K, Ca, Mg and S) and micronutrients (Fe, Mn, Cu, Zn, B and Mo) which are required to support the growth of vegetables grown on cocopeat.

- This nutrient formulation is suitable for most commonly grown vegetables (tomato, chilli, cabbage, zucchini, cucumber, ridge gourd, French bean, peas, cow pea, dolichos etc.) and leafy vegetables (amaranthus, coriander and palak etc.).

● Arka Haagalarasa: Ready -to-serve (RTS) Bitter gourd Juice

G20 SUMMIT AND INDIA'S PRESIDENCY OF G 20 IN 2023



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INTRODUCTION:

The G20 consists of the countries which contribute more than 80% of the global GDP which was established by the leaders at the Pittsburgh summit in September 2009. This was done in order to promote a healthy global economic growth. These nations worked together to discuss at what was then called the "Summit on Financial Markets and the World Economy," or "G20 Summit".

With advancements and growth of all the countries numerous concerns grew more intricately and interconnected, G20 focused not only on microeconomics and trading among member countries but also on a wide variety of global challenges that the world will be going to face in the near future. The major topics that were focused are global development, energy and climate change, health, counterterrorism, migration and refugee issues.

The G20 emerged after the Asia financial crisis of 1997 when a conversation was required on the global financial system for involvement of significant developing market nations. A Conference of the G20 Finance Ministers and Central Bank Governors was thus established by the G7 Finance Ministers in 1999. They were promoted to the position of head of state in order to create a forum for leaders from significant developed and emerging market nations. The third summit, which took place in Pittsburgh in September 2009 saw the leaders who appointed the G20 as the "Primary venue for international economic cooperation".

G20 Summit 2023 Held at Bali (Indonesia)

The motto for this G-20 summit is to "Recover Together, Recover Stronger". The leaders will engage in discussions over three sessions —on food and energy security, health partnership for global infrastructure and investment and digital transformation. In addition, to highlight the concerns over climate change issues, Mr. Jolowi will lead his

guests to the Indonesian mangroves of Taman Hutan Raya, which have been restored over a 30-year project covering nearly 700 acres. Prime Minister Narendra Modi is also set to spell out his agenda for the year ahead under India's G-20 presidency, with special focus on the Global South and the problem it is facing due to geopolitical tensions, food and fuel shortages.

What makes this G-20 different from others?

For India, the importance of the summit of the world's most advanced economies is that it is India's turn to host the summit next. Mr. Modi will receive a handover from the Indonesian President Joko Widodo after which India will assume the presidency on December 1st. Additionally, this is only the second time Chinese president Xi Jinping has travelled abroad since the COVID pandemic, and the first time since he was re-elected at china's party congress last month

India's aims in G20 2023 Presidency

India is aiming at developing standard operating procedures for cryptocurrency during its G20 Presidency next year, Union Finance Minister Nirmala Sitharaman has said, underlining that all countries want the technology to survive but not mutualised; that (crypto) will also be part of India (agenda during G-20 presidency), Ms Sitharaman told a group of Indian reporters before concluding her trip to Washington DC to attend the annual meetings of the International Monetary Fund and the World Bank.

India will assume the Presidency of the G20 for one year from December 1, 2022 to November 30, 2023. Under its Presidency, India is expected to host over 200 G20 meetings across the country, beginning December 2022. Ms. Sitharaman has been making a strong case for global regulation of crypto currencies to tackle the risks of money laundering and terror funding.

JUVENILITY OF SOME FRUITS



RAJNI THAKUR



MADHIMA THAKUR



VAISHALEE TOMAR

A plant goes through different stages in its life cycle. These stages are embryonic growth, juvenility, maturity, senesce and death. Juvenility is a developmental stage in a plant during which it is unable to produce/induce flowers. The length of juvenility varies among plant species. Annual plants have very short and perennial plants have a long juvenility period.

Table: Juvenility period of some plants

Plants	Juvenile period
Rose	20-30 days
Grapes	1 years
Apple	4-8 years
Mango	5 years
Citrus	5-10 years
Okra	45 years
Banana	1 years
Tomato, Brinjal	60 days
Cucumber	80 days

Characteristics of Juvenility

Leaf form: The leaf is vigorous in its juvenile form. The morphology of the leaf also differs in the juvenile stage of some plants for example Acacia sp.

Growth form: Young branch appears like a whip. The branch grows parallel to the main stem. Such a branch is known as a water sprout, for example Citrus, Guava etc.

Presence of thorns: In some fruit plants thorns are present in the young or juvenile stage and these thorns disappear when they reach the adult stage, for example Apple, Pear etc.

Leaf retention: Plants do not shed leaves throughout the year in the juvenile stage whereas they shed in the adult stage or mature stage.

Root emergence: When juvenile parts of the plant are used in propagation, the root emerges rapidly.

Flower Bud Differentiation

Bud- The bud is an immature shoot system that is often surrounded by protective scale leaves. The bud develops into a lateral branch, a flower

or an inflorescence. Whether these buds develop as flowers or in inflorescence is a very desirable aspect of fruit production. The stages of development in a flower are as follows-

1. Flower bud differentiation- It is also known as flower induction. Enhanced cell division occurs below the apical part of the meristem in the central region for bud differentiation to occur. Due to cell division, parenchyma cells differentiate into flower primordia that surround the meristem.

2. Imitation- Flower formation takes place in the second initiation.

3. Development of flowers- This includes the period from induction to bloom. During this period the flowers are usually receptive to pollination. The opening of the flower (anthesis) is the final stage of development.

A flower is a modified reproductive branch, basically a stem with an apical meristem that gives rise to the leaf primordia.

Table- Flower bud differentiation and flowering in some important fruits.

Fruit crop	Bud differentiation	Flower opening
Apple	June-July	Next spring
Mango	Oct	Next spring
Peach	June-July	Next spring
Pear	July-August	Next spring

Types of buds:-

1. Simple bud- It develops in vegetative shoots. It is also known as leaf bud.

2. Mixed bud- It develops in the form of shoots with flowers. It is also known as a flower bud.

3. Compound bud- It develops in both leaves and flowers.

Factors affecting flower bud differentiation

The signals leading to flower induction include the following endogenous and external factors:

1. Endogenous factor

a) Carbon: Nitrogen Ratio (C:N Ratio)- High ratio of nitrogen to carbohydrate increases flowering in young plants, heavy use of

INTEGRATED WEED MANAGEMENT



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Integrated Weed Management (IWM) means integrating multiple weed control tactics into a single weed management program, optimizing control of a particular weed problem. The past several decades have seen simplified weed control practices that rely heavily on a few popular herbicides. However, the rapid spread of herbicide-resistant weeds has required farmers to incorporate alternative weed management approaches. While many farmers are incorporating different herbicides, this is likely to have only short-term success. Using non-herbicide approaches in combination with multiple, effective sites of action is needed for long-term success.

Why is IWM Necessary?

It might be better to first discuss why weed control is necessary. Weeds negatively impact crop yields, interfere with many crops production practices, and weed seeds can contaminate grain. Based on national research, corn and soybean yield can be reduced by approximately 50% without effective weed control.

Herbicide application is the main weed control strategy used. Reliance on this one method has led to the development of herbicide-resistant weeds. There are a limited number of herbicides available to use and cases of herbicide resistance are rapidly increasing in the US. As a result, herbicides are in need of extra help to continue to ensure adequate weed control.

Components of an IWM Plan:

The goal of IWM is to incorporate different methods of weed management into a combined effort to control weeds. Just as using the same herbicide again and again can lead to resistance, reliance on any one of the methods below over time can reduce its efficacy against weeds. Two major factors to consider when developing an IWM plan are (1) target weed species and (2) time, resources, and capabilities necessary to implement these tactics. While it

is wise to be a good steward of herbicide technology, through the use of PRE and POST herbicide applications or tank mixes, IWM requires the use of tactics beyond herbicides. For example, using these herbicide application practices along with a winter cover crop or harvest weed seed control (HWSC) and prevention methods would be considered IWM.

Types of Integrated Weed Management Practices

There are three main types of agronomic practices that you can use to develop your integrated weed management program:

- Practices that limit the introduction and spread of weeds (prevent weed problems before they start)
- Practices that help the crop compete with weeds (help "choke out" weeds)
- Practices that keep weeds "off balance" (make it difficult for weeds to adapt)

Categories of IWM Practices:

Prevention: Prevention is one of the first steps of weed management. This category is unlike the others in that it focuses on keeping weeds out of the field or spreading within a field. Growers can incorporate this tactic by:

- Avoid inputs contaminated with weed seeds, such as crop seed, manure, and other inputs.
- Cleaning equipment, including combines (combine cleaning methodology), that could transport weed seeds between fields.
- Preventing weeds from producing seeds in the field but also in ditches, fencerows, and other nearby non-crop areas.
- Scouting for weeds in a timely manner.
- Proceeding with caution when purchasing used farm equipment or using rented land.

Cultural: A healthy, vigorous crop is the best weed control. Cultural practices are designed to give the crop a competitive advantage over weeds.

APOMIXIS AND METHOD OF APOMIXIS



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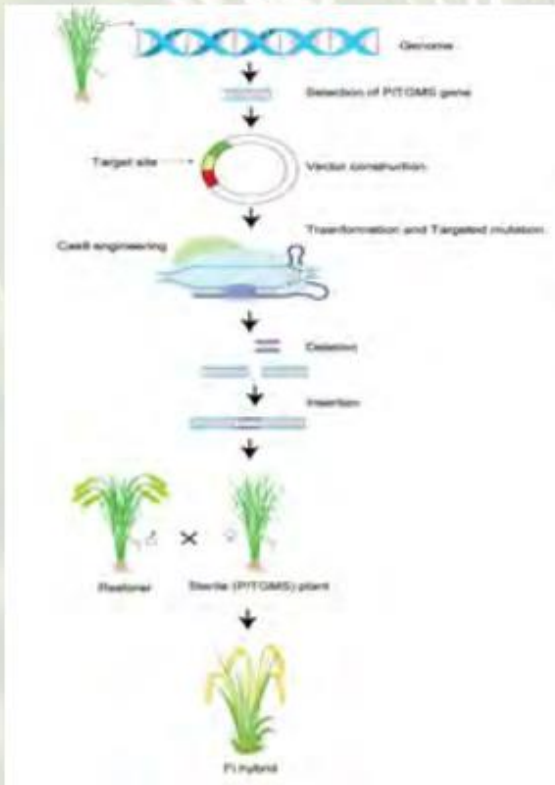


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Introduction

With the help of farmers and breeders as well as policymakers and the government, food security is simultaneously supported by scientific, logistical, and humanitarian approaches. Due to variances in cultural values, geographical locations, ecosystems, and technological advancements, finding a universal solution for sustainable food security is challengeable. Despite these significant obstacles, there is a lot of room to improve the effectiveness and productivity of today's agricultural products. We are utilizing the potent breeding tools we have at our disposal to take advantage of heterosis in commercially significant crops.

Figure-1: F1 hybrid



Apomixes happens naturally and results in progeny with the same genetic makeup as the

parent plant. Naturally, apomixes is a rare yet widespread phenomenon. Only 1% of the 40,000 species in the 400 families of flowering plants—or about 10% of them—experience the phenomena of apomixes.

Evolution of Apomixis

Apomixis is an intriguing plant trait that allows maternal clones to be produced through seed production. Apomixis is an intangible but revolutionary trait used in plant breeding and hybrid seed preservation. Recent findings suggest that apomicts are useful, and that they have the potential to spark more research interest in the evolutionary process of asexual seed production in flowering plants. Researchers believe that apomixis alone has the potential to revolutionize agriculture in both developed and developing countries in the twenty-first century.

Genetic Basis and Molecular Control of Apomixis

The qualitative process of apomixis includes elements of genetic analysis. Because the majority of the apomicts are not significant crops, molecular attempts to elucidate the genetic basis for apomixis are unable to explain unexplained phenomena. Gametophytic apomixis and polyploidy have a well-documented relationship. The identification of apomictic events in diploid plant populations dissociated apomixis from the absolute requirement of polyploidy. The genetic control of apomixis, according to some experts, may not be an autonomous feature, but rather is brought about by changes to the sexual system's temporal and spatial epigenome.

Apomictic species have suppressed recombination; however, the genes that control the various components of apomixis have been identified, and sequencing of these loci has revealed a number of genes that have the potential to play critical roles in apomixis. The apospory-specific genomic region (ASGR) of Pennisetum was identified using random amplified polymorphic DNA-based analysis in both sexual and apomictic plants.

Epigenetic Control of Apomixis

The diverse developmental processes and cells involved in apomictic mechanisms suggest that

IMPORTANCE OF EXTRUSION COOKING IN NUTRITIONAL SECURITY



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Introduction

Today's lifestyle is greatly transformed from those of the past. Limited free time has brought a lot of changes in food preparation and consumption habits i.e. modernization and globalization has made people always run in haste just for nothing. They have no time to cook their own food, especially during mornings. Nowadays consumers prefer ready to eat or ready to cook food with nutritionally rich and therapeutic benefits. There is an increase in demand for non-meat, high-protein products. Thus to fulfill the demand of consumers, extrusion technology is used.

Extrusion is defined as a system of pushing mixed ingredients out through a small opening, called die, to form and to shape the materials. The formed products are then referred to as extrudates. The first extruder for food processing was piston and ram type extruders for processing meat and sausages. In the 1930s, a piston extruder was replaced with a single screw extruder to design a continuous process instead of the previous batch process. Later in the 1960s, twin extruders were introduced. The increased potential of a twin screw system led to a diversification of options in food extrusion that expanded into a large variety of new snack and cereal products in the 1980s.

When temperature above 100°C is applied during processing then the process is known as extrusion cooking (or hot extrusion) used to produce a variety of shapes, including rods, spheres, doughnuts, strips, tubes, squirls and shells. Typical products include a wide variety of low density, expanded snack foods and ready to eat (RTE) puffed cereals can also be produced by extrusion cooking. Cold extrusion, in which ambient temperature is applied, is used to mix and shape foods such as pasta and meat products. Low pressure extrusion, at temperature below 100°C is used to produce products like liquorices, fish pastes, surmise and pet foods.

Food processing at high temperature has always been a challenge, as it leads to deterioration of nutritive values in food due to high temperature. In order to overcome this problem, extrusion cooking is preferred, as it owes low processing cost, high productivity, significant nutrient retention and minimal processing time as compared to conventional cooking. Extrusion cooking is a high-temperature short-time (HTST) process which inactivates enzymes & reduces microbial contamination in food. Extrusion processing operates at relatively low moisture, which reduces the quantity of heat required for cooking and re-drying of product after extrusion cooking.

Extrusion cooking is highly versatile as a wide range of products can be produced by changing ingredients, extruder operating conditions and dies. Extruders can modify proteins, starch, lipids and other food materials to produce a wide variety of new food products.

Importance of extrusion cooking in nutritional security

Extrusion cooking involves high temperature short time (HTST) retaining, many heat sensitive components of food and minimizes nutrient and flavour losses. The less deterioration of nutritive value in food is due to certain changes that occur during the process of extrusion cooking. Major changes occur during extrusion cooking are changes in composition: Extrusion results in changes in the chemical components of food. The changes are described below

- Changes in dietary fibers
- Changes in proteins
- Changes in carbohydrates
- Changes in lipids
- Changes in Minerals & Vitamins
- Changes in Anti-nutrients
- Changes in Antioxidant and total phenol

content

Dietary fiber

Fruit and vegetables contain large amounts of

DAIRY ENTERPRISE



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Dairy is a business enterprise established for the harvesting or processing of animal milk mostly of cows and buffaloes but also from goats, sheep, female yaks, mares and female camels for human consumption. A dairy is typically located on a dedicated dairy farm or in a section of a multi-purpose farm or mixed farm that is concerned with the harvesting of milk.

The word dairy refers to milk based products, derivatives and processes along with the animals and workers involved in their function production. A dairy farm produces milk and a dairy factory processes a variety of dairy products.

Milk producing animals have been domesticated for thousands of years. Initially they were part of subsistence farming that nomads engage in. As the community moved around the country, their animals accompanied them. Protecting and feeding the animals was a big part of the symbiotic relationship between animals and the herders. With the industrialization and urbanization,

supply of milk became a commercial industry which specialized breeds of cattle being developed for dairy as distinct from beef or drought animals.

Initially more people were employed as milkmen but it soon turned to mechanisation with machines designed to do milking. Historically, milking and processing took place close together in space and time on a dairy farm. People milked the animals by hand on farms where only a small number of animals are kept; hand milking may be still practiced.

While most countries produce their own milk products, the structure of the dairy products varies in different parts of the world. In the major milk producing countries, most milk is distributed through the wholesale market. As in many other branches of the food industry, dairy processing in many countries has become increasingly concentrated with more efficient plant operators along with their workers.

CHALLENGES IN THE TEACHING LEARNING



Kanchan Pawar
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This article tries to address the issues and challenges in teaching and learning. Technology and teaching trends have changed very rapidly in the last few decades. It was observed that teacher training methodology has not yet evolved at the same rate as information technology. As per findings, the teacher faces various types of problems like classroom discipline, family problems of students, and less time spent in the classroom teaching teacher because of extra clerical work given by higher authorities. Nowadays, creative and innovative education is in demand for the 21st century which helps all around development of students and teachers as well.

INTRODUCTION

Education is as old as the human race. It is a never ending process of growth and development of an individual. Education in the real sense is to humanize humanity and to make life progressive, cultured, and civilized. Father of the nation, Mahatma Gandhi once said, "By education, I mean all-round drawing out of the best in the child and body, mind and spirit".

Modern age is an age of media and technology. It has reduced the physical distance of the world. The events of a country affect other countries. All countries of the world are either developed or developing and interdependent. NEP 2020 aims to deliver a high-quality education to help India's economy thrive. The new policy aims to accomplish three primary goals in the education system, from elementary school to higher education: maximum quality, equality, and honesty.

ISSUES AND CHALLENGES

According to National Statistical Office (NSO) data, India's average literacy rate is 77.70 percent. The male literacy rate stands at 84.70% and female literacy stands at 70.30%

(2021 figure). A literate person is a great asset to the nation's development. According to the National Survey of India, the literacy rate of India in 2022 is 77.70 percent. The Literacy rate in 2011 was 73 percent, a level well below the world average literacy rate of 84% of all nations. India currently has the largest illiterate population.

For the 2022 collected data, it was assumed that India's Literacy rate would be 100 percent but due to COVID-19, this could not happen. The Pandemic created a lot of challenges in the Indian education system and badly hit all the nations in every aspect. Schools were closed due to COVID-19 that brought significant disruptions to education across the world.

As we have observed that there is a wider gender disparity in the literacy rate in India. The census provided a positive indication that growth in the female literacy rate was faster than the male literacy rate, which means the gender gap appears to be narrowing. In the real situation of the education system of India, the country is trying to achieve a 100 % literacy rate, demolishing gender disparity and trying to give quality education.

The top most issues are:-

- 1) Lack of knowledge
- 2) Quality education
- 3) Caste reservations and paid seat
- 4) Unemployment
- 5) Structured curriculum
- 6) Lack of technology
- 7) Costly higher education
- 8) Access to education
- 9) Improper Infrastructure
- 10) Unawareness about the need for education.

The overarching issues concerning each level of education in India are quality and pertinence. Recent advancement in Indian management has made this an especially suitable time for corporations to commit to

3D FOOD PRINTING



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3D printing or additive manufacturing is a process in which we create three-dimensional objects through a layer-by-layer method. Objects can be produced from any 3D model or other electronic data source. 3D printing technology began in 1984 when Charles Hull invented the technology called stereolithography. In 2007, Cornell University introduced the printed frosting Nutella, chocolate, and processed cheese. In 2014 3D domestic food printers were introduced.



- Steps followed in 3D food printing:
 - Modelling
 - Printing
 - Finishing

1. Modelling: Additive manufacturing takes virtual blueprints from computer aids and slices them into digital cross sections for the machine to successively use as a guideline for printing.

2. Printing: To perform a print, the machine reads the design and lays down successive layers of liquid, powder or sheet material to build the model from a series of cross sections. These layers correspond to the virtual cross sections from the CAD model.

3. Finishing: Printing a slightly oversized version of the desired material in standard resolution, and then removing material with a

higher resolution subtractive process can achieve a higher resolution.

Types of manufacturing in 3D Food printing

1. Subtractive manufacturing: It is a type of manufacturing in which any piece of raw material is cut into a desired and final shape and size by a controlled means of material-removal process.

2. Additive manufacturing: It is a type of process in which the product is produced by layering method in 3D.

□ **Principle and working:** The basic principle for 3D printed foods is solid freeform fabrication. It is the ability of food material to hold and produce a solid structure without getting any deformation and its working principle is based upon the same as that of other printers i.e. inkjet printers and laser printers. The injector places the layer as per the design sent from CAD and the bottom layer quickly solidifies to build more layers on it.

□ **Types of 3D Printing Technology:** There are three broad types of 3D printing technology;

Selective laser sintering (SLS)

Hot melt extrusion

Binder jetting

● **Selective laser sintering (SLS):** Hot air or laser move along X to Y axis to fuse powder particles so that they get bind together and form a solid layer i.e. into a 3D structure and each cross section is scanned individually for fusion of all powder ingredients present in that cross section.

● **Hot melt extrusion:** Melted material or paste like slurry is extruded out continuously from a moving nozzle and welds to the preceding layers on cooling.

● **Binder jetting:** Each powder layer is distributed evenly across the fabrication platform and liquid binder sprays to bind two consecutive powder layers.

□ Application of 3D food printers

● Chocolate industry

● Sugar based products

● Food supplements

OPTION B (BOOK REVIEW)



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In the ocean of only a few options, we often drown in disappointment forgetting, we still have an OPTION B, we still have a direction to row the boat of our life.

There are phases in our lives, when we feel stuck, we feel like we've come to a dead-end, as if there is no way to go. For times like those, we have our 'Option B'. Sheryl Sandberg very subtly takes us on a journey through adversity and the destination is happiness.

The book is about a woman, whose life brought her to a sharp unpleasant turn, a wife who had lost her husband, a mother who had innocent little kids with no father to look after, she is Sheryl Sandberg. This book is about how she dealt with the trauma and how she bloomed through adversity.

She talks about every stage one goes through when there is any kind of adversity, be it 'Kicking the Elephant out of the room' to 'loving and laughing again'. With each chapter, you see yourself inculcate something in yourself that takes you out of the pain you are in. There is no scale for pain and everyone has a pain the other can't experience, but even then the healing process is the same, and this book is that healing we all need.

We are often so engrossed in our pains and sufferings that we forget we have people around battling through their challenges. Each time we hear someone's experiences, the inspiring threads from others' stories weave a little more inspiration within us. This book is a beautiful creation which has the stories of the fighters of real life, whose names are unsaid and unsung; this book has all those knacks that you need to get out of that stagnant environment where you are stuck.

What makes you more involved with the book is the journal notes Sheryl shares with us. She not only talks about how important journaling our feelings is but she also shares with us exactly what she felt, how she was dealing with her struggles every single day.

Sheryl says, "I learned that when life pulls you under, you can kick against the bottom, break the surface, and breathe again". This one line summons that hidden strength in you, makes you want to get up and stand again.

'OPTION B' is one of the best self-help books I've ever read. It is as if with each page of the book, you too are evolving, building resilience and eventually moving towards joy.

IMPACT OF COVID-19



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Covid-19 has caused significant health and economic risk to many developing and underdeveloped countries. Many underdeveloped countries were unable to cope with these crises due to lack of resources. What impacted most was not Covid-19 but its aftermath. It had a huge impact on the Indian economic system as India's GDP shrank to 7.3% in 2020-21. Tourism was one of the most affected sectors due to travel bans and the closing of public places. Almost all sectors had been adversely affected as domestic demand and exports sharply plummeted with some exceptions i.e. Amazon, Flipkart and other online businesses where high growth was observed. Pandemic disrupted global food supplies also. Due to the lockdown many people became unemployed.

It had a major impact on the education sector as educational institutions were shut down due to pandemic. Initially, the government decided to temporarily close the schools to reduce the impact of covid-19 but later, due to increase in rates of infection schools and colleges were closed again. Many online platforms emerged during the pandemic especially for educational purposes but due to unavailability of internet and other resources these facilities were unable to reach the poor section of the society. Due to the sudden change in the education system students as well as teachers were unable to adjust quickly. Many low budget schools and institutions were shut down. Although many webinars,

online lectures and digital exams were conducted, these were not available to most students all over the nation.

Covid-19 brought many changes in society. The outbreak also provided cover for many illegal activities such as deforestation in Amazon rainforests, poaching in Africa and created economic fallout. Due to lockdown many entrepreneurs emerged. People grew closer to each other and focused more on their health.

Studies indicated a decrease in environmental pollution as there was significant improvement in air quality in different cities across the world. In China, lockdown and travel ban resulted in 25% reduction in carbon emissions and a 50% reduction in nitrogen oxides emissions. The Central Pollution Control Board reported a significant drop in noise pollution in many residential and commercial places of Delhi. Due to country wide lockdown, the government restricted several industrial activities due to which water quality of rivers including Ganga and Yamuna was improved. Due to restricted motor vehicles air and noise pollution got reduced.

There were many positive impacts of pandemic as during lockdown digitalization and consolidation of the healthcare system was enhanced. People were motivated for helping others, for performing social services and started working in collaboration for research, medical science and social welfare.

YOUTH AND POLITICS



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For political systems to be representative, all parts of society must be included. When young people are disenfranchised or disengaged from political processes, a significant portion of the population has little or no voice or influence in decisions that affect group members' lives. A key consequence is the undermining of political systems' representativeness.

To make a difference in the longer term, it is essential that young people are engaged in formal political processes and have a say in formulating today's and tomorrow's politics. Inclusive political participation is not only a fundamental political and democratic right but also is crucial to building stable and peaceful societies and developing policies that respond to the specific needs of younger generations. For young people to be adequately represented in political institutions, processes, and decision-making, and in particular in elections, they must know their rights and be given the necessary knowledge and capacity to participate in a meaningful way at all levels.

When there are obstacles to participating in formal, institutionalized political processes, young people can rapidly feel disempowered. Many tend to believe that their voices are not going to be heard or that they will not be taken seriously even if they are heard. The problem becomes circular as politicians may lose interest in responding to the aspirations of young people if they don't win their votes. This in turn leads to young people being increasingly excluded from taking part in decision-making, or in debates about key socio-economic and political issues, despite their sensitivity to the demands for social equity and justice, environmental protection and cultural diversity.

In new and emerging democracies, the inclusion of young people in formal political processes is important from the start. Young people's active contributions can bring democratic values to life, leading to the overturning of authoritarian practices. In countries where young people have led protests that have forced authoritarian regimes from power, they are likely to feel significant frustration if they are not included in

new formal decision-making procedures. This can destabilize democratization and accelerate conflict dynamics.

People between the age of 15 and 35 constitute youth. Those in their teens among the youth are said to be of tender age. They are not considered experienced and knowledgeable enough to understand the complex world of politics. That is why some people believe that the youth should not take part in politics. But when the government reduced the age of eligibility for casting vote from 21 to 18, the message was quite clear, that the youth should actively take part in the process of elections whereby the candidates are elected to form governments at the state as well as center.

India is the biggest democracy in the world. The real power lies in the hands of the people who elect the people who rule the country. The basic principle of democracy is that it should have a wide participation by the people. The more the percentage of voters out of the total population of the country, the stronger is the base of the democracy because the mandate given in the elections would have a popular sport. By making the age of casting of vote as 18, the government has brought crores of people within the ambit of active participation in elections thus giving a broad base to the democratic processes. It also gave the message that our youth is mature and wise enough to understand their responsibility and they would give their mandate after carefully considering candidates' capabilities. Being young, they are not swayed by the old systems of caste, creed and other orthodoxy which had been the bane of Indian politics for quite some time in the post-independence era. The government also seemed to have realised that it was important for India's future to induct the youth in the democratic process at an early age. After all it is the youth who ultimately will become the stalwarts in politics and one day will hold the reins in their hands. There has been much debate and discussion in various circles across the country on whether the youth should take part in politics.

MUSIC: A STRESS BUSTER



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“Music has the power to heal, transform and inspire and we have the power through deep listening to increase our intuition and self-awareness.”

— Andre Feriante

In this hustle bustle of everyday life, stress has become a part of an individual's existence whether it is work related or conflict in their interpersonal relationships or any other, people are always stressed no matter what the situation is. They seek medications or tend to use drug substances to get temporary relief from their daily life stress. To get rid of the unnecessary stresses of life, a therapeutic remedy called Music comes into the picture.

Music has a soothing effect on the body and mind of the human being and has the ability to heal the deepest scars of a being that even medicine cannot. Music has the power to entertain and to heal and plays an important role in improving the mental health of a person. Researchers have found that music has the ability to relieve a person from any type of psychological problems like stress, anxiety, depression etc. and it is also a great factor in enhancing memory and focus of an individual. It is often seen that whenever we are feeling stressed or upset over any situation, listening to music pacifies our soul and mind. Music is something that hits close to our heart and helps us to cope up with our daily life routines.

Music works as a healer of stress. According to WHO "Stress can be defined as any type of change that causes physical, emotional and psychological strain". Every individual at some point of their life is exposed to stress which can be acute or chronic. There is a natural process behind stress response. Stress has a biological cause, due to which our body releases specific hormones. For example: When a person encounters a dangerous situation that puts him in a tight spot with no possible solution, his body releases a series of hormones called adrenaline and cortisol. Adrenaline increases the heart rate, blood pressure and boosts energy whereas cortisol helps them to deal with the

perceived threat. There are some limitations of our body's stress response system. Once a fight and flight situation is passed, the hormone level drops and returns to its normal state but there are different stressors that are always present in a person's life that causes stress because of which the person is always alarmed. That is why overexposure to cortisol and other stress hormones can lead to problems like anxiety, depression and more.

For ages and ages, music has appeared to be a powerful tool for stress relief. Listening to soothing calm music or to any personal music genre is said to have an appeasing effect on the person's mental health. There are different types of music that a person can listen to-- like slow music causes feelings of nostalgia or sadness, upbeat music can make you feel positive and optimistic about yourself, faster music helps in focusing and can also cause feelings of excitement. Music artists produce the songs in such a way that a person can relate their personal feelings to it thus making that melody close to their heart and whenever they are in any stressful situation they can relive that pleasurable feeling after listening to the song.

There are ways by which music can help in stress management. To kick-start your day listen to some classical or instrumental music as it will keep you calm and focused and you will have a low stress day. Even if you have a long day ahead, the fresh start of the morning with your favourite music will keep your body and soul refreshed for a whole day. Second, while studying or working we are often distracted by our own nonsensical thoughts which make our mind go haywire. We let the negative thoughts spoil our whole mood for studying and working. For this, create a favourite playlist of songs, they can be with or without lyrics and listen to them. We will see the effects just a few minutes after. Third, losing sleep is another problem caused by

JATOLI SHIVA TEMPLE



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There are various ancient temples in India, which holds lots of secrets. Devbhoomi Himachal is known for its temples and holy places. One such place is Jatoli Temple, surrounded by amazing mountains and old villages. If tourists want to see a grand and spectacular temple, perched on a hill top then Jatoli Shiv Temple is the place to be. Jatoli temple is a divine shrine that is dedicated to Lord Shiva. Jatoli gets its name from the long Jata (hair) that Lord Shiva has. It is considered as Asia's highest Shiv temple, this shine is indeed an architectural marvel. Jataoli Shiv temple is the highest one of the famous holy destination in Solan, Himachal Pradesh Devbhoomi, which attracts a large number of pilgrims. It is only 08km from the Solan city. The height of this temple is around 111 feet. It took nearly 39 years to complete the construction of the temple. The temple building is a unique piece of construction of art. It is believed that Lord Shiva came here during the mythological period and stayed for some time. Crystal Shivling is installed inside

the temple. The cost of this Shivling is 17 lakh rupees. This Shivling is made up of transparent glass. This Shivling is very unique and beautiful. Crystal beads are considered as a symbol of positive energy. This stone is first to attract the sun's rays and give them back to the devotees around it in the form of positive energy as blessings. Here, at the time of sunrise, sitting near the idol gives different feelings.

Statues of various gods and goddesses are also installed in this temple. There is a sculpture of Shesh Nag also. Apart from this, idols of Lord Shiva and Mata Parvati have also been installed there. On the northeast corner of the temple, there is a water tank called 'Jal Kund' which is considered as pious as the holy river Ganga.

The temple is beautiful; the environment is serene and a great destination for spirituality. The peace you feel here has to be experienced, to be believed. You start contemplating the purpose of life or your existence on earth.

"दोस्ती"

एक अच्छी दोस्ती वो होती है जिसमे हम एक दूसरे को समझते हैं ।
उसका ध्यान रखते हैं, जब भी उसको जरूरत होती है
तो हम उसके साथ होते हैं ।
दोस्ती वो एहसास है
जिसे हम अंदर से महसूस करते हैं ।
दोस्ती वो है
जिसमे हम अपने आधे दुख भूल जाते हैं ।
एक अच्छे दोस्त का होना
जिंदगी में बहुत जरूरी है ।
दोस्त वो होता है
जिसके साथ हम अपना सबकुछ बांटते हैं,
जो हमारे दुःख सुख में हमारे साथ होता है ।
एक अच्छा दोस्त वो होता है
जो जिंदगी भर आपका साथ दे ।
जो आपकी निजी जिंदगी की हर एक बात अपने में समा ले,
चाहे वो साथ रहे या ना रहे ।
दोस्ती वो एहसास है
जब कोई हर मुसीबत में आपके साथ रहता है
जिंदगी में एक अच्छे दोस्त का होना बहुत जरूरी है ।

आशा रानी

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प्रथम वर्ष

"आज़ादी का मतलब"

आज़ादी का मतलब पूछो उन नन्हे बच्चों से,
जो बेखोफ है बंधनों की बेड़ियों से।
आज़ादी का मतलब पूछो उन परिदों से जो उठागण (मगन) है,
आसमान की ऊँ चाइयों में।
आज़ादी का मतलब पूछो फूलों की उस खुबशू से,
जो आज़ाद है धर्म की कच्ची डोरी से।
आज़ादी का मतलब पूछो उन समस्त वि श्व की नदि यों और झरनों से,
जो परिजादी (आज़ाद) है नफरत की आगमना (आग) से।
आज़ादी का मतलब पूछो उन बैरागियों से जो आज़ाद है,
मान अपमान की प्रतिष्ठा के घेरों से।
आज़ादी का मतलब पूछो उन हवाओं की लहरों से,
जो प्रतिबंदित नहीं है किसी भी धर्म की चौखट से।
आज़ादी का मतलब पूछो उन भारत माता के शरों से,
जिन्होंने अपने लहू का कतरा कतरा मां के चरणों में बहाया हो ।

□ जय हि न्द □

राजविंदर कौर

बी. एड (अकाल कॉलेज ऑफ एजुकेशन)

"प्रकृति हमें कितने उदाहरण देती है"

प्रकृति हमें कितनी उदाहरण देती है
जीवन को हर हाल में, खुशहाल में जीने की
ये प्रकृति का नियम है जो हम सब जानते हैं
जो बना है, वो मिटेगा
वो बना ही इसीलिए है, की वो मिट सके
प्रकृति हमें सिखाती है
की जीवन में कोई भी स्थिति हो, वो स्थिर नहीं
वो आज नहीं तो कल बदलेगी
और परिस्थिति को बदलना ही पड़ेगा
जो की प्रकृति का नियम है
मैंने पेड़ देखें जो मुरझा गए थे
मैंने बरसात पड़ने से पहले ऐसी जगह देखी जहां एक भी फूल नहीं था, घास नहीं था,
कोई छोटे पेड़ नहीं थे, थे अगर थे तो कंकर, मिट्टी थे।
पर जब मैं बरसात के मौसम के कुछ महीनों बाद वहां गई तो देखा
छोटे छोटे पेड़ अपनी नई नई कलियों के साथ,
और फूल अपने खुशमिजाज स्वभाव के साथ वहां अपनी जगह बनाए हुए हैं,
घास संग खिलखिला रहे हैं,
ये सब देख कर मेरे मन ने मानो मुझसे एक बात कही वो भी बड़े हौंसले और
आश्वासन के साथ की कभी जिंदगी मुसीबतों से लड़ते लड़ते बंजर लगने लगे,
तो उम्मीद की बारिश का इंतजार जरूर करना,
हो अगर बंजर जिंदगी को हरा भरा देखना।

राजविंदर कौर

बी. एड (अकाल कॉलेज ऑफ एजुकेशन)

"खुशी"

सबसे बड़ी खुशी ले सबसे छोटे हाथों में,
कोई आने वाला है या कोई आने वाली है।
दुआ है घर के बड़ों की और तुम दोनों का प्यार है ये,
कान्हा जी ने दिया है जो सबसे बड़ा उपहार है ये,
जो रातों को इतना जगायेगा तुम सो न पाओगे रातों में।
सबसे बड़ी खुशी ले सबसे छोटे हाथों में,
कोई आने वाला है या कोई आने वाली है।
इसमें तुम्हारी जान है अब तू पिता और तू माता है,
क्या तीर्थ करने जाना है, सारे तीर्थ तो अब यहाँ हैं,
अब कागज की नाव बनेगी अगले बरस बरसातों में।
सबसे बड़ी खुशी ले सबसे छोटे हाथों में,
कोई आने वाला है या कोई आने वाली है।

भारती

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प्रथम वर्ष

“किताबों का महत्व”

किताबें हमारी जिंदगी में बहुत ही एहम भूमिका अदा करती हैं ये ज्ञान का भंडार होती हैं। किताबें हमारी दोस्त हैं जो हमें जिंदगी जीना सिखाती है। इनको पढ़कर हम दुनिया का बहुत सारा ज्ञान इकट्ठा कर सकते हैं। स्कूल, कॉलेज, यूनिवर्सिटी में लाइब्रेरी होती है, जिसमें अनेकों प्रकार की किताबें होती हैं। जिनको पढ़कर हम अपने ज्ञान को बढ़ा सकते हैं। क्योंकि बिना ज्ञान के कोई महान नहीं होता पर आजकल हम किताबों से ज्यादा महत्व, ऑनलाइन माध्यमों को देने लग गए हैं। किताबों को मानो जसै भूल ही गए हों। किताबें हमारा हाथ थाम कर हमें अधरे कमरे से रोशनी की ओर ले जाती हैं। किताबें हमसे बहुत कुछ कहना चाहती हैं, बस उन्हें सुनने के लिए हमें उन जैसा होना पड़ेगा।

रमन दीप कौर

बी. एड (अकाल कॉलेज ऑफ एजुकेशन)

प्रथम वर्ष

“हिन्दी भाषा का महत्व”

हिन्दी भाषा के महत्व कि बात करें तो हिन्दी भारत में सम्पर्क भाषा का कार्य करती है और कुछ हद तक पूरे भारत में आमतौर पर एक सरल रूप में समझी जाने वाली भाषा है। हिन्दी यूरोपीय भाषा परिवार के अंदर आती है। हिन्दी की सबसे बड़ी विशेषता यह है कि यह जो बोली जाती है वही लिखी और पढ़ी भी जाती है। जो अन्य भाषाओं के संदर्भ में नहीं है। विशेषकर अंग्रेजी के संबंध में जो आज के आधुनिक दौर में यानि विशेष कर भारत के कुछ खास वर्गों के लोगों के बारे में जो हिन्दी बोलने में शर्मादंगी महसूस करते हैं और अंग्रेजी बोलना ज्यादा पंसद करते हैं। दोष हम जैसे लोगों का भी है कि हम अंग्रेजी बोलने वालों को ज्यादा पढ़ा लिखा और ज्ञानी समझते हैं, हिन्दी वालों की उपेक्षा करते हैं।

“हिन्दी” सिर्फ भाषा नहीं बल्कि हिन्दी के द्वारा भारत के लोग एक दूसरे से काफी अच्छी तरह से जुड़ सकते हैं और देश की तरक्की को एक नई ऊँचाईयों तक ले जा सकते हैं। भारत के लोग कभी भी अंग्रेजी को मुख्य भाषा के रूप में इस्तेमाल नहीं कर सकते। हिन्दी भाषा भारत के जन-मन में पैठ बना चुकी है। भारत के लोग बचपन से ही इसी भाषा का इस्तेमाल करते हैं, क्योंकि यह एक सरल भाषा है और इसका इस्तेमाल करना बहुत आसान है।

भारत में हिन्दी के बिना बहुत सारा काम नहीं हो सकता है क्योंकि यहां पर 70 से 80 प्रतिशत लोग अंग्रेजी नहीं जानते हैं। अगर उन्हें संवाद करना हो तो हिन्दी जानना ही पड़ता है। हिन्दी सीखने में ज्यादा प्रयास नहीं करना पड़ता है। यहां तक कि दक्षिण भारत के लोग भी हिंदी फिल्म देखकर हिंदी सीख जाते हैं। भारत के अधिकांश लोगों की “मातृभाषा” हिंदी होने की वजह से उन्हें बोलने और समझने में कभी समस्या नहीं होती। बहुत सारे लोग बिना स्कूल गए भी बहुत अच्छी हिंदी बोल लेते हैं। हिंदी में शब्दों की भरमार है। इस भाषा में भावनाओं को सही तरीके से व्यक्त किया जा सकता है। अगर लोगों को लगता है कि हिंदी का भविष्य अच्छा नहीं है तो ऐसा सोचना बिल्कुल गलत है हिंदी का महत्व स्थापित हो गया है। यह भाषा स्वाधीनता संग्राम के समय समूचे देश को आपस में जोड़ने वाली सबसे सशक्त संपर्क भाषा बन गई थी।

हिन्दी राष्ट्रीय एकता का मार्ग प्रशस्त करती है और यह धागा हमें और आपको एक सूत्र में मजबूती से बांध सकता है।

समृति शर्मा

बी. एड (अकाल कॉलेज ऑफ एजुकेशन)

प्रथम वर्ष

“भोजन की बरबादी”

भोजन की बर्बादी एक बहुत बड़ी समस्या है। हमारे देश भारत में प्रतिदिन भोजन इतना बर्बाद होता है कि बचे हुए भोजन से हजारों भूखे लोगों का पेट भर जाए। भोजन की बर्बादी के उदाहरण हमें हमारे आसपास तथा हमारे घरों में ही देखने को मिलते हैं। हम लोग अपने घरों में ही हर रोज़ खाने की बर्बादी करते हैं। एक आंकड़े के अनुसार हमारे देश भारत में लगभग 936 मिलियन लोग भूखे सोते हैं। और उनमें से 20,864 लोगों की भूख के कारण मौत हो जाती है। इन सबके जिम्मेदार हम स्वयं हैं। हमें भोजन को बर्बाद होने से रोकना होगा क्योंकि भोजन को हम लोग खुद ही बर्बाद करते हैं। भोजन को खरीदने में पैसा भले ही आपका लगता है। परंतु अनाज पूरे समाज का होता है। हम लोग भोजन की बर्बादी के साथ साथ अपने पैसों की भी बर्बादी कर रहे हैं। हमें भोजन की बर्बादी को रोकने के लिए शुरुआत खुद के घरों से करनी होगी हमें खाना उतना ही अपनी थाली में लेना चाहिए जितना कि हमें आवश्यकता हो, अगर भूख ज्यादा हो तो हम दोबारा से खाना ले सकते हैं। यदि आपके पास घरों में खाना बच जाए तो आप उसे किसी जरूरत मंद को खिला सकते हैं। हमें भोजन का सम्मान करना चाहिए भोजन को बर्बाद न करें किसी भूखे को दान करना चाहिए क्योंकि हम लोग भोजन के साथ साथ अपने पैसों की भी बर्बादी कर रहे हैं। हम लोगों को भोजन बर्बाद करने से पहले यह सोचना चाहिए कि कितने गरीब बच्चे बूढ़े लोग भूखे ही रहते हैं। जितना भोजन हम बर्बाद करते हैं उतने भोजन में न जाने कितने जरूरतमंदों का पेट भर जाता है हमें भोजन को बर्बाद नहीं करना चाहिए क्योंकि भोजन के बिना हम जीवित नहीं रह सकते भोजन हमारे जीवन को जीने के लिए सबसे बड़ी आवश्यकता है।

सुनिधि ठाकुर
बी.ए द्वितीया वर्ष

“सर्वांग आसन”

सर्वांग आसन की वर्धि:

एक स्वच्छ और समतल जगह पर चटाई बिछा दें। सबसे पहले पीठ के बल बैठ जाएं। दोनों पैरों को एक दूसरे के पास रखें।

हाथ को शरीर के पास रखें और हथेलियों को जमीन पर रखें। अपना मुख आकाश की ओर रखें। अंगुठों को बंद करके पूरे शरीर को ढीला रखें। गहरा श्वास लें और धीरे धीरे पैरों को ऊपर उठाएं। पैरों को उठाने समय कमर को भी उपर उठाना प्रारंभ करें। पैरों का भूमि से समकोण बन जाने पर पीठ को उपर की ओर उठाने का प्रयास करें। कमर और पीठ को उपर उठाने के लिए हाथों का सहारा लें। कोहनियां जमीन से टिकी होनी चाहिए। पैर, कमर और पीठ को इतना ऊपर उठाएं की सिर और गर्दन के साथ बाकि शरीर का समकोण तैयार होना चाहिए। पीठ को हाथों से सहारा देते हुए ख्याल रखें की हाथों की उंगलियां एक दूसरे के सामने होनी चाहिए और अंगूठे कि दिशा पेट की तरफ होनी की। चेहरे की दिशा ऊपर आकाश की तरफ या पैरों के अंगूठे पर तथा ठुडी कंठ से लगी होनी चाहिए। इस स्थान पर क्षमता अनुसार रुकने के बाद दोनों पैरों को धीरे धीरे नीचे लाकर पूर्व स्थिति में लेट जाना है। जितने समय तक आप सर्वांग आसन करते हैं उतनी ही अवधि तक शवआसन में लेटकर विश्राम करना चाहिए।

सर्वांग आसन के लाभ:

यह आसन थकान और दुर्बलता को दूर करता है। सर्वांग आसन से रक्त प्रवाह मस्तिष्क की ओर होने से एकाग्रता और बुद्धिमता में वृद्धि होती है। यह आसन मनोविकार दूर करता है। थायराइड ग्रंथि को क्रियाशील बनाता है। वजन कम करने में सहायक है। दमा से पीड़ित व्यक्तियों के लिए बेहद उपयोगी है। इससे पीठ और कंधे मजबूत होते हैं। कब्ज और पाचन संबंधित रोग दूर होते हैं। महिलाओं में गर्भाशय और मासिक धर्म से जुडी समस्याओं को दूर करने में भी यह आसन बहुत उपयोगी है।

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अदिति शर्मा
बी.ए प्रथम सेमेस्टर

“ मैला मन ”

कुम्हार करे कल से जतन
गूँथे माटी कर मैला मन
कोसा करे कब से माटी को
किस्मत की लकीरों को
कभी माटी ज्यादा गीली हो जाती
कभी सूखी इतनी ना गूँथी जाती
कुम्हार परेशान क्या करे
कैसे वो धीरज धरे
माटी ना उससे गूँथी जाए
गुस्सा उसका बढ़ता जाए
दिन अब ढलने को आया
घड़ा उससे एक न बन पाया
कुम्हार करे कल से जतन
गूँथे माटी कर मैला मन

आंचल चौहान
बी.एड (कॉलेज ऑफ़ एजुकेशन)
प्रथम वर्ष

“फिर वही कहानी”

शोर रहा दिन भर
बवाल रहा दिन भर
गूँगे चिल्लाते थे
गले सबके बैठे जाते थे |

राजा था, थी रानी
थी फिर वही कहानी
राजा महल ना छोड़े
प्रजा कब तक हाथ जोड़े |

सब अब इकजुट खड़े
पसीने से भीगे खड़े
राजा अभी बहुत व्यस्त हैं
बाग में गुलाब सूखे जाते हैं |

बोला दरबारी एक काम करो
आज जाओ कल फिर मिलो
दूर से कई बागबान आयें हैं
गुलाब की नई कली लायें हैं |

शाम तक सब लौट गए
बागबान भी चले गए
राजा गुलाब निहारते थे
गूँगे फिर गूँगे थे |

आंचल, बी.एड
कॉलेज ऑफ़ एजुकेशन

“पापा”

वो पापा ही होते हैं
जो बाहर से दिखते सख्त हैं
मगर बच्चों की आँखों में
आँसू देख कर टूट जाते हैं
फोन पर बच्चों से
ज्यादा बातें नहीं करते हैं
मगर मम्मी से
सारे हाल पूछ लिया करते हैं
सब की मनमर्जी
काम में टोकते बहुत हैं
मगर उसमें भी बच्चों की
भलाई सोचते बहुत हैं
हां मम्मी की डांट से
बचाया करते हैं
मगर कुछ मामलों में
सख्ती दिखाया करते हैं
कभी सलीका सिखाते हैं
तो कभी जीना सिखाते हैं मगर
हर लमहे में साथ निभाना जानते हैं
हां हर फर्ज निभाते निभाते
जीवनभर कर्ज चुकाते हैं
बच्चों की खुशी के लिए
अपने सारे गम भूल जाते हैं
हां वो पापा ही होते हैं
जो बाहर से दिखते सख्त हैं
मगर बच्चों की आँखों में,
आँसू देख कर टूट जाते हैं।

हिमानी
बी.एड (कॉलेज ऑफ़ एजुकेशन)

“मजबूरी”

दुनियां के हर सितम उठाने को मजबूर हैं हम
दो वक्त की रोटी के लिए अपनों से दूर हैं हम |

तकिए के बिना सो नहीं पाते थे हम
आकर तो देखो अब कहीं भी सो जाते है हम |

खाने में सौ नखरे दिखाते थे हम
आकर तो देखो अब कुछ भी खा लेते है हम |

घरवालों को हमेशा याद करते है हम
लेकिन पूछने पर, बिलकुल ठीक है , कह देते है हम

सबका दर बनाते बनाते हम हो गए दर – ब – दर
घर जाने के ही खातिर आज बेघर है हम |

अर्चना बी.एड
कॉलेज ऑफ़ एजुकेशन

“माँ”

माँ ही बरकत, माँ ही मन्नत, माँ ही दुआ, जिसके बिना अधुरा ये जहाँ !
माँ दुःख में होकर भी हमें हंसाती, खुद भूखा रह हमें खाना खिलाती !
ऐ इंसान माँ को नाराज़ करना तेरी भूल है, माँ के कदमों की मिट्टी जन्नत की धूल है !
चलना हमें सिखाती हैं माँ, मञ्जिल हमें दिखाती हैं माँ !
हमारी खुशी में अपनी खुशी ढूँढ लेती है, हमारे सपनों के लिए अपने सपने त्याग देती है!
मेरे लिए जन्नत कुछ नहीं, और मेरी मन्नत कुछ नहीं,
फिर वही माँ मिले मुझे अगले जन्म में, वही दुलार वही प्यार रखना उसके मन में!
जिस कोख में 9 महीने रखा है मुझे, उसी कोख में बार बार देना मुझे !

सोनाली
बी.एड (कॉलेज ऑफ़ एजुकेशन)

“सपनों में रख आस्था”

सपनों में रख आस्था, सपनों में रख आस्था, कर्म तू किए जा, त्याग से ना डर, आलस का परित्याग किए जा।
गलती कर ना घबरा, गिरकर फिर हो जा खड़ा।

समस्याओं को रास्तों से निकाल दे, चट्टान भी हो तो ठोकर से उछाल दे
रख हिम्मत तू तूफानों से ठुकराने की, जरूरत नहीं है किसी मुसीबत से घबराने की।

जो पाना है बस उसकी एक पागल की तरह चाहत कर, करता रह कर्म मगर साथ में खदुा की इबादत भी कर
फिर देख किस्मत क्या रंग दि खलाए।

रवीना चौहान

“माँ बाप की कहानी बेटी की जुबानी”

माँ बाप, इनके लिए जितना बोलो उतना कम है, मतलबी सी इस मतलबी सी इस दुनिया में यही तो हैं जो बिना किसी
मतलब के हमें, जीने का मतलब सिखाते हैं। हमारे लिए सारी दुनिया से लड़ जाते हैं। माँ बाप ही तो हैं जो बिना कहे कितना
कुछ सीखा जाते हैं।

छोटी सी थी जब मैंने पहली बार उनकी ऊँगली थामी थी, और आज इतनी बड़ी हो गई हूँ, कि गुस्से में मैं उनकी ऊँगली
झटक भी देती हूँ, पर वो तब भी मेरी ऊँगली थामे मुझे हर मञ्जिल पर ले जाने को तैयार थे और आज भी वही ऊँगली है
जिसको धम कर मैं यहाँ तक आ पाई हूँ। और अब जब आ ही गई हूँ, तो पीछे मुड़कर क्यों देखूँ, मैं अपने पापा की बेटी हूँ,
मैं हर मुश्किल को निकल बाहर फेकूँगी।

सब कहते हैं बेटियाँ पापा की लाड़ली होती हैं पर मेरी माँ ने भी मुझ पर खूब प्यार लुटाया है, मेरे सपनों के लिए उसने
अपने सपनों को ठुकराया है।

उनके बलिदानों का कर्ज तो कभी चूका नहीं पायूँगी
उनके बलिदानों का कर्ज तो कभी चूका नहीं पायूँगी।

हर कोई उन्हें मेरे नाम से जाने
हर कोई उन्हें मेरे नाम से जाने।

ऐसा कुछ कर दिखायूँगी
ऐसा कुछ कर दिखायूँगी

मंजूषा ठाकुर
बी.ए. प्रथम वर्ष

ਸੰਤ ਇਕਬਾਲ ਸਿੰਘ ਜੀ ...

ਘਰ ਤੋਂ ਜੇ ਬਾਹਰ ਸੀ ਤੁਰੇ ...
ਮਨ ਵਿਚ ਅਨੇਕਾਂ ਸਵਾਲ ਸੀ ਘੜੇ ...
ਨਾਮ ਜੱਪ ਕੇ ਨਾਮ ਜਪਾਉਣਾ,
ਫਿਰ ਸੰਤ ਬਾਬਾ ਇਕਬਾਲ ਸਿੰਘ ਜੀ ਕਹਾਉਣਾ ।
ਜਦੋਂ ਸੀ ਸੰਤ ਤੇਜਾ ਸਿੰਘ ਨੂੰ ਮਿਲੇ,
ਉਹਨਾਂ ਦੇ ਮਨ ਵਿਚ ਅਨੇਕਾਂ ਫੁੱਲ ਸੀ ਖਿਲੇ ।
ਸੰਤਾਂ ਨੂੰ ਇਕ ਬਚਨ ਸੀ ਫੱਬਿਆ,
ਫਿਰ ਕਹਿ ਕੇ ਬਾਬਾ ਇਕਬਾਲ ਸਿੰਘ ਜੀ ਨੇ
ਪਿੰਡ ਸੀ ਬੜ੍ਹ ਵਾਲਾ ਲੱਭਿਆ ।
ਪਿੰਡ ਬੜ੍ਹ ਤੋਂ ਬੜ੍ਹ ਸਾਹਿਬ ਬਣਾਇਆ।
ਸੰਗਤਾਂ ਦੇ ਰਹਿਣ ਲਈ ਅਸਥਾਨ ਬਣਾਇਆ ।
ਨਾਮ ਜੱਪ ਕੇ ਨਾਮ ਜਪਾਉਣਾ
ਫਿਰ ਸੰਤ ਬਾਬਾ ਇਕਬਾਲ ਸਿੰਘ ਜੀ ਕਹਾਉਣਾ ...
ਫਿਰ ਸੀ ਇਕ ਤੰਬੂ ਲਾਇਆ,
ਜਿੱਥੇ ਬਾਅਦ ਵਿਚ 'ਕੱਚਾ ਕੋਠਾ ਸਾਹਿਬ' ਪਾਇਆ ।
ਉੱਥੇ ਸ੍ਰੀ ਗੁਰੂ ਗ੍ਰੰਥ ਸਾਹਿਬ ਜੀ ਦਾ ਪ੍ਰਕਾਸ਼ ਸੀ ਕਰਾਇਆ ।
ਫਿਰ ਸੰਤ ਜੀ ਨੇ ਧਰਮ ਦਾ ਪ੍ਰਚਾਰ ਸੀ ਕਰਾਇਆ ।
ਸਾਰੀਆਂ ਸੰਗਤਾਂ ਨੂੰ ਬਚਨ ਸੀ ਸੁਣਾਇਆ ।
ਜੇ ਵੀ ਇਸ ਧਰਤੀ 'ਤੇ ਆਵੇ, ਅੰਮ੍ਰਿਤ ਛਕ ਕੇ ਸ਼ੇਰ ਬਣ ਜਾਵੇ ।
ਨਾਮ ਜੱਪ ਕੇ ਨਾਮ ਜਪਾਉਣਾ
ਫਿਰ ਸੰਤ ਬਾਬਾ ਇਕਬਾਲ ਸਿੰਘ ਜੀ ਕਹਾਉਣਾ ...
ਹਰ ਇਕ ਨੂੰ ਹੈ ਸਿੱਖ ਬਣਾਉਣਾ
ਸਿੱਖੀ ਦਾ ਪ੍ਰਚਾਰ ਸਾਰੇ ਸੰਸਾਰ ਵਿਚ ਫੈਲਾਉਣਾ।
ਸੰਤ ਜੀ ਦੇ ਬਚਨ ਅਣਮੁੱਲੇ, ਹਰ ਇਕ ਬਚਨ ਅਨੁਸਾਰ ਹੀ ਚੱਲੇ

ਨਾਮ ਜੱਪ ਕੇ ਨਾਮ ਜਪਾਉਣਾ
ਫਿਰ ਸੰਤ ਬਾਬਾ ਇਕਬਾਲ ਸਿੰਘ ਜੀ ਕਹਾਉਣਾ ...
ਸੰਤਾਂ ਜੀ ਨੇ ਹੁਕਮ ਚਲਾਉਣਾ
ਦੇਵੀਆਂ ਆਖ ਕੇ ਪਿਆਰ ਜਤਾਉਣਾ
ਉਹਨਾਂ ਦੇ ਹੀ ਬਚਨਾਂ ਨੂੰ ਕਮਾਉਣਾ
ਸਾਰੇ ਸੰਸਾਰ ਨੂੰ ਅੱਗੇ ਵਧਾਉਣਾ।
ਹਰ ਇਕ ਨੂੰ ਬਾਬਾ ਜੀ ਕਰਦੇ ਪਿਆਰ ।
ਉਹ ਸਾਡੇ 'ਤੇ ਵਾਰ ਦਿੰਦੇ ਜਾਨ
ਨਾਮ ਜੱਪ ਕੇ ਨਾਮ ਜਪਾਉਣਾ
ਫਿਰ ਸੰਤ ਬਾਬਾ ਇਕਬਾਲ ਸਿੰਘ ਜੀ ਕਹਾਉਣਾ ...
ਸੰਤਾਂ ਜੀ ਨੇ ਕੀਤੀ ਕਮਾਲ
ਫਿਰ ਕੀਤੀ ਗੁਰਸਿੱਖੀ ਵਾਲੀ ਫੁੱਲਵਾੜੀ ਤਿਆਰ
ਇਸ ਫੁੱਲਵਾੜੀ ਦੀ ਕਰਨੀ ਸੰਭਾਲ
ਅਸੀਂ ਕਰਨੀਆਂ ਨੇ ਹੋਰ ਵੀ ਫੁੱਲਵਾੜੀਆਂ ਤਿਆਰ
ਸੰਤ ਜੀ ਦੇ ਕਹੇ ਮਾਰਗ 'ਤੇ ਚੱਲਣਾ
ਚਾਹੇ ਜ਼ਿੰਦਗੀ ਵਿਚ ਕਸ਼ਟ ਪਵੇ ਝੱਲਣਾ
ਜੇ ਸੰਤਾਂ ਦੇ ਚਰਨੀ ਲੱਗ ਜਾਵੇਗਾ
ਆਪਣੀ ਜ਼ਿੰਦਗੀ ਸਵਰਗ ਬਣਾਵੇਗਾ
ਨਾਮ ਜੱਪ ਕੇ ਨਾਮ ਜਪਾਉਣਾ
ਫਿਰ ਸੰਤ ਬਾਬਾ ਇਕਬਾਲ ਸਿੰਘ ਜੀ ਕਹਾਉਣਾ ...
ਚਰਨਜੀਤ ਕੌਰ
ਐਮ.ਏ. (ਆਨਰਜ਼) ਪੰਜਾਬੀ, ਭਾਗ-ਪਹਿਲਾ
BS22MPB007

ਤੇਰੀ ਰਹਿਮਤ

ਕਿਤੇ ਝਰਨੇ ਤੇ ਕਿਤੇ ਨਦੀਆਂ ਨੇ,
ਤੂੰ ਪਾਣੀ ਕਿਵੇਂ ਫਿਰਾਇਆ ਹੋਵੇਗਾ !
ਪਹਾੜ, ਮੈਦਾਨ ਅਤੇ ਟਿੱਬੇ ਇਹ,
ਤੂੰ ਇਹ ਸਭ ਕੁਝ ਕਿਵੇਂ ਬਣਾਇਆ ਹੋਵੇਗਾ !
ਇਮਾਰਤਾਂ, ਗੁਰਦੁਆਰੇ, ਮੰਦਰ ਇਹ
ਤੂੰ ਇਹਨਾਂ ਨੂੰ ਕਿਵੇਂ ਸਜਾਇਆ ਹੋਵੇਗਾ !
ਇਹ ਸੋਹਣੀ ਦੁਨੀਆਂ ਸਾਜ ਰੱਬਾ !

ਵਿਚ ਨੂਰ ਕਿਵੇਂ ਤੂੰ ਪਾਇਆ ਹੋਵੇਗਾ !
ਪਿਆਰ ਨਾਲ ਬਣਾ ਕੇ ਗੋਦ ਆਪਣੀ,
ਵਿਚ ਪਰੀਆਂ ਨੂੰ ਆਣ ਬਿਠਾਇਆ ਹੋਵੇਗਾ !
ਤੂੰ ਭਾਗ ਖੇਲੂ ਕੇ ਬੱਚੀਆਂ ਦੇ,
'ਬੜ੍ਹ ਸਾਹਿਬ' ਬਣਾਇਆ ਹੋਵੇਗਾ !
ਦੇਖਣਾ ਚਾਹੁੰਦੀ ਹੈ 'ਗੁਰੀ' ਉਸਨੂੰ,
ਜਿਸਨੇ ਇਹ ਪ੍ਰਕਾਸ਼ ਖਿੰਡਾਇਆ ਹੋਵੇਗਾ !!!
ਗੁਰਪ੍ਰੀਤ ਕੌਰ
ਬੀ.ਏ. ਹਿਊਮੈਨਟੀਜ਼, ਭਾਗ-ਦੂਜਾ

ਸੰਤ ਬਾਬਾ ਇਕਬਾਲ ਸਿੰਘ ਜੀ

ਸੰਤ ਬਾਬਾ ਇਕਬਾਲ ਸਿੰਘ ਜੀ ਜਦੋਂ ਸੰਤ ਤੇਜਾ ਸਿੰਘ ਜੀ ਨੂੰ ਮਿਲੇ,
ਫਿਰ ਸੰਤ ਤੇਜਾ ਸਿੰਘ ਜੀ ਦੇ ਦੱਸੇ ਮਾਰਗ 'ਤੇ ਚੱਲੇ
ਸੰਤ ਤੇਜਾ ਸਿੰਘ ਜੀ ਨੇ ਸੰਤ ਬਾਬਾ ਇਕਬਾਲ ਸਿੰਘ ਜੀ ਨੂੰ ਬਚਨ ਸੁਣਾਇਆ
ਸੰਤ ਬਾਬਾ ਇਕਬਾਲ ਸਿੰਘ ਜੀ ਨੇ ਪਿੰਡ ਬੜੂ ਵਾਲਾ ਵਸਾਇਆ ।
ਪਿੰਡ ਬੜੂ ਤੋਂ 'ਬੜੂ ਸਾਹਿਬ' ਬਣਾਇਆ
ਫਿਰ ਉੱਥੇ ਇਕ ਤੰਬੂ ਸੀ ਲਾਇਆ
ਬਾਅਦ ਵਿਚ 'ਕੱਚਾ ਕੋਠਾ' ਸੀ ਬਣਾਇਆ
ਫਿਰ 'ਸ੍ਰੀ ਗੁਰੂ ਗ੍ਰੰਥ ਸਾਹਿਬ ਜੀ' ਦਾ ਪ੍ਰਕਾਸ਼ ਸੀ ਕਰਾਇਆ
ਸੰਤ ਜੀ ਨੇ ਕੀਤੀ ਸੀ ਇੱਕ ਕਮਾਲ
ਫਿਰ ਬਾਬਾ ਸੰਤ ਤੇਜਾ ਸਿੰਘ ਜੀ ਨੇ ਕੀਤੀ
ਸਿੱਖੀ ਵਾਲੀ ਇਕ ਫੁਲਵਾੜੀ ਤਿਆਰ ।
ਸੰਤ ਬਾਬਾ ਇਕਬਾਲ ਸਿੰਘ ਜੀ ਜਦੋਂ ਪਿਆਰ ਜਤਾਉਂਦੇ
ਦੇਵੀਆਂ ਕਹਿ ਕੇ ਜਦੋਂ ਬੁਲਾਉਂਦੇ
ਜੇ ਵੀ ਇਹਨਾਂ ਦੇ ਚਰਨੀਂ ਲੱਗ ਜਾਵੇ
ਆਪਣਾ ਜੀਵਨ ਸਵਰਗ ਬਣਾਵੇ ।
'ਚਰਨ' ਇੱਕੋ ਗੱਲ ਸਮਝਾਵੇ
ਸਭ ਨੂੰ ਸੰਤ ਬਾਬਾ ਇਕਬਾਲ ਸਿੰਘ ਜੀ ਬਾਰੇ ਸੁਣਾਵੇ
ਬਾਬਾ ਇਕਬਾਲ ਸਿੰਘ ਜੀ ਦੀ ਯਾਦ ਹੈ ਪੁਰਾਣੀ
ਇਹ ਸੀ ਬਾਬਾ ਜੀ ਦੀ ਜੀਵਨ-ਕਹਾਣੀ ...
ਚਰਨਜੀਤ ਕੌਰ
ਐਮ.ਏ. (ਆਨਰਜ਼) ਪੰਜਾਬੀ, ਭਾਗ-ਪਹਿਲਾ
BS22MPB007

ਬੱਸ ਹਾਰ ਨਾ ਮੰਨੀਂ ...

ਬੇਰਹਿਮ ਨੇ ਸਭ ਤੋਂ ਜ਼ਿਆਦਾ ਉਹੀ ਲੋਕ
ਜਿਹੜੇ ਮਜ਼ਬੂਰੀ ਦਾ ਨਾਮ ਦੇ
ਆਪਣੇ ਹੀ ਸੁਪਨਿਆਂ ਨਾਲ ਕਰਦੇ ਨੇ ਮਖੌਲ !
ਤੂੰ ਕਦਮ ਪੁੱਟ ਮੰਜ਼ਿਲ ਵੱਲ,
ਭਾਵੇਂ ਰੋਜ਼ ਥੋੜਾ-ਥੋੜਾ ਚੱਲੀਂ, ਬੱਸ ਹਾਰ ਨਾ ਮੰਨੀਂ ...
ਇਕ ਵਾਰ ਤਾਂ ਤੈਨੂੰ ਜ਼ਿੰਦਗੀ ਨੇ ਹੈ ਬੜਾ ਸਤਾਉਣਾ
ਆਪਣੇ ਪੈਰਾਂ 'ਤੇ ਖੜ੍ਹ, ਜੇ ਕਿਸੇ ਦਾ ਮੁਹਤਾਜ ਨਹੀਂ ਅਖਵਾਉਣਾ
ਆਪੇ ਕਹਿਣਗੇ ਲੋਕੀਂ ਫਿਰ ਤੈਨੂੰ
ਖੇਟੇ ਸਿੱਕੇ ਤੋਂ ਖਰਾ ਸੇਨਾ
ਉਸ ਦਿਨ ਗੁਣ ਗਾਉਂਦੀ ਏ ਫਿਰ ਖ਼ਕਲਤ ਸਾਰੀ,
ਰੱਖੀ ਜਦੋਂ ਰੱਬ ਨੇ ਨਿਗਾਹ ਸਵੱਲੀ
ਪਰ ਉਹਦੀ ਰਜ਼ਾ ਤੋਂ ਬਾਹਰ ਨਾ ਚੱਲੀਂ
ਕਦਮ ਚਾਹੇ ਐਖੇ ਨੇ, ਸੁਖਾਲੇ ਨਾ ਹੋਣ
ਤੂੰ ਬੱਸ ਹਾਰ ਨਾ ਮੰਨੀਂ ...
ਤੂੰ ਬੱਸ ਹਾਰ ਨਾ ਮੰਨੀਂ ...
ਰਾਖੀ ਕੰਬੋਜ
ਬੀ.ਟੈੱਕ (ਸੀ.ਐਸ.ਈ.)
BS21BCS013

ਮੇਰੇ ਪਿਆਰੇ ਅਧਿਆਪਕ

ਸਾਡੇ ਦਿਲ ਵਿਚ ਰਹਿੰਦੇ, ਸਾਰਿਆਂ ਤੋਂ ਨਿਆਰੇ
ਲੱਗਦੇ ਨੇ ਸਾਨੂੰ ਸਭ ਤੋਂ ਪਿਆਰੇ
ਸਾਰਿਆਂ ਨਾਲ ਰਲ-ਮਿਲ ਕੇ ਰਹਿੰਦੇ
ਦਿਲ ਲਾ ਕੇ ਕਰੇ ਪੜ੍ਹਾਈ ਸਭ ਨੂੰ ਕਹਿੰਦੇ
ਗੁੱਸਾ ਉਹਨਾਂ ਨੂੰ ਆਉਂਦਾ ਅੱਗ ਵਰਗਾ
ਸਾਫ਼ ਉਹਨਾਂ ਦਾ ਦਿਲ ਪਾਣੀ ਵਰਗਾ
ਕਰ-ਕਰ ਮਿਹਨਤ ਅੱਗੇ ਵੱਧਦੇ
ਲਾਇਬ੍ਰੇਰੀ 'ਚ ਆਉਣ ਲਈ ਬੱਚਿਆਂ ਨੂੰ ਸੱਦਦੇ

ਸੋਚ ਉਹਨਾਂ ਦੀ ਉੱਚੀ ਹੈ ਬੜੀ
ਸ਼ਖਸੀਅਤ ਉਹਨਾਂ ਦੀ ਗੀਰਿਆਂ 'ਚ ਜੜੀ
ਕਹਿੰਦੇ ਉਹਨਾਂ ਨੂੰ ਪਿਆਰ ਨਾਲ ਸਾਰੇ 'ਸਿਮਰ ਸਰ' ਜੀ
ਕਰਦੇ ਹਾਂ ਅਸੀਂ ਉਹਨਾਂ ਦਾ ਦਿਲੋਂ ਸਤਿਕਾਰ ਜੀ ...
ਰਾਜਵੰਤ ਕੌਰ ਅਤੇ ਸੁਖਜੀਤ ਕੌਰ
ਬੀ.ਏ. ਹਿਊਮੈਨਟੀਜ਼, ਭਾਗ ਤੀਜਾ
BS20BA045, BS2020BA057

ਕਿਸਾਨ ਅੰਦੋਲਨ

ਟਰੈਕਟਰਾਂ 'ਤੇ ਲਾਏ ਨੇ ਝੰਡੇ ਹਰੇ,
ਸਰਕਾਰ ਦੇ ਲਾਏ ਨਾਕੇ, ਕੀਤੇ ਨੇ ਪਰ੍ਹੇ ।
ਕੋਈ ਪਰਵਾਹ ਨਹੀਂ ਚਾਹੇ ਸਿਰ ਕਟੇ,
ਬਾਰਡਰਾਂ 'ਤੇ ਬੈਠੇ ਨੇ ਕਿਸਾਨ ਡਟੇ ।
ਕਿਸਾਨ ਦੀ ਆਵਾਜ਼ 'ਚ ਏਨੀ ਹਿੰਮਤ,
ਕਿ ਮਾਈਕ ਦੀ ਲੋੜ ਨਹੀਂ ।
ਪਤਾ ਲੱਗਣ ਲੱਗ ਪਿਆ ਕਿਸਾਨਾਂ ਨੂੰ,
ਕਿ ਸਰਕਾਰ ਦਾ ਮਕਸਦ ਹੀ ਨਹੀਂ ਸਹੀ ।
ਪਰਿਵਾਰ ਛੱਡੀ ਬੈਠੇ ਆ ਭਾਈ,
ਚੁਲ੍ਹੇ-ਚੱਕੇ ਛੱਡ ਕੇ ਸਾਥ ਦੇ ਰਹੀ ਮਾਈ ।
ਬਾਡਰਾਂ 'ਤੇ ਜਾ ਕੇ ਨੌਜਵਾਨਾਂ ਨੇ ਹੈ ਰੋਣਕ ਹੈ ਲਾਈ ।
ਸਕੂਲਾਂ 'ਚ ਪੜ੍ਹਦੇ ਬੱਚੇ ਵੀ ਆਉਂਦੇ ਨੇ ਚਾਂਈ-ਚਾਂਈ ।
ਕਦੋਂ ਕਾਲੇ ਕਾਨੂੰਨਾਂ ਦਾ ਧਰਨਾ ਖਤਮ ਹੋਊਗਾ ?
ਕਦੋਂ ਕਿਸਾਨ ਚੈਨ ਦੀ ਨੀਂਦ ਸੋਊਗਾ ?
ਜਿੰਨਾਂ ਚਿਰ ਕਿਸਾਨਾਂ ਦੇ ਹੱਕ ਖੋਹੇ ਜਾਣਗੇ,
ਹੱਕ ਲੈਣ ਲਈ ਧਰਨੇ ਵੀ ਲੱਗਦੇ ਰਹਿਣਗੇ ।
ਕਿੰਨੇ ਬੋਲ-ਕਬੋਲ ਸਰਕਾਰਾਂ ਨੇ ਕਹੇ ਨੇ,
ਕਿਸਾਨਾਂ ਨੇ ਵੀ ਕਿੰਨੇ ਡੂੰਘੇ ਜਖ਼ਮ ਸਹੇ ਨੇ ।
ਹਰ ਕਿਸਾਨ ਦੂਸਰੇ ਕਿਸਾਨ ਦਾ ਭਾਈ ਏ,
ਤਾਹੀਂ ਤਾਂ ਬਾਡਰਾਂ 'ਤੇ ਜਾਨ ਦੀ ਬਾਜੀ ਲਾਈ ਏ ।

ਅਮਨਦੀਪ ਕੌਰ

ਬੀ.ਏ. ਹਿਊਮੈਨਟੀਜ਼, ਭਾਗ -ਤੀਜਾ

BS20BA002

ਧੀ

ਬੇਬੇ ਨੇ ਸਿਖਾਇਆ ਕਿਸੇ ਨਾਲ ਲੜਨਾ ਨੀ,
ਬਾਪੂ ਨੇ ਸਿਖਾਇਆ ਪੁੱਤ ਕਿਸੇ ਤੋਂ ਡਰਨਾ ਨੀ,
ਪੁੱਤ ! ਬਹੁਤਾ ਪੜ੍ਹਨਾ ਏ, ਬੱਸ ਨਾਂ ਮੇਰਾ ਰੋਸ਼ਨ ਕਰਨਾ ਏ ,
ਬਾਪੂ ਦੀ ਪੱਗ ਨੂੰ ਦਾਗ ਲਾਉਣਾ ਨੀ,
ਵੀਰਾਂ ਦੀ ਮੁੱਛ ਨੂੰ ਥੱਲੇ ਝੁਕਾਉਣਾ ਨੀ,
ਚਾਹਤ ਮੇਰੀ ਵੀ ਇਹੀ ਏ,
ਗੁੱਡੀ ਸਿਖਰਾਂ 'ਤੇ ਚੜ੍ਹਾਉਣੀ ਬਾਪੂ ਤੇਰੀ ਏ ।
'ਪੂਜਾ' ਕਰਦੀ ਇਹੋ ਅਰਦਾਸ
ਬਾਪੂ ਦਾ ਸੁਪਨਾ ਕਰਾਂ ਸਾਕਾਰ ।

ਪੂਜਾ

ਬੀ.ਏ. ਹਿਊਮੈਨਟੀਜ਼, ਭਾਗ-ਦੂਜਾ

BS21BA027

ਅਧਿਆਪਕ ਦਿਵਸ

ਅਧਿਆਪਕ ਨੇ ਸਾਡੇ ਬੜੇ ਪਿਆਰੇ,
ਬੱਚੇ ਇਹਨਾਂ ਦੀ ਅੱਖ ਦੇ ਤਾਰੇ ।
ਕਰਦੇ ਨੇ ਬੱਚਿਆਂ ਨੂੰ ਪਿਆਰ ਇਹ ਸਾਰੇ ।
ਕੋਈ ਅਧਿਆਪਕ ਕਿਸੇ ਬੱਚੇ ਨੂੰ ਨਾ ਮਾਰੇ ।
'ਰਣਦੀਪ ਮੈਮ' ਪੜ੍ਹਾਉਂਦੇ ਨੇ ਦਿਲ ਲਾ ਕੇ,
ਹਰ ਕੋਈ ਪਾਠ ਛੱਡਦੇ ਨੇ ਰਟਾ ਕੇ ।
'ਗੁਰਤੇਜ ਸਰ' ਨੇ ਬੜਾ ਸੋਹਣਾ ਪੜ੍ਹਾਉਂਦੇ,
ਵਿਆਕਰਣ ਕਹਾਣੀ ਵਾਂਗ ਸਮਝਾਉਂਦੇ ।
ਪੜ੍ਹਾਉਣ ਦਾ ਇਹਨਾਂ ਦਾ ਵੱਖਰਾ ਢੰਗ,
ਬੱਚਿਆਂ 'ਚ ਭਰਦੇ ਨੇ ਤਰ੍ਹਾਂ-ਤਰ੍ਹਾਂ ਦੇ ਰੰਗ ।
ਅਧਿਆਪਕ ਦੀ ਮਦਦ ਨਾਲ ਬੱਚੇ ਨੇ ਤਰਦੇ,
ਅੱਗੇ ਜਾ ਕੇ ਜ਼ਰੂਰਤਮੰਦਾਂ ਦੀ ਮਦਦ ਨੇ ਕਰਦੇ ।
'ਰਜਿੰਦਰ ਸਰ' ਬੋਲਦੇ ਨੇ ਬੜੇ ਪਿਆਰ ਨਾਲ,
ਜਿਵੇਂ ਕੋਈ ਗੱਲ ਕਰ ਰਿਹਾ ਹੋਵੇ ਕਿਸੇ ਬਾਲ ਨਾਲ ।
'ਕੰਚਨ ਮੈਮ' ਅੰਗਰੇਜ਼ਾਂ ਦੀ ਅੰਗਰੇਜ਼ੀ ਨੂੰ ਦਿੰਦੇ ਨੇ ਮਾਤ,
ਸਾਨੂੰ ਸਿਖਾਉਣ ਲਈ ਲੱਗੇ ਰਹਿੰਦੇ ਨੇ ਦਿਨ-ਰਾਤ ।
'ਸਿਮਰ ਸਰ' ਨੇ ਸਾਡੇ ਫੇਵਰਟ ਸਰ,
ਪਰ ਫਿਰ ਵੀ ਲੱਗਦਾ, ਉਹਨਾਂ ਦੇ ਗੁੱਸੇ ਤੋਂ ਡਰ ।
'ਰਾਜਵਿੰਦਰ ਮੈਮ' ਨਵੀਆਂ ਗੱਲਾਂ ਦੱਸਦੇ ਸਮੇਂ-ਸਮੇਂ,
ਬਹੁਤਾ ਨਹੀਂ ਪਤਾ ਉਹਨਾਂ ਬਾਰੇ,
ਕਿਉਂਕਿ ਸਾਨੂੰ ਪੜ੍ਹਾਉਣ ਲੱਗੇ ਨੇ ਨਵੇਂ-ਨਵੇਂ ।
ਅਧਿਆਪਕ ਹੁੰਦੇ ਨੇ ਮੋਮਬੱਤੀ ਵਰਗੇ,
ਚਾਨਣ ਨਾਲ ਕਿੰਨੇ ਹੀ ਬੱਚੇ ਝੋਲੀਆਂ ਭਰਦੇ ।
ਸਫਲਤਾ ਪਾ ਕੇ ਬੱਚੇ ਭਰਦੇ ਨੇ ਉਡਾਨ,
ਘੁੰਮਦੇ-ਫਿਰਦੇ ਨੇ ਵਿਚ ਕਾਰ ।
ਜੇ ਅਧਿਆਪਕ ਨੇ ਪੜ੍ਹਾਉਣ 'ਤੇ ਲਾਏ ਨੇ ਸਾਲ,
ਬੱਚਿਆਂ ਦੀ ਸਫਲਤਾ ਹੁੰਦੀ ਗੁਰੂ ਦੀ ਕਿਰਪਾ ਨਾਲ ।
ਬੱਚਿਆਂ ਦੀ ਜ਼ਿੰਦਗੀ ਨੂੰ ਲਾਉਂਦੇ ਨੇ ਸਿਰੇ,
ਸੱਕਰ ਵਰਗੇ ਮਿੱਠੇ ਹੁੰਦੇ ਨੇ ਨਿਰ੍ਹੇ ।
ਅਧਿਆਪਕ ਦੀ ਝੋਲੀ ਖੁਸ਼ੀਆਂ ਨਾਲ ਭਰੇ,
ਰੱਬ ਇਹਨਾਂ ਦੀ ਲੰਮੀ ਉਮਰ ਕਰੇ ।

ਅਮਨਦੀਪ ਕੌਰ

ਬੀ.ਏ. ਹਿਊਮੈਨਟੀਜ਼, ਭਾਗ -ਤੀਜਾ

BS20BA002

ਮਾਂ

ਮਾਂ ਰੱਬ ਦਾ ਇਕ ਤੋਹਫਾ ਨਿਆਰਾ,
 ਇਸ ਤੋਂ ਨਹੀਂ ਕੁਝ ਹੋਰ ਪਿਆਰਾ।
 ਕਈ ਖੇ ਬੈਠੇ ਨੇ ਮਾਂ ਇਸ ਰਿਸ਼ਤੇ ਨੂੰ,
 ਕਈ ਆਖਦੇ ਬੋਝ ਇਸ ਰਿਸ਼ਤੇ ਨੂੰ,
 ਜਿਸ ਤੋਂ ਖੇਹੀਆਂ ਨੇ ਰੱਬ ਨੇ ਮਾਵਾਂ,
 ਤਰਸਦੇ ਨੇ ਉਹ ਰੱਬ ਦੀਆਂ ਬਾਹਵਾਂ।
 ਰੇ ਪੈਂਦੇ ਨੇ ਮਾਂ ਦੇ ਗਾਣੇ ਸੁਣ ਕੇ,
 ਯਾਦ ਕਰਦੀ ਨੇ...,
 ਦੇ ਗਈ ਸੀ ਜੇ ਸਵੈਟਰ ਬੁਣਕੇ।
 ਕਈ ਔਲਾਦਾਂ ਅੱਖਾਂ ਤੇ ਬਿਠਾਉਂਦੀਆਂ ਨੇ,
 ਕਈ ਗਲੀਆਂ ਚ ਰੋਲਦੀਆਂ ਨੇ।
 ਮਾਵਾਂ ਤਾਂ ਅਸੀਸਾਂ ਹੀ ਦਿੰਦੀਆਂ ਨੇ,
 ਕਦੇ ਨਾ ਔਲਾਦਾਂ ਨਿੰਦਦੀਆਂ ਨੇ।
 ਪੁੱਤਾਂ ਨੂੰ ਦਰਦ ਦਿਖੇ ਜਾਂ ਨਾ,
 ਮਾਂ ਦੀਆਂ ਅੱਖਾਂ ਦਰਦ ਸੁਣਾਉਂਦੀਆਂ ਨੇ।
 ਪੁੱਤਾਂ ਨੂੰ ਪੀਤਾ ਦੁੱਧ ਯਾਦ ਆਵੇ ਜਾਂ ਨਾ,
 ਮਾਵਾਂ ਰੋਟੀ ਲਈ ਵਿਲਕਦੀਆਂ ਨੇ।
 ਬੇਕਦਰੇ ਨਾ ਦਾਗ ਲਾਓ ਇਸ ਤੋਹਫੇ ਤੇ,
 ਭੁੰਜੇ ਨਾ ਬਿਠਾਓ, ਜਿਸਦੀ ਜਗ੍ਹਾ ਹੈ ਸੇਫੇ ਤੇ।
 ਰਮਨ ਦੀ ਸਭ ਨੂੰ ਇਹੀ ਅਪੀਲ,
 ਸਾਂਭ ਲਵੋ ਮਾਂ ਰਿਸ਼ਤੇ ਦੀ ਖਿਲਰਦੀ ਰੀਲ।
ਰਮਨਦੀਪ ਕੋਰ
ਬੀ.ਏ. ਹਿਊਮੈਨਟੀਜ਼, ਭਾਗ-ਤੀਜਾ
BS20BA0047

ਦਰਦ ਪੰਜਾਬ ਦੇ

ਪੰਜ ਨਦੀਆਂ ਦੀ ਧਰਤੀ ਸੀ,
 ਅੱਜ ਦੇ ਹੀ ਇੱਥੇ ਰਹਿ ਗਈਆਂ।
 ਸਰਕਾਰਾਂ ਦੀਆਂ ਲੜਾਈਆਂ ਸੀ,
 ਭਰਾਵਾਂ 'ਚ ਜੁਦਾਈਆਂ ਪਾ ਗਈਆਂ।
 ਨਵੀਆਂ-ਨਵੀਆਂ ਤਕਨੀਕਾਂ ਇਹ,
 ਨਸ਼ਿਆਂ ਦੀਆਂ ਨਦੀਆਂ ਵਹਾ ਗਈਆਂ।
 ਸਭਿਆਚਾਰ ਨਾ ਰਿਹਾ ਤੇਰਾ,
 ਭਰਾਵਾਂ ਜਿਹੀਆਂ ਗੱਲਾਂ ਨਾ ਰਹਿ ਗਈਆਂ।
 ਵੰਡਾਂ ਸੰਤਾਲੀ ਦੀਆਂ ਤੇਰੀਆਂ ਵੇ,
 ਹੰਝੂ ਮਾਂ ਮੇਰੀ ਦੇ ਵਹਾ ਗਈਆਂ।
 ਫ਼ਰਕ ਕੀ ਪੈਣਾ ਸਰਕਾਰਾਂ ਨੂੰ,
 ਮੇਰੇ ਬਸ ਯਾਦਾਂ ਪੱਲੇ ਰਹਿ ਗਈਆਂ।
 ਲਾਹੌਰ ਜੁਦਾਈਆਂ ਤੇਰੀਆਂ ਵੇ,
 ਨਾ ਪੰਜਾਬ ਕੇਲੋਂ ਇਹ ਸਹਿ ਹੋਈਆਂ।
 ਜੇ ਹੁੰਦਾ ਤੂੰ ਅੱਜ ਕੋਲ ਮੇਰੇ,
 ਇਹ ਦਿਨ ਨਾ ਦੇਖਣੇ ਪੈਣੇ ਸੀ।
 ਇਹ 'ਗੁਰੀ' ਦੀਆਂ ਕਲਮਾਂ ਕਹਿ ਗਈਆਂ,
 ਗੁਰੀ ਦੀਆਂ ਕਲਮਾਂ ਕਹਿ ਗਈਆਂ।
ਗੁਰਪ੍ਰੀਤ ਕੋਰ
ਬੀ.ਏ. ਹਿਊਮੈਨਟੀਜ਼, ਭਾਗ-ਦੂਜਾ
BS21BA004

ਬਿਨ ਮਾਂ ਦੀਆਂ ਬੱਚੀਆਂ

ਇਕ ਪਿੰਡ ਵਿਚ ਤਿੰਨ ਭੈਣਾਂ ਆਪਣੇ ਪਿਤਾ, ਦਾਦਾ, ਦਾਦੀ ਨਾਲ ਰਹਿੰਦੀਆਂ ਸੀ। ਉਹਨਾਂ ਦੀ ਮਾਂ ਕੁਝ ਸਮਾਂ ਪਹਿਲਾਂ ਮਰ ਚੁੱਕੀ ਸੀ। ਪਿਤਾ ਨੂੰ ਰਿਸ਼ਤੇਦਾਰਾਂ ਨੇ ਸਮਝਾਇਆ ਬੱਚੇ ਨਿੱਕੇ ਨੇ ਦੂਜਾ ਵਿਆਹ ਕਰਵਾ ਲੈ। ਪਰ ਬੱਚਿਆਂ ਦਾ ਪਿਤਾ ਨਾ ਮੰਨਿਆ। ਇਕ ਦਿਨ ਕਿਸੇ ਬਿਮਾਰੀ ਕਾਰਨ ਸਭ ਤੋਂ ਛੋਟੀ ਕੁੜੀ ਦੀ ਮੌਤ ਹੋ ਗਈ। ਸਭ ਤੋਂ ਵੱਡੀ ਮਾਂ ਦੀ ਮੌਤ ਕਰਕੇ ਮਾਨਸਿਕ ਤੌਰ ਤੇ ਪਰੇਸ਼ਾਨ ਰਹਿੰਦੀ ਸੀ।

ਦਾਦਾ ਦਾਦੀ ਤੇ ਪਿਤਾ ਨੇ ਮੁੰਡਿਆ ਦੀ ਤਰ੍ਹਾਂ ਪਾਲਿਆ, ਪਿਤਾ ਨੇ ਮਾਂ ਅਤੇ ਬਾਪ ਦੋਨਾਂ ਦਾ ਪਿਆਰ ਦਿੱਤਾ। ਦੋਨਾਂ ਭੈਣਾਂ ਨੇ ਬਹੁਤ ਲਗਨ ਨਾਲ ਪੜ੍ਹਾਈ ਕਰਕੇ ਦਸਵੀਂ ਪਾਸ ਕਰ ਲਈ। ਬੱਚੀਆਂ ਦੀ ਜਾਇਦਾਦ ਜੇ ਉਨ੍ਹਾਂ ਦੇ ਪਿਤਾ ਨੇ ਮਿਹਨਤ, ਮਜ਼ਦੂਰੀ ਕਰਕੇ ਬੱਚੀਆਂ ਦੇ ਵਿਆਹ ਲਈ ਬਣਾਈ ਸੀ। ਉਸ ਜਾਇਦਾਦ ਤੇ ਬੱਚੀਆਂ ਦੇ ਚਾਚੇ ਦੀ ਅੱਖ ਸੀ। ਉਹ ਉਹਨਾਂ ਦੇ ਪਿਤਾ ਤੇ ਜ਼ੋਰ ਪਾਉਣ ਲੱਗਿਆ, ਇਨ੍ਹਾਂ ਨੂੰ ਵਿਆਹ ਕੇ ਤੋਰ ਜਮਾਨਾ ਬਹੁਤ ਖਰਾਬ ਹੈ। ਤੇਰਾ ਤਾਂ ਕੋਈ ਮੁੰਡਾ ਵੀ ਨਹੀਂ। ਇਨ੍ਹਾਂ ਨੂੰ ਕਿਸੇ ਨੇ ਨੀ ਪੁੱਛਣਾ। ਪਰ ਪਿਤਾ ਨਾ ਮੰਨਿਆ ਉਹਨਾਂ ਦੇਵਾਂ ਨੂੰ ਅੱਗੇ ਪੜ੍ਹਾਉਣ ਦਾ ਫੈਸਲਾ ਕਰ ਲਿਆ। ਦੋਵੇਂ ਬੱਚੀਆਂ ਨੇ ਬਾਰਵੀਂ ਜਮਾਤ ਵੀ ਪਾਸ ਕਰ ਲਈ ਘਰ ਵਿਚ ਥੋੜੀ ਤੰਗੀ ਤੇ ਰਿਸ਼ਤੇਦਾਰਾਂ ਦੇ ਜੋਰ ਨੇ ਵੱਡੀ ਕੁੜੀ ਦਾ ਵਿਆਹ ਕਰਵਾ ਦਿੱਤਾ। ਪਰ ਛੋਟੀ ਕੁੜੀ ਨੂੰ ਚਾਚੇ ਵਾਲੀ ਗੱਲ ਪਤਾ ਲੱਗ ਗਈ ਸੀ। ਉਹ ਜਿੰਦ ਕਰਕੇ ਬਾਹਰ ਪੜ੍ਹਣ ਚਲੀ ਗਈ। ਉਸ ਨੇ ਬੀ.ਏ., ਐਮ.ਏ. ਅਤੇ ਪੀਐਚ.ਡੀ. ਕਰਕੇ ਸਰਕਾਰੀ ਨੌਕਰੀ ਕਰਨ ਲੱਗ ਗਈ।

ਜਦੋਂ ਘਰ ਗਈ। ਪਿਤਾ ਨੇ ਘੁੱਟ ਕੇ ਗਲ ਨਾਲ ਲਾ ਲਿਆ ਅਤੇ ਕਿਹਾ ਕਿ 'ਜੇ ਮੁੰਡਾ ਹੁੰਦਾ ਤਾਂ ਐਨਾ ਨਹੀਂ ਸੀ ਕਰਨਾ,...। ਇਨ੍ਹਾਂ ਕਹਿ ਕੇ ਪਿਤਾ ਦੇ ਅੱਖਾਂ ਵਿਚੋਂ ਅੱਥਰੂ ਆ ਗਏ। ਕੁੜੀ ਨੇ ਵੀ ਪਿਤਾ ਨੂੰ ਹੌਂਸਲਾ ਦਿੰਦੇ ਕਿਹਾ। ਜੇ ਮਾਂ ਹੁੰਦੀ ਤਾਂ ਐਨਾ ਹੌਂਸਲਾ ਤੇ ਹਿੰਮਤ ਕਦੇ ਨਾ ਆਉਂਦੀ। ਬੱਸ ਹੁਣ ਬਹੁਤ ਹੋ ਗਿਆ ਪਿਤਾ ਜੀ ਮੈਂ ਹੀ ਤੁਹਾਡਾ ਮੁੰਡਾ ਬਣ ਕੇ ਤੁਹਾਡੀ ਸੇਵਾ ਕਰਾਂਗੀ।

ਇਹ ਸਭ ਕੁੜੀ ਦਾ ਚਾਚਾ ਦੇਖ ਰਿਹਾ ਸੀ। ਦੇਖ ਕੇ ਬਹੁਤ ਸ਼ਰਮਿੰਦਾ ਹੋਇਆ ਅਤੇ ਕੁੜੀ ਤੋਂ ਅਤੇ ਉਸ ਦੇ ਪਿਤਾ ਤੋਂ ਮਾਫੀ ਮੰਗੀ ਅਤੇ ਕਿਹਾ ਕਿ ਮੇਰਾ ਮੁੰਡਾ ਤਾਂ ਮੈਨੂੰ ਪੁਛਦਾ ਵੀ ਨਹੀਂ। ਮੈਨੂੰ ਲੱਗਿਆ ਸੀ ਇਨ੍ਹਾਂ ਦੀ ਮਾਂ ਨਹੀਂ ਇਹ ਵੀ ਘਰ ਛੱਡ ਕੇ ਚਲੀਆ ਜਾਣਗੀਆਂ ਫੇਰ ਕਿਸ ਨੇ ਪੁਛਣਾ ਇਹ ਕਹਿ ਕੇ ਚਾਚੇ ਦੇ ਵੀ ਅੱਥਰੂ ਆ ਗਏ ਉਸਨੇ ਕੁੜੀ ਅਤੇ ਪਿਤਾ ਦੇਵਾਂ ਨੂੰ ਸੀਨੇ ਨਾਲ ਲਗਾ ਲਿਆ।

ਖੰਡ ਬਿਨ ਨਾ ਹੁੰਦੇ ਦੁੱਧ ਮਿੱਠੇ,
 ਘਿਉ ਬਿਨ ਨਾ ਕੁਟੀਦੀਆਂ ਚੂਰੀਆਂ ਨੇ।
 ਮਾਂ ਬਿਨ ਨਾ ਹੁੰਦੇ ਲਾਡ ਪੂਰੇ,
 ਪਿਉ ਬਿਨ ਨਾ ਪੈਂਦੀਆਂ ਪੂਰੀਆਂ ਨੇ।

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