Glimpses of the Field Work

The program started w.e.f. April 11, 2022 and the team reached the destination Mc Leodganj in the evening. Next day it was a collection day, and the team explored the local landscapes for exploring the plant wealth.

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Next day, the team trekked to the Triund Peak, knowing about and collecting the plants for preservation. Way back to the college, on the last day of the tour, the students visited Dharamshala Cricket Stadium as well as War Memorial.

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In order to upgrade the skills of students, one day field work tour was organized to Mushroom Farm and Strawberry Farm at Village Bajankalan Dist. Sonipat on February 19, 2022. Department of Biosciences and Eco Club organized this one day Educational for B.Sc. Medical, BCA and B.A. students. Total 50 students participated in this trip.

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Department of Biosciences had organized a one day Educational trip cum Field Work demonstration visit to Sultan Fish Farm at Nilokheri, Karnal for B.Sc. 3rd year on May 31st, 2022. Prof. Pawan Kumar, Prof. Monika, Prof. Bhawna Malik and Mr. Ram Mehar Sharma accompanied the tour.

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2021/12/1 15:18

Fig. 2 Dr. Neera Raghav, Department of Chemsitry, KUK interacting with the students

Fig. 3 Students and Staff of I.B. College, Panipat with the Dr. Neera Raghav, Chairperson

Fig. 4 Students and Staff of I.B. College, Panipat with Dr. Sanjiv Arora, Professor, K.U. Kurukshetra

Fig. 5 Students understanding working of NMR with Mr. Jasbir,

Figure 6. Students with Dr. Vikram Kumar, Prof. Simran and Research Scholar of Deptt.

Group Photo at Ion Beam Centre, K.U. Kurukshetra.

आईबी कालेज के छात्रों ने किया शैक्षणिक भ्रमण

पानीपत। आईबी पीजी महाविद्यालय के रसायन विभाग के तत्वावधान में एक दिवसीय शैक्षणिक भ्रमण का आयोजन किया गया। बीएससी तृतीय वर्ष के 25 विद्यार्थियों ने डा. विक्त्रम कुमार, प्रो.सिमरन, एलए नवीन के निर्देशन में कुरुक्षेत्र यूनिवर्सिटी के रसायन विभाग की रिसर्च लैब, आईओएम बीम सेंटर, कृष्णा संग्रहालय व श्री तिरुपति बालाजी मंदिर में भ्रमण किया। जिसमें विद्यार्थियों ने एनएमआर न्यूक्लियर मैग्नेटिक रिजोनेंस की जानकारी प्राप्त की। केयूके के रसायन विभाग चेयरमैन प्रो.नीरा राघव ने विद्यार्थियों को रिसर्च के फील्ड में आगे बढ़ने के लिए मोटिवेट करके एक बेहतर भविष्य बनाने की प्रेरणा दी। आईओएम बीम सेंटर की कार्यप्रणाली को भी विद्यार्थियों ने विस्तृत ढंग से समझा। तत्पश्चात विद्यार्थियों ने कृष्णा संग्रहालय में भ्रमण करके ऐतिहासिक कलाकृतियों का दर्शन किया। प्राचार्य डा. अजय गर्ग ने कहा कि इस तरह के भ्रमण ब चों के कंप्लीट डेवलपमेंट के लिए बहुत जरूरी है।

आईबी कालेज के छात्रों ने किया शैक्षणिक भ्रमण

आईबी कालेज के छात्र शैक्षणिक भ्रमण के दौरान उपस्थित। (मोहन लाल)

पानीपत (विनोद पांचाल) : आईबी पीजी महाविद्यालय के रसायन विभाग के तत्वावधान में एक दिवसीय शैक्षणिक भ्रमण का आयोजन किया गया। बीएससी तृतीय वर्ष के 25 विद्यार्थियों ने डा. विक्रम कुमार, प्रो .सिमरन, एलए नवीन के निर्देशन में कुरुक्षेत्र यूनिविर्सटी के रसायन विभाग की रिसर्च लैब, आईओएम बीम सैंटर, कृष्णा संग्रहालय व श्री तिरुपति बालाजी मंदिर में भ्रमण किया, जिसमें विद्यार्थियों ने एनएमआर न्यूक्लियर मैग्नेटिक रिजोनेंस की जानकारी प्राप्त की। केयूके के रसायन विभाग चेयरमैन प्रो .नीरा राघव ने विद्यार्थियों को रिसर्च के फील्ड में आगे बढ़ने के लिए मोटिवेट करके एक बेहतर भविष्य बनाने की प्रेरणा दी। आईओएम बीम सेंटर की कार्यप्रणाली को भी विद्यार्थियों ने विस्तृत ढंग से समझा। तत्पश्चात विद्यार्थियों ने कृष्णा संग्रहालय में भ्रमण करके ऐतिहासिक कलाकृतियों का दर्शन किया। प्राचार्य डा. अजय गर्ग ने कहा कि इस तरह के भ्रमण बच्चों के कंप्लीट डिवैल्पमैंट के लिए बहुत जरूरी है। रसायन विभागाध्यक्षा ने कहा कि ऐसे भ्रमण बच्चों के आत्मविश्वास को बढ़ाते है।

आज समाज
पानीपत, शनिवार, 28 मई 2022

आईबी पीजी कॉलेज के विद्यार्थियों ने किया शैक्षणिक भ्रमण

शैक्षणिक भ्रमण के दौरान विद्यार्थी।

पानीपत। जीटी रोड स्थित आईबी पीजी कॉलेज द्वारा विद्यार्थियों के लिए दिवसीय शैक्षणिक भ्रमण का आयोजन किया गया। गणित विभाग द्वारा आयोजित इस शैक्षिक भ्रमण में एमएससी (प्रथम व द्वितीय वर्ष), बीएससी(द्वितीय), बीए (द्वितीय) ने प्रतिभाग किया।

इस भ्रमण के दौरान विद्यार्थियों ने ऐतिहासिक बुद्धा टेम्पल काम्प्लेक्स का भ्रमण किया जो कि जापानी वास्तुशैली में निर्मित है। साथ ही विद्यार्थियों को प्रसिद्ध सहस्त्रधारा फॉल्स का भ्रमण कराया गया जो कि अपने गंधक मिश्रित पानी के लिए जाना जाता है। प्राचार्य डॉ अजय गर्ग ने कहा कि इस तरह की गतिविधियों से विद्यार्थियों का उत्साह और आत्मविश्वास तो बढ़ता ही है, साथ ही कुछ नया सीखने को भी मिलता है। इस भ्रमण का नेतृत्व गणित विभाग के डॉ. अर्पणा गर्ग, प्रो. मनीष, प्रो. मानसी, प्रो. कोमल, प्रो. दीपाली द्वारा किया गया। भ्रमण के सफल आयोजन पर प्राचार्य डॉ. अजय गर्ग ने गणित विभाग के अध्यापकों को बधाई दी।

27/07/23
Principal
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29/07/23

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I.B. (PG) College, Panipat

SCHEME AND SYLLABUS FOR THE SUBJECT OF ENVIRONMENTAL STUDIES

The "Six month module syllabus for Environmental Studies for U.G. Courses" supplied by the UGC for the subject was approved for adoption in the Universities of the State. The subject is to be taught in 1st year of the U.G. Course.

The subject of Environmental studies will be included as a qualifying paper in all UG Courses (including professional courses also) from the session 2004-05 and the students will be required to qualify the same otherwise the **final result** will not be declared and **degree** will not be awarded.

Since the module syllabus for Environmental Studies for U.G. Courses supplied by the UGC has been adopted in toto, the scheme of examination proposed by the UGC has been approved by the Vice-Chancellor alongwith the syllabus of the course under section 11(5) of KU Act, 1986 so that the same becomes operative from the session 2004-05.

Credit System: The core course will be awarded 4 credits.

Exams. Pattern: In case of awarding the marks, the question paper should carry 100 marks. The structure of the question paper being:

Paper-I PART-A : Short Answer Pattern 25 Marks

PART-B : Essay type with inbuilt choice 50 Marks

Paper -II PART-C : Field Work (Practical) 25 Marks

Annual System: The examination of this compulsory qualifying subject of Environmental Studies in case of the DCC candidates will also be conducted by the Examination Branch of the University alongwith the annual examinations of other theory papers of the DCC candidates of the respective UG streams. With regard to the Field Work (Practical), the DCC candidates will be required to submit a Report of Practical Assignment of around 20 pages neatly written/typed,

duly bound by 30 March of the session which will be got evaluated by the Examination Branch of the University as in case of Practical Assignments/Project Report submitted by the DCC candidates of other courses.

Instructions for the Examiners

Part-A Question 1 is **compulsory** and will contain ten short-answer type question of 2.5 marks each covering the entire syllabus.

Part-B Eight essay type questions (with inbuilt choice) will be set from the entire syllabus and the candidates will be required to answer any four of them. Each essay type question will be of the 12-1/2 marks.

PCP/Contact Classes: The subject of Environmental Studies will also be taken up in the PCPs/Contact classes to be arranged by the University/Service Providers at their Study Centres/Study Centres in the affiliated colleges of the University with number of lectures at par with other subjects/papers of the respective courses.

Each candidate will be required to score minimum of 35% marks each in theory and Practical separately. The marks obtained in this qualifying paper will not be included in determining the percentage of marks/division obtained by them for the award of **'degree'**. However, these will be shown in the detailed marks certificate of the student.

The candidates, who will not be able to pass in the subject of Environmental Studies (Theory and/or Field Work (Practical) in 1st year will have to qualify the same by appearing in the examination of Environmental Studies in 2nd year or 3rd year or thereafter by submitting a separate examination form and examination fee of Rs. 50/- as an ex-student as in the case of 'Reappear'/'Compartment' candidates. There will, however, be no supplementary examination in the subject of Environmental Studies.

CORE MODULE SYLLABUS FOR ENVIRONMENTAL STUDIES FOR UNDER GRADUATE COURSES OF ALL BRANCHES OF HIGHER EDUCATION (AS APPROVED BY THE U.G.C.)

UNIT-1: The **Multidisciplinary** nature of environmental studies Definition; Scope and importance, Need for public awareness.

UNIT-2: Natural Resources:

Renewable and non-renewable resources:

Natural resources and associated problems.

a) Forest resources: Use and Over-exploitation, deforestation, case studies. Timber extraction, mining, dams and their effects on forests and tribal people.

b) Water resources: Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dams benefits and problems.

c) Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies.

d) Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies.

e) Energy resources: Growing energy needs, renewable and non-renewable energy sources, use of alternate energy sources, Case studies.

f) Land resources: Land as a resource, land degradation, man induced landslides, soil erosion and desertification.

- Role of an individual in conservation of natural resources.

- Equitable use of resources for sustainable lifestyles.

UNIT-3: Ecosystems

- Concept of an ecosystem.

- Structure and function of an ecosystem.

- Producers, consumers and decomposers.

- Energy flow in the ecosystem.

- Ecological succession.

- Food chains, food webs and ecological pyramids.

- Introduction, types, characteristic features, structure and function of the

following ecosystem: -

a. Forest ecosystem

b. Grassland ecosystem

c. Desert ecosystem

d. Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries).

UNIT-4: Biodiversity and its Conservation

- Introduction-Definition: genetic, species and ecosystem diversity.
- Biogeographical classification of India.
- Value of biodiversity: consumptive use, productive use, social, ethical, a esthetic and option values.
- Biodiversity at global, National and local levels.
- India as a mega-diversity nation.
- Hot-spots of biodiversity.
- Threats to biodiversity: habital loss, poaching of wildlife, man-wildlife conflicts.
- Endangered and endemic species of India.
- Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity.

UNIT-5: Environmental Pollution:

Definition

- Causes, effects and control measures of: -

a. Air pollution

b. Water pollution

c. Soil pollution

d. Marine pollution

e. Noise pollution

f. Thermal pollution

g. Nuclear hazards

- Solid waste Management: Causes, effects and control measures of urban and industrial wastes.

- Role of an individual in prevention of pollution.

- Pollution case studies.

- Disaster management: floods, earthquake, cyclone and landslides.

UNIT-6: Social Issues and the Environment

- From Unsustainable to Sustainable development.

- Urban problems related to energy.

- Water conservation, rain water harvesting, watershed management.

- Resettlement and rehabilitation of people; its problems and concerns. Case studies.

- Environmental ethics: Issues and possible solutions.

- Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust. Case studies.

- Wasteland reclamation.

- Consumerism and waste products.

- Environment Protection Act.

- Air (Prevention and Control of Pollution) Act.

- Water (Prevention and Control of Pollution) Act.

- Wildlife Protection Act. - Forest Conservation Act.

- Issues involved in enforcement of environmental legislation.

- Public awareness.

UNIT-7: Human Population and the Environment

- Population growth, variation among nations.

- Population explosion-Family welfare Programme.

- Environment and human health.

- Human Rights.

- Value Education.

- HIV/AIDS.

- Women and Child Welfare.

- Role of information Technology in Environment and human health.

- Drugs and their effects; Useful and harmful drugs; Use and abuse of drugs; Stimulant and depressant drugs. Concept of drug de-addiction. Legal position on drugs and laws related to drugs.

- Case Studies.

UNIT-8: Field Work (Practical).

- Visit to a local area to document environmental assets-river/forest/grassland/ hill/mountain.

- Visit to a local polluted site-Urban/Rural/Industrial/Agricultural.

- Study of common plants, insects, birds.

- Study of simple ecosystems-pond, river, hill slopes, etc.

SIX MONTHS COMPULSORY CORE MODULE COURSE IN ENVIRONMENTAL STUDIES: FOR UNDERGRADUATES

Teaching Methodologies

The Core Module Syllabus for Environmental Studies includes class room teaching and Field Work. The syllabus is divided into eight units. The first seven unit will cover lectures to enhance knowledge skills and attitude to environment. Unit eight is based on field activities which will provide students first hand knowledge on various local environmental aspects. Field experience is one of the most effective learning tools for environmental concerns. This moves out of the scope of the next book mode of teaching into the realm of role learning in the field, where the teacher merely acts as a catalyst to interpret what the student observes or discovers in his/her own environment. Field studies are as essential as class work and form an irreplaceable synergistic tool in the entire learning process.

Course material provided by UGC for classroom teaching and field activities be utilized.

The Universities/colleges can also draw upon expertise of outside resource persons for teaching purposes.

Environmental Core Module shall be integrated into the teaching programmes of all undergraduate courses.

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UNIQUE

ENVIRONMENT STUDIES

PROJECT WORK

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Dr. Aashima Gakhar
HOD Botany Dept.,
KVA/ DAV College
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Dr. Vineet Bala
Asstt. Prof.
Deptt. in Geography
Vaish College, Rohtak

For B.A./B.Sc./B.Com./B.C.A./B.B.A-Ist Year

(Written Strictly according to the latest Syllabus of Kurukshetra University, Kurukshetra & M.D. University, Rohtak & CDLU, SIRSA)

Name RIYA CHAUBEY

Class BCA - I Section A Roll No. 2100/0037

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(Anjali Gupta)
Deptt of EVS.

Teacher Signature

Date _____

नदी प्रदूषण

Date 30.6.22

PROJECT- 1

I) नदी का अध्ययन

उद्देश्य

नदी का हमारे जीवन में बहुत अधिक महत्व है। नदी का पानी हम सिंचाई के लिए, बिजली बनाने के लिए और जहाँ पानी की कमी है; वैसे स्थानों पर पीने के लिए भी इस्तेमाल किया जाता है। पर जहाँ पानी के जैविक, भौतिक और रसायनिक विशेषताओं में बदलाव आ जाता है, तो उसका गहरा हानिकारक प्रभाव सभी जीवों के साथ-साथ मनुष्य के सामाजिक और आर्थिक जीवन पर भी पड़ता है।

नदी के बारे में जानकारी

जैसे: नदी का नाम, उदगम स्थल, प्रमुख शहर जिनके पास से वह गुजरती है, पूरा साल बहती है या फिर थोड़े समय के लिए इत्यादि।

नदी के पानी की गुणवत्ता के बारे में जानकारी

Teacher Signature

Date 30.6.21

जैसे नदी का पानी पीने के लिए इस्तेमाल होता है या नहीं और किन-किन कामों के लिए इस्तेमाल होता है? नदी का पानी साफ है या फिर दूषित है? क्या उस पानी को सिंचाई के लिए या फिर औद्योगिक कारखानों में इस्तेमाल किया जाता है या नहीं?

नदीय जल प्रदूषण के स्त्रोत

औद्योगिक कारखानों के उपशिष्ट पदार्थों को नदी में फेंका जाता है। नदी के आस-पास रहने वाले लोग घरों में कूड़ा-करकट में फैंकते हैं। गर्मी के मौसम में गाय, भैंसें पानी में नहाती हैं। गर्मी के मौसम में जब कई स्थानों पर पानी की कमी होती है; तो उस वक्त नदी के पानी में कपड़े भी धोये जाते हैं।

नदी जल प्रदूषण के प्रभाव

नदी का पानी प्रदूषित होने की वजह से पीने का पानी के लिए बिल्कुल भी इस्तेमाल नहीं होता। नदी का पानी पीने के लिए इस्तेमाल करने से बीमारियाँ हो सकती हैं जैसे पेट में दर्द, उल्टियाँ इत्यादि।

Teacher Signature

Experiment No. .....

Date 30.6.22

नदी के प्रदूषित जल में जीव भी ज्यादा दिनों तक जिंदा नही रह सकते।
नदी के पानी में से गंदी बदबू आती है।

नदी जल प्रदूषण को रोकने के उपाय

औद्योगिक कारखानों के अपशिष्ट पदार्थ तथा सिवरेज नदी के पानी में नहीं फेंकना चाहिए। नदी के किनारे कपड़े धोना या नदी के पानी में नहाना ये दोनों बातों के लिए साफ मनाही होनी चाहिए। नदी के पानी की शुद्धता को बनाए रखने के लिए आसपास के लोगों को दिल से प्रयत्न करना चाहिए। कुछ सख्त कानून पानी की साफ-सफाई के लिए बनाने चाहिए।

Remarks .....

Teacher's Signature .....

ग्रामीण प्रदूषित क्षेत्र

Experiment No. .....

Date 3.1.22

PROJECT - 2

II.) ग्रामीण प्रदूषित क्षेत्र का अध्ययन

उद्देश्य

बड़े शहरों में वायु - प्रदूषण और जल - प्रदूषण की समस्या बढ़ रही है। पर ग्रामीण प्रदूषित क्षेत्रों में स्वास्थ्य संबंधी समस्याएँ बढ़ने का प्रमुख कारण है। दिनो - दिन बढ़ती हुई जनसंख्या, इसके साथ है जागरूकता का अभाव। ग्रामीण क्षेत्र का अध्ययन करने से ही प्रदूषण की वजह से होने वाली समस्याओं को कम किया जा सकता है।

प्रदूषण का स्त्रोत

घरों में से निकलने वाला कुड़ा - कर्कट। दुकानों से उत्पन्न कूड़ा।
अस्पताल का कचरा।
वाहनों में से निकलनेवाला धुआँ।
औद्योगिक कारखानों में से निकलने वाले अपशिष्ट पदार्थ।

Remarks .....

Teacher's Signature .....

Experiment No. .....

Date 3.7.22

प्रदूषण के प्रभाव

इस तरह के प्रदूषण की वजह से मनुष्यों को अलग-अलग प्रकार की बीमारियाँ हो सकती है।

- प्रदूषण से पेड़-पौधे कमजोर हो कर मर जाते है।
- लोगों में त्वचा विकार और श्वास-संबंधी समस्याएँ देखने को मिलती हैं।
- वायु, जल तथा भूमि प्रदूषण की वजह से हमारे आसपास का पर्यावरण जिंदा रहने लायक नही रहता
- प्रदूषण की वजह से पीने वाला पानी भी प्रदूषित हो जाता है।
- भूमि प्रदूषण की वजह से जमीन की उपजाऊ शक्ति कम हो जाती है और भूमि कटाव की समस्याएँ बढ़ जाती है।

नियंत्रण के उपाय

जहरीले अपशिष्ट पदार्थों पर प्रक्रिया करके, हानिकारक तत्वों को अलग करने के बाद किसी सुरक्षित स्थान पर फेंक देना चाहिए। ज्यादा से ज्यादा पेड़-पौधे लगाने चाहिए। पीने के पानी को प्रदूषण से बचाने के लिए सही कदम उठाने चाहिए।

Remarks .....

Teacher's Signature .....

कबूतर

Experiment No. .....

Date 10.7.22

PROJECT - 3

iii) सामान्य पक्षियों का अध्ययन

उद्देश्य

पक्षी हमारे वातावरण के मुख्य अंग है। उनका प्रयोग थकान दूर करने के लिए भी होता है। अलग-अलग पक्षी अलग-अलग रंगो और सुंदर पंखो वाले होते है। पंखो को सजावट के लिए भी इस्तेमाल किया जाता है।

1) कौआ

ये आसानी से किसी भी प्रदेश में देखा जाने वाला पक्षी है। इसकी गर्दन ग्रे रंग की होती है बाकी ये काले रंग का होता है।

2) कबूतर

इसे 'राक ड्रव्ह' भी कहते है। भारत में ये आसानी से पाया जाने वाला पक्षी है। इसका सिर स्लेटी रंग का होता है, गर्दन पर हरा और बैंगनी

Remarks .....

Teacher's Signature .....

तोता

Experiment No. ..... Date 10.7.22

रंग का होता है। इसकी पीठ स्लेटी- काले रंग की होती है और इसके पंख हल्के स्लेटी रंग के होते हैं। पंखों पर दो गहरे रंग की रेखाएँ होती है। इसकी चोंच भी स्लेटी रंग की और पैर गुलाबी रंग के होते हैं।

3) **तोता**

ये पक्षी गरम और उष्णकटिबंधीय प्रदेशों में पाया जाता है। ज्यादातर तोते हरे रंग के होते है। इसकी प्रजातियाँ रंग-बिरंगी सी होती है। तोते बीज, फल, मेवा या पेड़ के कच्चे भागह फल खाते है। तोता अपना घोंसला पेड़ो पर जिसमें वेद होते है उसमें बनाता है और उसी में ही सफेद अंडे देता है। जिसमें बाद में इनके बच्चे जन्म लेते है। कुछ प्रजातियाँ मनुष्य की आवाज की नकल करती है। और इसलिए इन्हें घरों में पाला जाता है।

4) **काला तीतर**

ये पक्षी हरियाणा में देखा जाता है और बाकी भारत में भी पाया जाता है। तीतर के आस-पास पेड़-पौधे के पास और खुले गीली जमीन पर

Remarks ..... Teacher's Signature .....

चिड़िया

Experiment No. .....

Date 10.7.22

रहता है। इसे हरियाणा का राज्य पक्षी भी कहते हैं। क्योंकि ये वहाँ ज्यादा पाया जाता है। ये घास के बीज, दाने और कीट खाकर अपना गुजारा करते हैं। नर तीतर काले रंग का होता है और गालों पर सफेद धब्बा होता है। तथा सारे शरीर पर सफेद धब्बे होते हैं। इसकी पीठ और पंख पर सुनहरे रंग के शेड्स होते हैं।

5) चिड़िया

चिड़िया एक ऐसी जंगली पक्षी है, जो पृथ्वी पर सभी जगह पर पाई जाती है। इसकी लंबाई 14-16 cm तक होती है। ये ज्यादातर ठंडे मौसम वाली जगहों पर रहती है पर कुछ पर्वतीय क्षेत्रों में कम दिखती हैं। चिड़िया को आप गाँव, शहरों, खेतों आदि जगहों पर देख सकते हैं। नर चिड़िया का ताज, उसके गाल और पेट के पास का हिस्सा स्लेटी रंग का होता है और गला, छाती, चोंच और आँखों के पास वाला हिस्सा काले रंग का होता है। गर्मी के मौसम में इसकी चोंच का रंग नीला-काला सा हो जाता है और पैर भूरे रंग का होता है।

Remarks .....

Teacher's Signature .....

तालाब का पारिस्थितिक तंत्र

Experiment No. ..... Date 20.7.22

PROJECT - 4

* पारिस्थितिक तंत्र का अध्ययन

(तालाब का ; नदी का या चारागाह का पारिस्थितिक तंत्र)

उद्देश्य

पारिस्थितिक तंत्र ⇒ जीवों के अस्तित्व के लिए पर्यावरण के जैविक और अजैविक घटकों में जो क्रिया-इँ या आदान-प्रदान होता है उसे पारिस्थितिक तंत्र कहते हैं।

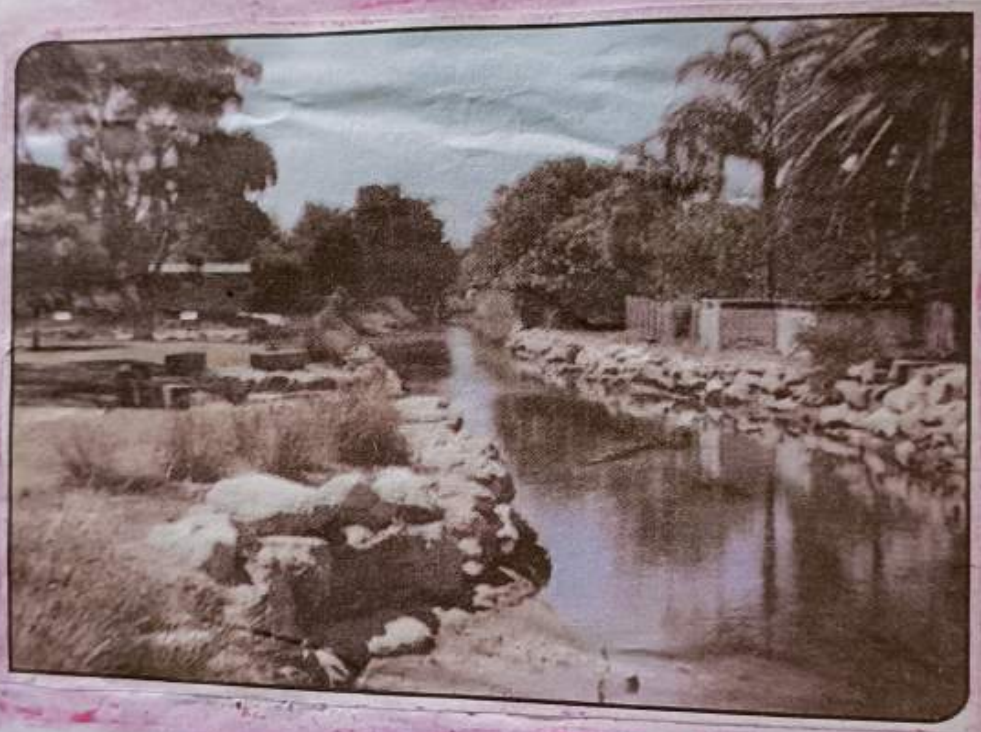
किसी भी पारिस्थितिक तंत्र के दो प्रमुख घटक होते हैं

1.) जैविक 2.) अजैविक

पारिस्थितिक तंत्र के जैविक घटक प्रमुख तीन प्रकार के होते हैं -

1.) उत्पादक
2.) उपभोक्ता
3.) अपघटक

Remarks ..... Teacher's Signature .....



नदी का पारिस्थितिक तंत्र

Experiment No. .....

Date 20.7.22

(i) पारिस्थितिक तंत्र अजैविक घटक दो प्रकार के होते हैं :-
भौतिक घटक :- जैसे सूर्य की रोशनी, तापमान, वर्षा, भूमि, पानी, हवा इत्यादि।

(ii) रासायनिक घटक :- जैसे - आक्सीजन, कार्बन, नाइट्रोजन, वर्षा, भूमि, पानी, हवा इत्यादि।

यहाँ 'उत्पादक' हरे भरे पेड़-पौधे हैं जो प्रकाश संश्लेषण की क्रिया से अपना खाना खुद बनाते हैं। इसके लिए वे सौर ऊर्जा का इस्तेमाल करते हैं। 'उपभोक्ता' की श्रेणी में शाकाहारी, मांसाहारी जानवर आते हैं। ये सारे जानवर एक दूसरे पर या पेड़-पौधे पर निर्भर रहते हैं। शाकाहारी जानवर पेड़-पौधों पर निर्भर होते हैं। उन्हें मांसाहारी जानवर खाते हैं जबकि सर्वाहारी जानवर पेड़-पौधे भी खाते हैं और छोटे-बड़े जानवरों को मारकर भी खाते हैं। खाद्य स्तर के अनुसार जानवरों को पहले नंबर वाला उपभोक्ता, दूसरे नंबर वाला, तीसरे नंबर वाला और चौथे नंबर वाला उपभोक्ता संबोधित किया गया है। जब कोई भी जानवर मर जाता है तो उसे सड़ाने-गलाने का काम सूक्ष्मजीव करते हैं और उन्हें 'अपघटक' कहा जाता है।

Remarks .....

Teacher's Signature .....

Experiment No. .....

Date 20-7-22

खाद्य स्तर आसानी से खाद्य शृंखला में देखे जाते है उदाहरण के लिए :-
तालाब के पारिस्थितिक तंत्र में जो खाद्य शृंखला होती है वह नीचे दी गई है।

पादप्लवक → प्राणिप्लवक → छोटी मछलियाँ → बड़ी-मछलियाँ → मनुष्य / शिकारी पक्षी

नदी के पारिस्थितिक तंत्र में भी लगभग ऐसी ही खाद्य शृंखला दिखाई देती है, क्योंकि दोनों ही मीठे पानी वाले पारिस्थितिक तंत्र है पर घास के पारिस्थितिक तंत्र में जो खाद्य शृंखला देखने को मिलती है वह अलग होती है। चरागाह, वन और मरुस्थल का पारिस्थितिक तंत्र ये तीनों जमीन वाले पारिस्थितिक तंत्र है। घासवाले पारिस्थितिक तंत्र में जो खाद्य-शृंखला आसानी से देखी जा सकती है। वह नीचे दी गई है।

घास → टिड्डे → मेंढक → साँप → शिकारी पक्षी
(जैसे बाज, नेवला, चील)

Remarks .....

Teacher's Signature .....

Topic

Date / /

Stay at Home

CERTIFICATE

This is certify that "Shweta Sharma" student of "B.Sc Medical" Ist yr. has successfully completed their zoology project on

"Invertebrates"

under the guidance of Ms. Bhawna Malik Mam I certify that this project is up to my expectations.....

Date :- 21-6-2022

Bhawna Malik 28/06/22

Teacher's Signature

SUNGRACE® A NAME OF COMPLETE SOLUTION

Topic | Date / /

Stay at Home

Introduction :

Invertebrates

Invertebrates are animals that don't have backbones.

97% of the animal Kingdom is made up invertebrates.

Some can be found in ponds, oceans and other water environments.

Insects and some other invertebrates have exoskeletons.

An exoskeleton is a hard outer covering that protects an animal's body and gives it shape.

Topic..... Date.....

1) Cockroach

Scientific Name :- Periplaneta

Habitat :- → Terrestrial and Cosmopolitan insect
→ Found in place warmth and food like kitchens, bakeries, railways wagon etc.
→ Its native place is tropical America.

Habits :- → Running and flying type Locomotion
→ Omnivorous and also show Cannibalism with biting and chewing type mouth part.

Economic Importance :- It is an animal of mixed blessing.
⇒ Harmful :- 1) Destroy human food and other goods.
2) Nuisances in the house.
⇒ Useful :- 1) Used for dissection purposes.
2) Used in Physiological and toxicological researches.

Morphology :-
1) Body is oval-shaped and reddish-brown in colour.
2) Head has one pair of antennae and biting and chewing type mouth.
3) Thorax bear 3 pair of jointed legs and 2 pair of wings.

Teacher's sign.....

Topic..... Date.....

2) Grasshopper

Scientific Name :- Poecilocerus

Habitat :- It is a terrestrial, gregarious and cosmopolitan grasshopper. Commonly found on the AK- plant (Calotropis), so is also called AK-grasshopper.

Habits :- 1) It is a diurnal insect.
2) Locomotion is jumping type with the help of its saltatorial metaleg and flying with the help of hind wing.
3) Herbivorous and voracious feeder of AK-leaf with the help of chewing and biting type mouth part.

Economic Importance :- It is used as food by useful animal and even for human being.

Morphology :-
1) Body is green and yellow banded in colour.
2) They have a pair of antennae that does touch and small.
3) They have a segmented abdomen and thorax and also rigid cuticle made of overlapping.
4) They have two pair of wing and three pair of legs. It abdomen has 11 segments.

Teacher's sign.....

Teacher's sign.....

Topic..... Date.....

3) House Cricket

Scientific Name :- Gryllus.

Habitat :- Terrestrial and solitary in. Commonly found in the house in India, Ceylon, Burma etc. especially during rainy season.

Habits :- 1) Locomotion is of jumping type with the help of saltorial metalegs.
2) Omnivorous and has biting and chewing type mouth part.

Economic Importance :-
It is harmful as destroys cloths, paper, fruit, vegetables etc

Morphology :-
1) Cricket vary in length from 3 to 50mm (0.12 to 2 inches).
2) They have thin antennae, hind legs modified for jumping, three-jointed tarsus (feet) segment, and two slender abdominal sensory appendages (called Cerci).
3) The two forewing are stiff and leathery, and two long, membranous hind wing are used in flying.

Teacher's sign.....

Topic..... Date.....

1) Centipede

* Scientific Name :- Scolopendra.

* Habitat :- It is segmented, worm-like arthopod found under the stones and logs or in the crevices in tropical countries.

* Habits :- 1) It is running type with the help of legs.
2) Carnivorous and feed upon the worms, insect and spider.
3) It has biting and chewing type mouth part. The prey is killed with the poison claws.

* Economic Importance :- It is harmful as its biting is highly painful but not fatal.

* Morphology :- 1) Body is divided into head and trunk.
2) Head has biting and chewing type mouth parts.
3) Each segments of trunk has one pair of 7- jointed legs. First pair of legs are modified into poison claws.

Teacher's sign.....

Date.....

5) Silver fish

Scientific Name :- Lepisma.

Habitat :- It is terrestrial and solitary wingless insect commonly found among books, clothes behind wall paper etc.

Habits :- 1) It is a fast running insect.
2) Omnivorous and feeds upon starched cloth, paste or glue of book bindings.

Economic Importance :- It is a harmful insect as causes large damage to the book and clothes.

Morphology :-
1) Body is silvery-white and fish shaped.
2) Head bear a pair of 2 antennae and simple eyes.
3) Thorax has 3 pair of small sized legs but no wings.
4) Abdomen bear two anal cerci and a telson at its posterior end.

Teacher's sign.....

10) Snail

Scientific Name :- Pila.

Habitat :- Snail are mainly found in fresh water. They are found in ponds, pools, tanks, lakes, paddy field, marshes & sometime in rivers and streams.

Habit :- 1) Locomotion is of creeping type and creeps very slowly, which covers about 3cm a minute at full speed.
2) Herbiverous and feed voraciously on succulent plants.

Economic Importance :- Land Snail serve an important role in the eco-system. They eat very low food on food web.
2) The Snail provide calcium and other nutrient vital to the formation of shell and embryos.

Morphology :- 1) Most Snail posses a soft, tube-shaped body, a muscular foot for locomotion.
2) One or more pair of tentacles from the head & small eyes at the top or the base of the main stalks.

HERBARIUM
I. B. COLLEGE, PANIPAT

Botanical Name.....

Common Name.....

Family.....

Locality..Mcleodganj...,Himachal..Pradesh

Date of Collection.....13..May..2022.....

Collected by.....Mansi.....

HERBARIUM
I. B. COLLEGE, PANIPAT

Botanical Name..... Rubus ellipticus .....

Common Name.....

Family..... Rosaceae .....

Locality..... Hc-Leodgunj H.P. .....

Date of Collection..... 13.05.2022 .....

Collected by..... Kirti .....

HERBARIUM
I. B. COLLEGE, PANIPAT

Botanical Name..... Caragana sp.

Common Name.....

Family..... Fabaceae

Locality..... Tyund-Mukteshwar Trek, U.P.

Date of Collection..... 13.05.2022

Collected by..... Nidhan Singh

HERBARIUM
I. B. COLLEGE, PANIPAT

Botanical Name.....Ampelocissus Sp.....

Common Name.....

Family.....Vitaceae.....

Locality.....

Date of Collection.....13.05.2022

Collected by.....

HERBARIUM
I. B. COLLEGE, PANIPAT

Botanical Name.....Gerbera jamesonii.....

Common Name.....

Family.....Asteraceae.....

Locality.....Gurgaon.....

Date of Collection.....2022.....

Collected by.....

HERBARIUM
I. B. COLLEGE, PANIPAT

Botanical Name.....Rhamnus Sp.....
Common Name.....
Family.....Rhamnaceae.....
Locality.....Triund Trek, McLeodganj
Date of Collection.....13.05.2022.....
Collected by.....Nidhan Singh.....

HERBARIUM
I. B. COLLEGE, PANIPAT

Botanical Name..... Caesalpinia sp.

Common Name.....

Family..... Fabaceae

Locality..... Chakrata Tiger Fall

Date of Collection..... 6/Sept/2023

Collected by..... Shikhar Singh

HERBARIUM
I. B. COLLEGE, PANIPAT

Botanical Name..... Deutzia staminea

Common Name.....

Family..... Rosaceae

Locality..... Chakrata (Uttrakhand)

Date of Collection..... 04/06/2022

Collected by..... Abhishek

HERBARIUM
I. B. COLLEGE, PANIPAT

Botanical Name: Primula denticulata

Common Name:

Family: Primulaceae

Locality: Uttarakhand (Chakrata)

Date of Collection: 03/04/2023

Collected by: Ashkirat

HERBARIUM
I. B. COLLEGE, PANIPAT

Botanical Name..... Ilex dipyrena

Common Name.....

Family.....

Locality... Uttarakhand [Chakrata]

Date of Collection... 03/04/2023.....

Collected by..... Ashish.....

HERBARIUM
I. B. COLLEGE, PANIPAT

Botanical Name....Trifolium resupinatum....

Common Name....Persian clover....

Family....Fabaceae....

Locality....From the field....

Date of Collection....5 May, 2023....

Collected by....Tanmay Kaili....

HERBARIUM
I. B. COLLEGE, PANIPAT

Botanical Name.....Fragaria sp.....
Common Name.....
Family.....Rosaceae.....
Locality.....Taund., HoPa.....
Date of Collection.....13.05.2022.....
Collected by.....Mansi.....

HERBARIUM
I. B. COLLEGE, PANIPAT

Botanical Name... Urtica dioica...

Common Name.....

Family..... Urticaceae.....

Locality..... Mc. Leodganj.....

Date of Collection..... 13.05.2022.....

Collected by..... Tushar.....

Topic Date

Aquaculture.....

Submitted By :~

Nancy Verma

B.Sc - 3rd year (Med.)

3161820016

T.B (PG), College, Panipat

Topic Date

Certificate....

This is to certify that the project report entitled "Study of Aquaculture" is submitted by "Nancy Verma" a student of Bachelors of science (final year) having roll no. "1910416 40" for the purpose of Practical examination to be conducted by "Kurukshetra University" for the session 2021-2022

This project is a part of curriculum and is an original piece of work carried by her during the session. Her behaviour during course was satisfactory

Monika 11/07/2022

Prof. Pawan Kumar

Prof. Monika

Topic Date

Present Status of Fish Production ....

The total global fish production is 80 million tones This appears to be the saturation level. All modern devices for improvement in fishing and implementation of EEZ concept. The fishery currently gives increasing catches rates The cost of fishery is further fuel cost. travellor cost and salary employs out of total 80 million tones of global production 69 million tones comes from Captwre fishery & 11 million from Culture fishery.

EEZ Concept :-

Under the law of sea an EEZ is a sea zone over which a state has special right over the exploration and use of marine resources The concept of EEZ was the result of confliction countries. Beyond the EEZ the fisheries of the high sea will be regulated by the regional fisheries organization In 2010 India, submitted a detail claim to the united nation/ states Comission extend its coastal EEZ from 200 nautical miles to 350 nautical miles.

Topic Date

...Fishing Crafts...

Various types of fishing crafts are formed and used in different type of fisheries In India, different types of fishing crafts were developed in different fishing centres of coastal areas
They are of following types :-

Catamaran :- Word is derived from Tamil language Kattumaron which describe the nature of craft. It is keelless craft formed by tying together 3-7 logs of wood A loose rubber is hang b/w the log called 'teppa'
These are 4 types :-

1.) Orissa & Ganjam
2.) Andra
3.) Coromondel
4.) Boat

Masula Boat :- It is frequently used in the Coromendal Coast. This boat is frameless double ended, keelless boat constricted from mango plant tied together with palm leaf fibres.

Dinghi & Nauka :- These are curved boats commonly used in west bengal and orissa Naukas are very long boats used for fishing.

Topic

Date

Fishing Gears :-

These are the instrument for fish catching and are of various types. It include a variety of nets, hooks and lines traps, spears & harpoon. The Entire period b/w the launching of a fish gear and launching it after a gap is called FISHING CYCLE

Hooks & Lines :- It is the very common gear used by general public to capture fish from ponds, lakes and reservior. In fish farming these gears are used for capturing predatory fishes the hook may have 1 or many barks.

Nets :- It is basically a piece of webbing in which twines are interested into regular mushes. At point of intersection of twins there may be knot or simple interlacing

Nets are of diffrent types :-

(a) Fixed nets :- It is fixed in a water body or tidal region. These are of various size & meshes to keep net in position wooden poles called stakes or smites are used.

(b) Sieves :- It is very large net used in running water for active fishing it encircles a large part of water having a lot of fishes.

Topic Date

SHORE SIEVES :- These nets are used at the shore. One end of the end is kept at shore & other end is spread in sea water is semicircular pattern

BOAT NETS :- They are conical bags withs wing The size of mesh increase from bag position towards outer ends.

(c) Beach Sieves :- This type of net is used Catboat It is Called Bisjal in Orissa. It is very large sized net. It Consist of 2 walls of net wabbling of strong twins Called wings.

(d) Cast Net :- It is Commonly Called 'Ghagaria jal' or throw net. Its string is of cotton / nylon. The number of meshes at apix is 50 & margins are around 1000. At the time of fisting net is thrown skillfully in water keeping hauling line.

(e) Purse Net :- They are used to Capture migratory fish likes hilsa, large sized Carps & Cats fishes

(f) Gill Net :- It is a permanently fixed Net

(g) Drag Net :- This type of net is Commonly used for fisting in pond It is also called Chanti net / Pattijal This net is as long as width of the pond.


aquaxcel

Topic

Date

Induced Breeding :- The old methods of collection of fish, the seed from natural breeding places & putting them into the water bodies to rear was having many draw backs like brixing of the eggs of the predatory fishes

Fish Feed :-

Fishes are adapted to have wide ranging of feeding habitat. Some fishes are herbivorous some are carnivorous & majority are Omnivorous. Schoperdau classified the natural food of fishes in 3 Categories :-

Mainfood :- Called Natural food. It is food preferred to fish under favourable condition.

Occasional food :- Also liked & consumed when available.

Emergency food :- It is taken when preferred food is not available.

→ 'Nikol Skii' had classified in following Categories :-

Basic food :- It is main part of gut content of fish

Obligatory food :- Consumed in absence of basic food

Secondary food :- Present in small amount in gut of fish

→ Nikol 'Skii' classified fishes on the basis of variety of food takes.

Topic Date

Eurphagic :- Fishes feeding on fen selected type of food.

Stenophagic :- Fishes feeding on few selected type of food.

Monophagic :- Fishes feeding on single types of food.

Das & mitra classified the fishes in 3 groups :-
Surface feeders :- Eat plankton at surface Catla Catla
Bottom feeder :- Feed at bottom Labio ~~Labiata~~ sa
Column feeder :- Feed at mid water body Labio rohita.

Artifical food :-

It is the food product given to different stages of fish in artifical to natural food. Commonly used artifical food for carps are rice & oil cakes of ground nut.

Pelleting :-

Compressed pellets are formed initially by exposure to dry steam & later by moist heat, having temperature around 80 - 90°C & humidity 10 - 15%. The high temp & high humidity is required to make the pellet of low density so that it can float & sunk slowly in H_2O.

Topic Date

(a) Nursery Pond :- Here hatchlings & fries are kept for growth.

(b) Rearing Pond :- Here proper growth of fingerlings are maintained. These are longer & narrow to provide long distance swimming to the fishes.

(c) Stocking Pond :- These are large, sized pond where the fingerlings are allowed to attain full sized & kept there till harvesting.

Arrangement Of Various Fish Ponds :-

There are 2 types of arrangement :-

(a) Rosary System :- In this type, Ponds are constructed in a series. All the ponds are linked by a channel.

(b) Parallel System :- In this ponds may be built in single series or 2 parallel series.

The male attain regularly maturity after one year while female mature before completion of 1 years age Breeding take place in flooded river during July to September

Labeo rohita

Distribution – It is tropical & temperate region specifically found in India & Burma

Habit & Habitat – Found in ponds or rivers, fed on vegetables and are bottom feder because of its feeding habitat it is cultivated with 2 other carps i.e Catla catla & Cirrhinus mrigala.

Comments :- Commonly known as rohu. It has compressed & fusiform body about 1 cm in length body with a brownish on back or silvery white colour.

Economic Importance:- It is used as culture fishes in aquaculture commonly used as food by human often used as game fish in Bangladesh.

CERTIFICATE

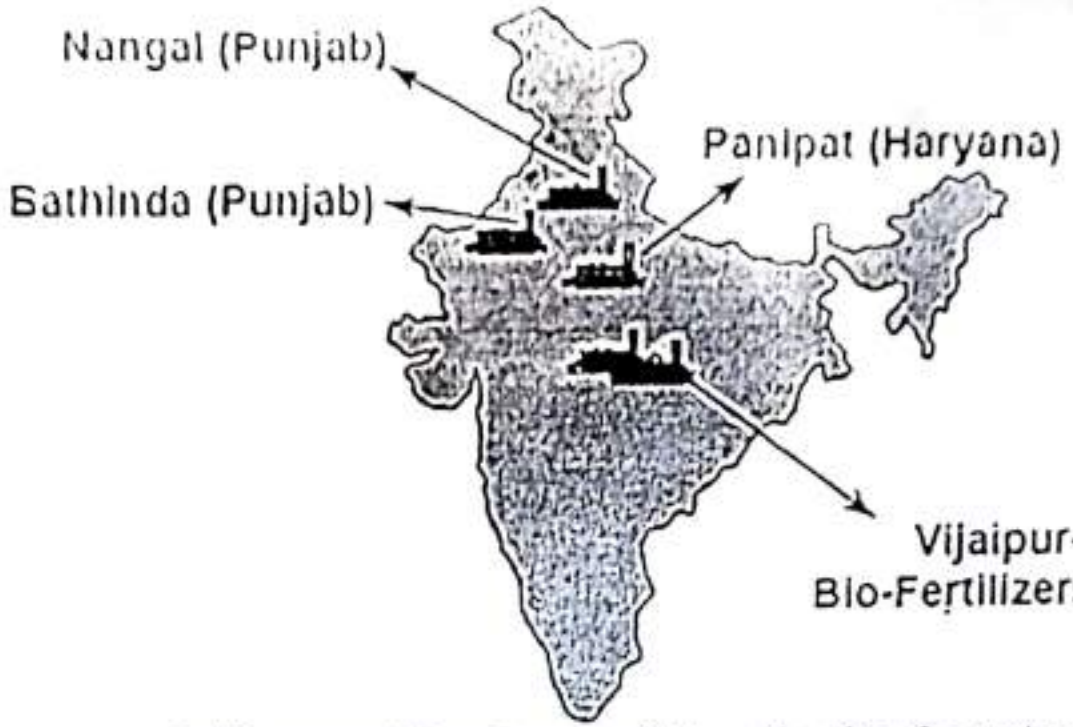
This is to certify that the project report entitled Pollution and Pollutants is submitted by **Yukta Chadha** a student of bachelors of science (biotech) (final year) having roll number:- **191041670** for the purpose of practical examination to be conducted by Kurukshetra University for the session 2021-22.

This project is a part of curriculum and is an original piece of work carried by her during the session. Her behaviour during the course satisfactory.

Ms Kiran 15/07/22

CONTENTS

NFL - PLANTS
Strategically Located



2nd Largest Producer of Urea in the Country

नेशनल फर्टिलाइज़र्स लिमिटेड

एन.एफ.एल.

NATIONAL FERTILIZERS LIMITED

POLLUTION AND POLLUTANTS

INTRODUCTION

Pollution is any undesirable change in physical, chemical and biological characteristics of air, water and land that leads to harmful effects or may cause potential hazards to living beings.

POLLLUTANTS

Any substance that cause pollution is called a pollutant. It can be any chemical, geochemical substance, biotic component or physical factor which is released intentionally by men into environment in such a that may cause adverse, harmful or unpleasant effects.

SOURCES OF POLLUTION

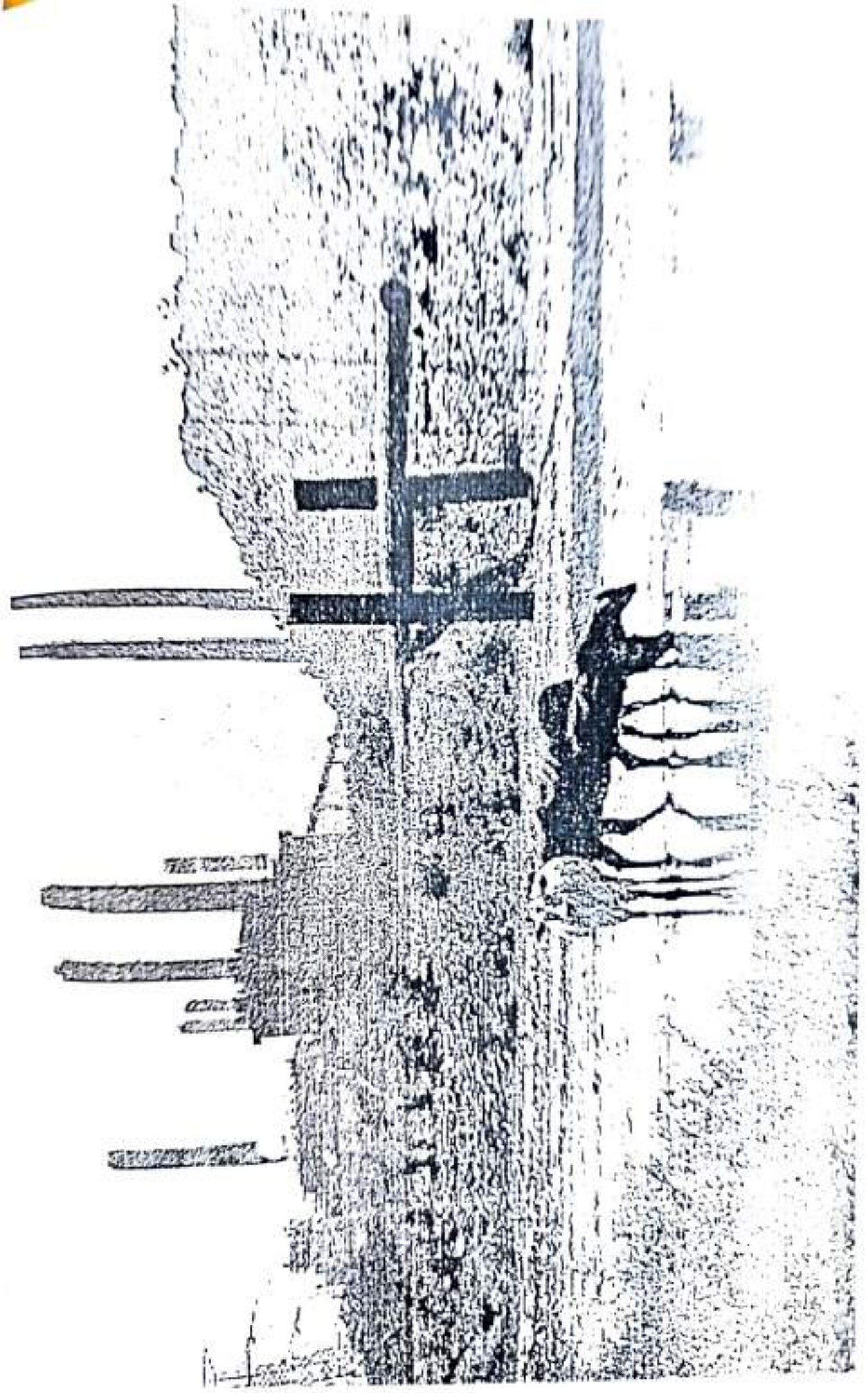
There are many sources of pollution, like wastes from chemical and other factories pollute the lakes, rivers, ponds and other water bodies etc. Air gets polluted by gases of automobile exhaust, industries and thermal power plants etc.

EFFECTS

There has grown serious concern all over the world about rivers turning murky, fish rotting on sea shores, tree withering, cities choking with foul air, toxic chemicals being cycled in food stuffs and epidemic disease appearing frequently.

SOURCES OF POLLUTION AT N.F.L, PANIPAT

- Harmful gases like ammonia, oxides of nitrogen, and oxides of sulphur and carbon monoxide released during various activities at ammonia plant.
- Urea dust from urea plant, escaped during scrubbing operation.
- Fly ash produced from the burning of coal.
- Liquid effluents like ammonia, sewage waste from N.F.L residential colony.
- Oily waste from compressor house in ammonia and urea plant.



HARMFUL EFFECTS OF POLLUTANTS

CARBON MONOXIDE

- It is harmful at level of 100 ppm. . It causes breathing difficulties headache and irritation of mucous membrane.
- It combines with haemoglobin of blood, reducing its oxygen carrying capacity, leads to hypoxia and hence death, if remains unattended for 4 hours.
- At higher level, gas causes the leaf drop, leaf curing,
- Reduction in leaf size, premature ageing etc. in plants.

OXIDES OF SULPHUR

- It causes intense irritation to eyes and respiratory tract.
- Exposure to 1 ppm level of sulphur dioxide could be fatal for an asthma patient.
- Moist air and fog increases sulphur dioxide damage and leads to formation of sulphuric acid.

POLLUTION CONTROL STEPS TAKEN BY THE INDUSTRIAL UNIT UNDER STUDY

Urea Plant Prilling Tower

An urea recovery plant has been installed at top of chamber by using water from water spray nozzles and urea dust escaping even after this retained by puff filters and foam filters.

Flare Stacks

And to burn them, this height ensures a ground unit has a flare stacks of 80 meter High to release the gases from production of streams having contamination of pollutants with in permissible limits.

Sulphur Recovery Stack

A sulphur recovery unit is installed for hydrogen sulphide emitted from rectisol section of ammonia plant. This unit has been installed to eliminate pollution caused by hydrogen sulphide and also to recover valuable sulphur. After recovery of sulphur, the gases are burnt in an incinerator to eliminate the residual sulphur. Thereafter the gases are discharged to the atmosphere through 50m high chimneys.

Captive Power Plant Stack

Electrostatic precipitator has been installed in captive power plant boilers for removal of fly ash and the line instruments are installed for analyzing carbon monoxide and oxygen and their continues monitoring and recording is also achieved.

MONITORING AND STUDY OF EFFECTS OF POLLUTANTS AND THEIR CONTROL

To ensure a better pollution control, it is essential to monitor the environment regularly and to take timely corrective action based on feedback results. The Panipat unit has adopted strict monitoring controls to achieve the tolerable limits of pollutants

SOME TYPES OF MONITORING CONTROL

Stack Monitoring:

Iso-kinetic stack samples monitor stack emissions at source, as well as the efficiency of stack. In addition to this, some of stacks are equipped with online analyzer for smoke density. Carbon monoxide, oxygen and sulphur dioxide.

Use of High Volume Sampler in Stack Monitoring:

This is workhouse of particular sampling. The sampler operates like a vacuum cleaner by simply forcing a large quantity of air through a filter.

Ambient Air Monitoring:

The unit had built three permanent ambient air stations for monitoring ground level concentration. These stations are collecting field data round the clock. Based on results collected after every eight hours, corrective measures are taken for abnormality observed.

CONCLUSION

Thus, a detailed look at pollution generated by National Fertilizer Limited, Panipat tells us about what could be the consequences of their pollution remaining unchecked. We are sure that management of N.F.L, Panipat unit is very conscious about its responsibilities towards environment conservation and pollution control. Sustained efforts are being made by everyone to keep the ecological balance. The emission level of different pollutants from all stacks is controlled within limits. Ambient air quality is regularly monitored to ensure that the waste water do not contain pollutants higher than standard limits. It can be safely concluded that the industry is serious about the safety measures to be undertaken for overcoming pollution related problems. The complete pollution-free environment for such a big industry is practically not possible yet there are enough measures to give a minimal level of pollutants.

Topic..... Date.....

IB PG. COLLEGE

Zoology Project.....

TOPIC :-

INSECT PEST.....

Submitted To

Ms. Monika Mam.

Submitted By.

Sufal
Bsc. Medical.
19104160 2.

Topic _____ Date _____

Certificate →

This is to certify that, Sujal of class BSc (Med) – 3rd year has completed her project under my supervision. She has taken proper care and shown almost sincerity in the completion of this project.

I certify that this project is upto my expectations as per guidelines.

T.B. (PG) College
Panipat.

Signature → Monika 15/07/2022.

Little Bachpan

Teacher Sign.

Topic..... Date.....

Insect Pests

The insects causing damage to yield and quantity of crops are called insect pests.

If insects feed on a single species of plants it is known as monophagous.

If insects feed on plants of one family is known as oligophagous.
Example :→ Cabbage butterfly.

If insects feeds on a very large number of cultivated and wild plants are known as Polyphagous.

The insects causes damge by destroying crops, fruit plants, trees, house-holds articles and by attacking stored grains and food items etc.

The insects cause benefit by providing honey, lac, silk, dyes and helping in pollination etc.

Topic..... Date.....

2:- Sugarcane Leafhopper.-:-

Pyrilla perpusilla...
- Walker.

Classification
Class - Insecta
Order - Hemiptera
Family - Fulgaridae.

Habit :→ The adult and nymphs live on the leaves and suck cell sap. The breeding is performed throughout the year. The egg laying is mainly done in April, May, October & November.

Morphology :→ Pyrilla is a straw coloured leaf-hopper with two pairs of wings folded roof shaped on the dorsal side on the dorsal side. It is 8-10 mm long insect.

Damage :→ Nymphs & adults can damage.

Control :→ (i) Ratoon crops should be avoided.
(ii) Resistant varities of sugarcane should be sown.
(iii) Crop should be dusted with 5-10% BHC dust.
(iv) Spraying of 0.25% endosulfan.
(v) Spraying of 0.01% endrin at rate of 500 L/acre.

Topic..... Date.....

Sugarcane top borer.

Scirpophaga nivella.
— Fabricius.

Classification:—
Class - Insecta
Order - Lepidoptera.
Family - Pyralididae.

Habit:→ The moths are more active during night. The main damage is caused by caterpillars.

Morphology:→ Adult is silver white moth with 25-30 mm width of wings. The abdomen of the male is slender and pointed and that of the female is stout and covered with a orange or crimson hairy tuft.

Damage:→ Caterpillars.

Control:→ (i) Ratoon crops should be avoided.
(ii) Egg of stem borer should be manually removed.
(iii) Resistant varieties should be grown.
(iv) 0.02% Endrin should be sprayed at time of egg laying.

Topic..... Date.....

Sugarcane Whitefly.

– Aleurolobus barodensis Maskell.

Classification

Class – Insects

Order – Homiptera

Family – Aleyrodidae.

Habit :→ These are very active and fragile insects. Their nymphs cause main damage by sucking the cell sap.

Morphology :– Adult whitefly is a tissy insect, about 32 mm long with expanded wings. These are small, fragile, pale yellow and have prominent black eyes. The average life span of the insect is of 2 days only.

Damage :– Nymphs by sucking the cell sap.

Control :– (i) Ratoon crop should be avoided.

(ii) Resistant varieties of sugarcane should be grown.

(iii) the infested leaves should be plucked and destroyed.

(iv) Folidol in ratio of 3ml / 1 gallon of water should be sprayed.

Topic..... Date.....

Sugarcane root borer

Emmalocera depressella
Swinhoe.

Classification :→
Class → Insecta
Order → Lepidoptera
Family → Pyralidedae.

Habit :→ The adult is a nocturnal insect and also lays eggs during night. The main damage to sugarcane is caused by its caterpillar.

Morphology :→ The moth is about 15–25 mm in length and is pale brownish in colour. Its hind wings are wings are white, shorter and broader than forewings.

Control :→ (i) Ratooning should be avoided.
(ii) Moths should be picked by light traps.
(iii) BHC dust should be applied at the rate of 8 kg / acre.
(iv) To kill eggs, aldrin at the rate of 10 kg / acre should be mixed in soil.

Topic..... Date.....

Wheat stem borer

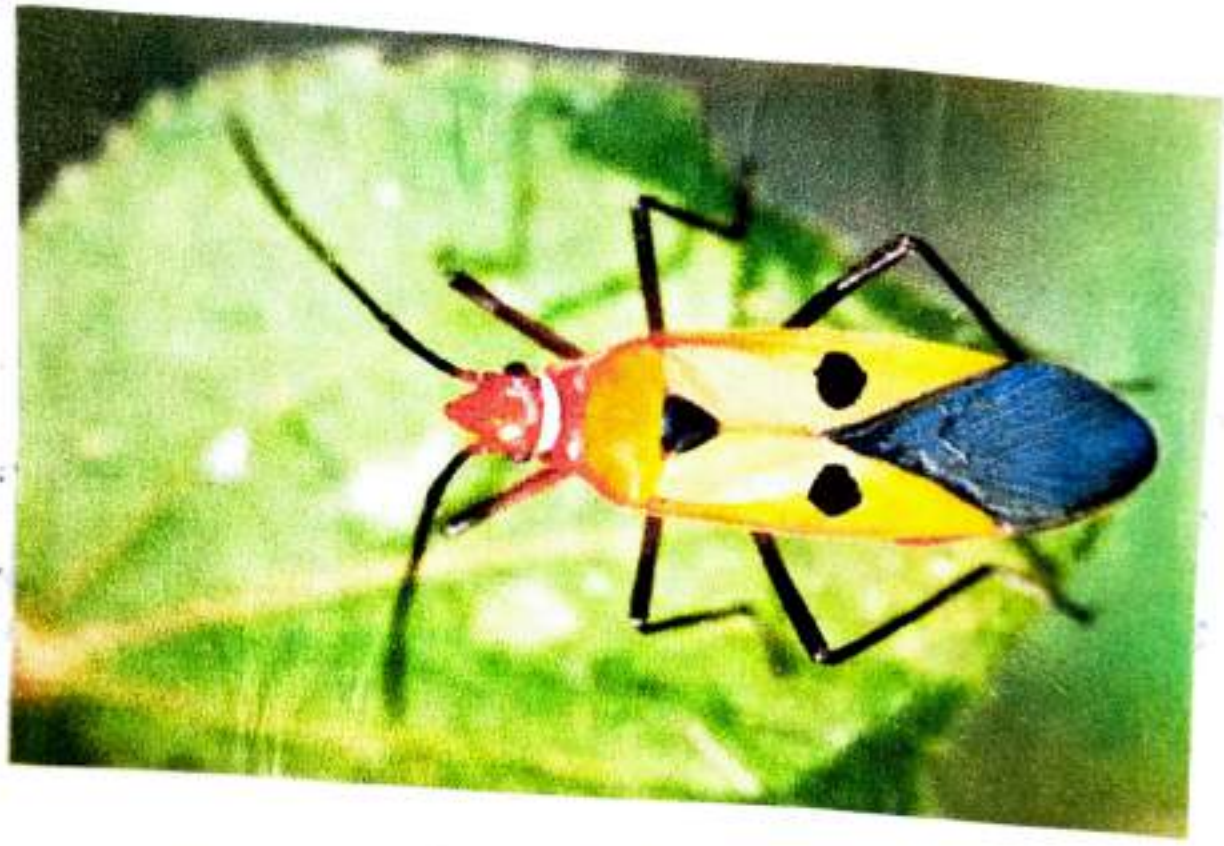
Sesamia inferens
Walker.

Classification :→
Class → Insecta
Order → Lepidoptera
family → Noctuidae

Habit :→ It is a nocturnal insect and lives for 10 to 15 days. The eggs are laid on the inner surface of the leaf sheath. The caterpillar prefers moist weather to infest new shoots.

Morphology :→ The adult moth is fawn coloured and has dark brown streaks. the fore wings have greyish black lines going to the tip of wings from the central point. It is 15-20 mm in length and wing span is 35 mm.

Control :→ (i) Attacked shoots should be removed and burnt down.
(ii) Rotation of crops.
(iii) The grass weeds should be removed and burnt.
(iv) 5% BHC or DDT at rate of 7-8 kg/acre.



Topic..... Date.....

The red cotton bug.

Dysdercus cingulatus.
koenigii.

Classification
Class → Insecta
Order → Hemiptera.
Family → Pyrrhocoridae.

Habit :→ These insects are active during day. They have piercing and sucking type of mouth parts. The pests feed gregariously and suck cell sap of plants.

Morphology :→ The bug is about 16mm in length and is red in colour. It has black marks on the forewings and white bands on the abdomen.

Control :→ (i) Insects should be caught manually and killed.
(ii) The fields should be ploughed properly to kill eggs.
(iii) 10% BHC must be sprayed at rate of 25 kg per hectare.
(iv) 1% Endosulfan 35 EC may be sprayed.

Topic..... Date.....

Rice Gundhi bug.

Leptocorisa varicornis

Classification :→
Class → Insecta
Order → Hemiptera
Family → Coreidae

Habit :→ These insects are active during morning and evening hours. The adult insect emits a stuong unpleasant smell from the thoracic glands. So called 'Gundhi bug'.

Morphology :→ The adult insect is about 20mm length and is light brown in colour has long slender legs and four jointed antennae. The nymphs are smaller than adults and slightly green in colour.

Control :→ (i) the insects should be caught by light traps.
(ii) the rice plants should be dusted by 0.25% BHC or 5% malthion.
(iii) the leaves having eggs should be clipped off and burnt.
(iv) Paddy growing areas should not have the wild grasses in surroundings.

Topic..... Date.....

The Rice grasshopper.

Hieroglyphus banian.

Classification

Class → Insecta
Order → Orthoptera
Family → Acrididae

Habit :→ These insects have single brood in a year. The adult hoppers appear immediately after rains. The adults have long hind legs for hooping.

Morphology :→ The adult is greenish yellow hopper, about 5-7cm long. There are present 2-3 black spots on either side of thorax.

Control :→

(i) The insects should be manually collected and destroyed.
(ii) The affected field should be ploughed 10-15 cm deep after harvesting to kill eggs.
(iii) Sprayed of 0.02% dieldrin, 30% aldrin or 0.04% hepta chlor. or methyl parathion.
(iv) 5% BHC dusting can control it.

Topic..... Date.....

The rice stem borer.

Scirpophaga incertulas.

Classification

Class → Insecta

Order → Lepidoptera

Family → Pyralidae

Habits :→ The moths become active after dusk. The life span of the adults is of 5 to 10 days. Caterpillars bores into the stem.

Morphology :→ The adult moth is about 20 mm in length and light brown in colour. The female is bigger than male moth and has distinct black spots on the fore wings.

Control :→

(i) Stubbles should be burnt to kill hibernating larvae.

(ii) Resistant varieties should be grown.

(iii) Collect egg masses & destroy them.

(iv) 6% Lindance should be sprayed in the field.

Topic.....

Date

The Rice beetle.

Hispa armigura
– Oliver.

Classification :→
Class → Insecta
Order → Coleoptera
family → Chrysomelidae.

Habit :→ The adults live on Paddy leaves and feeds on green scrappings. The grubs also fed on the leaves. The entire life cycle is completed in 20-30 days.

Morphology :→ Adult insect is a small blue black coloured beetle of about 10mm length. It has black bristles on its body. It is commonly called Dhan ka Hispa.

Control :→ (i) Beetles should be collected manually & killed.
(ii) Paddy leaf tips containing blotch mines should be plucked & destroyed.
(iii) Crop is dusted by 10% BHC.
(iv) Sprayed by 0.07% endosulfan & 0.03% phosphamidon.

Topic..... Date.....

The red pumpkin beetle.

Aulacophora foveicolis

Classification

Class → Insecta
Order → Coleoptera
family → Chrysomelidae

Morphology :→ The adult beetles are oval & 5 to 8 mm long and 4mm wide. The beetle have biting & chewing type mouth, Their body is orange red colored on dorsal side.

Habit :→ Adult insects cause main damage to the vegetables in April & May. They biting & chewing type mouth part. hibernate from November to February.

Control :→ (i) Beetles may be picked by nets.
(ii) Early varieties of these vegetables should be sown.
(iii) Younger plants should be dusted by ash.
(iv) 5% Pyrethrum should be dusted.

Topic: _____ Date: _____

I.B (PG) COLLEGE PANIPAT

Name - Monika

Class - Bsc 3rd Med.

Roll no - 3161820012

Topic - Microtomy

Subject - Zoology

Submitted to - Mr. Pawan Kumar
Mis. Monika Mam

Rohit

Topic: _____ Date: _____

Accomplishment

In the accomplishment of this Project successfully, many people have best owned upon me their blessing and the heart pledged support, this time I am utilized to think all the people who have been concerned with this Project.

I would like to express my gratitude to our principle Mr. Ajay Garg and my teacher Pawan Sir & Monika mam. whose valuable guidance has been the ones that helped me patch this project. Her suggestions and her instructions have served as the major contributor toward the completion of the major contribution toward the Project.

I would now thank my parents and friends to give this Project is creative blend and help me in various phases of this Project.

A big thanks to all who have willingly helped me out with their ability.

Rohit

Topic: _____ Date: _____

Microtomy

The process of cutting thin paraffins sections of the organ or tissue for studying histological, histopathological and histochemical details of them is called as microtomy. The instrument used in this process is called as microtome.

Significance of Microtomy

1) Microtomy is beneficial for examination of tissue. It is used for proper diagnosis of certain disease.

Steps involved in Microtomy

1. Sample availability (i.e. animal)
2. Nacrotisation
3. Dissection of animal for tissue.
4. Fixation of tissues
5. Washing of tissues
6. Dehydration of tissues
7. Clearing or dealcoholization of tissues.
8. Embedding of tissues
9. Block making
10. Trimming of blocks
11. Section cutting
12. Stretching of ribbons
13. Double staining, dehydration, clearing & mounting
14. Microscopic study.

① Availability of Animal: Bring the animal, study of whose tissue is to be done. Usually microtomy of tissues of lung, rat or goat is done.

Rohit

Date

MICROTOMY

The process of cutting thin paraffins sections of the organs or tissue for studying histological, histopathological and histochemical detail of them is called microtomy. The instrument in this process is called as microtome.

SIGNIFICANCE OF MICROTOMY...

→ It is beneficial for examination of tissue.
→ It is used for proper diagnosis of certain diseases.

STEPS INVOLVED...

1. Availability of animal:- Bring the animal, study of whole tissue is to be done. Usually microtomy of tissues of frog, rat or goat is done.

2. Narcotisation:- Anaesthise the animal with the help of chloroform. Take a medium sized frog or rat in a jar. Wet some cotton in chloroform & put it in the jar containing animal. Close the mouth of the

TODAY
Designer Sheet

for water glass vessel. After 15-20 min when fully anaesthetized, take out the animal and keep in a dissecting tray.

3. Dissection of animal:- Keep the animal in a dissecting tray containing normal saline 0.9% NaCl which is isotonic to body tissues. It helps to prevent the shrinking & swelling of tissue. In simple words, it keep the tissues in their actual state.

4. Fixation of tissues:- Fresh tissue sample must be preserved for future examination. This process is called fixation & the resulting specimen is described as fixed. A fixating is a solution which helps to keep the tissue in living state i.e, in a state as in the animal body.

Types of fixatative:- Depending on composition, fixatives are of 2 types:-

Simple fixative:- It consists of only a single component eg:- formalin.

Compound fixative:- It is prepared by mixing of two or more components eg:- Bouin fixative, Formal Calcium & Carnoy fixative etc.

Functions:- [PTO]

TODAY Designer School

Topic Date

Function of fixative :-

① It renders hardness to tissue to resist further postmarten changes

② Fixative agents coagulates & renders the elements of tissue insoluble so that cellular substances may not be washed away.

③ They alter the refractive indices of tissues & make them optically differentiated under microscope.

⑤ Washing of tissue :- Washing of tissue which were kept in a fixative is done to remove fixative from them. Tissues fixed in aqueous Bouin's fluid are washed with tap water while those fixed in Bouin's fluid are washed with 70% alcohol.

After 24 hours, take out the pieces of tissues and keep in a beaker with label. Tie the mouth of the beaker with thin muslin cloth & keep it under slow running tap water. Keep on washing under tap water till all the picric acid is removed. The indication of complete removal of picric acid comes when no yellowish water is seen. Washing is carried out for 24 hours.

Topic Date

⑥ Dehydration of water:- After Washing, next step is dehydration of tissue. It removes water to prevent putrification. Dehydrate the tissue in following way:-

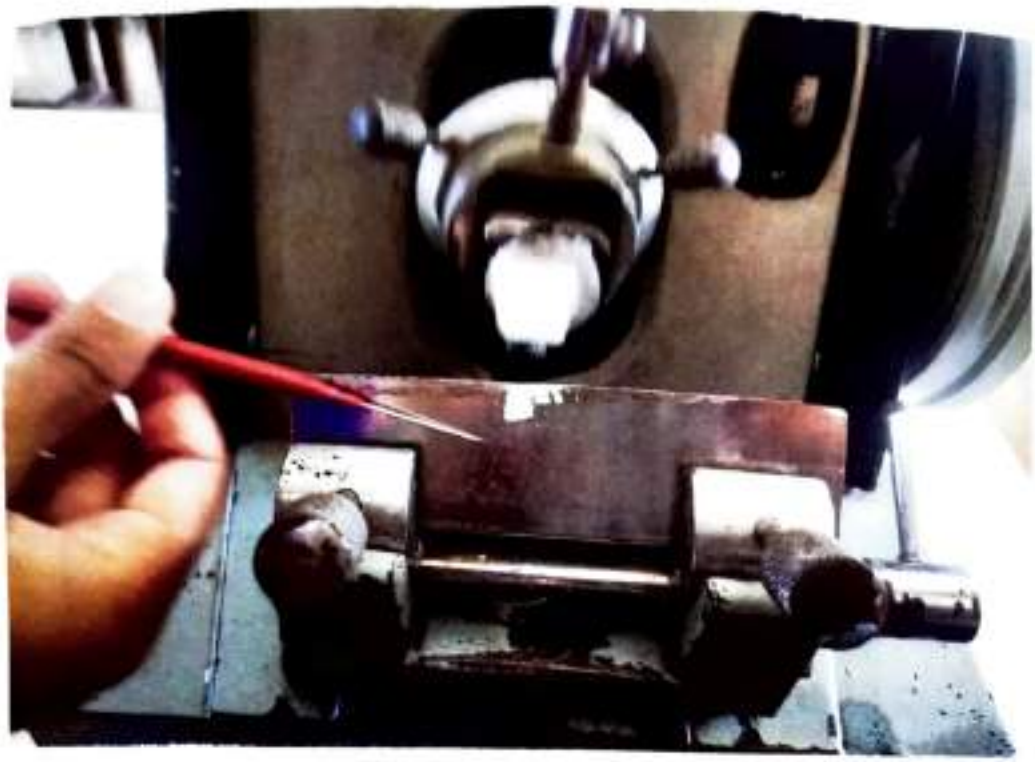
30% alcohol (2 hrs)
↓
50% alcohol (2 hrs)
↓
70% alcohol (2 hrs)
↓
90% alcohol (1 hr)
↓
Absolute alcohol (2 hrs + 2 changes)

Till dehydration is complete. Check for dehydration by putting the piece of tissue in clearing agent Xylene or benzene can be used as clearing agents. If milkiness appears then dehydration is incomplete, go back to 70% & repeat. If no milkiness appears then proceed further.

⑦ Clearing :- Absolute alcohol + Xylene (30 min)
(1:1)
↓
Xylene (15 min)
Xylene + wax (30 min) at 58 to 60 °C in oven.

⑧ Embedding :-


VASIAN



Topic

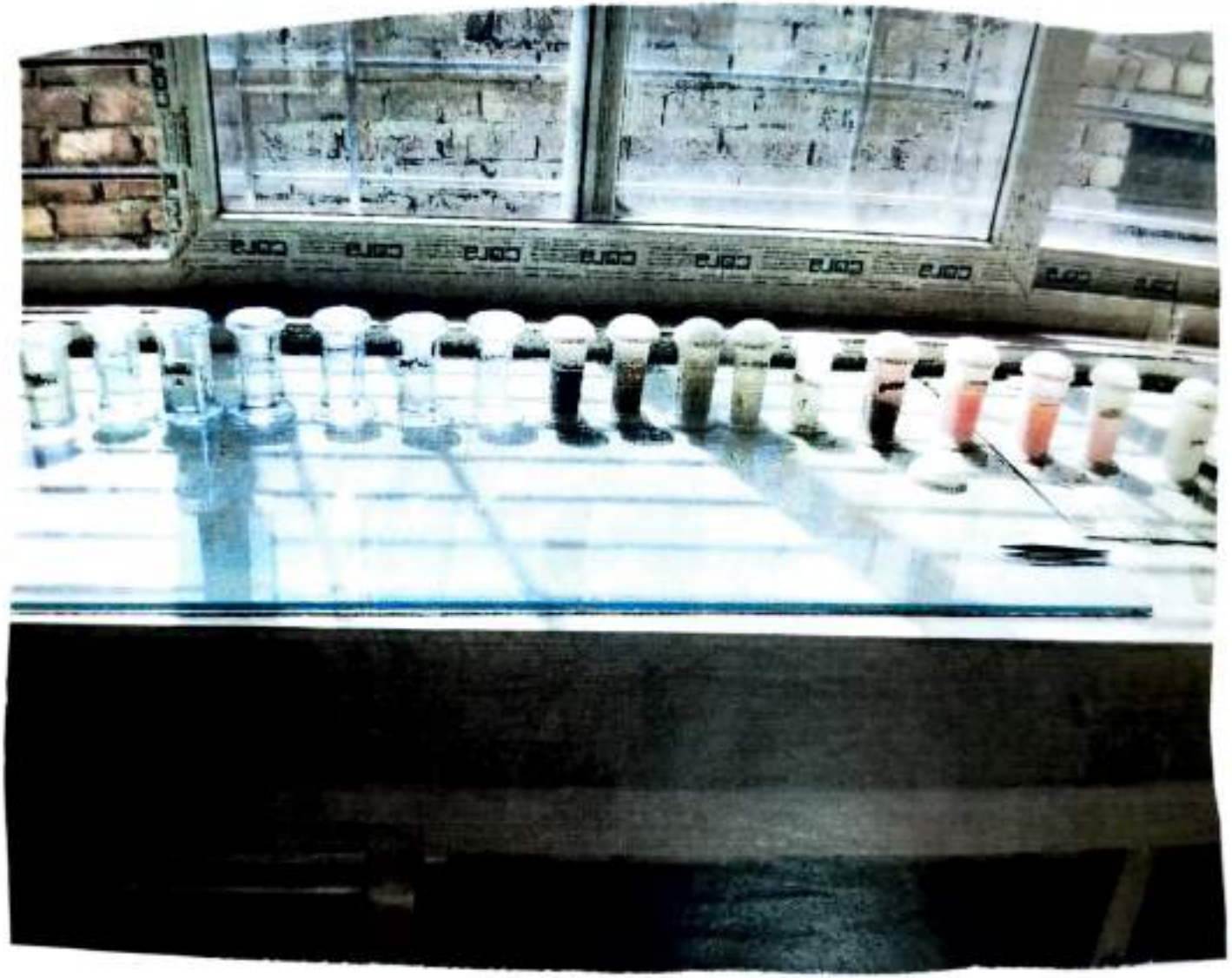
Date

Spirit lamp as in most of the cases wax melts and sections are heard. After all the sections & ribbons become flattened, drain off water and leave the slide at room temp over night for drying the ribbions.

13. Double staining / Dehydration / Clearing & Mounting :- Haematoxylin & Eosin (H&E) stain nucleus and cytoplasm of the cells respectively. Haematoxylin which appear blue, is a basic stain means it binds with acidic cell components. These components are therefore termed basophilic. Nucleic acids such as nucleus of the cell & the ER stain with this dye, due to their high affinity for Haematoxylin. In contrast eosin is an acidic dye & therefore binds structures that are basic. It appears pink. Eosin binds basic components of cell & extracellular matrix such as protein. These structures are termed eosinophilic

Procedure :- Take individual slide & keep it in xylene to remove wax for 5 - 10 min for tile deparaffinization. Wax is dissolved in xylene & section are left free. Now pass the slide in descending grades of alcohol.

TODAY Designer Sheet



I.B (PG) COLLEGE PNP

Name - Monika

Class - Bsc 3rd med.

Roll no - 19104164l (3161820012)

Subject - Botony

Topic - Plant collection

Submitted to - Miss Kiran Mam

Certificate ....

This is to certify that the Project report entitled "Economic plants" is submitted by "Monika" a student of Bachelor's of Scienc (final year) having roll no 3161820012 for the purpose of practical examination to be Conducted by Kurukshetra University for Session 22

This Project is a part of curriculum and is an original piece of work carried by her during this session. Her behaviour during course was satisfactory

Signature 15/07/22

Maize

Classification :

Botanical Name -
Vernacular Name -
Family -

Uses of Maize

- Most of the maize in India is used in the poultry feed industry.
- The green plants harvested dry plants are used as fooder.
- Industrial starch, alcohol and adhesives are formed from maize
- Corn oil is medicinal and the cob remains are a wonderful fuel as well as poddling.
- The fibres of maize plants are used as for making paper and yarn.
- The grains are used for preparing corn flask, a popular breakfast cereal.

Neem

Classification

Botanical Name : Melia Azadirachta
Vernacular Name : Neem
Family : Meliaceae

Uses of Neem

- Tooth plaque. Applying a gel containing neem leaf extract to teeth or using a neem leaf mouthwash can reduce the amount of plaque on the teeth.
- But it is not clear if neem is as helpful as using chlorhexidine mouthwash or gel.
- Applying a gel containing neem leaf extract to the teeth or using a neem mouthwash can reduce gingivitis in some people.
- Lice. Applying a neem extract shampoo to the scalp once can treat head lice in children.

Jute (A soft or blast fibre)

Classification:

Botanical Name - Corchorous Capsularies
Vernacular Name - Paat
Family - Tiliaceae

Economic Importance

Jute is next to cotton in important as natural fibre and has got diverse used as given below: • Jute is used as manufacture of coarse cloth mainly for covers of cotton bales curtains, oils cloth, carpets and potato sacks.

- It is used for manufacturing textile for bags and canvases.
- The fibre is used in the manufacture of twine, coarse cloth rugs. upholstery etc.
- The tender shoots are used as vegetable in Egypt, sudan etc.
- Oil from Juts seeds is used for cooking purpose and in the manufacture of soaps.

Mustard

Classification:

Botanical Name : Brassica sp.
Vernacular Name : Sarson
Family : Cruciferae

Use of Mustard :-

- Mustard oil is one of the major edible oil of India and is the chief cooking medium in north India.
- Oil is used in soap making and rubber substitutes.
- The oil is used as massage oil, hair oil and as lubercant in machines.
- Mustard seeds (especially rai) are used as spice in vegetables and pickle preprations.
- Oil cake known as 'khall' is very nutritious and is used as cattle feed
- Oil has also been used as salad oil, for elking and as lamp oil.
- Because of their rapid growth and ease of handling, mustard are frequently used as subject crops in experiments with herbicides and soil culture studies.

Pigeon Pea

Classification

Botanical Name - Cajanous Cajan
Vernacular Name - Arhar
Family - Leguminosae

Uses of Pigeon Pea

- Pigeon Pea of red gram is extensively used as split pulse or dal.
- It's green pods may be used as vegetables.
- Green plants are used as forage crop.
- The plant helps to bind soil and checks soil erosion due to its deep rooting habit.
- The heavy shedding of leaves add considered organic matter to the soil. It is often grown as a cover crop in plantations.

Cotton

Botanical Name – Gossypium herbaceum

Vern Name – Kapas

family – Malvaceae

Plant Part used – Surface growths of seeds

Uses :–

→ Cotton fibre is used in manufacturing of cotton fabrics, thread etc

→ It is also weaved with other synthetic fibres.

→ Unspun Cotton is used for filling quilts, pillows, cushion etc.

FLAX

Botanical Name: Linum usitatissimum

Vernacular Name: Flax

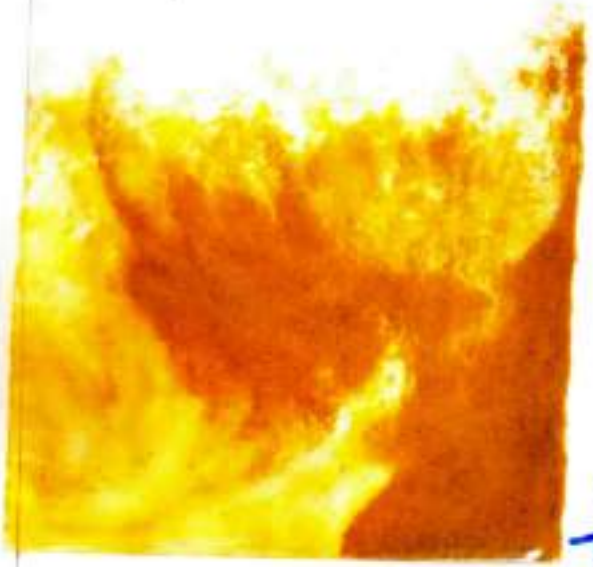
Family: Linaceae

Plant part used: Seed

USES

- Flax is grown for its seeds which can be ground into a meal or pressed into linseed oil
- Linseed oil is used as nutritional supplement & as an ingredient in many wood finishing product
- Flax is also grown as an ornamental plant in gardens

Haldi



Botanical Name – Curcuma longa

Vern. Name – Haldi

family – Zingiberaceae

Plant Part used – Rhizome

Uses :-

- Haldi powder is Consumed as spice to add aroma
- Food Industry – used to colour curtain fruits, cakes etc
- As dye – yellow coloured pigments curcumin present in Haldi is used to dye silk, wool & Cotton.

YUKTA CHADHA
19104167O
B.Sc[Biotech] 6th sem
ZOOLOGY

TOPIC :-

STUDY OF PEST

Topic Date

Rattus rattus

CLASSIFICATION-

Class - Mammalia
Order - Rodentia
Family - Muridae
Species - Rattus rattus (House rat)

CHARACTERSTICS-

→ It is commonly found rodent in India.
→ It has reddish brown dorsal surface & white grey ventral surface. The length of its tail is equal to head & body length.
→ Its tail, head & body is 12 cm, 11.5 cm, 21 cm resp..
→ It is nocturnal & found in warehouse, houses, fields, sea ports.
→ It breeds during the whole year and its litter size 6-8 youngones.

DAMAGE

→ The sugarcane crop is damaged heavily by rodents due to their burrowing, nibbling & feeding activities
→ They cause severe damage to fruit crops like almond, apple, guava & grapes.
→ Stored grains are also damaged by them.

SQUIRRELS

CLASSIFICATION -

Class - Mammalia
Order - Rodentia
Family - Sciuridae
Species - Funambulus pennanti

CHARACTERSTICS

- It is found in Punjab, Haryana, UP, Gujarat etc.
- Its body is greyish brown on dorsal side having five white stripes separated by brown bands.
- It is greyish white on ventral side.
- It is arboreal & diurnal.
- It breeds throughout the year.
- Its litter size varies from 1 to 6.

DAMAGE

- It cause great damage to vegetables, fruits and crops.
- It also feeds on insects.
- It cause great damage to lac crop.
- They remove bark of trees alongwith vertical veins, causing death of trees.

Topic Date

HOUSE SPARROW

CLASSIFICATION

Class - Aves
Order - Passeriformes
Family - Passeridae
Species - Passer domesticus

CHARACTERSTICS

→ It is cosmopolitan in distribution.
→ It is a small bird measuring 9-15 cm in length.
→ The female bird is greyish white and male bird is light brown with black throat. So sexual dimorphism is present.
→ Their feet are adapted for perching with first toe of hallux posterior & three toe anterior.
→ It lives as a commensal of man.

DAMAGE

→ The maximum damage is caused to seeds in mandis and at shelter.
→ The birds cause damage to fruit crops at ripened & unripened stage.

Topic Date

PIGEON

CLASSIFICATION

Class - Aves
Order - Columbiformes
Family - Columbidae
Species - Columba livia

CHARACTERSTICS

→ It is distributed throughout India.
→ It has spindle shaped body about 30-35 cm in length.
→ It is grey in colour with metallic green on upper breast and neck.
→ Its wings have two black bars.

DAMAGE

→ The crops are damaged at the time of sowing & just before harvesting.
→ Legumes are damaged at pod stage.
→ The main damage is caused to tomatoes, cucurbits etc.

Topic Date

WHEAT WEEVIL

CLASSIFICATION

Class - Insecta
Order - Coleoptera
Family - Dermestidae
Species - Trogoderma granarium

CHARACTERSTICS

→ The adult insect is dark brown coloured oval beetle.
→ It is about 2-5 mm long with a small contractile head.
→ The females are larger than males.
→ The adult survives for 15-31 days.
→ The entire life cycle is completed in 34-76 days.

DAMAGE

→ The main damage is caused by the grubs and the adults.
→ It mainly attacks wheat & sometimes maize, rice also.
→ The grubs eats up the embryo of seeds.

Topic

Date

GRASSHOPPER

CLASSIFICATION

Class - Insecta
Order - Orthoptera
Family - Acridiidae
Species - Chrotogonus Trachypterus

CHARACTERISTICS

→ The adult hopper varies in length from 4-7 cm.
→ It is greenish yellow in colour.
→ There are about 2-6 generations in 1 year.
→ The adults are active during day & prefer low growing vegetation.

DAMAGE

→ The main damage is caused by the nymphs and the adults both.
→ They feed on germinating cotton plants and cotyledonary leaves.
→ They feed on plants of low height.