3.2.1. Additional Information regarding innovative ecosystem, Indian Knowledge System (IKS), including awareness about IPR, establishment of IPR Cell, Incubation Centre and other initiatives for the creation and transfer of knowledge/technology

1. An ecosystem for innovations

Gushkara Mahavidyalaya has already established an "Aquaculture Research and Training Unit" under the Department of Zoology in 2022, for education, research as well as community training purposes with the help of our college wetland. This wetland has been divided into three parts separated by natural walls; 1) Pond wetland for Aquaculture, 2) Bog wetland for Larvicidal fish culture and 3) Marsh wetland for Phytoremediation as well as Habitat conservation to achieve our goal of sustainable development. Molly (*Poecilia sphenops, Poecilia latipinna*), Guppy (*Poecilia reticulata*), Zebrafish (*Danio rerio*) etc larvicidal fishes are cultured in Bog wetland and used for prevention of various mosquito-borne diseases including Dengue within our college campus as well as nearby local communities.

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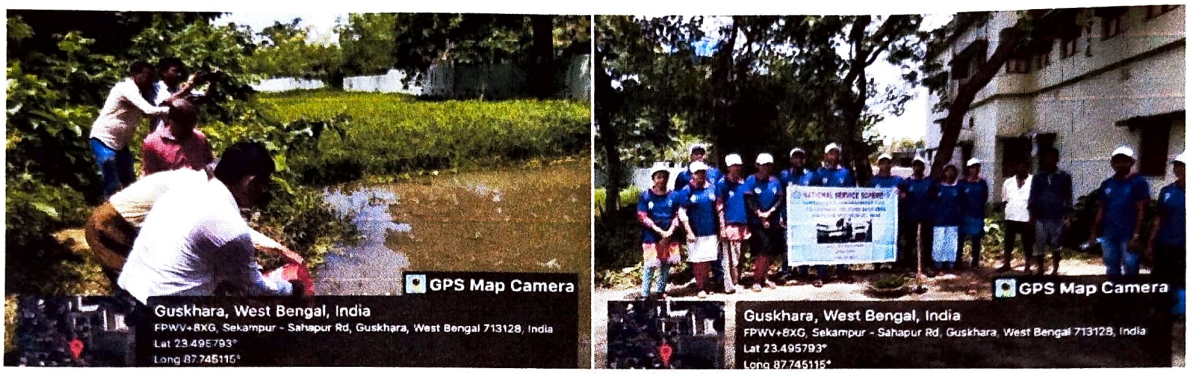

Larvicidal fish culture for preventing mosquito-borne diseases including Dengue

Habitat conservation for sustainable development

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2. Awareness of IPR

A few departments in our college have IPR in their syllabus and curriculum. For example, Department of Botany has IPR as a course in SEC 1 (Skill Enhancement Course 1) in 3rd Semester Honours syllabus. Department of Nutrition has trademark related chapters (Chapters 4 and 5) in a course (Core Course 14) of 6th Semester Honours syllabus. Apart from that, faculties from different departments of our college do aware our students regularly about copy write, patents, trademarks (under IPR) during their classes, lectures, various project writing and other academic affairs related to IPR.

Syllabus of Botany and Nutrition (SEC 1 and CC-14)

B.Sc. Nutrition (Honours)

CC 14: FOOD SAFETY AND FOOD STANDARD
[TOTAL CREDITS: 6 (THEORY-4, PRACTICAL-2)]

Theory: **Total Lecture-60**

1. **Food additive and food safety:**
   - Concept of food safety, factors affecting food safety.
   - Food safety measures: basic concept of HACCP, Safe food handling practices and storing food safely.
   - Food additives-various types and their effects on health.
2. **Food security:**
   - Concept of food security, factors affecting food security.
3. **Food adjuncts and preserved products:**
   - Spices (Chilies, Turmeric, Garlic and Ginger), use and nutritional aspect.
   - Jams, Jellies, Pickles, Syrup, Squashes–uses and nutritional aspects.
4. **Food adulterants:**
   - PFA definition of food adulteration, adulterants in commonly consumed food items.
   - Common adulterants in food and their effects on health.
   - Common household methods to detect adulterants in food,
5. **Food laws and regulatory authority:**
   - Prevention of Food Adulteration (PFA) Act.
   - Regulating authority-Codex Alimentarius, ISI, Agmark, Fruit Products Order (FPO), Meat Products Order (MPO), Bureau of Indian Standards (BIS), MMPO, FSSAI.

Practical:

1. Detection of vanaspati in Ghee.
2. Detection of vanaspati in Butter.
3. Detection of Khesari flour in Besan.
4. Detection of Argemone oil in Edible oil.
5. Detection of Metanil yellow in Turmeric.

Suggested readings:

- Gopalan C and Kaur S (Eds.) (1993). Towards Better Nutrition, Problems and Policies, Nutrition Foundation of India.
- Tovel AP (1984). Standardising Food Service for Quality and Efficiency. AVI Publishing Company INC.
- Dept. of WCD, Govt. of India. (1993): National Nutrition Policy.
- Food and Nutrition Board, Dept. of WCD, Govt. of India (1995): National Plan of Action on Nutrition.
- Roday S (1999). Food Hygiene and Sanitation, 1st Edition, Tata McGraw Hill, New Delhi.
- Diehl JF (1995). Safety of Irradiated Foods Marcel Dekker Inc, New York.

(2) Intellectual Property Rights Credits 2 **Lectures: 30**

Unit 1: Introduction to intellectual property right (IPR) **(2 lectures)**
Concept and kinds. Economic importance. IPR in India and world: Genesis and scope, some important examples.IPR and WTO (TRIPS, WIPO).

Unit 2 : Patents **(3 Lectures)**
Objectives, Rights, Patent Act 1970 and its amendments. Procedure of obtaining patents, Working of patents. Infringement.

Unit 3: Copyrights **(3 Lectures)**
Introduction, Works protected under copyright law, Rights, Transfer of Copyright, Infringement.

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Unit4: Trademark **(3 Lectures)**
Objectives, Types, Rights, Protection of goodwill, Infringement, Passing off, Defences, Domain name.

Unit 5: Geographical Indications **(3 Lectures)**
Objectives, Justification, International Position, Multilateral Treaties, National Level, Indian Position.

Unit 6:Protection of Traditional Knowledge **(4 Lectures)**
Objective, Concept of Traditional Knowledge, Holders, Issues concerning, Bio-Prospecting and Bio-Piracy, Alternative ways, Protectability, needfor a Sui-Generis regime, Traditional Knowledge on the International Arena, at WTO, at National level, Traditional Knowledge Digital Library.

Unit 7: Industrial Designs **(2 Lectures)**

Objectives, Rights, Assignments, Infringements, Defences of Design Infringement

Unit 8: Protection of Plant Varieties **(2 Lectures)**

Plant Varieties Protection-Objectives, Justification, International Position, Plantvarieties protection in India. Rights of farmers, Breeders and Researchers.National gene bank, Benefit sharing.Protection of Plant Varieties and Farmers' Rights Act, 2001.

Unit 9:Information Technology Related Intellectual Property Rights **(4 Lectures)**

Computer Software and Intellectual Property, Database and Data Protection, Protection of Semi-conductor chips, Domain Name ProtectionComputer Software and Intellectual Property, Database and Data Protection, Protection of Semi-conductor chips, Domain Name Protection

Unit 10: Biotechnology and Intellectual Property Rights **(4 Lectures)**

Patenting Biotech Inventions: Objective, Applications, Concept of Novelty, Concept of inventive step, Microorganisms, Moral Issues in Patenting Biotechnological inventions.

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3. Establishment of IPR Cell

An IPR Cell under the Research Development Cell (RDC) was already formed in 2022, in compliance with the guidelines for the establishment of a Research & Development Cell in Higher Education Institutions on the score of specified functioning and to play a pivotal role in catalyzing Research culture as well as Research Eco-System within Higher Education Institutions. This IPR Cell comprises three members along with one Director (RDC) and one Chairman (RAC) following the guidelines of Higher Education Department as well as The University of Burdwan.

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[An ISO 9001:2015 & 14001:2015 Quality Research Organization]
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Phone : 03452 - 255105, Website : gushkaramahavidyalaya.ac.in
E-mail : guskaramahavidyalaya@gmail.com, office@gushkaramahavidyalaya.ac.in

Ref. No. ..... *Date* .....

Committees for Research & Developmental Cell (R&D Cell)

1) Chairman (RAC): Dr. Sudip Chatterjee, Principal, Gushkara Mahavidyalaya

2) Director (RDC): Dr. Saurabh Sarkar

Committee 1: Committee for Finance and Infrastructure
(i) Dr. Bholanath Sarkar
(ii) Dr. Papita Dutta
(iii) Mr. Diptiman De

Committee-2: Committee for Research Programme, Policy Development
(i) Dr. Sukhendu Roy
(ii) Dr. Banashree Ghosh
(iii) Dr. Nabyendu Rakshit
(iv) Dr. Yadabesh Acharya

Committee-3: Committee for collaboration and community
(i) Dr. Sunanda Mondal
(ii) Dr. Manisha Mondal
(iii) Mr. Krishna Pada Pal

Committee-4: Committee for Product Development, Monitoring & Commercialization
(i) Dr. Madhumita Bhattacharya
(ii) Dr. Mita Roy
(iii) Mr. Ankit Kumar Bhagat

Committee-5: Committee for IPR, Legal & Ethical Matters
(i) Dr. Biswajit Mitra
(ii) Mr. Ranjan Paul
(iii) Dr. Monoj Das

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4. Incubation Centre and transfer of knowledge/technology

Department of Zoology possesses an Animal House where *Drosophila* culture is carried out in winter sessions. *Drosophila* sp requires 23°C ± 2°C temperature for laboratory culture in BOD chamber. An indigenous assembled BOD chamber costs about 2-3 lakhs and foreign branded BOD chamber has a starting price of around 4-5 lakhs. Faculties of Zoology has introduced low priced Clay Pot *Drosophila* culture techniques for the fulfillment of Project on *Drosophila* Stock Culture as well as various basic practical related to Developmental Biology, Molecular Biology, Animal Behaviour, Toxicology etc with fruit flies for our students. The total instrumental cost for Clay Pot *Drosophila* culture is less than 5000/- rupees. This low priced culture technology would be transferred to the surrounding colleges and academic institutions for carrying out projects and practical for their students.

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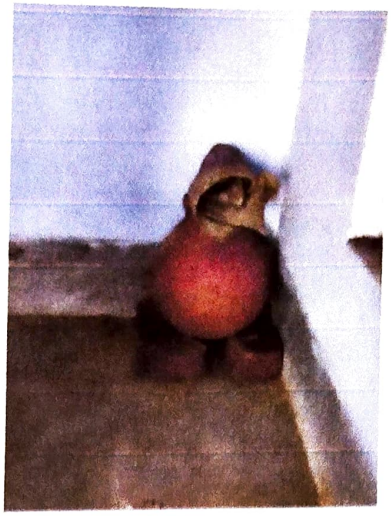





Incubation & Culture mechanism of *Drosophila melanogaster* by Department of Zoology in Animal House of Gushkara Mahavidyalaya

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5. Creation and transfer of knowledge/technology and the outcomes of the same are evident

Pisciculture in pond wetland is carried out with the latest scientific technologies to implement natural food and low priced self-made feed system in semi-intensive polyculture. The protocol for piciculture was initially designed and developed by the Department of Zoology, Gushkara Mahavidyalaya and, later on, the Research & Development Cell, Gushkara Mahavidyalaya has provided their scientific advice and expertise since 2022. These niche technologies and knowledge systems have extended to the students as well as local fish farmers under the guidance of our scientifically trained faculties.

Release of fingerling

Inspection, Sampling and rearing

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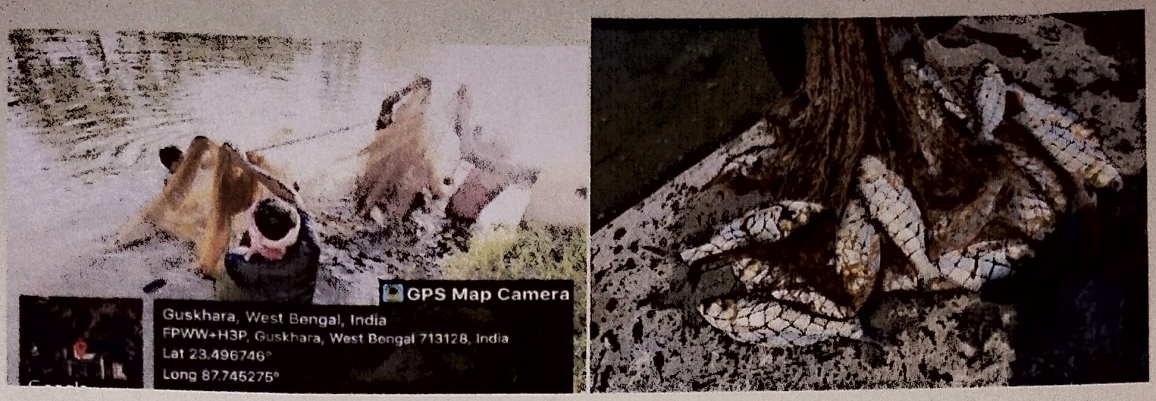

Catching

Marketing

Technology demonstrations

Low priced polyculture techniques for better production in the semi-intensive culture environment

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