IQAC INITIATIVE
INTEGRATED ANIMAL FARMING

REPORT 2021-22

ZOOLOGY RESEARCH CENTRE; ANIMAL HOUSE

ANIMAL HOUSE, DEPARTMENT OF ZOOLOGY
ST. JOHN'S COLLEGE, PALAYAMKOTTAI – 627002.

DEPARTMENT O ZOOLOGY
PROFILE

Vision

Leading into the knowledge and acquiring skills on Animal Sciences with a definitive focus on steady academic achievement and subsequent placement.

Mission

- Understanding the interactions among various living organisms with their environment.
- Applying the knowledge to develop empathy, concern and care towards the animals.
- Analyzing various concepts of animal sciences and their importance in human health.
- Evaluating the concept of biodiversity, conservation and protection of endangered species.
- Creating skills on agro-based industries like Poultry farming, Sericulture, Apiculture, Vermicomposting, Ornamental fish culture, and successive placement.

The Department of Zoology has the distinction of catering to the academic needs of graduates, postgraduates and research students. The degree course was started in 1963, and upgraded to the postgraduate status in 1986. Two years later, in 1988, M. Phil. Degree course was introduced. In the year 1997, Ph.D. research programme was also commenced, with the recognition of the Zoology Research Centre by Manonmaniam Sundaranar University, Tirunelveli. The department is equipped to provide optimal solutions to student delight by adopting newer technologies. Sericulture as a vocational subject for the B.Sc. Zoology students was conducted from the year 1997 to 2003 with the assistance from the UGC and under this programme students were given on the job training in Sericulture.

Integrated Farm:

In 2016-17, the Animal house has been upgraded as “Integrated Farm” to rear various economically important animals. The activities include Sericulture, Vermiculture, Ornamental fish culture, Apiculture and Poultry farm.

The sericulture laboratory was constructed with this objective utilizing the financial assistance received from U.G.C. for "Vocational Sericulture Course" between the years 1997 and 2002. The centre has enough infra structure to rear many layings at a time and is also designed to grow bivoltine races too. The lab is also suitable for egg production. The centre has produced more than 5 Ph.D. and more than 25 M. Phil scholars. Most of the research work concentrated on evolving region specific varieties – both silkworm races as well as mulberry variety.

A batch of layer birds, Gramapriya; a preferred layers from Veterinary College and Research Institute, Tirunelveli has been brought to our centre. This breed is developed by the Project Directorate on Poultry based in Hyderabad. This is being reared in this Animal house and expected to start laying eggs from June 2017. Another commercial chicken (CC) breed is reared in the poultry farm in the year 2021-22.

Administration, Management & Execution

Secretary	Mr. KPK Selvaraj
Principal	Dr. S. John Kennady
Vice-Principal	Dr. R. Jeyasundararaj
Bursar	Dr. Rajesh Ananthaselvan
IQAC Coordinator	Dr. A. Arul Gnanam
NAAC Coordinator	Dr. S. Suthakar Isaac

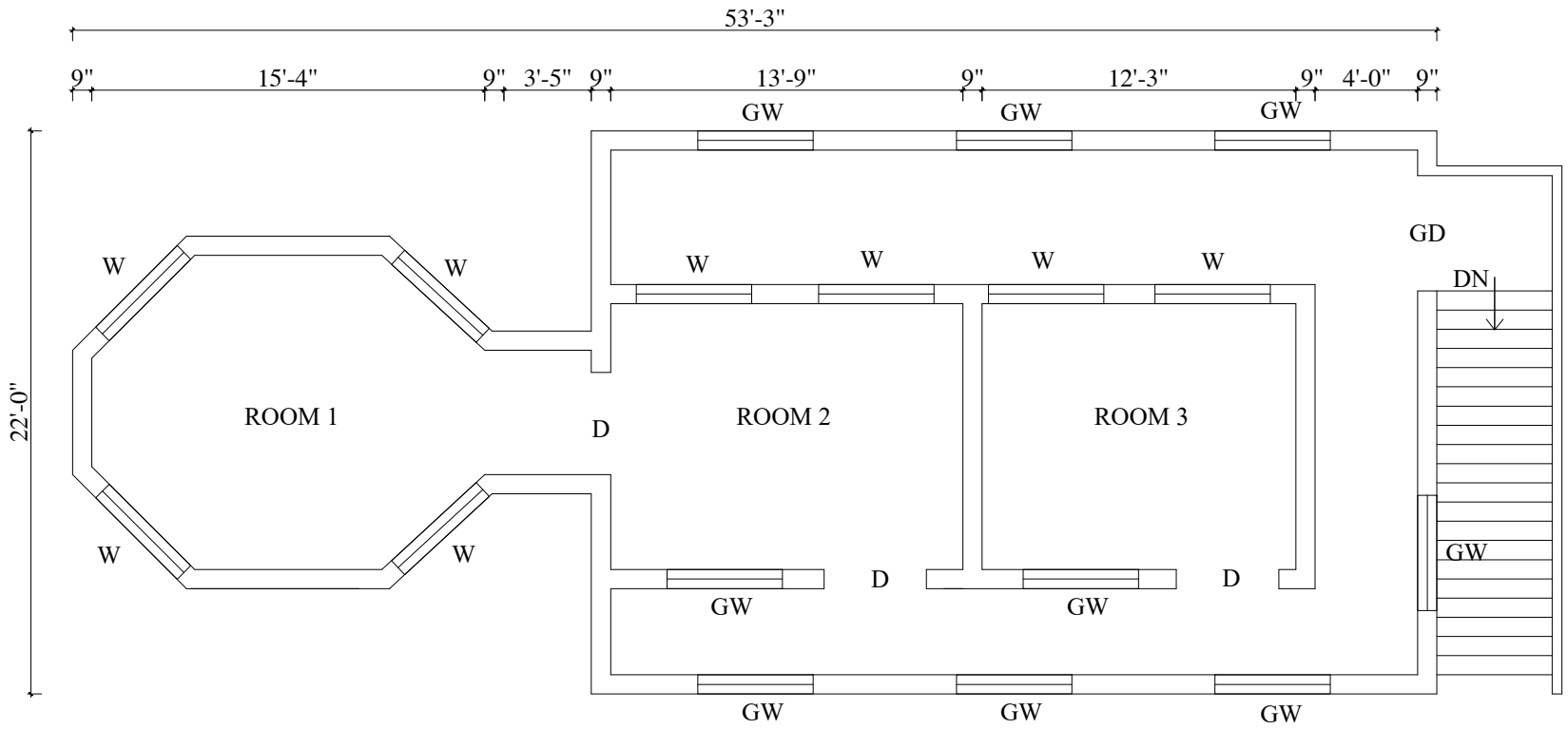
Faculty involved in various activities of Integrated farm in the Animal House

Activities	Staff adviser	HoD
Poultry farm	Dr. S. Suthakar Isaac Dr. D. Paramanantha Swamidoss	Dr. B. Jawahar Samuel
Ornamental fish culture	Dr. (Mrs). M. Rajakumari Dr. (Mrs) Ezhilmathi Sophia	
Sericulture	Dr. (Miss) W. Kerenhap Evangelin	
Pigeon research	Dr. (Mrs) D.V. Sheeba Rajakumari	
Apiculture	Dr. P. Augustus Robince Dr. D. Stephenraj	
Vermicomposting	Dr. (Mrs) Vijila Dr. (Mrs). L. Jansi	

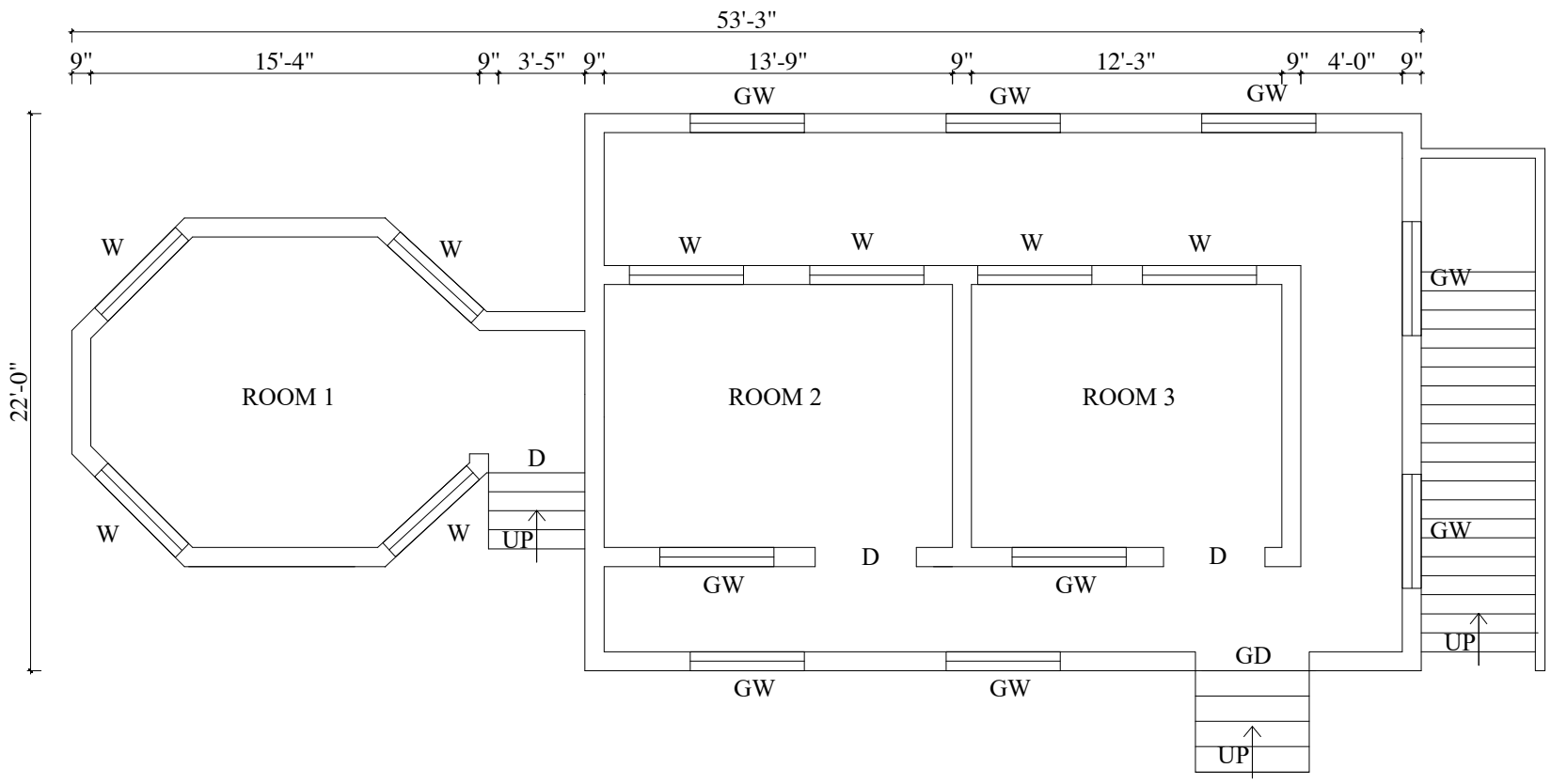
Student participation in the Integrated farm of the Animal House

FARMING	ACTIVITIES	NAME OF THE STUDENTS
Animal House	Care Taker	S. Balamurugan, Research Scholar
Poultry farm Vermicomposting Mulberry cultivation Drip Irrigation Ornamental fish culture	Vaccination Feeding Watering Egg Collection	**Team Leader:** S. Balamurugan, Research Scholar **Student volunteers:** M. Punitha Stephen K. Kamaraj N. Imran N. Ifran M. Prashoban
Sericulture	Silkworms collection (3-4 instars) Mulberry watering Feeding the silkworms Batch I during NAAC visit	**Team Leader:** Dr. J. Sundararaj, Sericulture - Researcher **Project Students:** Chidambaram S Jemila R Sharmila V Sivanesh H Suguna Devi B Suresh kumar, S

MAP SHOWING EXISTING ZOOLOGY RESEARCH CENTER FOR St. JOHN'S COLLEGE, PALAYAMKOTTAI.



EXISTING ZOOLOGY RESEARCH CENTER - FIRST FLOOR PLAN



EXISTING ZOOLOGY RESEARCH CENTER - GROUND FLOOR PLAN

GROUND FLOOR = 858 SQ.FT FIRST FLOOR = 858 SQ.FT	
TOTAL AREA = 1716 SQ.FT	
SCHEDULE OF JOINERIES	
GD	GRILL DOOR 4'6" X 7'0"
D	DOOR 4'0" X 2'0"
W	WINDOW 4'6" X 4'6"
GW	GRILL WINDOW 4'6" X 4'6"

IQAC INITIATIVE ORGANIC START-UP: INTEGRATED FARMING

DATE: 28.07.21 TIME @ 5 PM

Dr. S. John Kennady, Principal inaugurated the venture of Start-Up Initiative of Integrated Animal Farming in the Animal House Campus.

1. **Mulberry Plantation(MR2)**
   MR2 Mulberry saplings (200 nos.) supplied by Sericulture Department at VM Chatram, Tirunelveli, was planted in the Animal House Campus on 28.07.21., (15x13 = 195 + 15 saplings; 45x39 ft; 3ft gap in between the saplings).
2. **Rainwater Harvest**: The Animal House is fitted with rainwater harvest system, letting the rainwater of terrace area of ca. 875 sq ft into water well using 4" PVC pipe line. The collected rain water can be used for irrigation of mulberry plants.
3. **Drip Irrigation system:** The mulberry plants are provided with 17 row drip irrigation x 13 plants in each row. The drip irrigation is regulated by 3 valves to get adequate water pressure.
4. **Vermicomposting:** Vermicomposting of garden leaves waste using African worm, *Eudrilus eugeniae* was initiated. About 100kg of leaves collected in the College campus was put for pre-treatment and partial composting.
5. **Brooder:** A brooding chamber for day-old chicks was set-up in the animal house for hybrid Commercial Chicken (CC Breed) and Kadaknath breed supplied by Veterinary College & Research Institute, Tirunelveli.

Members present:

1. Dr. S. John Kennady (Principal)
2. Dr. R. Jeya Sundararaj (Vice-Principal)
3. Dr. A. Arul Gnanam (IQAC, Coordinator)
4. Dr. P. Rajesh Ananthaselvan (Bursar)
5. Dr. D. Kathiravan
6. Dr. S. Darwin Paul Edison
7. Dr. S. Daniel David Annaraj
8. Mr. B. Robert Jeyapaul
9. Mrs. A. Kanaga Jeya (OS)

Staff-in-charge:

1) Dr. S. Suthakar Isaac
2) Dr. D. Paramanantha Swami Doss

INTEGRATED FARMING : MULBERRY PLANTATION

28.07.21

MR2 or Mildew Resistant variety-2

(45x39 ft; 3ft gap in between the saplings 200 saplings)

INTEGRATED FARMING : MULBERRY PLANTATION 28.07.21

INTEGRATED FARMING : MULBERRY PLANTATION 28.07.21

INTEGRATED FARMING : MULBERRY PLANTATION 28.07.21

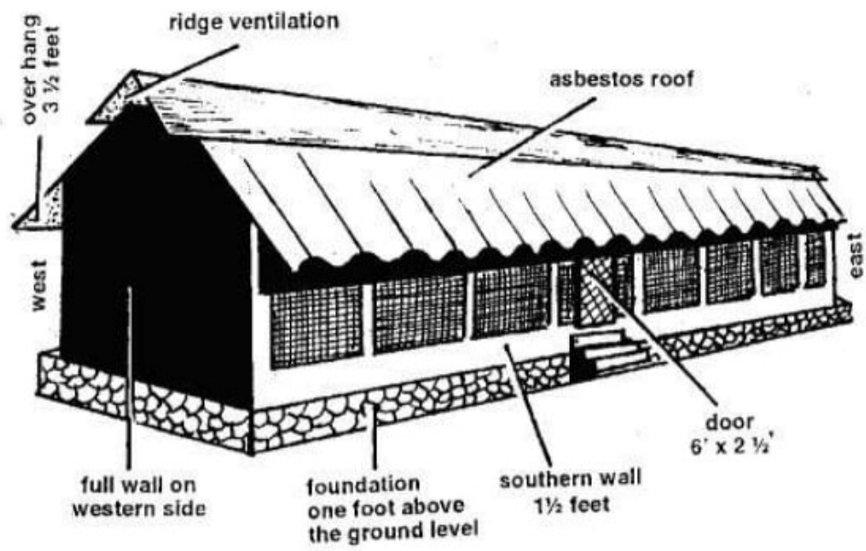
Integrated animal farm

POULTRY FARMING: NATIVE AND COMMERCIAL CHICKEN BREEDS

VACCINATION SCHEDULE FOR LAYER CHICKEN

AGE		DATE	DISEASE / VACCINE	DOSE	ROUTE OF ADMINISTRATION
	1st Day	30.07.21	Marek's Disease (At Hatchery)	0.20 Ml	Subcutaneous
	7th Day	05.08.21	Newcastle / Ranikhet Disease Vaccine (RDV) (F1/B1)	One Drop	Eye Drop
	14th Day	12.08.21	Infectious Bursal Disease (IBD/ Gumboro)	One Drop	Eye Drop
	21st Day	19.08.21	Newcastle / Ranikhet Disease (RDV) (La Sota Strain)	One Drop	Eye Drop
	42nd Day	09.09.21	Fowl Pox	0.50 Ml	IM Injection
	56th Day	23.09.21	Ranikhet Disease Vaccine (RDV) (K / R2b)	0.50 Ml	IM Injection

Supply & Vaccination schedule recommended by Veterinary College and Research Institute (VCRI), TVL



A model poultry house

Commercial chicken (CC) breed is reared in the poultry farm in the year 2021-22.

Commercial chicken (CC) breed is reared in the poultry farm
Eggs are produced and distributed

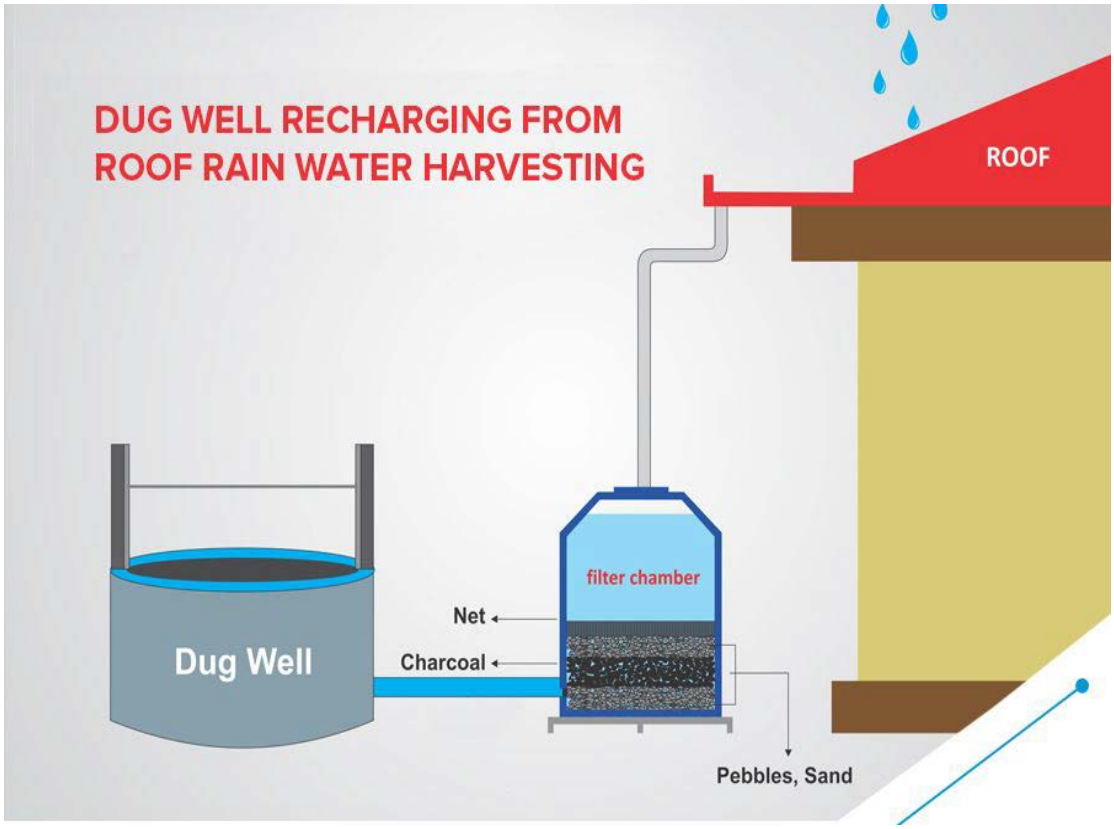
CIRCULAR

Dear Staff Members,

The Country Breed Chicken in the Poultry Farm of our Animal House started laying eggs. Staff members who like to get the fresh farm eggs (₹60 per 6 egg pack) are asked to book their orders in the College Stores.

15/12/21 PRINCIPAL

RAIN WATER HARVEST



The average annual rainfall over the district is 0.879m (879 mm).*

Rain water harvest terrace area 79.7 sq m (858 sq ft)

Rain water harvest estimation = Area sq m x rainfall (m /year) x Harvesting efficiency 99%

= 79.7 x 0.879 x 99

= 6935 m^3

Annual rain water harvest = 69,35,000 Litre/ year

Source * www.tnenvis.nic.in

Rain water harvest and recharging the water well:

Water is a precious, essential and an abiotic component of the ecosystem. Today we all are heading toward the scarcity of water, and this is mainly because of the lack of water conservation and pollution of water bodies. So, let us not waste a drop of water and start conserving water for further use.

The rainwater harvesting system is one of the best methods practised and followed to support the conservation of water. Today, scarcity of good quality water has become a significant cause of concern. However, Rainwater, which is pure and of good quality, can be used for irrigation, domestic use and also for other livestock requirements. In the Animal House the rain water is harvested for recharging the water well and used for mulberry cultivation by drip irrigation.

Rainwater harvesting systems consists of the following components:

- Catchment- Used to collect and store the captured Rainwater.
- Conveyance system – It is used to transport the harvested water from the catchment to the recharge zone.
- Filter – Used for filtering the collected Rainwater and remove debris.
- Tanks and the recharge structures: Used to store the filtered water which is ready to use.

The process of rainwater harvesting involves the collection and the storage of rainwater with the help of artificially designed systems that run off naturally or man-made catchment areas like- the rooftop, or land surface.

Several factors play a vital role in the amount of water harvested. Some of these factors are:

- The quantum of runoff
- Features of the catchments
- Impact on the environment
- Availability of the technology
- The capacity of the storage tanks
- Types of the roof, its slope and its materials
- The frequency, quantity and the quality of the rainfall
- The speed and ease with which the rainwater penetrates through the subsoil to recharge the groundwater.

The benefits of rainwater harvesting system are listed below.

- Less cost.
- Helps in reducing the water bill.
- Decreases the demand for water.
- Reduces the need for imported water.
- Promotes both water and energy conservation.
- Improves the quality and quantity of groundwater.
- Does not require a filtration system for landscape irrigation.
- This technology is relatively simple, easy to install and operate.
- It reduces soil erosion, water runoff, flooding, and pollution of surface water with fertilizers, pesticides, metals and other sediments.
- It is an excellent source of water for landscape irrigation with no chemicals and dissolved salts and free from all minerals.


Shot on OnePlus
Powered by Quad Camera


RESEARCH

DRIP IRRIGATION





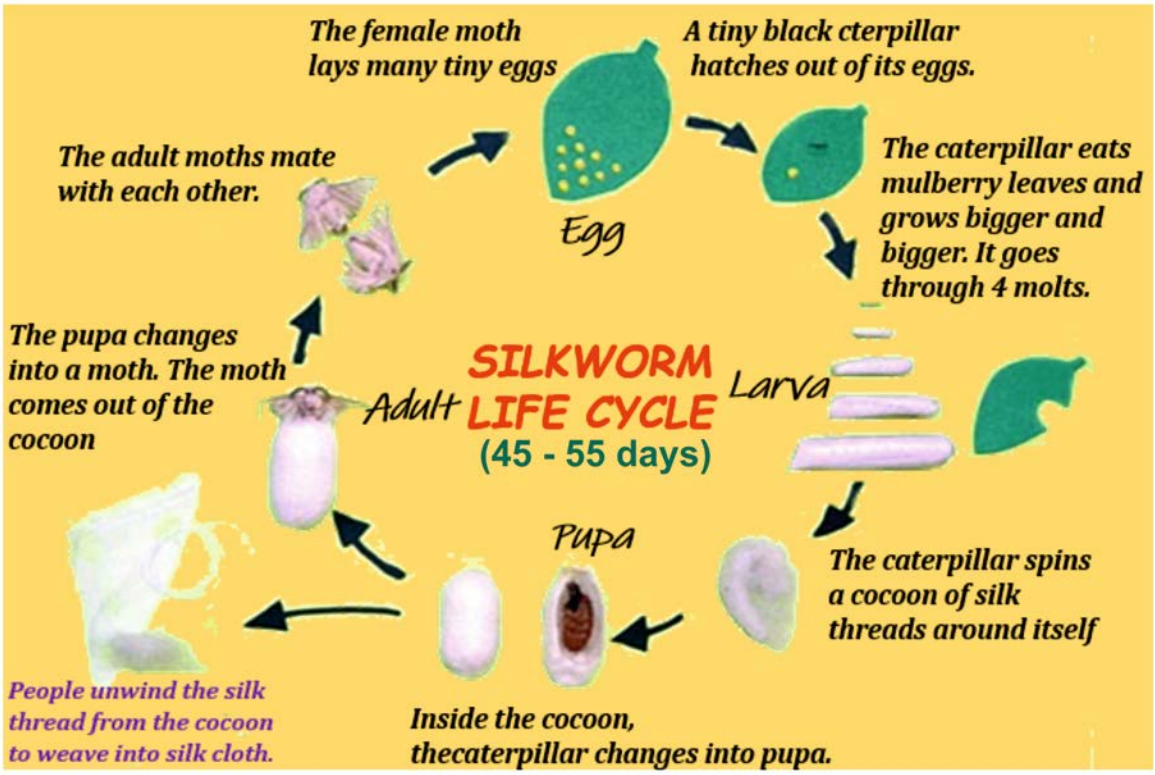


SERICULTURE

MULBERRY CULTIVATION – A PART OF SILKWORM REARING PRACTICE

PROJECT	DATE OF PLANTATION	MULBERRY VARIETY	SAPLINGS SUPPLY
2	28.07.21	**MR2 or Mildew Resistant variety-2** (45x39 ft; 3ft gap in between the saplings 200 saplings)	Sericulture Department VM Chatram, Tirunelveli,

Life cycle of silkworm



PREPARATION OF SOIL, DRIP IRRIGATION AND MULBERRY PLANTATION






SILKWORM REARING IN THE ANIMAL HOUSE

04.01.2022 Silkworm V instar larva 15 DFL


Shot on OnePlus

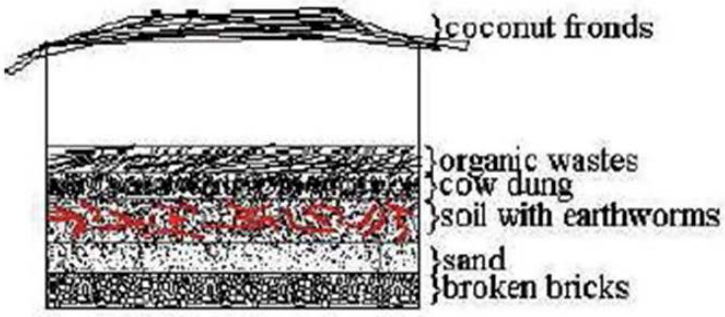

Shot on OnePlus

VERMICOMPOSTING OF GARDEN WASTE

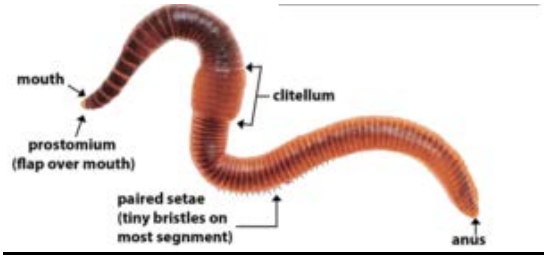
SOIL REJUVENATOR – VERMICOMPOST NUTRITIVE ORGANIC FERTILIZER

PROJECT	DATE OF INTRODUCTION	TYPE OF WASTE	SPECIES OF EARTH WORM
1	28.08.21	Garden waste (leaves) with cow dung (ca.100kg)	African worm, *Eudrilus eugeniae*.

Process of Vermicomposting



African Earth Worm



1. *Eudrilus eugeniae* is also called the "African Nightcrawler".
2. It is an earthworm species native to tropical west Africa.
3. Now widespread in warm regions under vermicompost











Vermiculture:

Vermicompost is eco-friendly and it can help in reducing landfill. The worm liquid at the bottom of the worm bin is great for the growth of garden plants. It is also known as worm tea. Worm casting can improve soil fertility by enriching it with nutrients. Worms have no eyes, no ears, and 5 hearts. They breathe through their skin.

Vermiculture Process:

The method used by farmers to multiply earthworms is by mixing high amounts of organic wastes, including the plant materials, cattle dung in a proportion of 1:1. Once the substrate medium has been made, around 40-50 earthworm species are released into the medium and it is protected from various environmental factors.Regular maintenance is important for the growth of earthworms. The temperature should be between 15 to 25-degree centigrade and the moisture level should be at 80-90%. Within one to two months, the earthworms can multiply up to 300 times relying on this process and factors affecting the process, and then they can be harvested.

Significance of Vermiculture

Vermiculture is the culture of earthworms. It is a beneficial way of improving the fertility of the plant and soil. Vermiculture mainly focuses on the breeding of worms so as to increase their population. Vermicompost is then prepared to promote the growth and development of crops. It also causes disease in plants along with increasing water retention and the porosity of the soil. This greatly reduces the need for chemical fertilizers and encourages organic matter.

VERMICOMPOST
SOIL REJUVENATOR & NUTRITIVE ORGANIC FERTILIZER

- Protect earthworms from sunlight and rain
- Cow dung is spread over plastic sheet which prevents both earthworms and vermin-wash form going into the grounds
- Beds are made of partially decomposed cow dung
- Water is sprinkled to cool down the compostable material
- Earthworms *Eisentia fetida* mixed with cow dung are put on top of the bed.
- 1 worm/Kg is inoculated for rapid reproduction and efficient vermin-composting.
- The bed is watered so that earthworms move inside from the surface
- The beds are covered with jute to maintain moisture
- Provide dark environment to protect earthworms and from predators and birds
- Moisture is maintained around 70% and temperature in the range of 20-30 degree in the bed by regular sprinkling of water.
- After 45 days upper portion (8cm) of cow dung layer is loosened with help of hand tool.
- The worms feed on an upper bed of about 8 cm. This portion becomes vermicasted in about 7-10 days. It is then removed and collected near the bed.
- Thus in 75 days about 32 cm of the bed is vermicasted and collected.
- The remaining 8 cm of layer rich with earthworms mixed with partially decomposed cow dung and the composting process is restarted.
- The vermicasted material collected from the bed is freed of worms and uncomposted /foreign matter by sieving.
- The vermicompost is packed in air tight bag.

Ornamental Fish culture: Guppies

Ornamental fishes of India are contributing about 1% of the total ornamental fish trade. These fishes are exported to the tune of 69.26 tons, having the value of Rupees 566.66 crores in 2014 – 15. On an average, an Annual growth rate of about 11 percent has been recorded during the period 1995 to 2014.

India has great potentials in Ornamental fish production due to the presence of rich biodiversity of species, favourable climatic conditions and availability of cheap labour. Kerala, Tamil Nadu and West Bengal mainly practice ornamental fish farming in India.

The ornamental species are categorized into indigenous and exotic. Availability of a vast number of native species has contributed significantly to the development of ornamental fish industry in the country. North-eastern states, West Bengal, Kerala and Tamil Nadu are blessed with potential indigenous species. About 90% of native species (85% are from northeast India) are collected and reared to meet export demand. Presently, nearly about 100 native species are reared as aquarium fish. There is also a great demand for exotic species due to its colour, shape and appearance. More than 300 exotic species are covered in the ornamental fish trade, but a greater demand for this exists. About 200 species are bred in India. 90% of India exports go from Kolkata followed by 8% from Mumbai and 2% from Chennai.

Benefits of ornamental fish culture:

- It gives pleasure to young and old people
- It enables relaxation of the mind and thereby contributes to a healthy living
- Children get to know more about nature and use their time productively.
- It creates a self-employment opportunity

Guppy Fish culture:

In the Animal House, guppies (50 nos.) are introduced in a cement tank exclusively constructed for ornamental fish culture. It provides a natural environment with aquatic plants and started to breed in this cement tank (4x4x4). The fish bred naturally within three weeks of time.

The guppy (*Poecilia reticulata*), also known as million fish and rainbow fish, is one of the world's most widely distributed tropical fish and one of the most popular freshwater aquarium fish species. It is a member of the family Poeciliidae and, like almost all American members of the family, is live-bearing. Guppies originate from northeast South America, but have been introduced to many environments and are now found all over the world. They are highly adaptable and thrive in many different environmental and ecological conditions. Male guppies, which are smaller than females, have ornamental caudal and dorsal fins. Wild guppies generally feed on a variety of food sources, including benthic algae and aquatic insect larvae. Guppies are used as a model organism in the fields of ecology, evolution, and behavioural studies.

Apiculture

Beekeeping is the maintenance of bee colonies, commonly in man-made hives, by humans. A location where bees are kept is called an apiary or "bee yard". Most such bees are honey bees in the genus *Apis*. A beekeeper (or apiarist) keeps bees in order to collect their honey and other products that the hive produce including beeswax, propolis, flower pollen, bee pollen, and royal jelly, to pollinate crops, or to produce bees for sale to other beekeepers.

The keeping of bees dates back to 9,000 years ago, and has been traditionally for honey. Since the 20th century that has become less true. In the modern era, it is more often used for crop pollination and other products, such as wax and propolis. The largest beekeeping operations are agricultural businesses that are operated for profit, though most beekeepers are non-commercial and have fewer than 25 hives. Many people have small beekeeping operations that they do as a hobby. As beekeeping technology has advanced, beekeeping has become more accessible, and urban beekeeping has become a growing trend. Some have found that "city bees" are actually healthier than "rural bees" because there are fewer pesticides and greater biodiversity.

Five important species of honey bees are as follows.

1. The rock bee, *Apis dorsata*.
2. The Indian hive bee, *Apis cerana indica*.
3. The little bee, *Apis florea*.
4. The European or Italian bee, *Apis mellifera*.
5. Dammer bee or stingless bee, *Melipona irridipennis*.

Indian hive bee / Asian bee (*Apis cerana indica*)

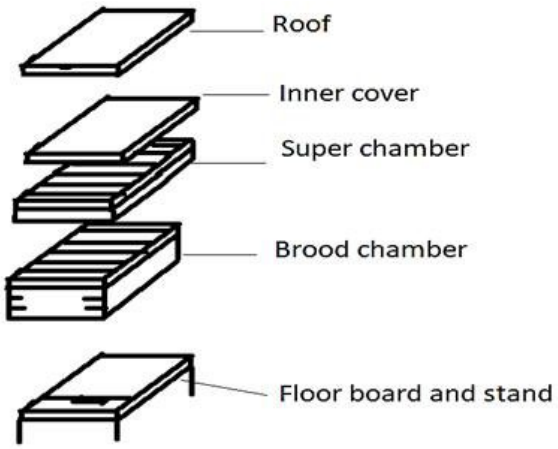
They are the domesticated species, which construct multiple parallel combs with an average honey yield of 6-8 kg per colony per year. These bees are larger than *Apis florae* but smaller than *Apis mellifera*. They are more prone to swarming and absconding. They are native of India/Asia.

The best known honey bee is the western honey bee (*Apis mellifera*), which has been domesticated for honey production and crop pollination; the only other

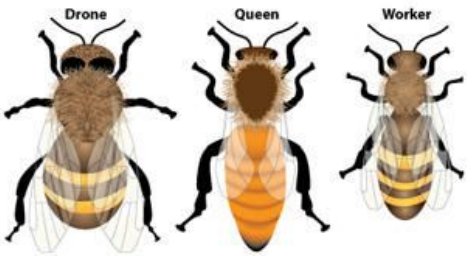
domesticated bee is the eastern honey bee (*Apis cerana*), which occurs in South Asia. Some other types of related bees produce and store honey, and have been kept by humans for that purpose, including the stingless bees, but only members of the genus *Apis* are true honey bees. Modern humans also value the wax for use in making candles, soap, lip balms, and various cosmetics.

In the Animal House, two Newton's bee hives are placed in a shade place, honey bees are abundant in the brood chamber and started constructing the super chamber. Apiculture is one of the elective and vocational subjects taught for UG students, these bee hives will be very useful in demonstration, research and training.

Newton's Bee hive



Types of Honey bees



STUDENTS INVOLVED

ACADEMIC YEAR	FARMING	ACTIVITIES	NAME OF THE STUDENTS
2021-22	Poultry farm	Feeding Watering Egg Collection	S. Balamurugan M. Punitha Stephen K. Kamaraj N. Imran N. Ifran M. Prashoban
	Sericulture	Silkworms collection (3-4 instars) Mulberry watering Feeding the silkworms Batch I during NAAC visit	**Team Leader** Dr. J. Sundararaj **Project Students** Chidambaram S Jemila R Sharmila V Sivanesh H Suguna Devi B Suresh kumar, S

INCOME GENERATED

DATE	ACTIVITIES	AMOUNT	REMITTANCE DETAILS	SIGNATURE
2021-22	Sale of cockerels 15 Nos x Rs300 To College staff	4500.00	Paid to College management Office Receipts attached	
	Sale of eggs 66 eggs x Rs 10 To College staff	660.00	Paid to College management Office Receipts attached	
2021-22	Sale of silkworm cocoons 1.900 kg x ₹400 = 760 – ₹6 (charges) To Govt Silk board, Nannagarm, Tenkasi	754.00	Paid to College management Office Receipts attached	

INTEGRATED ANIMAL FARMING
ANIMAL HOUSE, DEPARTMENT OF ZOOLOGY
ST. JOHN'S COLLEGE, PALAYAMKOTTAI – 627002

IQAC INITIATIVE AN ORGANIC START-UP

POULTRY FARMING: NATIVE AND COMMERCIAL CHICKEN BREEDS

INCOME GENERATED

DATE	ACTIVITIES	AMOUNT	REMITTANCE DETAILS	SIGNATURE
2016 -17	Sale of broilers 20 Nos x Rs200	4000.00	Paid to College management Office Receipts attached	
	Sale of eggs 250 eggs x Rs 04	1000.00	Paid to College management Office Receipts attached	
2021-22	Sale of cockerels 15 Nos x Rs300	4500.00	Paid to College management Office Receipts attached	
	Sale of eggs 66 eggs x Rs 10	660.00	Paid to College management Office Receipts attached	

INTEGRATED ANIMAL FARMING
ANIMAL HOUSE, DEPARTMENT OF ZOOLOGY
ST. JOHN'S COLLEGE, PALAYAMKOTTAI – 627002

IQAC INITIATIVE AN ORGANIC START-UP

POULTRY FARMING: NATIVE AND COMMERCIAL CHICKEN BREEDS

STUDENTS INVOLVED

ACADEMIC YEAR	FARMING	ACTIVITIES	NAME OF THE STUDENTS
2016 -17	Poultry farm	Feeding Watering Egg Collection	S. Balamurugan B. Pradeep V. Murugan V. Kannan
2021-22	Poultry farm	Feeding Watering Egg Collection	S. Balamurugan M. Punitha Stephen K. Kamaraj N. Imran N. Ifran M. Prashoban
	Sericulture	Silkworms collection (3-4 instars) Mulberry watering Feeding the silkworms	S. Chidambaram H. Sivanesh S. Suresh Kumar