

DEPARTMENT OF BOTANY

LIST OF STUDENTS: 11 (SCAN COPY)

- i. DOLON MAJI
- ii. INJAMAMUL HOQUE
- iii. RUMELA GHOSH
- iv. SHARMISTHA KONER
- v. MAHADEV KISKU
- vi. SANDIP DAS
- vii. SNEHESIS MONDAL
- viii. DEBOJYOTI ROY
- ix. SNIGDHA BHATTACHARYA
- x. SANNIK MISHRA
- xi. MONALISA MAJHI

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Ref. No. Date

LIST OF STUDENTS

| SL. NO. | CLASS ROLL | NAME OF THE STUDENTS | YEAR & SEMESTER | CONTACT NUMBER | CONTACT NO. OF PARENTS | REMARKS |
|---------|------------|----------------------|-------------------------|----------------|------------------------|---------|
| 1. | 10 | MAHADEV KISKU | 6 TH SEM(H) | 6295803052 | 7718568731 | |
| 2. | 13 | SANDIP DAS | 6 TH SEM(H) | 7001410169 | 9932296095 | |
| 3. | 217 | DOLON MAJI | 1 ST SEM(H) | 8101943103 | 9749998453 | |
| 4. | 104 | SHARMISTHA KONER | 1 ST SEM(H) | 8944982259 | 9474780124 | |
| 5. | 216 | INJAMAMUL HAQUE | 1 ST SEM(H) | 8509555314 | 7908676943 | |
| 6. | 102 | RUMELA GHOSH | 1 ST SEM(H) | 9832914069 | 9647839059 | |
| 7. | 66 | SNEHESIS MONDAL | 6 TH SEM (H) | 7029865416 | 8129771849 | |
| 8. | 71 | DEBOJYOTI ROY | 1 ST SEM (H) | 9339214488 | 9732051092 | |
| 9. | 75 | SNIGDHA BHATTACHARYA | 4 TH SEM (H) | 6290890974 | 9339982759 | |
| 10. | 1262 | SANNIK MISHRA | 1 ST SEM (H) | 8944800382 | 911174977 | |
| 11. | 1261 | MONALISA MAJHI | 1 ST SEM (H) | 9883212973 | 9649413925 | |

LIST OF STAFF

| SL. NO | NAME OF THE STAFFS | CONTACT NUMBER |
|--------|------------------------|--------------------------|
| 01 | DR. SUNANDA MONDAL | 8617607272 |
| 02 | PROF. RANJAN PAUL | 8637822961 7063748305 |
| 03 | AHANA RAY | 7091468387 |
| 04 | PARTHA PRATIM KARMAKAR | 9475245761 |

12. Ayan Dasgupta 6th Sem 9882676653 9476492603
13. Ayan Dasgupta 1st Sem 9882676653
14. Anurima Ghosh 1st Sem 9882676653 9735577063
15. Munim Ghosh 6th Sem 8297028717 3149560462
16. Souvik Nayek 403582679514 9018282277
Sakina Dasgupta
Teacher-in-Charge
Gushkara Mahavidyalaya
Teacher-in-charge
Gushkara Mahavidyalaya

04.08.2023

TITLE OF THE PROJECT:

1. FIELD REPORT TO VISIT INDIAN COUNCIL OF AGRICULTURAL RESEARCH, (ICAR) RATHINDRA KRISHI VIGYANKENDRA, SRINIKETAN.
2. PROJECT ON ECONOMICALLY IMPORTANCE OF SOME PLANTS.

DURATION WITH DATE:

1. 11AM TO 4 PM (05.04.2023)
2. 24.01.2023 TO 23.03.2023

PROJECT WORK COMPLETION CERTIFICATES:

CERTIFICATE

This is to certify that the project sub-mitted by Rumela Ghosh, B.Sc/
B.A./B.Com, Hons./Gen. Roll No. 20231002023 has been accomplished under my
supervision as a part of curriculum in consideration of the objective stated
therein for the Semester-I (under CBCS) Exam, for the present academic
session.

Suman Mondal
Signature of Project Guide with date

Name : Rumela Mondal
Designation : Associate Professor
Department : Botany
College : Gushkara Mahavidyalaya

आचार्य
श्री नरेन्द्र मोदी
ACHARYA (CHANCELLOR)
SHRI NARENDRA MODI

उपाचार्य
प्रो. विद्युत चक्रवर्ती
UPACHARYA (VICE-CHANCELLOR)
PROF. BIDYUT CHAKRABARTY

विश्वभारती
VISVA-BHARATI
पल्ली शिक्षा भवन
(कृषि संस्थान)
PALLI-SIKSHA BHAVANA
(Institute of Agriculture)
संस्थापक
रबीन्द्रनाथ टागोर
FOUNDED BY
RABINDRANATH TAGORE

पो-श्रीनिकेतन-731236,
P.O.-SRINIKETAN-731236,
जिला-बीरभूम, पश्चिम बंगाल, भारत
DIST.-BIRBHUM, WEST BENGAL, INDIA
रेल स्टेशन : बोलपुर
Rly. Station : Bolpur
Website : www.visva-bharati.ac.in

सं./No. PSB/2-V/03/2023-24 दिनांक / Date : 05.04.2023

From
Prof. A. K. Barik
Principal (Dean)

To
The Teacher-in-Charge
Gushkara Mahavidyalaya
Purba Bardhaman, West Bengal

Dear Madam,

This is to certify that UG students of Botany department, Gushkara Mahavidyalaya, accompanied by their respected teachers visited Department of Horticulture and Post Harvest Technology and Rathindra Krishi Vigyan Kendra, Palli Siksha Bhavana (Institute of Agriculture), Visva-Bharati, Sriniketan, Birbhum as a part of an academic excursion on 05.04.2023.

Yours sincerely,
A. K. Barik
(A. K. Barik)

REPORT OF THE FIELD WORK: (PDF OF THE REPORT OF THE STUDENT)

1. PDF OF SANDIP DAS
2. PDF OF RUMELA GHOSH

SAMPLE PHOTOGRAPH OF THE FIELD WORK:



PERMISSION LETTER FOR FIELD WORK FROM COMPETENT AUTHORITY

Phone : 03452 - 255 105
Fax : 03452 - 257 635

GUSHKARA MAHAVIDYALAYA
P.O.: Gushkara, Dist.: Purba Bardhaman, Pin - 713128 (W.B.)
E-mail : guskaramahavidyalaya@gmail.com

Ref. No.E-5/533..... Date 24.03.2023.....

To
The Principal
Rathindra Krishi Vigyan Kendra
Palli-Siksha Bhavana (Institute of Agriculture)
Visva-Bharati, Sriniketan
Birbhum, West Bengal-731236
principal.psb@visva-bharati.ac.in
rkvk@visva-bharati.ac.in

Subject: Seeking Permission to visit Rathindra Krishi Vigyan Kendra on 5th April, 2023.

Respected Sir,

With due respect it is our humble submission before you that in accordance to our Botany curriculum in UG level (under The University of Burdwan) our students have to make an academic visit at least one Indian Agricultural Research Institute. So, we have planned to conduct the academic excursion for this academic year at your esteemed Rathindra Krishi Vigyan Kendra Palli-Siksha Bhavana (Institute of Agriculture) along with Department of Horticulture & Post-Harvest Technology on 5th April, 2023. In this regard it is to draw your kind and sympathetic notice that a certificate of the said academic visit from your end is required as per our CBCS Regulation.

The undersigned would request your good self to kindly allow us the visit and make necessary arrangements for the same.

Thanking you.

Yours Sincerely,
Sabina Begum
Teacher-in-Charge
Gushkara Mahavidyalaya
Teacher-in-charge
Gushkara Mahavidyalaya

Enclosure:
1. List of Faculty members & Students who will visit your centre.

PROJECT WORK BOOK

Subject : BOTANY HONOURS
(Compulsory)

CHOICE BASED CREDIT SYSTEM (CBCS)
(III SEMESTER)
CC-7 (Economic Botany)

Name of the Student : *Rumela Ghosh*

Roll No. : 210311000034

Registration No. : 202001001435 of 2020-21

ECONOMICALLY IMPORTANT PLANT

INTRODUCTION

This guide offers a systematic approach to the wide variety of published materials on the use of plants by people. Economic plants are defined as being useful either directly, as in food, or indirectly, as products we use or that enhance the environment. Plants are essential to life on earth; they produce the oxygen we breathe through photosynthesis and provide much of the food we eat. Some species provide medicines and promote healing, others are used for insect control or to conserve water. Plants with dense root systems prevent soil erosion and those with brightly colored flowers attract pollinators. Plants have been used to control body functions and fertility, to poison, and to make clothing, paper, and rubber. The guide includes references to materials on food plants, fiber plants, dye plants, edible plants, medicinal plants, oilseed plants, as well as plants used in ceremonies, cultivated for commercial purposes, or used as shelter.

PROJECT COPY OF SOME ECONOMICALLY IMPORTANT PLANTS

| SERIAL NO. | LOCAL NAME | SCIENTIFIC NAME | FAMILY |
|------------|--------------|--------------------------------|---------------|
| 1 | RICE | <u>Oryza sativa</u> | GRAMINAE |
| 2 | WHEAT | <u>Triticum aestivum</u> | POACEAE |
| 3 | SOYBEAN | <u>Glycine max</u> | FABACEAE |
| 4 | GROUNDNUT | <u>Arachis hypogaea</u> | FABACEAE |
| 5 | PIGEON PEA | <u>Cajanus cajan</u> | FABACEAE |
| 6 | CHICK PEA | <u>Cicer arietinum</u> | FABACEAE |
| 7 | SAFFRON | <u>Crocus sativus</u> | IRIDACEAE |
| 8 | SUGARCANE | <u>Saccharum officinarum</u> | POACEAE |
| 9 | POTATO | <u>Solanum tuberosum</u> | SOLANACEAE |
| 10 | BLACK PEPPER | <u>Piper nigrum</u> | PIPERACEAE |
| 11 | FENNEL | <u>Foeniculum vulgari</u> | APIACEAE |
| 12 | CLOVE | <u>Syzygium aromaticum</u> | MYRTACEAE |
| 13 | TEA | <u>Camellia sinensis</u> | THEACEAE |
| 14 | COFFEE | <u>Coffea canephora</u> | RUBIACEAE |
| 15 | COCONUT | <u>Cocos nucifera</u> | ARECEACEAE |
| 16 | MUSTARD | <u>Brassica nigra</u> | BRASSICACEAE |
| 17 | ROSA | <u>Hibiscus rosa sinensis</u> | MALVACEAE |
| 18 | EUCALYPTUS | <u>Eucalyptus obliqua</u> | MYRTACEAE |
| 19 | RUBBER | <u>Ficus elastica</u> | EUPHORBIACEAE |
| 20 | KALMEGH | <u>Andrographis paniculata</u> | ACANTHIACEAE |
| 21 | NAYANTARA | <u>Catharanthus roseus</u> | APOCYNACEAE |
| 22 | SEGUN | <u>Tectona grandis</u> | LAMIACEAE |

| | | | |
|----|-----------|-----------------------------|----------------|
| 23 | PINUS | <u>Pinus sabiniana</u> | PINACEAE |
| 24 | PAT | <u>Corchorus olitorius</u> | MALVACEAE |
| 25 | CINCHONA | <u>Cinchona officinalis</u> | RUBIACEAE |
| 26 | DIGITALIS | <u>Digitalis purpurea</u> | PLANTAGINACEAE |
| 27 | PAPAVER | <u>Papaver somniferum</u> | PAPAVERACEAE |
| 28 | CANNABIS | <u>Cannabis sativa</u> | CANNABACEAE |
| 29 | TOBACCO | <u>Nicotiana tabacum</u> | SOLANACEAE |
| 30 | COTTON | <u>Gossypium arboreum</u> | MALVACEAE |

Cannabis sativa



Oryza sativa

SERIAL NO :- 01

LOCAL NAME:- RICE

SCIENTIFIC NAME:- Oryza sativa

FAMILY:- Graminae

IDENTIFYING CHARACTER:-

The rice plant can grow to 1–1.8 m (3.3–5.9 ft) tall, occasionally more depending on the variety and soil fertility. It has long, slender leaves 50–100 cm (20–39 in) long and 2–2.5 cm (0.79–0.98 in) broad. The small wind-pollinated flowers are produced in a branched arching to pendulous inflorescence 30–50 cm (12–20 in) long. The edible seed is a grain (caryopsis) 5–12 mm (0.20–0.47 in) long and 2–3 mm (0.079–0.118 in) thick.

PARTS USED:- [SEED]

ECONOMIC USE:-

Rice is the principal food crop grown right from historic days. Today, this unique grain helps sustain two-thirds of the world's population. It is life for thousands of millions of people. It is deeply embedded in the cultural heritage of their societies. About four-fifths of the world's rice is produced by small-scale farmers and is consumed locally. Rice cultivation is the principal activity and source of income for about 100 million households in Asia and Africa



Triticum aestivum

SERIAL NO :- 02

LOCAL NAME:-WHEAT

SCIENTIFIC NAME:-Triticum aestivum

FAMILY:-Poaceae

IDENTIFYING CHARACTERS:-

Leaves emerge from the shoot apical meristem in a telescoping fashion until the transition to reproduction i.e. flowering. The last leaf produced by a wheat plant is known as the flag leaf. It is denser and has a higher photosynthetic rate than other leaves, to supply carbohydrate to the developing ear.

Wheat roots are among the deepest of arable crops, extending as far down as 2m. While the roots of a wheat plant are growing, the plant also accumulates an energy store in its stem, in the form of fructans, which helps the plant to yield under drought and disease pressure, but it has been observed that there is a trade-off between root growth and stem non-structural carbohydrate reserves.

PARTS USED:- [SEED]

ECONOMIC USE:-

Wheat is unique as a source of the gluten proteins that alone have the dough-forming properties needed to make the variety of foods that rely on the rheology of dough, namely, leavened breads, pasta, noodles, flat/pocket breads, steamed breads, biscuits, cakes, pastries and various food ingredients. Therefore wheat, an essential part of the diet of most of the world's population, is prominent in world trade. Its quality traits are the most critical of all the grains. The glutenin polypeptides (subunits) make a substantial contribution to the wheat quality and their composition is used extensively as a selection tool in breeding and in quality-based segregation of grain.

Triticum aestivum



Glycine max

SERIAL NO :- 03

LOCAL NAE:- SOYBEAN

SCIENTIFIC NAME:-Glycine max

FAMILY:-Fabaceae

IDENTIFYING CHARACTERS:-

The genus *Glycine* Willd. is divided into two subgenera, *Glycine* and *Soja*. The subgenus *Soja* (Moench) F.J. Herm. includes the cultivated soybean, *Glycine max* (L.) Merr., and the wild soybean, *Glycine soja* Sieb. & Zucc. Both species are annuals. *Glycine soja* is the wild ancestor of *Glycine max*, and grows wild in China, Japan, Korea and Russia. The subgenus *Glycine* consists of at least 25 wild perennial species: for example, *Glycine canescens* F.J. Herm. and *G. tomentella* Hayata, both found in Australia and Papua New Guinea. Perennial soybean (*Neonotonia wightii*) originated in Africa and is now a widespread pasture crop in the tropics.

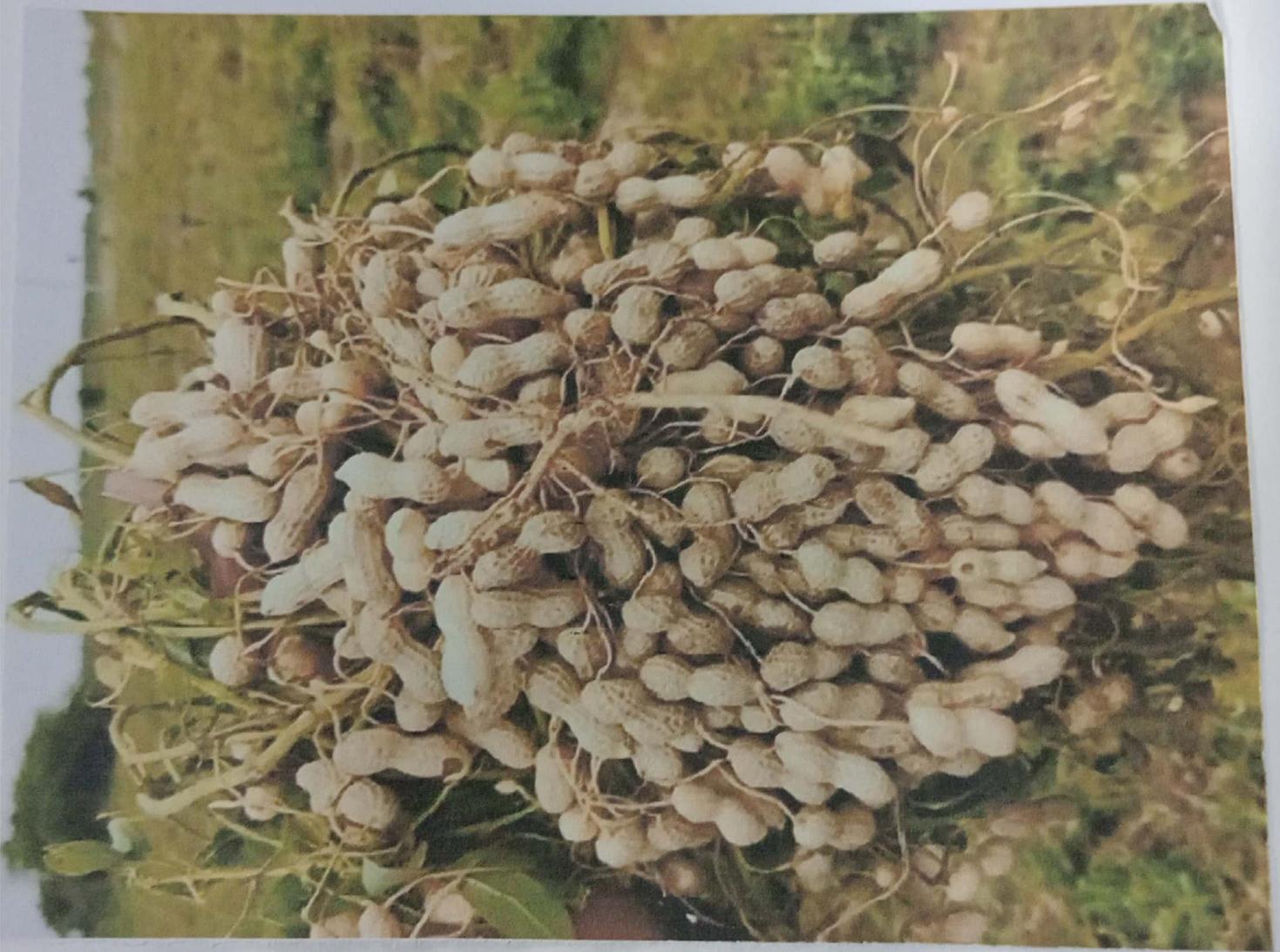
Like some other crops of long domestication, the relationship of the modern soybean to wild-growing species can no longer be traced with any degree of certainty. It is a cultural variety with a very large number of cultivars.

PARTS USED:- [SEED]

ECONOMIC USE:-

Soybeans are a globally important crop, providing oil and protein. In the United States, the bulk of the harvest is solvent-extracted with hexane, and the "toasted" defatted soymeal (50% protein) then makes possible the raising of farm animals (e.g. chicken, hog, turkey) on a large industrial scale. Soybean products are used in a large variety of processed foods.

During World War II, soybeans became important in both North America and Europe chiefly as substitutes for other protein foods and as a source of edible oil. During the war, the soybean was discovered as fertilizer by the United States Department of Agriculture



Arachis hypogaea

SERIAL NO :- 04

LOCAL NAE:-GROUNDNUT

SCIENTIFIC NAME:-Arachishypogaea

FAMILY:-Fabaceae

IDENTIFYING CHARACTERS:-

Peanut is an annual herbaceous plant growing 30 to 50 cm (1.0 to 1.6 ft) tall. As a legume, it belongs to the botanical family Fabaceae (also known as Leguminosae, and commonly known as the bean or pea family). Like most other legumes, peanuts harbor symbiotic nitrogen-fixing bacteria in their root nodules.

The leaves are opposite and pinnate with four leaflets (two opposite pairs; no terminal leaflet); each leaflet is 1 to 7 cm ($\frac{3}{8}$ to $2\frac{3}{4}$ in) long and 1 to 3 cm ($\frac{3}{8}$ to 1 in) across. Like those of many other legumes, the leaves are nyctinastic; that is, they have "sleep" movements, closing at night.

The flowers are 1.0 to 1.5 cm (0.4 to 0.6 in) across, and yellowish orange with reddish veining. They are borne in axillary clusters on the stems above ground, and last for just one day. The ovary is located at the base of what appears to be the flower stem, but is actually a highly elongated floral cup.

Peanut pods develop underground, an unusual feature known as geocarpy. After fertilization, a short stalk at the base of the ovary (termed a pedicel) elongates to form a thread-like structure known as a "peg". This peg grows down into the soil, and the tip, which contains the ovary, develops into a mature peanut pod. Pods are 3 to 7 cm (1.2 to 2.8 in) long, normally containing one to four seeds.

PARTS USED:- [SEED]

ECONOMIC USE:-

Boiled peanuts are a popular snack in the southern United States, as well as in India, China, and West Africa. In the US South, boiled peanuts are often prepared in briny water, and sold in street side stands. Peanut butter is a food paste or spread made from ground dry roasted peanuts.

Peanuts have a variety of industrial end uses. Paint, varnish, lubricating oil, leather dressings, furniture polish, insecticides, and nitroglycerin are made from peanut oil. Soap is made from saponified oil, and many cosmetics contain peanut oil and its derivatives. The protein portion is used in the manufacture of some textile fibers. Peanut shells are used in the manufacture of plastic, wallboard, abrasives, fuel, cellulose (used in rayon and paper), and mucilage (glue).



Cajanus cajan

SERIAL NO :- 05

LOCAL NAE:-PIGEON PEA

SCIENTIFIC NAME:-Cajanuscajan

FAMILY:- Fabaceae

IDENTIFYING CHARACTERS:-

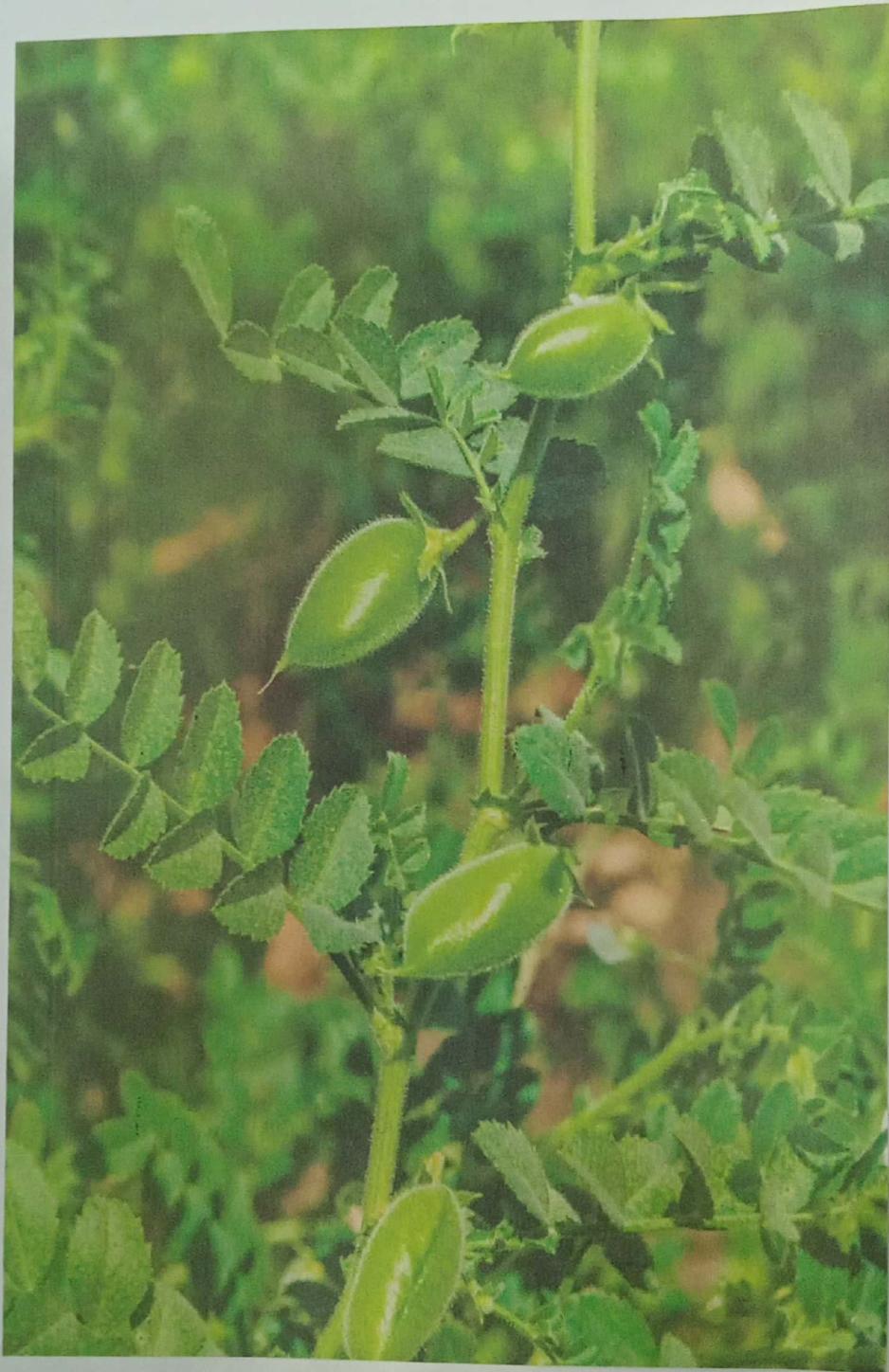
The pigeon pea is the first seed legume plant to have its complete genome sequenced. The sequencing was first accomplished by a group of 31 Indian scientists from the Indian Council of Agricultural Research. It was then followed by a global research partnership, the International Initiative for Pigeonpea Genomics (IIPG), led by ICRISAT with partners such as BGI-Shenzhen (China), US research laboratories like University of Georgia, University of California-Davis, Cold Spring Harbor Laboratory, and National Centre for Genome Resources, European research institutes like the National University of Ireland Galway. It also received support from the CGIAR Generation Challenge Programme, US National Science Foundation and in-kind contribution from the collaborating research institutes. It is the first time that a CGIAR-supported research center such as ICRISAT led the genome sequencing of a food crop. There was a controversy over this as CGIAR did not partner with a national team of scientists and broke away from the Indo American Knowledge Initiative to start their own sequencing in parallel. The 616 mature microRNAs and 3919 long non-codingRNAs sequences were identified in the genome of pigeon pea

PARTS USED:-[SEED]

ECONOMIC USE:-

Pigeon peas are both a food crop (dried peas, flour, or green vegetable peas) and a forage/cover crop. In combination with cereals, pigeon peas make a well-balanced meal and hence are favoured by nutritionists as an essential ingredient for balanced diets. The dried peas may be sprouted briefly, then cooked, for a flavor different from the green or dried peas. Sprouting also enhances the digestibility of dried pigeon peas via the reduction of indigestible sugars that would otherwise remain in the cooked dried peas.

In India, split pigeon peas, called *tur* (तूर) in Marathi, *toor dal* (तूरदाल) or 'arhar' (अरहर) in Hindi and *areharki dal* in Urdu, *kandhipappu* () in Telugu, *thuvaramparuppu* in Tamil Nadu, *togaribele* in Kannada are one of the most popular pulses, being an important source of protein in a mostly vegetarian diet. In regions where it grows, fresh young pods are eaten as a vegetable in dishes such as *sambar*. Whole pigeon peas are called *arhar dal* in Hindi. In Ethiopia, not only the pods, but also the young shoots and leaves are cooked and eaten.



Cicer arietinum

SERIAL NO :- 06

LOCAL NAE:-CHICK PEAK(কাবগিছোলা)

SCIENTIFIC NAME:-Cicerarietinum

FAMILY:- Fabaceae

IDENTIFYING CHARACTERS:-

Two varieties of chickpea: the larger light tan *Kabuli* and variously coloured *Desi* chickpea. They are green when picked early and vary through tan or beige, speckled, dark brown to black. 75% of world production is of the smaller *desi* type. The larger garbanzo bean or *hummus* was introduced into India in the 18th century.

Sequencing of the chickpea genome has been completed for 90 chickpea genotypes, including several wild species.[15] A collaboration of 20 research organizations, led by the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), sequenced CDC Frontier, a *kabuli* chickpea variety, and identified more than 28,000 genes and several million genetic markers.

PARTS USED :- [SEED]

ECONOMIC USE :-

Chickpeas and Bengal grams are used to make curries and are one of the most popular vegetarian foods in South Asia and in diaspora communities of many other countries served with variety of breads or steamed rice. Popular dishes in Indian cuisine are made with chickpea flour, such as Mirchi Bada and *mirapakayabaji*. In India, as well as in the Levant, unripe chickpeas are often picked out of the pod and eaten as a raw snack and the leaves are eaten as a leaf vegetable in salads.

In India, desserts such as besan halwa and sweets such as besanbarfi and laddu are made. Chickpeas are usually rapidly boiled for 10 minutes and then simmered for a longer period. Dried chickpeas need a long cooking time (1–2 hours) but will easily fall apart when cooked longer. If soaked for 12–24 hours before use, cooking time can be shortened by around 30 minutes. Chickpeas can also be pressure cooked or *sous vide* cooked at 90 °C (194 °F).



Crocus sativus

SERIAL NO :- 07

LOCAL NAE:- SAFFRON

SCIENTIFIC NAME:- Crocus sativus

FAMILY:- IRIDACEAE

IDENTIFYING CHARACTERS:-

Crocus sativus has a corm, which holds leaves, bracts, bracteole, and the flowering stalk. [4] These are protected by the corm underground. *C. sativus* generally blooms with purple flowers in the autumn. The plant grows about 10 to 30 cm high. *C. sativus* is a triploid with 24 chromosomes, which means it has three times the haploid number of chromosomes. This makes the plant sterile due to its inability to pair chromosomes during meiosis.

PARTS USED :- FLOWER (STIGMAS)

ECONOMIC USE:-

Saffron is considered to be the most valuable spice by weight. See spice. Depending on the size of harvested stigmas, 50,000–75,000 *Crocus sativus* plants are needed to produce about 1 pound of saffron; each flower only produces three stigmas. Stigmas should be harvested mid-morning when the flowers are fully opened. The saffron crocus (*Crocus sativus*) should not be confused with "meadow" saffron or autumn crocus (*Colchicum autumnale*) which is poisonous.

Crocus sativus



Saccharum officinarum

SERIAL NO :- 08

LOCAL NAE:-SUGARCANE

SCIENTIFIC NAME:-Saccharum officinarum

FAMILY:-Poaceae

IDENTIFYING CHARACTERS:-

Saccharum officinarum, a perennial plant, grows in clumps consisting of a number of strong unbranched stems. A network of rhizomes forms under the soil which sends up secondary shoots near the parent plant. The stems vary in colour, being green, pinkish, or purple and can reach 5 m (16 ft) in height. They are jointed, nodes being present at the bases of the alternate leaves. The internodes contain a fibrous white pith immersed in sugary sap. The elongated, linear, green leaves have thick midribs and saw-toothed edges and grow to a length of about 30 to 60 cm (12 to 24 in) and width of 5 cm (2.0 in). The terminal inflorescence is a panicle up to 60 cm (24 in) long, a pinkish plume that is broadest at the base and tapering towards the top. The spikelets are borne on side branches and are about 3 mm (0.12 in) long and are concealed in tufts of long, silky hair. The fruits are dry and each one contains a single seed.^{[9][11][12]} Sugarcane harvest typically occurs before the plants flower, as the flowering process causes a reduction in sugar content.

PARTS USED:- [STEM]

ECONOMIC USE :-

Portions of the stem of this and several other species of sugarcane have been used from ancient times for chewing to extract the sweet juice. It was cultivated in New Guinea about 8000 years ago for this purpose. Extraction of the juice and boiling to concentrate it was probably first done in India more than 2000 years ago.

Saccharum officinarum and its hybrids are grown for the production of sugar, ethanol, and other industrial uses in tropical and subtropical regions around the world. The stems and the byproducts of the sugar industry are used for feeding to livestock. Pigs fed on sugarcane juice and a soy-based protein supplement produced stronger piglets that grew faster than those on a more conventional diet. As its specific name (*officinarum*, "of dispensaries") implies, it is also used in traditional medicine both internally and externally.



Solanum tuberosum

SERIAL NO :- 09

LOCAL NAE:-POTATO

SCIENTIFIC NAME:-Solanum tuberosum

FAMILY:-SOLANACEAE

IDENTIFYING CHARACTERS:-

Potato plants are herbaceous perennials that grow about 60 cm (24 in) high, depending on variety, with the leaves dying back after flowering, fruiting and tuber formation. They bear white, pink, red, blue, or purple flowers with yellow stamens. In general, the tubers of varieties with white flowers have white skins, while those of varieties with colored flowers tend to have pinkish skins. Potatoes are mostly cross-pollinated by insects such as bumblebees, which carry pollen from other potato plants, though a substantial amount of self-fertilizing occurs as well. Tubers form in response to decreasing day length, although this tendency has been minimized in commercial varieties.

After flowering, potato plants produce small green fruits that resemble green cherry tomatoes, each containing about 300 seeds. Like all parts of the plant except the tubers, the fruit contain the toxic alkaloid solanine and are therefore unsuitable for consumption. All new potato varieties are grown from seeds, also called "true potato seed", "TPS" or "botanical seed" to distinguish it from seed tubers. New varieties grown from seed can be propagated vegetatively by planting tubers, pieces of tubers cut to include at least one or two eyes, or cuttings, a practice used in greenhouses for the production of healthy seed tubers. Plants propagated from tubers are clones of the parent, whereas those propagated from seed produce a range of different varieties.

PARTS USED :-[STEM]

ECONOMIC USE:-

Potatoes are prepared in many ways: skin-on or peeled, whole or cut up, with seasonings or without. The only requirement involves cooking to swell the starch granules. Most potato dishes are served hot but some are first cooked, then served cold, notably potato salad and potato chips (crisps). Common dishes are: mashed potatoes, which are first boiled (usually peeled), and then mashed with milk or yogurt and butter; whole baked potatoes; boiled or steamed potatoes; French-fried potatoes or chips; cut into cubes and roasted; scaloped, diced, or sliced and fried (home fries); grated into small thin strips and fried (hash browns); grated and formed into dumplings, Röstl or potato pancakes. Unlike many foods, potatoes can also be easily cooked in a microwave oven and still retain nearly all of their nutritional value, provided they are covered in ventilated plastic wrap to prevent moisture from escaping; this method produces a meal very similar to a steamed potato, while retaining the appearance of a conventionally baked potato. Potato chunks also commonly appear as a stew ingredient. Potatoes are boiled between 10 and 25 minutes, depending on size and type, to become soft.



Piper nigrum.

SERIAL NO :- 10

LOCAL NAE:- BLACK PEPPER

SCIENTIFIC NAME:- Pipernigrum

FAMILY:-PIPERACEAE

IDENTIFYING CHARACTERS:-

The pepper plant is a perennial woody vine growing up to 4 m (13 ft) in height on supporting trees, poles, or trellises. It is a spreading vine, rooting readily where trailing stems touch the ground. The leaves are alternate, entire, 5 to 10 cm (2.0 to 3.9 in) long and 3 to 6 cm (1.2 to 2.4 in) across. The flowers are small, produced on pendulous spikes 4 to 8 cm (1.6 to 3.1 in) long at the leaf nodes, the spikes lengthening up to 7 to 15 cm (2.8 to 5.9 in) as the fruit matures.^[9] Pepper can be grown in soil that is neither too dry nor susceptible to flooding, moist, well-drained and rich in organic matter (the vines do not do too well over an altitude of 900 m (3,000 ft) above sea level). The plants are propagated by cuttings about 40 to 50 cm (16 to 20 in) long, tied up to neighbouring trees or climbing frames at distances of about 2 m (6 ft 7 in) apart; trees with rough bark are favoured over those with smooth bark, as the pepper plants climb rough bark more readily. Competing plants are cleared away, leaving only sufficient trees to provide shade and permit free ventilation. The roots are covered in leaf mulch and manure, and the shoots are trimmed twice a year. On dry soils, the young plants require watering every other day during the dry season for the first three years. The plants bear fruit from the fourth or fifth year, and then typically for seven years. The cuttings are usually cultivars, selected both for yield and quality of fruit.

A single stem bears 20 to 30 fruiting spikes. The harvest begins as soon as one or two fruits at the base of the spikes begin to turn red, and before the fruit is fully mature, and still hard; if allowed to ripen completely, the fruit lose pungency, and ultimately fall off and are lost. The spikes are collected and spread out to dry in the sun, then the peppercorns are stripped off the spikes.

Black pepper is native either to Southeast Asia or South Asia. Within the genus Piper, it is most closely related to other Asian species such as P. caninum

PARTS USED :-[FRUIT]

ECONOMIC USE:-

Black pepper plants are used to produce black, white and green pepper. Black pepper is the product of drying the fruit to produce the familiar black peppercorns. White pepper is produced by soaking the fruits in water for approximately a week to recover the seed from the decomposed fruit. Green pepper is produced by drying the unripe fruit in a way that retains the green colour. Green peppercorns are often conserved by pickling.



Foeniculum vulgare

CERTIFICATE

This is to certify that the project sub-mitted by Rumela Ghtsh....., B.Sc/
B.A./B.Com, Hons./Gen. Roll No. 210311002034 has been accomplished under my
supervision as a part of curriculum in consideration of the objective stated
therein for the Semester -I (under CBCS) Exam, for the present academic
session.

Sunanda Mondal 24.03.2023

Signature of Project Guide with date

Name : Sunanda Mondal

Designation : Associate Professor.

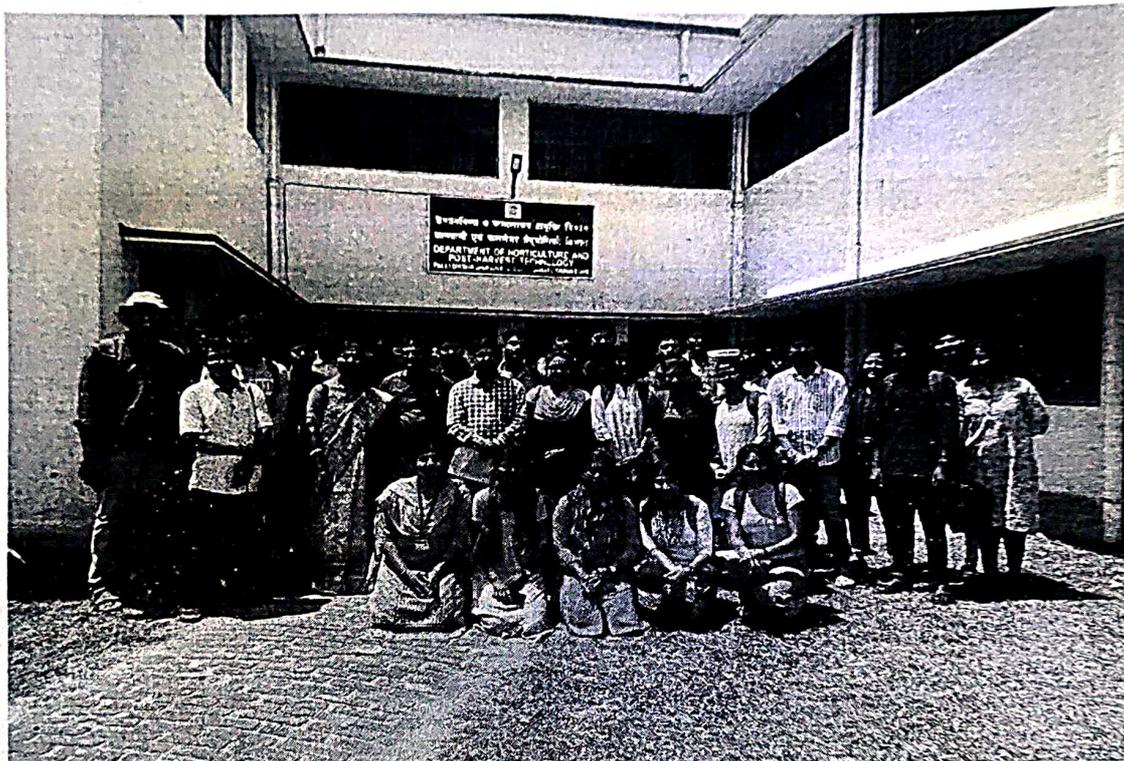
Department : Botany

College : Gushkera Mahavidyalaya

FIELD VISIT TO
INDIAN COUNCIL OF AGRICULTURAL RESEARCH (ICAR)
RATHINDRA KRISHI VIGYAN KENDRA

(Date : 05.04.2023)

DSE-4



ORGANISED BY
DEPARTMENT OF BOTANY
GUSHKARA MAHAVIDYALAYA
GUSHKARA, BURDWAN

THE UNIVERSITY OF BURDWAN



GUSHKARA MAHAVIDYALAYA

B.SC.(HONS) SEMESTER-6 EXAMINATION-2023

FIELD VISIT



SUBMITTED BY:- SANDIP DAS

REGISTRATION NO.:- 202001004809

ROLL NO.:- 200311000030

SD

INTRODUCTION:-

Plants grow in widely different habitats & environmental condition forming vegetation ranging from microscopic thallophytes to bearing seeds. The ecological amplitude of all species growing in vegetation is not equal. Different plants respond differently towards changing influences of ecological influences. e.g.-precipitation, relative humidity, available light, temperature & biotic factors, plants of a different group form a multi-storied structure in vegetation.

So, the study of above vegetation pattern is of immense importance for the botany students.

To understand the nature of vegetation of particular area, it is necessary so that under field survey which is done during excursion of different location which making a survey of vegetation. It is not possible to identify all plants in the field and specimen collected to be identified later. It is also necessary to keep asset of many specimens preserved for future reference & record.

Similarly, an excursion has also an aesthetic value

Aim of the Excursion:-

The word "Botany" derived from Greek noun "Botane" that means herb. It is a branch of biology which deals with the study of plants. It considers the morphology, anatomy, physiology of plants.

Since, we are students of Botany (Hons) of Gushkara Mahavidyalaya. We must know the plants and their anatomy, morphology & their systematic position of area. In this regard a field excursion in our college campus conducted by our professors.

It is universally admitted that field study is one of the most essential & valuable parts of study in "Botany". It is not only providing useful knowledge but also encourage the students to study & know more about mystery of nature.

Purpose of Visit:-

Preserved for future reference & record Botany is one of the most important subjects in Biology. To understand the nature of the vegetation of area, it is necessary to undertake field survey, while making a survey of vegetation of an area. It is not always identifying all plants in the field. It is necessary to keep a set of specimens.

INSTRUMENTS FOR COLLECTION:-

1. VASCULUM- It is a light metallic of stable size container. Its provide with a lid that opens up word for pressing the plant specimen in field work.
2. KNIFE.
3. MAGNIFYING GLASS.
4. FIELD NOTEBOOK & PENCIL.
5. WALKING STICK.
6. PLASTIC POUCH.
7. FAA (Formaline acetic acid)
8. MOBILE & CAMERA.

COLLECTION PROCEDURE :-

We all students of B.Sc. department of Botany went to study at some place of Burdwan & Bolpur. We studied some members of angiosperm plant specimens, the reproductive & vegetative parts of ferns, gymnosperms specimen, for study morphological & anatomical characters.

Some Pteridophytes and Angiosperms plant specimens are drying & pasting on herbarium sheets.

ABOUT THE PLACES TO VISIT

DATE OF THE EXCURSION : 05.04.2023

DURATION OF FIELD VISIT : 10.00 am to 4.00 pm

NUMBER OF PARTICIPANTS : 35

YEAR OF THE STUDENTS : Students of 3rd and 5th Semester of Botany

LOCATION :

Rathindra Krishi Vigyan Kendra (RKVK) is situated at Sriniketan in Birbhum District of the State of West Bengal. Sriniketan is in the Municipality of Bolpur which comes under Bolpur Sub Division of Birbhum District. It is located near Bolpur-Sriniketan Community Development (CD) Block Office of Govt. of West Bengal and Chip Kuthi Campus of Palli-Samgathana Vibhaga (PSV) (Institute of Rural Reconstruction) and Staff Quarters of Visva-Bharati. The distance of Bolpur-Santiniketan Railway Station from Rathindra KVK is about 6.5 kms. The distance of Rathindra KVK from Jambuni Central Bus Stand of Bolpur is about 2.5 kms. From Gushkara Railway Junction Station the distance of Rathindra KVK is about 25 kms. by Railway and by Roadways the distance is about 30 kms. The visitors can come to Rathindra KVK from Bolpur-Santiniketan Railway Station or Jambuni Central Bus Stand of Bolpur by Rickshaw, Electric Rickshaw, Auto or Bus.

DATA OF SOME WELL STUDIED SPECIMENS OF FERNS:-

VARIOUS KINDS OF FERNS ARE FOUND DURING EXCURSION. FERNS HAVING SORUS BODIES WHICH ARE COLLECTED WITH LEAF & RHIZOME.

| Name | Class | Order | Family |
|---|----------------|--------------|--------------|
| <i>Pteris vittate</i> | Filicopsida | Polypodiales | Petridaceae |
| <i>Dryopteris sp</i> | Filicopsida | Polypodiales | Petridaceae |
| <i>Marsilea quadrifolia</i> (Aquatic Pteridophyta) | Filicopsida | Marsileales | Marsileaceae |
| <i>Azolla Sp.</i> (Aquatic Pteridophyta) | Polypodiopsida | Salviniales | Salviniaceae |

DATA OF SOME WELL STUDIED SPECIMENS OF ANGIOSPERMS:-

We have collected Angiosperm specimens during excursion. Those are drying & paste on herbarium sheets.

| Name of the plant | Family |
|-------------------------------|-----------------|
| <i>Oryza sativa</i> | Poaceae |
| <i>Canna indica</i> | Cannaceae |
| <i>Commelina benghalensis</i> | Commelinaceae |
| <i>Polygonum sp.</i> | Piperaceae |
| <i>Achyranthes aspera</i> | Amaranthaceae |
| <i>Mirabilis jalapa</i> | Nyctaginaceae |
| <i>Dianthus chinensis</i> | Caryophyllaceae |
| <i>Michelia champaca</i> | Magnoliaceae |
| <i>Cajanus cajan</i> | Fabaceae |
| <i>Fragaria × ananassa</i> | Rosaceae |
| <i>Saccharum officinarum</i> | Poaceae |
| <i>Helianthus annuus L.</i> | Asteraceae |
| <i>Mangifera indica</i> | Anacardiaceae |
| <i>Zea mays</i> | Poaceae |
| <i>Arachis hypogaea</i> | Fabaceae |
| <i>Triticum aestivum</i> | Poaceae |
| <i>Aloe vera</i> | Liliaceae |
| <i>Colocasia esculenta</i> | Araceae |
| <i>Cassia fistula</i> | Leguminosae |

DESCRIPTION OF FIELD VISIT :-

It was 5th April, 2023, Monday. All the participants arrived at Guskara rail station at 7.30 am. At 8am we ready to go. We also carry first aid box, medicines, pen & notes copy, water bottles etc.

The students looked the nature through the window. They enjoyed by getting to see beautiful nature. We arrived at Santiniketan after 30 minutes derive at 8.30 am. We did breakfast. After having breakfast, we reached at Krishi Vigyan Kendra, where students are requested to have a pen and notebook to write down and they were informed to perform the activities among groups. Collected plants were taken into bag and the descriptions of each plant were written according. The collection numbers of plant specimen etc. are enrolled. The association number of plant specimens which could not be collected were observed carefully & noted down Photographs were taken in several places to show the plants & their association for later study collected plants were kept within folded newspaper with slip noting the collection number which in the note book.

Most of the collected plants were kept within the newspaper press and some specimens were kept in the solution of formaldehyde. After returning home the dry specimens were attached in herbarium sheet. The wet specimens that were separated & kept in separated vials.

KRISHI VIGYAN KENDRA :-

Indian Council of Agricultural Research (ICAR) established the Krishi Vigyan Kendra (KVK), Palli Siksha Bhavana, Visva-Bharati on 4th October 1994. This KVK was sanctioned to Visva-Bharati for the farming community and agricultural practitioners of Birbhum district of West Bengal, India. This KVK was named after Rathindra Nath Tagore, the eldest son of Gurudev Rabindra Nath Tagore. He was one of the first batches of five students of the Brahmacharya School of Santiniketan. Rathindra Krishi Vigyan Kendra is attached with the Palli Siksha Bhavana (Institute of Agriculture), Visva-Bharati. The Principal of Palli Siksha Bhavana is the in-charge of RKVK.

Rathindra Krishi Vigyan Kendra is situated at Sriniketan in the Bolpur-Sriniketan Community Development (CD) Block in the District of Birbhum. The distance of Rathindra Krishi Vigyan Kendra is 5 kms from Bolpur- Santiniketan Railway Station. Sriniketan where the Rathindra KVK is situated is located at $23^{\circ}40'33''N$ $87^{\circ}39'37''E$.

ACTIVITIES DONE AT KRISHI VIGYAN KENDRA :-

On-farm testing to identify the location specificity of agricultural technologies under various farming systems
Organize Frontline Demonstrations to establish production potential of technologies on the farmers' fields. Training of farmers to update their knowledge and skills in modern agricultural technologies. Training of extension personnel to orient them in the frontier areas of technology development. To work as resource and knowledge center of agricultural

technology for supporting initiatives of public, private and voluntary sector for improving the agricultural economy of the district.

At Krishi Vigyan Kendra, we learn from Observation and Discussion/Interaction with their teacher and their employees about tissue culture laboratory, oat cultivation, use of *Azolla* sp. as bio fertilizer, use of medicinal plants and their cultivation and so many things.

PURPOSE OF FIELD STUDY :-

It is most advanced task for every botanist or the students of botany to visit the field study the plants in their natural habitats and to examine the direct interaction between the plants and their surrounding environments. Otherwise the study of plant in nature will be incomplete.

In the field one should investigate the following aspects of plants during study -

1. To denote the growth, habit and habitat.
2. To examine various plant parts.
3. To denote the surrounding climatic condition.
4. To denote the local name and use of it.
5. To collect plants for preparation of herbarium specimens.

So, it is essential for every students of botany to visit various phytogeographical region of the world.

CONCLUSION:-

Learning science from first-hand information through observation at the field is much important in making the subject unforgettable and long-life understanding. Such practical activity is used for relating the concepts with actual life of the students. Thus, the trip for field study at Santiniketan Sriniketan and Illambazar Fossil park played greater role to understand nature, learn more about phanerogamic plants. I learned from the trip about the management of plants, organization of plants in the garden, about instruction programme conducted by KVK, and how to involve students practically in field study. am great full to the Department of Botany Rampurhat College for giving me the opportunity to participate in one day excursion to Santiniketan, Sriniketan and Illambazar Fossil park.

REPORT OF THE TOUR :-

- NUMBER OF PARTICIPANTS:-35
- PROFESSOR ACCOMPANIED FOR GUIDANCE :-
Dr. Sunanda Mondal, Prof. Ranjan Paul.
- PLACE OF EXCURSION :- Krishi Vigyan Kendra
DATE OF EXCURSION :- 05/04/2023
- DURATION:- 7.30am – 6pm

ACKNOWLEDGEMENT:-

I have great pleasure in expressing my deep sense of gratitude to my esteemed professor Dr. Sunanda Mondal & Mr. Ranjan Paul with respected faculties of KVK for providing me

guidance, fruitful criticism encouragement and all other helpful co-operation during the tour.

I wish to express my thankfulness to our professors of Gushkara Mahavidyalaya, department of Botany, for their valuable support, inspiration and direction about how utilizing the tour for enhancing the knowledge power, systematize the study material and analysis of excursion experience.

Sharda
26/04/2023

Head
Department of Botany
Gushkara Mahavidyalaya



