EDUCATIONAL TOUR

GUJARAT

TILKA MANJHI AGRICULTURE COLLEGE

Submitted to – DR. MUKESH KUMAR SINGH

Name – Anamika Pandey

Roll – 67

Semester – 7th

Session – (2019-2020)

ITINERARY

Departure: 21/9/2022 Time of Departure: 07:35 A.M.

- Journey started from TMAC, Godda College campus to Jasidih railway station.
- Reached Jasidih junction around: 10:40 A.M.
- (13331)Patna intercity express (JSME-PNBE)
- Arrival time: 11:27 A.M.
- Leave the station: 11:32 A.M.
- Advent to Patna Junction: 05:30 P.M.
  - ➔ Parting to Patna Junction through 12948- Azimabad Express(PNBE – ANND) 11:45 pm.
  - ➔ ARRIVAL to ANAND Junction at 23/09/22 at 02:19 A.M.
  - ➔ Reached to B.A. college of agriculture under Anand Agricultural University, Anand, Gujarat, 388110.

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DAY 01

- ➢ Visit to Department of Entomology
  Guided by Dr. D.B.Sisodiya
  Insect Museum Guided by Nikhil Trivedi
- ➢ Visit to Honey Processing unit
  Guided by Dr. Minakshi Bhatnakar
- ➢ Visit to Agronomy Department
  Guided by Rounak Patel (Ph.Ed scholar)
  crop museum
- ➢ Lunch Break 12:30 - 1:30 A.M.
- ➢ Visit to Sardar Patel Agricultural Educational Museum Anand Agricultural university, Anand at 03:00 A.M.
- ➢ Laboratory for Micronutrients, Soil and Water testing
  Guided by Dr. Chaitanya Pandya
- ➢ Department of pathology

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DAY 02

- ➢ Visit to Sardar Patel & Vithalbhai Patel Memorial, Sardar Patel Trust, Karamsad
- ➢ Visit to Tribhuvandas Food Complex, Mogar
- ➢ Visit to Amul chocolate factory
  - Arrival time :2:18 P:M
  - Departure time:2:42 P.M
- ➢ Visit to amul milk factory.
  - Arrival time :3:19 P.M
  - Departure time: 4:00P.M

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DAY 03

- ➢ Visit to Statue of unity
  - Departure time: 6:30A.M
  - Arrival time :10:45A.M
- ➢ Visit to neelkanth dham,Poicha
  - Arrival time :3:15 P.M
  - Departure time :5:30P.M

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DAY 04

- ➢ Visit to Sabarmati Ashram,Ahmedabad,gujarat.
  - Arrival time:2:50P.M
  - Departure time:6:30P.M
- ➢ Arrival B.A college of agriculture around 9:20P.M
- ➢ Catch sight of garba night
  - Timing :10:00 P.M to 12:00P.M

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DAY 05

- ➢ Left Anand, Gujarat by 9:15A.M
- ➢ Arrived Navsari agricultural university at about 5:30P.M
- ➢ Catch sight of garba night
  - Timing :10:00 P.M to 12:00P.M

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DAY 06

1.Enjoyed Dandi beach from 7am to 8am

2. Campus tour of N.M. College of agriculture

- Visit to Central Instrumentation Laboratory
- Visit to entomology department
- Visit to plant pathology department
- Visit to college of forestry
- Visit to practical training centre of hi-tech horticulture and experimental learning unit.
- Visit to the university museum.

3. Left Navsari for catching train at chayapuri with arrival time: 09:37 pm

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DAY 07

- ➢ TRAIN JOURNEY

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DAY 08

- ➢ ARRIVED AT PATNA JN BY 3:30 AM
- ➢ Train from patna to jasidih
- ➢ Departure from patna jn: 5:30 am
- ➢ Arrived at jasidih station by 8:55 am
- ➢ Arrived to Tilka Manjhi Agriculture College, Godda by 11:30 am

—----------END OF EDUCATIONAL TOUR—----------

INTRODUCTION

DATE - 21st September, 2022.

INTRODUCTION:

The idea of an educational tour to me at first felt like fun, but later on reaching our destination, AAU, it seemed to be more of exposure and opportunities we have in understanding the importance of studying agriculture which was at our hand's disposal.

Our Agriculture study tour was basically designed to enhance and broaden the on-campus learning experience by visiting areas of horticultural, agronomical, economical, entomological, pathological to the different agricultural interests and incorporating what are important practices that we miss out or ignore in our fruitful production and conduction.

The agenda is to educate us about the experiences of the real world situations in the agricultural field. Educational tours help students to enhance their learning skills and make a better career choice as these tours give them exposure to see how things work practically, rather than based on learned knowledge from papers.

So, this idea of equipping us with on-field; on campus of different states universities knowledge and their awareness of agricultural science and crop science was the biggest highlight of the educational tour organised for the batch 2019-20.

DATE : 23rd September, 2022.

DAY 1 :

AT ANAND AGRICULTURAL UNIVERSITY ON CAMPUS VISIT

Lets know more about the university first:

Anand Agricultural University (AAU) was established in 2004 at Anand with the support of the Government of Gujarat, Act No.(Guj 5 of 2004) dated April 29, 2004. The AAU was set up to provide support to the farming community in three facets namely education, research and extension activities in Agriculture, Horticulture Engineering, Product Processing and Home Science. At present there's seven Colleges, seventeen Research Centres and six Extension Education Institute works in the nine districts of Gujarat namely **Ahmedabad, Anand, Dahod, Kheda, Panchmahal, Vadodara, Mahisagar, Botad and Chhotaudepur.**

THE PICTURE SHOWS OUR STAY ORGANISED BY THE UNIVERSITY.

Its mandates includes:

- Imparting education to the students in agriculture and allied fields.
- Conducting research in order to improve the productivity of rural areas.
- Undertaking various basic research to breakthrough newer areas of knowledge.
- And even Provides opportunities to observe and understand the life of rural development by allowing educational tours like the one we had.

The above mandates of the university Enables the student to inculcate the attitude to develop skills relevant for grass-root work needed for enhancement in the agricultural sector as envisioned by our country's PRIME MINISTER, SHRI NARENDRA MODI.

There was a very warm welcome for all of the students visiting the AAU campus that day. The visit wise describing its details would be justice to the campus and teams initiating that valuable learning experience we learned.

1.VISIT TO HONEY PROCESSING UNIT OF ENTOMOLOGY DEPARTMENT: It was guided and conducted by DR. MEENAKSHI MA'AM.

Apiary over there is maintained by the beekeepers for the production of honey and then manually bottled and sold under the label of university, named Anubhav, where specifically each bottle of 500 grams of honey was sold at Rs 200. Every year about 1800-2000 kg of Anubhav honey are sold. Apiary plots had different crops like mustard, fennel, sesame, ajwain, etc. for adding flavour to the formation of honey in comb by the bee colonies being reared.

FLOW DIAGRAM OF HONEY PROCESSING :

- Harvesting and Transport of Raw Honey
- Liquefaction
- Straining
- Filtration
- Moisture Reduction unit
- Pasteurisation
- Cooling
- Bottling
- Labelling

The thermal processing of honey is carried out with two stages.

First, honey is heated at approximately 55°C to ensure ease in handling (liquefaction process).

Secondly, liquefied honey is subjected to a higher temperature at approximately 80°C to destroy yeasts and dissolve crystallisation nuclei (pasteurisation process).

Liquefaction depends on concentration of the glucose in the honey and in the crystal form.

Straining and filtration are done to remove the suspended solids is carried out either manually or by mechanical means and the filtration is done to such an extent that all or most of the fine particles, pollen grains, air bubbles, and other materials normally found in suspension have been removed.Filtered honey is obtained by removing foreign inorganic or organic matter in such a way as to result in the significant removal of pollen.
The honey temperature is maintained between 50–55°C, which prevents the melting of the beeswax.Large-scale processors subject honey to coarse filtration, centrifugal clarification, fine filtration, and blending, prior to filling.The filtration should be done carefully so that required pollen count in the honey must be retained.
Moisture reduction unit:The amount of water present in honey determines its stability against fermentation and granulation .Honey having high water content ferments easily with time. So, it is

necessary to process the honey by subjecting it to thermal treatment to prevent fermentation by sugar tolerant yeasts .
Pasteurisation of honey reduces the chance of fermentation and also delays granulation.
Different Temperature and Time combinations are suggested. Heating the honey to 63°C for 30 minutes or 65.5°C for 30 minutes or temperature be brought to 77° C momentarily and followed by the rapid cooling.
Bottling :The filling of honey in the bottles is normally done at a high temperature. Filling at higher temperatures eliminates air bubbles and avoids air incorporation during packing due to low viscosity**.**
Labelling is done according to fssai and then sold in the market.

2. VISIT TO LABORATORY AND MUSEUM OF ENTOMOLOGY DEPARTMENT : **Guided by Dr. D.B. Sisodiya Sir and Nikhil Trivedi Sir.**

Dr. Sisodiya heartily welcomed all of us. Then he mentioned how the entomology department works in all the three aspects of education, research and extension work. Under teaching components, it is requisite for imparting laboratory knowledge to undergraduate and postgraduate students.

Under the research component the department is entrusted with projects not only by the other agencies but also on the national level.

AAU entomology department has recently worked on pollination by honey sponsored by the national bee board, India.

The department also works as a testing ground for newly developed insecticide which is yet to be analysed for its effectiveness against the particular pest. These insecticides before their registration in the central insecticide board and committee are sent for its trial to two or three reputed universities. And I was not surprised when he mentioned that the AAU entomology department works on these field trials and testing before its release. Research scholars there basically present the report on its efficiency and control, then only the molecules of that insecticide are registered and later released for the particular crop and its pest.

The department even worked on the invasive insect pest named Fall armyworm (*Spodoptera frugiperda)* causing serious damage to maize at all stages of its growth.It was first reported in India in May; 2018. The entomology department reported the disease in the Gujarat region too and started working on formulating different recommendations under integrated pest management of this disease.

The entomology department's first recommendation against this pest were insecticides such as Chlorantraniliprole granular application @

0.4 ml/litre and Emamectin benzoate5% SG (80g/acre) @ 0.4g/litre as best control against the pest.
The second recommendation was poison bait which consisted of 25kg either rice grain or maize flour, 5kg of jaggery and third component was emamectin benzoate as an insecticide. And it was pinch full recommended even for killing the large larvae residing in the leaf whorl.
Their third recommendation was of whorl application by bacillus thuringiensis in powdered form that is 20 gm/10 litre of water.
All of the above recommendations practised under the agro climatic regions of Gujarat were effective in controlling the pest infestation.

The entomology department even worked on the new pest reported between end of the year 2021 and initiation of the year 2022. This was also an invasive pest, black thrips that entered India for the first time and was reported from southern India in the crop chilli. This led to the chilli crop failure in southern parts increasing its cost of sale.

Their entomology department also trains farmers on IPM. Almost 130 trainings had been given to about 30-40 farmer groups arriving at a time from all the 9 districts jurisdiction the university works for.The training is of 4 days; 1st day is visit and then remaining three days of training and learning. They even conduct an experiential learning program for students which basically trains in apiary and then processing, packaging and selling of processed honey.
Now Nikhil Trivedi Sir explained how we collect and preserve the insects that were beautifully done for its presentation in their insect museum. So first we collect the insect in an insect trap net, then we kill them in a killing jar, then spread them on boards by pining at a proper point without damaging antennae, wings and legs, and finally drying them up so that there's no moisture content required in their storage as a specimen.

3.Visit to Agronomy Department and its crop museum: Guided by Rounak Patel (Ph.Ed scholar)

First we saw a crop museum covering their own developed varieties of crops grown in different regions of the country.

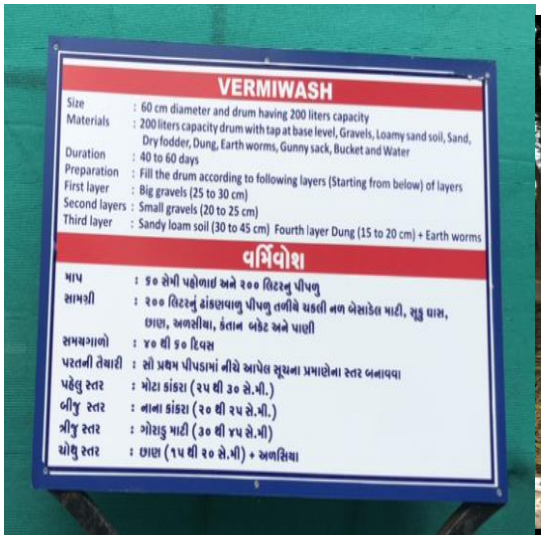
Like:

- Sorghum GS-42
- KODO MILLET(guj kodo millet-2)
- Sawn
- Vari (gujarat vari-1)
- Finger millet (guj finger millet-3)
- Soybean
- Pigeon pea
- Cotton
- Groundnut
- Blackgram
- Sorghum
- Greengram
- Turmeric
- Ginger
- Remi
- Agav
- Ladyfinger
- Sannhemp

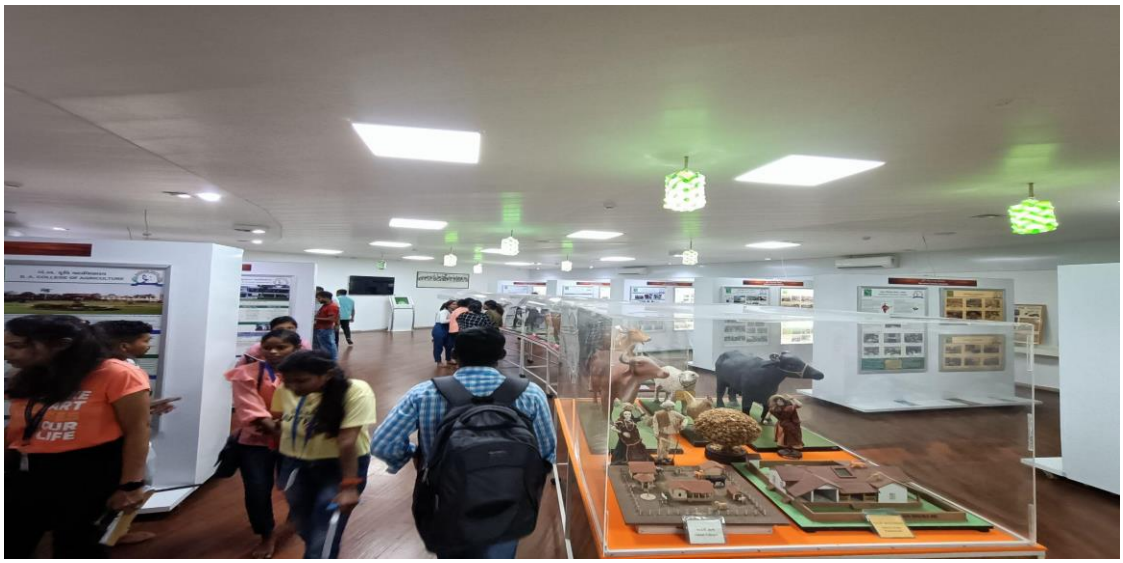
- Jute
- Maize
- Lucerne
- Egyptian clover
- Dasharath grass
- Guinea grass
- Hybrid napier
- Napier grass
- Marvel grass
- Barley
- Oat
- Sawan
- Italian millet
- Blue panic
- Fodder maize
- Paddy rice

These crops and their identification confined in one place enables one from any field to differentiate different kinds of crops and their morphology. It's well kept and maintained not only helps students in better understanding but also in a research field for the experiment.

We even saw organic farming being practised in the university with everything being used,reused and recycled organically. Compost was made from different methods in different compost pits. These methods were like coimbatore method, NADEF method(aerobic), jivaamrit and even the vermiwash unit was functional like everything else.



4. Visit to Sardar Patel Agricultural Educational Museum Anand Agricultural university, Anand at 03:00 A.M.



Museum objective as per i can understand was like:

1. To exhibit different branches of Anand Agricultural university like Agriculture, Veterinary, Dairy science, Food Processing Technology and Bio Energy, Agriculture Information Technology, Agriculture engineering and advance technologies
2. To collect information about educational colleges and related new technologies of Anand Agricultural university.

3. To maintain records of different recommendations based on year, crop and different branches like Agriculture, Veterinary, Dairy science, Food Processing Technology and Bio Energy, Agriculture Information Technology, Agriculture engineering.
4. To compile the opinion of farmers about developing technologies of Anand Agricultural University.
5. To collect information based on the needs of the farming community.
6. Museum was perfectly structured to represent the entire middle gujarat regions agricultural practices and production status. Museum depicts the working pattern of the university in both research and extension. Under AAU working there are 6 kvk stations working on different research and extension work needed for the benefits related to farmers. Museum guide even talked about how tobacco seeds are under the economic generating sector of the university with 1CR turnover each and every year. What a viable unit of income to have under its production.

5. Laboratory for Micronutrients, Soil and Water testing : Guided by Dr. Chaitanya Pandya

This lab centre mainly was not for micronutrients but now also for important elements as per requirement.It tests the limiting element of soil as well as of plants and this limited element is also limiting when consumed by us ,the people in the form of grain or the produce.Recently they were working on this concept that anything limiting in soil will also be limited when consumed by people.They took this research by feeding sedentary girls with 45gm of chickpea and wheat to see what their iron content was after a week. And it was

positive that the haemoglobin level of all the girls increased from what it was a week ago. So yes it gets limited if limited during the growing stages of plants.

Then our professor over there started to explain to us the working principle of different lab equipment installed for testing elements. Firstly we saw

1.AAS : AAS is a laboratory instrument that measures the concentration of micro elements in soil, fertiliser and plant sample solutions. It is so sensitive that it can measure down the concentration of elements to parts per billion in any sample.

REQUIREMENT: Minimum 15 g powdered sample / 50 g dried sample **Soil :** Minimum 100 g sample sieved (< 2.0 mm sieve) **Water :** Minimum 250 ml freshly collected/sample preserved in< 2.0 pH using HNO_3 in plastic (preferably polytetrafluoroethylene) container rinsed with 1:1 HNO_3.

Charges excluding GST:

	Industry	University	National Lab and R&Ds	
Micro nutrient	Rs. 300/-	Rs. 150/-	Rs. 150/-	Per sample
Heavy metal	Rs. 500/-	Rs. 250/-	Rs. 250/-	Per sample

The main drawbacks of this technique are its limited sensitivity, its capability to only measure one element at a time and limited linearity. And it can't measure element in parts per trillion**.** The Atomic Absorption Spectroscopy (AAS) is used in the laboratory to measure the content of metals in inorganic or organic samples. The AAS can be performed with both flame and electrothermal atomization. The samples are measured in the form of solutions in water or organic phase (methanol, ethanol).

However, graphite furnace atomic absorption spectroscopy allows for extremely low detection of trace elements within an organic or inorganic sample.

2.AAS HIGHER version is ICP **ICP (Inductively Coupled Plasma)**

Spectroscopy is an analytical method used to detect and measure elements to analyse chemical samples. The process is based on the ionisation of a sample by an extremely hot plasma, usually made from argon gas. ICP CAN CALCULATE UPTO PPT OF AN ELEMENT. Icp present valuation is around 70-80 lakh. It is basically used for accurate identification and analysis of heavy metals like chromium, nickel,boron,etc.icp icp is very efficient since it has a very high temperature which restricts matrix mixing.

3.**LAB even had an automated gas chamber installed for purification of any gas required for experiments** since impurities in it can lead to non-functioning of the lab equipments. Gas after been purified and passed through to the instrument requiring it . generally acetylene and air combination is used for testing of elements but elements like boron and molybednum requires nitrous oxide gas for its analysis.

4.**Soil pH meters**:**Soil pH meters** are devices used to measure the acidity or alkalinity of a soil. They work by measuring the hydrogen ion activity and this is expressed through the potential for hydrogen or 'pH'.

5. **Soil EC:** It is measured via electrodes inserted directly into the ground or by extracting soil water using **a lysimeter** (an instrument that uses suction to extract soil or groundwater from the ground.

6. Spectrophotometers are **a valuable tool for monitoring nitrogen and phosphorus levels in fertilizers and soil compounds**. Through advanced spectrophotometric technology we can monitor and develop fertilizers that will lead to a more lucrative and productive agricultural sector.

7. **Ion exchange chromatography (or ion chromatography) is a process that allows the separation of ions and polar molecules based on their affinity to ion exchangers.**
The principle of separation is thus by reversible exchange of ions between the target ions present in the sample solution to the ions present onion exchangers.

In this process, two types of exchangers i.e., cationic and anionic exchangers can be used.

8.And then the lab had general required equipments needed for research.

LAB’S MAIN HIGHLIGHT WAS THAT AFTER EVERY 4 YEARS IT WORKS ON COLLECTING SOIL SAMPLE FROM ITS DIFFERENT 8 ZONAL REGIONS THEY WORK WITH AND ANALSIS DIFFERENT SOIL REQUIREMENTS NEEDED FOR UNDERTAKING DIFFERENT CULTURAL PRACTICES FOR THE PARTICULAR SOIL OF THAT REGION.EVEN THE RESULTS OF VARIOUS PHYSICAL COMPONENTS OF SOILS ARE PUBLISHED WHICH HELPS FARMERS IN DETERMINING WHAT KIND OF CROP, CROPPING PATTERN AND PRACTICES HAVE TO BE TAKEN.

7. DEPARTMENT OF PATHOLOGY: GUIDED BY DR. SNEHA MISHRA

There were 4 different laboratory under this department; one for seed testing laboratory, the other for molecular testing of virus,fungi and bacteria, disease identification lab and the last lab was completely dedicated to viral disease testing and finding solutions against harmful effects faced by the crop.

Greenhouses had different crops under different stages of growth for current observation and data collection under various controlled systems.

Day 2

Visit to Sardar Patel & Vithalbhai Patel Memorial, Sardar Patel Trust, Karamsad:

This memorial is situated in the Karamsad city in Anand district in Gujarat. There is also a library and a beautiful garden. Visit the photo gallery section where you will see the paintings, photographs and banners of the lives of Sardar Patel and Veer Vithalbhai. This area's beauty is enhanced by the various trees, plants, and creepers which offer a nice view to the tourists. The memorial is spread over 7 acres of land, which were originally waste land, most of which was given free to the Trust by the people of Karamsad. The Government of Gujarat and Government of India separately awarded grants totalling Rs. 2.5 crores for the development of the land and construction of the Memorial.

THE PICTURE SHOWS THE DOCUMENTARY BEEN PLAYED UPON THE LIFE OF SARDAR PATEL LIFE'S.

Today, the Memorial is a popular destination for school and college students, local and foreign tourists, and leaders from most political parties and social organisations.

Visit to Amul chocolate factory: GUIDED BY IFQTYAR MALIK

AMUL CHOCOLATE FACTORY ITSELF MAKES ABOUT 101 PRODUCTS TODAY.AMUL chocolate factory is a great place to visit for all the students, to witness the process that goes behind making chocolate. For all those who wish to see what goes on behind making one of the most loved things in the world then its visit is an enthralling experience. Amul is very kind in allowing visitors into its factory at Anand. One can see through all the stages of chocolate production, right from the earliest of stages to packaging. The Factory has a

museum known as **AMUL Co-operative Museum** which is an exhibition, tracing down the storied past of one of the country's greatest institutions.

The guide over there mentioned the three important ingredients, to the processing unit principle to finally produce packaging and labelling. The three important ingredients were: cocoa butter, cocoa powder and milk powder. Like 99% dark chocolate will contain 99 percent cocoa powder, white chocolate will contain only cocoa butter and milk chocolate contains more of milk powder.

STEPS:

1. RAW INGREDIENTS CONVERTED INTO LIQUID PASTE AND PURIFYING
2. REFINING TO GIVE SILLY TEXTURE TO THE PASTE
3. CONCHING: IT'S BASICALLY MIXING AND TASTE DEVELOPING OPENING PROCESS THROUGH FRICTIONAL HEAT, RELEASE OF VOLATILES AND ACIDS, AND OXIDATION.IT TAKES AROUND 2-3 HOURS. THE BETTER YOU MIX AND AGITATE THE MORE ENHANCING FLAVOUR WE GET.
4. THEN ON MOULDING LINE WE ADD FLAVOUR IF WE WANT FLAVOURED CHOCOLATE LIKE FRUITS & NUT, HAZELNUT, DRY FRUITS,CRACKLE,ORANGE CHOCOLATE;ETC.
5. THEN INTO THE FREEZING CHAMBER.
6. THEN TO THE PACKAGING AND LABELLING LINE .
7.

THE COMPANY AT A TIME ONLY MAKES ONE TYPE OF A CHOCOLATE.IF MAKING 99% DARK CHOCOLATE IS IN MAKING THEN ONLY THAT'S BEEN PROCESSED.

1 DAY = 48-50 METRIC TONS (CHOCOLATE FORMS)

1 MIN = 120-130 CHOCOLATES

THE PRODUCTION OF CHOCOLATE WORKS IN 3 SHIFT.

THE FACTORY EVEN HAD DARK CHOCO CHIPS PRODUCTION FOR INTERNAL USE ONLY. THEY DON'T SELL THAT FOR PROFIT. THE QUANTITY TO BE PRODUCED GOES ACCORDING TO THE MARKET DEMAND AND ITS BAKERY DEMAND ONLY.

THERE LATEST CHOCOLATE IS ONE COUNTRY ORIGIN CHOCOLATE THAT MEANS ITS RAW MATERIAL IS FROM ONLY ONE COUNTRY.

AMUL DAIRY

AMUL AS A BRAND HAS ABOUT 800 DIFFERENT PRODUCTS IN THE MARKET. IT GIVES ABOUT 80%OF ITS PROFIT BACK TO FARMERS.

Amul is an Indian dairy state government cooperative society, based in Anand, Gujarat Formed in 1946, it is a cooperative brand managed by Gujarat Cooperative Milk Marketing Federation Ltd. (GCMMF),

which today is controlled jointly by 36 lakh milk producers in Gujarat and the apex body of 13 district milk unions, spread across 13,000 villages of Gujarat. Amul spurred India's White Revolution, which made the country the world's largest producer of milk and milk products.The word AMUL stands for Anand Milk Union Limited

AMUL DAIRY

Number of Producer Members	7,15,028
Number of Village DCS	1208
Total Milk Handling Capacity	5.2 Million liters per day
Milk Collection (Daily Average)	3.3 Million liters

Amul dairy at anand makes amul milk powder and butter at that factory of amul at anand.. Amul even works for the government in providing nutrition and protein to anganwadi ladies and children through its products like bal shakti,prona shakti,etc.

Guide at amul explained how milk is collected from the farmers and then how it is processed to increase its shelf life until reaching its consumer. It was really a learning session regarding the processes and working of a fully automated system with least labour requirement.

Amul is the first company to have a milk powder plant. She even explained to us how the first milk powder plant is demobilised today. Since the earlier system was consuming more power and was not cost effective. But today's new model and the plant is efficient and in favour

of high economic returns. Amul milk powder capacity to produce milk powder is around60 metric tonne per day, inshort 60 kg per second.

Amul is very impressive when it comes to providing the best quality product to the consumer. I say this because after every half an hour they conduct testing of a random sample for its quality. If passed then its okay to continue the process.

If I conclude my experience I would say the visit to both the plants of amul made me want to work in such a business environment who works for the farmers profit by cutting away the middle men involved in the process.

Amul's main revenue generation is from butter, then cheese and ice cream and so on. There is no profit, no loss in its milk business. Because it's the largest cooperative business, they say, ”value for money, value for many.”

DAY 03:
Visit to Statue of unity

The Statue of Unity depicts Sardar Vallabhbhai Patel (1875–1950), a leading figure in the nonviolent Indian Independence Movement and the first Deputy Prime Minister/ Home Minister of Independent India. The Statue of Unity is the world's tallest statue, with a height of 182 metres (597 feet) which is almost double the height of the Statue of Liberty, USA.

Statue of Unity is capable of withstanding wind velocity up to 50 metre/second (180 kilometre/hour speeds) and vibration. The statue has been designed for seismic Zone IV as an earthquake resistant structure.

70,000 metric tonnes of cement was used in the construction of the Statue of Unity.

6,000 metric tonnes of structural steel and 18,500 metric tonnes of reinforcement bars were used to build the Statue of Unity.

Therefore, the Statue of Unity is a testimonial to the life of Sardar Patel, a roleMonument. It represents more than a colossal structure facing the Sardar Sarovar Dam on the river Narmada. It is an iconic symbol of the ‘Iron Man’, who played an important role during India’s freedom struggle and thereafter in the unification of the princely states. It reminds the world of the towering personality of Sardar

Vallabhbhai Patel, the nucleus of India’s integration as a united country.

Visit to Sabarmati Ashram,Ahmedabad,gujarat.

The Sabarmati Ashram (also known as Harijan Ashram) was home to Mohandas Gandhi from 1917 until 1930 and served as one of the main centres of the Indian freedom struggle. Originally called the Satyagraha Ashram, reflecting the movement toward passive resistance launched by the Mahatma, the Ashram became home to the ideology that set India free. Sabarmati Ashram named for the river on which it sits, was created with a dual mission. To serve as an institution that would carry on a search for truth and a platform to bring together a group of workers committed to non-violence who would help secure freedom for India.

While at the Ashram, Gandhi formed a school that focused on manual labour, agriculture, and literacy to advance his efforts for self-sufficiency. It was also from here on the 12 March 1930 that Gandhi launched the famous Dandi march 241 miles from the Ashram (with 78 companions) in protest of the British Salt Law, which taxed Indian salt in an effort to promote sales of British salt in India.

SO THIS ASHRAM HAD MANY HISTORICAL AND SENTIMENTAL SIGNIFICATION FOR THE INDIANS AND THE NATION. IT HAS THE UTENSILS TO THE CHAKRA USED BY GANDHIJI DURING PROMOTING SWADESHI MOVEMENT. ASHRAM EVEN HAD MUSEUM DEDICATED TO HIS LIFE, ANOTHER ONE INCLUDED ALL THE DIFFERENT TYPES OF CHARKHA USED DURING ,BEFORE AND AFTER INDEPENDENCE BEFORE MODERNIZATION IN CLOTHING CAME WITH ADVENT OF LARGE AUTOMATED MACHINERIES.

MUSEUM HAD A SECTION NAMED “MY LIFE IS MY MESSAGE” SAIF BY GANDHIJI HIMSELF. IT WAS SO INSPIRING TO SEE THE INTRICATE DETAILS OF HIS LIFE CAREFULLY COLLECTED TO SHOWS THE GOLDS AND DIFFICULTIES OF HIS LIFE .

ASHRAM EVEN HAD A LIBRARY CONTAINING THE WHOLE LITERARY SECTION DEVOTING ITS PAGES TO THE LIFESTYLE , WORKS AND STRUGGLE OF MAHATMAS GANDHI LIFE.

DAY 6
NAVSARI AGRICULTURAL UNIVERSITY

The iconic educational and farmers welfare Institute of South Gujarat, Navsari Agricultural University (NAU) with its headquarter in Navsari came into existence with the promulgation of Gujarat Agricultural University Act 2004 on May 1, 2004. NAU’s jurisdiction covers seven districts of South Gujarat *viz.*, Surat, Navsari, Bharuch, Valsad, Narmada, Tapi and Dang.At present, there are seven Colleges imparting five bachelor’s, twenty seven Master’s and twenty one doctoral degree programmes. NAU has the following faculties: Agriculture, Horticulture, Forestry, Agribusiness Management, Agricultural Engineering and Agricultural Biotechnology. Further, there are 25 research centres at 15 locations to carry out need based research on mandate crops *viz.,* paddy, sugarcane, cotton, sorghum,

small millets, mango, banana, sapota and vegetables. The NAU has extensive reach to the farmers and covers sprawling South Gujarat through its 5 *Krishi Vigyan Kendras* located at Navsari, Surat, Waghai, Vyara and Dediapada and Sardar Smruti *Kendra*, T & V and ATIC at Navsari to undertake dissemination of latest technologies to end users in seven districts of South GUJARAT.

The research stations of NAU, received Best Performing AICRP centre on fruits (2016, 2020 & 2021), small millets (2017, 2022) and tuber crops (2018, 2020, 2021), IFS (2021) and sugarcane (2018). At present, a total of 18 AICRPs including 4 voluntary centres are operational at NAU.

THERE WAS VISIT TO THE DIFFERENT DEPARTMENT OF THE UNIVERSITY:

1. SOIL SCIENCE AND BIOCHEMISTRY DEPARTMENT: GUIDED BY NEELIMA AND NITU MAAM:

We went through the lab learning about different equipment of practice in determining factors important in soil science.

SPECTROPHOTOMETER: It is used for the estimation of phosphorus.
CUBEETE : It is for putting samples into a spectrophotometer.
The principle of spectrophotometer works on optical density reading.

ECMETER : Used for knowing the electrical conductivity of the soil
PH METRE : For measuring ph of soil
WATER BATH: It is used to incubate the sample in water at a constant temperature over a period of time.
Then again we had an atomic absorption spectrophotometer which was used for detecting different micronutrients except boron , molybdenum, chlorine.

Then we saw an atomic emission spectrophotometer where every element can be detected except nitrogen since nitrogen needs digestion.

ENTOMOLOGY DEPARTMENT: GUIDED BY DR. SACHIN PATEL

- THE DEPARTMENT WORKS ON INSECT PEST OF MAJOR GROWN CROP LIKE SUGARCANE, CASTOR, SAPOTA, ETC.
- THEN THEY HAVE AICRP ON HONEYBEE AND POLLINATOR SCHEME ON WHICH THEY ARE WORKING ON POLLINATORS EXCEPT HONEYBEE AND EVEN ON STINGLESS BEE
- THEY ARE EVEN WORKING ON SERICULTURE. PEOPLE HAVING CASTOR AS A CROP CAN ALSO HAVE ERI SILKWORM FOR ADDITIONAL PROFIT.

- THEY EVEN HAVE BIOLOGICAL CONTROL UNIT WHERE THEY ARE PRODUCING TRICHOCARD AND CHRYSOCARD USING TRICHOGRAMMA AND CHRYSOPERLA SPECIES.
- IN SOUTH REGION OF GUJARAT MANGO AND SAPOTA ARE IN MIXED PLANTATION AND THERE'S CONTINUOUS ATTACK OF FRUIT FLY THROUGHOUT THE YEAR. TO FIGHT AGAINST THE ATTACK THE UNIVERSITY WAS SUCCESSFUL IN DEVELOPED FRUIT FLY TRAP. THIS TRAP ATTRACTS THE MALE FRUIT FLY AND KILLS THEM. ITS ECO-FRIENDLY MEASURE FOR THE BIODIVERSITY OF SOUTH GUJARAT.
- SUGARCANE SUCKING PEST PYRILLA WAS CONTROLLED BY ITS ECTOPARASITE, EPRICANIA MELLANOLUCA. THIS WAS AN AUTOCIDAL CONTROL IN THE SUGARCANE ECOSYSTEM AND THEIR CONCERNING FACTORIES.

PATHOLOGY DEPARTMENT:

Pathology department was the same as any pathology department. But the most attractive feature was its

walls with important diseases of different crops , their symptoms and their control measures to be taken were engraved in the form of a frame on the walls. This will definitely help any student to get a good hold in identification of diseases on the basis of symptoms and suggest controls on the farmers field at the time of visit.

COLLEGE OF FORESTRY: FORESTRY COLLEGE
DR. PRASHANT KUMAR SHRIVASTAVA

He met us stating how the college prepares trained manpower who can scientifically protect and sustain forest and natural resources of the county
And he even interacted with us, convincing us young students to undertake applied and basic research in the field of forestry.

IT WAS REALLY AN AMAZING EXPERIENCE TO BE INTERACTING WITH THE PRINCIPLE OF FORESTRY DETAILING US WITH THE WOOD OF DIFFERENT TREES AND ITS VALUE AND IMPORTANCE IN THE MARKET.

Last was a visit to the practical training centre of hi-tech horticulture and an experiential learning unit.

There we saw students of our semester who were in an elp program of hi-tech horticulture who literally had a campaign set up with different types of products on display for selling purpose. They had different types of seeds of different horticultural crops including all the vegetables and fruits.then they had juices ,jams and pickles prepared and packed by them for selling at a reasonable price. They even had very cute and small table plants like varieties of cactus plant . They were even selling gluten free pasta and food materials. landscaping, floriculture and beautifying nature were an important highlight of the whole hi tech horticultural elp program run , controlled and managed by students under the guidance of professors and seniors help.

THE WHOLE EXPERIENCE WAS TOO OVERWHELMING.
I AM SO HEARTILY GRATEFUL TO OUR ADMINISTRATION FOR TAKING US ON SUCH THIS TOUR. THE IMPORTANCE OF THIS TOUR WAS REALISED FROM THE VERY FIRST DAY OF OUR VISIT TO ANAND AGRICULTURAL UNIVERSITY.

EXTRA ACTIVITIES INCLUDES POICHA TEMPLE AND DANDI BEACH

THANK YOU

- Shreya