

1.3.2 Percentage of students undertaking project work/field work/ internships (Data for the latest completed academic year)

1.3.2.1. Number of students undertaking project work/field work / internships

Providing Internship completion certificate / project work completion certificate of

1) Miss. Gauri Pramod Ambure



ANALAB

26, Siddheshwar Shopping Center, Panch katta, Solapur - 413 001

Testing Service : Specialized Biochemistry; Soil, leaves, fertilizers, pesticides; Animal Feeds; Water & waste water; Industrial Chemicals; Ores, Minerals, Activated Carbon; Food, Herbs & Neutraceuticals; Microbiological

Consulting Service: Agriculture Fertilizer Management; Waste water treatment studies

9 A.M. TO 5 P.M.

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Project Completion Report

This is to certify that, Gauri Pramod Ambure has visited ANALAB carried analysis and successfully completed her required for project entitled "Phytochemical Analysis and Antioxidant Activity of Tagetes erecta (Marigold)" as prescribed in the B.Sc. Biotechnology-III syllabus, P.A.H. Solapur University, Solapur at the Department of Biotechnology, V.G. Shivdare College of Art's, Commerce and Science, Solapur during the academic year 2021-22.



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Dr. K.C. Nagda, Ph.D.

C. S. Karpe M.Sc.

Dr. Gautam Nagda, Ph.D.

2) Miss. Shweta Dhula Khatake

**V. G. SHIVDARE COLLEGE OF ARTS, COMMERCE
& SCIENCE, SOLAPUR**

Jule Solapur – 1, Vijapur Road, Solapur (Maharashtra) - 413 004
2021-2022



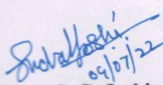
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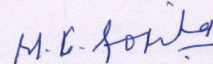
This is to certify that, **Shweta Dhula Khatake** satisfactorily completed the visit report on Nursery Establishment & Development as prescribed by the P.A.H. Solapur University, Solapur under the guidance Miss. S. G. Joshi (Assistant Professor) at the department of Biotechnology, V.G. Shivdare College of Arts, Commerce and Science, Solapur during the academic year 2021-2022.

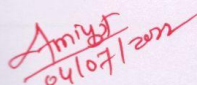
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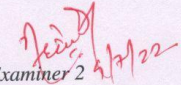
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Miss. S. G. Joshi
(Project Guide)


Mr. B. N. Kambale
Principal


Mrs. Gopika Manjunath
Biotechnology Depart.
HOD
VG Shivdare, Solapur


Examiner 1


Examiner 2

iii



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Consulting Service: Agriculture Fertilizer Management; Waste water treatment studies

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Project Completion Report

This is to certify that, Shweta Dhula Khatake has visited ANALAB carried analysis and successfully completed her required for project entitled "Phytochemical Analysis and Antioxidant Activity of Tagetes erecta (Marigold)" as prescribed in the B.Sc. Biotechnology-III syllabus, P.A.H. Solapur University, Solapur at the Department of Biotechnology, V.G. Shivdare College of Art's, Commerce and Science, Solapur during the academic year 2021-22.



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Dr. K.C. Nagda, Ph.D.

C. S. Karpe M.Sc.

Dr. Gautam Nagda, Ph.D.

3) Miss. Shradha Suryakant Gaikwad

**V. G. SHIVDARE COLLEGE OF ARTS, COMMERCE
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2021-2022



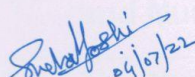
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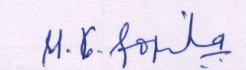
This is to certify that, **Shraddha Suryakant Gaikwad** satisfactorily completed the visit report on Nursery Establishment & Development as prescribed by the P.A.H. Solapur University, Solapur under the guidance Miss. S. G. Joshi (Assistant Professor) at the department of Biotechnology, V.G. Shivdare College of Arts, Commerce and Science, Solapur during the academic year 2021-2022.

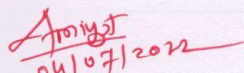
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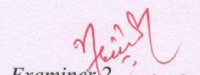
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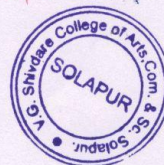

Miss. S. G. Joshi
(Project Guide)


Mr. B. N. Kambale
Principal


Mrs. Gopika Manjunath
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VG Shivdare, Solapur


04/07/2022
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4/7/22
Examiner 2



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Project Completion Report

This is to certify that, Shradha Suryakant Gaikwad has visited ANALAB carried analysis and successfully completed her required for project entitled "Phytochemical Analysis and Antioxidant Activity of Tagetes erecta (Marigold)" as prescribed in the B.Sc. Biotechnology-III syllabus, P.A.H. Solapur University, Solapur at the Department of Biotechnology, V.G. Shivdare College of Art's, Commerce and Science, Solapur during the academic year 2021-22.



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r. K.C. Nagda, Ph.D.

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4) Miss. Sakshi Satish Kokate

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Jule Solapur – 1, Vijapur Road, Solapur (Maharashtra) - 413 004
2021-2022



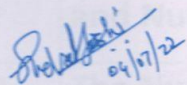
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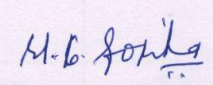
This is to certify that, **Sakshi Satish Kokate** satisfactorily completed the visit report on Nursery Establishment & Development as prescribed by the P.A.H. Solapur University, Solapur under the guidance Miss. S. G. Joshi (Assistant Professor) at the department of Biotechnology, V.G. Shivdare College of Arts, Commerce and Science, Solapur during the academic year 2021-2022.

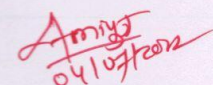
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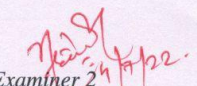
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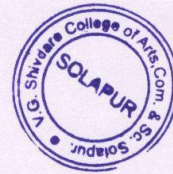

Miss. S. G. Joshi
(Project Guide)


Mr. B. N. Kambale
Principal


Mrs. Gopika Manjunath
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HOD
VG Shivdare, Solapur


Examiner 1


Examiner 2



VISIT REPORT: Miss. Gauri Pramod Ambure, Miss. Shweta Dhula Khatake, Miss. Shradha Suryakant Gaikwad, Miss. Sakshi Satish Kokate

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Introduction of nursery visited :

- Name of Nursery : Vanashree Nursery
- Name of Owner : Sunita Chandrkant Kale.
- Address : Panchkatta, Siddheshwar Peth, Solapur.
- Year Of Establishment : 2006
- Licence Type : Registered Nursery Of government.
- No.Of Labours : 07

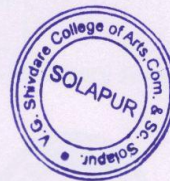


Aim and Objectives :

The report of nursery establishment and development was made to give the complete information regarding the process of nursery planning, establishment, seedling production trial, as well as nursery development plan in future.

The nursery report has several objectives in providing the information regarding:

- (i) nursery design,
- (ii) the establishment of nursery facilities,
- (iii) the implementation of seedling production trial,
- (iv) plan of future nursery development.



THE NURSERY DESIGN :

The principle used in a nursery design is the success of high quality seedling production. There are two main elements determining the successful seedling production, i.e. the environmental factors and seedling production techniques in nursery operation as illustrated in Figure 1.

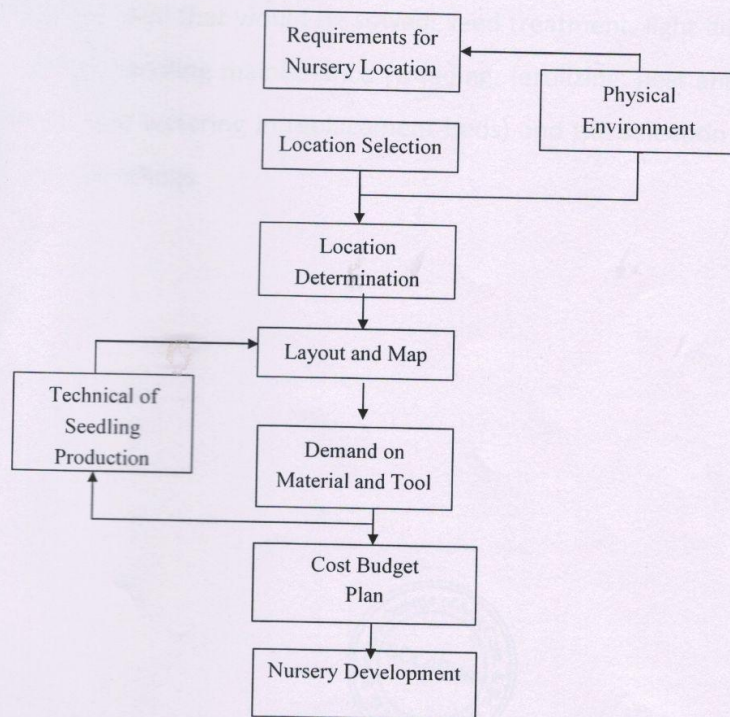
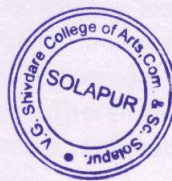


Figure 1. The making process of nursery design.



Figure 1 show that the physical environmental factors, which give influence to the successful seedling production, are (i) availability of water resources, (ii) topography, (iii) climate, (iv) accessibility, (v) community's housing, (vi) electricity, (vii) communication and (viii) the nursery layout. Meanwhile, the seedling production techniques that have closely related to the successful production are the size and species of seed that would be sowed, seed treatment, light demanding seedlings, seedling maintenance (weeding, fertilizing, pest and disease control, and watering in replacement beds) and the selection of ready to plant seedlings.

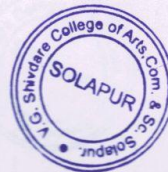


NURSERY LOCATION:

Generally, the selection of nursery location is based on several considerations, for instance:

- 1) Location; the nursery is established in the following location requirements:
 - (i) near with the planting location,
 - (ii) near with the road to make easy the transportation process and
 - (iii) near with the community's house to make easy in obtaining the workers.
- 2) The water resources; water has to be available every time. It can be obtained from the river, lake, swam, or ground.
- 3) Topography; the nursery should be established in flat area with the slope is less than 5%. If it is more than 5%, the terrace should be made.
- 4) Climate and elevation; it is based on the seedling would be produced.
- 5) Electricity and communication facilities; it is required in seedling distribution and office administration activity.

The criteria of site selection were based on supporting aspects, for instance, this location would be a learning base for Agricultural High School and the community living in surrounding nursery area. Various species of plants for private forest and agriculture would be developed. Learning on soil and water conservation aspects, and learning for the community about the basic of forestry development would be taken into consideration in developing this nursery center. Therefore, the nursery development is established by the multi-functions approach on the basis of education, conservation and business.



THE NURSERY PHYSICAL ESTABLISHMENT:

THE REQUIRED NURSERY MATERIALS AND TOOLS:

Based on the design map, the required tools and materials in establishing the nursery are inventoried, for instance the greenhouse establishment (size and shape), replacement beds (quantity, size and shape), water container (quantity, capacity and height) for watering (number of watering point, watering area and length of watering hose) and warehouse for placing the nursery materials (fertilizer, pollybag, seeds and shading net) and tools (hand sprayer and hoe).

ARRANGING THE BUDGET PLAN:

The budget for nursery establishment was arranged based on its conducted activity and analysis on inventory result of required tools and materials. The analyzed budget components covered: (1) the land preparation, (2) building establishment, (3) the establishment of irrigation system, (4) machines and tools procurement, and (5) cost of fuel, package, media, fertilizer, fee for worker and seedling maintaining.



THE NURSERY PHYSICAL ESTABLISHMENT :

The nursery physical establishment was conducted through the following steps: (i) land preparation (terrace), (ii) road making, (iii) the irrigation making, (iv) fencing and (v) the nursery facilities establishment (office, germination house, greenhouse, warehouse, etc). 3.1. Land Preparation The land preparation was conducted through land clearing, land levelling and terrace making, soil solidifying to make easy the replacement house making.

1. Land Clearing : The first activity in the nursery establishment was the land clearing. The land clearing can be conducted manually or mechanically. It was depended on the land condition. In the field with heavy topography and high quantity of workers, the land clearing is conducted manually (Figure 3). At this step, the cutting of the useless protection trees was conducted.

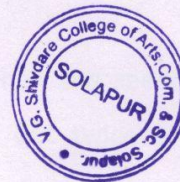
2. Land Levelling : To avoid the rest of rainwater and erosion, the land had to be flattened. This was conducted manually by using a hoe and spade because of its heavy topography. The levelling should be conducted in dry season (Figure 4). The land drainage system is also arranged at this activity.



3. Solidification : The area of seedling production had to be solidified to be able to be well passed anytime, in dry or rainy season. Beside that, solidification would repair the drainage.

4. Water Path Making : Number and type of water path were made depending on the type of soil, annual rainfall and topography. The water path making was conducted by digging the ground manually or mechanically. The making of water path was designed to follow the contour direction because naturally, the water would flow from the higher site to the lower one.

5. Fencing : All of the nursery area should be fenced by 1.5 m of height. The type of fence was determined on the available budget. In ITTO nursery, the area fencing was conducted by planting Gmelina arborea around the nursery border through the practical session on the training of tree planting for farmer on February 6 – 10, 2007. This activity was implemented in such way because of unavailable budget for fencing in nursery establishment budget.



MAINTAINING PROCESS OF SEEDLING AND NURSERY FACILITY :

The process of seedling maintenance is conducted through the activity of seedling cleaning from the disturbance plants, pest and disease observation and destroying, seedling watering and fertilizer. Meanwhile, the nursery facility maintenance covers the maintenance activity on the terrace, drainage, falling field, etc.

1. The Seedling Cleaning :

The seedling cleaning is the activity to clean the seedling from any disturbance plants that will bother the seedling growth in the replacement house (32 units). This activity is conducted manually and can be seen in Figure 20. The dead seedling is put off to avoid its possibility to be a disease in the nursery.

2. Fertilizing :

Fertilizing is using the leaf fertilizer, which is 2 gr/plant gandasil fertilizer. Fertilizing is intended for the seedlings with slow growth and have bio element deficiency symptom .

3. Watering :

The seedling watering was conducted when the seedling was too dry. The seedling watering was carried out twice a day, in the



morning and afternoon. On the rainy season, the frequency of seedling watering was reduced and determined on the wet rate level of seedling media. The seedling watering in the nursery area.

4. Seedling Selection :

The seedling selection was implemented in the planting season. It uses certain criteria based on the types of seedling characteristics, such as 30 – 40 cm in high, 5 – 10 leaves and 1 – 2 cm in seedling trunk diameter.

5. Seedling Transporting :

The seedling transporting was conducted after determining the exact planting location and preparing the planting holes. The seedling transporting was successful if the number of dead seedlings in its transporting process was relatively low (2-4%). Handling of seedling transporting became an impor thing for the success of planting in fields. To support the seed tracking process and the implementation of nursery accounting system, the seedling transport could be supported by the accurate data recording to find out the rate of growing trees and the origin of seed sources.



THE NURSERY DEVELOPMENT PLAN :

Some of PSC (Project Steering Committee) members consisting of head of Forestry Service of West Java Province, head of FSCD, head of Watershed Management Agency of Cimanuk-Citanduy, Administrator of Perhutani KPH (Forest Management Unit) Ciamis, APKR (Association of Community Wood Business) of Ciamis and other stakeholders discussed seriously the nursery development plan the nursery.

It was decided that the several things could be taken as input materials for the next nursery development. These were:

- (1) making of nursery area border,
- (2) improvement of replacement beds and show window of seedlings collection,
- (3) improvement of the inspection road,
- (4) improvement of watering installation,
- (5) improvement on water throwing path,
- (6) establishment of meeting room,
- (7) establishment of climatology station,
- (8) operational plan on the second period seedling production,
- (9) making of nursery accounting system,
- (10) implementation of seed tracking system,



CONCLUSIONS :

Two important factors determined the nursery design was nursery physical environmental factors (the availability of water resources, topography, climate, easiness and closeness to the inspection road the community's house, the facility of electricity and communication, and the nursery layout) and the technical factors of seedling production (species and size of germinated seeds, seed treatment, seedling sensitivity to the sunlight, seedling maintenance in the replacement house and selection of the ready to be planted seedlings).

The nursery establishment was conducted through the following steps: (i) land preparation, (ii) road making, (iii) water path making, (iv) fencing, and (v) the establishment of nursery facilities.

The implementation of seedling production trial in the nursery covered: (1) technical improvement of nursery location, (2) processing of high quality seedling production, (3) maintaining process on seedling and nursery facilities, (4) field and office administration, (5) process on budget proposal and its payment mechanism, and (6) valuable lessons on seedling production trial process.

There were valuable lessons should be considered and it became a basic consideration and should be applied in the second period of seedling production to make it more effective and efficient.



5) RageshwariShendage 6) PritiShendage 7)TejaswiGawali 8) MayuriShendage

V.G.SHIVDARE COLLEGE OF ART'S, COMMERCE AND SCIENCE,
SOLAPUR

Jule Solapur -1, Vijapur Road Solapur (Maharashtra) - 413004

2021-2022



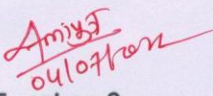
Certificate

This is to certify that,

Miss mayuri shendge, miss Rageshwari Shendge, miss tejaswi gawali, main ss priti Shendge has satisfactorily completed and Submitted project report entitled " Nursery Raising for Vegetables and flowers in White House " as prescribed in the syllabus P.A.H. Solapur University Under the guidance of Dr. Valsange A B at the Department of Biotechnology V. G. Shivdare College of Art's, Commerce and Science, Solapur during the academic year 2021-22.

Date: 04 / 07 / 2022


Examiner-1


Examiner-2



Shri Swami Samarth Ropvatika

Nimbargi, Sadepur Road, Solapur - 413221



Project Completion Report

This is to certify that, **Mayuri Shendage** has satisfactorily Visited and collected an information & Samples required for one year duration project entitled “Deep Root aeration for better yield in Hydroponic and post-harvest drying of tomatoes” as prescribed in the B.Sc. Biotechnology-III syllabus, P.A.H. Solapur University, Solapur at the Department of Biotechnology, V. G. Shivdare College of Art's, Commerce and Science, Solapur during the academic year 2021-22.

श्री. स्वामी सवर्ध रोपवाटिका सादेपूर
ता. द. सोलापूर, जि. सोलापूर-413221.

Signature

प्रो. न. न. 9763282892

Shri Swami Samarth Ropvatika

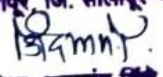
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Project Completion Report

This is to certify that, **Rageshwari Shendage** has satisfactorily Visited and collected an information & Samples required for one year duration project entitled “Deep Root aeration for better yield in Hydroponic and post-harvest drying of tomatoes” as prescribed in the B.Sc. Biotechnology-III syllabus, P.A.H. Solapur University, Solapur at the Department of Biotechnology, V.G. Shivdare College of Art's, Commerce and Science, Solapur during the academic year 2021-22.

श्री. स्वामी सवर्ध रोपवाटिका सन्तः
ता. द. सोलापूर, जि. सोलापूर-413221.


प्र. बाळचंद्र शिंदे
फ़. नं. 9763282892

Shri Swami Samarth Ropvatika

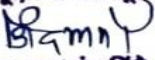
Nimbargi, Sadepur Road, Solapur - 413221



Project Completion Report

This is to certify that, **Tejaswi Gavali** has satisfactorily Visited and collected an information & Samples required for one year duration project entitled “Deep Root aeration for better yield in Hydroponic and post-harvest drying of tomatoes” as prescribed in the B.Sc. Biotechnology-III syllabus, P.A.H. Solapur University, Solapur at the Department of Biotechnology, V.G. Shivdare College of Art's, Commerce and Science, Solapur during the academic year 2021-22.

श्री. स्वामी समर्थ रोपवाटिका सादेपूर
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डॉ. बाळचंद्र सिंदे
मो. नं. 9763282892

Shri Swami Samarth Ropvatika

Nimbargi, Sadepur Road, Solapur - 413221



Project Completion Report

This is to certify that, **Priti Shendage** has satisfactorily Visited and collected an information & Samples required for one year duration project entitled "Deep Root aeration for better yield in Hydroponic and post-harvest drying of tomatoes" as prescribed in the B.Sc. Biotechnology-III syllabus, P.A.H. Solapur University, Solapur at the Department of Biotechnology, V.G. Shivdare College of Art's, Commerce and Science, Solapur during the academic year 2021-22.

श्री. स्वामी समर्थ रोपवाटिका सादेपूर
ता. द. सोलापूर जि. सोलापूर-413221.

प्रतिभा. बालबंश सिंदे
मो. नं. 9763282892

**VISIT REPORT: Miss. Rageshwari Shendage, Miss. Priti Shendage , Miss. Tejaswi Gavali ,
Mayuri Shendage**

H.O.D.	Project Incharge	Principal
VISIT REPORT SUBMITTED TO PUNYASHLOK AHILYADEVI HOLKAR SOLAPUR UNIVERSITY, SOLAPUR SUBMITTED BY Miss.Rageshwari Shendge Miss.priti Shendge Miss. tejaswi gawali Miss. mayuri shendge B.Sc. Biotechnology Part-III Semester- VI UNDER THE GUDENICE DR. Valsange. A. B  V.G.SHIVDARE COLLEGE OF ART'S, COMMERCE AND SCIENCE, SOLAPUR		

Nursery Raising for Vegetables and flowers in White House

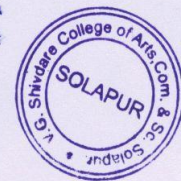
Abstract

India is having a great diversity of agro climatic zones suitable for different horticultural crops such as fruits, vegetables, ornamental plants, spices, plantation crops, medicinal and aromatic crops. After green revolution, India has made a tremendous progress in horticultural production and occupies good ranks in vegetables and floriculture production in the world but, the productivity is quite low due to poor planting materials, improper nursery management practices, climate change and traditional cultivation practices. To achieve higher productivity of major share contributing horticultural crops such as vegetables and floriculture sectors, it is very essential to produce healthy seeds and seedlings. Although India has varied agro climatic zones to produce quality and disease free seedlings, however, in off season, it is essential to raise seedlings in protected structure with controlled climate systems. The main purpose of raising seedlings in protected structure with hi-tech nursery management system is to produce higher yields with quality vegetables and floriculture crop production. Hi- tech nursery management practices include modern practices such as use of plug trays or pro trays, soil less substrate, mechanization and automation in irrigation and seed sowing in plug tray with different cells, water soluble nutrients, weed mats, seed priming and hardening in protected structure. Therefore, a brief discussion of modern nursery management practices under greenhouse for seedling production of vegetable and flowers crops is needed.

Keywords: Greenhouse, vegetables, flowers, nursery raising

1. Introduction

Greenhouse is persisting for longer time as usable pre-fabricated structure which is covered with transparent polythene, glass and shade-net to grow the seedling of vegetables, flowers and spices crop. Protected cultivation is the modification process from natural environment for increased growth and yield of the crop. Here, artificial regulation of temperature, light and humidity as per the requirement of crop to increase crop yield and extend the growing season. For the expansion of horticulture



industry availability of quality planting material is the basic need (Singh et al. 2017).

Presently, progressive farmers are adopting commercial protected cultivation of high value vegetables and flowers (Maitra 2020).

Nursery management is an important place for regular supply of disease free young seedling in particular high value vegetables and flowers crop with special care and attention. For the convey size of nursery in greenhouse in the area of 1000 m²

. Nowa-days, commercial nursery business is highly profitable business by the professional farmer with growing vegetable seedling and sale to different area. Vegetable and flower seeds are transplanted type of crop which is needed one place to grow with better care and after some days transplanted to the main field. Demand of vegetables in India increases day by day and also farmer are depend upon the quality of seedling with reasonable price.

India occupies the second largest position in area agriculture and production after China. Hybrid vegetables are highly costly, each and every seeds are important to grower. Vegetable like tomato, cherry tomato, brinjal, chilli, capsicum, cauliflower, cabbage, red cabbage, broccoli, knolkhol, Chinese cabbage, pak-choi, brussels sprout, lettuce, celery, endive and kale are sowing in greenhouse in plastic tray except onion, lettuce and asparagus are needed conventional bed under green house. Flower like marigold, impatient, gerbera, carnation, petunia, salvia, helichrysum, chrysanthemum cutting, aster, dianthus, geranium, larkspur, snap dragon, phlox and calendula.

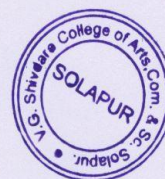
An appropriate site must be selected for the most effective, efficient, and economical design of a nursery.

Components and process of nursery raising

Artificial plastic tray (plug tray), sterilized media, mechanization with automated filling of media in plug tray, seed sowing after that irrigation, water soluble nutrient, protected structure like greenhouse and shade net, seed priming, seed pelleting and hardening.

Types of media

4.1. Root media for plug tray



Growing media is the key factor for successful nursery management. For proper root growth it is depend upon the physical characteristic like water holding capacity and nutrient content (Pandiyaraj et al. 2017). The role of media is root initiation and supplies the food material and water to young seedling (Krishnan et al. 2014). For better growing cocopeat, vermiculite, perlite used 3:1:1 ratio. For disinfect from disease and pest, media are mixed with neem cake + Trichoderma + Carbofuran for vegetable seeding growing.

Fig. 1: Coco-peat dust and coco-peat block

4.1.1. Coco peat: Sterilized cocopeat with low EC are used as growing media which is byproduct of coconut fibers. The pH should be 5.8 to 7 reported by (Easdown and Ravishankar 2016). It is C:N ratio and high water holding capacity about 7-9 times more than its weight. It improves the porosity, water retention capacity, good aeration, quick root growth and free from pathogen. Cocopeat blocks are very light in weight, so that it is easier to transport from one place to another place. It is free from soil borne disease. Commercial nursery is using mainly cocopeat for vegetable and flower seedling. Undecomposed cocopeat are needed to soak in water and squeeze at least 3 to 4 times for maintain lower down EC and salt.

4.1.2 Perlite: It is a one of the volcanic glass which is light in weight and expensive media as compare to cocopeat. It is used for good drainage of water and porosity and easy root growth. It improves aeration and drainage. Perlite is neutral in reaction.

4.1.3 Vermiculite: It is light in weight with good aeration and water holding capacity.

5. Type of nursery raising

5.1. Conventional method

For small farmer they adopted conventional method for healthy plant nursery raising of onion, lettuce and small size ornamental seeds.

1. Bed is raised bed with convenient length, 1m width and 0.15m height with well pulverized soil. 20-25 kg well rotten FYM and 200 g SSP are applied in one bed.

2. To prevent disease, nursery beds are treated with formaldehyde (25 ml/litre of water) after that covered with white polythene at lease 7-8 days. Polythene is



removed and turned the soil 3-4 times before sowing of seed to remove fumes.

3. The line to line spacing is 5cm and after seed sowing lines are covered with fine soil and FYM and bed are mulched by straw or dry grass.

4. Irrigation is applied in morning and evening by water cane and mulch are removed when seedling are emerging.

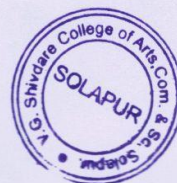
5. To avoid damping off bed is drenched with fungicide bavistin.

6. Water soluble fertilizer 19:19:19 spray @0.4% from 2 leaf stages to 16 days.

7. Seedlings are hardening with withheld water before 7 days of transplanting.

5.2. Plug tray method

Now-a-days, the plug tray plant nursery is establishing roots in India. For example large scale production in Maharashtra, Chhatisgarh, Karnataka and Tamil Nadu. For huge quantity vegetable and flower seedling production, modern technology like plug tray or pro tray method is a new technology introduced from Korea. Plug-plant propagation is advantageous for production of healthy, virus-free seedlings which reduces pre-bearing period, provide uniform crop growth and facilitate harvest among various crops vegetables such as tomato, chilli, brinjal, bell capsicum, cole crops, cucurbits, lettuce, parsley and celery. Seedlings are raised in seedling trays or plug tray or pro tray placed inside a greenhouse. Vermicompost + sand (1:1) and well decomposed, nutrient enriched and sterilized cocopeat is used as the growing medium (Prasad and Kumar 2007). The number of different trays are available in market with varied numbers of cells are used to grow the seedlings in vegetable nurseries. The cells number varies from 72-800 cells and standard tray is 98 and 104 cavity suitable for vegetable growing which are made of polypropylene material with drainage holes are used for seedling production. But for papaya, drumstick, cucurbits and gerbera growing 50 cavity is best. Seedlings produced in larger cells are taller and more root whereas in smaller size early ready for transplanting. Trays are filled with the growing medium and tapped gently to fill the cell properly. Seedling trays are drenched using Carbendazim 2g/l or Copper oxychloride (3g/l). Seeds are treated with Carbendazim (0.2g/100 seed) or Captan (0.2g/100g seed) are sown one per cell,



covered with a thin layer of the above growing medium and watered lightly with rose cane. Filled trays are stacked one above the other and covered with plastic sheet to create warmth and humidity required for germination. Seeds are taken 4-6 days after sowing according to temperature and humidity. Trays are shifted to a greenhouse and placed on the raised bed covered with a plastic sheet immediately after germination. Trays are watered twice a day to maintain appropriate moisture. Seedlings are drenched with 0.2% 19:19:19 + trace elements at 15 days after germination. Seedlings are sprayed using acephate (0.75g/l) to prevent infection by thrips. Hardening is done by exposing them gradually to sunlight and by reducing the frequency of watering. Seedlings will be ready for planting after 25-30 days after sowing. The importance of this method is to produce quality and disease free seedling in off season to get higher profit. After seed sowing, leveling the tray is to be done with leveler and written down the variety name, number of batch, date of sowing and company name.

Nursery management

6.1. Handling of plants

Since plants grown in a nursery are tender, care must be taken in nourishing them in order to ensure their growth and development. After 5-6 days of germination, trays are taken under poly house with proper care for uniform growth of plant. After that transfer to shade net and lastly open area for hardening.

6.2. Irrigation

Quality water is required important on the growth and development of plant in nursery. EC should be below 1 mS/cm and pH of water should be 6.5-8.4 (Easdown and Ravishankar 2016). Due to porous media water holding capacity is more so that 1-2 times in one day depends upon the moisture condition. Before 7 days prior to transplant withhold the water. Frequency of irrigation is done to see age of the seedling.

Weeding

Nursery has to be weed free because disease and pest attack is more. Black colour woven mats are covering in entire nursery.



6.4. Nutrient application

Nutrition plays an important role in the nursery. The nutrition in the form of organic and inorganic sources supplies all the essential nutrients required for proper growth and development of the nursery plants. Water soluble fertilizer like 19:19:19 is applied from cotyledon stage to 24 days with 5g to 20g respectively. 8-16 days- 5 g/10 lt, 16-19 day-10 g/10 lt, 19-22 day-15 g/10 lt and 22-24 days-20 g/10 lt. 13:0:46, 0:52:34, calcium nitrate, potassium nitrate, magnesium nitrate, EDDHA Fe and micronutrients are applied.

6.5. Plant protection measures

The disease and pest maintenance with minimize the number of spray by maintenance of polyhouse construction. Avoid more water use which increase the disease, all hoshould be close when ever see, sterilize the media, disinfection the plug tray and vicinity area. Yellow and blue sticky trap are used mass trapping. Sticky traps are using as integrated pest management in nursery for thrips, aphids, whiteflies, jassids and leaf minor are caught in the flying stage and alternate any type of tin box or mud pot are painted with yellow or blue colour in periphery with mustard oil or grease. The flies are attracted for yellow or blue colour. One trap is used for 10 m² of nursery. Trap are used when plant start emergence.

6.6. Chemical treatment

Hybrid seeds are already treated with chemicals. Seeds are treated with Thiomethoxam (10g/kg seed) for control initial pest infestation. Application of Copper oxychloride@3g/l when damping off symptom is seen. 17 days after sowing seedlings are sprayed with pesticide and drenching with systemic insecticide and broad spectrum fungicide on 22 to 25 days after sowing.

6.7. Packing and transport of nursery plants

The seedling are growing in plug tray method is best for loading and packing which are also transport with special type of vehicle for distance market. Re usable tray is disinfected by chlorine and used upto 3-4 times. Special type of plastic crate or



seedling trays is available in market to transport the seedling.

7. Future scope of Research

In the future, more crops may be grown as seedling transplants, especially those of high economic value and potentially high seed cost and also focus to grafted vegetable.

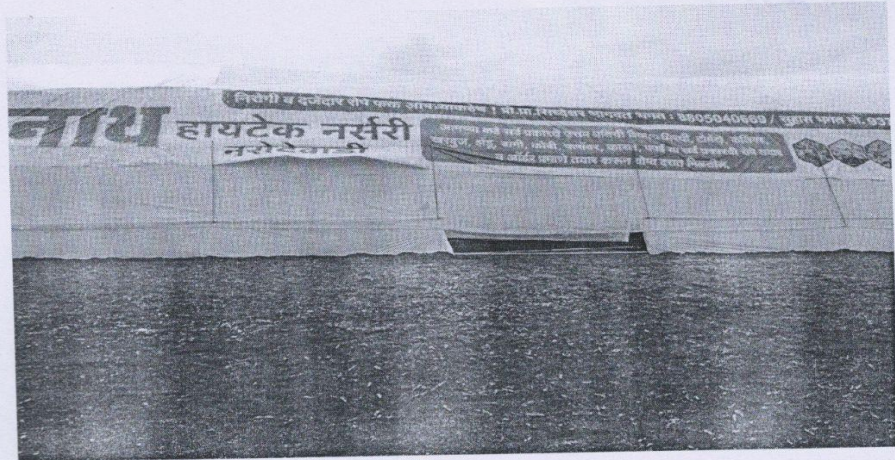
8. Conclusion

The importance of good nursery practices cannot be over-emphasized. The nursery should be maintained at the highest standard to ensure healthy, vigorous and uniform quality seedling. There are different factors like high quality hybrid seeds, growing media with good drainage facility and water holding capacity and recommended use of fertilizer and pesticide. Seedlings are uniform germination and growth in greenhouse condition. Hence, a full-proof planning, adequate investment, sufficient nursery infrastructure, scientific production system, good nursery management practices and maintenance of quality standards of planting material in a comprehensive manner are required for sustainable and profitable nursery.

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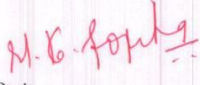




Microbiology and Applied Sciences, 6(6): 3162-3172



9) Miss. Anjali Patewadiyar

Protein Rich Healthy Beer	
CERTIFICATE	
This Is Certify That Ms.Anjali Patewadiyar, Completed The Project Work Entitled "Protein Rich Healthy Beer" Under The Guidance Of Ms.Swati Patil Asst Professor,Dept Of Biotechnology , V.G.Shivdare College Centre For Biotechnology Solapur, For The Partial Fulfillment Of The Degree Of "Master Of Science" In "Biotechnology" For Solapur University, Solapur University, Solapur During The Academic Year 2021-2022 .	
 Project guide (Swati Patil)	 Principal (Dr. B. N. Kamble)
Examiner -	
	
2	



TVK Beverages Private Limited

Ref. No. – HR/ 2022/06

Project Completion Report

This is to certify that, **Miss. Anjali Patewadiyar**, has satisfactorily visited and collected an information & samples required for one year duration project entitled **"Protein Rich Healthy Beer"** as prescribed in the B.Sc. Biotechnology – III syllabus, P. A. H. Solapur University, Solapur at the Department of Biotechnology, V. G. Shivdare College of Art's, Commerce and Science, Solapur during the academic year 2021-22.

For TVK Beverages Private Limited



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Protein Rich Healthy Beer

PROJECT REPORT SUBMITTED TO

PUNYASHLOK AHILYADEVI HOLKAR SOLAPUR UNIVERSITY, SOLAPUR

SUBMITTED BY

Mr.Hadsange Umesh Dundappa

B.Sc. Biotechnology Part-III

Semester- VI

UNDER THE GUIDANCE OF

Asst. Prof. Swati Patil



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This is to certify that, **Mr. Hadsange Umesh Dundappa**, has satisfactorily visited and collected an information & samples required for one year duration project entitled “**Protein Rich Healthy Beer**” as prescribed in the B.Sc. Biotechnology – III syllabus, P. A. H. Solapur University, Solapur at the Department of Biotechnology, V. G. Shivdare College of Art's, Commerce and Science, Solapur during the academic year 2021-22.

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12) Miss. Karalmala Shravani Suryakant

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2021-2022



Certificate

This is to certify that,

Ms. Karalmala Shravani Suryakant has satisfactorily completed and Submitted project report entitled " (Protein Rich Healthy Beer)" as prescribed in the syllabus P.A.H. Solapur University Under the guidance of Df./Asst.Prof.Mrs.Swati Patil at the Department of Biotechnology V.G.Shivdare College of Art's, Commerce and Science, Solapur during the academic year 2021-22.

Date: / / 2022



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H.O.D.

M. R. Jopika
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Mrs. Swati Patil
Mam

Ami
Examiner-2

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Principal

Dr. B. N. Kamble
Sir



TVK Beverages Private Limited

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PATHOLOGY LABORATORY VISIT

A Visit to **MONARCH HOSPITAL** Was Arriving for The Project Work On 2 July 2022. We Are The 5 Students in A Group of **Third Year B. Sc Biotechnology.**

We Are Reached at The Monarch Hospital and Our Group Visit to Different Different Department of Pathology Lab.

A Detailed Explanation Regarding Each Department Sample Collection, Testing Was Given During the Visit.



There is many equipment of pathology lab are followed: -

❖ **ESR ANALYZER: -**

This is used for the measure inflammation as inflamed red blood cells settle quickly relative to normal blood cells. Is a clinical lab test that measure the rate at which red blood cells in whole blood descend into a standardized tube, reported as mm per hour?

Thus, a high ESR can be indicative of elevated inflammation, though other conditions such as anemia, renal failure and obesity can increase ESR rate as well.



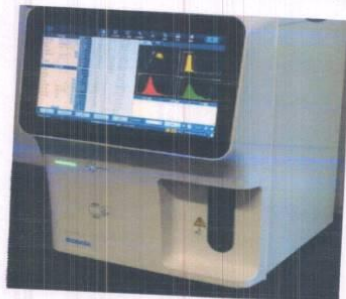
❖ **HEMATOLOGY ANALYZER: -**

Hematology analyzer engineered by **WALLACE H. COULTER.**

There are used to conduct a complete blood count (CBC). Which is usually the first test requested by physicians to determine a patients general health status.

A complete blood count includes red blood cell (RBC), white blood cell (WBC), hemoglobin, and platelet counts, as well as hematocrit levels.

It is all about to run tests on blood samples. they are used in medical field to do coagulation tests, analysis etc.



❖ **HbA1C ANALYZER: -**

The Quo- test hba1c system is a fully automated hemoglobin a 1c analyzer that uses patented boronated affinity fluorescence quenching technology to measure glycated hemoglobin from a 4 ul sample taken from a capillary or venous whole blood.

It is used for check for diabetes or prediabetes in adults. For people without diabetes the normal range for the hemoglobin A1c level is between 4% and 5.6%.



❖ **MICROTOME: -**

Microtomy is a method for the preparation of thin sections for materials such as bones, minerals and teeth, and an alternative to electropolishing and ion milling.

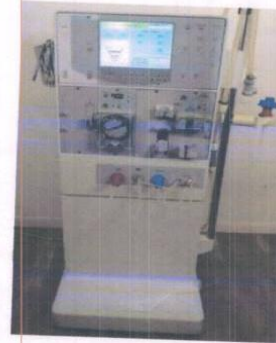
It is used for make thin slices of tissue (usually 4um but can be 2-10 um). The cut tissue is floated over a water bath, in order to eliminate wrinkles and distortion in the tissue, and picked up on a slide.



❖ **HEMODIALYSIS MACHINE: -**

This dialysis machine pumps blood through the filter and returns the blood to your body.

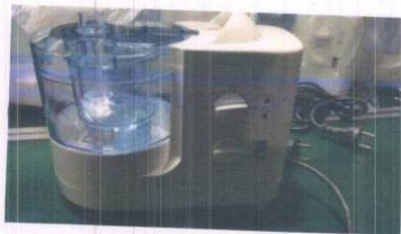
During hemodialysis, your blood is pumped through a filter, called a dialyzer. The process, the blood dialysis machine checks your blood pressure and controls how quickly. It's machine all about artificial kidney or a dialyzer are used to clean your blood.



❖ **ULTRASONIC NEBULIZER: -**

Ultrasonic nebulizer's use a piezoelectric crystal vibrating at high frequency to create the aerosol, and do not require gas flow. The vibrations are transmitted through a buffer to the drug solution and form a fountain of liquid in the nebulization chamber.

It is used to deliver medication using high frequency. This high frequency vibration turns liquid medicine into a mist. this mist can be inhaled by patients through a mask or mouthpiece.



❖ AUTOMATIC TISSUE PROCESSOR: -

There are two types-

- 1) Tissue transfer machines
- 2) Fluid transfer machine

The tissue processor finds applications in histopathology laboratories to automatically prepare tissue samples for laboratory testing by fixing, dehydrating, clearing, and infiltrating them with paraffin. Tissue processing is the technique by which fixed tissues are made suitable for embedding within a supportive medium such as paraffin, and consist of three sequential steps.



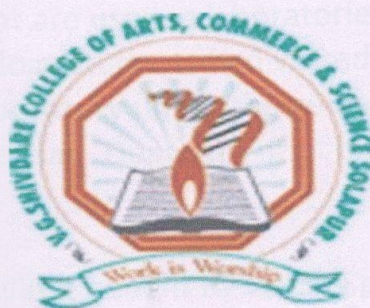
PATHOLOGY LABORATORY



A Visit Report submitted to

V.G. SHIVDARE COLLEGE OF ARTS COMMERCE AND
SCIENCE, SOLAPUR
SOLAPUR

For the partial fulfilment of
B.Sc. BIOTECHNOLOGY III



SUBMITTED BY:

Ms. Kalshetty Pooja Rajshekhar

Under the Guidance of

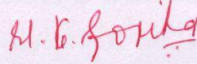
Asst. Prof. Ms. Rukmini. Potdar

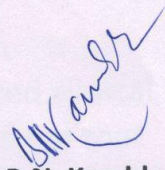
Department of biotechnology

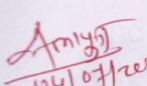
2021-2022




4-7-2022
Ms. Rukmini. Potdar.
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Dr. B.N. Kamble
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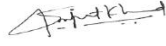

04/07/2022
Examiner -



गोदावरी दुध संकलन व शितकरण केंद्र

Project Completion Report

This is to certify that, **Kalshetty Pooja Rajshekhar** has satisfactorily Visited and collected an information & Samples required for one year duration project entitled “**Production of protein using Soyabean and whey**” as prescribed in the B.Sc. Biotechnology-III syllabus, P.A.H. Solapur University, Solapur at the Department of Biotechnology, V.G. Shivdare College of Art's, Commerce and Science, Solapur during the academic year 2021-22.



सुजीत दत्तात्रय खुर्दे

पुण्यश्लोक अहिल्याबाई होळकर वस्ती मु.पो.पिलीव ता.माळशिरस जि. सोलापूर



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2021-2022



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Date: / / 2022

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04/07/2022

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M. G. Kulkarni

H.O.D.

Neeraj
4/7/22

Examiner-2

Potdar
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Project Incharge



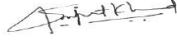
M. G. Kulkarni

Principal

गोदावरी दुध संकलन व शितकरण केंद्र

Project Completion Report

This is to certify that, **Jadhav Vaishnavi Kashinath** has satisfactorily Visited and collected an information & Samples required for one year duration project entitled “**Production of protein using Soyabean and whey**” as prescribed in the B.Sc. Biotechnology-III syllabus, P.A.H. Solapur University, Solapur at the Department of Biotechnology, V.G. Shivdare College of Art's, Commerce and Science, Solapur during the academic year 2021-22.



सुजीत दत्तात्रय खुर्द

पुण्यश्लोक अहिल्याबाई होळकर वस्ती मु.पो.पिलीव ता.माळशिरस जि. सोलापूर



Email-ID-godavari@gmail.com Contact No of proprietor- 7972722685

Laboratory Visit Report

Visit To Pathology Laboratory Dr.Potdar's Laboratory

V. G. Shivdare college of arts commerce and science department of BSc biotechnology , Solapur. Has organised a visit to pathology laboratory. As a biotechnology students we need to know about the instruments that are used in laboratories. So, the final year biotechnology students had visited **Dr.Potdar's Laboratory** under the guidance of **Asst. prof. Ms. Rukmini potdar** . Department of biotechnology.

Introduction

We got an excellent benefit by visiting pathology laboratory when **Dr.Shubhangi potdar** mam had explained well about the working principle of instruments those are **Microlab 300** and **Cobas c 111** .

1. Microlab 300

The microlab 300 Small in size, giant in performance. It is a true semi-automated clinical chemistry analyser in all its glory. A system that is designed as a clinical chemistry analyser and not as a standard photometer. Thousands of users have experienced the proven reliability and high performance of the the Microlab all over the world.



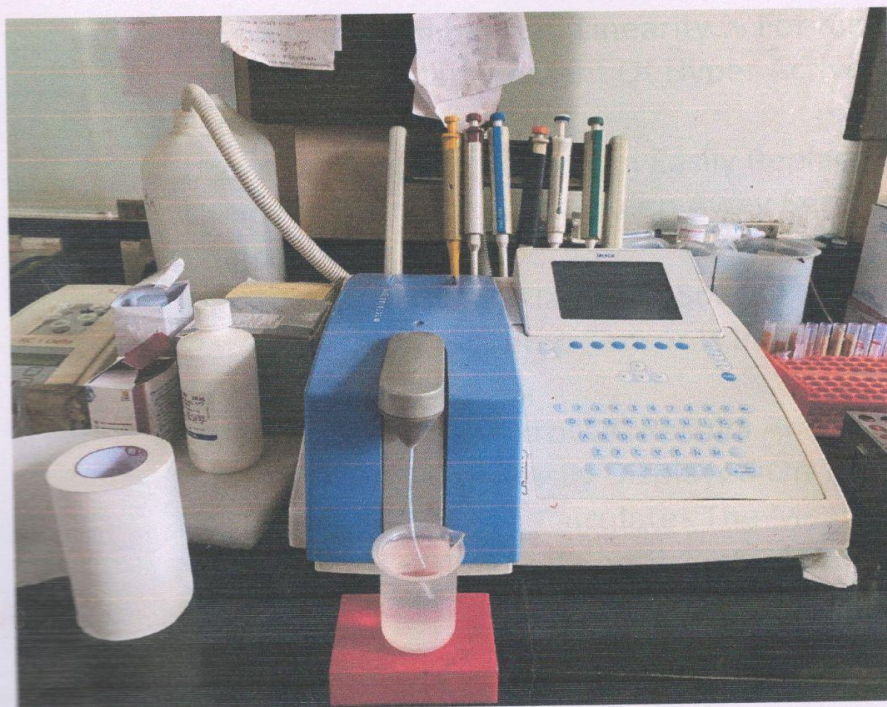


Fig no.1, Microlab 300

- Microlab 300 works in the principle of optical density .
- The reagents are taken in the reaction test tubes and samples are added with the help of micro pipette.

SPECIAL FEATURES:

- Unique 'Bellows Pump "Aspiration Technology Do Not Demand Periodic Calibration And Maintenance .



- User Programmable Non Linearity % For Kinetic Tests - Better Management Of Hyper Active Samples.
- User Maintenance - User Can Easily Replace Lamp And Remove Clogs - Keep Away Service Engineers .
- Measurement Takes Place In A Special Designed Patented Flowcell, Temp Sensor Is In Direct Contact With flowcell.
- Onboard Quality Control QC Results Are Stored In Memory And Are Easily Displayed On The Screen. The Software Calculates The Mean, Standard Deviation And Coefficient Of Variation

System overview :

- Clinical Chemistry
- Special Proteins
- Drugs of Abuse
- Therapeutic Drugs
- Electrolytes

2. Cobas c 111

The cobas c 111 analyser is the smallest member of the cobas serum work area platform family and the ideal solution for clinical chemistry testing in laboratories running 10 to 50 samples per day.

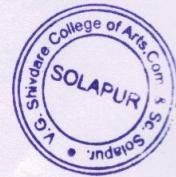




Fig no. 2 Cobas C 111

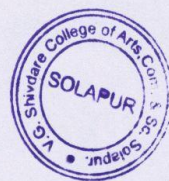
Overview :

- Good fit for labs more than 50 samples/day.
- Throughput of up to 100 tests/hour.
- Low water consumption of up to 3 liters per day.
- Reducing complexity for a range of laboratories, both networked or standalone.

Conclusion:



We can conclude that The Microlab 300 is a true semi-automated clinical chemistry analyser in all its glory. A system that is designed as a clinical chemistry and The cobas c 111 analyser is the ideal compact benchtop solution for clinical chemistry testing in laboratories running up to 50 samples per day. The cobas c 111 analyser is the ideal compact benchtop solution for clinical chemistry testing in laboratories running up to 50 samples per day.



16) Miss. Maske Aishwarya Avinash

- Name:- Aishwarya Avinash Mhaske
- Seat No:- 901267.
- Visit site:- Sidhharth Laboratories.

Amigat
04/07/2022
Examiner 1

MR. Gokul
400

Principal
Principal.



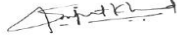
Amigat
04/07/22
Examiner 2

P. S. Patil
4-7-2022
Project incharge

गोदावरी दुध संकलन व शितकरण केंद्र

Project Completion Report

This is to certify that, **Maske Aishwarya Avinash** has satisfactorily Visited and collected an information & Samples required for one year duration project entitled “**Production of protein using Soyabean and whey**” as prescribed in the B.Sc. Biotechnology-III syllabus, P.A.H. Solapur University, Solapur at the Department of Biotechnology, V.G. Shivdare College of Art's, Commerce and Science, Solapur during the academic year 2021-22.



मुजीत दत्तात्रय खुर्द

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VISIT TO SIDDHARTH LABORATORIES

- **Department of Biochemistry**
- **Information and applications of instruments**

On my visit to Siddharth Laboratories, two lab assistants offered me a tour of the laboratories. Also, they gave a detailed explanation of instruments and all the other equipment in the laboratory.

1. **Biochemistry Machine:** Commonly used in science labs and medical settings, this device helps doctors to diagnose the problem and identify critical issues (cell related issues and diseases). Scientists also use this device to identify the structure as well as function of bio-molecules, such as nucleic acids, lipids, enzymes, etc. In simple terms, the device is ideal for performing critical tasks in an efficient and safe manner.

Benefits of biochemistry analyzers

Timely and accurate analysis of samples

Improves the level of medical industry

Optimizes time-consuming testing and analytical processes

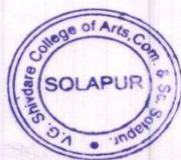
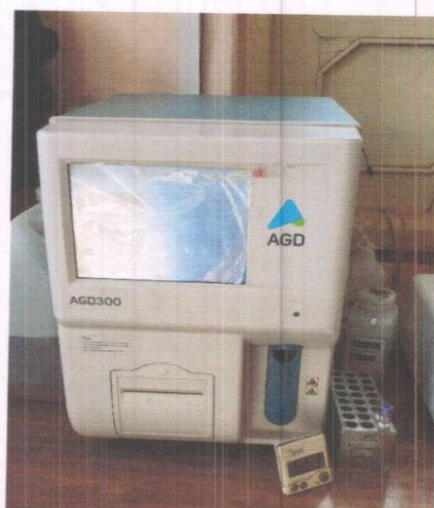
Provides reliable diagnostic information



2. AGD Machine:

Specifications:

- Assay types are absorbance, End point, Kinetic, Fixed time & coagulation
- Photometric range is from - 0.1-3.00Abs
- Direct access to 196 programs & 5000 test records with reaction curve
- 6V/10W, Tungsten Halogen Lamp
- Aspiration volume is from 0.2mL to 1.0mL
- 32 μ L Quartz flowcell
- 7" Graphic colour LCD with resistive touch screen



3. Microscope:

The goal of any laboratory microscope is **to produce clear, high-quality images**, whether an optical microscope, which uses light to generate the image, a scanning or transmission electron microscope (using electrons), or a scanning probe microscope (using a probe).

Tissue Analysis

It is common for histologists to study cells and tissues using the microscope. For example, if a section of tissue is taken for analysis, histologists can use a microscope in combination with other tools to determine if the sample is cancerous.

Examining Forensic Evidence

Evidence collected at a crime scene may contain information that is not visible to the naked eye. For example, striations in bullets can be examined under a microscope to see if they match bullets shot from a particular gun.

Determining the Health of an Ecosystem

It is common for field biologists to monitor the health of a particular ecosystem, such as a stream, by using microscopes to identify the number and diversity of organisms in a particular region over time.

Studying the Role of a Protein within a Cell

Research scientists find microscopes an invaluable tool when they study the function of proteins within cells. With today's technology, many proteins can be labeled with a tag and studied in live cells.



17) Mr. Anirudha Masa Sonkamble

A Visit Report Submitted To
V.G. SHIVDARE COLLEGE OF ARTS
COMMERCE AND SCIENCE, SOLAPUR

B.Sc. BIOTECHNOLOGY PART III

SUBMITTED BY:
Mr. Anirudh Masa Sonkamble
Under the Guidance of
Asst. Mrs Sonali Kale

Department of biotechnology
2021-2022

S.V. Kale
4-7-22
Mrs. Sonali Kale.
(Project Guide)

M.G. Manjunath
Mrs. Gopika Manjunath.
(HOD)

1/1/22
1/1/22
Examiner



TVK Beverages Private Limited

Ref. No. – HR/ 2022/11

Project Completion Report

This is to certify that, **Mr. Anirudha Masa Sonkamble** , has satisfactorily visited and collected an information & samples required for one year duration project entitled **"Protein Rich Healthy Beer"** as prescribed in the B.Sc. Biotechnology – III syllabus, P. A. H. Solapur University, Solapur at the Department of Biotechnology, V. G. Shivdare College of Art's, Commerce and Science, Solapur during the academic year 2021-22.

For TVK Beverages Private Limited



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(Director)

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18) Mr. Ajit Sidaray Nivargi

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COMMERCE AND SCIENCE, SOLAPUR**

B.Sc. BIOTECHNOLOGY PART III



SUBMITTED BY:
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S.V. Kale
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Mrs. Sonali Kale.
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M.G. Gopika
Mrs. Gopika Manjunath.
(HOD)

Examiner
4/7/22





TVK Beverages Private Limited

Ref. No. – HR/ 2022/12

Project Completion Report

This is to certify that, **Mr. Ajit Sidaray Nivargi** , has satisfactorily visited and collected an information & samples required for one year duration project entitled **"Protein Rich Healthy Beer"** as prescribed in the B.Sc. Biotechnology – III syllabus, P. A. H. Solapur University, Solapur at the Department of Biotechnology, V. G. Shirdare College of Art's, Commerce and Science, Solapur during the academic year 2021-22.

For TVK Beverages Private Limited



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19) Mr. Moajjamali Kabir Mulani

**A Visit Report Submitted To
V.G. SHIVDARE COLLEGE OF ARTS
COMMERCE AND SCIENCE, SOLAPUR**

B.Sc. BIOTECHNOLOGY PART III



SUBMITTED BY:

Mr. Moajjamali Kabir Mulani.

Under the Guidance of

Asst. Mrs. Sonali Kale

Department of biotechnology

2021-2022

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4-7-22
Mrs. Sonali Kale.
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M. G. Gopika
Mrs. Gopika Manjunath.
(HOD)

Handwritten signature
17/02
Examinee





TVK Beverages Private Limited

Ref. No. – HR/ 2022/13

Project Completion Report

This is to certify that, **Mr. Moajjamali Kabir Mulani** , has satisfactorily visited and collected an information & samples required for one year duration project entitled “**Protein Rich Healthy Beer**” as prescribed in the B.Sc. Biotechnology – III syllabus, P. A. H. Solapur University, Solapur at the Department of Biotechnology, V. G. Shivdare College of Art's, Commerce and Science, Solapur during the academic year 2021-22.

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Field Visit To Food Production Industry
VISIT REPORT

INTRODUCTION

Bsc Biotechnology Department of V.G. Shivdare College Of Art's Commerce And Science has organised a field visit to Food Product Industry, Food Product as a part of Biotechnology studies. Final year biotechnology students joined the visit under the guidance of faculty Asst. Professor Mrs Sonali Kale.Nandini Food Products Area Incharge. Mr..Praveen explained well about the structure and working of the food processor Of plant. offered us a visit to the concerned areas. Students got an excellent benefit by visiting the food production plant in Solapur with a capacity of 200 Kilo /day and understanding about the Production methods.

Namkeen is the Hindi word used to describe a savoury flavour. The word Namkeen is derived from the word Namak (meaning salt). Namkeen is also Used as a generic term to describe savoury snack foods. Both black and Regular white salt are used in Indian cooking, which gives it the salty flavour Many people like. Other namkeen snacks common in Indian cuisine include Farsan,, Chivda, Shev., chips. Today we Visited the Bhujia Namkeen foods that are typically designed to be portable, quick, and satisfying. Processed snack foods, as one form of convenience food, are designed to Be less perishable, more durable, and more portable than prepared foods. They often contain substantial amounts of sweeteners, preservatives, and Appealing ingredients such as chocolate, peanuts, and specially-designed Flavours.



OBJECTIVE

The objectives of visiting Food Factory is

- To study the types of food production.
- To study the process of food production.

PRODUCT TYPES & SIZE

Indian consumers seem to have recovered their taste for traditional snacks Such as sev, bhujia and namkeen/ mixtures, which are contributing to the Impressive growth rate of the firms.

To elaborate further, namkeens can be characterised into three segments as:

- **Single product segment:** Moong Dal, Chana Dal, Peanut, Nut Cracker, Karare Peanut, Heeng Jeera Peanut, Masala Matar, Mathri, Namkeen Pare, etc.
- **Single product in bhujia:** Plain Sev, Bikaneri Bhujia, Aloo Bhujia, Punjabi Tadka, Ratlami Sev, Bhavnagri Gathiya, etc.
- **Lots of mix:** Navratan Mix, Khatta Meetha, Chatpata Mix, Magic Mix, All in One, etc.

Now Namkeen is well known to each and every part of our geography. South and North East part of India has good demand for Namkeen because of its mixed culture.



Size of the product

Namkeen products are packed in different types of packaging products with different sizes.

Pouch Packaging Size

- 50 gram
- 100 gram
- 250 gram
- 500 gram
- 1 KG

Raw Material Requirement

<u>Sr</u>	<u>Particulars</u>	<u>Rate per KG</u>
<u>1</u>	<u>Besan</u>	<u>60-70</u>
<u>2</u>	<u>Oil</u>	<u>190-200</u>
<u>3</u>	<u>Spices</u>	<u>200-2500</u>
<u>4</u>	<u>Dal</u>	<u>80-90</u>
<u>5</u>	<u>Peanut</u>	<u>110-120</u>
<u>6</u>	<u>Potato</u>	<u>15-20</u>

Average raw material cost per KG: Rs. 100-110.

MANUFACTURING PROCESS



- Procurement of raw material.
- Preparation of dough with the help of a dough mixer.
- Then with the help of a Bhujia machine, the extruder converts the dough into the shape of the required namkeen.
- After that, take it into the frying section.
- Drying of namkeen
- After frying, mix all the other ingredients like: peanut, spices etc. as per the different taste of the namkeen.
- Seasoning of namkeen with the help of a seasoning machine.
- Packaging of goods.
- Transportation.

Power Requirement

The borrower shall require a power load of 2500 watts which shall be applied with Power Corporation. However, for standby power arrangement. The Conveyor Belts Requires Power to transfer the fried bhujia to another place.

Manpower Requirement

6-7 Manpower is required for the Namkeen Manufacturing unit. Includes:

- 1 Skilled Labour.
- 2 Unskilled Labour.
- 3 Helper.
- 4 Accountant.
5. Transport Workers.





Fig 01 Making The dough



Fig 02 Mixing the Dough



Fig 03 Bhujia Fried in Fresh hot oil

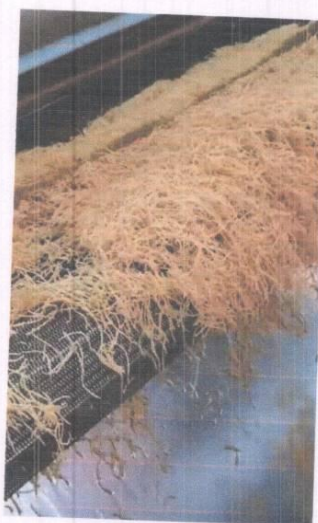


Fig 04 Bhujia with short threads





Fig 05 Adding flavours



Fig 06 Bhujia ready to get packed





Fig 07 Nandini Food Factory at Solapur.



Fig 08 Visit to Nandini Food Factory.



RESULT -

The food product has potentially to be developed because of the customers' needs and wants for food will continue to increase and be more diverse from time to time. Changes to the customers' needs and wants are likely to become increasingly diverse, both in terms of design, quality, and delivery process. Consequently, the company must be able to produce a variety of products to meet customers' needs and wants. Nandini Food Products Provide Different types of snack products. They have hygienic products and processing Units as Well. We learnt how Processed Food gets made, how long it takes to make what are the requirements.

