International Journal of Scientific Research in Engineering and Management (IJSREM)
Volume: 05 Issue: 01 | Jan - 2021 ISSN: 2582-3930

AGRICULTURE COLLEGE AND RESEARCH CENTRE AT PIMPLEKHUTA

YASHODHAN.C.DESHMUKH (5th Year B. ARCH)

AR. MIHIR VAKHARIA (Guide)

Bachelor of Architecture

DR. D. Y. PATIL COLLEGE OF ARCHITECTURE, AKURDI, Savitribai Phule Pune University, PUNE

ABSTRACT

Agriculture being a basic activity plays a vital role in Indian economy, but still it gambles with the monsoon, causes high fluctuations in production. Inadequate rainfall of monsoon and frequent drought conditions hampered the development of agriculture, particularly, in drought prone area of Maharashtra. In this report the Amravati district, which falls, in Maharashtra is selected for study. The major objective is to find out and analyze the needs, issues in region.
Land use and land cover change is for the human modification of earth’s terrestrial surface.

Agriculture being a major occupation in India possess least awareness about the modern trends in agricultural sector and thus also lack the attention which is required to be given major working group in this sector.Agriculture continues to sustain millions of people in India. This is despite the rapid industrialization which is acquiring significant proportions in many regions of the country. Agriculture is one of the oldest economic activities of man. In India 63 percent population lives in rural area and it contributes nearly 17.20 percent of gross domestic product. Over 63 percent population depends on agriculture for their livelihood.

Over 63 percent population depends on agriculture for their livelihood. Distribution of agriculture depends upon large number of geo-hydrological, environmental, biological and socio-economic variables. In India 60 percent area is rain fed. Agricultural landscape has drastically changed in the last two decades. Better agriculture techniques have successfully applied in order to achieve self sufficiency in agriculture production. The five year plans are aimed to make India self reliant in agriculture sector. Hence for the last five
plans, many programmes such as community development programme, extension services, expansion of irrigation facilities, fertilizers, agricultural machineries, high yielding varieties of seeds, expansion of transport, power, marketing and institutional credit have introduced. Before green revolution Indian agriculture was facing many problems such as lack of irrigation, limited use of technology, unsuccessful land reforms, explosive population growth, decreasing investment in agriculture sector etc.

AIM: To design Agricultural college and research centre to promote new technologies and methods to educate farmers and students for their best practice in future.

OBJECTIVES:

1. To study the scenario and identify issues related to Agriculture at Urban and rural level

2. To study the estimate the levels and pattern of the investment in agricultural research, extension and education.

3. To study research resource allocations across states and commodities.

4. To study the determinants of public investment in agricultural research, extension and education.

5. To study measures to improve the efficiency of the national agricultural research and extension systems.

6. To identify status and number of Agricultural facilities at urban and rural level.

7. To analyse the study area based on selected parameters

8. To analyse agricultural land use pattern And Identification crop combination and diversification regions in study area.

9. To propose Agricultural research and innovation centre at Chikhaldara, Amravati.

THESIS TOPIC: AGRICULTURE COLLEGE AT PIMPLEKHUTA

SUB-TOPICS:

1.Why agricultural college?

2.Basic introduction.

3.Needs for the project.

4.Main designing features and components of project.

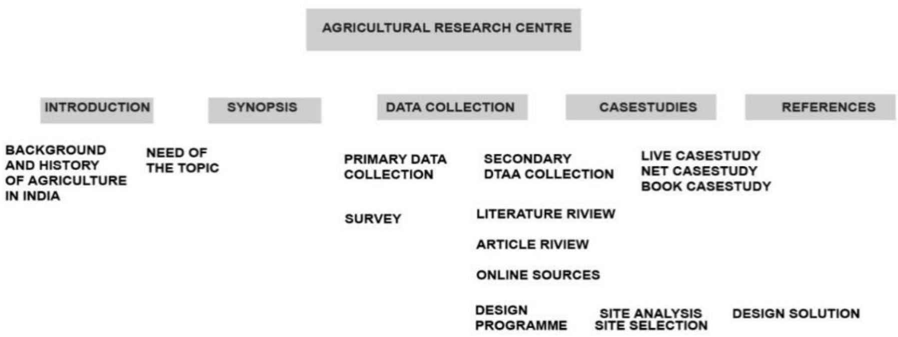
5.Necessary bylaws needed for the desi.gn.

6.Govermental scope for the project in future.

7.Possiblities with the international sector.

8.Foreign investment probabilities.

METHODOLOGY



What is agriculture college and extension?

Agro hub is the project having the most essential requirements of the new emerging agricultural sector in various aspects of institutional, research and development, storage, guidance, and commercial divisions.

Basic introduction:

Agro hub is the collective unit of agricultural institution,research centres, storage facilities,information centres,guidance centres and commertial zone for the development of farmers and user aided with the agricultural sectors.

This term is refers as the Agricultural extention.This will act as a whole and soul unit for this sector and there will be uniformity in the functioning of these uints.This will help in countering the problems leading due to diversed units of these components.

Need for the Agriculture college:

In India there is no such proposed project ,therefore it will lead to great outcome of such proposed design.There should be such unit in every state on the national level which will actas an connective network for the user groups for proper functioning in their most spreaded field.

Features:

Basic components of Agriculture college:

1.Institutional and academic zone.

2.Research and development zone.

3.Storage facilities and agro production sector.

4.Commertial and sales departmental zone.

5.Guidance centres.

6.Information centres.

7.Call centres and testing labs.

8.Administration zone.

9.Green house zones.

Bylaws regarding projects:

In India agricultural institution run on LAND GRAND METHOD which is not applicable in todays scenario . This is one of the main flaws in the design of such much needed project.

In land grand method there is great amount of land is given to institutional block for study purposes which is not needed.

This can be countered by minimizing research land and leading to great use of proposed land.

Govermental scope:

As agriculture is the main occupation in India this project can be one of the main projects in which governmental assistance will lead to great development of agricultural sector.

Every state should have such hub for the agricultural development and creation of various job opportunities and local production.

Relation with the international sectors and investment probabilities:

Due to great local production opportunities and development in agricultural sector will attract the foreign investors and companies for the agro products and researches in this field.

Drawbacks of Exsisting agricultural facilities and extensions :

1.In any agricultural colleges ,agricultural extensions are just provided with basic facilities and are not sufficient for emerging agricultural sector.

2.Improper use of the provided land leads to lack of essential facilities and also degrades the image of agricultural heritage for that particular region

3.It also disrupts the interaction between the governmental schemes and locals associated with the agri-sector which is essensial for the economic growth of that particular region.

Methodology in the Design proposal:

1. Analysis of the facilities such as agricultural colleges, research centres, commertial facilities, and other agrobased centres.
2. Proper selection of the site for the proposal for maximum utilization and also to raise the awareness for local agro based sector.
3. It will also help in the generation of the employment.
4. It will help in maintain the proposed project and will to use every space and create a disciplined use of the provided land.

Scope:

1.It will be most important proposal in future to maintain the wise of available land.

2.It can also be more effective if done on govermental basis in the future.

3.It will also increase the awareness and the importance of the local agrobased industry and also will create the platform for upgrading agrobased industry.

Limitations:

1.Designing of the proposed project depends on the current requirements of the site, laws of the selected region, and current need of the project in the proposed site.

2.Area of the proposed project may differ according to the requirements of the context of the site.

3.Context of the site should be properly determined to uplift the utilization of the proposed project.

4.Climatic conditions may affect the planning and designing of the proposed project and also the requirements of the project.

WHAT IS YOU TOPIC?

A.Topic Name : Agro-hub Proposed at Chikhaldara.

WHY IS YOUR TOPIC?

A. AGRO-HUB is the integrated facility that includes all the basic components which are necessary for the regional growth of the agricultural sector in the area in which the project is proposed.

B. This project is not being introduced in the India in with proper requirements,provide according to the site context.

HOW ARE YOU GOING TO DESIGN THIS FOR THE TOPIC?

A. Design will start with analysis of related projects , casestudies , suitable context for the project .
B. Components of the project should be suitably decided according to the requirements of the project.
C. New implementation should be added according to the new construction and design techniqes according to the project.

FOR WHOM ARE YOU GOING TO DESIGN THIS FOR?

A. This design project is basically targeted for the people associated with the agricultural sector.
B. This will also help to raise the awareness among about the upgrading trends in agricultural sector.

WHERE ARE YOU PLANNING TO DESIGN YOU TOPIC?

Selection of the site should done according to the suitable context and also surrounding region should be beneficial for the proposed design project.

CHAPTER 1. INTRODUCTION

1.1GENERAL INTRODUCTION

Agriculture, as the backbone of Indian economy, plays the most crucial role in the Socioeconomic sphere of the country. Indian agriculture is a diverse and extensive sector involving a large number of actors. It has

been one of the remarkable success stories of the post independence era through the association of Green Revolution technologies.
The Green Revolution contributed to the Indian economy by providing food self-sufficiency and improved rural welfare. The role of national agricultural research system (the NARS) was imperative in the context of Green Revolution.

1.2 AGRICULTURE AS OCCUPATION

Agriculture is one of the oldest economic activities of man. In India 63 percent population lives in rural area and it contributes nearly 17.20 percent of gross domestic product. Over 63 percent population depends on agriculture for their livelihood. Distribution of agriculture depends upon large number of geo-hydrological, environmental, biological and socio economic variables.

1.3 INTRODUCTION OF AGRICULTURAL COLLEGE RESEARCH CENTRE

The Agricultural Research Centre (ARC) is a large research center that spreadover all Governorates in Egypt and represented by Research Institutes, CentralLaboratories, 31 Specialized Research Stations (SRS), 8 Regional Research Stations(RRS), Extension Centres (EC), Agricultural Experiments, AgriculturalDirectorates (AD), Agricultural Library and CentralAdministration for Research Stations. There are some individual entities that established its network infrastructure such asCentral Laboratory for Agricultural Expert Systems , ENAL- AgriculturalGenetic Engineering Research Institute (AGERI), and Central Laboratory forAgricultural Climate (CLAC).

1.4CENTRAL IDEA OF WORK

Agricultural research centre will be consisting of research departments all the research activities will be carried out depending upon the requirements of farmers in Shirur, Pune

Campus will be consisting of Farmers information center,Exhibition for farmers, Sales and marketing building ,Vertical farming building etc..

- Lack of recommended crop rotations in sugarcane cropping system leading to decreasing fertility and productivity and pest problems. There is also lack of intercropping and crop-rotation. Hence there is a need to carry more research activities to provide bio fertilizers to farmers

- Increasing micronutrient deficiency of soils. The soil suffers from lack of iron and zinc. Hence research in microbiology will help in resolving this issue

-Unavailability of bullock power and labour during peak period of farm operations delaying farm operations. Hence there is a need to develop information centre for farmer’s welfare and solving their problems

Hence there is need to develop appropriate agrotechniques for enhancing agricultural production and productivity of different crops has also been passed on to the farmers. Inwater management is quite significant. The research onmicro propagation, farm machinery, dry land horticulture, integratedpest and nutrient management including bio fertilizers, mushroom production etc. is worth mentioning. There is need to focus on location specific and need based research activities inorder to cater the needs of all types of farmers and farming groups. Biotechnology with its vast potential and challenges is important toagricultural development. This university is developing biotechnological competence in the areas of plant tissue culture, molecular biology,biocontrol and bio fertilizers.

The Agricultural Research Centre (ARC) is a large research center that spreadover all Governorates in Egypt and represented by Research Institutes, CentralLaboratories, 31 Specialized Research Stations (SRS), 8 Regional Research Stations(RRS), Extension Centres (EC), Agricultural Experiments, AgriculturalDirectorates (AD), Agricultural Library and CentralAdministration for Research Stations. There are some individual entities that established its network infrastructure such asCentral Laboratory for Agricultural Expert Systems , ENAL- AgriculturalGenetic Engineering Research Institute (AGERI), and Central Laboratory forAgricultural Climate (CLAC).

CHAPTER 2. LITERATURE REVIEW

2.1 Education for agriculture in India: Time for a change

***Suresh K. Sinha*Published by CURRENT SCIENCE, 302 VOL. 79, NO. 3, 10 AUGUST 2000**

Suresh K. Sinha is with Water Technology Centre, Indian Agricultural
Research Institute, New Delhi 110 012, India.

Article explains the mechanism of transfer of technologies from the agricultural universities to farmers. Wemay also ask whether the spread of rice and wheat production technology was the result of scientists–extensionnexus or considerably due to farmer-to-farmer communication.The agricultural technology is based on the following biophysical factors:
· Understanding of location-specific climate/weather.
· Soil characteristics, including its physical, chemicaland biological properties.
· Appropriate soil treatment.
· Assessment of suitability of crops for a crop season.
· Knowledge and assessment of different diseases, insectpests, nematodes and weeds and their potential forcompetition with different crops.
· Availability and arrangement of the various inputs, crops varieties with alternative choices, water, fertilizers, pesticides, energy source and labour.
· Facility for availability of seed material and its testingor other plant material.
· Time management for different operations for the successof agricultural production.

2.2IFPRI Discussion Paper 01048 December 2010

Review of Agricultural Extension in India

Are Farmers' Information Needs Being Met
The research paper focuses on analysis of requirements of farmers in India hence it also states the importance of research on new techniques and methods that should be invented by researchers
Farmers require a diverse range of information to support their farm enterprises. Information is needed not only on best practices and technologies for crop production, which the traditional public-sector extension system provided during the Green Revolution, but also information about postharvest aspects including processing, marketing, storage, and handling. Farmers require information related to the following
• Most appropriate technological options

• Management of technologies, including optimal use of inputs
• Changing farm system options (mixed farming and diversification, animal husbandry, fisheries)
• Sourcing reputable input suppliers
• Collective action with other farmers
• Consumer and market demands for products
• Quality specifications for produce
• Time to buy inputs and sell produce
• Off-farm income-generation options
• Implications of changing policies (input subsidies, trade liberalization)
• Access to credit and loans
• Sustainable natural resource management and coping with climate change

This includes both architectural design and material solutions, supported by theoretical Principles, to present a sustainable approach to design. It demonstrates that tropical buildings do not necessarily require large energy input, in compliance with green building Standards. Case studies show how principles of sustainable design have been successfully applied in tropical environments.

2.3 Agricultural research in India: an exploratory study
Anwesha borthakur, Pardeep singh
International Journal of Social Science & Interdisciplinary Research
Vol.1 Issue 9, September 2012, ISSN 2277 3630
www.indianresearchjournals.com

India has one of the largest and institutionally most complex agricultural research systems in the world. Historically, the Indian agricultural research system is the zenith of a process which started in the 19th century and which resulted in the establishment of the Imperial (now Indian)Council of Agricultural Research (ICAR) on the recommendation of a Royal Commission on Agriculture in 1929. Since then there was a stupendous evolution of agricultural research in India.
The main events in the history of agricultural research in India can be grouped into the following seven categories (Singh, 2001):
1. Establishment of agriculture departments and agriculture colleges,
2. Establishment of the imperial council of agricultural research,
3. Initiation of commodity committees,
4. Project for intensification of regional research on cotton, oilseeds and millets,
5. Initiation of all India coordinated crop improvement projects,
6. Reorganization of ICAR, and
7. The development of agricultural universities. Among these, first three could be listed under the development of agriculture in the colonial era, whereas the next four were prominent in the post-colonial era.

Eleventh five year plan (2007-2012)
The analysis by the Steering Group for the Eleventh Plan has identified technological change (Using yield potential of varieties of major crops released by the National Agricultural Research System [NARS] as a proxy), public investment (including investment on irrigation), and diversification (represented by area under fruits and vegetables) as the most important proximate determinants of growth. The Eleventh Plan had found out some research gaps in the agricultural sector.
The following critical research gaps were identified in the Eleventh Plan:

Integrating methods of traditional and modern biology giving attention to both yield and quality aspects. An orientation of public sector research in hybrid development with commercial Viability has to be reintroduced on a mission mode at least in crops like pigeon pea, Soybean, and mustard. Indigenous plant types that inherently possess genes responsible for higher nutritive value (More protein, micronutrients, etc.) need to be identified and used for enriching nutrients in rained crops major research thrust is warranted in areas of balanced and site-specific nutrient supply and efficient water management strategies. Integrated Pest Management (IPM) needs greater emphasis.

In horticulture, the research agenda needs to emphasize survey of indigenous biodiversity for resistance to various biotic and a biotic stresses for improvement in production,

CHAPTER 3.DATA COLLECTION

In livestock, there is an urgent need to reorient research and assess the genetic potential of indigenous breeds. Intensive research work needs to be undertaken for genetic Identification of traits of excellence in Indian breeds.
With endemic shortage of animal feeds, research should explore technologies to augment feed resources, including genetic modification of microorganism to utilize high lignin Forage grasses.
With large quantities of animal products now being produced, research on process technologies, value addition, packaging, storage, transportation, and marketing should receive high priority. In the absence of a proper slaughter regime, there is considerable wastage and an effective package of practices for management of slaughter age needs to be evolved.

3.1 AGRICULTURE AND ECONOMY

Agriculture continues to remain a major sector of the Indian economy. It contributes considerable per cent of GNP, provides 60 per cent of employment and continues to be the primary source of living for 70 per cent of the population. Technological progress in agriculture is, therefore, crucial for the overall economic development of the country.
-The total geographical area of India is estimated at 328.8 million hectors.
- The gross cropped area is about 180 m.ha, of which 35 m.ha are under double cropping.
- Rice is the most important crop followed by wheat, pulses, oilseeds, sorghum, and maize. Cotton and sugarcane are the principal commercial crops.
- India has one-half of the buffalo and one-sixth of the cattle population of the world.
- India ranks first in goat
-India ranks sixth in sheep population.
-It has a vast potential of fishing resources comprising 2.02 m.sq.km of Exclusive Economic Zone (EEZ),
- India has 7,517 km of coastline
-29,000 km of rivers
- 1.7 m.ha of reservoirs,
- 0.902 m.ha of brackish water areas, and
- 0.753 m.ha of tanks and ponds

3.2 GLOBAL AGRICULTURAL RESEARCH SYSTEM

It is system that supports and funds to carry out research to develop agriculture and its related aspects to reduce hunger and poverty in the world. *The Consultative Group on International Agricultural Research (CGIAR)* is a part of Global Agricultural Research System

CGIAR (The Consultative Group on International Agricultural Research)

The Consultative Group on International Agricultural Research (CGIAR) was established in 1971.

The Consultative Group on International Agricultural Research (CGIAR) is an association of public and private members that support and fund a number of International Agricultural Research Centres (IARCs) that carry out research to reduce hunger and poverty.

The Consultative Group on International Agricultural Research (CGIAR) is a global partnership that unites organizations engaged in research for sustainable development with the funders of this work.

3.3 THE PRESENT AGRICULTURAL RESEARCH SYSTEMS OF INDIA

India has one of the largest agricultural research systems in the world with the largest number of scientific personnel of any developing country except China. The research system includes approximately 30,000 scientists and more than 100,000 supporting staff actively engaged in research related to agriculture. Although the total number of scientists engaged in agricultural research in India looks very impressive, it compares less favourably with many developed countries.

The present agricultural research system comprises essentially two main streams, the ICAR at the national level and the Agricultural Universities at the State level. Besides, several other agencies such as General Universities, Scientific Organizations, and various Ministries/Departments at the Centre, as also Private or Voluntary Organizations participate directly or indirectly in research activities related to agriculture.

3.4 NATIONAL AGRICULTURAL RESEARCH SYSTEM

1. THE ICAR SYSTEM
2. THE AGRICULTURAL UNIVERSITIES SYSTEM
3. OTHER AGENCIES
4. LINKAGES AMONG THE SUB-SYSTEMS
5. INTERNATIONAL CO-OPERATION

3.4aTHE ICAR SYSTEM

The ICAR has the following major objectives: (i) to undertake, aid, promote and coordinate agricultural, animal husbandry and fisheries education, research, and its application; (ii) to act as a clearing house of research and general information relating to agricultural and veterinary matters; (iii) to maintain a research and reference library; (iv) to do other things considered necessary to attain the above objectives; and (v) to provide consultancy services in the fields of education, research and training in agriculture and allied sciences.

Among the major scientific organizations in the country, ICAR is unique in having concurrent responsibility for both research and education. As an apex body at the national level, ICAR is mainly responsible for the promotion and coordination of agricultural research in the various branches of agricultural and allied sciences in the country. In addition to its promoting and coordinating roles, ICAR is also directly involved in undertaking research at the national level, basic as well as applied, on diverse problems facing production of crops, animals, fisheries, etc., with the objective of evolving new production technologies suited to different agro-climatic conditions. Just as the University Grants Commission (UGC) plays a major role for the general education in the country, ICAR plays a similar role in the area of agricultural education. The Charter of the ICAR also includes extension education, which is carried out through a network of projects and other mechanisms.

3.4b RESEARCH INFRASTRUCTURE OF THE ICAR

Although agriculture is a State subject, ICAR has established many Central Research Institutions over the years to meet the agricultural research needs of the country. These are essentially meant for: (i) implementing research mandates extending beyond the administrative boundaries of the States; (ii) pursuing basic research not undertaken by most Agricultural Universities; (iii) evaluating research results through multi - location testing; and (iv) developing manpower for Agricultural Universities and other agricultural institutions.

3.4c CENTRAL RESEARCH INSTITUTES:

ICAR directly administers 49 research institutes in the areas of crop, animal and fishery sciences. They are:

3.4c.1 Research Management Academy:

National Academy of Agricultural Research Management (NAARM) originally started as Central Staff College for Agriculture, at Hyderabad provides research management training to the agricultural scientists in the country. In addition, it organizes seminars, conferences and workshops, both national and international, based upon the scientific studies and reviews undertaken on the management problems encountered in the research system.

3.4c.2 National Bureaux:

In order to collect, conserve and initiate such measures as would lead to long-term productivity of basic resources like plants, animals, fish, soil, and water, ICAR has established four national bureaux. They are:
1. National Bureau of Plant Genetic Resources (NBPGR) at New Delhi undertakes research and coordinates activities in germplasm collection; introduction and exchange of seeds and plant materials; and characterization, documentation, maintenance, and conservation of genetic resources for utilization in crop management.

2. National Bureau of Soil Survey & Land Use Planning (NBSS&LUP) at Nagpur is engaged in the preparation of soil map of India; preparation of district level soil resource inventories; soil correlation and classification at national level; research in soil genesis and classification; imparting training in soil survey and mapping; soil taxonomy, land use planning, etc; and establishment of a soil data bank for use in agricultural research and extension.
3. National Bureau of Animal Genetic Resources (NBAGR) at Karnal is engaged in the collection, maintenance and conservation of animal genetic resources for utilization in livestock improvement.
4. National Bureau of Fish Genetic Resources (NBFGR) at Lucknow is engaged in the collection, conservation and efficient utilization of fish genetic resources

3.4c.3 Crop Science Institutes:

There are nine crop science institutes carrying out basic and applied research on specific crops and transferring the results thereof. They are:
1. Indian Agricultural Research Institute (IARI) at New Delhi is the premier agricultural institution engaged in basic and applied research in crops, postgraduate education and training, extension education, and transfer of technology.

2. Central Rice Research Institute (CRRI) at Cuttack is engaged in basic and applied research in all disciplines of rice culture;

3. Central Research Institute for Jute and Allied Fibers (CRIJAF) at Barrackpore is engaged in developing varieties of jute

4. Central Tobacco Research Institute (CTRI) at Rajahmundry is engaged in varietals improvement of FCV tobacco

5. Indian Grassland and Fodder Research Institute (IGFRI) at Jhansi carries out basic and applied research on grasses, grass lands and fodder crops including all aspects of forage seed production and its protection for producing high quality forage.

6. Sugarcane Breeding Institute (SBI) at Coimbatore is engaged in evaluating important sugarcane varieties for different agro-climatic regions in the country.

7. Indian Institute of Sugarcane Research (IISR) at Lucknow has the mandate to standardize the sugarcane production and protection technologies

8. Central Institute of Cotton Research (CICR) at Nagpur is engaged in basic and applied research to improve cotton production

9. Vivekananda Parvatiya Krishi Anusandhan Shala (VPKAS) at Almora is engaged in the development of improved high yielding and disease resistant varieties of different cereals, millets, pulses, vegetables

3.4c.4 Horticulture and Plantation Crops Institutes:

There are six horticulture and plantation crops institutes conducting and coordinating research on the crops they deal with. They are:
1. Indian Institute of Horticultural Research (IIHR) at Bangalore has the mandate to conduct cytogenetically studies to improve horticultural crops
2. Central Institute of Horticulture for Northern Plains (CIHNP) at Lucknow is engaged in the investigation of major production problems of fruit and vegetable cultivation for the northern plains with special reference to mango.
3. Central Institute of Temperate Horticulture (CITH) at Srinagar has the mandate to carry out basic and applied research relating to temperate fruits and vegetables in the country.
4. Central Potato Research Institute (CPRI) at Shimla has the mandate to conduct and coordinate potato research in India; to serve as a centre of information on all aspects of potato research and development; and to produce breeder seed required by the country.
5. Central Tuber Crops Research Institute (CTCRI) at Trivandrum conducts and coordinates research on all tropical tuber crops other than potato, viz. cassava, sweet potato, amorphophallus, aroids, yams, arrowroot, etc.
6. Central Plantation Crops Research Institute (CPCRI) at Kasargod has the mandate to improve the genetic potential of plantation crops; conduct basic and applied research; serve as an information centre on all matters relating to these crops; and produce genetically superior planting materials.

3.4c.5 Resource Management Institutes:

There are eight resource management institutes which are primarily responsible for undertaking research on soil and water conservation for optimizing production of crops under different conditions. They are:
1. Central Soil and Water Conservation Research and Training Institute (CSWCR&TI) at Dehradun has the mandate to study erosion problems, and conservation of land and water resources;

2. Central Soil Salinity Research Institute (CSSRI) at Karnal has the mandate to collect information on the extent, characteristic, genesis, and classification of salt affected soils; study soil and water dynamics in irrigated agriculture

3. Central Arid Zone Research Institute (CAZRI) at Jodhpur has the mandate to evolve location-specific technologies for optimizing production of arid lands

4. Central Research Institute for Dryland Agriculture (CRIDA) at Hyderabad has the mandate to carry out basic research in conservation, management and utilization of natural resources in dryland ecosystem;

5. ICAR Research Complex for North-Eastern Hill Region (ICAR-NEH) at Shilling caters to the needs of agriculture, animal husbandry, fisheries, soil and water conservation, etc.,

6. ICAR Research Complex for Goa (ICAR-GOA) at Ela is engaged in research related to horticultural and other crops, livestock improvement, fisheries, etc. in the region.

7. Central Agricultural Research Institute (CARI) for Andaman and Nicobar Islands at Port Blair conducts research on high value cash and plantation crops; develops silvipastoral system and appropriate land use pattern

8. Indian Institute of Soil Science (IISS) at Bhopal has the mandate to study the fundamental aspects of soils, particularly those that are basic to develop agricultural expertise and generate information on various basic aspects of soil research

3.4c.6 Technological Institutes:

The technological and engineering problems in crop production and quality of commercial crops are handled by five institutes. They are:
1. Central Institute of Agricultural Engineering (CIAE) at Bhopal has the mandate for research and development of improved farm equipment related to crop production; postharvest technology

2. Central Institute for Research on Cotton Technology (CIRCT) at Bombay has the mandate to improve the production of quality cotton; and to find ways and means for better utilization of cotton and its by-products.
3. National Institute of Research on Jute and Allied Fibre Technology (NIRJAFT) at Calcutta has the objectives of improvement of fiber quality; preparation of textiles by blending jute and other fibres; basic research on fibres and products; and transfer of technology for application in agriculture and industry.
4. Indian Lac Research Institute (ILRI) at Ranchi carries out research towards effecting improvements in cultivation, modification and standardization of lac, and studies its constitution and modifications so as to intensify its production and utilization; and to impart training in improved methods of lac cultivation and its industrial use.
5. Central Institute of Postharvest Engineering and Technology (CIPET) at Ludhiana undertakes research on various aspects of postharvest technology related to agricultural produce.

3.4c.7 Animal Science Institutes:

Eight animal science institutes have the mandate of breeding animals for higher productivity and suggest better management practices. They are:
1. Indian Veterinary Research Institute (IVRI) at Izatnagar, a Deemed University, has its objectives to conduct basic and applied research on all aspects of livestock health, production, and nutrition; and impart postgraduate education in veterinary sciences and animal husbandry.
2. National Dairy Research Institute (NDRI) at Karnal, a Deemed University, has the mandate to meet the manpower needs for research, teaching, and dairy development

3.4c.8 Fisheries Institutes:

Six fisheries institutes conduct studies for assessing the production of fish, conduct training programmes and undertake research. They are:
1. Central Inland Capture Fisheries Research Institute (CICFRI) at Barrackpore has the mandate to develop systems for monitoring of fish population in rivers, fresh water reservoirs, estuaries

2. Central Marine Fisheries Research Institute (CMFRI) at Cochin conducts research for assessing and monitoring exploitable marine fishery resources for rational exploitation and conservation; to assess the exploited and under-exploited fishery resources;

3. Central Institute of Fisheries Education (CIFE) at Bombay has the Deemed University status. It conducts undergraduate and postgraduate degree programmes in fishery sciences; undertakes research

Central Institute of Fisheries Technology, (CIFT) at Cochin conducts research for the improvement of indigenous crafts and gears, and develops suitable designs for them; develops technologies for handling, processing, preservation, product development

5. Central Institute of Brackish water Aquaculture (CIBA) at Madras conducts multidisciplinary, mission-oriented applied research to develop appropriate technologies for the aquaculture organisms in the estuaries

6. Central Institute of Freshwater Aquaculture (CIFA) at Dhauli conducts research for developing low input aqua-farming to benefit small and marginal farmers and also system of industrialized aquaculture for entrepreneurs;

3.4c.9 Social Science Institutes:

Two institutes come under this category. They are:
1. Indian Agricultural Statistics Research Institute (IASRI) at New Delhi conducts research in experimental design, surveys, statistical genetics, computer and data processing

2. National Centre for Agricultural Economics and Policy Research (NCAP) at New Delhi has the objectives to undertake research related to the economic aspects of agricultural production process including the associated policy issues

a. PROJECT DIRECTORATES:

Because of the importance and magnitude of the work involved in a single commodity like rice, wheat and poultry, or a group of commodities like oilseeds, pulses and vegetables, ICAR has upgraded some of its research infrastructure/projects with added responsibilities, and designated them as Project Directorates.

1. Directorate of Rice Research, Hyderabad;
2. Directorate of Wheat Research, Karnal;
3. Directorate of Pulses Research, Kanpur;
4. Directorate of Oilseeds Research, Hyderabad;
5. Project Directorate on Vegetables, Varanasi;
6. Directorate of Cropping Systems Research, Modipuram;
7. Project Directorate on Water Management, Patna;
8. Project Directorate on Cattle, Meerut;
9. Project Directorate on Poultry, Hyderabad;
10. Directorate of Maize Research, New Delhi.

b. NATIONAL RESEARCH CENTRES:

The National Commission on Agriculture recommended setting up of `Centres of Fundamental Research' headed by eminent scientists in particular areas. Consequently, the ICAR conceived the idea of setting up a number of National Research Centres (NRCs). The concept of NRCs revolves around the need for concentrated attention with a mission approach by a team of scientists from different disciplines. They work under a senior leader on selected topics which have direct or indirect relevance to resolving national problems in a particular crop or commodity or a problem area of research. These centres are designed to concentrate on those crops and commodities not well served by the research institutes.

c. RESEARCH SCHEMES/PROJECTS:

In addition to its institute-based research, ICAR promotes research schemes/projects in agriculture and allied areas to resolve location-specific problems. It is involved in a cooperative endeavor with other research organizations in carrying out multidisciplinary research programmes. Such promotional schemes fall under the following categories.

d. ALL INDIA COORDINATED RESEARCH PROJECTS (AICRPS):

These projects have been essentially conceived as an instrument to mobilize available scientific resources to find effective solutions for the national problems of agricultural production through inter-institutional interactions. The projects are developed as multidisciplinary and problem-oriented projects with major emphasis on multi-locational testing of new materials/production systems.

e. NATIONAL AGRICULTURAL RESEARCH PROJECT (NARP):

Agricultural Universities which have a state-wide mandate for agriculture did not have a strong base for research at the regional level and most of the funds provided were utilized for developing the University main campuses, thus neglecting the regional research needs.

f. TECHNOLOGY MISSION IN AGRICULTURE:

In the Seventh Five Year Plan, a mission-oriented approach to technology development was emphasized to faster relevance and to provide motivation for establishing organic working linkages between different sectors, which otherwise remained compartmentalized. The Steering Group on Science and Technology, constituted by the National Planning Commission, has identified.

g. AD HOC RESEARCH SCHEMES:

ICAR generates a Cess Fund by levying a custom duty at the rate of 0.5 per cent ad valorem on 25 articles of agricultural produce exported from India. It supports a large number of short-term, result-oriented ad hoc research schemes by utilizing the Agricultural Produce Cess Fund, which roughly works out to Rs.60 million a year

h. CENTRES OF ADVANCED STUDIES:

In order to improve faculty competence and develop infrastructure for better research and training, ICAR with the support of UNDP has set up, since 1971, several Centres of Advanced Studies in selected disciplines in Agricultural Universities and ICAR Institutes. These Centres were established to encourage the pursuit of excellence through collaboration between scientists of outstanding ability with their counterparts in similar institutions abroad

i. SPECIAL SCHEMES:

ICAR launched in 1978 a special scheme known as `Professors of Eminence and National Research Fellows' to identify individuals of outstanding merit, who could provide leadership in the development of `Schools of Thought' in specific areas by undertaking fundamental research in agriculture and allied areas. Under this scheme, scientists work on specific projects formulated by them in the ICAR Institutes and Agricultural Universities

j. RESEARCH PLANNING, MONITORING AND EVALUATION:

ICAR is responsible for agricultural research planning at the national level. Its headquarters scrutinizes and sanctions research schemes received from its own institutes as well as from other institutions. The research schemes are first technically examined by the concerned Subject Matter Divisions in the headquarters and put up for consideration before the Scientific Panels. Once they are found technically sound, they are later examined for financial implications by the Standing Finance Committee. Finally, they are placed before the Governing Body for approval.

3.4d THE AGRICULTURAL UNIVERSITIES SYSTEM

As agriculture is a State subject, the responsibilities for research, education and extension rest with the State Governments. Prior to 1960, agricultural research in the States, essentially on local problems, was carried out by the State Departments of Agriculture supported by Agricultural Colleges. During the past 30 years, research and education have been transferred to the Agricultural Universities, and the State Departments of Agriculture organize extension services. The Universities are supported by their respective State Governments. ICAR provides financial support and assists their research and education programmes.

3.4d.1 LIST OF AGRICULTURAL UNIVERSITIES IN INDIA

1. Acharya NG Ranga Agricultural Univ., Rajendranagar, Hyderabad-500030, A.P.
2. Anand Agricultural University, Anand-388110, Gujarat
3. Assam Agricultural University, Jorhat-785013, Assam
4. Bidhan Chandra Krishi Viswavidyalaya, P.O Krishi Viswavidyalaya, Mohanpur, Nadia-741252, West Bengal

5. Birsa Agricultural University, Kanke, Ranchi- 834006, Jharkhand

6. Central Agricultural University, Imphal -795004, Manipur

7. Chandra Shekar Azad Univ. of Agriculture & Technology, Kanpur- 208002, U.P

8. Chaudhary Charan Singh Haryana Agricultural University, Hissar-125004,Haryana

9. Chaudhary Sarwan Kumar Himachal Pradesh Krishi Vishvavidhalaya, Palampur, Kangra- 176062, Himachal Pradesh

10. Dr Balasaheb Sawant Konkan Krishi Vidyapeeth, Dapoli, Ratnagiri-415712, Maharashtra

11. Dr Panjabrao Deshmukh Krishi Vidyapeeth, Krishi Nagar, Akola-444104, Maharashtra

12. Dr Yashwant Singh Parmar Univ. of Horticulture & Forestry, Solan, Nauni – 173230, Himachal Pradesh

13. Govind Ballabh Pant University of Agriculture & Technology, Pantnagar, Udhamsingh Nagar-263145, Uttarakhand

14. Guru Angad Dev University of Veterinary and Animal Sciences, Ludhiana-141004, Punjab

15. Indira Gandhi Krishi Vishwavidyalaya, Krishak Nagar, Raipur-492006, Chhattisgarh

16. Jawaharlal Nehru Krishi Vishwavidyalaya, Krishi Nagar, Jabalpur- 482004, M.P.

17. Junagadh Agriculture University, Moti Baug, Agril. Campus, Junagadh-362001, Gujarat.

18. Karnataka Veterinary Animal and Fisheries Science University, P.B. No. 6, Nandinagar, Bidar-585401, Karnataka

19. Kerala Agricultural University, P.O Vellanikkara, Thrissur-680656, Kerala

20. Maharana Pratap Univ. of Agriculture & Technology, Udaipur-313001, Rajasthan

21. Maharashtra Animal Science & Fishery University, Nagpur, Maharashtra

22. Mahatma Phule Krishi Vidyapeeth, Rahuri-413722, Maharashtra

23. Marathwada Agricultural University, Parbhani -431402, Maharashtra

24. Narendra Deva University of Agriculture & Technology, Kumarganj, Faizabad- 224229, Uttar Pradesh

25. Navsari Agricultural University, Vijalpore, Navsari-396450, Gujarat

26. Orissa Univ. of Agriculture & Technology, Siripur, Bhubaneswar-751003, Orissa

27. Punjab Agricultural University, Ludhiana -141004, Punjab

28. Rajasthan Agricultural University, Bikaner -334006, Rajasthan

29. Rajendra Agricultural University, Pusa, Samastipur-848125, Bihar

30. Sardar Vallabh Bhai Patel University of Agriculture & Technology, Modipuram, Meerut-250110, Uttar Pradesh

31. Sardarkrushinagar-Dantiwada Agricultural University, Sardarkrushinagar, Dantiwada, Banaskantha-385506, Gujarat

32. Sher-E-Kashmir Univ. of Agricultural Sciences & Technology, Railway Road, Jammu- 180012 (J&K).

33. Sher-E-Kashmir Univ. of Agricultural Sciences & Technology, Shalimar, Srinagar- 191121, (J&K).

34. Sri Venkateswara Veterinary University, Tirupati, Chittoor- 517502, A.P.

35. Tamil Nadu Agricultural University, Coimbatore-641003, Tamil Nadu

36. Tamil Nadu Veterinary & Animal Sciences University, Madhavaram Milk Colony, Chennai- 600051, Tamil Nadu

37. University of Agricultural Sciences, Dharwad, Karnataka

38. University of Agricultural Sciences, Banglore- 560065, Karnataka.

39. UP Pandit Deen Dayal Upadhaya Pashu Chikitsa Vigyan Vishwa Vidhyalaya Evam Go Anusandhan Sansthan, Mathura- 281001, Uttar Pradesh

40. Uttar Banga Krishi Vishwaviddyalaya, P.O. Pundibari, Distt. Cooch Behar-736165, West Bengal
41. West Bengal University of Animal & Fishery Sciences, 68 KB Sarani, Kolkata-700037, West Bengal
42. University of Horticultural Sciences, Venkataramnagudem, West Godavari, A.P.
43. Rajmata VRS Agricultural University, Gwalior-474002, Madhya Pradesh.
44. University of Horticultural Sciences, Navanagar, Bagalkot-587101, Karnataka
45. University of Agricultural Sciences, Raichur-584102, Karnataka

3.4e DEEMED-TO-BE UNIVERSITIES

1. Indian Agricultural Research Institute, Pusa-110012, New Delhi
2. Indian Veterinary Research Institute, Izatnagar, Bareilly-243122, Uttar Pradesh
3. National Dairy Research Institute, Karnal-132001, Haryana
4. Central Institute of Fisheries Education, Mumbai-400061, Maharashtra
5. Allahabad Agricultural Institute, Allahabad-211007, Uttar Pradesh

3.4f CENTRAL UNIVERSITIES WITH AGRICULTURE FACULTY

1. Banaras Hindu University, Varanasi, U.P.
2. Aligarh Muslim University, Aligarh, U.P.
3. Vishwa Bharti, Shantiniketan, West Bengal
4. Nagaland University, Medizipherma, Nagaland

3.5 RESEARCH INFRASTRUCTURE IN INDIA –ANALYSIS AT NATIONAL LEVEL

Basically, the research infrastructure consists of an experiment station at the main campus and a number of research stations and substations located in different parts of the State. There are numbers of research stations belonging SAUs, working on location-specific problems. Generally, the research programmes are headed by the Directors of Research, who are assisted by the Associate Directors of Research located at the regional research stations within the State. Some Agricultural Universities have established Advanced Centres by combining related subjects in areas such as plant protection, genetics and plant breeding, agricultural engineering, agricultural economics, water technology, etc.

3.5aResearch planning, monitoring and evaluation

Agricultural Universities have State-wide responsibility for research in agriculture. In those States where, more than one University is there, the research responsibilities are shared on the regional basis. To ensure relevant research planning, their efficient implementation and proper evaluation, each Agricultural University has a Research Council or a Research Advisory Committee as an apex body for policy formulation and coordination of research activities. This body, c sion Education, Deans of constituent colleges, representatives of State Departments and haired by the Vice-Chancellor comprises Director of Research, Director of Extent farmers.

3.5b Six National Research Centers

Cotton, Orange, Pomegranate, Grape, Onion & Soil Survey

Post Harvest Training Centre at Talegaon, Dist-Pune, One of its kind in Country

Crop based organisations – MAHA GRAPE, MAHA MANGO, MAHA BANANA, MAHAGRAPE, Pomegranate, Floriculture association, Orange

- Soil Testing Labs – 118 (29 Public , 89 Private)

- Residue Testing Labs – 2 Bio- control lab - 10
- Fertiliser testing labs - 5 Pesticide Testing Labs- 4
- Seed Testing Labs - 3
- Agro polyclinic - 231
- Taluka Seed Farm - 194
- Horticulture nurseries - 1373

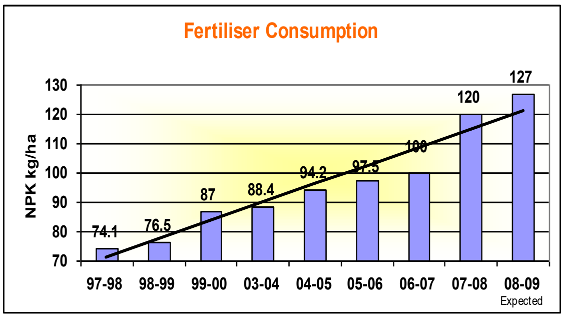


Fig 3.5(a) Rate of fertiliser consumption in India (Source-Forest department)

Sr. No	Item	Proposed Amount (Rs.in Crores)	Implementing Agency
1	Seed Village Scheme	11.48	MSSC Ltd.Akola
2	Strengthning of Infra-structure facility	30.00	MSSC Ltd.Akola
3.	Strengthning of Seed Testing Lab.	1.37	State Dept. of Agriculture
	Total	42.85	

Fig3.5 (b) Infrastructure for seed research in India

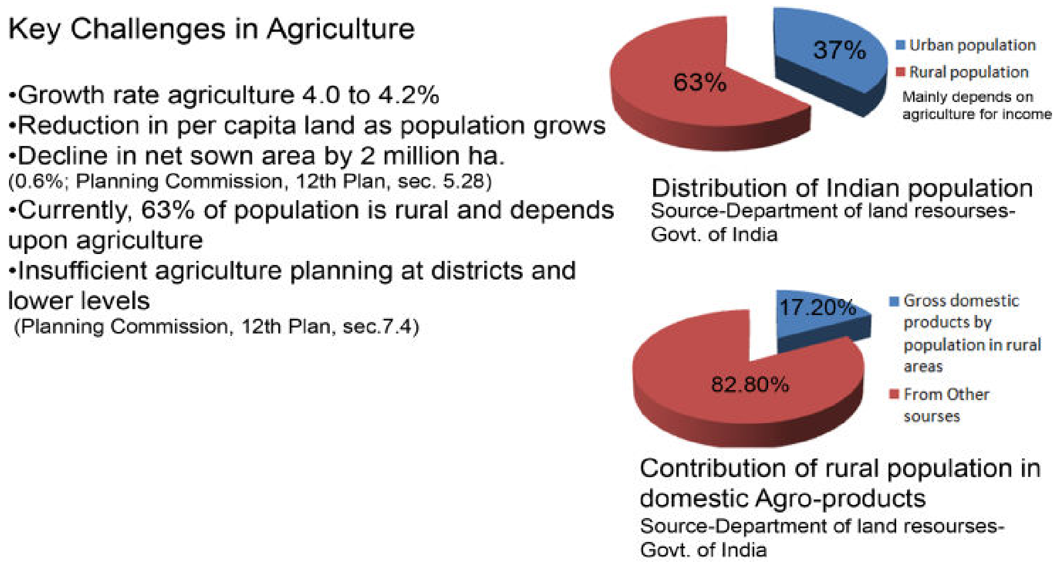
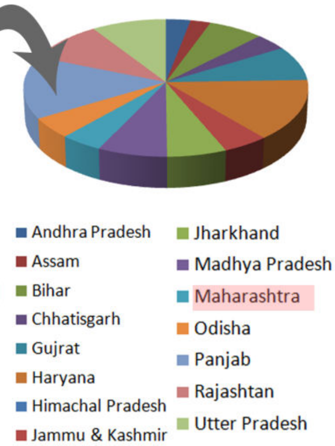


Fig 3.5(c) Chart: Distribution of Indian population in urban and rural area

Yield (Kg/hectare)

State/UT	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Andhra Pradesh	556	818	900	889	1143	1000	1300	1375	1250	1000
Arunachal Pradesh	2023	1525	1575	1472	1576	1505	1595	1757	1498	#
Assam	1066	1074	1117	1268	1090	1087	1179	1147	1304	821
Bihar	1609	1617	1908	2058	2043	2084	1948	2206	2427	2251
Chhatisgarh	853	886	1002	1059	1040	1086	1144	1227	1396	1304
Gujarat	2482	2700	2498	3013	2377	2679	3155	3014	2875	2703
Haryana	3901	3844	4232	4158	4390	4213	4624	5030	4452	4722
Himachal Pradesh	1890	1894	1385	1376	1520	928	1530	1671	1671	1451
Jammu & Kashmir	1910	1790	1893	1782	1735	1003	1535	1689	1595	1589
Jharkhand	2381	1340	1529	1621	1541	1738	1642	1908	1944	2058
Karnataka	740	858	762	946	918	887	1094	858	796	1075
Madhya Pradesh	1735	1613	1835	1612	1723	1967	1757	2360	2596	2405
Maharashtra	1344	1393	1325	1659	1483	1610	1761	1558	1528	1460
Meghalaya	1778	1714	2000	1833	1750	1773	1791	1564	1806	#
Nagaland	1585	1583	867	1067	1500	1200	1712	1711	1801	#
Odisha	1250	1364	1487	1554	1396	1450	1458	1644	1894	1606
Punjab	4221	4179	4210	4507	4462	4307	4693	4898	4724	4848
Rajasthan	2839	2762	2751	2749	3175	3133	2910	3175	3028	3175
Sikkim	1456	1385	1385	1000	1345	1135	1023	1060	1058	#
Tripura	2545	2636	1800	1900	2000	1984	2025	2000	2000	#
Uttar Pradesh	2502	2627	2721	2817	3002	2846	3113	3113	3113	3038



State wise yeild of wheat

Source: Directorate of Economics and Statistics, Department of Agriculture and Cooperation.

Fig 3.5(d) Chart: State wise yield production of wheat (Source-Department of Agriculture and co operation India)

3.6 MAHARASHTRA'S RESPONSE TO AGRICULTURE-ANALYSIS AT STATE LEVEL

- First State to adopt Dry Land Farming Technology.
- Pioneer in Horticulture Development through EGS to promote higher income & more employment in farming sector
- State Seed Corporation – First farmers company in seed sector

- Pioneers in Co-operative network

  Sugar factories, Dairies, Water user association.

- Corporate Horticulture Company
- Four State Agricultural Universities
- Very effective & Research based Farmers Organizations

- In livestock, there is an urgent need to reorient research and assess the genetic potential
- of indigenous breeds. Intensive research work needs to be undertaken for genetic
- Identification of traits of excellence in Indian breeds.
- With endemic shortage of animal feeds, research should explore technologies to augment
- feed resources, including genetic modification of microorganism to utilize high lignin
- Forage grasses.
- With large quantities of animal products now being produced, research on process
- technologies, value addition, packaging, storage, transportation, and marketing should
- receive high priority. In the absence of a proper slaughter regime, there is considerable

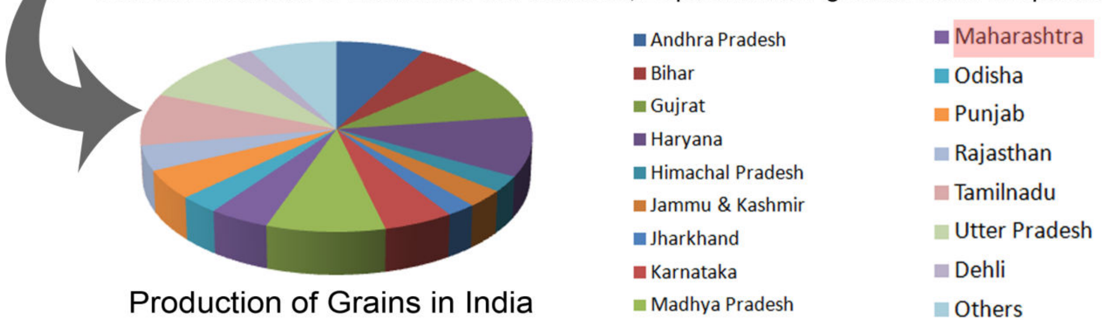
.

Yield (Kg/hectare)

State/UT	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14*
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Andhra Pradesh	862	1012	770	1243	1017	1178	1507	1349	1657	1597
Bihar	1083	1070	1073	1111	1200	1108	1102	1113	1142	1139
Gujarat	1172	1169	1088	1419	1365	1232	1250	1419	1743	1869
Haryana	1316	1147	1649	1843	1769	1593	1793	2040	1910	2057
Himachal Pradesh	667	333	500	500	500	1083	500	542	555	542
Jammu & Kashmir	600	600	591	595	592	629	598	591	598	595
Jharkhand	833	500	500	0	1000	574	704	520	474	453
Karnataka	601	977	483	824	703	502	1081	972	1036	1080
Madhya Pradesh	1368	1491	1365	1402	1373	1495	1898	1924	1568	1873
Maharashtra	736	720	729	878	765	741	1085	982	637	932
Nagaland	1481	1000	NA	NA	NA	NA	857	862	#	#
Odisha	500	552	583	593	600	604	636	615	610	611
Punjab	1000	1000	1000	1000	1000	1333	1000	1000	1000	1000
Rajasthan	658	556	701	832	828	394	832	915	972	857
Tamil Nadu	1274	1158	1511	1435	1483	1512	1564	2452	1326	1782
Uttar Pradesh	1534	1434	1455	1520	1609	1638	1665	1839	1951	1744
West Bengal	NA	NA	NA	NA	0	434	375	367	429	500
Puducherry	2000	2500	2500	1000	1000	1850	2324	2667	#	#
Delhi	2435	1824	1813	1875	1933	1917	1852	1868	1875	#
Daman & Diu	NA	NA	NA	NA	2000	1667	1333	NA	#	#
Others	NA	NA	NA	NA	NA	NA	NA	NA	NA	1574
All India	**859**	**802**	**886**	**1042**	**1015**	**731**	**1079**	**1171**	**1198**	**1164**

Statistics for total yeild production of 'Bazara' (grains) in India

Source: Directorate of Economics and Statistics, Department of Agriculture and Cooperation.

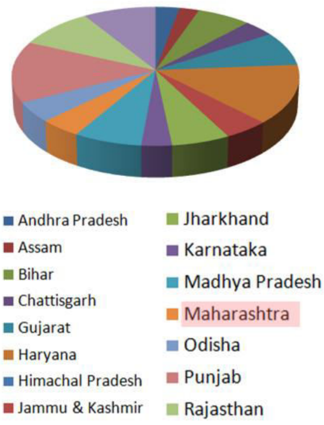


Production of Grains in India

Volume: 05 Issue: 01 | Jan - 2021 ISSN: 2582-3930

Yield (Kg/hectare)

State/UT	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14*
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Andhra Pradesh	2096	2167	2073	2630	2466	1978	2143	2449	2670	2326
Arunachal Pradesh	1158	1201	1204	1234	1249	1568	1674	1780	1803	#
Assam	1374	1409	1210	1283	1514	1647	1783	1673	1875	1942
Bihar	835	1096	1469	1197	1574	1145	1118	2152	2263	1760
Chhattisgarh	1072	1212	1236	1335	1100	1048	1539	1481	1633	1664
Goa	2740	2793	2440	2254	2454	2128	2896	2564	2583	#
Gujarat	1146	1238	1037	1380	1311	1204	1374	1403	1631	1592
Haryana	2186	2214	2466	2629	2283	2428	2323	2609	2801	2837
Himachal Pradesh	1975	1652	2044	2448	2008	1650	2037	2160	2002	2105
Jammu & Kashmir	1615	1656	1691	1710	1935	1611	1713	1706	2161	1794
Jharkhand	1207	1077	1595	1772	1785	1344	1250	1881	1941	1967
Karnataka	1539	1934	1470	1670	1682	1526	1940	1882	1732	1871
Kerala	2261	2214	2329	2227	2348	2456	2329	2588	2474	2505
Madhya Pradesh	821	963	792	903	931	902	957	1115	1279	1210
Maharashtra	920	1077	1093	1272	1084	1085	1329	1374	1281	1389
Manipur	2417	2241	2241	2348	2285	1832	2371	2541	2264	#
Meghalaya	1487	1405	1632	1556	1599	1623	1616	1688	1745	#
Mizoram	1894	1745	767	263	887	1014	1223	1351	1779	#
Nagaland	1634	1614	1503	1589	1846	1264	1965	1974	2029	#
Odisha	1282	1346	1352	1486	1342	1385	1410	1258	1575	1582
Punjab	3836	3765	3792	3952	3961	3960	3804	3735	3970	3939



State wise yeild of Kharip food grains

Source: Directorate of Economics and Statistics, Department of Agriculture and Cooperation.

Fig 3.5(e) Chart: Statistics of total yield production of 'Bazara'and grains in India

Major Emerging Concerns-

Un-viable farming

Lack of diverification in Crops & Other activities in Vidarbha & Marathwada

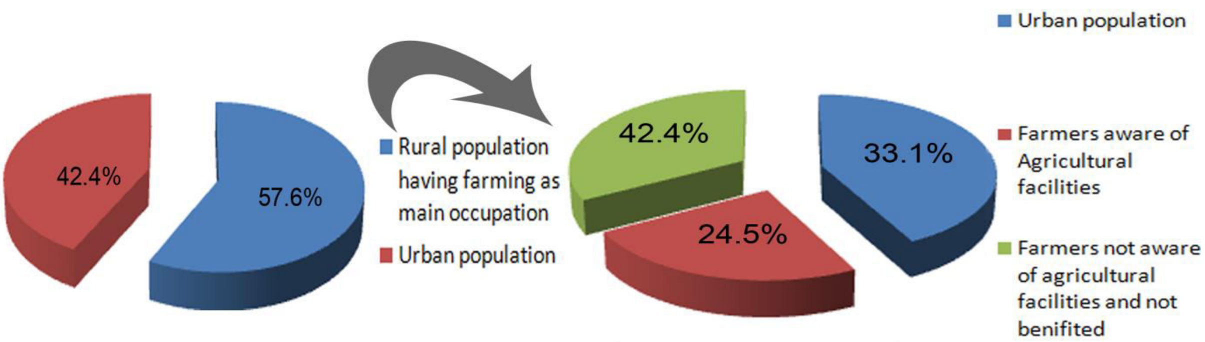
Land locked areas in Marathwada & Vidarbha

Lack of infrastructures, markets, roads, railway rake points, airport

Infrastructural Bottle necks

Roads, Market facility, irrigation, Tribal area

Input dissemination, poor credit,



Distribution of population at Maharashtra region

Source-Report by department of forest

Awareness amonst farmers about Agricultural facilities

Source-Report by department of forest

Fig 3.5 (f) Chart: Distribution of population and Agricultural facilities in Maharashtra (Source-Forest department)

S.No	Areas of Research	Total
I.	Agricultural Sciences	66
II.	Biological and Medical Sciences	60
III.	Chemical Sciences	09
IV.	Physical Sciences and Mathematics	16
V.	Earth Sciences	16
VI.	Engineering Sciences	23
VII.	Materials, Minerals and Metallurgy	09
VIII.	Multi-disciplinary and Other Areas	17
	Total	216

There are total 66 main Agricultural facilities which includes following catagories
1. Research centers
2. Agriculture colleges
3. Agricultural business centers
4. Agricultural information centers
5.Temporary exhibitions like 'Krshi vigyan exhibition', Krishi mela etc..

Fig 3.5(g) Areas of research related to Agriculture in India(Source-Forest department)

3.6a REGION BASED CROP STRATEGIES IN MAHARASHTRA

1. KONKAN

– Paddy - Increase area under Hy. Rice, Use of Urea DAP briquettes , Popularising "Chatu-Sutri"-Four point paddy production technology

– Cashewnut - Area expansion , Productivity enhancement , Promotion of organic cashew

– Mango - Area expansion under Alphonso , Post harvest management including better transportation of mango, Adoption of GAP

– Construction of Konkan Jalkund, Check dams, Diversion Bundhara

– Western Maharashtra & Khandesh

– Sugarcane - increase productivity & release area for foodgrains and soybean

– Soybean – increase area & productivity

– Grapes & Banana – major stress on export

– Pomegranate - area expansion in DPAP blocks

– Floriculture & high value vegetables- cultivation under controlled conditions

– Promote organic fruits & vegetables

– More emphasis on ICM & IPM for horticultural crops like Pomegranate, Grapes

– Promote floriculture & Cold chain

2. MARATHWADA

- Cotton - Increase the yield & promote Clean & quality cotton

- Maize - Increase the area for cattle feed & industrial use
- Oilseeds & pulses - Bridge the yield gaps
- Promote the cultivation of sweet oranges, mangoes & banana
- Kharif sorghum - Promote industrial use
- Discourage the cultivation of sugarcane and divert the area under soybean & gram
- Promote protective irrigation through the farm ponds, dug wells and other water harvesting structures

3. VIDARBHA

- Paddy- SRI method for increasing productivity
- Soybean- increase the area & productivity
- Cotton- promoting Clean & quality cotton through contract farming, reduction in cost of cultivation through INM & IPM
- Organic cotton & mandarin promotion campaign
- Pulses – promoting as intercrop in soybean and cotton
- Mandarin Orange – improving the quality & productivity through improved packages of cultivation and quality planting material
- Promoting PHM of mandarin orange through better packing , transportation & preservation
- Promoting Public Private partnership to develop clusters of pulses, vegetables, flowers & fruits for the ultimate market in the urban areas
- Water harvesting through farm ponds, dug wells, check dams, malgujari tanks & bodies

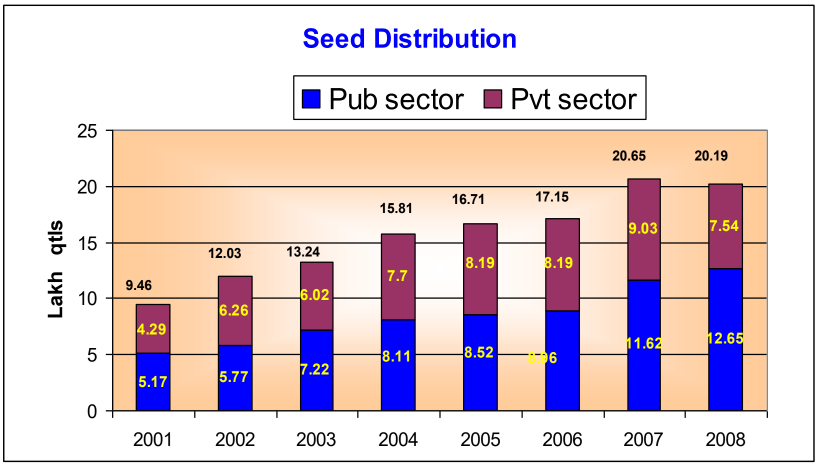


Fig 3.6(a) Chart: Seed distribution in Maharashtra(Source-Forest department)

Crop Group	AREA in Million Ha.			PRODUCTION in Million Tons		
	India	Mah	% share	India	Mah	% share
Total Cereals	100.52	9.62	10	203.08	10.59	5
Total Pulses	23.19	3.83	17	14.20	2.31	16
Total Foodgrains.	123.71	13.45	11	217.28	12.90	6
Total Oilseeds	26.51	3.86	15	24.29	3.73	15
Cotton (Lint)	9.14	3.11	34	22.63	4.62	20
Sugarcane. (Harvested)	5.15	0.85	17	355.52	66.28	19

Fig 3.6(b) chart: Crop production in Maharashtra (Source-Forest department of India)

States	Growth rate (%) of real investment			Investment as % of AgGDP		Investment (Rs)/ha (at 1981 / 82 prices)		Investment (Rs)/ha (at current prices)		Investment scientist (000 Rs, at current prices) 1992-94
	1960s	1970s	1980s	1980-82	1992-94	1980-82	1992-94	1980-82	1992-94	
Andhra Pradesh	-0.09	12.18	7.48	0.17	0.26	5.40	12.90	5.32	32.23	357
Assam	7.49	-0.09	6.25	0.30	0.41	11.19	20.88	11.12		291
Bihar	1.37	12.30	6.26	0.14	0.16	4.60	9.94	4.50	24.93	222
Gujarat	12.33	-0.01	7.17	0.21	0.38	5.94	13.34	5.84	33.41	355
Haryana	-	31.25	4.69	0.30	0.31	11.52	17.91	11.31	44.86	227
Himachal Pradesh	-	-0.12	9.39	0.67	1.23	21.59	51.88	21.21	130.16	225
Jammu & Kashmir	18.34	-0.12	6.85	@	@	12.87	69.93	12.64	68.70	152
Karnataka	-0.15	13.75	7.79	0.20	0.29	4.99	10.88	4.90	27.34	240
Kerala	2.06	21.12	7.42	0.33	0.49	18.10	42.94	17.77	107.50	488
Madhya Pradesh	-0.08	-0.08	13.32	0.07	0.14	1.08	3.36	1.06	8.35	145
Maharashtra	16.62	-0.01	5.65	0.42	0.46	9.27	16.16	9.11	40.57	453
Orissa	-0.05	7.19	7.01	0.11	0.21	2.40	4.67	2.36	11.64	196
Punjab	-0.01	4.70	7.16	0.26	0.30	10.62	20.57	10.42	51.66	262
Rajasthan	-0.02	4.46	9.32	0.13	0.21	1.92	4.45	1.90	11.16	241
Tamil Nadu	1.37	3.68	12.28	0.23	0.42	7.67	24.57	7.56	61.62	329
Uttar Pradesh	12.19	-0.11	4.88	0.14	0.16	4.78	7.42	4.68	18.73	316
West Bengal	5.58	13.52	2.35	@	@	8.31	9.68	8.19	24.53	545
All India (centre+state)	6.52	9.51	6.29	0.39	0.49	10.65	20.65	10.49	51.85	432

Fig 3.6(c) Chart: State wise distribution of Investments in Agricultural education and research(Source: Department of Agriculture and cooperation India)

Fruits	Vegetables	Flowers
Grape, Pomegranate, Banana, Papaya, Mango, Sweet Orange, Mandarin Orange, Cashewnut Sapota, Coconut, Guava	Onion, Tomato Brinjal, Okra, Peas, Beans, Potato, Drum-Stick, Capsicum, Bitter gourd	Roses, Marigold, Chrysanthemum, Gerbera, Aster, Tuberose

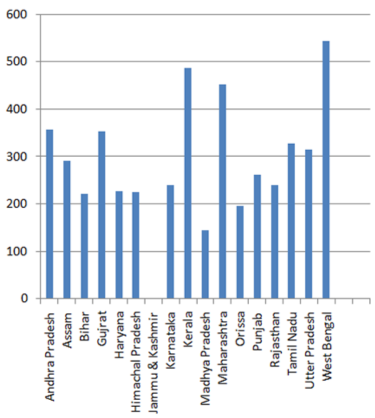
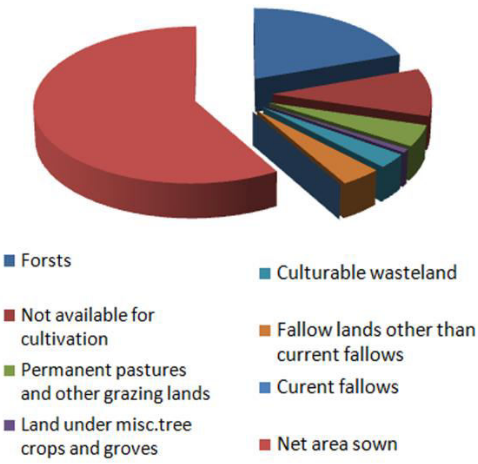


Fig 3.6(d) Chart: Role of Maharashtra in statistics(Source: Department of Agriculture and cooperation India)

 ISSN: 2582-3930



Sr. No.	Crop	State Average	Potential reported by SAU
1	Mango	3.50	15.00
2	Pomegranate	10.20	15.00
3	Mandarin Orange	9.10	15.00
4	Sweet Orange	13.00	15.00
5	Cashew	1.14	5.00
6	Banana	58.00	87.50
7	Kagzi Lime	9.65	10.00
8	Guava	12.15	25.00
9	Grapes	28.20	30.00

Fig 3.6(e) Chart: Land use pattern in Maharashtra and yield gap analysis of major fruit crops in Maharashtra(Source: Department of Agriculture and cooperation India)

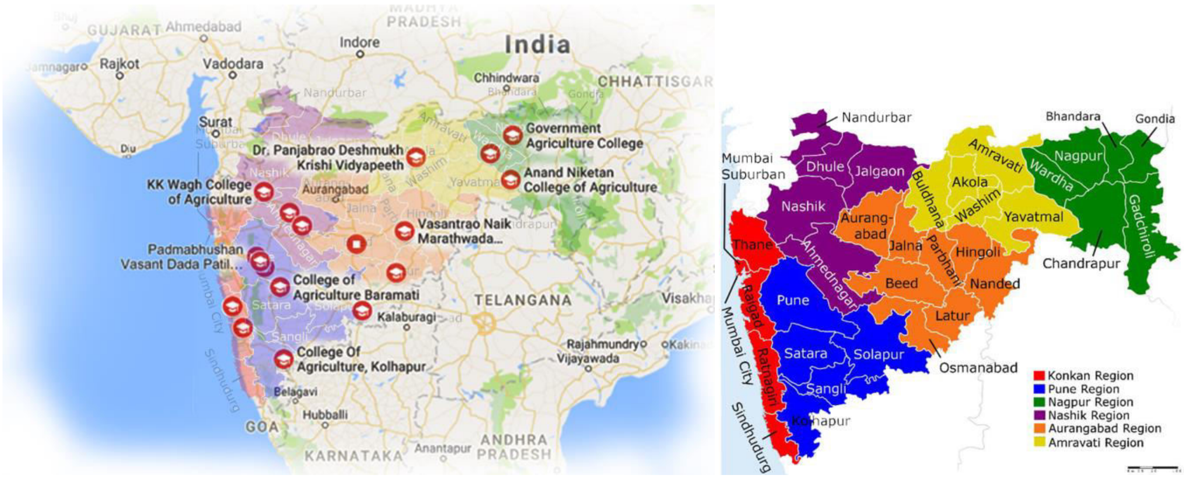


Fig 3.6(f) Map:Agricultural educational institus /research centres Maharashtra(Source: Department of Agriculture and cooperation India)

3.7 ANALYSIS AGRICULTURAL EDUCATION AT REGIONAL LEVEL-VIDARBHA

Firstly, study Pune falls in changing cropping pattern two separate geographical regions having diversified in rainfall at relief characteristics. Secondly, this region has not been so far studied thoroughly from land use point of view by geographers and therefore Pune has remains still untouched for land use study

In Haveli, Maval and Baramati talukas the agricultural land is being converted into non-agricultural land. This process is hampering the growth crops and production too. Government should be restricted this conversion by byelaws. The dryland agriculture in central and east parts in study region in Indapur, Baramati, Purandar, Daund and Shirur talukas, evaporation losses can be reduced by mulches, anti-transpirants, wind breaks and weed control. Most of the part of Maval, Ambegaon, Mulshi, Bhor and Velha talukas are still rain-fed. In these talukas planners must give attention on the development of non-arable

International Journal of Scientific Research in Engineering and Management (IJSREM)
Volume: 05 Issue: 01 | Jan - 2021 ISSN: 2582-3930

land and irrigation facilities. Agro- forestry, pasture development, horticulture and alternate landuse in these areas will help to reduce the problems of rain-fed area

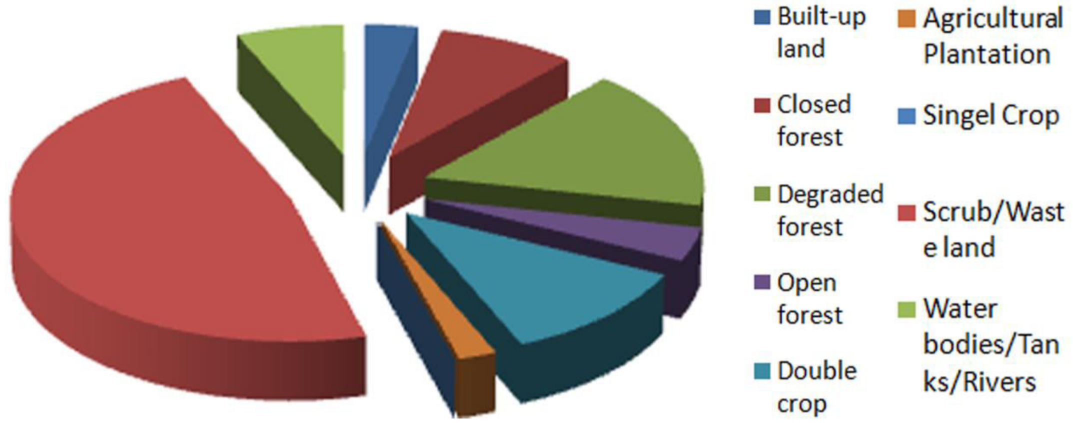


Fig 3.6(g) Chart: Land use pattern in Maharashtra(Source-Department of Agriculture and co operation India)

Sr.No.	Landuse Pattern	Total Area
1.	Built-Up Land	401.63
2.	Closed Forest	1054.69
3.	Degraded forest	2095.77
4.	Open Forest	497.53
5.	Double crop	1422.57
6.	Agricultural Plantation	264.59
7.	Single Crop	3092.20
8.	Scrub/ Waste land	5995.39
9.	Water bodies/ Tanks/ River	815.63
	Total	**15640**

.Fig 3.6 (h) Distribution of cropping systems on land in Maharashtra (Source-Department of Agriculture and co operation India)

3.7a REQUIREMENTS AND CONDITIONS OF FARMERS IN PUNE

Farmers should form their association on needs basis to determine the price for their own produce. Minimum support price of fruits and vegetables must be decided by the government for wheat, rice and jowar. To minimize the damage caused by the insects, efficient application of integrated pest and insect management programme is essential in this area. Farmers also should have to take plant quarantine facilities to prevent the introduction of any insect, fungus or other pest, which may be destructive to crops. Government should establish Plant Quarantine Stations at every taluka level to facilitate every farmer. Traditional methods of irrigation are responsible for the wastage of water and causing problems by over irrigation in Daund and Baramati talukas. Therefore, farmers in this area should be guided and trained for the advanced method of irrigation such as drip, sprinkler etc. which saves water and decreases threat of salinization. Purandar, Shirur, Haveli and Junnar talukas have water scarcity during summer season. It is suggested that, farmers in these talukas should use drip irrigation.

The study region belongs to western part in Maharashtra state where rainfall varies between 500 to 600 millimeters. The study region has varied topography, soil and climate. Land in river valleys is fertile which resulted to cultivate sugarcane and fruits and vegetables besides jowar and bajra. Agriculture department and farmers in Pune district are making efforts to improve agricultural practice to cultivate maximum area under crop.

New planning strategies needs to be introduced to enhance the knowledge of farmers and for increased yield. These typical characteristics of this region can be same background for immense development of agriculture sector. Such study may attention of experts from various fields like planning, agriculture, economics and administrators for further study for better agricultural landuse in Pune district.

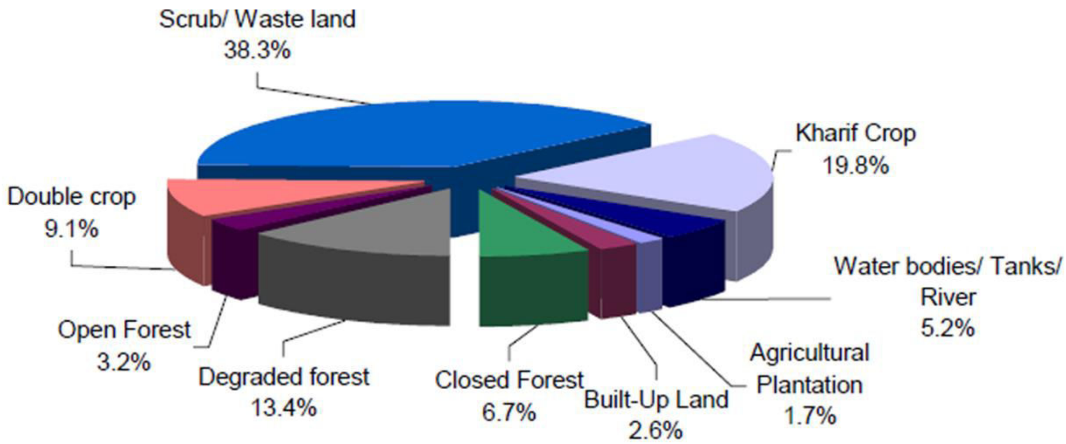
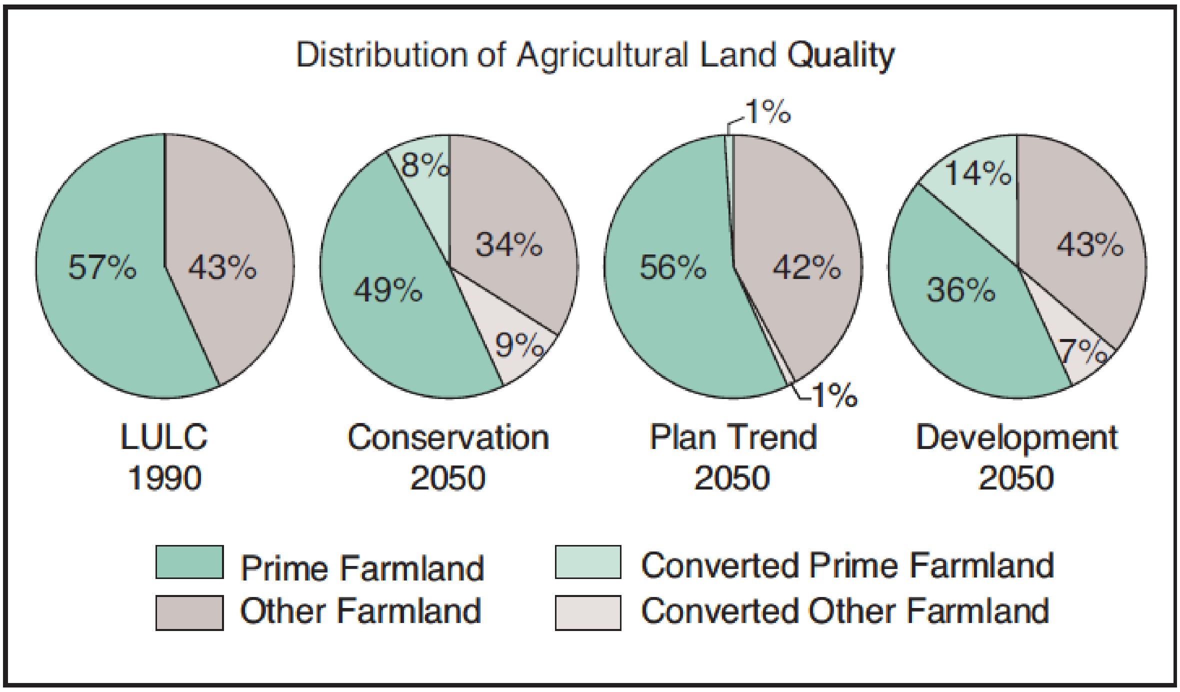


Fig 3.7(a) Chart: Distribution of land use in Pune district(Source-Land use map MRFAC Nagpur)

Land Cap. Class	Description	Locations in the district	Agricultural capability
I	More than 100 cm deep, 0 % to 15% slope, none to slight erosion; very deep soil.	--	--
II	50 to 100 cm or more than 100 cm deep, 1% to 3% slope, slight to moderate erosion, very deep, deep soil	Maval, Mulshi, Bhor, Haveli, Baramati, Indapur, Shirur, Khed, Junnar	Cultivable
III	25 to 50 cm deep, 1% to 3% or 3% to 5% slope, moderate to severe erosion, well drained, moderately deep.	Junnar, Ambegaon, Shirur, Haveli, Bhor, Baramati, Indapur, Daund	Cultivable
IV	7.5 to 25 cm deep, 3% to 5% and 5% to 3% slope, severe to very severe erosion, excessively drained light texure, shallow soil.	Junnar, Ambegaon, Khed, Shirur, Maval, Haveli, Purandhar, Baramati, Indapur, Daund	Cultivable
VI	0 to 7.5 cm and 7.5 to 25 cm deep, 5% to 8% and 8% to 5% slope, coarse texure, very severe erosion, very shallow soil	Junnar, Ambegaon, Khed, Shirur, Maval, Haveli, Bhor, Purandhar, Baramati, Indapur, Daund	Un-Cultivable
VII	0 to 7.5 cm and 7.5 to 25 cm deep, more than 5% slope, very severe erosion, coarse texure, strong erosion, very shallow soil	Khed, Maval, Mulshi, Haveli, Daund, Purandhar, Velhe, Bhor	Un-Cultivable

.Fig 3.7(b) Table: Soil conditions in Pune district (Source-Department of forest Maharashtra)

Pune district offers a very conducive climate for horticultural crops and floriculture. Barely 12 percent of GCA is under fruits and vegetables. The strength of Pune district lies in cultivating high value crops such as fruits and vegetables. There are 6 Government and 45 Private nurseries in the district which meet the requirements of planting materials. The National Research Centre for Grapes as well as for Onion & Garlic are located in the district which provide support to farmers. The district has been identified as Agri Export Zone for Grapes and grapevine, Floriculture, Pomegranate and onion.



3.7(c) Chart: Distribution of prime and other farmland for each of the alternative scenarios in Pune district (Source-Department of Irrigation and water management Maharashtra)

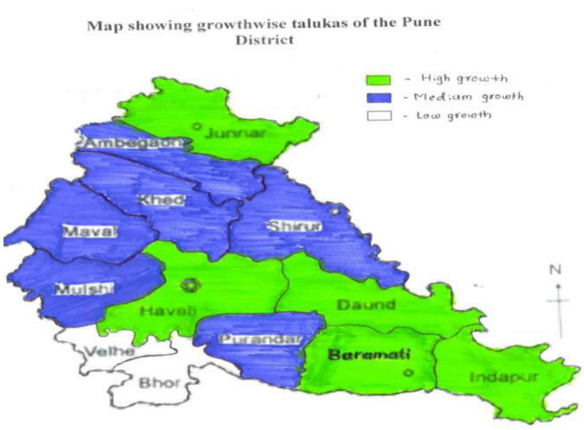
3.7c. CLIMATE AND AGRICULTURE IN AMRAVATI

Pune district is extended from 17o 54' and 10o 24' north latitudes and 73o 19' and 75o 10' east longitudes covering 15,642 square kilometres area and population of 94,26,959 in 2011 censes. This region is bounded by Ahmednagar district on northeast, Solapur district on southeast, Satara district on south, Raigad district on west and Thane district on northwest. It is the second largest district in Maharashtra state accounting 5.10 percent area. The landscape of Pune district is triangular in shape. Administratively, this district is divided into fourteen talukas, namely, Junnar,Ambegaon, Khed, Maval, Mulshi, Velhe, Bhor, Haveli, Purandar, Pune city, Indapur, Daund, Baramati and Shirur. Pune is the administrative headquarter

The temperature ranges from 20° to 38°C. From November to January temperature lower from 9°C to 14°C. January to March appears moderate temperature. The study region has 60 percent net sown area. Total irrigation in study area is 27 percent. There are 26.9 percent cultivators and 12.7 percent agricultural labourers in study region. The main crops in study region are jowar, rice, bajara, wheat, sugarcane, groundnut, gram, safflower, crops and many vegetables crops fields**.**

Type of growth region	*Talukas*
Vibrant growth region	Baramati, Indapur, Daund, Haveli, Junnar
Medium growth region	Khed, Ambegaon, Shirur, Velha, Maval, Mulshi,Purandhar
Slow growth region	Bhor, Velha

Fig 3.7(d) Crop growth rate in regions of Pune district (Source-Department of Irrigation and water management Maharashtra)



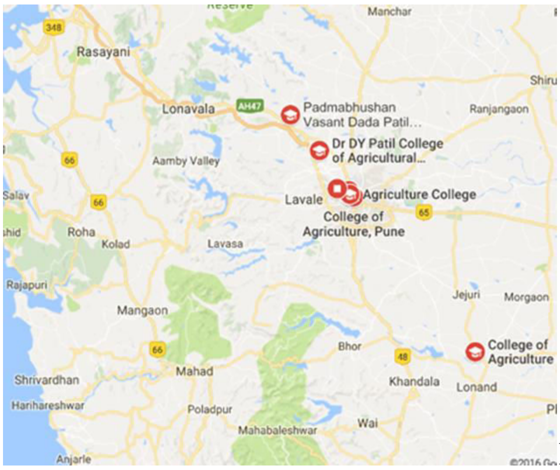
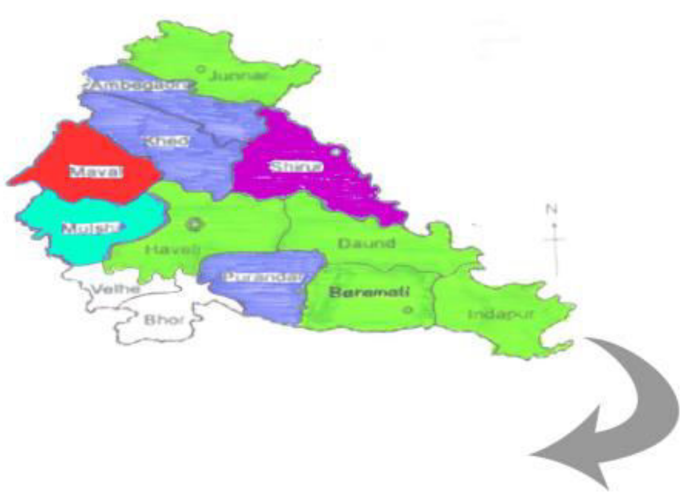


Fig 3.7(e) Map: Map showing talukas in Pune district(Source-Department of Irrigation and water management Maharashtra)

3.8 ANALYSIS OF AGRICULTURAL EDUCATION AT RURAL LEVEL-PIMPLEKHUTA , AMRAVATI

3.8a OCCUPATION AND LAND USE IN 'PIMPLEKHUTA'



Feg 3.7(f) Map: showing location of Shirur in Pune district

3.9 RULES AND REGULATIONS FOT AGRICULTURAL RESEARCH CENTRE AT 'SHIRUR', PUNE(sourse-Draft Development Control andPromotion Regulations for D Class Municipal Corporations in Maharashtra)

a. Agricultural, Horticultural and allied uses (except agro-based industries) are permitted.
General agriculture, horticulture and poultry farming (but not dairy farming) in the areas other than congested area, poultry farming being permitted at the rate of 0.25 sq.m. built-up area perbird in an independent plot measuring not less than 1 ha provided that no offensive odours, dirt and/or dust are created and there is no sale of products not produced on the premises, and the accessory buildings are not located within of 9m the boundaries or 6m. from the main buildings on the plot provided further that the above restriction on space shall not apply to any poultry kept for domestic consumption only, Raisin production.

b. Research, experimental and testing laboratories not involving any danger of fire or explosion or of any obnoxious nature and located on a plot not less than 4 ha. in area, provided that the laboratory is at least 30m. from any of the boundaries of the existing residential building.
c. Minimum area of plot shall be 0.40 hect.
d. Maximum FSI shall be 0.30 and as far as possible the development shall be at one place of the total land.
e. Tree plantation shall be done at the rate of 500 Trees/Ha. on the remaining land excluding the built-up area and the surrounding open space/utility space.
f. The maximum height of the building shall not exceed 15 mt.
g. Essential residential development for the staff/officer's accommodation shall be permitted upto the extent of 33% of the permissible built-up area.

h. Maximum FSI shall be 0.30 and as far as possible the development shall be at one place of land i. Tree plantation shall be done at the rate of 500 Trees/Ha. on the remaining land excluding the built-up area and the surrounding open space/utility space.

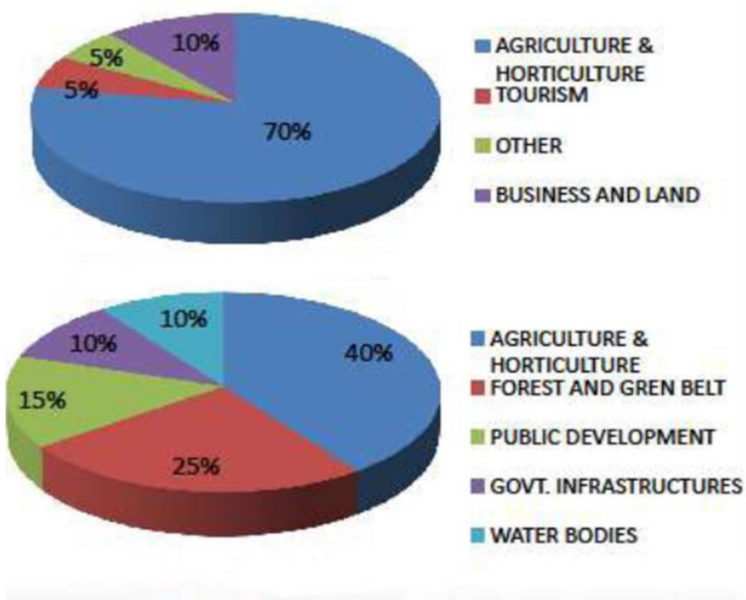


Fig 3.9 Chart: Occupation in Shirur(Sorce-Agricultural landuse report forest departmet)

3.10 ROLE OF UNIVERSITIES OF ARTS, HUMANITIES AND SCIENCES

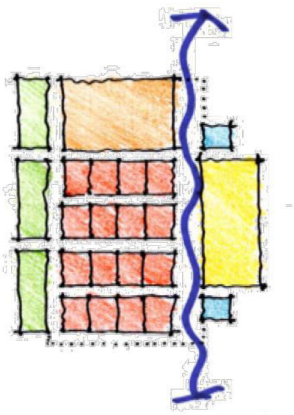
Several important colleges and universities existed in the pre-independence period in the country which imparted education in science and humanities. Some of them such as the Banaras Hindu University had an excellent schoolof agriculture which was integrated in the university edu- cation. The departments of botany and zoology existed in all Universities of Arts, Humanities and Science (UAHS). There were departments of mathematics, chemistry and physics. Two streams – biology and physics were created for undergraduate studies. The biology department had some outstanding scientists who contributed in the areas of morphology, taxonomy and anatomy. Either because of lack of funds or some other reasons, these departments did not have an active experimental research programme on plants and animals. For some strange reason these departments lacked expertise in genetics, physiology, bio- chemistry and statistics which were to become important areas of applied science or technology.

3.11 INFRASTRUCTURE AND FACILITIES REQUIRED FOR AGRICULTURAL EDUCATION

Agriculture in its broadest sense remains the most impor- tant sector of the society even though its contribution to economy might have declined. Agriculture remains and will remain the source of food supply in the world. But agriculture is a part of the rural society and culture. Therefore, improvement of agriculture means the imp- rovement of rural society, environment and quality of life. This includes housing, sanitation, health care, energy, water supply, road and telecommunication, rural industry, literature and arts. If today in India we think of Panchayat Raj institution, there is also a need for the people to know about its management and legal systems. Thus when agri- culture is talked in isolation we deprive students of the aspects of social development. Why cannot we think of enhanced agricultural production being taught along with health care and sanitation. The university has to be an institution which offers an opportunity to students to learn and also become capable of earning. Therefore, it is time that we make agriculture as an integral part of university education and broaden the outlook of teachers and stu- dents.

3.12 INTRODUCTION AND SPREAD OF TECHNOLOGIES OUTSIDE AGRICULTURE

We have seen several technologies spreading in India after independence. There was the introduction of radio and transistor in the fifties and sixties; then came tele- vision. There were refrigerators and air conditioners based on refrigeration, and now we see the spread of information technology. The fundamental difference between these technologies and agriculture is the emer- gence of a service sector for each of these technologies.



3.13ARCHITECTURAL CONSIDERATIONS

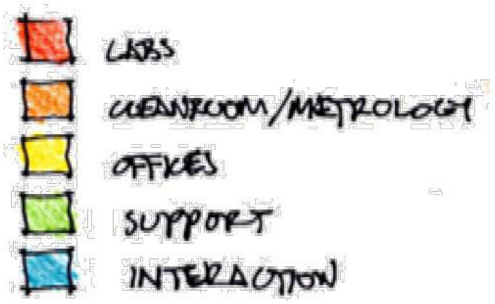
a Walls/Doors/Security

The laboratory must be completely separated from outside areas (i.e., must be bound by four walls).

The laboratory shall have means of securing specifically regulated materials such as DEA Controlled Substances, CDC Select Agents and radioactive materials (i.e., lockable doors, lockable cabinets, etc.)

Having secured hazardous materials storage will keep unauthorized personnel from gaining access to them. These regulations apply specifically to laboratories containing radioactive materials,CDC Select Agents and DEA Controlled Substances; however, UNC-Chapel Hill EHS interprets this to include all laboratories (e.g., general chemistry and electronics).
Laboratories which may use CDC Select Agents shall have secured entry doors that upon illegal entry alarm to DPS and EHS Doors in H-occupancy laboratories shall have doors which swing in the direction of egress. Doors serving B-occupancy shall swing in the direction of egress if the occupant load is 50 or more. Where possible, all B-occupancy lab doors should swing out with hardware satisfying ADA requirements.

Each door into a laboratory room must have a view panel.
Inside the laboratory, on the wall adjacent to the door latch, provide 2 feet of clear space for light switches, telephone, thermostat and fire extinguisher.
.



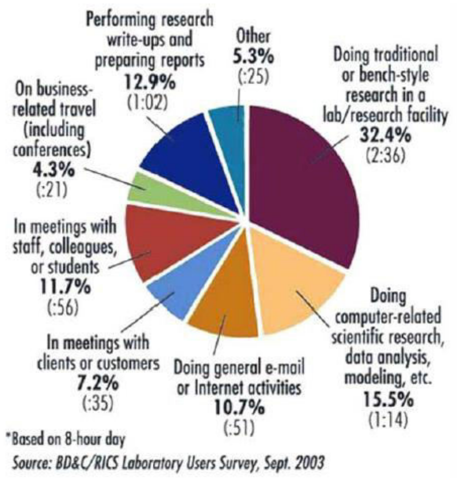


Fig 3.13(a) Chart: Researchers curriculam throughout whole day(Source-BD&C/RICS Laboratory users survey, Sept 2003)

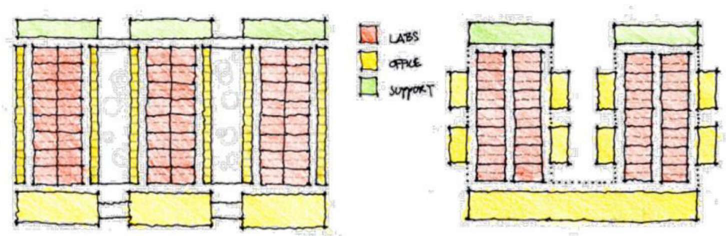


Fig 3.13(b) Laboratory standard zoning(Source-BD&C/RICS Laboratory users survey, Sept 2003)

b Windows

If the laboratory has windows that open they must be fitted with insect screens.

cFlooring

The floor must be a one piece non-pervious and with covings to the wall. This can be achieved by use of glue, heat welded vinyl flooring, epoxy coated concrete slab, etc.

Floors should be coved up walls and cabinets to ensure spills cannot penetrate underneath floors/cabinets. Tiles and wooden planks are not appropriate because liquids can seep through the small gaps between them. These references apply specifically to laboratories containing biological and radioactive materials; however, UNC-Chapel Hill EHS interprets this to include all laboratories (e.g., general chemistry, electronics, etc.).
Floors in storage areas for corrosive liquids shall be of liquid tight construction.

d Sinks

Each laboratory must contain a sink for hand washing. Elbow or electronic sensing faucet controls are recommended particularly for biological agents and/or highly toxic chemicals.
Sink faucets and hose bibs that are intended for use with attached hoses must be equipped with back siphon prevention devices.

e Sink materials and size

The traditional material for sinks is fire clay which is extremely hard. These heavy 'Belfast' sinks are durable, resistant to chemicals and heat, and relatively easy to clean. They have been known to craze and even to crack. Glass apparatus dropped in them shatters readily. Sinks made of other materials are more forgiving. Cast epoxy sinks are highly resistant to both heat and chemical attack. In some cases they may be slightly cheaper than fire clay. Polypropylene sinks resist attack by chemicals, but can be damaged by hot objects. Stainless-steel sinks are attacked by metal particles and corrosion can start. We generally do not recommend stainless steel sinks in laboratories and preparation rooms but if used they should be specified to 316 grade which resists corrosion better than domestic grade sinks (304).Sinks made of mineral-filled resins are also available and have good heat and chemical resistance. If sinks are made of light-coloured materials, they can become stained and dirty unless cleaned regularly.

fSink traps and drains

PVC is used for drains in domestic situations and is probably suitable for most school science Laboratories. More commonly, however, high-density polythene or polypropylene (e.g. Vulcathene) is used as these are more resistant to chemicals and are necessary for more advanced work and in fume cupboards. There should be an adequate number of access points so that blockages can be easily dealt with.

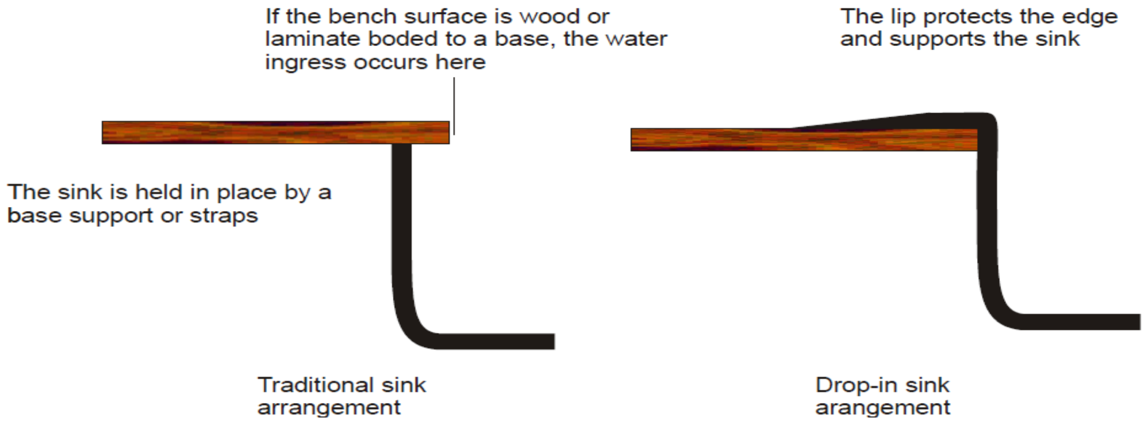


Fig 3.13(c) Standard sink surface in laboratories(Source-BD&C/RICS Laboratory users survey, Sept 2003)

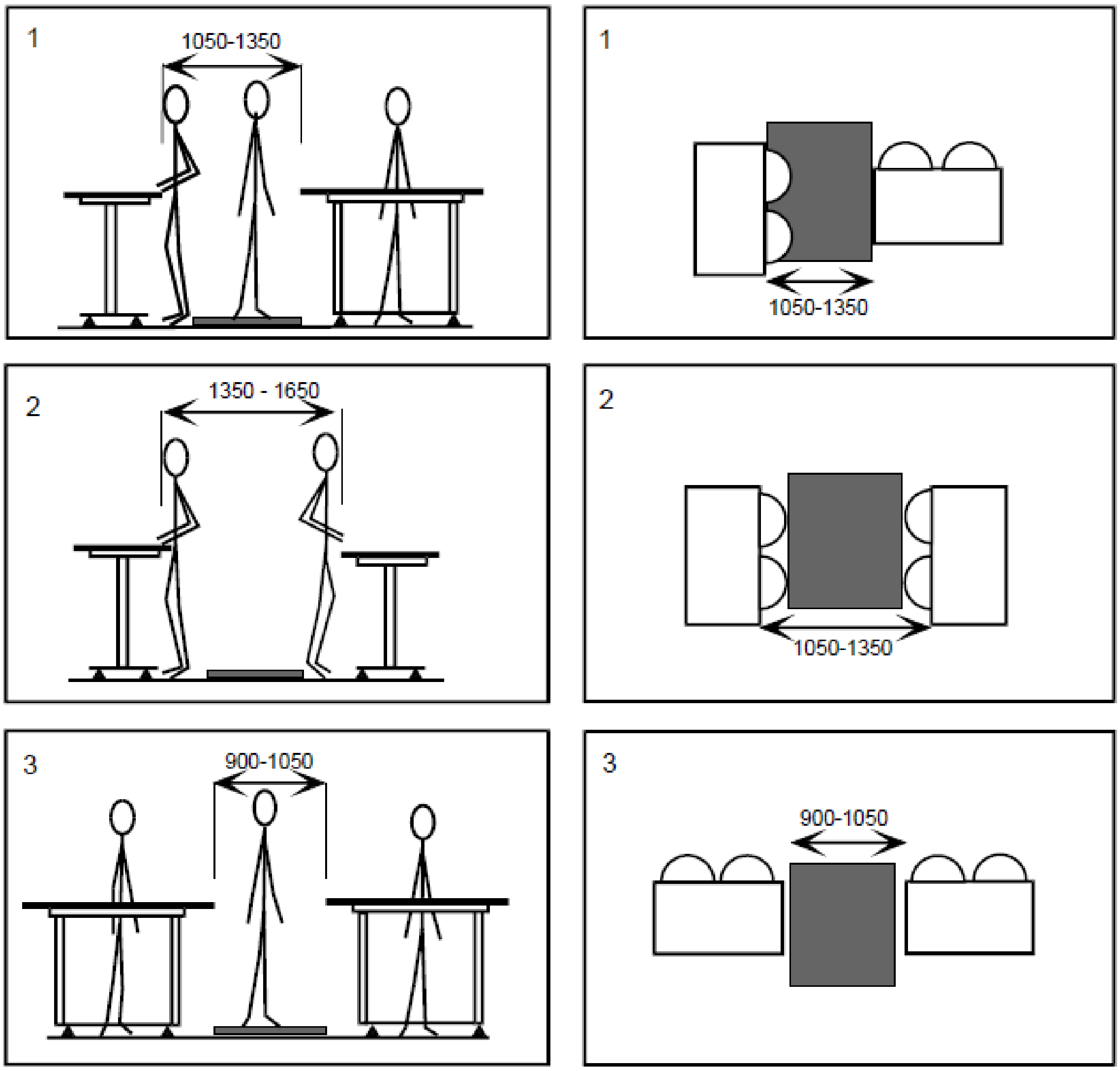


Fig 3.13(d) Standard sink positioning in laboratories(Source-BD&C/RICS Laboratory users survey, Sept 2003)

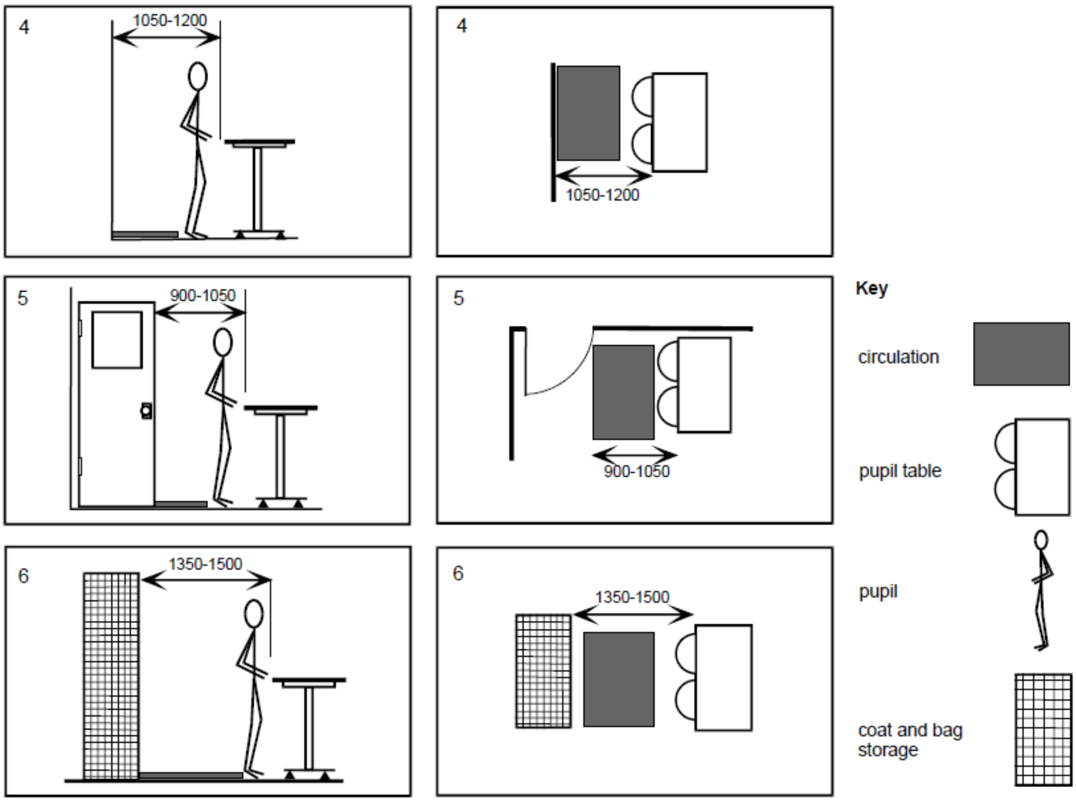


Fig 3.13(e) Standard sink positioning in laboratories(Source-BD&C/RICS Laboratory users survey, Sept 2003)

g chemical/waste storage

Chemical storage shelves shall not be placed above laboratory sinks.
Chemical storage shelves shall be flush to a back wall and shall have a ½ inch lip along the front edge.
Sufficient space or facilities (e.g., storage cabinets with partitions) shall be provided so that incompatible chemicals can be physically separated. This will be based on the chemical inventory and use projection provided by the Principal Investigator to the project and EHS. If the project scope cannot provide sufficient storage the user must develop a written management control plan to include as part of their local Chemical Hygiene Plan.

h Furniture Design and Location/Exit Paths

All furniture must be sturdy. All work surfaces (e.g., bench tops and counters) must be impervious to the chemicals used.
For example, many microbiological manipulations involve concurrent use of chemical solvents such as formaldehyde, phenol, and ethanol as well as corrosives. The lab bench must be resistant to the chemical actions of these substances and disinfectants. Wooden bench tops are not appropriate because an unfinished wood surface can absorb liquids. Also, wood burns rapidly in the event of a fire. Fibreglass is inappropriate since it can degrade when strong disinfectants are applied. Fibreglass also releases toxic smoke when burned. These references apply specifically to laboratories containing biological and radioactive materials; however, UNC-Chapel Hill EHS interprets this to include all laboratories (e.g., general chemistry and electronics).

i Clean ability

The laboratory must be designed so that it can be easily cleaned. Walls should be painted with washable, hard non-porous paints.
Spaces between benches, cabinets, and equipment must be accessible for cleaning.

j Break rooms

The design of the laboratory building must incorporate adequate additional facilities for food storage/consumption and personal hygiene tasks outside of the rooms where chemical and biological materials are handled.
Break rooms should be sized based upon floor occupancy and must be dedicated as a break area and not serve other functions such as copy canter or equipment storage.
A minimum of 1 break room is required per floor unless separate desk space is provided for each occupant in office areas which are walled off and separately ventilated from the laboratory space.

k General Ventilation Considerations

Laboratory room supply should discharge through a perforated ceiling/plenum at velocities not exceeding 50 fpm. Supply terminal velocity at the face of the hood must not exceed 25 fpm or 30 per cent of the minimum face velocity (whichever is less).
The building DDC system should have spare capacity for building gas and vapour sensor inputs.
Sensor technology should be considered for emergency detection and alarm for highly hazardous gases or vapours.

l Electrical

GFI protection shall be provided to electrical receptacles above counter tops and within 6 feet of sinks. Receptacles that are not readily accessible or receptacles for appliances occupying dedicated space, which are cord-and-plug connected in accordance with NEC Section 400-7A (6-8), are exempted.
Circuit breakers should be located outside the lab. All breakers must be clearly labeled as to equipment, lighting and outlets served.
In the event of an emergency, the laboratory may be unsafe to enter. Hence, the circuit breakers for key electrical appliances should be located outside the lab.
b. Plumbing
Valves for building gas supply lines should be located outside the lab.

The flexible connections should be used for connecting gas and other plumbed utilities to any freestanding device including, but not limited to; bio safety cabinets, incubators, and liquid nitrogen freezers. Flexible connections should be appropriate for the pressure requirements and should be constructed of material compatible with the transport gas. A shutoff valve should be located within sight of the connection and clearly marked.
Sink drains traps must be transparent (e.g., made of glass) and easy to inspect or have drain plugs to facilitate mercury spill control.

m Media Room

The media room is the kitchen of the tissue culture facility. The media room is provided with a working table in the centre and benches along the wall, the tops of which is either covered with granite or laminated board
The tables and benches should be at a height suitable for working while standing and
the space below them could be fitted withdrawers and cupboards for storage purposes. The benches are required for keeping balances, pH meter, magnetic stirrers, hot plates etc. A top loading electronic balance

with tare for weighing large quantities and an analytical balance for small quantities of chemicals must be provided. The balances should be isolated in a small chamber if the media room also houses the autoclave. In a large commercial laboratory it will be of help to have an automatic media dispenser.

n Preparation area

Requirements for the preparation area include;
-a fume cupboard,
-a dish washer (or, if you can afford it, a laboratory glass washer),
-a water purifier (i.e. a still, de-ioniser or reverse osmosis unit),
-a refrigerator,
-a freezer (or combined fridge / freezer) and
-a drying cabinet (or oven).

Fig3.13(f) An illuminated culture trolley with six shelves holding culture tubes arranged in metallic racks. An enlarged portion of a trolley with cultures in screw cap bottles.(Source-Bureau of Indian standards)

o Growth Room

The inoculated culture vials are transferred for incubation to a growth room with controlled temperature and light conditions. It is of paramount importance to maintain cleanliness in this area. It can be achieved by having positive air pressure in the 'clean area' or an overhead air curtain at the entry to remove surface dust. This room should have one door, and the windows should be avoided to prevent external light from interfering with the internal light cycle. Desirably, the junction of walls should be rounded rather than angular to prevent cobwebs. The wall paints should be of semi or high-gloss with a linoleum floor to withstand repeated cleaning. Tiller et al. (2002) reported that the polymer Hexyl-PVP when coated on a glass surface killed 99 % of harmful bacteria.

p Fume hoods

The requirements of this Guide apply to all UNC laboratory buildings, laboratory units, and laboratory work areas in which hazardous materials are used, handled, or stored.

q Fume Hood Location

Fume hoods should be located away from activities or facilities, which produce air currents or turbulence. Locate away from high traffic areas, air supply diffusers, doors, and operable windows.
Fume hoods should not be located adjacent to a single means of access to an exit. Recommend that hoods be located more than 10 feet from any door or doorway.
Fume hoods must not have large equipment located in front.
Hoods should not be located in room corners, near windows or near very cold equipment.

International Journal of Scientific Research in Engineering and Management (IJSREM)
Volume: 05 Issue: 01 | Jan - 2021 ISSN: 2582-3930

Fig 3.13(g) Location of fume hoods in laboratories.(Source-Bureau of Indian standards)

Fume hood openings should not be located opposite workstations where personnel will spend much of their working day, such as desks or microscope benches.
Fume hoods should not face each other across narrow aisles.
An emergency eyewash/shower station shall be within 10 seconds of each fume hood.
fume the requirement for an eyewash/shower is triggered when an employee may be exposed to substances, which are “corrosive or severely irritating to the skin or which are toxic by skin absorption” during normal operations or foreseeable emergencies. Fume hoods are assumed to contain such substances; hence, UNC interprets this regulation to mean that emergency eyewash/shower station shall be within 10 seconds of fume hoods

r Cold Storage

In a commercial setup it is necessary to have a cold storage maintained at 24 C for temperate plants and 15 C for tropical plants. These rooms are used to give treatment for breaking dormancy of some plant materials, storing of cultures to schedule workload, maintain ‘mother’ cultures and to hold harvested plants

S Glassware and Plastic ware Washing

All glassware and plastic ware, except presterilized ones, should be thoroughly washed when using for the first time. As a normal practice, the apparatus is soaked overnight in a standard laboratory detergent and scrubbed with a bottle brush manually or by a machine. These are then rinsed under tap water followed by a rinse in distilled water. Dried agar can be removed by heating. The contaminated glass and plastic culture vials should be autoclaved before opening for washing or discarding, respectively, in order to minimize the spreading of bacterial and fungal contaminants in the laboratory. The washed apparatus are placed in wire baskets or trays to allow maximum drainage and dried in a hot air cabinet at about 75 _C and stored in a dust proof cupboard. For transportation of washed lab ware from washing area suitable trays and mobile carts can be used.

t Sterilization

Whether it is lab ware or culture medium, plant material or environment in the laboratory, instruments used for culture or the operator himself, all are sources of infection. The tissue culture medium being rich in sugar and other organic and inorganic nutrients supports good growth of microorganisms, such as fungi and bacteria. On reaching the medium the microorganisms may grow faster than the plant tissues, finally killing them. The microbes may also secrete toxic wastes into the medium inhibiting growth of cultured tissues. It is, therefore, Absolutely essential to maintain a completely aseptic environment inside culture vessels. As a rule, plant tissue culture laboratory facilities should not be shared with microbiologists and pathologists, and contaminated vessels should be removed as soon as detected.

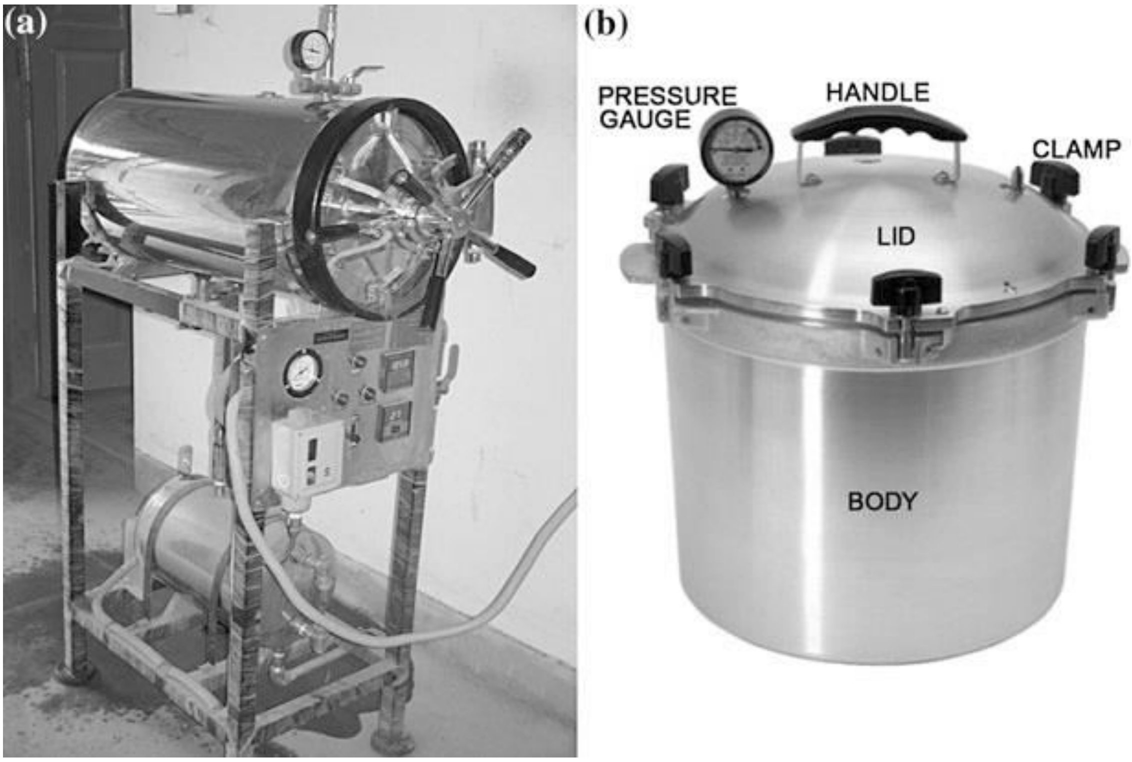


Fig 3.13(h) A horizontal autoclave (a) and a small vertical autoclave (b)(Source-Bureau of Indian standards)

u Power and Electrical

Chemical fume hood exhaust fans shall be connected to an emergency power system in the event of a power failure.
Emergency power circuits should be available for fan service so that fans will automatically restart in proper sequence upon restoration after a power outage.
Fume hood ventilating controls should be arranged so that shutting off the ventilation of one fume hood will not reduce the exhaust capacity or create an imbalance between exhaust and supply for any other hood connected to the same system.

v Exhaust

New exhaust fans should be oriented in an up-blast orientation.
Hood exhaust stacks shall extend at least 10 feet above the roof. Discharge shall be directed vertically upward.
If parapet walls are present, EHS recommends that stacks extend at least 2 feet above the top of a parapet wall or at least 10 feet above the roof, whichever is greater.
Note: The University Architect/Planning Office must be contacted if any building features, such as exhaust stacks, extend above the roofline.

w Emergency eyewash and safety shower equipment

-General Location

Emergency eyewash facilities and deluge showers shall be in unobstructed and accessible locations that require no more than 10 seconds for the injured person to reach along an unobstructed pathway (i.e., no doors without panic bars or which don't swing open when pushed). If both eyewash and shower are needed, they shall be located so that both can be used at the same time by one person.

-Signage

Emergency eyewash and shower locations shall be identified with a highly visible sign. The areas around the eyewash or shower shall be well lighted and highly visible.

-Deluge Shower Requirements

1. Deluge Shower Positioning
The emergency shower location must have a level surface beneath the shower head.
Having a level surface will prevent the users from tripping while trying to access and use the emergency shower.
Emergency shower heads shall be designed so that a flushing fluid column is provided that is not less than 82 inches and not more than 96 inches in height from the surface on which the user stands.

x Compressed gas cylinders

Laboratory design shall include a storage area for cylinders of compressed gases where:
i. They are protected from external heat sources such as flame impingement, intense radiant heat, electric arc, or high temperature steam lines.
ii. They are in a well protected, well ventilated, dry location, at least 20 feet from highly combustible materials.
Design features which are prohibited: Unventilated enclosures such as lockers and cupboards.
Work practice issues: Oxygen cylinders shall not be stored near highly combustible materials, especially oil or grease, or near any other substance likely to cause or accelerate fire
Restraint Systems
Laboratory design shall include restraints for the storage of cylinders greater than 26 inches tall; the restraint system shall include at least 2 restraints (made of noncombustible materials), which are located at one-third and two-thirds the height of the cylinder.

y ventilation considerations

Ventilation requirements for the laboratories utilizing radioactive materials are dependent upon the types of materials used. Facilities that use radioactive gases shall be equipped with ventilation to adequately maintain concentrations to below allowable occupational exposure levels and to not permit escape of the gas to adjacent non-use areas such that concentrations exceed those allowed for uncontrolled areas. These range from no special requirements to those requiring separate exhaust systems equipped with "panic button" shut down switches. The Radiation Safety Program will review the proposed uses and make specific recommendations appropriate for each facility.

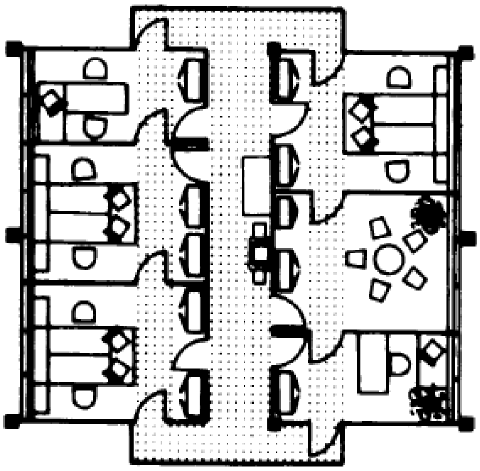
z Greenhouse

In order to grow the mother plants and to acclimatize in vitro produced plants, a tissue culture laboratory should have a greenhouse made of glass, polythene or polycarbonate depending on the budgetary provisions. This facility should have a provision to maintain high humidity such as fan and pad system. It would be desirable to
have a potting room adjacent to this facility. A separate autoclave might be required in this area if one wants to sterilize the potting mixture. In a commercial laboratory provision for certain other rooms such as,

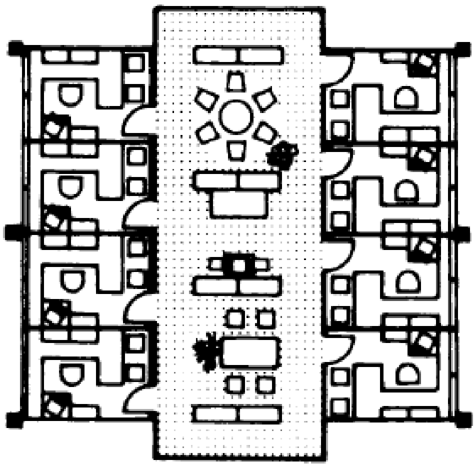
International Journal of Scientific Research in Engineering and Management (IJSREM)
Volume: 05 Issue: 01 | Jan - 2021 ISSN: 2582-3930

a general storage, and employee's tea room, an administrative office and shipping and receiving centre should be made.

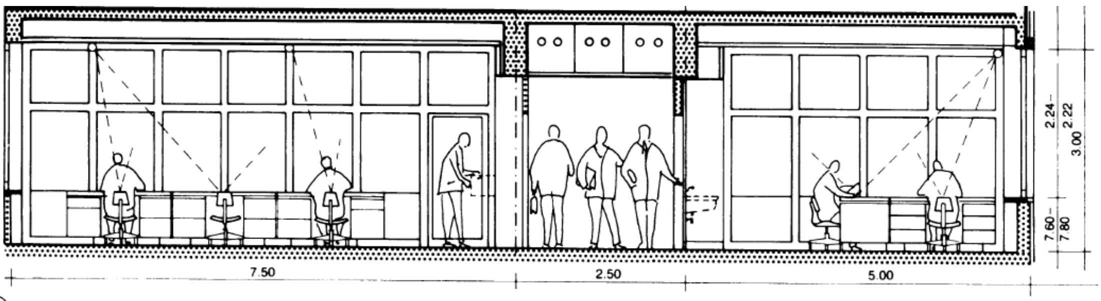
3.14 DESIGN STANDARDS



9 Separate office



10 Combined office



4 Section through office space

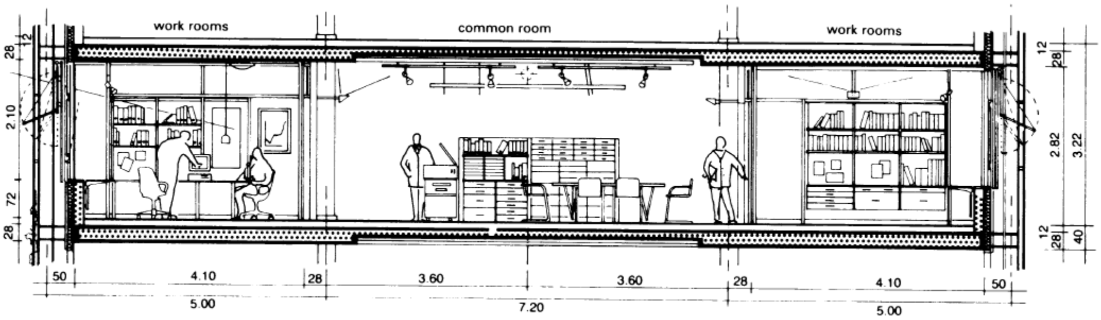


Fig 3.14(a) Standard arrangement of administration offices (Source-Neuferts standard data)

There are major differences between refurbishing an existing laboratory and adapting non-science accommodation to laboratory use. For example, in most laboratories, gas, electricity, water and drainage services will be required on at least some benches. It is very expensive, noisy and dusty to dig up existing floors in order to lay ducting for such services. Drains present particular problems. In a new build, services can be easily placed wherever required, but a decision on the location will be needed at an early stage, when the foundations are laid and perhaps before the final layout has been agreed. In an adaptation of an existing laboratory, service ducts may well be available, but not necessarily at the ideal location. Almost certainly, they cannot be moved,

 ISSN: 2582-3930

although it may be possible to box them in. Where non-science accommodation is adapted, it may well be necessary to accept that only services around the periphery of the room are possible, perhaps supplemented by peninsular arrangements.

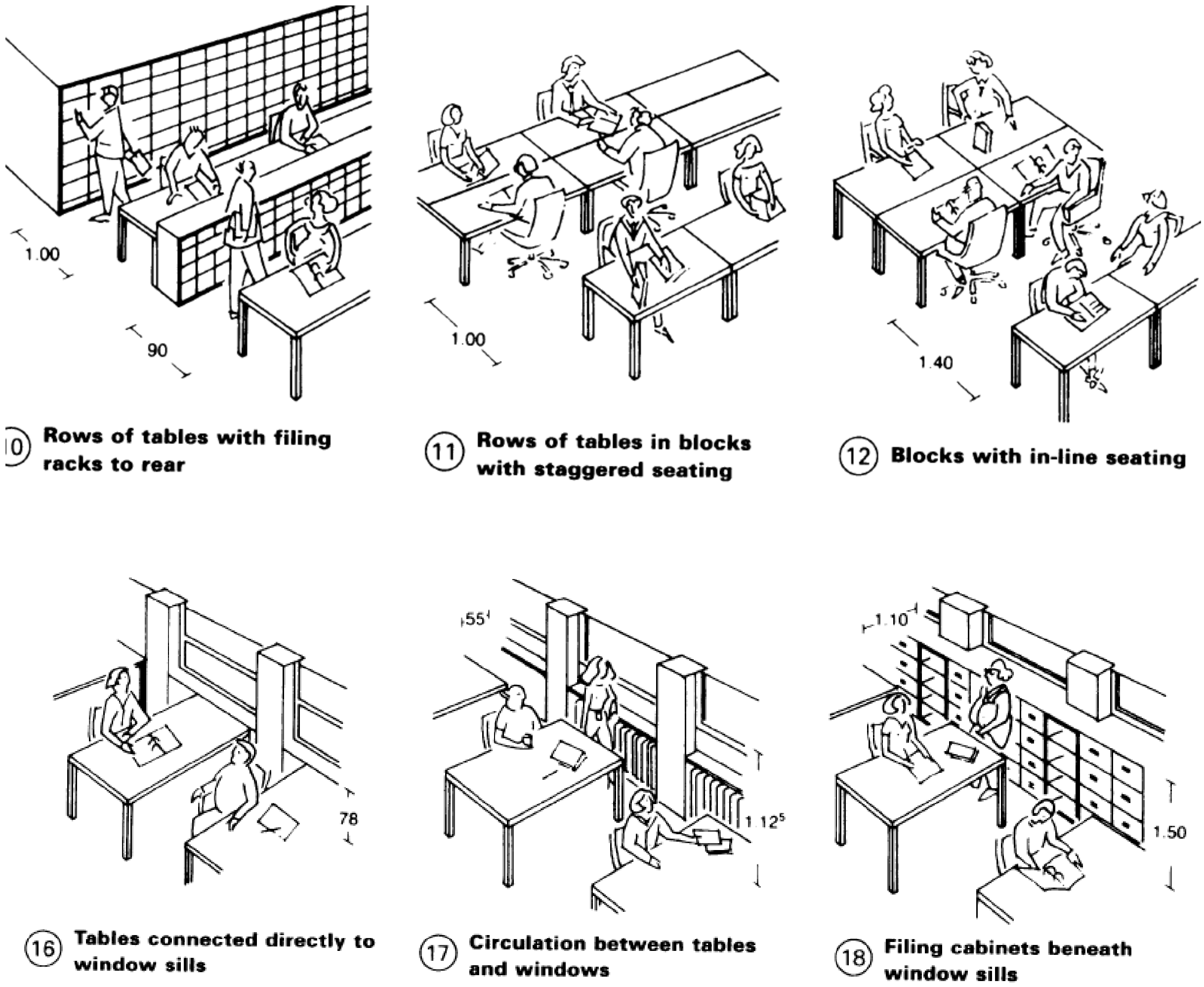


Fig 3.14(b) Standard arrangement of work areas (Source-Neuferts standard data)

The shape of the room is also important. A long thin room gives poor acoustics and poor sight lines. Laboratories are larger than ordinary classrooms; they have hard reflecting surfaces (the benches) and sometimes noisy equipment (extractor fans, fume cupboards). This results in poor acoustics. Equally, it seems to be quite difficult to provide a satisfactory layout of benches in an almost square room. In a 90 m2 laboratory, 10m by 9m works reasonably well. Whilst, traditionally, the teacher's base has been on the shorter wall, there may well be some advantages in having the room the other way round. It should at least be considered. Pupils will be closer to the teacher although some sight lines may be awkward. If windows are (mainly) along one long wall, the direction of the Sun should be considered, to avoid the teacher being dazzled when watching the class.

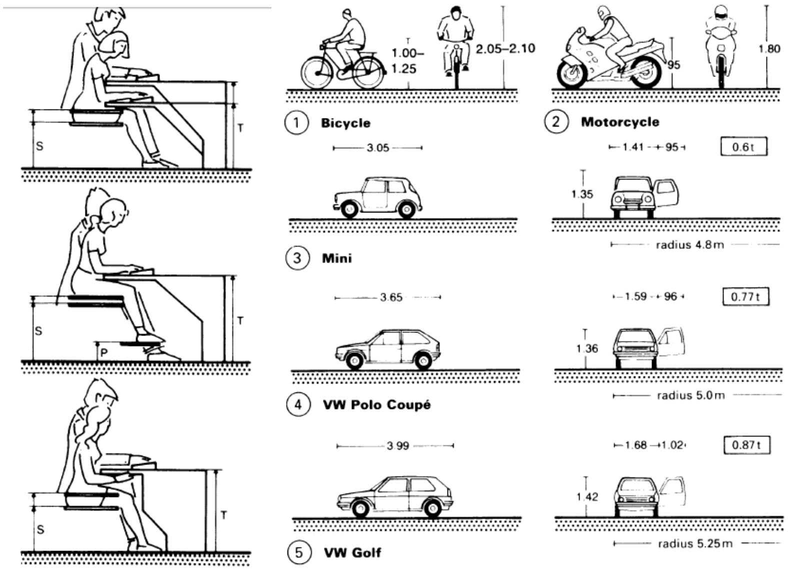


Fig 3.14(c) Standard arrangement of vehicle parking (Source-Neuferts standard data)

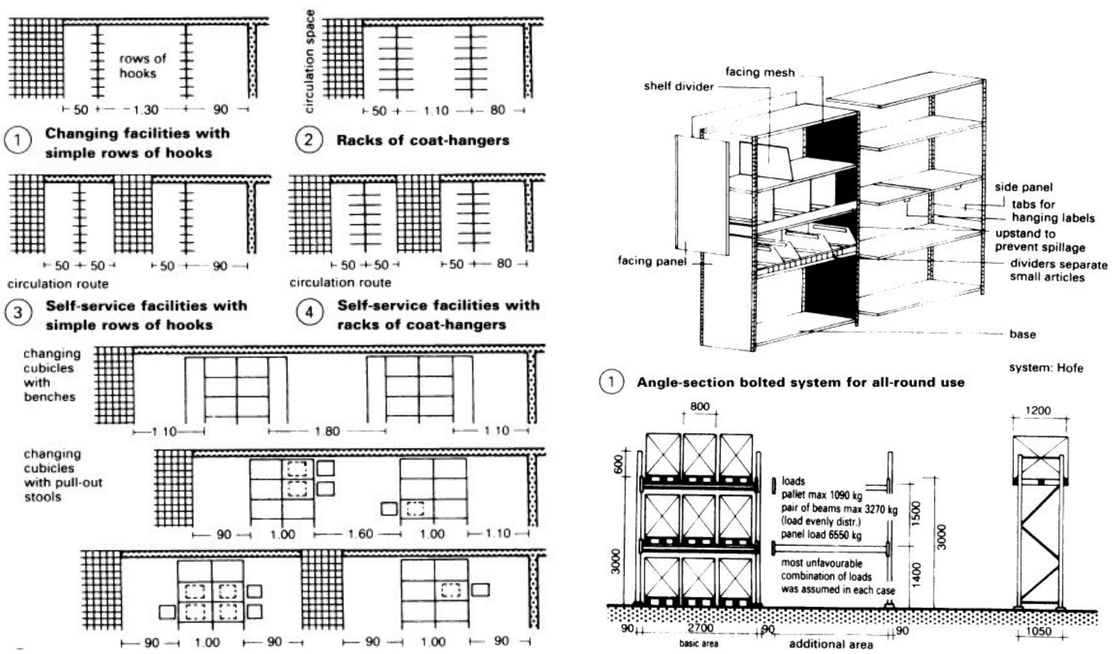


Fig 3.14(d) Standard arrangement of warehouse storage (Source-Neuferts standard data)

The size of the room is not the only factor – the amount of bench space per pupil is also important. The DCSF recommends a minimum of 0.30 m2 per pupil, but 0.36 m2 per pupil is a figure commonly used and this permits two pupils to sit at a standard table (1200 mm by 600 mm), with each having a 600 mm length of bench.

Octagonal benches often have a front edge dimension of 745 mm and, even allowing for the taper, this can give more than 0.36 m2 per pupil. However, sometimes smaller octagons are used, e.g. 600 mm (or even less) front edges, which obviously gives less space, especially if there is a raised portion in the middle. Remember the need for knee space when sitting at a bench. If, in large classes, pupils have to sit around the sides of the room, the positioning of cupboards may prevent them sitting comfortably when working.

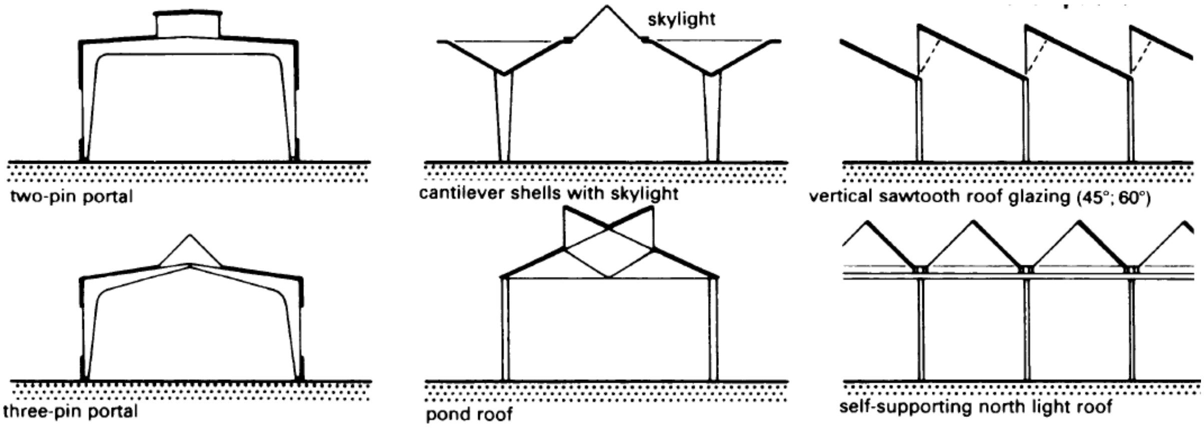


Fig 3.14(e) Standard shapes of green house structure (Source-Neuferts standard data)

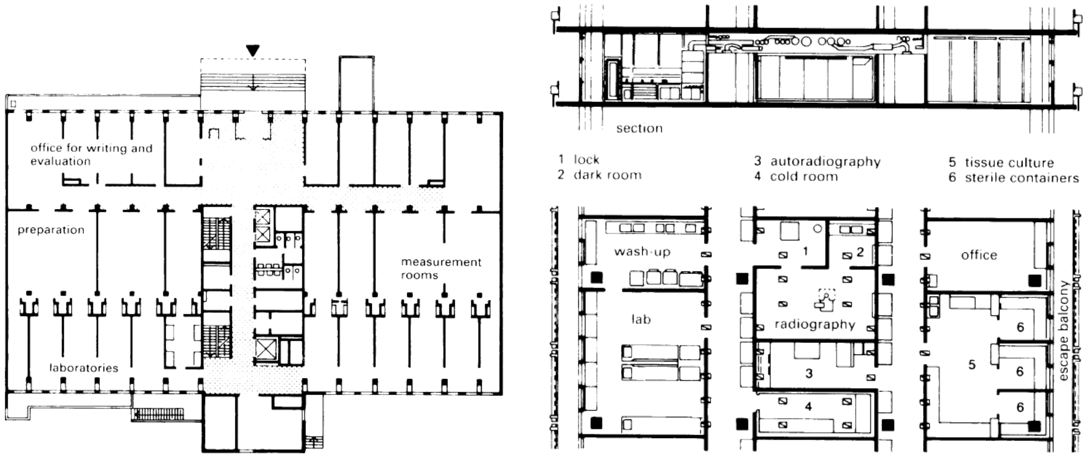
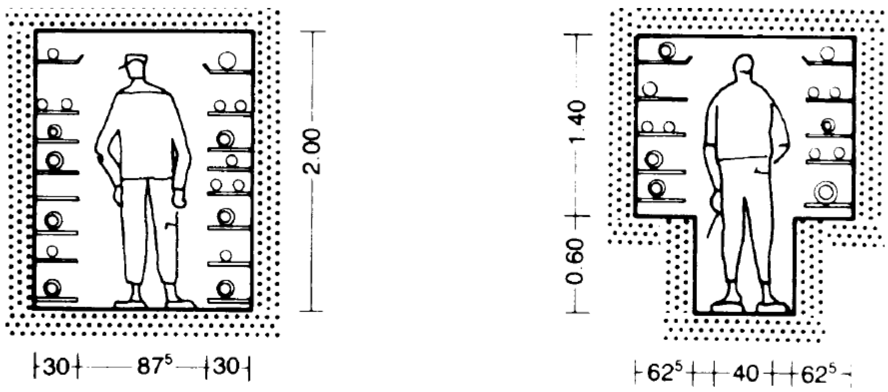


Fig 3.14(f) Standard shapes of green house structure (Source-Neuferts standard data)



Section of main service route (walk-in) varies according to number of ducts it is carrying

Fig 3.14(g) Section of main service route (Source-Neuferts standard data)

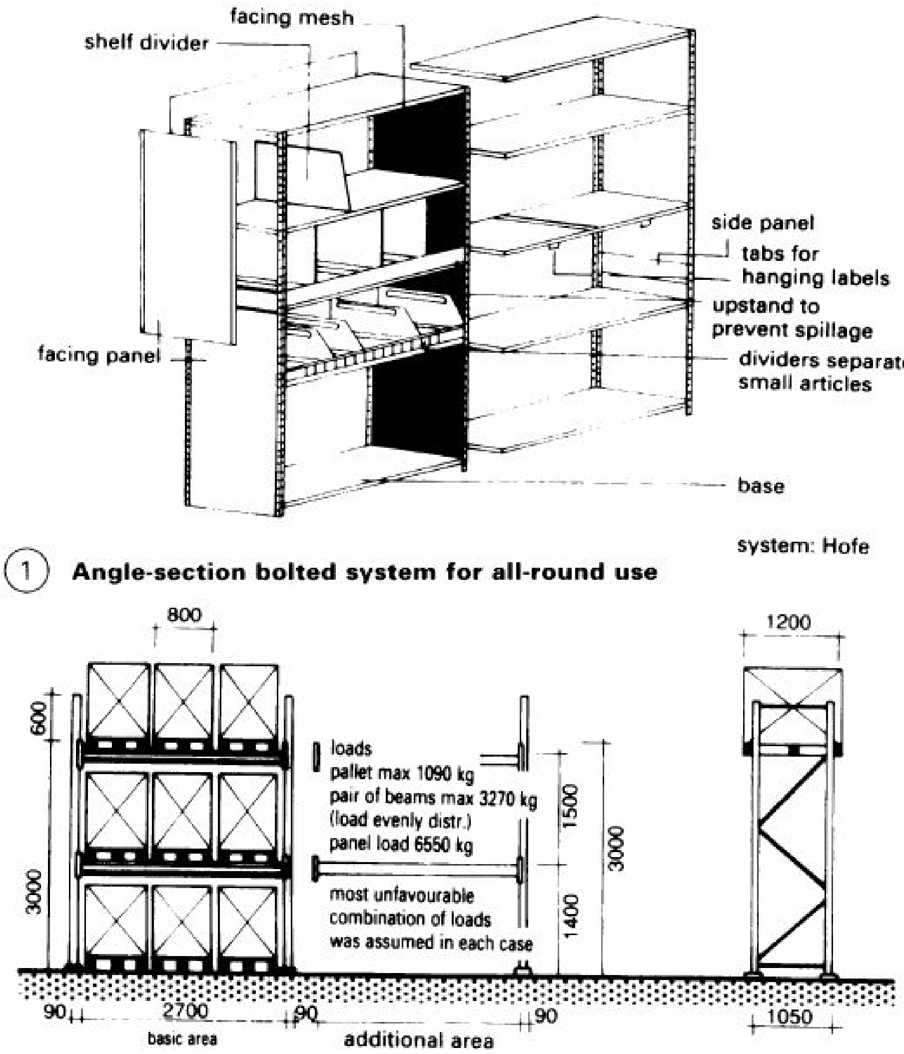


Fig 3.14(h) Section of rack storage in ware house (Source-Neuferts standard data)

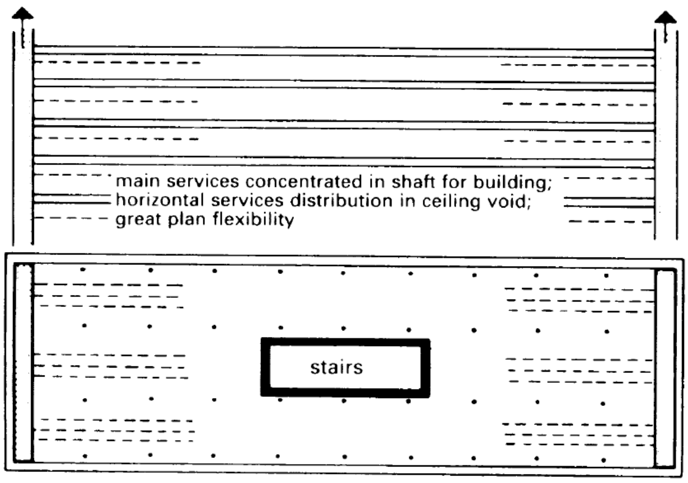


Fig 3.14(i) Standard services in laboratory building (Source-Neuferts standard data)

International Journal of Scientific Research in Engineering and Management (IJSREM)
Volume: 05 Issue: 01 | Jan - 2021 ISSN: 2582-3930

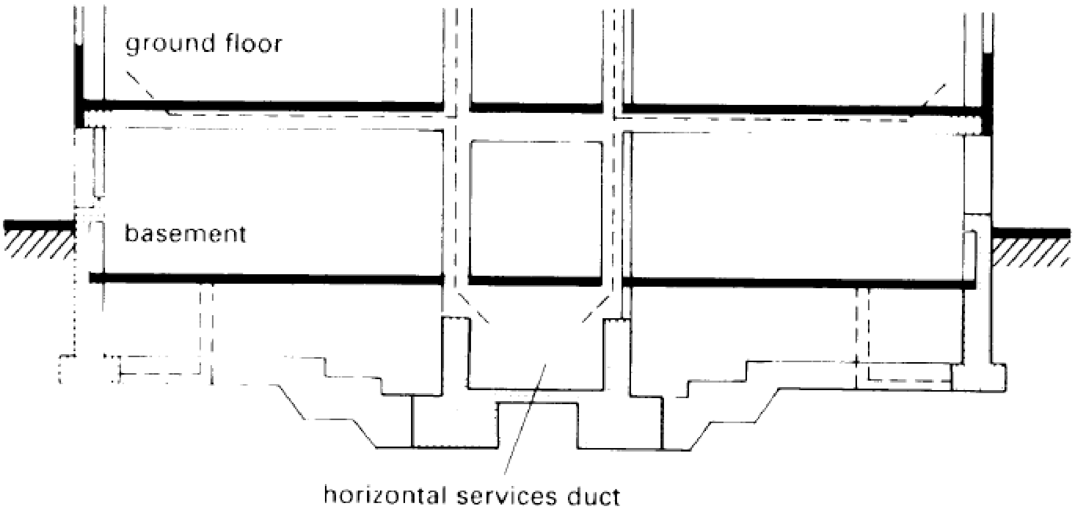


Fig 3.14(j) Standard services in laboratory building (Source-Neuferts standard data)

A common problem is to leave too little space between workbench and cupboards, or between pupils who are working back to back. The diagram on the next page is reproduced, with permission, from Science Accommodation for Secondary Schools which itself was adapted from BS3202 and shows safe distances between benches, cupboards, etc.
Modern laboratories tend to have much lower ceilings than traditional ones. This means that there is a much smaller volume of air and hence any fumes are less diluted. As any fumes are likely to be warmer than the surrounding air, they will tend to rise, but with a low ceiling this means that they may end up at head height, rather than out of harm's way. Even if there are no fumes, the heat generated by a class set of Bunsen burners can make conditions very uncomfortable. Specify the greatest ceiling height that you can but additional ventilation may well be necessary . Ventilation may affect the operation of fume cupboards. In Northern Ireland DENI specifies a minimum ceiling height of 2.7 m for new buildings.

Fig 3.14(k) Location of fume hoods in laboratories (Source-Neuferts standard data)

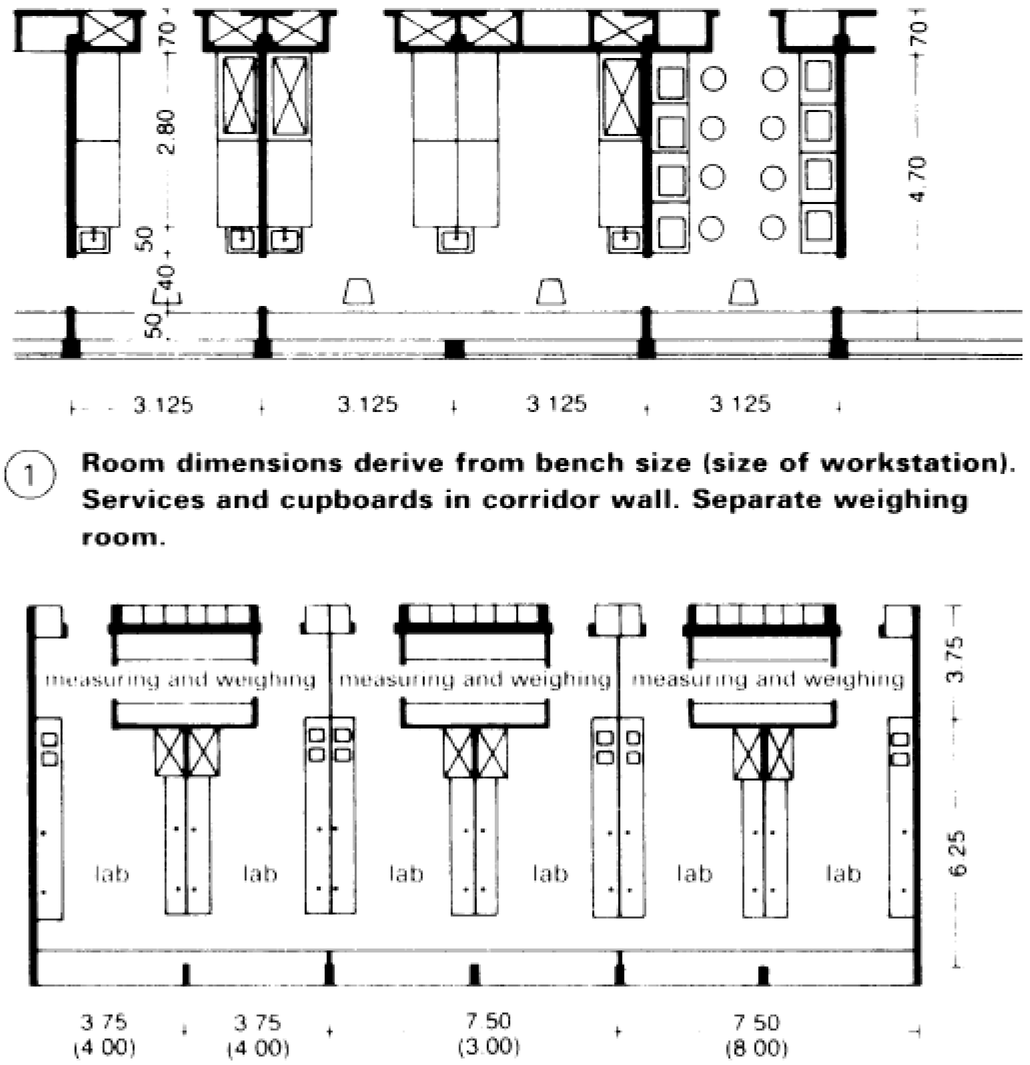


Fig 3.14(l) Standard arrangements of laboratory worktops (Source-Neuferts standard data)

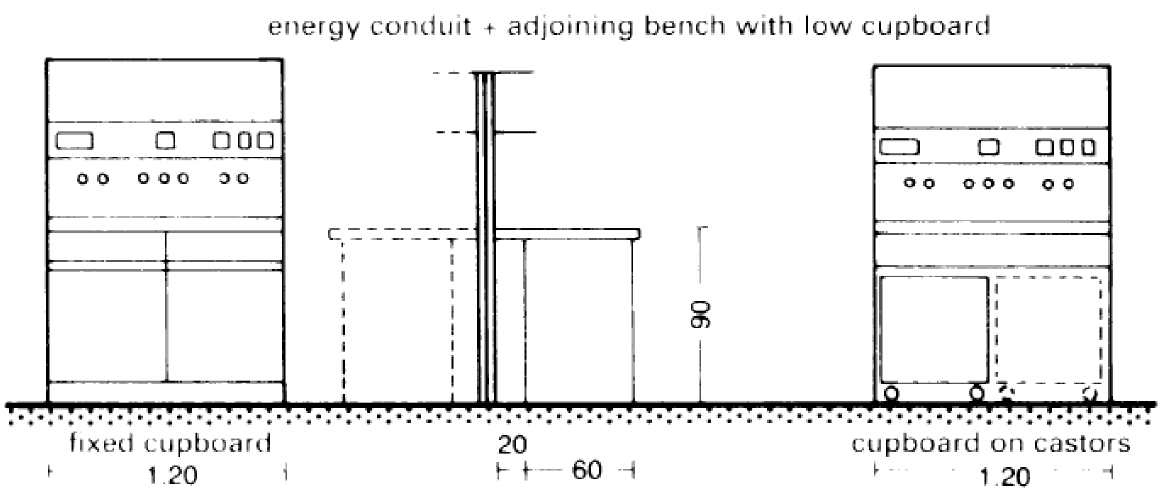


Fig 3.14(m) Section showing arrangement of lab work tops (Source-Neuferts standard data)

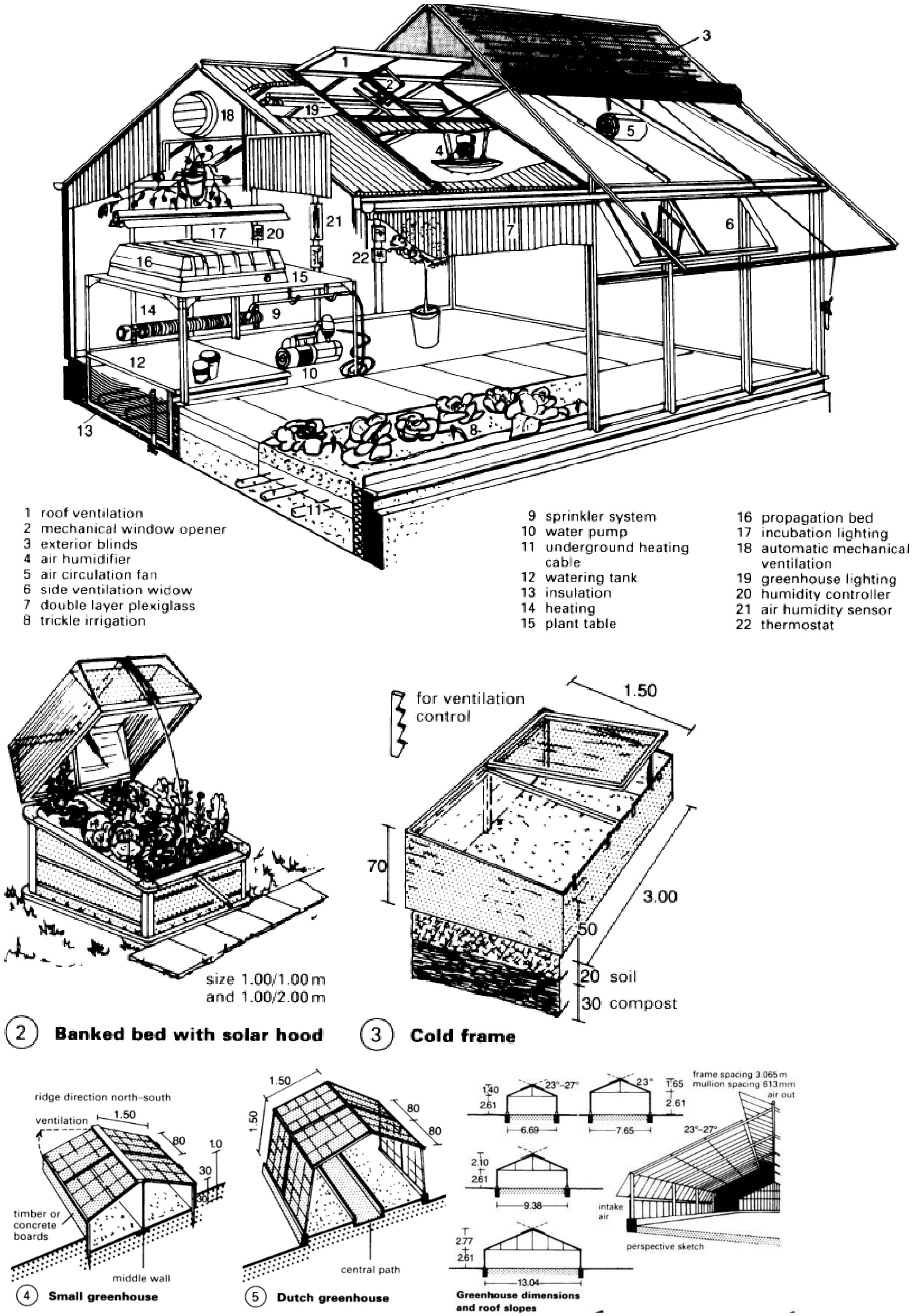
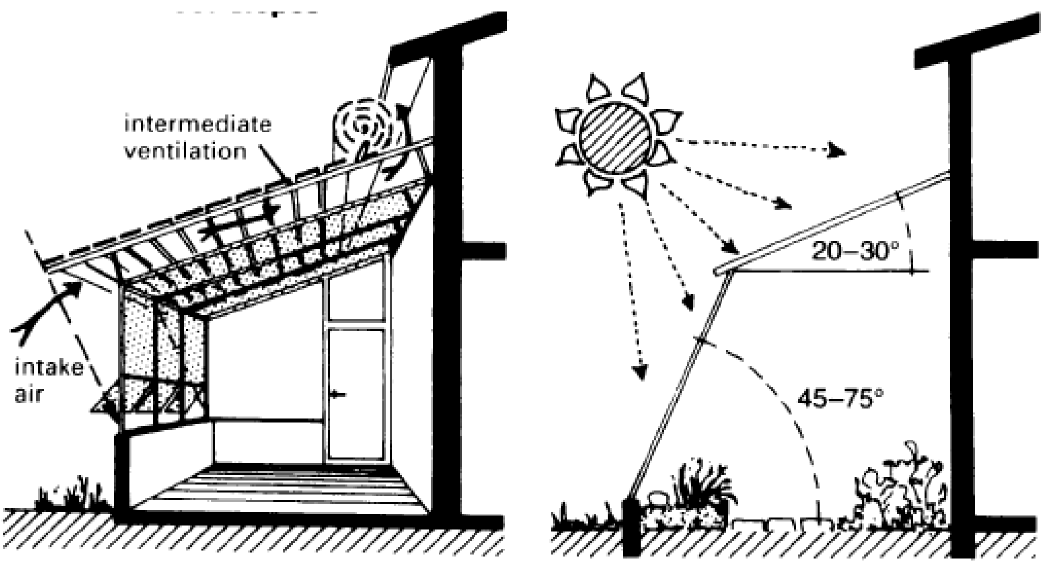


Fig 3.14(n) Standard arrangements of green house structures (Source-Neuferts standard data)

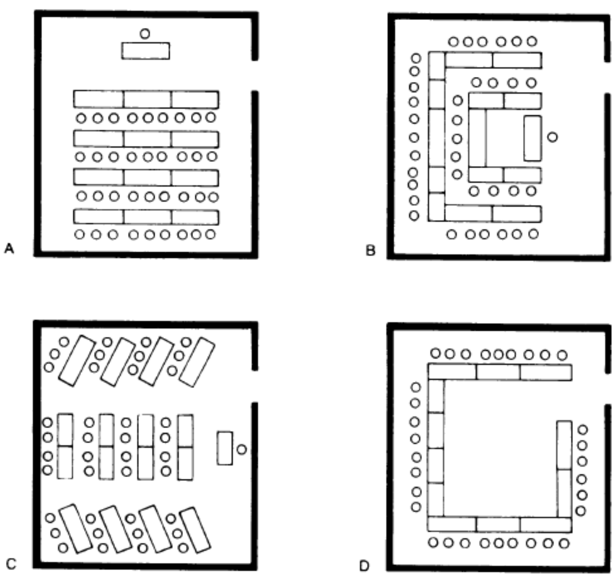
A greenhouse, with a floor area of approximately m2 should be provided, if possible opening off, or adjacent to, the preparation room. If south-facing, it should have roller-blind shades and a means of (automatically) opening windows for use during summer months. It should be glazed on three sides or one side if it has roof glazing, with the glazing extending to floor level. Heating should operate independently of the school heating during winter months, and preferably be thermostatically controlled. If possible, fan heating should be provided sinceair circulation is desirable, otherwise tube heating should be provided. A piped water supply isdesirable, with provision for a tap and connection to an automatic watering system, e.g.capillary matting reservoir tank. At least two waterproof electrical sockets should be provided.Standard 300 lux light fittings will be needed for staff, and additional lighting (11,000 to21,500 lux) is desirable especially for successful plant growth in north-facing locations.

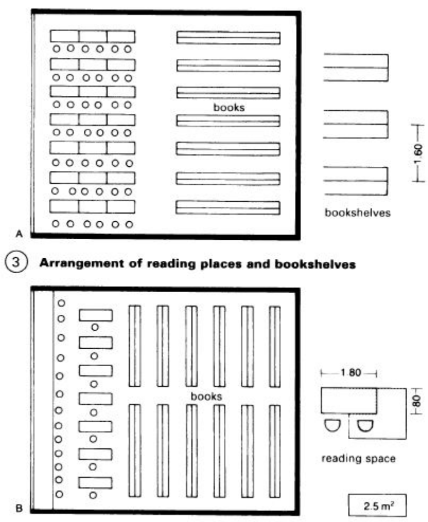


(11) **Exterior blinds with full intermediate ventilation**

(12) **Optimal angles for glass surfaces**

Fig 3.14(o) Standard roof detils of green house structures (Source-Neuferts standard data)

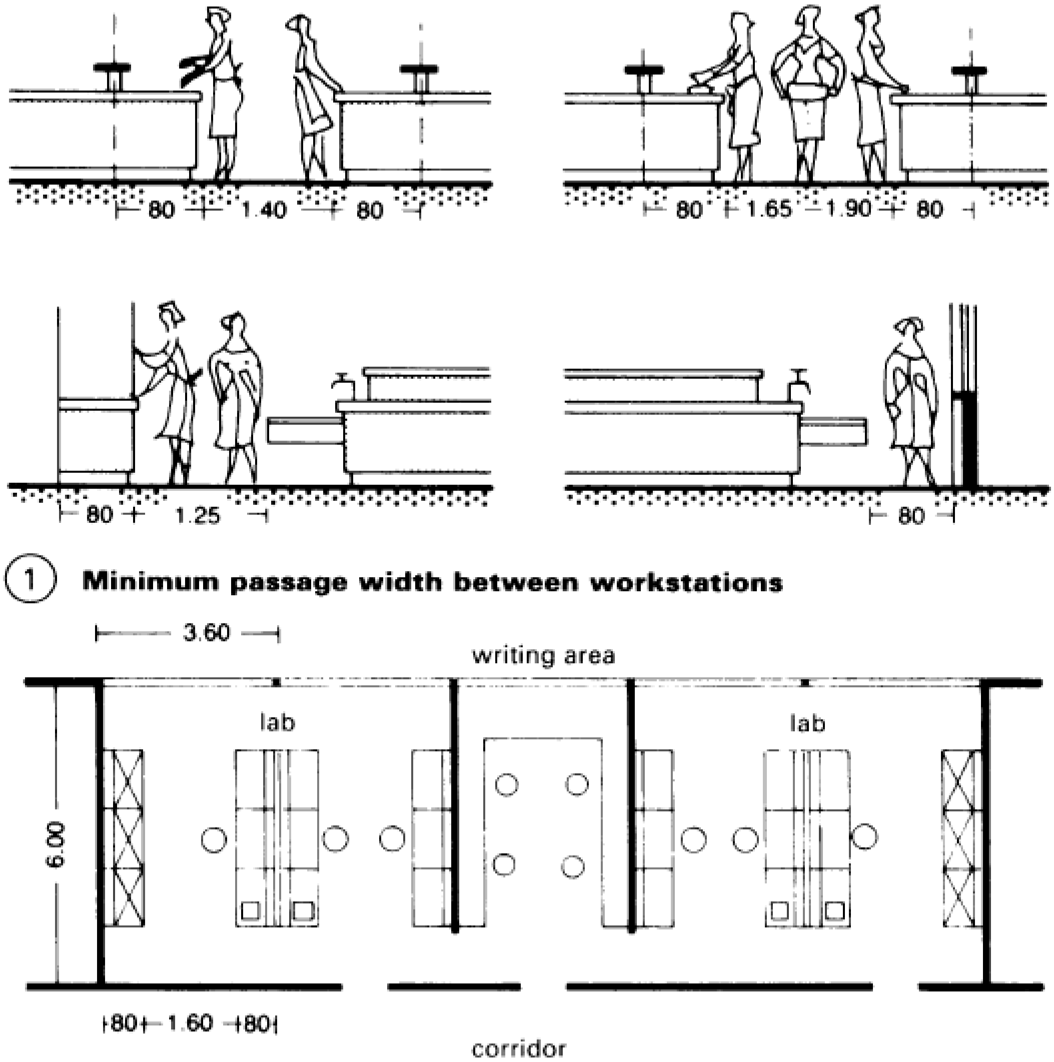




(3) **Arrangement of reading places and bookshelves**

(4) **Arrangement of reading places and bookshelves**

Fig 3.14(p) Standard arrangements of reading halls (Source-Neuferts standard data)



DESIGN BRIEF: AREA SPECIFICATION

SL.NO		DETAILS	NO OF UNITS	DIMENSIONS (SQ.M)
A.		CENTRAL FACILITIES		
		DEAN ROOM	1	40 SQ.M
		P.A ROOM	1	25 SQ.M
		COMMETTEE ROOM WITH A.V.	1.	40 SQ.M
		ASSISTANT ADMIN STAFF OFFICER	1	15 SQ.M
		ASSISTANT ACCOUNTS OFFICER	1	15 SQ.M
		ASSISTANT STAFF ACADAMIC	1	15 SQ.M
		EXAM CELL	1 (300 CAPACITY)	400 SQ.M
		EVALUATION ROOM	1	60 SQ.M
		FACULTY ROOM (GENTS)	1 (30 CAPACITY)	300 SQ.M
		FACULTY ROOM (LADIES)	1 (20 CAPACITY)	200 SQ.M
		PLACEMENT CELL	1	20 SQ.M
		EXAM HALL CUM AUDITORIUM	1 (60 CAPACITY)	60 SQ.M
		LIBRARY / BOOK BANK		450 SQ.M
		COMMON UTILITY ROOM	1	60 SQ.M
		HOSTEL (BOYS)	1(70 CAPACITY)	
		HOSTEL (GIRLS)	1(50 CAPACITY)	
		CANTEEN		120 SQ.M
		WASH ROOMS	10	20 SQ.M (A.P.R)
B.		ACADAMIC SECTION		
		CLASSROOMS	8	135 SQ.M
		PRACTICAL LABORATORY		
		PHYSICAL SCIENCE HALL	2	216 SQ.M
		BOTONY LAB	2	216 SQ.M
		EXTENSIONS	1	216 SQ.M
		ECONOMICS LAB	2	216 SQ.M
		AGRONOMY LAB	2	200 SQ.M
		HORTICULTURE LAB	4	200 SQ.M
		ANIMAL HUSBANDARY	2	180 SQ.M (OPEN)
		AGRICULTURAL ENGINEEING	3	200 SQ.M
		GREEN NET SHADE	A.P.R	800 SQ.M
C.		GUIDANCE CENTRES		
		INFORMATION PODS	APR	5 SQ.M
		SEMINAR HALLS	2	115 SQ.M
		AGRI. INFORMATION DEPARTMENT	1	50 SQ.M
		MEETING ROOMS	1	30 SQ.M
		OPEN AIR DISPLAY AREAS	2	A.P.R
		GUEST ROOMS	4	35 SQ.M
D.		RESEARCH LANDS		
		AGRICULTURAL RESEARCH LAND	1	7-10 ACRES
		IRRIGATION PUMP ROOM	3	25 SQ.M

SL.NO		DETAILS	NO OF UNITS	DIMENSIONS (SQ.M)
		STORAGE ROOMS	3	100 SQ.M
		MUESEUM FOR SEED DISPLAY (DISPLAY AND IDENTIFICATION ZONE)	1	300 SQ.M
E.		ANIMAL HUSBANDARY SECTION		
		COWSHADES	1 (CAPACITY 20)	100 SQ.M
		BULLOCK SHADE	1 (CAPACITY 10)	100 SQ.M
		POULTRY FACILITY	1 (CAPACITY 500)	216 SQ.M
F.		FACILITIES:		
		MULTIPURPOSE GROUND	A.P.R	A.P.R
		PARKING SPACES	A.P.R	A.P.R
		FARM STORES , THRASHING YARDS INCLUDING THE IMPLEMENTS AND TRACTOR SHEDS	ONE CORE COMPLEX	
		DRINKING WATER AND IRRIGATION FACILITIES	A.P.R	A.P.R
		VEHICAL SHED	A.P.R	50 SQ.M
		CRPO CAFETERIA	2	0.5 ACRE
G.		RESEARCH DEPARTMENT		
		CLERICAL STAFF ROOM	4	30 SQ.M
		LABORATORIES	8	160 SQ.M
		GREEN HOUSE AND NURSERY	1	0.5 ACRE
		FIELD LAB STORES	5 1.AGRONOMY	A.P.R
			2.GEN.&LI.BREEDING	
			3.SOIL SCI.	
			4.HORTICULTURE	
			5.PEST &CHEMICALS	

International Journal of Scientific Research in Engineering and Management (IJSREM)
Volume: 05 Issue: 01 | Jan - 2021 ISSN: 2582-3930

THESIS INTODUCTION AND NECESSITY

INITIATION

ABSTRACT

Agriculture being a basic activity plays a vital role in Indian economy, but still it gambles with the monsoon, causes high fluctuations in production. Inadequate rainfall of monsoon and frequent drought conditions hampered the development of agriculture, particularly, in drought prone area of Maharashtra. In this report the Amravati district, which falls, in Maharashtra is selected for study. The major objective is to find out and analyze the needs, issues in region.
Land use and land cover change is for the human modification of earth's terrestrial surface.

Agriculture being a major occupation in India possess least awareness about the modern trends in agricultural sector and thus also lack the attention which is required to be given major working group in this sector. Agriculture continues to sustain millions of people in India. This is despite the rapid industrialization which is acquiring significant proportions in many regions of the country. Agriculture is one of the oldest economic activities of man. In India 63 percent population lives in rural area and it contributes nearly 17.20 percent of gross domestic product.
Over 63 percent population depends on agriculture for their livelihood.

Over 63 percent population depends on agriculture for their livelihood. Distribution of agriculture depends upon large number of geo-hydrological, environmental, biological and socio-economic variables. In India 60 percent area is rain fed. Agricultural landscape has drastically changed in the last two decades. Better agriculture techniques have successfully applied in order to achieve self sufficiency in agriculture production. The five year plans are aimed to make India self reliant in agriculture sector. Hence for the last five
plans, many programmes such as community development programme, extension services, expansion of irrigation facilities, fertilizers, agricultural machineries, high yielding varieties of seeds, expansion of transport, power, marketing and institutional credit have introduced. Before green revolution Indian agriculture was facing many problems such as lack of irrigation, limited use of technology, unsuccessful land reforms, explosive population growth, decreasing investment in agriculture sector etc.

AIM:

To design Agricultural college and research centre to promote new technologies and methods to educate farmers and students for their best practice in future.

OBJECTIVES:

1. To study the scenario and identity issues related to Agriculture at Urban and rural level
2. To study the estimate the levels and pattern of the investment in agricultural research, extension and education.
3. To study research resource allocations across states and commodities.

4. To study the determinants of public investment in agricultural research, extension and education.

5. To study measures to improve the efficiency of the national agricultural research and extension systems.

6. To identify status and number of Agricultural facilities at urban and rural level.
7. To analyse the study area based on selected parameters

8. To analyse agricultural land use pattern And Identification crop combination and diversification regions in study area.

9. To propose Agricultural research and innovation centre at Chikhaldara, Amravati.

THESIS TOPIC: AGRICULTURE COLLEGE AT PIMPLEKHUTA
SUB-TOPICS:

1.Why agricultural college?
2.Basic introduction.
3.Needs for the project.
4.Main designing features and components of project.
5.Necessary bylaws needed for the design.
6.Govermental scope for the project in future.
7.Possiblities with the international sector.
8.Foreign investment probabilities.

What is agriculture college and extension?

Agro hub is the project having the most essential requirements of the new emerging agricultural sector in various aspects of institutional, research and development, storage, guidance, and commercial divisions.

Basic Introduction:

Agro hub is the collective unit of agricultural institution, research centres, storage facilities.information centres, guidance centres and commertial zone for the development of farmers and user aided with the agricultural sectors.
This term is refers as the Agricultural extention.This will act as a whole and soul unit for this sector and there will be uniformity in the functioning of these uints.This will help in countering the problems leading due to diversed units of these components.

Need for the Agriculture college:

In India there is no such proposed project ,therefore it will lead to great outcome of such proposed design.There should be such unit in every state on the national level which will actas an connective network for the user groups for proper functioning in their most spreaded field.

Features:

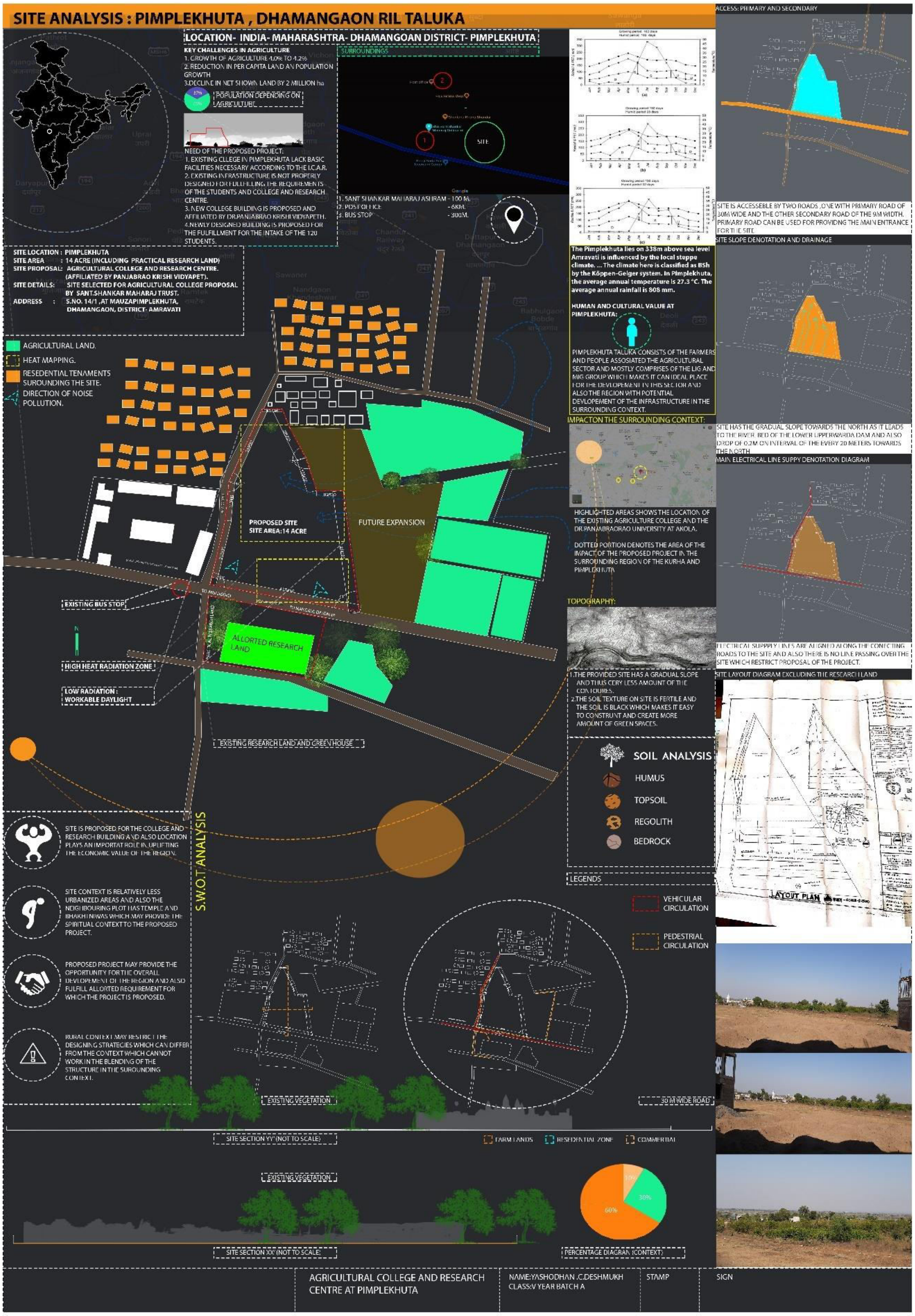
Basic components of Agriculture college:
1.Institutional and academic zone.
2.Research and development zone.
3.Storage facilities and agro production sector.
4.Commertial and sales departmental zone.
5.Guidance centres.
6.Information centres.
7.Call centres and testing labs.
8.Administration zone.
9.Green house zones.

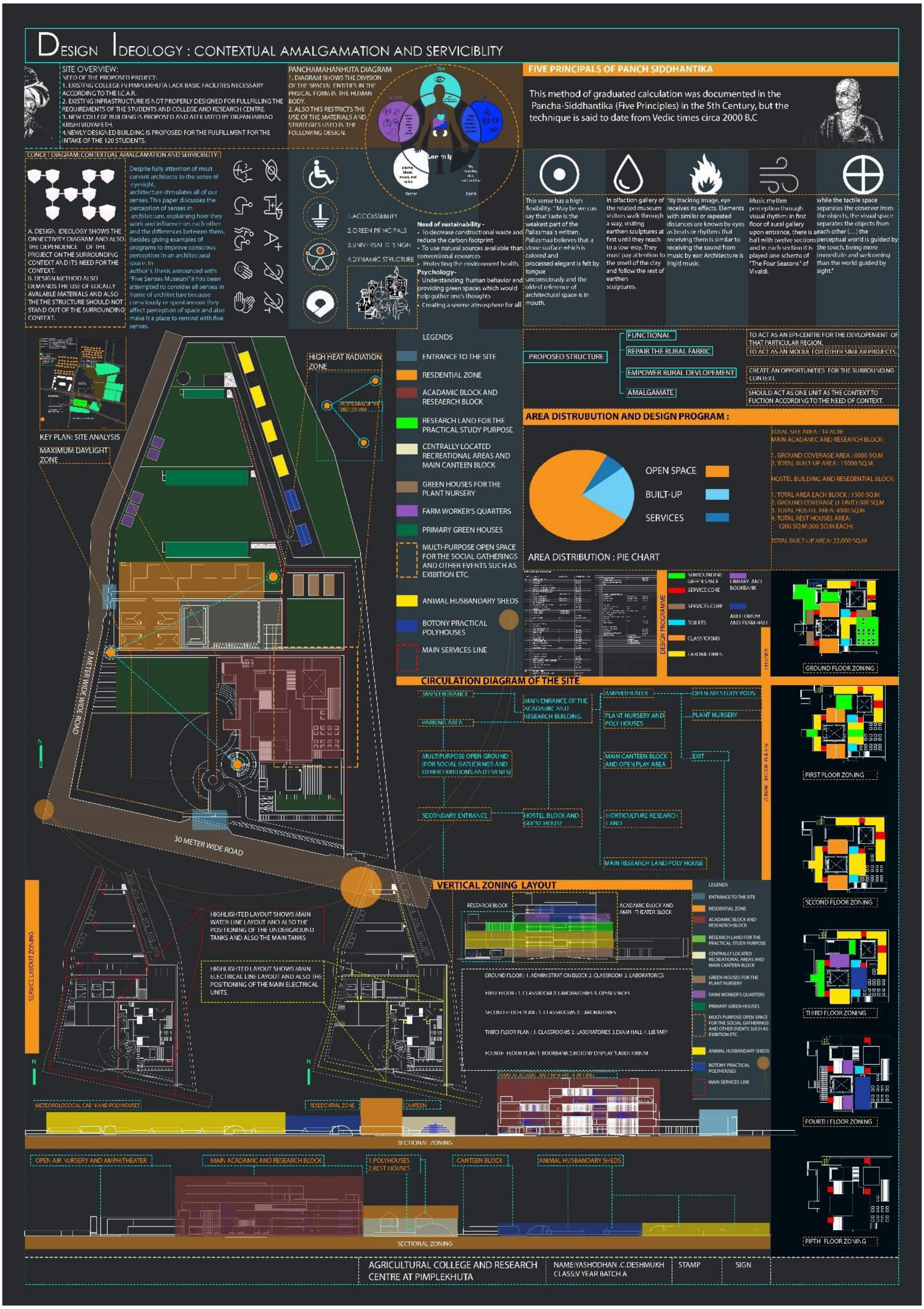
Methodology in the Design proposal:

1. Analysis of the facilities such as agricultural colleges, research centres, commertial facilities, and other agrobased centres.
2. Proper selection of the site for the proposal for maximum utilization and also to raise the awareness for local agro based sector.
3. It will also help in the generation of the employment.
4. It will help in maintain the proposed project and will to use every space and create a disciplined use of the provided land.

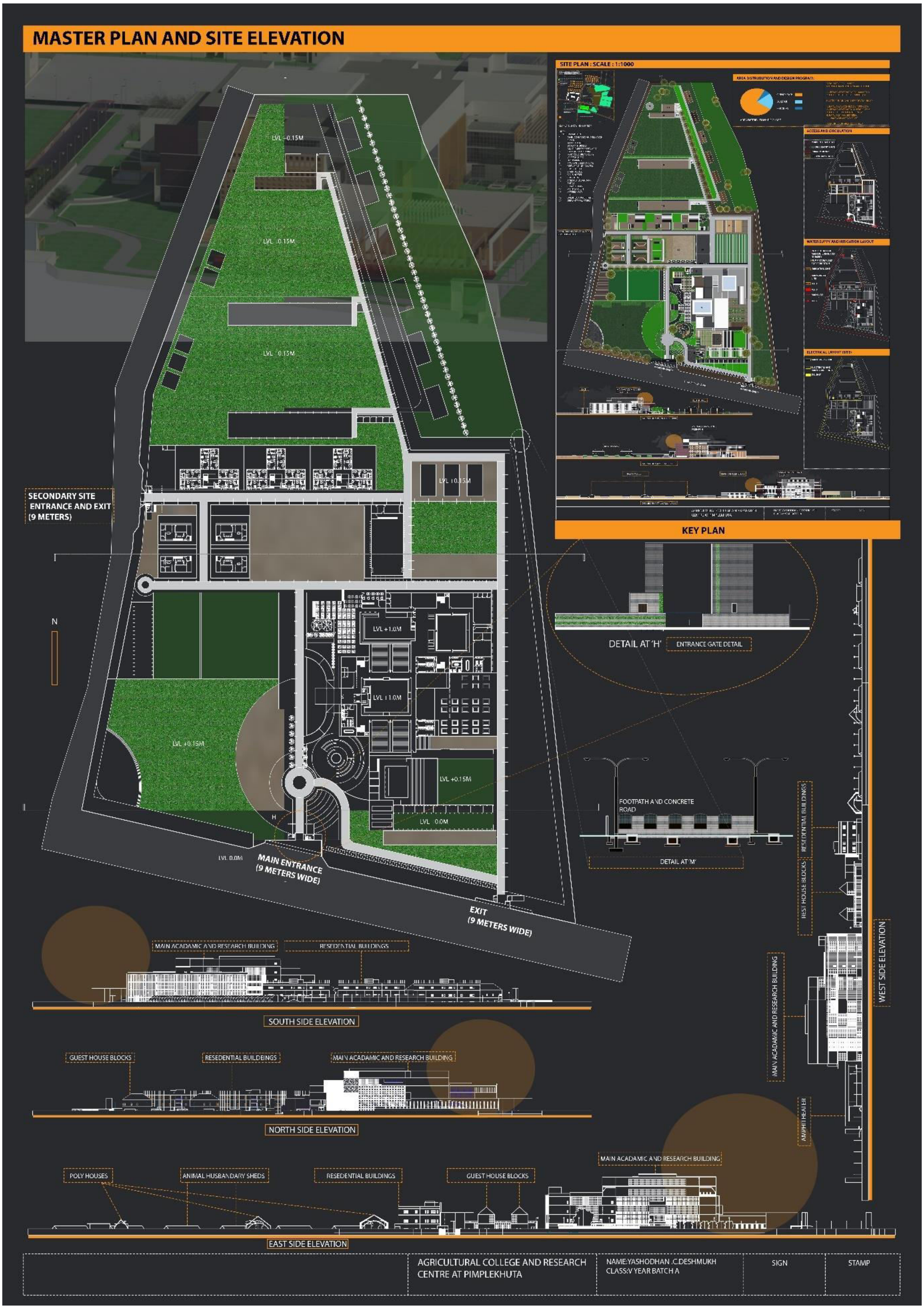
Scope:

1.It will be most important proposal in future to maintain the wise of available land.
2.It can also be more effective if done on govermental basis in the future.
3.It will also increase the awareness and the importance of the local agrobased industry and also will create the platform for upgrading agrobased industry.


SITE ANALYSIS : PIMPLEKHUTA , DHAMANGAON RIL TALUKA
LOCATION- INDIA- MAHARASHTRA- DHAMANGOAN DISTRICT- PIMPLEKHUTA
SITE LOCATION : PIMPLEKHUTA
SITE AREA : 14 ACRE (INCLUDING PRACTICAL RESEARCH LAND)
SITE PROPOSAL: AGRICULTURAL COLLEGE AND RESEARCH CENTRE.
PROPOSED SITE
SITE AREA:14 ACRE
FUTURE EXPANSION
ALLOTED RESEARCH LAND
EXISTING BUS STOP
HIGH HEAT RADIATION ZONE
LOW RADIATION : WORKABLE DAYLIGHT
EXISTING RESEARCH LAND AND GREEN HOUSE
S.W.O.T ANALYSIS
SOIL ANALYSIS
HUMUS
TOPSOIL
REGOLITH
BEDROCK
LEGENDS
VEHICULAR CIRCULATION
PEDESTRIAL CIRCULATION
EXISTING VEGETATION
SITE SECTION YY (NOT TO SCALE)
SITE SECTION XX (NOT TO SCALE)
PERCENTAGE DIAGRAM (CONTEXT)
AGRICULTURAL COLLEGE AND RESEARCH CENTRE AT PIMPLEKHUTA
NAME:YASHODHAN .C.DESHMUKH
CLASS:V YEAR BATCH A
STAMP
SIGN

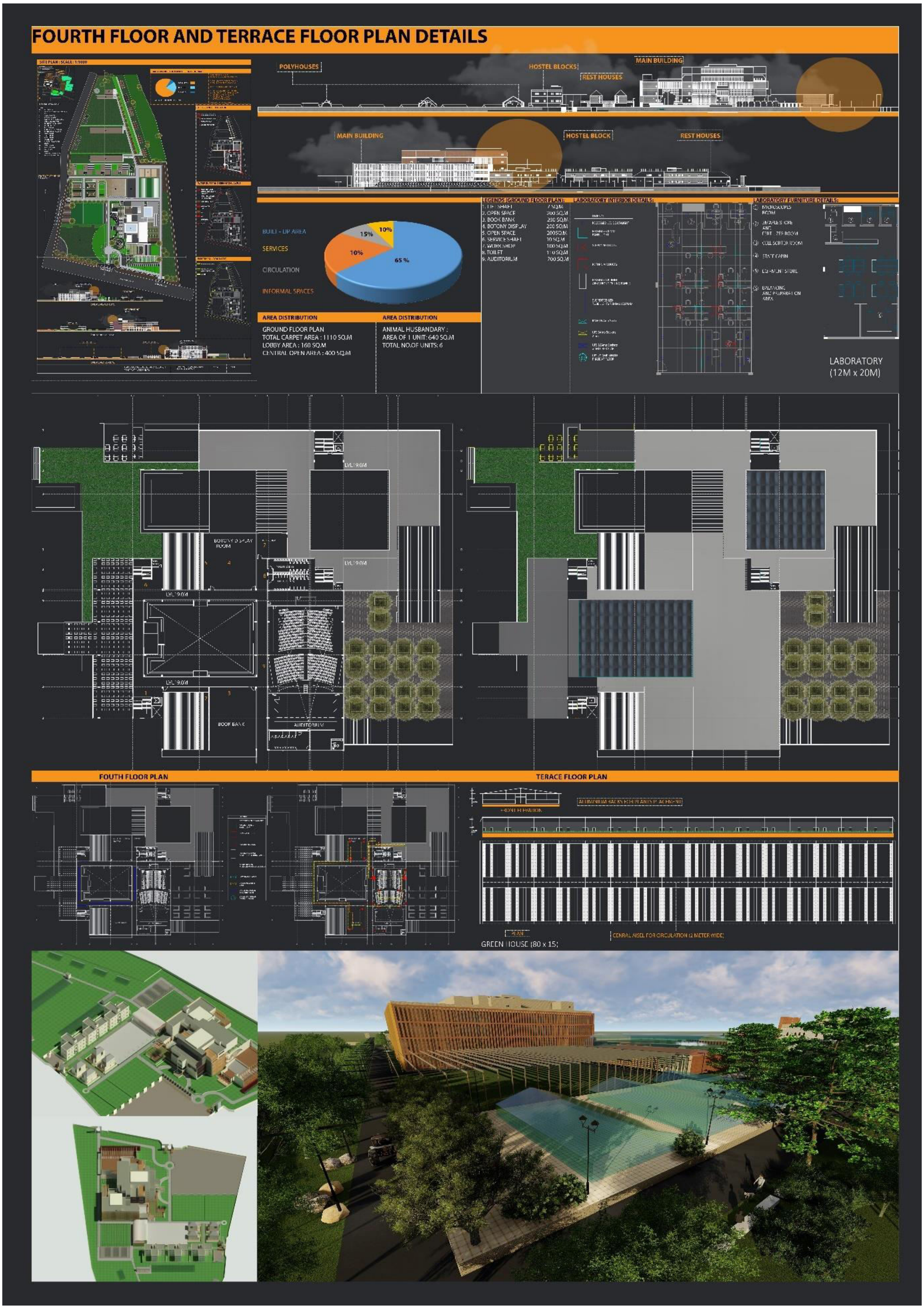

DESIGN IDEOLOGY : CONTEXTUAL AMALGAMATION AND SERVICIBLITY
FIVE PRINCIPALS OF PANCH SIDDHANTIKA
This method of graduated calculation was documented in the Pancha-Siddhantika (Five Principles) in the 5th Century, but the technique is said to date from Vedic times circa 2000 B.C
LEGENDS
ENTRANCE TO THE SITE
RESDENTIAL ZONE
ACADAMIC BLOCK AND RESEERCH BLOCK
RESEARCH LAND FOR THE PRACTICAL STUDY PURPOSE
CENTRALLY LOCATED RECREATIONAL AREAS AND MAIN CANTEEN BLOCK
GREEN HOUSES FOR THE PLANT NURSERY
FARM WORKER'S QUARTERS
PRIMARY GREEN HOUSES
ANIMAL HUSBANDARY SHEDS
BOTONY PRACTICAL POLYHOUSES
MAIN SERVICES LINE
AREA DISTRUBUTION AND DESIGN PROGRAM :
OPEN SPACE
BUILT-UP
SERVICES
AREA DISTRIBUTION : PIE CHART
CIRCULATION DIAGRAM OF THE SITE
VERTICAL ZONING LAYOUT
30 METER WIDE ROAD
SECTIONAL ZONING
AGRICULTURAL COLLEGE AND RESEARCH CENTRE AT PIMPLEKHUTA

International Journal of Scientific Research in Engineering and Management (IJSREM)
Volume: 05 Issue: 01 | Jan - 2021 ISSN: 2582-3930


MASTER PLAN AND SITE ELEVATION
SITE PLAN : SCALE : 1:1000
KEY PLAN
SECONDARY SITE ENTRANCE AND EXIT (9 METERS)
N
MAIN ENTRANCE (9 METERS WIDE)
EXIT (9 METERS WIDE)
DETAIL AT 'H'
ENTRANCE GATE DETAIL
FOOTPATH AND CONCRETE ROAD
DETAIL AT 'M'
MAIN ACADAMIC AND RESEARCH BUILDING
RESEDENTIAL BUILDINGS
SOUTH SIDE ELEVATION
GUEST HOUSE BLOCKS
RESEDENTIAL BUILDINGS
MAIN ACADAMIC AND RESEARCH BUILDING
NORTH SIDE ELEVATION
POLY HOUSES
ANIMAL HUSBANDARY SHEDS
RESEDENTIAL BUILDINGS
GUEST HOUSE BLOCKS
MAIN ACADAMIC AND RESEARCH BUILDING
EAST SIDE ELEVATION
WEST SIDE ELEVATION
AGRICULTURAL COLLEGE AND RESEARCH CENTRE AT PIMPLEKHUTA
NAME:YASHODHAN .C.DESHMUKH
CLASS:V YEAR BATCH A
SIGN
STAMP


GROUND FLOOR AND FIRST FLOOR PLANS DETAILS
POLYHOUSES
HOSTEL BLOCK
REST HOUSES
MAIN BUILDING
AREA STATEMENT:
BUILT - UP AREA
SERVICES
CIRCULATION
INFORMAL SPACES
65 %
15%
10%
10%
AREA DISTRIBUTION
GROUND FLOOR PLAN
TOTAL CARPET AREA : 3000 SQ.M
LOBBY AREA : 450 SQ.M
CENTRAL OPEN AREA : 750SQ.M
AREA DISTRIBUTION
FIRST FLOOR PLAN :
TOTAL ACRPET AREA: 2600 SQ.M
LOBBY AREA: 400 SQ.M
OPEN SPACE AREA: 450 SQ.M
LEGENDS (GROUND FLOOR PLAN):
AREA (IN SQ.M)
LEGENDS (FIRST FLOOR PLAN):
AREA (IN SQ.M)
RAMP 2.5M WIDE
GROUND FLOOR PLAN
FIRST FLOOR PLAN


SECOND AND THIRD FLOOR PLAN DETAILS
POLYHOUSES
HOSTEL BLOCK
REST HOUSES
MAIN BUILDING
MAIN BUILDING
HOSTEL BLOCK
REST HOUSES
BUILT - UP AREA
SERVICES
CIRCULATION
INFORMAL SPACES
10%
15%
10%
65 %
AREA DISTRIBUTION
GROUND FLOOR PLAN
TOTAL CARPET AREA : 3000 SQ.M
LOBBY AREA : 450 SQ.M
CENTRAL OPEN AREA : 750SQ.M
AREA DISTRIBUTION
FIRST FLOOR PLAN:
TOTAL ACRPET AREA: 2500SQ.M
LOBBY AREA: 325 SQ.M
OPEN SPACE AREA: 450 SQ.M
LEGENDS (GROUND FLOOR PLAN):
AREA (IN SQ.M)
LEGENDS (FIRST FLOOR PLAN):
AREA (IN SQ.M)
SECOND FLOOR PLAN
THIRD FLOOR PLAN


FOURTH FLOOR AND TERRACE FLOOR PLAN DETAILS
POLYHOUSES
HOSTEL BLOCKS
REST HOUSES
MAIN BUILDING
MAIN BUILDING
HOSTEL BLOCK
REST HOUSES
BUILT - UP AREA
SERVICES
CIRCULATION
INFORMAL SPACES
10%
15%
10%
65 %
AREA DISTRIBUTION
GROUND FLOOR PLAN
TOTAL CARPET AREA : 1110 SQ.M
LOBBY AREA : 160 SQ.M
CENTRAL OPEN AREA : 400 SQ.M
AREA DISTRIBUTION
ANIMAL HUSBANDARY :
AREA OF 1 UNIT: 640 SQ.M
TOTAL NO.OF UNITS: 6
LABORATORY
(12M x 20M)
FOUTH FLOOR PLAN
TERACE FLOOR PLAN
GREEN HOUSE (80 x 15)


ELEVATIONAL AND SECTIONAL DETAILS
EAST SIDE ELEVATION
SOUTH SIDE ELEVATION
NORTH SIDE ELEVATION
WEST SIDE ELEVATION
EAST SIDE ELEVATION
SECTION XX'
NORTH SIDE ELSEVATION
SECTION YY'
WEST SIDE ELEVATION
SECTION AA'
SOUTH SIDE ELEVATION
SECTION BB'


SITE COMPONENTS DETAILS
HOSTEL BLOCK
REST HOUSE BLOCK
MAIN BUILDING BLOCK
NURSERY
NURSERY
MAIN BUILDING BLOCK
REST HOUSE BLOCK
HOSTEL BLOCK
GREEN HOUSES
AREA DIVISION STATEMENT:
BUILT - UP AREA
SERVICES
CIRCULATION
INFORMAL SPACES
15%
10%
10%
65 %
CANTEEN BLOCK
CANTEEN AREA:
900 SQ.M
REST HOUSE BLOCK
EACH BLOCK AREA: 200 SQ.M
NUMBER OF BLOCKS: 4
TOTAL RESTHOUSE AREA: 1200 SQ.M
HOSTEL BLOCK
EACH BLOCK AREA: 500 SQ.M
NUMBER OF BLOCKS: 3
TOTAL HOSTEL BLOCK AREA:
4500 SQ.M
REST HOUSE DETAILS
CANTEEN DETAILS
HOSTEL BLOCK DETAIL
SITE DETAILS
KITCHEN
COLD STORAGE
COUNTER
SECONDARY KITCHEN
DRY STORAGE
CANTEEN
45 x 20
PLAN
HOSTEL FLOOR PLANS
FIRST FLOOR, SECOND FLOOR, THIRD FLOOR
FRONT ELEVATIONS :HOSTEL BLOCK
SECTION XX'
SECTION YY'
SECTION XX'
FRONT ELEVATION
SECTION YY'
SECTION YY'
MASTER BEDROOM
GUEST ROOM
LIVING AREA
MASTER BEDROOM
DINING
VESTIBULE
ANIMAL HUSBANDARY SHEDS
MAIN CANTEEN BLOCK
MAIN ACADAMIC AND RESEARCH BLOCK
AMPHITHEATER AND NURSERY
NURSERY AND AMPHITHEATER
MAIN ENTRANCE
MULTIPURPOSE OPEN GROUND
REST HOUSES
HOSTEL BLOCK
GREEN HOUSES
HOSTEL BLOCK
MAIN ACADAMIC AND RESEARCH BUILDING
AMPHITHEATER AND NURSERY
MAIN CANTEEN BLOCK
MULTIPURPOSE GROUND