



GOVERNMENT OF TAMIL NADU

HIGHER SECONDARY FIRST YEAR

BIOLOGY

BOTANY

A publication under Free Textbook Programme of Government of Tamil Nadu

Department of School Education

Untouchability is Inhuman and a Crime

Government of Tamil Nadu

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BIOLOGY-BOTANY

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E-book



Assessment



HOW TO USE THE BOOK



Learning Objectives:

Learning objectives are brief statements that describe what students will be expected to learn by the end of school year, course, unit, lesson or class period.

Chapter Outline

Illustrate the complete overview of chapter



List of Botanical terms

Amazing facts, Rhetorical questions to lead students to biological inquiry

Tamil terminology for Botanical terms given for easy understanding

Activity

Directions are provided to students to conduct activities in order to explore, enrich the concept.

Infographics

Visual representation of the lesson to enrich learning .

Evaluation

Assess students to pause, think and check their understanding



To motivate the students to further explore the content digitally and take them in to virtual world



ICT

To enhance digital Science skills among students

Concept Map

Conceptual diagram that depicts relationships between concepts to enable students to learn the content schematically

Career corner

List of professions related to the subject

References

List of related books for further details of the topic

Web links

List of digital resources

Glossary

Explanation of scientific terms

Competitive Exam questions

Model questions to face various competitive exams



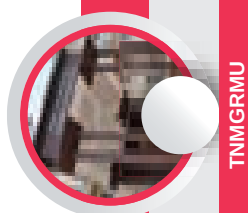
Scope of Botany

Higher Studies and Career Opportunities



TNAU

- B.Sc. Agriculture,
- B.Sc. Horticulture
- B.Sc. Forestry,
- B.Sc. Sericulture
- B.Tech. Biotechnology
- B.Tech. Agricultural Engineering
- B.Tech. Horticulture
- B.Tech. Food process Engineering
- B.Tech. Energy and
- Environmental Engineering
- B.Tech. Bioinformatics
- B.Sc. Agribusiness Management
- B.Tech. Agricultural IT
- M. Tech. Environmental Engineering
- M. Sc in Agriculture
- M. Sc in Agronomy
- M. Sc in Soil Science
- M. Sc in Agricultural Biotechnology
- M. Sc in Agricultural Marketing
- M. Sc in Agricultural Microbiology
- M. Tech in Agricultural Engineering
- M. E in Agricultural Engineering
- Master of Agriculture in Entomology
- Master of Agriculture in Horticulture
- Master of Agriculture in Animal Sciences
- Master of Agriculture in Entomology
- Master of Agriculture in Plant Pathology
- Master of Agriculture in Agricultural Economics and Rural Sociology
- Master in Agriculture And Rural Development



TNM/GRMU

- MEDICAL**
- MBBS
 - M.D/M.S/M.D.S
 - M.Ch. (5 year course)
 - B.D.S
 - M.D.S
- Indian Medicine and Homoeopathy Courses**
- B.A.M.S. - Ayurvedic Medicine
 - B.H.M.S. - Homoeopathic Medicine
 - B.N.Y.S. - Naturopathy and Yogic
 - B.S.M.S. - Siddha Medicine
 - B.U.M.S. - Unani Medicine
- Allied Health Sciences**
- B.Sc. (N)- Bachelor of Science in Nursing
 - B.P.T.- Bachelor of Physiotherapy
 - M.P.T.- Master of Physiotherapy
 - B.O.T.- Bachelor of Occupational Therapy
 - M.O.T.- Master of Occupational Therapy
 - B.Sc. - Accident & Emergency Care Technology
 - B.Sc. - Audiology & speech Language Pathology
 - B.Sc. - Cardiac Technology
 - B.Sc. - Cardio Pulmonary Perfusion Care Technology
 - B.Sc. - Critical Care Technology
 - B.Sc. - Dialysis Technology
 - B.Sc. - Neuro Electrophysiology
 - B.Sc. - Medical Sociology
 - B.Sc. - Nuclear Medicine Technology
 - B.Sc. - Operation Theatre & Anaesthesia Technology
 - B.Sc. - Physician Assistant
 - B.Sc. - Radiology Imaging Technology
 - B.Sc. - Radiotherapy Technology
 - B.Sc. - Fitness and Lifestyle Modifications
 - B.Sc. - Clinical Nutrition
- Diploma Course**
- Accident & Emergency Care Technology
 - Critical Care Technology
 - Health Care Aide (as per 245th GC)
 - Operation Theatre & Anaesthesia Technology
 - Ophthalmic Nursing Assistant
 - Scope Support Technology
 - Medical Record Science
 - Optometry Technology
 - Radiology & Imaging Technology
 - Medical Lab Technology
 - Cardiac Non Invasive Technology
 - Dialysis Technology



AIMS

- Undergraduate Courses (UG)**
- MBBS
 - B.Sc Nursing (post Certificate)
 - B.Sc. (Hons.) Nursing
 - Paramedical Courses (PM)
 - B.Sc. (Hons.) Ophthalmic Techniques
 - B.Sc. (Hons.) Medical Technology
- Postgraduate Courses (PG)**
- M.D/M.S/M.D.S
 - M.Ch. (5 year course)
 - M.Sc. / M. Biotechnology



SCIENCE

- Courses in Arts & Science Colleges and Universities**
- B.Sc. Botany
 - B.Sc. Plant Biology & Plant Biotechnology
 - B.Sc. Biochemistry
 - B.Sc. Bio-computing
 - B.Sc. Plant Pathology
 - M.Sc. Botany
 - M.Sc. Biotechnology
 - M.Sc. Bio-chemistry
 - M.Sc. Bioinformatics
 - M.Sc. Immunology and Microbiology
 - M.Sc. Applied Medical Biotechnology & clinical Research
 - M.Sc. Genetic Engineering & Plant Breeding
 - M.Sc. Applied Plant Science
 - M.Sc. Plant Biology & Plant Biotechnology
 - M.Sc. Plant molecular Biology
 - M.Sc. Mycology & Plant pathology
 - M.Sc. Plant science



ANNA UNIVERSITY

- B.E. Bio Medical Engineering
- B.Tech. Industrial Bio technology
- B.Tech. Food technology
- B.Tech. Bio technology



Integrated courses

- Mode of selection: Entrance conducted by concern institution or NEET**
- M.Sc. in Life sciences- 5 year Integrated course**
- Indian institute of Science, Bengaluru
 - Website: <http://www.iisc.ac.in/>
 - National Institute of Science Education and Research (NISER) , Bhubaneswar, Kolkata , Pune , Mohali, Bhopal , Thiruvananthapuram , Tirupati and Berhampur
 - Website: <http://www.niser.ac.in>
 - B.Sc.,B.Ed -5 year Integrated course
 - Regional Institute of Education Ajmer, Bhopal, Bhubaneswar, Mysuru and Shillong
 - Website: www.riemysore.ac.in

Research Institutions in various areas of Botany		
Name of the Institution	Research Areas	Website
Indian Agricultural Research Institute (IARI) New Delhi	Genetics & Plant Breeding; Microbiology; Post Harvest Technology	www.iari.res.in
National Bureau of Plant Genetic Resources (NBPGR) New Delhi	Plant genetic resources management and use.	www.nbpgr.ernet.in
Institute of Forest Genetics and Tree Breeding, Coimbatore.	Tree improvement; Bio-prospecting of Forest Natural Resources	www.ifgtb.icfre.gov.in
Central Plantation crops Research Institute, Kerala	Crop improvement; Production; Protection; Plant physiology and Biochemistry.	www.cpcrri.gov.in
Indian Institute of Crop Processing Technology, Thanjavur.	Agricultural Process Engineering Renewable energy for food processing .	www.iicpt.edu.in
Central Tuber Crops Research Institute, Thiruvananthapuram.	Development of Agro techniques for tuber crops	www.ctcrrri.org
Indian Institute of Spices Research, Kozhikode.	Collection, conservation, evaluation and cataloging of germplasm.	www.spices.res.in
Central Institute for Cotton Research, Nagpur, (Regional station: Coimbatore & Sirsa)	Crop improvement, Crop Production and Crop Protection.	www.cicr.org.in
Directorate of Cashewnut & Cocoa, Agri, Kerala	Cocoa production and processing	www.dccd.gov.in
National Research Center on Plant Biotechnology, New Delhi	Genetic engineering for biotic resistance.	www.nrcpb.org
National Institute of Plant Genome Research (NIPGR), New Delhi	Structural and Functional Genomics in Plants; Computational biology; Genome analysis and molecular mapping..	www.nipgr.res.in
Sugarcane Breeding Institute, ICAR, Coimbatore.	Breeding of superior sugarcane varieties/ genotypes;	www.sugarcane.res.in
Central Research Institute for Dryland Agriculture, Hyderabad	Dryland, Agrometerology and Crop sciences	crda.in
National Research Centre for Groundnut(NRCG) Junagarh, Gujarat	Productivity and quality of groundnut; repository of groundnut germplasm and information on groundnut researches	www.nrcg.res.in
International Centre for Genetic Engineering and Biotechnology (ICGEB), New Delhi	Mammalian Biology; Plant Biology; Synthetic Biology and Biofuels.	www.icgen.org
National Institute of Virology, Pune	Epidemiology, Basic virology; Diagnostics.	www.niv.co.in
Center for DNA Fingerprinting and Diagnostics, Hyderabad	Computational Biology. Protein structure, Dynamic and Interactions Epigenetic	www.cdfd.org.in
Institute of Life Sciences, Bhubaneswar	Infectious disease;immune biology; Cancer biology; Nanotechnology	www.ils.res.in
Centre for Cellular and Molecular Biology, Hyderabad.	Genetics & evolution, Genomics; Cell Biology & Development.	www.ccmb.res.in
Central Institute of medicinal and Aromatic Plants, Lucknow.	Biotechnology, Crop protection; Genetics and plant breeding	www.cimap.res.in
National Botanical Research Institute, Lucknow.	Genetics and molecular biology; Plant microbe interaction & Pharmacogenosy.	www.nbri.res.in
Institute of Genomics and Integrative Biology	Genomics and Molecular medicine, Chemical and systems biology.	www.igib.res.in
National Centre for Biological Sciences, Bangalore	Biochemistry, Biophysics, Bioinformatics, Genetics and development;Cellular organization & signalling neurobiology etc.	www.ncbs.res.in
Birbal Sahni Institute of Palaeobotany (BSIP) Lucknow.	Palynology in fossil fuel exploration; Dendrochronology; Ethnobotany; Micropaleontology, Carbon 14Dating	www.bsip.res.in
North East Institute of Science & Technology Jorhat, Assam.	Chemical science; Biological sciences;Material sciences; Agro-science and technology; Geosciences.	www.rriorhat.res.in
Institute of Wood Science and Technology, Bangalore.	Tree improvement and Genetics; Chemistry of Forest Products.	iwst.icfre.gov.in
Centre for Ecological Sciences, Indian Institute of Science. Bangalore.	Behavior Ecology; Evolution; climate change & conservation.	www.ces.iisc.ernet.in
Botanical Survey of India(BSI), Kolkatta	To Survey, research and conservation of plant resources, flora and endangered species.	www.bsi.gov.in