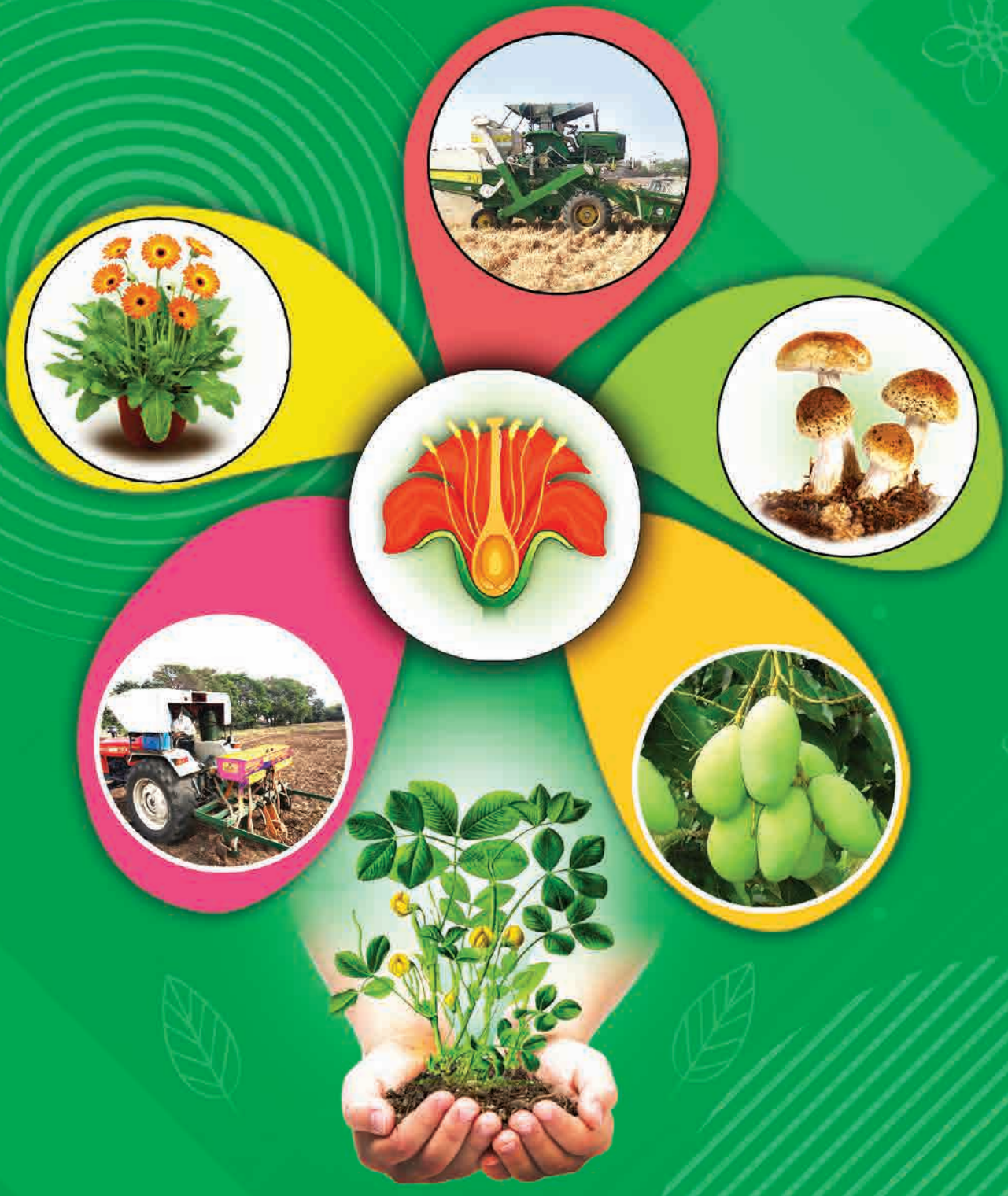
AGRICULTURE SCIENCE AND TECHNOLOGY

Standard XII



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STANDARD XII

Q1J6A4

Download DIKSHA App on your smartphone. If you scan the Q.R. Code on this page of your textbook, you will be able to access full text and the audio-visual study material relevant to each lesson provided as teaching and learning aids.

2020

Maharashtra State Bureau of Textbook Production and Curriculum Research, Pune.

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The Constitution of India

Preamble

WE, THE PEOPLE OF INDIA, having solemnly resolved to constitute India into a SOVEREIGN SOCIALIST SECULAR DEMOCRATIC REPUBLIC and to secure to all its citizens:

JUSTICE, social, economic and political;

LIBERTY of thought, expression, belief, faith and worship;

EQUALITY of status and of opportunity; and to promote among them all

FRATERNITY assuring the dignity of the individual and the unity and integrity of the Nation;

IN OUR CONSTITUENT ASSEMBLY this twenty-sixth day of November, 1949, do HEREBY ADOPT, ENACT AND GIVE TO OURSELVES THIS CONSTITUTION.

NATIONAL ANTHEM

Jana-gana-mana-adhināyaka jaya hē
Bhārata-bhāgya-vidhātā,

Panjāba-Sindhu-Gujarāta-Marāthā
Drāvida-Utkala-Banga

Vindhya-Himāchala-Yamunā-Gangā
uchchala-jaladhi-taranga

Tava subha nāmē jāgē, tava subha āsisa māgē,
gāhē tava jaya-gāthā,

Jana-gana-mangala-dāyaka jaya hē
Bhārata-bhāgya-vidhātā,

Jaya hē, Jaya hē, Jaya hē,
Jaya jaya jaya, jaya hē.

PLEDGE

India is my country. All Indians are my brothers and sisters.

I love my country, and I am proud of its rich and varied heritage. I shall always strive to be worthy of it.

I shall give my parents, teachers and all elders respect, and treat everyone with courtesy.

To my country and my people, I pledge my devotion. In their well-being and prosperity alone lies my happiness.

Preface

Dear Students,

The textbook "Agriculture Science and Technology" is meticulously prepared by Maharashtra State Bureau of Textbook Production and Curriculum Research (Balbharati), Pune with a view to generating an appetite for the XII Standard students aspiring for higher studies in Agriculture and allied disciplines and subjects, Agricultural Entrepreneurship and seeking job opportunities. It is in tune with the new education policy as well as the new syllabi of the Government of Maharashtra.

Agriculture, as an academic discipline, is as interesting and as challenging as other disciplines of science. It deals with food production, processing and empowering the farm-communities of our country. In our country, as in others, the cultivable land is shrinking due to urbanization. Population is growing unceasingly. The pressures and demands of the global community on the farmers are quite telling and exigent. Added to these, the problems such as Global Warming, Climate Change, Healthcare Concerns, Fluctuating Markets and Rise and Fall in the Economies aggravate the complexities of farm production and processing. Nevertheless, the discipline of Agriculture and allied disciplines assuage such challenges clouding food security by generating suitable and sustainable technologies. Besides, it seeks to provide food for the ever growing population of the world through the technologies developed at the agricultural universities, krishi vigyan kendras, and other such research and development organizations and institutions. The production of Food Grains alone is around 285 million tonnes during 2018-19. It is because of the untiring efforts of the Indian Farmers as well as the Agricultural Scientists. Therefore, the contribution of Agriculture is not only significant to the Gross Domestic Product (GDP) of our country but also in generating employment. It is to such interesting challenges and issues, the young Indian students are invited and introduced by Maharashtra State Bureau of Textbook Production and Curriculum Research (Balbharti) through the textbook on Agriculture Science and Technology.

This textbook introduces and seeks to lead the students to the systematic and scientific study of subjects like Agronomy, Entomology, Economics, Plant Pathology, Plant Breeding, Seed Technology, Horticulture, Soil Science and Agricultural Chemistry, etc. In this textbook each subject in the discipline of Agriculture provides theories, definitions, descriptions, explanations, experimental procedures and practicals. In order to train the students in fruitful studies and in enhancing their memory power, reviews, and recalls are also provided through such study-strategies like "Can-You-Recall", "Can-You-Tell", "Observe-and–Discuss", "Try-This", "Think-about-It" and so on. At appropriate places, diagrams, pictorial descriptions and tabular presentations are provided to make the reading interesting and informative. Q.R. code given in the textbook can be used for getting additional audio- visuals as supporting information. This textbook will prove to be a sincere effort in developing an interest and quest for the students who opt for this discipline.

We look forward to a perspective response from the teachers and students.

Our best wishes to all!

(Vivek Gosavi)
Director
Maharashtra State Bureau of Textbook
Production and Curriculum Research, Pune

Pune
Date: 21 February 2020
Bhartiya Saur : 2 Phalguna 1941

For Teachers

Dear Teachers,

Maharashtra State Bureau of Textbook Production and Curriculum Research (Balbharti), Pune has the privilege of introducing the textbook of Agriculture Science and Technology for Std. XII. The textbook is a very earnest attempt to develop a constructive and optimistic approach among the students for effective learning. In continuation of the content and activities in the previous standards, this book also is being equipped with a number of interesting and innovative activities. Sufficient sources for further learning are also provided for students as well as teachers. The curriculum has been restructured to make it more compatible with further higher education and vocational needs. Efforts are made to link up novelty in the field of agriculture. The following guidelines would help enrich the teaching-learning process and achieve the desired learning outcome.

- To begin with, familiarize yourself with the textbook.
- The present book has been prepared for constructive and activity-based learning.
- Teachers must skilfully plan and organise the activities provided in each chapter to develop interest as well as to stimulate the thought process among the students.
- Proper teaching schedule and lesson planning will be of immense help to the teachers.
- Use teaching aids as required for proper understanding of the subject.
- Do not finish the chapter in short.
- Follow the order of chapters strictly, as listed in the contents, because the units are introduced in a progressive manner to facilitate knowledge building.
- Ask questions on information related to trends and patterns. Efforts have been made to provide the latest data available. Teachers must explain to the students the importance of data collection and data analysis.
- Major concepts of agricultural science and technology have a scientific base and they deal with observations. Encourage group work and learning through one another, etc. Facilitate peer learning as much as possible by reorganizing the class structure frequently.
- Teaching-learning interactions, processes and participations of all students are very necessary and so is your active guidance.
- Do not use the boxes titled ‘Do you know?’ for evaluation. However, teachers must ensure that students read this extra information.
- Information provided in the boxes with various titles should be considered for evaluation.
- Exercises provided under each unit are prepared using different parameters such as observation, co-relation, critical thinking, analytical reasoning, etc. Evaluation pattern should be based on given parameters. Equal weightage should be assigned to all the topics. Use different combinations of questions. Stereotype questions should be avoided.
- Use QR Code given. Keep checking the QR Codes for updated information. Certain important links, websites have been given for references. In addtion a list of reference book is also given for extra reading and in-depth understanding of the subject.

Best wishes for a wonderful teaching experience.

Competency Statements

Standard XII

Unit	Competency statements After studying the content in Textbook students would be able to.....
Unit I Cultivation Practices	• Explain the cultivation practices of cereals viz. wheat and paddy. • Understand the cultivation practices of oilseeds viz. groundnut and soybean. • Discuss the steps in cultivation of pulse crop viz. gram. • Decide best varieties for crop cultivation. • Elaborate various practices involved in cultivation of sugar crops viz. sugarcane. • Explain cultivation practices of fruit crops viz. mango, banana and mandarin orange (santra).
Unit II Propagation and Seed Technology	• Explain and differentiate sexual and asexual modes of reproduction. • Practice buddings, grafting cuttings, etc. • Explain tissue culture and techniques involved. • Discuss advantages and disadvantages of this technique. • Understand the methodology of tissue culture and outline of tissue culture laboratory. • Develop awarness about use of tissue culture seedlings. • Understand the genetic and agronomic principles of seed production. • Detailed study of hybrid seed production. • Explain the seed production process of jowar and cotton. • Perform or advice for emasculation and pollination of cotton.
Unit III Agriculture Management	• Explain the objectives of farm management and its importance. • Elaborate various functions of farm manager. • Understand farm layouts and explain cropping schemes. • Prepare calendar of operations. • Explain types of agriculture labour. • Discuss measures of improving labour efficiency. • Maintain different farm accounts and records. • Explain importance of nursery. • Create awareness about planning and layout of nursery. • Understand types of nursery. • Explain the after care of nursery.
Unit IV Applied Agriculture	• Understand meaning, importance and scope of greenhouse technology. • Elaborate types of greenhouse. • Manage installation of Green house. • Understand operation in Green house like climate control. • Explain details of cultivation of gerbera and capsicum in green house. • Explain meaning and importance of processing and objectives of seed testing. • Prepare charts on diagrammatic representation of seed processing of different crops . • Understand a layout of seed processing plant. • Describe seed testing, prepare a layout and design of seed testing laboratory. • Understand records and forms in seed processing plants and seed testing laboratory. • Visit and collect information on seed testing. • Create awareness about seed testing and analysis for quality seed. • Explain the importance and scope of mushroom production. • Describe the types of mushroom cultivated in India. • Explain the production technique of mushroom. • Collect information on preserved products of mushroom. • Guide to new mushroom produers.

Unit V Modern Trends in Agriculture	• Explain concept and feature of Agrotourism. • Discuss the advantages of Agrotourism centres. • Aquiant with fundamental and supplementary facilities of Agrotourism centres. • Prepare Agrotourism model. • Create awareness about organic farming. • Explain meaning , merits and demerits of organic farming. • Explain principles and types of organic farming. • Collect information on different components of organic farming. • Explain the concept of agro information technology and agriculture clinic. • Collect information on agriculture technology information centre. • Try to make automization of agricultural operations.
Unit VI Agriculture Marketing and Preservation	• Explain the process of agricultural marketing. • Understand types of agricultural market based on different aspects. • Collect information regarding meaning and importance of crop insurance and create awareness about crop insurance. • Aquiant with various crop insurance schemes implemented by Govt. • Explain and elaborate food laws and regulations. • Elaborate the role of FSSAI. • Visit and collect information about preserved food products. • Explain methods of preparation of Jam, Sauce and Pickle.

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