ELEMENTS OF HORTICULTURE

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PREFACE

Horticulture provides best course of diversification in land use and opens avenues for improving productivity of land, generating employment opportunities, improving economic conditions of farmers and entrepreneurs, increasing exports and nutritional security to the people. Today we contribute 10 and 14% of the total world's fruits and vegetables production. Our horticultural produce and value added products have their own significance in the world market. Still, there are competitions and challenges we have to face globally in the post–WTO scenario. We have to emphasize upon 3 Ps–production, post–harvest management and processing–the keys of successful cultivation of horticultural crops. Setting up of Agri Export Zones will increase production of all the export–oriented crops in the coming years.

Spices are low–volume and high value commercial crop, playing an important role in agricultural economy of the country. Organically produced horticultural produce is getting momentum day–by–day in the world, fetching premium price to growers. A paradigm shift is required in the mindset of the orchardists that their produce meant for the export, ensure quality, quantity and reliability to meet the international standards. Selection of crops and their varieties and hybrids requires a judicious survey of the area in which they are to be grown. Identification of suitable agro–ecological region can increase production of horticultural crops. For instance, microclimatic requirement of fruit crops is to be ascertained to get best quality fruits. Adoption of high–tech horticulture like microirrigation, micropropagation, high–density planting, application of biofertilizers, biopesticides, use of genetically–modified varieties etc. are the demands of the day. All horticultural crops bring money to the growers, making them self sufficient in their day–to–day life. Since these all crops bring money/gold to the farmers, we call it golden revolution.

ABOUT THE AUTHOR

D.K.SINGH

Dr. D.K. Singh, is a recipient of award from Chief Minister of Rajasthan for best popular article and best worker award from Art, Culture and Tourism Minister of Rajasthan in the year 2002 and 2003 respectively. He also got the award from the state forest department of Rajasthan for production and protection of plants through scientific techniques and book prize award from the C.S.A. University of Agriculture and Technology, Kanpur (U.P.), where he did Bsc. (Ag. and AH) and MSc. (Ag.) Horticulture in 1998 and 1992 respectively. He obtained his doctorate degree from the G.B. Pant University of Agriculture and Technology, Pantnagar, Uttranchal in 1996 under the guidance of eminent horticulturist Dr. Sant Ram. He was awarded senior research fellowship from I.C.A.R., New Delhi during Ph.D. Programme. Dr Singh started his carrier in 1995 as Assistant Agriculture Research Officer (Horticulture) at Government Agriculture Research Station, Hanumangarh Town, Rajasthan. Presently he is Assistant Professor, Horticulture at Krishi Vigyan Kendra, Anta, Baran under, M.P. University of Agriculture and Technology, Udaipur.

The author has published more than 125 research papers and popular articles in various journals and magazines on various aspects of horticulture besides two bulletins, one compendium, 5 folders, one pumphlet, krishi calender and krishi diary. He also evaluated the several research paper and as a expert to judge the different flower, fruit and vegetables exhibitions. He participated in many national and international symposium, workshop and training programmes. He disseminated his technologies several times through television and radio.

He has distinguished himself as an author of book 'Hi–tech Horticulture' and 'Triazole Compounds in Horticulture' and popular of research technologies in international plateform.

S.K.SINGH

Dr. S.K. Singh obtained his doctorate degree in Entomology from G.B. Pant University of Agriculture and Technology, Pantnagar in 1999 and

under graduate and post graduate from C.S.A. University of Agriculture and Technology, Kanpur. The doctoral research of Dr. Singh was carried out on 'Biology and Management of Termite in Mango' under the guidance of Dr. Gajendra Singh. He was served as a Senior Research Fellow of UPDASP of G.P.P.U.A.& T., Western Campus, Modipuram, Meerut, U.P. from 1999–2000 and Research Associate at IIPR, Kanpur, U.P. from 2000–02. Dr. Singh has to his credit more than 25 publications, most of which on termite and pulse crops. Presently he is working as a lecturer in the department of Entomology at B.N.V.P.G. College, Rath, Hamirpur with officer Incharge of N.S.S.

ABOUT THE BOOK

Element of Horticulture is concerned with the learning of primary aspects of art and science of horticulture. From this study the learner should know what is horticulture, what is its scope and importance, horticultural crops and their classification. He should be able to make choice of horticultural crops for a given set of climatic and soil conditions and should be able to make decision about site selection, planning, planting, nutrition, irrigation, training and pruning, plant protection, maturity, harvest, post harvest handling etc. and should know about fruiting and problems thereof for effective planning and successful venture. The book consist of chapters including introduction, fundamental of horticultural crops, nutrition of horticultural crops, water requirement of horticultural crops, orchard management, nursery management, breeding of horticultural crops, seed production of horticultural crops. Presentation of tables, figures attracts more to the readers and even in a quick look one can get vital information. This book covers all aspects of horticulture syllabi of under graduate and post graduate students. The book is written in a simple, easy to understand language which will be highly useful to the students, teachers, extension personnel, scientists and progressive horticulturist.

GOLDEN REVOLUTION

After the green revolution or the security of food, now it is the turn of the security of nutritive foods. Consumption of fruits and vegetables has significant health promoting effects and can reduce the incidence of cardiovascular diseases, cancer, AIDS, rheumatism and other degenerative diseases. Floriculture indirectly overcome nutritional security. A major thrust will be given on development of rainfed and irrigated horticulture, floriculture, root, tuber and plantation crops, aromatic and medicinal plants etc. to augment food supply, export and generate employment opportunity for rural masses. Adequate availability of hybrid seed and disease free planting materials of improved varieties, supported by a network of regional nurseries, tissue culture laboratories, and seed farms will be promoted to support horticulture development systematically. The provision of establishing a National Seed Grid to ensure adequate supply of seeds, especially to natural calamities affected/prone area. Demand on quality education and need based research in horticulture and several states have established separate state departments of horticulture and now there are sixteen colleges of horticulture and one university of horticulture and more than twenty National Institute/Centres of ICAR and Horticultural Commodity Boards to look after the interest of horticulture. Looking to change of emphasis ICAR, constituted Dean's Committee to review the prevalent course curriculum for horticultural education and based on the recommendations subject panels were constituted to develop appropriate course curriculum and syllabi for different areas of horticulture at undergraduate and post graduate levels. To fulfil the requirement of undergraduate and post–graduate horticulture course curriculum, this book 'Elements of Horticulture' is being brought out.

The present book is an effort in this direction in which the author has attempted to describe the fundamentals of horticultural crops, nutrition of horticultural crops, water management of horticultural crops, seed production of horticultural crops, breeding of horticultural crops, nursery management. All the latest research findings

in various aspect of horticulture have been incorporated in the text. Presentation of tables, figures attracts more to the readers and even in a quick look one can get vital information. The book is written in a simple, easy to understand language that will be highly useful to the students, teachers, scientist, extension personnel and progressive horticulturist.

We take this opportunity to gratefully acknowledge the contribution made by various persons in the preparation of this book. We warmly acknowledge the various sources and publications from which valuable materials for this book has been drawn. This book is being dedicated to late Dr. Sant Ram and late Dr. V.N. Maurya who guided the senior author in Ph.D and MSc. (Ag). respectively at G.B.P.U.A & T., Pantnagar and C.S.A.U.A and T. Kanpur. We deeply indebted to the entire staff of Krishi Vigyan Kendra, Anta for the help rendered by them in the preparation of this book. We express my sincere appreciation to Dr. A.R. Singh, Dr. R.P. Singh, Dr. G.S. Gaur, Dr. G.N. Singh, Dr. H.S. Shukla, Dr. O.P. Chaturvedi in Horticulture department of C.S.A. University of Agriculture and Technology, Kanpur and Dr. N.P. Singh, Dr. J.P. Tiwari, Dr. C.P. Singh in department of Horticulture of G.B. Pant University of Agriculture and Technology, Pantnagar, who inspired me to write this book and gave valuable suggestion from time to time. I take this opportunity to express my sincere thanks and gratitude to all who have made valuable suggestions to enhance the utility of the book and also wish to acknowledge and express my sincere thanks and gratitude to Prof. L.L. Somani, Director, Resident Instructions, M.P. University of Agriculture and Technology, Udaipur for providing the necessary encouragement to complete this book.

It is hoped that the book 'Elements of Horticulture' will prove of immense value not only to research workers but also to the teachers, students, planner, farmers and individuals who are desirous of increasing quality fruit and seed production in horticultural crops. Besides it is also expected to be useful to the horticulturists all over world, seeking latest information on horticultural technologies.

D.K. Singh
S.K. Singh

CONTENTS

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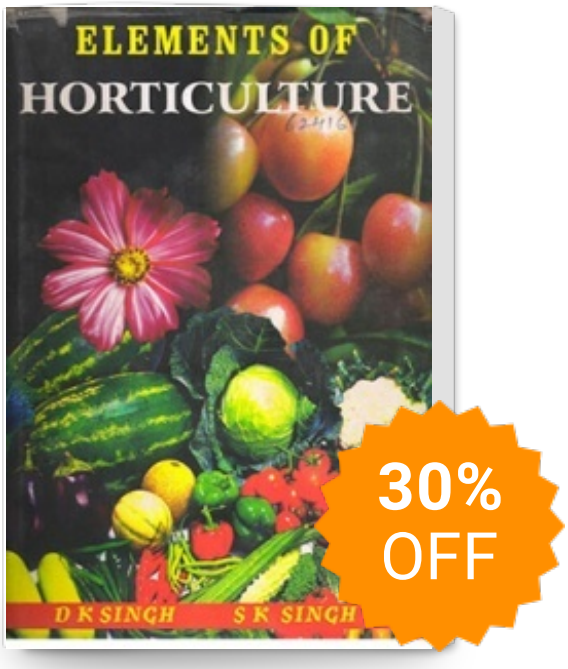

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