STRATEGY & APPLICATION OF
PLANT BREEDING

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PREFACE

The agriculture industry has radically transformed over the past 50 years. Advances in machinery have expanded the scale, speed, and productivity of farm equipment, leading to more efficient cultivation of more land. Seed, irrigation, and fertilizers also have vastly improved, helping farmers increase yields. This book covers technologies that are extremely useful for the day-to-day operation of a farm or garden. The potential of new digital technologies in agriculture is astonishing. Linking farmers digitally would allow them to organize and share equipment, facilitate the sharing or exchanging of fields and support alternative supply and production channels, as well as promoting solidarity.

Everything that can be measured can be improved. The agricultural plots are managed on the basis of observation, measurement and action against inter and intra-crop variability. Based on this reflection, agricultural experience is also gradually growing hand in hand with technology. Its smart tools and services enable the development of true precision agriculture. The precision-agriculture approach can also help reduce inefficiencies and waste. It works by refining current practices and does not encourage the exploration of alternatives. This is what scientists call "technological lock-in", with precision approaches reinforcing pesticide use rather than eliminating it. IoT sensors enable precision agriculture, helping farmers use as little water, power, and other resources as possible.

Agriculture is in the early days of yet another revolution, at the heart of which lie data and connectivity. Artificial intelligence, analytics, connected sensors, and other emerging technologies could further increase yields, improve the efficiency of water and other inputs, and build sustainability and resilience across crop cultivation and animal husbandry. Technological innovations have greatly shaped agriculture throughout time.

The technology of drones in agriculture is rising day by day for modifying farming. There are high-technology drones that will help to increase the efficiency and effectiveness of farming. The drone in the agricultural field can monitor the crops, manage the plants, and supports crop-spraying. The role of digitization in agriculture is increasing with the use of ICT and mobiles.

New technologies in the field of agriculture are improving the lifestyle of the farming communities. Main among these are Vertical farming, Aeroponics, pearl culture and permaculture.

Poultry, Goat and Pig farming are the enterprise that are the first priority of farmers to take for their livelihood. It provides handsome income on the investment made by farmers. We have tried to elaborate their scientific rearing to avoid any loss.

Soil testing, composting, Agroforestry and Medicinal and aromatic plants cultivation is providing opportunities to farmers not only to earn more but also to save the environment.

This book will serve as a valuable resource for those who wish to learn about new technologies and equipment in agriculture. It will help the readers to understand the uses of technologies and their benefits.

Dr. Khushboo Chandra
Dr. S. K. Kaushik
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CONTENT

Editor in Chief

Dr. Khushboo Chandra, Assistant Professor- cum - Junior Scientist of Genetics & Plant Breeding Bihar Agricultural University, She has affluent experience of teaching in Breeding of field and horticultural crops, Genetics, Plant Breeding, Cytogenetic, Seed Production Technology of field and horticultural crops, Crop Improvement, Biodiversity and conservation of field and horticultural crops & Plant Biotechnology. The research thrust area falls under Abiotic stress predominantly in drought stress of cereals and Oilseeds crops, Genetic Diversity analysis at Molecular Level & Plant Tissue Culture (Rice).She has also 6 years of research experience in Abiotic stress predominantly in drought stress of cereals and Oilseeds crops. She had been awarded with University Gold Medalist in field of Genetics & Plant Breeding. She has been awarded with Eminent Scientist Award, Young Scientist award, Best Research Scholar Award, Best M.Sc. Thesis Award, Best PhD Thesis Award Hindustan Harit Kranti Award-2022, Excellence in Research Award-2022 and Dr. B.P.Pal Award (in field of Plant Breeding)-2022. She has published 4 Books, 8 Book Chapters, 6 Review Articles and 17 Research Papers .She has attended about 50 Conferences, Seminars, Training, FDP & Workshop.

Dr. S. K. Kaushik completed his Ph. D. (Ag.) degree in the discipline of Plant Breeding & Genetics from R.A.U., Bikaner in 2004. He is working as a Senior Scientist(P.B.G.) at RVSKVV,KVK-Ujjain(MP). He engaged in quality seed production of pulses and Oilseed (Soybean) since last more than 06 years. Since the last 17 years he also engaged in Extension and Research programme of various crops(Soybean, Blackgram, Mungbean, Maize, sorghum, Pigeonpea, Wheat, Chickpea, Mustard, Fenugreek, Linseed, etc.). He wrote >37 research papers in reputed journals, >15 extension literatures, 07 book chapters in ISBN rated books, 08 book chapters in booklets, 08 research articles in highly reputed ICAR Magazines, more than 15 Articles in Popular Agri-Magazines, joined more than 60 National Seminars/ Workshops / Trainings, etc.

Dr. Devendra Kumar Payasi working as Scientist (Plant Breeding & Genetics) & Incharge, ICAR-All India Coordinated Research Project on Oilseeds at Jawaharlal Nehru Krishi Vishwa Vidyalaya, Regional Agricultural Sagar, Madhya Pradesh since 2013. He is also acting as Project In charge of Department of Biotechnology sponsored Network Project and Department of Agriculture Cooperation and Farmenrs Welfare sponsored project NFSM-Seed hub Oilseeds. He has developed 8 linseed varieties and published 35 research and review articles in International and national journals. Under his leadership AICRP oilseeds awarded Certificate of Excellence and best AICRP centre.

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