



Chickpea (Gram)

Status and Cultivation Technology



S.S. Shekhawat



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**Chickpea (Gram):
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Dr. S.S. Shekhawat (born. May 15, 1961), Sr. Scientist, AICRP on Chickpea ARS, Durgapura, Jaipur was awarded Ph.D. in Plant breeding and Genetics from RAU, S.K.N. College of Agriculture, Jobner, Jaipur (Raj) in 2002. He is working on crop improvement since 1990 and working in legumes from 1996. He has contributed in seven varieties and several donors taking care, in view of different climatic conditions, biotic and abiotic stresses, consumer preference , value addition and export quality, more than fifteen research papers, number of book chapters, abstracts, popular articles , folders and pamphlets.

Chickpea (Gram): Status and Cultivation Technology

Dr. S.S. Shekhawat

Senior Scientist

All India Coordinated Project on Chickpea

{Swami Keshwanand Rajasthan Agricultural University,
Bikaner-334002 (Rajasthan)}

Agricultural Research Station

Durgapura, Jaipur, Rajasthan - 302 018



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**CHICKPEA (GRAM) Status and Cultivation
Technology**
is

***Dedicated to
my respected father***



Late Thakur Raghuveer Singh Ji Shekhawat

FOREWORD

Chickpea occupies a unique place in food legumes in India agriculture and is best option for diversification and intensification because it fixes atmospheric nitrogen to the soil and it has ability to thrive well in poor and marginal lands. It's intrinsic value in terms of higher protein plays an important role in food, feed, soil health, industry, eco-system and sustainable crop production. It provides nutritional security to millions of people suffering from protein malnutrition as it is rich source of protein, minerals, vitamins, sugar, fat, crude fiber, dietary fibre and several amino acids required for human health. Importance of chickpea for improving nutritional security in developing countries is well known. Chickpea becomes more important in our country where majority of people are poor and vegetarian, depends on low priced food for their dietary requirement. It has ability to tolerance drought and heat compared to other seasonal food legumes. Traditionally, it is cultivated as a rain-fed crop and sometimes as a irrigated one. Chickpea has wide adaptability as it is cultivated from the equator to 50°N. It has medicinal value and helpful to overcome so many diseases. With the unique ability of biological nitrogen fixation, low water requirement and deep root system, legumes thrive well under adverse weather condition and capacity to withstand in drought condition. It

has become an important component of dry land farming system across the globe.

The supply of quality seed of improved varieties is important not only for realizing full potential of varieties but for retaining faith of farmers in high yielding technology. It is the key input for enhancing the agricultural production and increasing the food availability to feed the growing population of India and the world as well. Neither the poor quality seed of superior variety nor the high quality seed of inferior variety can serve the purpose of crop production. Seed account for a small part of the total cultivation expenditure. Without good quality seed, the investment on fertilizer, irrigation, pesticides and other inputs will go in vain. The need of production technology is well recognized for increasing the yield. In any cropping system, production technology is required for increasing yield, resistance against biotic and abiotic stress, value addition. This publication **“Chickpea (Gram): Status and Cultivation Technology”** provides latest information about constraints and strategies in chickpea cultivation, chickpea breeding, physiology of drought tolerance in chickpea, production technology in chickpea, integrated nutrient management in chickpea, use of bio-fertilizer in chickpea, integrated weed management in chickpea, integrated disease management in chickpea, integrated insect-pest management in chickpea, integrated nematode management in chickpea, quality seed production in chickpea and safe storage etc. which will be helpful to the researchers, students, extension workers, professionals and the last user of the technology **“The farmer”**.

PREFACE

Pulses are the back bone of the national economy, nutritional security of vegetarian society, soil health and sustainability of environment. In India, we are facing the problem of poor fertility of soil, lack of irrigation, poor condition of farmer and pre-dominating vegetarian mass, and in the present scenario pulses become more important because, only pulses opens the door of sustainability in the field of agriculture. Being a rich source of protein, minerals, vitamins, crude fiber and several amino acids essential for human health, pulses are considered as a health food and offer nutritional security to millions of people suffering from protein malnutrition. However, it fixes atmospheric nitrogen in the soil.

The important pulses cultivated in India are Chickpea, lentil, fieldpea, rajmah, lathyrus, pigeonpea, mungbean, urdbean, cowpea, mothbean and horsegram. A cross the globe, Chickpea is an important pulse cultivated in an around 40 countries. It ranks first in area and production at national level. Present manuscript “**Chickpea (Gram): Status and Cultivation Technology**” includes, The opening chapter gives an overview on chickpea research in india, Status and Cultivation Technology, Introduction about chickpea, constraints and strategies in chickpea cultivation, Subsequent chapters discuss chickpea breeding, chapters on physiology of drought tolerance in chickpea,

production technology in chickpea, nutrient management in chickpea, role of bio-fertilizers in chickpea, integrated weed management in chickpea provide comprehensive information on production management of the crop, chapters on management of stress, diseases, insect-pest, nematodes deals with different aspects of abiotic and biotic stresses, their efficient management in integrated manner. The last two chapters deal with seed production and post harvest technologies in perspective of safe storage. We hope this compendium will serve as a standard reference book on chickpea and encourage further research in developing high yielding, effective technologies, value addition, consumer preference and export quality to earn a handsome forex which leads to strong economic contribution to our nation. It will be helpful to the researchers, students, extension workers, professionals and the farmers.

The Author feels deep gratitude towards **Dr. N.P. Singh, Project Coordinator, AICRP on chickpea, Indian Institute of Pulse Research, IIPR, Kanpur, UP**, Prof. Swaroop Singh, Zonal Director Research, ARS, Durgapura, for their consistent encouragement and guidance in bringing out this publication. I also want to thank Dr. S.J. Singh, Senior Chickpea Breeder, Dr. S.C. Gupta, Senior Chickpea Physiologist, Dr. O.P. Khedar, Senior Pulse Breeder, Dr. O.P. Sharma, Senior Chickpea Pathologist; Dr. M.M. Singh, Senior Chickpea Agronomist, Dr. Surendra Singh, Senior Agronomist, Dr. Yogendra Singh, Incharge Cum Senior Millet Breeder, Dr. Hoshiyar Singh, Senior Wheat Breeder, Dr. Mahesh Srimali, (HOD) Plant Breeding and Genetic Section, Incharge cum senior wheat breeder, Dr. R.S. Sain, Senior Plant Breeder, Dr. S.M. Yadav, Senior Chickpea Nematologist, Dr. Kuldeep Sharma, Senior Pulse Pathologist, Dr. V.D. Fageria, Senior Pulse Agronomist, Dr. S.S. Bareth, Senior Entomologist, Dr. R.S. Mahla, Senior Pulse Entomologist, for taking keen interest and giving their valuable advice and kind support, Prof. Govind Singh Ji (Chui) (Jai Narayan Vyas University,

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Jaipur

S.S. Shekhawat

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