Upland Rice in India

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Foreword

Upland rice is grown in about 13% of the area under rice in India but contributes to only 4% of the rice production. A number of abiotic and biotic stresses depress rice yields in rainfed uplands which is mostly populated by resource poor farmers. Though rice area in uplands have declined in recent years, especially in the South and West, substantial area in the eastern states of Jharkhand, Orissa, Chhattisgarh, eastern Uttar Pradesh, parts of Assam, West Bengal and north-eastern states are covered under upland rice as it is the staple diet of the inhabitants of this region, and land holding which are predominantly undulating, permit only rice to be grown during the monsoons. Upland rice systems are diverse, each state growing several genotypes under a range of management practices and cropping patterns. A redeeming feature of the system across the states is that it provides sustenance to the farming families during the lean season as upland rice is harvested early.

The authors of this edited compilation have systematically analyzed the agro-ecosystem in their respective states and listed the predominant varieties grown, crop management practices followed as well as new technologies introduced for improved productivity and constraints that need attention. This gives an opportunity for researchers to examine the existing knowledge base and work around the problems more effectively, addressing the location specific issues in a focused manner. Increasing frequency of aberrant weather leading to drought further complicates the fragile environment, deepening the crisis and placing the poor farmers under severe food scarcity. Strategic response to such aberrant weather vis a vis upland rice management would be (a) resilient production systems with assured productivity from diversified cropping systems, (b) conservation agriculture that judiciously use soil and water resources and (c) minimizing crop losses due to diseases and pets by ecological engineering. This includes need based deployment of genes for stress tolerance, increased landscape bio-diversity, modifying micro-climate by appropriate crop/canopy configurations and increased reliance on natural beneficial microflora to check population build up of pathogens/pests with epidemic potential. Recent advances in direct seeded rice systems, development of drought tolerant varieties and disease/pests management strategies to tackle drought induced predisposition have helped address these issues to a large extent. It is hoped that the states where upland rice continues to be the major contributor to food security will benefit by popularizing such technologies.

This impressive compilation on "Upland rice in India" in the form of a book will be useful for all concerned about the uplift of rainfed rice farmers. I compliment the editors for compiling the scattered information into a very compact publication and getting it published.

(A K Singh)
PREFACE

The rainfed upland ecosystem is the most neglected but it feeds India’s poor from the limited resources it has. The ecosystem is spread in most of the states, across the country, covering about 7 million hectares with maximum (>90%) area coverage in Eastern India. Rice in typical upland ecosystem is grown under direct seeding with minimum input (fertilizer, insecticide, fungicide, herbicide) use. It is common knowledge that upland rice cultivation is practised under subsistence farming to meet the food requirement of rainfed farm families during the lean period (end of September), when nothing is available to eat in poor households.

Upland ecosystem is the most diverse among the entire rice ecosystem. Upland rice is cultivated in permanent systems year after year, grown in block rotations or under slash and burn method (Jhum cultivation); established by broadcasting, seeding behind plough, drilling the seeds in small holes; grown under mono-cropping as well as mixed cropping with other cereals, oilseeds or pulses. In eastern Uttar Pradesh and West Bengal, short duration upland rice is grown under transplanted condition. The harvest from upland rice not only feeds the poor farmers, but also supports the feed requirement of cattle in the lean period.

The book chapters from 23 states deal with the general scenario of states, climate, soil, rice as a whole, upland rice with cropping season, cropping system, tillage, seeding, fertilization, weed management practices, insect pests and diseases, varieties grown in upland ecosystem in different states, harvesting, post harvest activities, constraints faced by farmers and future opportunities to increase the upland rice productivity, thereby securing household food security for the resource poor farmers.

The purpose of the process documentation is to pool the scattered information related to upland rice cultivation in the country in a book form with the help of upland rice workers across the country, to make the information related to upland rice easily available to researchers, extension workers, teachers, planners, policy makers and students for the benefit of future planning. This book may be a reference book for future use in improving upland rice productivity and livelihood of rainfed farmers.
We acknowledge our grateful gratitude to the efforts made by the authors for their cooperation in documenting the chapters with update information available in respective states. We express our sincere thanks to Scientific Publishers (India), Jodhpur for publishing the book with great care and impressiveness.

Editors
CONTENTS

Foreword
Preface

1 Upland rice in Arunachal Pradesh
   — Arvind K. Rai, Ranjay K. Singh and Rakesh Bhardwaj 1

2 Upland rice in Assam
   — S.K. Rautaray 32

3 Upland rice in Bihar
   — S.B. Mishra, Ashok K. Singh and R.K. Singh 59

4 Upland rice in Chhattisgarh
   — V.K. Singh, A.K. Singh and Amit Kumar Sinha 74

5 Upland rice in Gujarat

6 Upland rice in Himachal Pradesh

7 Upland rice in Jammu & Kashmir
   — Anil Kumar and Sanjay Arora 130

8 Upland rice in Jharkhand
   — N.P. Mandal, Anantha M.S., R.K. Singh and M. Variar 142

9 Upland rice in Karnataka
   — N.G. Hanamaratti, P.M. Salimath, Y.G. Shadakshari, Anantha, M.S. and H.E. Shashidhar 168

10 Upland rice in Kerala
    — Geethakumari, V.L., Leena Kumary, S., Jayakrishnakumar, V., Mini, G. and Renjini, P.R. 189
11 Upland rice in Madhya Pradesh  
   206

12 Upland rice in Maharashtra  
   — A.N. Deshpande, Y.J. Patil and S.B. Choulwa  
   215

13 Upland rice in Manipur  
   — L. Nabachandra Singh and Angad Prasad  
   229

14 Upland rice in Meghalaya  
   — Patiram, Rajesh Kumar and Brajendra  
   242

15 Upland rice in Mizoram  
   — A.K. Vishwakarma, Brajendra and K.A. Pathak  
   260

16 Upland rice in Nagaland  
   — Sanjay Singh Rathore  
   269

17 Upland rice in Orissa  
   — Sabyasachi Rath, Nimai Charan Mishra and Somanath Panda  
   284

18 Upland rice in Rajasthan  
   — Rajesh Pandya, R.S. Tripathi and S.K. Kaushik  
   302

19 Upland rice in Tamil Nadu  
   — P. Jeyaprakash and S. Mahendran  
   321

20 Upland rice in Tripura  
   — N.P. Singh, K. Chattopadhyay and S.P. Das  
   331

21 Upland rice in Uttarakhand  
   — HN Singh, Sanjay Singh and R.K. Singh  
   344

22 Upland rice in Uttar Pradesh  
   359

23 Upland rice in West Bengal  
   — S.B. Goswami and Biswapati Mandal  
   376