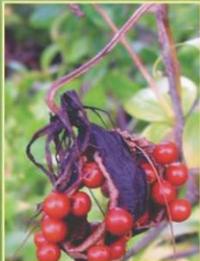


Medicinal Seeds and Plants

K. Vanangamudi

V. Anbukkarasi

M. Prabhu



MEDICINAL SEEDS AND PLANTS

MEDICINAL SEEDS AND PLANTS

K. VANANGAMUDI

Former Dean (Agriculture)
Agricultural College and Research Institute
Tamil Nadu Agricultural University, Coimbatore - 641 003.

V. ANBUKKARASI

Research Associate
Horticultural College and Research Institute
Tamil Nadu Agricultural University, Coimbatore - 641 003

M. PRABHU

Assistant Professor (Horticulture)
Horticultural College and Research Institute,
Tamil Nadu Agricultural University, Periyakulam -625 604.

Published by:

Scientific Publishers (India)
5 A, New Pali Road, P.O. Box 91
Jodhpur 342 001 (India)

E-mail: info@scientificpub.com
Website: www.scientificpub.com

Branch Office
Scientific Publishers (India)
4806/24, Ansari Road, Daryaganj
New Delhi - 110 002 (India)

© 2014, Authors

All rights reserved. No part of this publication or the information contained herein may be reproduced, adapted, abridged, translated, stored in a retrieval system, computer system, photographic or other systems or transmitted in any form or by any means, electronic, mechanical, by photocopying, recording or otherwise, without written prior permission from the authors and the publishers.

Disclaimer: Whereas every effort has been made to avoid errors and omissions, this publication is being sold on the understanding that neither the author nor the publishers nor the printers would be liable in any manner to any person either for an error or for an omission in this publication, or for any action to be taken on the basis of this work. Any inadvertent discrepancy noted may be brought to the attention of the publishers, for rectifying it in future editions, if published.

ISBN: 978-81-7233-875-6

eISBN: 978-93-86237-42-2

Printed in India

PREFACE

The World Health Organization has listed 21,000 plants that have reported medicinal uses around the world. Other estimates indicate the number to range between 35,000 and 70,000 worldwide. The last decade has witnessed a great revival of interest in the use of herbal medicines both in the developed as well as developing countries. Almost 50 per cent of the medicines we use today are derived straight from plants and 25 per cent of the prescription drugs have their genesis of tropical plants. According to World Health Organization, 80 per cent of the world population relies chiefly on plant based traditional medicines especially for their primary health care needs. Medicinal and aromatic plants have a high market potential with the world demand of herbal products growing at the rate of seven per cent per annum. The major importers of medicinal plants are the European Union, Russia and the USA, while the major exporters of medicinal plants or its value added products are China, Japan and Russia. These countries also show strong intellectual property protection. It is noteworthy that active Intellectual Property Right Protection has helped countries like China to establish supremacy in the world trade. Forty five per cent of all patents on herb or herbal based or related medicine are with China, closely followed by Japan with 28 per cent share.

In India, the evergreen forests of Western Ghats and the Himalayas are rich in herbs useful in treatment of common ailments to lethal diseases like blood cancer. Satawari, Safed Musli, Kali Musli and Ashwagandha for promising tonic, Kukronda and Adusa for respiratory trouble, Gudmar and Sadasuhagan for Diabetes, Bramhi and Bach for memory, Kalmegh for chronic fever, Sarpagandha and Arjun for heart troubles are some examples of miracle herbs. Sarpagandha, Aloe and Gloriosa once in abundance, now they have become rare plants in some parts of India. The availability of wonderful herb Safed Musli is also continuously increasing in the country. The climatic and edaphic conditions of India are suitable for commercial cultivation of more than 50 potential plants including Safed Musli, Satawari, Ashwagandha, Akarkara, Sarpagandha, Bach, Ratanjot, Aloe, Senna, Gymnema, Mucuna etc.

Considering above facts, the Medicinal Seeds and Plants has been prepared for the benefit of scientists, students and extension personnel. This book contains Global and National scenario of medicinal plants, Industrial

applications of medicinal plants and detailed description of taxonomy, botany, propagation, seed biology and uses for important species.

The authors extend their sincere thanks to the Scientific Publishers (India), Jodhpur for publishing this book.

**K. VANANGAMUDI
V. ANBUKKARASI
M. PRABHU**

CONTENTS

S.No	Title	Page
<i>Part I-</i> GENERAL ASPECTS		
1.1.	Global scenario of medicinal plants	3
1.2.	National scenario of medicinal plants	6
1.3.	Industrial uses of medicinal plants	13
<i>Part II-</i> ANNUAL MEDICINAL PLANTS		
2.1.	<i>Abelmoschus moschatus</i>	23
2.2.	<i>Abutilon indicum</i>	30
2.3.	<i>Acalypha indica</i>	33
2.4.	<i>Acorus calamus</i>	35
2.5.	<i>Andrographis paniculata</i>	38
2.6.	<i>Asteracantha longifolia</i>	44
2.7.	<i>Bacopa monnieri</i>	46
2.8.	<i>Centella asiatica</i>	49
2.9.	<i>Chlorophytum borivilianum</i>	53
2.10.	<i>Coleus aromaticus</i>	56
2.11.	<i>Coleus forskholii</i>	57
2.12.	<i>Dioscorea composita</i>	59
2.13.	<i>Dioscorea deltoidea</i>	60
2.14.	<i>Dioscorea floribunda</i>	61
2.15.	<i>Eclipta alba</i>	64

2.16.	<i>Euphorbia hirta</i>	68
2.17.	<i>Lippia nodiflora</i>	70
2.18.	<i>Mucuna pruriens</i>	74
2.19.	<i>Nervilia aragoana</i>	76
2.20.	<i>Nigella sativa</i>	78
2.21.	<i>Papaver somniferum</i>	80
2.22.	<i>Phyllanthus amarus</i>	83
2.23.	<i>Plantago ovata</i>	92
2.24.	<i>Plectranthus vettiveroides</i>	96
2.25.	<i>Rosmarinus officinalis</i>	97
2.26.	<i>Thymus vulgaris</i>	99
2.27.	<i>Trianthema portulacastrum</i>	101
2.28.	<i>Tribulus terrestris</i>	106

Part III-

HERBACEOUS PERENNIAL MEDICINAL PLANTS

3.1.	<i>Achyranthes aspera</i>	115
3.2.	<i>Aconitum heterophyllum</i>	118
3.3.	<i>Adhatoda zeylanica</i>	122
3.4.	<i>Aloe vera</i>	124
3.5.	<i>Alpinia galanga</i>	127
3.6.	<i>Alternanthera sessilis</i>	129
3.7.	<i>Atropa belladonna</i>	131
3.8.	<i>Baliospermum montanum</i>	134
3.9.	<i>Barleria prionitis</i>	136
3.10.	<i>Boerhavia diffusa</i>	139
3.11.	<i>Calotropis gigantea</i>	142
3.12.	<i>Cassia angustifolia</i>	146
3.13.	<i>Cassia auriculata</i>	151
3.14.	<i>Cassia tora</i>	154
3.15.	<i>Catharanthus roseus</i>	156

3.16.	<i>Centratherum anthelminticum</i>	160
3.17.	<i>Costus speciosus</i>	162
3.18.	<i>Datura innoxia</i>	165
3.19.	<i>Datura metal</i>	167
3.20.	<i>Datura stramonium</i>	169
3.21.	<i>Digitalis lanata</i>	172
3.22.	<i>Glycorrhiza glabra</i>	174
3.23.	<i>Hibiscus rosasinensis</i>	176
3.24.	<i>Hybanthus enneaspermus</i>	179
3.25.	<i>Jatropha curcas</i>	181
3.26.	<i>Kaempferia galanga</i>	187
3.27.	<i>Mentha</i> spp	189
3.28.	<i>Mimosa pudica</i>	191
3.29.	<i>Nardostachys jatamansi</i>	194
3.30.	<i>Ocimum basilicum</i>	196
3.31.	<i>Ocimum gratissimum</i>	201
3.32.	<i>Ocimum sanctum</i>	204
3.33.	<i>Plumbago zeylanica</i>	208
3.34.	<i>Podophyllum hexandrum</i>	211
3.35.	<i>Rauwolfia serpentina</i>	214
3.36.	<i>Salvia officinalis</i>	221
3.37.	<i>Solanum khasianum</i>	223
3.38.	<i>Solanum nigrum</i>	230
3.39.	<i>Solanum surattense</i>	239
3.40.	<i>Solanum torvum</i>	241
3.41.	<i>Sphaeranthus indicus</i>	243
3.42.	<i>Stevia rebaudiana</i>	246
3.43.	<i>Trichopus zeylanicus</i>	249
3.44.	<i>Vitex negundo</i>	251
3.45.	<i>Withania somnifera</i>	254

**Part IV-
MEDICINAL CLIMBERS**

4.1.	<i>Abrus precatorius</i>	263
4.2.	<i>Argyreia nervosa</i>	265
4.3.	<i>Aristolochia indica</i>	268
4.4.	<i>Cephaelis ipecacuanha</i>	271
4.5.	<i>Chonemorpha fragrans</i>	273
4.6.	<i>Cissus quadrangularis</i>	275
4.7.	<i>Embelia ribes</i>	277
4.8.	<i>Gloriosa superba</i>	280
4.9.	<i>Gymnema sylvestre</i>	286
4.10.	<i>Hemidesmus indicus</i>	289
4.11.	<i>Ipomoea mauritiana</i>	292
4.12.	<i>Operculina turpethum</i>	294
4.13.	<i>Piper longum</i>	296
4.14.	<i>Pueraria tuberosa</i>	299
4.15.	<i>Tinospora cordifolia</i>	301
4.16.	<i>Tylophora indica</i>	303

**Part V-
PERENNIAL MEDICINAL PLANTS**

5.1.	<i>Aegle marmelos</i>	309
5.2.	<i>Alstonia scholaris</i>	317
5.3.	<i>Artocarpus hirsutus</i>	320
5.4.	<i>Boswellia serrata</i>	323
5.5.	<i>Butea monosperma</i>	325
5.6.	<i>Caesalpinia sappan</i>	328
5.7.	<i>Commiphora wightii</i>	332
5.8.	<i>Emblica officinalis</i>	335
5.9.	<i>Ephedra gerardiana</i>	342
5.10.	<i>Garcinia indica</i>	344

5.11.	<i>Helicteres isora</i>	348
5.12.	<i>Lawsonia inermis</i>	351
5.13.	<i>Mimusops elengi</i>	353
5.14.	<i>Nothapodytes nimmoniana</i>	356
5.15.	<i>Pterocarpus santalinus</i>	361
5.16.	<i>Salvadora persica</i>	364
5.17.	<i>Saraca asoca</i>	368
5.18.	<i>Symplocos cochinchinensis</i>	370

