

25th Asian-Pacific Weed Science Society Conference

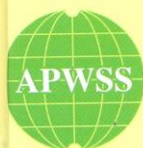
Hyderabad, India

WEED SCIENCE FOR
SUSTAINABLE AGRICULTURE,
ENVIRONMENT
AND BIODIVERSITY

Volume 1

Editors

**A.N. Rao &
N.T. Yaduraju**



**Asian-Pacific Weed Science Society and
Indian Society of Weed Science**

ICAR-Directorate of Weed Research (DWR)

Maharajpur, Jabalpur - 482004, Madhya Pradesh, India.



WEED SCIENCE FOR SUSTAINABLE AGRICULTURE, ENVIRONMENT AND BIODIVERSITY

Proceedings of the Plenary and Lead Papers of the
25th Asian-Pacific Weed Science Society Conference,
Hyderabad, India

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Indian Society of Weed Science
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Maharajpur, Jabalpur - 482004, Madhya Pradesh, India

Editors:

A.N. Rao, Ph. D.

Visiting Scientist,

ICRISAT Development Center (IDC) and
International Rice Research Institute
(IRRI), International Crops Research
Institute for Semi Arid Tropics
(ICRISAT); Building # 303, ICRISAT,
Patancheru, Hyderabad - 502324, India

అడుసుమిల్లి నారాయణ రావు

e-mail: anraojaya1@gmail.com

N T Yaduraju, Ph. D. (UK)

Formerly:

Director, Directorate of Weed
Research, Jabalpur & National
Coordinator - National Agriculture
Innovation Project (ICAR);
President, APWSS and ISWS,
Hyderabad, India

e-mail: nyaduraju@gmail.com

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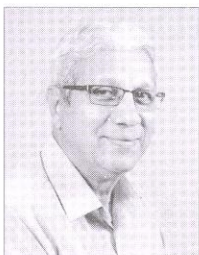
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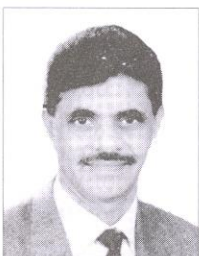
Jabalpur - 482004, Madhya Pradesh, India.

Website: www.isws.org.in

Editors



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Dr N T Yaduraju obtained his graduate and post-graduate degrees from the University of Agricultural Sciences, Bangalore, India and Ph.D. from the University of Reading, UK. He was actively involved in research and teaching in agronomy, weeds and weed management at the Indian Agricultural Research Institute, New Delhi from 1976 to 2000. As Director of Directorate of Weed Research at Jabalpur, India from 2000 to 2005, he gave leadership and new direction to weed science in the country. He has over 200 research publications and is the Fellow of the Indian Society of Weed Science (ISWS) and a recipient of the ISWS Gold Medal. He is currently serving as President of ISWS and APWSS.

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PREFACE

The Asia and Pacific Region (APR) holds 40 percent of the world's agricultural land and 25 percent of its agricultural population. APR generates about one-third of the world's GDP and is the world's biggest producer of cereals, vegetables, fruit, meat and fish, with strong growth in all areas. The APR has registered faster economic growth in past decades than any other region. Development in agriculture during last 50 years has brought unprecedented successes in enhancing agricultural production and alleviating hunger and poverty. However, around 529 million hungry people or 63 percent of the world's hungry, live in APR. Despite 43% reduction in undernourished during 2014, the APR is still home to more undernourished persons than any other region. Compared to other sectors growth, the agriculture growth has a stronger impact on poverty and hunger of APR. Hence, there is a strong need to increase agricultural production on sustainable basis as well as to reduce the productivity gap between marginal and favoured areas. The lowering in agricultural production, loss of biodiversity and degradation of environment due to increasing problems of weeds have become a matter of serious concern for farmers, researchers, academicians, scientists and policy makers as these in turn affect food and livelihood security. Thus the weed management plays a key role in enhancing crop productivity on sustainable basis.

Despite the development and adoption of weed management technologies, weed infestations are virtually increasing in most countries in addition to the development of herbicide resistance in weeds; growing menace of weedy rice, occurrence of *Parthenium*, *Orobanche*, *Chromolaena* and other alien invasive weeds in many parts of the Asia-Pacific region. This is due to adoption of high-input and intensive cropping systems; neglect and discontinuation of some of the traditional practices like intercropping, mulching and crop rotations involving legumes. This suggests that weed problems are dynamic in nature and require continuous monitoring and refinement of management strategies for alleviating their adverse effects on agricultural productivity and environmental health and balance, in the era of climate change.

In this context, the Indian Society of Weed Science has organized the 25th Asian-Pacific Weed Science Society Conference at Hyderabad, India during 13-16 October, 2015. The theme of the conference is on 'Weed science for sustainable agriculture, environment and biodiversity'. The conference is intended to discuss about the current weed problems, available management options and future strategies of weed management that enhances the agro-ecosystem productivity and production with positive impact on the

environment and biodiversity. This first volume incorporates the lead and plenary papers of the conference submitted by the eminent weed scientists from around the world. This volume contains presentations on varying aspects of weed science such as: weeds taxonomy (P.W. Michael) and use (N. Chandrasena); biodiversity (J. Storkey, P.W. Westerman); problematic weeds (C. Parker, B. Marambe et al., S. Adkins, V.K. Nandula; P.C. Bhowmik); weed seed identification (S. R. Prasad et al.), modelling (M. Renton); allelopathy (H.K. Naguchi), microbial bioherbicides (R. Charudattan); herbicides (M.R. Weimer, N.K. Nguyen); herbicide application techniques (W. Chisholm et al.), herbicide resistant weeds (I. Heap) and crops (V.S. Rao); sustainable weed management (R.K. Malik et al., G. Mahajan and B.S. Chauhan, R.M. Kathiresan, S. Manali, A.R. Sharma); and innovative weed management technologies (Y. Huang and K.N. Reddy). We thank Mr. Y.S.N. Murthy, for the help in designing cover page and Drs. Jim Westwood ; J.K. Ladha; S.P. Wani; M. Ramesha; Arvind Kumar and (Mrs.) A. Nagamani for their help. A.N. Rao extends personal thanks to IRRI, ICRISAT and Government of Karnataka for support.

It is hoped that this volume will serve as a guide and reference book for researchers, teachers, students and all those involved in weed science across the globe.

A.N. Rao

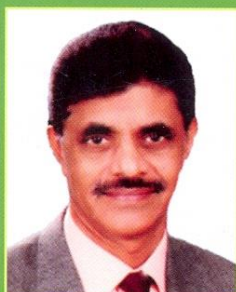
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