



ISWS News Letter

A publication of Indian Society of Weed Science

October-December 2009

Message from the President



This Newsletter highlights the Society's significant activities performed during the period under report. The research and training programme pertaining to Weed Science is always within its focus.

The Directorate of Weed Science Research organised a National level consultation programme on 'Weed Utilisation' during 20-21 October, 2009. The purpose of this national consultation was to provide a platform to all weed scientists who are engaged in different aspects of research on weed utilization at various institutes and universities. There were four brain storming technical sessions with 36 presentations covering various themes besides the Plenary Session. I am sure that this consultation programme will open up new avenues for research and finally for weed management.

Any suggestion for improving the contents of the newsletter and for the activity of ISWS would be highly appreciated.

Jay G. Varshney

Salient research findings from the DWSR Centres

Weed distribution in Uttarakhand

DWSR Center at GBPAUT, Pantnagar revealed that the distribution of different types of weeds in hilly and plane tract of this zone varies widely. It seems that this variation may be due to the different altitude of different places. In planes of Kumaon division (<600 m msl), among the grasses, *P. minor* was prominent weed spp, while among broadleaved *Polygonum* was the major spp followed by *Coronopus* spp., *Chenopodium album*, *Anagalis arvensis* and *Medicago denticulate*. In plains area of Garhwal division (<600 m msl), *P. minor* was major grass, however, *Parthenium hysterophorus* was the most dominant weed followed by *Chenopodium album*, *Coronopus*



didymus, *Ageratum conyzoides*, *Anagalis arvensis* and *Medicago denticulate*. *Ipomea* spp. was the major weed in sugarcane fields. In the mid hills of Kumaon division (600-1200 m msl), the spectrum

of weed flora was broader than lower and higher altitude. But in Garhwal division, the lower hills have the broader spectrum of weed flora as compared to mid hills. The per cent coverage of broad leaved weeds decreases with altitude. The share of broad leaved weeds in the terai region of Udham Singh Nagar district is 82 %, whereas that



in the hilly tract (600-1200 m msl) of Nainital and Almora districts is 63 only.

Unidentified broad Leaf Weed from Dehradun district, Uttarakhand

Phalaris minor is exhibiting resistance at various degrees towards isoproturon at both 1.0 and 2.0 kg ha⁻¹ in different areas of Uttarakhand including Bhattapuri, Bajpur, Fatehpur, Gadarpur and Bachchipur.

Enhanced CO₂ may favor the growth of weeds

Enhanced CO₂ is favorable for the growth of some weeds. The DWSR centre at Kerala Agricultural University, Thrissur provides this information on the growth of *Urena sinuata* and

Melochia corchorifolia. Weeds kept inside the CO₂ chambers had higher growth which was likely due to the higher level of CO₂ and moisture.

Growth of weeds kept inside and outside the chamber



Urena sinuata



Melochia corchorifolia

CO₂ Enrichment Chamber



National Consultation on Weed Utilization

A "National consultation on weed utilization" was convened at Directorate of Weed Science Research, Jabalpur during 20-21 October 2009. The purpose of this national consultation was to provide a platform to all weed scientists who are engaged in different aspects of research on weed utilization at various institutes and universities. The theme of the Consultation was "Utilization of weed plants for useful purposes". Under the main theme, there were following sub-themes on which deliberations were made:



- Utilization of weed plants for soil and water conservation
- Utilization of weed plants for alternative livelihood opportunities
- Utilization of weed plants for industrial uses
- Utilization of weed plants for strengthening research

Dr. A.K. Singh, Deputy Director General (NRM), ICAR, New Delhi was the Chief Guest who inaugurated the National Consultation. Dr. Jay G. Varshney, Director, DWSR welcomed the Chief Guest and delegates which represented almost all the states of India. Dr. Varshney apprised the Chief Guest and participants about the huge losses caused by the weeds alone if not managed properly and emphasized the need of utilization of abundantly available weed biomass for some useful purposes. There were four technical sessions covering various themes besides the Plenary Session.



The Technical Session-I was chaired by Dr. A. K. Singh, DDG (NRM), ICAR, New Delhi and co-chaired by Dr. Jay G. Varsheny, Director, DWSR and Dr. P. K. Chonkar, Emeritus Scientist, IARI, New Delhi. The first presentation was on 'Phytoremediation of contaminated sites using weeds' by Dr. P. K. Chonkar. Dr. M. Madhu (CSWCRTI, Dehradun) presented role of weeds in soil conservation. Dr. C. Chinnusamy (TNAU, Coimbatore) explored the scope of weeds for compost and vermicompost production. Dr. R. K. Ghosh (BCKV, Kalyani) discussed various aspects of weed utilization such as food, fodder, compost,

medicine and household items were discussed. Dr. K. K. Barman (Sr. Scientist, DWSR) presented the benefits and scopes of weed mulches. In contributory paper section, Dr. Ramachandra Prasad (UAS, Bangalore) and Dr. Chinnusamy (TNAU, Coimbatore) discussed on the utility of different weeds in making compost and vermicompost. Dr. P. J. khankhane (DWSR) presented details about possible use of Giant reed (*Arundo donax*) for phyto remediation of runoff water in industrial catchment area.



The theme for the technical session-II was "Weeds for industrial use". It was chaired by Dr. Jay G. Varsheny, Director, DWSR, Jabalpur. Dr. R.M. Kathiresan from Annamalai, Tamil Nadu presented paper on "Industrial utility – a tag that attracts stakeholder involvement for control of invasive weeds". He has discussed the process of preparation of nanofibres from Water hyacinth and its quality and utility. Other weeds are useful like *Cyperus hexalis* for furniture and mat making, *Hemidesmus indicus* for flavour in soft drinks, *Prosopis juliflora* for good quality fuel and seaweed *Gracilaria edulis* for agar making. Dr. Rupam Kataki from Tejpur University, Assam suggested that the woody stems of *Ipomoea cornea* and other woody weeds can well be utilized for the production of charcoal, which can further be compacted to briquette solving the problem of poor people of India. Dr. Lalit Kumar reviewed the allelopathic utilization of weeds and also discussed the reality of allelopathic prospects.

Technical Session-III on "Weed utilization for alternative livelihood opportunities" was chaired by Dr. S.S. Tomar, Director Research, JNKVV, Jabalpur. Dr. Manoj Kumar of CIRCOT, Mumbai

described different option of utilizing weeds citing examples including the solid state fermentation technology developed by Central Institute of Cotton Technology to make weeds like *Amaranthus*, *Oxalis*, etc. more palatable to cattle. Dr. Sushil Kumar of DWSR discussed the scope of utilizing weeds in paper industries. *Lantana*, *Parthenium*, *Sachharum* etc. can be used for making hand made paper of good quality. Dr. P.K. Das of NIRJAFT, Kolkata presented the use of Kimp (*Leptadema pyrotichnica*) for fiber making. Kimp is a common plant in Thar desert, used as animal feed and as a soil cover to control wind erosion of desert soils. The Kimp fibre is rich in cellulose (75%) and low in lignin and pentosan, desired for qualities for currency papers.

Technical Session-IV on "Weed utilization for strengthening research" was chaired by Dr. C.B. Gaikwad, MPKV, Rahuri. Dr. Bhumesh Kumar, DWSR, explored the scope of weeds in the programme of gene improvement for Abiotic stress. Dr. Shobha Sondhia of DWSR, Jabalpur reviewed the work done on biopesticidal properties of weeds. Dr. Deka from AAU, Assam suggested the use of weed as climate bioindicator.



Plenary Session was chaired by Dr. Gautam Kallu, Vice Chancellor, JNKVV, Jabalpur. Dr. Jay G. Varsheny, Director, DWSR, Jabalpur acted as a Co-Chairman. After a thread bearing discussion on each theme following recommendations were emerged:

1. The importance of weed has yet not been realized by policy planners. It is well documented fact that about 37% loss in

crop productivity is occurred due to weeds only besides loss to human and animal health, plant biodiversity and environment. Proper utilization of weeds itself can contribute significantly to enhance the income of poor farmers besides giving benefit of control in various ecosystems.

2. There is great scope of many weeds for phytoremediation. More weeds are required to be identified for absorbing different type of pollutants from water so that treated water could be used in irrigation. There is research need to isolate the concentrated metals from the weeds and to make use of them for different purposes.
3. A list of weeds should be prepared having soil and water conservation properties. These weeds can be recommended for soil and water conservation in required ecosystems.
4. Making compost and vermicompost from weeds has great potential which can be utilized by resources poor farmers at very low cost. Efforts should be made to popularize the compost preparing techniques among the farmers. This will also save our national drainage of money for purchasing inorganic fertilizers.
5. Many weeds can be utilized for essential oil, gum and dye production. Efforts should be made for commercial utilization of these weeds.
6. There is scope of using weeds for composite, furniture and hand made paper making. There is need to delineate the various properties of weeds required to develop such value added product.
7. There is scope to convert many woody weeds into compacted fuel in the form of briquettes. There is need to popularize these technologies among the resource poor farmers/families to generate additional income.
8. Supplement of additional nutrient rich food for human and fodder for animals rich with carbohydrates, vitamins and minerals could be obtained by using many weed plants. There is need to investigate such weeds for nutrients status.
9. The bio gas and bio diesel production will save our national drainage of money for

this purpose and lowering the environment particularly air pollution.

10. There is scope of producing biopesticides after characterization of suitable chemicals in the weeds which may be used in pest management
11. Many home using materials like mats, chatai /hogla pati, sweeping materials, garlands, thatching materials can be prepared.
12. There is change in global climate. Many weeds are good indicator reflecting these changes. Such weeds can be utilized for indicating climate change.
13. It was realized that herbicide tolerant GM crop besides drought and cold resistant crop may offer simplified and efficient control of weeds particularly in wheat, rice, maize cotton and pulses. Therefore, efforts should be made towards identification,

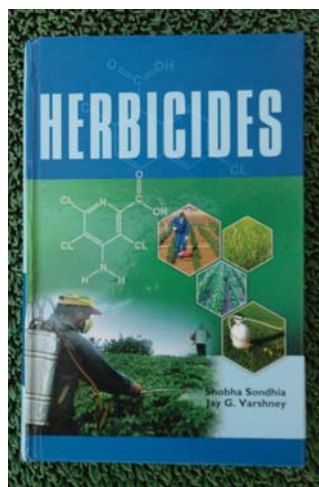
evaluation and development of herbicide, drought and cold tolerant genes for viable public private partnership in Indian conditions.

14. Commercial cultivation of the weeds found useful should be done only after assessing the merits and demerits by different agencies concerned.
15. There is coordination gap between industries and research institutions. Therefore, linkage between industries with NRCWS and SAUs for managing the weed problems should be strengthened.

New books

Herbicides

Dr. Shobha Sondhia and Dr. Jay G. Varshney
Satish Serial Publishing House, Delhi-33
Price : Rs. 2495.00



It is a rare book of its kind, especially in our country, covering herbicides' chemistry, their biochemical response, and fate in environment, toxicology and their role in weed management.

Academicians and students can enjoy this book with elaborative discussion on all aspects of herbicides. It provides

huge number of key references to researchers. The book, a well-knit creation of two well known experts of this field, covers chemistry and biology of herbicides in fourteen chapters, beginning with an overview followed by basic information on herbicide chemistry, classification, absorption, transport, mode of action, metabolism in plants, selectivity and resistance, fate and persistence,

adjuvants, use of herbicides in major field crops, herbicide residues in soil, food chain , water and its management, effect on soil health, succeeding crop, non-target organisms, and herbicide toxicology. The most fascinating part of this book is its appendix which cover list of herbicides, their common and chemical names, along with toxicity class, maximum residue limits and physicochemical properties. It is a ready reckoner for everybody.

International weed news

New formulations from BASF

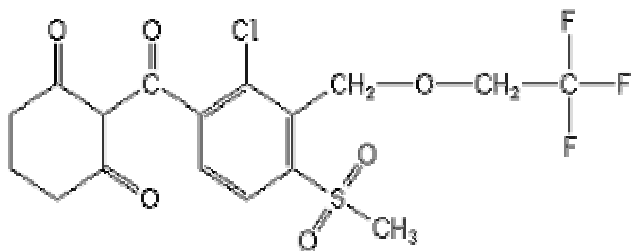
BASF has introduced three formulations based on saflufenacil technical in USA. It is a broad spectrum broad leaf herbicide for corn, soybean and wheat. Saflufenacil products are labeled for preplant or preemergence use only, and provide residual control of most annual broadleaf weeds at the rates that can be used in corn.

(Source: <http://www.agrow.com>)

Bayer introduces a new triketone

Bayer Crop Science has introduced tembotrione, a new triketone herbicide for the selective post-emergence control of mono- and dicotyledonous

weeds in corn, including field corn, seed corn, sweet corn, and popcorn. It acts by inhibiting the enzyme 4-hydroxyphenylpyruvate dioxygenase (HPPD) and bleaches sensitive plants.



At a use rate of 75-100 g a.i./ha of tembotrione a wide range of grass and broadleaved weeds are controlled.

(Source: <http://www.bayercropscience.com>).

Allelochemicals in *Ipomoea cairica*

Scientists of Hanshan Normal University, China have confirmed the presence of allelochemicals in *Ipomoea cairica* L. Two compounds have been identified as allelochemicals using ultrasonic extraction and bioactivity guided column chromatography. We isolated 2 allelochemicals: 3-

3'-5-Trihydroxy-4'-7-dimethoxyflavone and 3-3'-5-Trihydroxy-4'-7-dimethoxyflavone-3-O-sulfate from the crude extracts of n-butanol. In bioassay, both these allelochemicals independently or jointly inhibited the seed germinations of all 4 test plants [*Raphanus sativus*, *Cucumis sativus*, *Brassica pekinensis* and *Ligularia virgaurea* (a weed)]. These allelochemicals exhibited selectivity; both strongly inhibited the germination of cucumber seeds but were moderately inhibitory to cabbage seeds. There was antagonism between these allelochemicals and they might be candidates for new natural product based herbicides.

(Source: *Allelopathy Journal*, Year: 2009, Volume : 24, Issue : 1)

Future Events

July 11-14, 2010

Aquatic Plant Management Society Annual Meeting
Venue: Bonita Springs, FL
Web: <http://apms.org/>

July 19-23, 2010

Brazilian Weed Science Society Congress.
Venue: Ribeirao Preto, Sao Paulo State

Important web sites related to weed science

<http://www.nrcws.org> – Apex organization for weed research in India

<http://www.weeds.iastate.edu/mgmt/qtr97-1/weedid.htm>- For information of weed identifications

www.ewrs.org – European weed research society

<http://plantsciences.ucdavis.edu/iws>-International weed science society

http://www.weedcenter.org/management/weed_id.html - Centre for Invasive plant management

<http://www.wssa.net/>- Weed Science Society of America

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The **ISWS Newsletter** is an electronic quarterly publication to foster better communication and give information to our members and others in the country interested in weed science. Information for publication in the ISWS Newsletter may be sent to the Editor at the following address:

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Indian Society of Weed Science

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NOTICE BOARD

This is informed to all concerned that a few members are running a fake society with the name of Indian Society of Weed Science from CCSHAU, Hissar. It is informed to all concerned that this society is neither registered with appropriate authority nor has sought any approval from the Governing Body of Indian Society of Weed Science (ISWS). The publication of journal by them with the name of IWS is not an official organ of ISWS. All are, therefore, requested to kindly correspond and transact only with legal and approved ISWS based at Directorate of Weed Science Research, Jabalpur. Necessary action against the persons involved in the parallel running of ISWS and publishing Indian Journal of Weed Science has already been initiated.

Kindly also refer the proceedings of GB held at TNAU, Coimbatore on 02/08/2009

Members Directory

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Indian Society of Weed Science
Directorate of Weed Science

Exhibition of some members from ISWS membership
ISWS Election - 2010

Web site : <http://www.isws.org.in/>