DWSR

WEED news

भाकृअनुप ICAR

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From Director's Desk

Worldwide herbicides represent about 50 percent of the total agrochemical sales. In India it is around 20 percent and the use is steadily increasing. Farmers are depending on herbicides more and more. But from the experience of West and from our own experience of recent past, it is for sure that, over-dependency on herbicides in a particular production system induces herbicide resistance. And it is frequent if farmers embrace a single herbicide or modes of action as the main tool for eliminating a key weed. This is the case of propanil resistance in junglerice (Echinochloa colona) in Central America, Mexico and parts of South America; and that of isoproturon resistance in Phalaris minor in India. Till recent past our farmers depended on 2,4-D, butachlor and isoproturon in field crops, and paraquat in plantation crops. Now low-dose herbicides of different modes of action are grabbing a good share. Two modes of action groups of more recent commercialization, those of herbicides that inhibit the enzyme acetolactate synthase (ALS), which include the sulfonylureas (SFU), imidazolinones, triazolopyrimidines, pyridinilbenzoates and sulfonylaminocarbonyltriazolinones, and the inhibitors of acetyl CoA carboxylase (ACCase) comprised by the aryloxyphenoxy propanoates and cyclohexanediones, have contributed to the aggravation of the herbicide resistance problem.

No single herbicide or management strategy can solve a particular herbicide resistance problem. Both to prevent and manage resistance, once it occurs, require a basic knowledge of the biology of the weeds and their population dynamics. A fundamental understanding of the forces that select resistant individuals and the processes by which resistance is accelerated or delayed, plus the experience gained over a broad range of growing conditions and countries, should better prepare us to combat herbicide resistance.

Research Notes

Allelochemicals from Parthenium

Parthenium is the most studied weed in recent times. It has become a serious threat to human and cattle health, and also productivity in crop fields. The biodiversity of the flora and fauna is being threatened. It is silently ruining the nation's economy. Recently, scientists have found solace, isolating a couple of compounds of herbicidal potential from leaf extract of Parthenium. These compounds are highly bioactive to kill aquatic weeds. Molecule-I is light yellow, lacks fluorescence in short and long wave UV, and has a molecular mass of 262. The compound crystallizes when methanolic solution is left over at >25°C. Molecule-II is light yellow and shows no fluorescence in short wave UV but shows yellow fluorescence in long wave UV. The compound crystallizes when methanolic solution is left over at about 15°C. Probably, this research will help in utilizing this obnoxious weed in near future.

-DK Pandey

National Invasive Weed Surveillance

A NIWS project funded by the Department of Agriculture and Cooperation, GOI was undertaken by this Directorate for early detection of the five

invasive weed species intercepted in wheat imported from various countries during 2006-07 for Public Distribution System in 10 states, viz. Andhra Pradesh, Chhattisgarh, Gujarat, Karnataka, Kerala, Orissa, Madhya Pradesh, Maharashtra, Tamil Nadu and West Bengal, where the weed seed contaminated wheat was distributed.

During 2006-07, India imported large scale wheat to the tune of 6.2 MT from various countries like Russia, Australia, Canada, Hungary, Ukraine, France, Argentina, Romania, Netherlands, Kazakhstan and Bulgaria. While conducting the phyto-sanitory inspection at various quarantine stations, seeds of large number of invasive weed species were intercepted through imported wheat grains.

During the review meeting concluded at TNAU, Coimbatore, out of the 22 centers, 13 centers in nine states (Andhra Pradesh, Gujarat, Madhya Pradesh, Tamil Nadu, Orissa, Maharashtra, West Bengal, Kerala and Karnataka) reported the incidence of alien weed, *Solanum* spp., while the Kerala center reported the incidence of *Cenchrus echinatus* and *Cynoglossum* during its first phase. It was perceived from the findings that the infestation level of *Solanum* spp. was medium to high, mostly in garbage and non-cropped areas. This is a major weed in crops like wheat, maize, potato, apple, tomato, groundnut, soybean, tea etc. Availability of varied hosts and soil types are conducive for its establishment. Due to higher reproductive potential, it can propagate through seeds, root, root-cuts etc. The Botanical Survey of India (BSI) identified this species as *Solanum carolinense*. However, well-known taxonomist Dr. Fred Hrusa of University of California, USA was of the opinion that it was not *Solanum carolinense*, and Dr. Lynn Bohs of University of Utah, USA identified this species as *Solanum insanum*. In India, the identity of this species was referred as *Solanum melongina* sub spp. *insanum*. The re-identification of this weedy plant is needed by the Botanical Survey of India.

-VSGR Naidu

Solanum spp.

Cynoglossum officinale

News

Krishi Vigyan Kendra: VI National Conference

The VI National Conference of KVKs on 'Preparing Farmers for Secondary Agriculture" was held at JNKVV, Jabalpur on 3-5 December, 2011. The Directorate took part actively. Directorate's stall exhibited pros and cons of weed management through various ways. The mechanical tools and biocontrol agents were the cynosure of visitors. Dr. S. Ayyappan, Secertary, DARE and DG, ICAR released a bulletin on '*Shakahari Rasayanon dwara kharpatwar prabandhan*' compiled by Anil Dixit, V.P. Singh, P.K. Singh and A.R.G. Ranganatha. A E-module on "Weed Seed Identification" prepared by V.S.G.R. Naidu and S. Dhagat was also released in this occasion.

Director General in DWSR

During the National Conference on Krishi Vigyan Kendra at Jawaharlal Nehru Krishi Vishwavidyalaya, Dr. S. Ayyappan, Secertary, DARE and DG, ICAR visited the Directorate on 3rd December, 2011. In a meeting with staff of DWSR, Director General expressed keen interest to resolve the problems being faced by the scientists. He enquired about all the research projects pursued by the scientists, and advised to be more specific while addressing farmers' problems.

A meeting with Deputy Director General (Horticulture)

Dr. H.P. Singh, DDG (Horticulture) attended an interactive meeting with scientists of this Directorate on the 3rd December, 2011. He also discussed some emerging issues of agricultural research and emphasized on partnership mode of research work.

Deputy Director General (NRM) in DWSR

Dr. A.K. Singh, Deputy Director General (NRM), ICAR, New Delhi visited DWSR on 4th December, 2011. Dr. Singh reviewed the progress of all the projects carried out in this Directorate. He urged scientists to develop collaborative research programmes involving other organizations.

Seminar on safer weed management on pulse crops

Dr. A.R.G. Ranganatha, Director-in-Charge delivered a crisp lecture on the safer weed management techniques for pulse crops. He discussed on different aspects of production and protection of pulse crops. Weeds are one of the important production constraints in various agro-ecological situations. The productivity can be enhanced by 30-50% in different *kharif* and *rabi* pulses, through integrated weed management strategies. In our country, protein malnutrition, being a very serious issue, weed management in high-rainfall black-soil areas, is a critical issue need to be addressed on war footing.

राजभाषा कार्यान्वयन समिति : कार्यशाला

दिनांक 15 दिसम्बर 2011 एवं दिनांक 16 दिसम्बर 2011 को खरपतवार विज्ञान अनुसंधान निदेशालय के सभागार में वैज्ञानिक अधिकारियों एवं तकनीकी अधिकारियों/कर्मचारियों हेतु दो दिवसीय वैज्ञानिक छायांकन विषय पर श्री बसंत मिश्रा एवं श्री एम. के. भट्ट द्वारा हिन्दी कार्यशाला का आयोजन किया गया, बैठक की अध्यक्षता डॉ. ए. आर. जी. रंगनाथा निदेशक महोदय ने की जिसमें 27 अधिकारियों एवं कर्मचारियों ने भाग लिया।

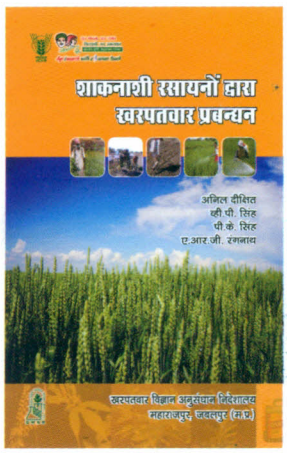
श्री बसंत मिश्रा द्वारा छायांकन पर आधारित कैमरे से संबंधित जानकारियां, फोटोग्राफी क्या है? फोटोग्राफी का अर्थ, फोटोग्राफी के प्रकार, कैमरे एवं उसके पार्ट्स की जानकारी, लैंसों के प्रकार नार्मल लैंस, टेली लैंस, व्हाईड एंगल लैंस, फिश आई लैंस, जूम लैंस, माइक्रो लैंस तथा हर क्षेत्र में उनकी उपयोगिता, एक्सपोजर की फोटोग्राफी में भूमिका, इसमें लाईट और समय का क्या सामंजस्य है? डेप्थ ऑफ फील्ड की उपयोगिता, अर्थ, महत्व, कम्पोजिशन में डे लाईट आर्टीफीशियल लाईट का महत्व तथा अंत में कैमरों के रखरखाव एवं सावधानियों के बारे में बताया। श्री एम.के. भट्ट द्वारा कार्यशाला में वीडियोग्राफी से संबंधित जानकारियां जिसमें डिजिटल वीडियोग्राफी की तकनीकी को समझने के लिये सबसे पहले उन शब्दों के अर्थ को जानना जरूरी है जिनका प्रयोग इस विषय में ज्यादातर किया जाता है। जैसे – ए/डी कंवर्टर, एसेंबल एडिटिंग, एवीआई, डीवी कैमरा, फील्ड, हाई बैंड, की–फ्रेम, कंप्रेशन, लीनियर एडिटिंग, मार्कर, एमपीईजी आदि के बारे में जानकारी दी।

Faculty Training Programme

Directorate conducted a programme during 19-20 October, 2011 on the Advances of Weed Management as a part of Centre of Advanced Faculty Training conducted by the Department of Soil Science and Agricultural Chemistry, Jawaharlal Nehru Krishi Viswavidyalaya. Twenty six participants from various State Agricultural Universities and ICAR Institutes participated and were exposed to the latest developments in the area of weed science research.

Publications

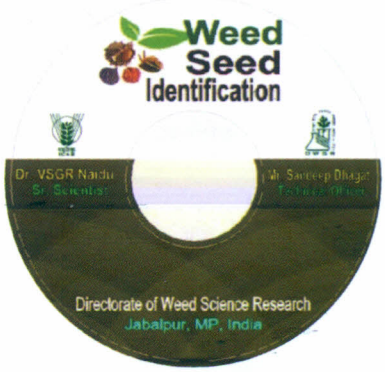
Shaknashi Rasayano Dwara Kharpatwar Prabandhan



Directorate of Weed Science Research, Jabalpur brought out a publication ***"Shaknashi Rasayano Dwara Kharpatwar Prabandhan"*** in Hindi, which highlights the scientific and judicious use of herbicides in crops and non-crop situation, application technique and their safety. This publication will be of immense use to researchers, farmers and extension workers involved in KVKs and Agricultural Department, and students. This book is authored by Anil Dixit, V.P. Singh, P.K. Singh and A.R.G. Ranganatha.

Weed Seed Identification

This Directorate has also published e-Module on "Weeds Seed Identification". This software will be helpful to identify weeds by their seed characteristics. To aid the user, colour illustrations of each species along with seed characters are provided in this software. It can be searched/queried by scientific name, common name, seed thumbnail etc. Dr. VSGR. Naidu and Mr. Sandeep Dhagat authored this e-Module.



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