Proceedings of the Annual Group Meeting
All India Coordinated Research Project on Weed Control

28th Feb. – 1st March, 2011
Anand Agricultural University, Anand (Gujarat)

Date: 28-02-2011

INAUGURAL SESSION

At the outset of the meeting, two minutes silence was observed in the memory of late Dr V.M. Bhan, former Director, DWSR, Jabalpur who passed away on 30 January, 2011.

Dr. S.K. Dixit, Dean, College of Agriculture, AAU, Anand gave the welcome address and briefed about the activities of AICRP-WC at AAU, Anand since its inception. Dr. R.H. Patel, Associate Director of Research, presented the research activities of the university and AICRP-WC at Anand. Dr. Jay G. Varshney, Director, DWSR delivered a key note address. He pointed out that though farmers adopt all the improved practices or quality seeds for better production if weeds are not managed properly, it may still result in 20-30 per cent yield loss. Further, he emphasized over the future challenges such as weed management in rainfed agriculture, growing menace of weedy rice, effect of climate change on crop weed competition, quarantine weeds, management of aquatic weeds, etc. He advised to involve more and more scientists to work on herbicide residue and persistence, nano-herbicides and weed utilization. Dr. R.P. Dubey, Scientist In-Charge, AICRP- WC presented the research highlights of the project during 2010 and the recommendations on weed management by various coordinating centres.

After the presentation, two publications, *viz*., Annual Report of AICRP-WC and report on long term tillage experiments by TNAU, Coimbatore were released by Hon'ble Vice Chancellor, AAU and Dr. Varshney, respectively. Dr. A.M. Shekh, Hon'ble Vice Chancellor delivered the presidential address where he emphasized over the food security and agricultural growth of the country. He added to give more emphasis on using improved agricultural practices for reducing yield loss due to weeds which would support the agriculture growth and ultimately the national food security. He advised to study the anatomy and physiology of weeds and give greater attention on herbicide residues. He suggested to study the variations in control of *Parthenium* by *Zygogramma* beetle under different ecological regions.

At the end, Dr. R.B. Patel, Principal Investigator, Anand Centre proposed vote of thanks.

TECHNICAL SESSION – I

Presentation of salient findings and recommendations of network trials conducted during 2009-10.

Chairman	:	Dr. Jay G. Varshney, Director, DWSR, Jabalpur
Co-Chairman	:	Dr. R. H. Patel, ADR, AAU, Anand
Rapporteurs	:	Dr. Ramesh Babu, UAS, Dharwad Dr. B. Duary, V. B., Sriniketan

Weed survey and surveillance

Dr. J. Deka, AAU, Jorhat presented the salient findings of weed survey and surveillance of different centres. He highlighted weed survey at different centres and presented weed flora of different habitats across the country state wise. Further, he highlighted surveillance and shift of weed flora with probable reasons of shift. *Cuscuta* sp is emerging as a new weed in berseem at Ludhiana. New weeds namely similar to *Solanum carolinense*, *Solanum trilobatum* (Solanaceae), *Cenchrus tribuloides/ biflorus* (Poaceae), *Verbesina encelioides* Cav., *Echinops echinatus* Roxb. (Asteraceae), *Ipomoea hederifolia*, *Ipomoea quamoclit* (Convolvulaceae), *Anoda cristata* (Malvaceae) were noticed on cropped fields and road sides in Southern Karnataka. *Alternanthra triandra* in cropped fields especially direct seeded rice which occupies around 70% area in Chhattisgarh state, has emerged as a new havoc. Another weed invading the non-cropped are is *Malwa pusila* at an alarming rate. In wheat crop, Infestation of dicotyledonous weed *Solanum nigrum* and *Malwa parviflora* was more in wheat fields planted by zero till method and only carfentrazone was found effective to control these weeds in north-eastern Haryana.

The Chairman asked for preparing a status report on the state wise position of *Parthenium* during the last five years. Dr T.V. Ramachandra Prasad and Dr C. Chinnusamy may compile the information by end of March, 2011. Dr J. Deka was asked to prepare a review/research paper on weed shift by end of March, 2011.

Dr. R. Devendra, UAS, Bengaluru presented the salient findings of physiological studies of net work trials.While presenting the data on herbicide resistance, he reported that no resistance has developed against butachlor in *Echinichloa* in the lateritic zone of West Bengal and Faizabad and against azimsulfuron at Tamil Nadu due to continuous use of herbicide. *P. minor* showed cross resistance to other herbicides like clodinafop, fenoxaprop and sulfosulfuron at PAU, Ludhiana and CCSHAU, Hissar.

Propagation potential of perennial weeds like *Cyperus rotundus* was reduced by glyphosate 1.5 kg along with jaggery 2% in different centres. Use of 2,4-D was more efficient in controlling *Cyperus* than glyphosate.

Studies on seed longevity of weeds associated with major cropping systems revealed that annual weeds need targeting of weed seed, whereas, biennials and perennials need targeting of both seedling stage and seed bank for effective management.

Glyphosate can be used as senescence inducing agent to enhance herbicide translocation and chlorophyll fluorescence characteristic can be a good parameter for screening herbicide tolerance.

Bengaluru centre reported lot of variation amongst weed species for the response to CO_2 enrichment. After 15 days of enrichment (up to 600 ppm) studies *Parthenium* showed 200 % enhanced biomass over initial biomass before CO_2 enrichment followed by *Echinochloa colona* (175 %) and *Ageratum conyzoides* (155%) responded more compared to *C. rotundus*.

The presence of weedy rice as reported by the centres like TNAU, Coimbatore, NDUAT, Faizabad; KAU, Thrissur and VB, Sriniketan was also highlighted.

Discussion

Dr Jay G. Varshney, suggested that the physiological aspects of weed management like herbicide resistance, biology of weedy rice and *Echinochloa* should be carried out by all the physiologists. The Chairman formed a committee under the Chairmanship of Dr S.S. Tomar (RVSKVV) with Dr V.P. Singh (GBPUAT), Dr S.S. Punia (CCSHAU), Dr Jaidev Sharma (NDUAT), Dr M.S. Bhullar (PAU) as members to formulate strategy for management of herbicides resistance. The committee was asked to submit the report within 15 April, 2011.

Weed management in crops and cropping systems

Dr N. N. Angiras, CSKHPKV, Palampur presented the studies on Effect of time of sowing and weed control methods in direct seeded rice. Irrespective of sowing time, management of weeds by butachlor 1.5 kg/ha fb one hand weeding was economically effective to get higher productivity of direct seeded rice.

The experiment on effect of weed management practices under different rice establishment techniques showed that the SRI integration with pyrazosulfuron-ethyl at 30 g/ha (pre.) / pretilachlor 0.75 kg/ha fb. mechanical weeding/hand weeding is effective to increase productivity of rice by effective management of weeds. Studies on efficacy of herbicides for controlling weeds in DSR revealed that fenoxaprop + Almix, cyhalofop + Almix and Bispyribac Na were quite effective. Pinoxaden in combination with broadleaf killer like carfentrazone was effective against complex weed flora in wheat.

Dr. R. R. Upasani, BAU, Ranchi presented the integration of atrazine with mechanical weeding was effective in managing the weeds in maize. Oxyfluorfen showed phytotoxicity in maize at UAS, Dharwad. In sugarcane ratoon, integration of metribuzin at 2 DAP with hand weeding and application of 2,4-D at 90 DAP produced higher millable cane yield and net return. In integrated weed management studies on autumn planted sugarcane intercropping systems, intercropping of wheat with sugarcane, use of pinoxaden with met sulfuron-methyl produced significantly higher cane yield by effective control of weeds.

Dr. C. Chinnusamy, TNAU, Coimbatore presented the highlights of long term tillage and herbicidal trials in different cropping systems. In general zero/conventional tillage was found to give equal or better yield compared to conventional tillage in initial years. However, in subsequent years the conventional tillage was found better. There was some shift in weed flora favouring perennial weeds in reduced tillage situation. There was no adverse effect on soil microflora. The bulk density and organic matter content of the soil was found to be favourably influenced by zero tillage-conventional tillage.

In long-term herbicidal trials conducted at all the coordinating centres in different cropping systems showed that none of the herbicides used for long time has resulted in build up of herbicide residues in soil or crop produce. There was no adverse effect on soil microflora. Application of FYM had favourable effects on crop yield and some microflora.

Discussion

Dr Varshney requested Dr Chinnusamy to prepare a research paper on weed shift under long term tillage experiments. It was further decided that research papers on long term herbicides trials may be prepared by the following scientists within 30 April, 2011.

Scientist	Cropping system
Dr TV Ramachandra Prasad, UAS, Bengaluru	Groundnut based
Dr C.T. Abraham, KAU, Thrissur	Rice-rice
Dr C. Chinnusamy, TNAU, Coimbatore	Maize based
Dr M. madhavi, ANGRAU, Hyderabad	Rice-maize
Dr B. Duary, V.B., Sriniketan	Rice-mustard
Dr A.P. Singh, IGKV, Raipur	Rice-chickpea
Dr M.S. Bhullar, PAU, Ludhiana	Rice-groundnut
Dr S.S. Tomar, RVSKVV, Gwalior	Pearlmillet-wheat

- It was also decided that during coming years more emphasis on management of parasitic weeds i.e. *Orobanchae* at Hissar and Bikaner, *Cuscuta* and *Striga* at Dharwad, *Cuscuta* and *Orobanchae* at Hyderabad.

- AAU, Jorhat and KAU, Thrissur centres may give more emphasis on managing aquatic weeds.

Dr. V. P. Singh from GBPUAT, Pantnagar presented the salient findings of long term herbicide trial on weed management in rice-chickpea, rice-wheat, and maize-chickpea/lentil/pea cropping system. In rice-chickpea cropping system butachlor 1.5 kg/ha + 1 HW produced higher grain yield of rice. In rice –wheat cropping system grain yield of rice was higher in mechanical weeding at Pantnagar and RAU(P) both of which were at par with butachlor 1.5 kg/ha whereas, at AAU(J) butachlor 1.5 kg/ha and pretilachlor 0.75 kg/ha increased in rice yield as compared to mechanical weeding. In maize-chickpea/lentil/pea cropping system atrazine 0.75 kg/ha (PE) fb one HW or atrazine 0.75 kg/ha (PE) fb 2,4-D 0.5 kg/ha recorded the minimum weed density and higher grain yield of maize.

Management of parasitic/invasive/problematic/ aquatic weeds

Dr. T. V. Ramachandra Prasad while presenting the findings of management of *Cuscuta* sp in crops reported that in lucerne and niger, pendimethalin 1.0 kg/ha (pre-em), SSB + pendimethalin 0.5 kg/ha (post-em, 20 DAS) or imazethapyr 75 g/ha as PPI were effective and increased the yield substantially. In onion, use of pendimethalin 1.0 kg/ha as pre-emergence and stale seed bed technique followed by pendimethalin 0.5 kg/ha as PE lowered the incidence of *Cuscuta chinensis.*

Use of PE herbicides – oxyfluorfen 0.1 kg/ha pendimethalin 1.0 kg/ha and metribuzin 0.5 kg/ha delayed the emergence of *Orobanche* In tomato, potato and brinjal and improved the yields considerably. Use of glyphosate 0.1 to 0.2% in potato at 50-55 DAP improved the control of *Orobanche*. In tobacco, use of imazethapyr 30 g/ha at 55 DAT or plant hole application of neem cake at 200 kg/ha at planting lowered the menace of *Orobanche.* In mustard to lower the density of *Orobanche,* neem cake 200 kg/ha + pendimethalin 0.5 kg/ha pre-em fb hand weeding 60 DAS at Bikaner and use of neem or

castor cake (400kg/ha in furrows at sowing) + direct application of glyphosate 50 g/ha +1% ammonium sulfate at 60 DAS at Hissar appeared good for lowering the emergence of *Orobanche* in mustard, besides providing higher yields.

In sugarcane, spraying of 2,4-D Na salt at 1.0 kg/ha + urea 1.0% + soap solution 1% on 70-75 days after planting and use of atrazine 1.0 kg/ha as PE + mulching crop residues at 120 DAP after final inter cultivation gave good control of *Striga* and gave higher cane yield.

The infestation of *Dendrophthoe* ranged from 5 to 60% depending on the agro-ecological situations and habitat across India. Mango, Neem, *Dalbergia sissoo/latifolia,* Mahua, Jack and other trees are infested heavily in many situations. Spraying of ethrel 12 to 16 ml/lit of water + 2% ammonium sulfate caused defoliation of *Dendrophthoe* leaves.

Herbicide testing, leaching behaviour, persistence, residues and toxicity

Chairman	**:**	Dr. Jay G. Varshney, Director, DWSR, Jabalpur
Co-chairman	**:**	Dr. N.N. Angiras, CSKHPKV, Palampur
Rapporteurs	**:**	Dr P.P. Choudhary, DWSR, Jabalpur Dr. N.S. Jadhav, MAU, Parbhani

Studies on herbicide residue in food chain, soil and ground water and studies on herbicide persistence in water were presented by Dr. PP Choudhury.

Herbicides, namely isoproturon, pendimethalin, sulfosulfuron, trifluralin, 2,4-D, Almix, cyhalofop-butyl, pyrazosulfuron, pretilachlor, butachlor, oxyfluorfen, glyphosate etc. were treated for their residues in soil and crop plants. Excepting pendimethalin and atrazine, all other herbicides were found below detectable limit in soil and crop at harvest.

It was found that concentration of paraquat achieved on water hyacinth comes below detectable limit within 15-30 days depending on the physico-chemical properties of water. Similarly, 2,4-D achieved on water hyacinth comes below detectable limit within 25 DAS. No fish mortality was found. Both the herbicides do not impart any significant change in pH and EC of water.

Dr. R.B. Patel presented the findings under leaching behavior of herbicides in different soils, persistence of herbicides in soils and crop produce at farmers' fields, studies on secondary metabolites of herbicides, adsorption-dissipation behavior of herbicides.

Most of the herbicides were retained in the upper soil layer and leached maximum upto 15 cm depth except oxyfluorfen, azimsulfuron and pretilachlor which moved upto 40-60 cm. More over, no herbicide residues detected in leachate which indicated no contamination of applied herbicides in ground water as well as lower depth of soil except 2,4-D and oxyfluorfen.

Herbicides (isoproturom, pretilachlor, clodinafop and azimsulfuron) used in farmers' fields did not leave residues in crop produces above MRL and remained below detectable limit in soil at harvest. Residues of pendimethalin, butachlor, PSE and atrazin were found in soil at harvest.

Ethofumesate fortified in the soil sample degraded in two metabolites *viz*. hydroxyl-ethofumesate and oxy- ethofumesate.

Adsorption isotherm for metamitron in all the soils are 'S' type. The isotherm expressed an increasing trend in the adsorbed content Cs (mg/kg) with respect to increase in the equilibrium concentration of metamitron Ce (mg/l) in solution. Amount of adsorbed metamitron desorbed from soil is in the range of 0.59 to 3.24 % at different concentration of metamitron applied in the organic soil.

Discussion

- Dr. Jay G. Varshney, suggested that herbicides under trial in AICRP-WC project should only be tested for fate and persistence studies.

- Dr Varshney remarked that all the centres who have HPLC/GLC facilities for residue estimation should not report the bioassay data.

Transfer of technology

Chairman	**:**	Dr Jeyaraman, Director, Directorate of Crop Management, TNAU, Coimbatore
Co-chairman	**:**	Dr T.V. Ramachandra Prasad, UAS, Bengaluru
Rapporteurs	**:**	Dr. A.P. Singh, IGKV, Raipur Dr. J. Deka, AAU, Jorhat

The session started with the presentation by Dr. Sushilkumar, DWSR, Jabalpur on Parthenium management by *Zygogramma* beetles. Varying success of control of Parthenium was reported from different centers. Higher success was achieved at UAS (Dharwad), PAU (ludhiana), MAU (Parbhani), TNAU (Coimbatore), CSAUAT (Kanpur), CSKHPKVV (Palampur), GBPUAT (Pantnagar), NDUAT (Faizabad) and UAS (Bangalore) with good establishment of the beetle and self reoccurrence. But poor establishment and population build up was reported by AAU (Anand), RVSKVV (Gwalior), RAU (Bikaner), DBSKVV (Dapoli), CCSHAU (Hisar) and VB (Sriniketan). In general, there was no establishment of the beetle in the high rainfall areas. But reasons should be investigated as to why the beetle is not establishing in some suitable areas.

With regards to the trial on management of water hyacinth by *Neochetina bruchi* / *eichhorniae*, he informed the house that it could not be initiated during the last year in most of the centers due to existing population of the weevil, while at Hisar and Bhubaneswar weevils were released and population build up is in progress. A new strategy is to be formulated in respect of this trial.

Dr. S.S.Tomar, RVSKVV, Gwalior presented the data on yield loss estimation carried out by various centers. The highest and lowest yield loss due to weeds was 41.5% and 9.4%, respectively. The unavailability of labourers and inputs in time were reported to be main constraints of non-adoption of recommended technology. But wherever technology has been adopted, farmers were satisfied partially to fully. Major sources of information of weed management technology were cited as SAU/extension agencies, Govt. Agriculture Dept. and Input dealers.

The results of On Farm Trial and Impact Analysis of weed management were presented by Dr B. Duary, VB, Sriniketan. A total of 295 on farm trials were conducted by the cooperating centers on various crops. He suggested that on farm trials should be conducted as per guidelines prepared and supplied, the number of treatments in OFT should be restricted to 3 or at the most 4, different trade products of same herbicide should not be compared, the format should be rectified while calculating the yield and income in OFT,

The data on impact analysis encompassed the cropping systems - Rice based, Maize based, Soybean based, Banana based, Sorghum based and Groundnut based. Adoption level of herbicide varied from 5 to 100%. Reasons for non adoption of technology were given as economic condition (50% farmers), resource (25% farmers) and technical (25% farmers).

Dr. P.K.Singh, DWSR, Jabalpur presented the results of Frontline Demonstrations of 8 cooperating centers. The house decided that benefit: cost ratio should be given as well as farmers' practice should be specified.

Discussion

The house opined that meaningful data is not being generated from this exercise of yield loss estimation. Henceforth, the work can be stopped and it will be replaced by undertaking Frontline Demonstrations. The protocol will be framed at DWSR, Jabalpur and circulated to all centers. The number of demonstrations may range from 10 to 15 with Rs. 2000/- each for demonstrations. Dr P.K. Singh, DWSR will submit the protocol for conducting FLDs and also coordinate the FLDs at different centres. It was also decided that from now onwards DWSR, Jabalpur (Dr P.K. Singh) will carry out the work of impact analysis.

TECHNICAL SESSION – II

Discussion on revalidation of herbicide recommendations, guidelines for herbicide testing and interaction with herbicide Industry

Chairman	:	Dr. Jay G. Varshney, Director, DWSR, Jabalpur
Rapporteurs	:	Dr Anil Dixit, DWSR, Jabalpur Dr S.S. Punia, CCSHAU, Hisar

At the outset, Dr. Varshney invited people working in herbicide industry to highlight about the herbicide research being carried out and new herbicide molecule in the pipeline having good efficacy against weeds in different crops. Mr. Suresh from Monsanto, Mr.Ram Ratan Sharma from UPL, Mr. Pankaj from DuPont, Mr. Rakesh from Dhanuka and Mr. B.K. Patel from Rallis informed to the house about salient features of herbicides in pipeline and their work plan for future course of action.

To know the status of herbicide efficacy against *Phalaris minor* in Haryana and Punjab states a survey team consisted of Dr. S.S. Tomar, RVSKVV, Gwalior, Dr. S.S. Punia, CCSHAU, Dr. J.D. Sharma, NDUAT, Faizabad, Dr. V.P. Singh, GBPUAT, Pantnagar and Dr, M.S. Bhullar, PAU Ludhiana and visited at farmers field, interacted with extension officials , herbicide dealers. Dr. S.S. Punia, Sr. Agronomist (Weed control), CCS HAU, Hissar and Dr. M. S. Bhullar, Agronomist (weed control) from PAU, Ludhiana

presented a survey report on status of herbicide efficacy against *Phalaris minor* in wheat in Haryana and Punjab states, respectively.

Dr. Punia and Dr. Bhullar presented that efficacy of alternate herbicides particularly clodinafop and fenoxaprop has decreased against *Phalaris minor* and apprehended the possibility of development of resistance. Regeneration of sulfosulfuron was also observed at recommended dose. Some herbicides like sulfosulfuron + metsulfuron (RM), Meso + Ido (RM) performed very well in condition where double the recommended dose of clodinafop is not performing well.

Survey team also visited to the trials of new herbicide being conducted by CCSHAU, Hisar, PAU, Ludhiana and also at farmer's field conducted by industry at Haryana and Punjab. The team were very much impressed to see the performance of efficacy of promising herbicides *viz* . fenoxaprop + metribuzin (RM) from Bayer and UPH -110 from United Phosphorus Ltd, against resistance *Phalaris minor* in wheat.

Members of survey committee put their view that efforts should be made to early availability of these herbicides (UPH- 110 and Fenox + Metri) to the wheat farmers for control of clodinafop and sulfosulfuron resistance *Phalaris minor*.

Discussion

- Dr. Jay G. Varshney informed the house that a systematic study will be conducted to know about control measure and nature of resistance in *Phalaris minor* against these herbicides. The DWSR will issue necessary directives on this very soon.

- Regarding guidelines prescribed by ICAR for herbicide testing, Dr. Anil Dixit highlighted the contents of the letter before the house. Chairman advised to the house for strict compliance in the matter. Regarding revalidation of herbicide recommendations, there is a need to retest the molecules/herbicides by the entire manufacturer to review the herbicide recommendations in different crops.

Date: 01.03.2011

TECHNICAL SESSION – III

Presentation of research highlights (Station trials) by coordinating centres/ volunteer centres

Chairman	:	Dr. Jay G. Varshney, Director, DWSR, Jabalpur
Co-chairman	:	Dr. SS Tomar, RVSKVV, Gwalior
Rapporteurs	:	Dr VP Singh, DWSR, Jabalpur Dr. Sushilkumar, DWSR, Jabalpur

In this session, six presentations were made by the volunteer centres. First presentation was made by Dr. AK Singh of DMR, New Delhi on Integrated weed management in maize under different cropping systems conducted at different locations like Kashmir Valley, Udhampur, Pantnagar, Arbabhi, Banswara and New Delhi. He reported that growing of cover crops (cowpea and green gram) with maize provided excellent control of weeds in maize at Banswara and New Delhi. Moreover, application of atrazine 0.5 kg/ha followed by 2,4-D at 0.4 kg/ha as PO (25 DAS) or atrazine PE fb atrazine PO were

found effective in managing the weeds. Dr Singh has been advised to recheck the technical programme taken up by their few cooperating centres.

Dr. Raj Singh, CAZRI, Jodhpur briefed about the agro-climatic situations and problems and characteristics of arid zone weeds. Then he presented the findings of weed management in cumin and concluded that fluchloralin 0.5 kg/ha + one hand weeding at 25 DAS gave highest net return and seed yield of cumin. He also reported that *Chenopodium murale* is most dominating weed in the region and 20-35 days after sowing is the critical period for crop-weed competition in cumin. He also discussed in house regarding the technical programme of future experiment on weed management in pearl millet based cropping system and requested the house to suggest the herbicides for the same.

Research highlights of volunteer centre at Agra was presented by Dr. HB Sharma. He evaluated different herbicides with and without surfactants against weeds in wheat and concluded that pinoxaden 40 g/ha followed by carfentrazone 25 g/ha or vise-versa with 1% ammonium sulfate gave the effective control of weeds. He also presented the findings of effect of maize based cropping system on weed dynamics, soil health and productivity. He concluded that maize-wheat cropping system followed by maize-potato-greengram/ blackgram with recommended weed control practices gave highest net return and B:C ratio.

Dr. V. M. Bhale from Akola presented the highlights of station trial and reported that maize-potato with recommended practice of weed control gave significantly higher yield, net return and B:C ratio. He also presented the results of the experiment on weed management in maize-chickpea system.

Dr Anil Kumar presented the highlights of trials conducted at SKUAST, Jammu. He reported that in maize-wheat cropping system, the application of metribuzin in wheat and atrazine in maize was found safe and effective for better weed control. Whereas, in rice-wheat system, butachlor application in rice and isoproturon in wheat may serve the purpose of weed control in the region. He also briefed the highlights of parthenium awareness week, status of parthenium and weedy rice in the region.

Dr. R. Balasubramaniuam from TNAU, Madurai reported that fenoxaprop 60 g/ha+ (Metsulfuron+Chlorimuron 20 g/ha) was quite effective followed by bispyribac sodium and ethoxysuilfuron in direct seeded aerobic rice. He informed to the house that among all herbicides under study oxyfluorfen has shown some phyto-toxicity on rice. He also reported that atrazine 1 kg/ha + one mechanical weeding 30 DAS fb ametryn or oxyfluorfen gave the highest weed control efficiency in maize.

All the coordinating centres also conducted the station trials in addition to their network/ coordinating trials to address the location specific weed problems. Chairman of the session requested to all the centres to present only worthwhile findings/ new accomplishments which have not been covered in earlier presentations.

PLENARY SESSION

Chairman	:	Dr A.R. Pathak, Vice Chancellor, NAU, Navsari
Co-Chairman	:	Dr A.M. Shekh, Vice Chancellor, AAU, Anand Dr Jay G. Varshney, Director, DWSR, Jabalpr
Rapporteurs	:	Dr C. Chinnusamy, TNAU, Coimbatore Dr R.P. Dubey, DWSR, Jabalpur

Rapporteurs of different technical sessions presented the summary/recommendations and research highlights.

Dr Jay G. Varshney in his remarks emphasized on creating better facilities as centre of excellence in residues studies. He emphasized on weed management studies in rain fed agro-ecosystems and weedy rice.

Dr A.M. Shekh remarked that weed control recommendations should be standardized as per local conditions. There is a need for mass production of Mexican beetle, he added. He also emphasized to survey the weeds of medicinal value.

Dr A.R. Pathak appreciated the efforts made by AICRP- Weed Control in bringing out the recommendations on weed management across the country. However, he felt that there is still scope to strengthen the transfer of technologies on weed management at farmer's field. He also stressed upon the need to explore the medicinal properties of weeds.

Dr N.N. Angiras, Principal Investigator, CSKHPKV, Palampur and Dr H.B. Sharma, Principal Investigator, RBS College, Bichpuri, Agra were given warm farewell upon their superannuation.

At the end of the session Dr R.P. Dubey, DWSR, Jabalpur proposed vote of thanks.

Recommendations

Administrative

1. It was emphasized upon the coordinating centres that in spite of repeated letters to SAU,s, the position of scientists are not filled up. If they are not filled up by 31 March, 2011, that should be treated as withdrawn.

2. Coordinating Centres must submit the annual reports to Coordinating Unit DWSR within the stipulated period.

3. It was decided that in XII plan proposal, provision of a Jr. Agronomist should be made at all the Coordinating centres.

4. All the Coordinating Centres are required to follow the guidelines issued by ICAR on herbicide testing.

Technical

1. More emphasis in XII Plan needs to be given on weed management in rainfed agriculture, growing menace of weedy rice, effect of climate change on crop weed competition, quarantine weeds, management of aquatic and parasitic weeds, herbicide residue and persistence, nano-herbicides and weed utilization.

2. A committee was constituted under the Chairmanship of Dr S.S. Tomar (RVSKVV) with Dr V.P. Singh (GBPUAT), Dr S.S. Punia (CCSHAU), Dr Jaidev

Sharma (NDUAT), Dr M.S. Bhullar (PAU) as members to formulate and suggest the strategy for management of herbicides resistance.

3. It was decided that under herbicide residue studies, herbicides under trial in AICRP-WC project should only be tested for fate and persistence studies.

4. All the centres who have HPLC/GLC facilities for residue estimation should not report the bioassay data.

5. Frontline demonstrations on proven weed management technologies are to be conducted by all the Coordinating Centres.

6. There is a need for mass production of Mexican beetle for controlling of *Parthenium*.

7. There is need to explore the medicinal properties of weeds.

The technical programme of the project was not discussed as it was finalized for 2010-11 and 2011-12 in the biennial workshop held at IGKV, Raipur during Feb, 2010.

ANNUAL GROUP MEETING
OF
ALL INDIA COORDINATED RESEARCH PROJECT ON WEED CONTROL

Venue : **Anand Agricultural University, Anand (Gujarat)**

Date : **28th Feb. – 1st March, 2011**

LIST OF PARTICIPANTS

DIRECTORATE OF WEED SCIENCE RESEARCH, JABALPUR

1.	Dr. Jay G. Varshney	Director
2.	Dr. V.P. Singh	Pr. Scientist (Agronomy)
3.	Dr. Anil Dixit	Pr. Scientist (Agronomy)
4.	Dr. R. P. Dubey	Sr. Scientist (Agronomy)
5.	Dr. Sushil Kumar	Pr. Scientist (Entomology)
6.	Dr. P.K. Singh	Pr. Scientist (Entomology)
7.	Dr. P.P. Choudhary	Sr. Scientist (Agril. Extension)

INVITEES FROM AICRP-WC CENTRES

8. Dr. T.V. Ramchandra Prasad,
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