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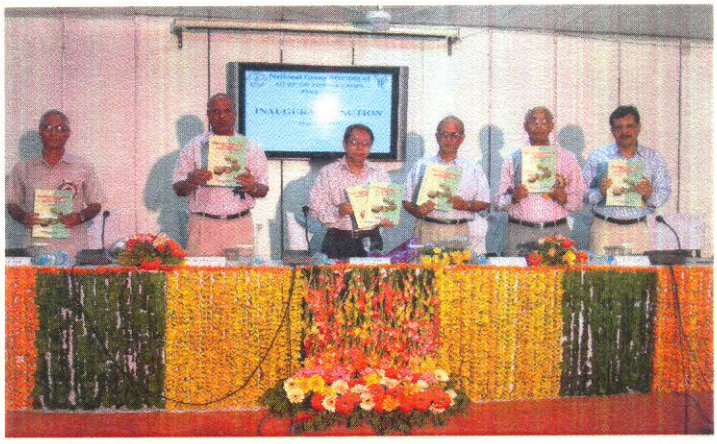
ALL INDIA COORDINATED RESEARCH PROJECT
ON
FORAGE CROPS
(Indian Council of Agricultural Research)



Proceedings of the National Group Meeting- Kharif
held at
GBPUA&T, Pantnagar
during
May 21-23, 2010

Project Coordinating Unit
AICRP on Forage Crops,
IGFRI, Jhansi– 284 003 (U.P.)

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AICRP ON FORAGE CROPS
Tech. Pub. Number – 2-a/2010

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This document is meant for official use only of the AICRP (FC) Centres, Coordinating Unit and ICAR Headquarters and Forage Scientists.

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July 2010

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PREFACE

The National Group Meet, Kharif 2010 of All India Coordinated Research Project on Forage Crops was organized with the objective to review the accomplishments of Technical Programme executed during Kharif 2009 at different centres and also to formulate Technical Programme for Kharif 2010 as well as to suggest future thrust areas. The meeting was jointly organized by Indian Council of Agricultural Research and GBPUAT, Pantnagar, during 21-23, May, 2010.

The meeting was attended by the scientists mainly engaged in forage research working under coordinating and collaborating centres located at different SAUs, ICAR Institutes and NGOs Besides this the local participation included faculty from GBPUAT, Pantnagar, Scientists from RRS & KVK's, officials from Department of Animal Husbandry, National Dairy Development Board, State Seed Corporation, Seed Certification Agency, Dairy Federation, representatives from Agro Industries and farmers of the region.

This compilation contains brief report of National Group Meet, Kharif 2010 covering highlights on forage production and protection technology generated, Proceedings of different technical sessions and next Kharif season programme. The deliberations and discussions on the various aspects of forage improvement have added new area (s) of future research for addressing of national and regional problems pertaining to forages. The finalized technical programme on forage crop improvement, forage crop production and forage crop protection for the Kharif 2010 have been given in annexure(s).

The successful conductance of programme is attributed to joint efforts made by the participating scientists, authorities of GBPUAT, IGFRI and ICAR, the core staff of Project Coordinating Unit, Principal Investigators and other staff. The team of All India Coordinated Research Project on Forage Crops sincerely acknowledges for their all technical and organizational assistance and cooperation.

S A Faruqui
Project Coordinator (Forage Crops)

INAUGURAL SESSION

The inaugural session of the National Group Meet, *Kharif* 2010 of AICRP on Forage Crops was organized at GBPUAT, Pantnagar (Uttrakhand) during 21-23, May, 2010. The meeting was inaugurated by Dr. B.S. Bisht, Hon'ble Vice-Chancellor, GBPUAT, Pantnagar, who chaired the function. The other dignitaries on the dais included Dr. J.P. Tiwari, Dean Agriculture, GBPUAT, Pantnagar, Dr. S.K. Saini, Director Research, GBPUAT, Pantnagar. Dr. S.K. Saini, Director of Research, GBPUAT, Pantnagar extended welcome to the Chief Guest, dignitaries, participating scientists and team of NGM organizers, University staff, representatives of press and media, NGO's and farmers of the region.

Dr. S. A. Faruqui, Project Coordinator (Forage Crops) presented the Coordinator's Report for *Kharif* 2010. He highlighted the progress of research activities and the targets achieved as per the Technical Programme under the project. During *Kharif* 2009, the research programmes were conducted at 35 centres located in five zones i.e., Hill, North-West, North-East, Central and South zone, on aspects of forage crop improvement, crop production and plant protection. In Kharif 2009, seventeen breeding trials of four annuals and five perennial forage species comprising 93 entries alongwith their respective checks were conducted at 32 centres located in five zones. The forage species evaluated were Pearl millet, Cowpea, Rice-bean and Soybean in annuals and Guinea grass, *Cenchrus ciliaris*, Napier Bajra hybrid, *Stylosanthes seabrana* and Setaria *ancep* in perennials. Eight forage crop production trials at 25 locations were undertaken to generate forage production technologies. Forage crop protection trials included disease and pest occurrence, evaluation of varietal resistance and pest management and were conducted at Anand, Bhubneswar, Hisar, Hyderabad, Jhansi, Ludhiana, Palampur and Rahuri. For monitoring the disease, insect pests and nematodes four cultivated forage crops Sorghum, Pearl millet, Maize and Cowpea were screened for the occurrence and abundance of disease and pest in relation to weather parameters. Dr. J.P. Tiwari, Dean Agriculture, GBPUAT, Pantnagar, also gave his remarks, emphasizing need to increase higher forage biomass production per unit area-unit time for economic milk production.

Dr. B.S. Bisht , Vice chancellor, GBPUAT, Pantnagar emphasized that increase in green fodder production is must for increase in milk production. The fodder production can be increased by using good quality seeds hence research should be focused on improving genetic potential of fodder species with aim to develop short duration biotic and abiotic resistant varieties. He also pointed to work for rain fed areas, problem soils and degraded lands.

The inaugural function ended with vote of thanks by Dr. Y.P. Joshi, OIC, AICRPFC, GBPUAT centre to the dignitaries and participants for their valuable presence in inaugural session. He also extended gratitude to the faculty members and staff of GBPUAT, Pantnagar for their support in organization of National Group Meet of AICRP on Forage Crops.

Highlights: Technology Generated

A. Forage Production Technology:

- In Napier *Bajra* hybrid, application of 75% recommended N + *Azospirillum*+ *Azotobacter* produced higher fodder yields (472.32 q/ha green and 97.54 dry q/ha) with net return of Rs. 35,605/ha. This treatment was followed by 100% recommended N i.e. 90 kg N/ha (433.14 q/ha green and 88.31q/ha dry fodder and net return Rs. 31,282/ha) and 75% recommended N + *Azospirillum* (425.98 q/ha green and 97.54 q/ha dry fodder and net return of Rs 31,287/ha).

B. Forage Protection Technology:

- seed treatment with *Trichoderma viride* @ 5 g/kg seed +FYM @ 4t/ha followed by foliar spray of NSKE@ 3% at 30 and 40 days after sowing increased cowpea green forage Yield by 32.28 per cent over untreated control with minimum pests and diseases incidence.

TECHNICAL SESSION- I

Review of Research Activities

(Centre wise Presentation)

Chairman : Dr. S.A. Faruqui, PC, AICRP-FC
Vice Chairman : Dr. R.V. Kumar, PI, Plant Breeding
Rapporteurs : Dr. J.K. Bisht & Dr. S.K. Bilaiya

The Session started with introductory remarks of the Chairman. He advised that the respective centers should come out with the salient achievements. After this, PC discussed about the Fodder Technology Demonstrations (FTDs) by different coordinated centers. Finalization of FTDs was been done with consultation of all the centers and accordingly it was allotted. It was decided that all the centers will take-up the FTDs for newly released varieties which were identified for the region. It was emphasized to associate all the Scientists and the technical staff for conducting the FTDs. That will give good exposure and feed back to the issues related to their respective disciplines. Guide lines issued for conducting FTDs should be strictly followed. Data shall be recorded properly for these FTDs. After this center wise presentation was held.

- Palampur center has a good collection of Setaria grass. Out of which two (S-20 & S-21) were found frost tolerant and 9 were having low oxalate content. Srinagar center had collected maize germplasm from different locations.
- Ludhiana & Hisar centers are having good collection of bajra. Ludhiana has released multicut downy mildew tolerant variety PHBF-1 from SVRC.
- Bikaner center is having good number of *Lasiurus sindicus* germplasm.
- Pantnagar has released UPC-621 variety of cowpea from SVRC during last year. Apart from this they are working on triple purpose variety of cowpea.

- In Eastern region Faizabad center highlighted the characters of promising bajra variety and has released NDFB-2 from SVRC.
- Good numbers of rice bean and maize germplasm are being maintained at Kalyani.
- Ranchi center has worked on development of forage maize and got 20 new forage entries from NBPGR.
- A rice bean variety Shyamalee was developed by Jorhat and recommended for cultivation in Assam.
- Jabalpur center has released Oat variety JO 2003-91 from CVRC for Central region.
- Emphasis on heterosis breeding programme has been highlighted by Anand center.
- In Rahuri, two independent population improvement programme have been initiated for maize using African tall, J-1006 and different male parents.
- Urulikanchan center has participated in special breeding programme for maize and pearl millet.
- Nine hundred five samples of different crops have been analyzed for different quality parameter by Hyderabad center.
- Mandya center has developed forage legumes based cropping in coconut gardens.
- Three varieties i.e. Harithasree in guinea grass, Suguna and Supriya in Hybrid Napier were released through SVRC by Vellayani for Southern region of Kerala.
- Coimbatore centre had a good programme of forages and they are providing off season nursery for cowpea. Working as a lead centre in bajra napier hybrid and national breeding programme.

The session was concluded with the thanks to Chair.

TECHNICAL SESSION- II

FORAGE CROP IMPROVEMENT

Convener : Dr. R.V. Kumar, PS and PI (Plant Breeding)
Rapporteurs : Dr. D.K. De and Dr. D.I. Sumabai

The session started with introductory remarks by Dr. R.V. Kumar, Principal Scientist and Principal Investigator (Plant Breeding). Dr. Kumar highlighted the results of 17 breeding trials conducted during Kharif-2009 on four annuals namely Pearl millet, Cowpea, Ricebean and Soybean and five perennials namely Guinea grass, *Cenchus ciliaris*, Napier Bajra hybrid, *Stylosanthes seabrana* and *Setaria ancep*. However, two trials in perennials i.e. one on *Cenchrus ciliaris* and the other on *Stylosanthes seabrana* have completed their fourth and final year of evaluation.

- In Pearl Millet AVT-1, five entries namely NDFB-11, NDFB-13, AFB-3, AFB-4 and JHPM-08-1 were promoted to AVTPM-2 for further evaluation. The same entries will be evaluated in AVTPM-2 (Seed).
- In IVT Pearl Millet , due to lack of sufficient number of superior entries, the trial AVTPM-1 could not be formulated and postponed till next year.
- In case of Cowpea, three entries namely MFC-14, IL-1177 and RR-3 were identified from IVTC on the basis of superiority for testing in AVTC-1.
- In Ricebean AVT-1, all the entries exhibited significant superiority for one or the other character over the check variety. Therefore all the three entries were promoted to AVTR-2 and AVTR-2 (Seed).
- In case of Soybean IVT, four entries were promoted to AVT-1 on the basis of superiority.
- However due to lack of sufficient number of superior entries, formulation of AVT-2 and AVT-2 (Seed) could not take place in Soybean and Cowpea.
- All the perennial trials *viz.*, VTGG- 2009, VT GG –2008, ,VT GG –2007, VTCC - 2008, VT N x B hybrid and VT Setaria-2008 will be continued for evaluation in Kharif-2010.
- Six new trials one each in Fodder Maize, Fodder Pearl Millet, Cowpea, Rice-bean, Sewan Grass (*Lasiurus sindicus*) and *Cenchrus citigerus* have been formulated.

The meeting ended with vote of thanks to the Chair.

TECHNICAL SESSION- II (CONCURRENT)
FORAGE CROP PRODUCTION

Convener : Dr. U.S. Tiwana, Sr. Agronomist, PAU, Ludhiana
Rapporteurs : Dr. N.S. Yadava and Dr. S. Karmakar

The session was chaired by Dr. U.S. Tiwana and supported by Dr. Naveen Kumar, Sr. Agronomist. Dr. Sunil Kumar, Former P.I. (Crop Production) also attended the session as special invitee. Dr. Tiwana welcomed all the Agronomists, Soil Scientists and Biochemist. In the inaugural remarks, Dr. Tiwana discussed the ongoing programme in detail and invited views of all the colleagues and particularly the Scientists to whom zone-wise responsibility for finalization of technical programme was assigned by Project Coordinator. Dr. Sunil Kumar in his remarks briefed about research priorities and actively participated in the discussions for the formulation of technical programme.

Dr. S.A. Faruqui, Project Coordinator also joined the session and provided valuable suggestions for improvement of Forage Agronomy programme. Dr. Faruqui emphasized for contingent crop planning under rainfed conditions. He advised to start with exploratory trials in relation to aberrant weather conditions, so that new proposal can be formulated from the next season at all the locations.

Recommendations:

One experiment was concluded and following recommendation emerged out :–

- In Napier *Bajra* hybrid, application of 75% recommended N + *Azospirillum*+ *Azotobacter* produced higher fodder yields (472.32 q/ha green and 97.54 dry q/ha) with net return of Rs. 35,605/ha. This treatment was followed by 100% recommended N i.e. 90 kg N/ha (433.14 q/ha green and 88.31q/ha dry fodder and net return Rs. 31,282/ha) and 75% recommended N + *Azospirillum* (425.98 q/ha green and 97.54 q/ha dry fodder and net return of Rs 31,287/ha).

Following new experiments were finalized to be conducted from *kharif* 2010.

A. Coordinated:

- Forage production potential of Sorghum hybrid with forage legumes under varying seed rates of intercrop – For Hill and NW Zone.
- Performance of forage crops raised through sewage water under varied nutrient levels - For South Zone.
- Effect of tillage and nutrient management in oat on the productivity and economics of rice – oat cropping system - For NE Zone.

B. Location specific:

- Banana based fodder intercropping in the homesteads of Kerala.- Vellayani
- Chemical control of *Acrachne racemosa* weed in sorghum fodder.- Ludhiana
- Effect of irrigation and nitrogen levels on fodder production of perennial sorghum.- Bikaner

C. AVT II based: Entries x nutrient levels

Pearlmillet, Setaria and ricebean

The session ended with thanks to the convener and participants.

TECHNICAL SESSION- II (CONCURRENT)

FORAGE CROP PROTECTION

Chairman : Dr. S.A. Faruqui. PC(FC)
Convener : Dr. Ch. Chiranjeevi,
Rapporteurs : Dr. D.K. Banyal and Dr. A.B. Tambe

Crop Protection scientists of the forage group discussed in detail the result of the last Kharif season along with the on going technical program. Scientist of the group appraised the chairman regarding the results of the last kharif season along with the technical programme. The chairman appreciated the work done by this small group and gave valuable suggestions. Based on the discussion and advices of the chairman the following recommendations emerged.

- The trial PPT-1,2,7,8 and 9 (2^{nd}/3^{rd} year) will continue in Kharif 2010. The varietal evaluation against disease and pests should be done in sick plots where ever available.
- The PPT-II entitled Biointensive pests and disease mamagement in cowpea has been completed after three years and best treatment was validate for one year in the farmers field. The best treatment i.e. seed treatment with *Trichoderma viride* @ 5 g/kg seed +FYM @ 4t/ha followed by foliar spray of NSKE@ 3% at 30 and 40 days after sowing increased cowpea green forage Yield by 32.28 per cent over untreated control with minimum pests and diseases incidence. Now this will go as a recommendation in the ICAR website (Centers- Anand, Bhubneshwar, Hisar , Hyderabad, Jhansi and Palampur).
- Execution of plant protection trials at Hisar is kept in abeyance as the Plant pathologist post is lying vacant.
- The evaluation of breeding materials against different diseases in the sick plots have been developed at Palampur, Ludhiana, Anand and Bhubneshwar. For maintaining these sick plots, contingent amount of Rs.50,000 (Rupees fifty thousand) only to each above mentioned center every year may please be provided as per the decision taken during Kharif 2009.

The session ended with vote of thanks to the chair

TECHNICAL SESSION- III

PRESENTATION OF DISCIPLINE WISE REPORT

Chairman : Dr. N. P. Melkania, Former Project Coordinator, AICRP-FC
Co-Chairman : Dr.S. K. Saini, Director of Research, GBPUAT, Pantnagar
Rapporteurs : Dr S.K. Velayudham and Dr. M. Shanti

The session started with welcoming of delegates by Dr. Melkania. Technical reports of the disciplines viz., Crop improvement , crop production and crop protection were presented by respective Principal Investigators.

CROP IMPROVEMENT: Dr. R. V. Kumar, PI (Plant Breeding) presented the report of seventeen trials conducted with 4 annual and 5 perennial crops at 32 locations. The PI requested the breeders to increase the promptness in reporting of data. The results of each trial were presented and entries eligible for further promotion were mentioned. In IVT Rice bean and VTCC-2006 none of the entries had shown superiority over the respective National checks.

During the interaction Dr. A.K. Singh, DGM, NDDB, Anand has urged the breeders to adopt modern techniques / tools such as biotechnological interventions while evolving new varieties. The need of use of biotechnological tools in developing new varieties was also stressed by Dr.S.A. Faruqui, Project Coordinator, Forage Crops. While appreciating the presentation, Dr S.K. Saini, DR, GBPUAT has cautioned the scientists to develop varieties to meet the expectations of the farmers.

CROP PRODUCTION: Dr. U.S. Tiwana, Senior Scientist (Agronomy), PAU, Ludhiana presented the results of 8 agronomical trials conducted at 22 locations and one biochemistry trial conducted at 5 centres. The results of INM and forage quality trials were promising and the pooled results will be presented in ensuing rabi group meet.

CROP PROTECTION: The Project Coordinator Dr. S.A. Faruqui presented the report. Results of eleven trials conducted at 8 centres were presented. Promising entries resistant to pest and diseases were identified. Further, successful IPM modules developed for the control of various pest, disease and nematodes were mentioned.

The Chairman suggested taking research programmes on Chrysopogon and Lasuirus spp which are very promising under arid/rainfed situations. Need for research on carbon sequestration, development of heat resistant as well as cold tolerant spp is stressed. Dr. S.S. Faruqui, Project Coordinator proposed the vote of thanks.

TECHNICAL SESSION- IV

STRENGTHENING OF FORAGE RESOURCES

Chairman : Dr. B.S. Bisht, Vice-Chancellor, GBPUAT, Pantnagar
Co-Chairman : Dr. J.P. Tiwari, Dean Agriculture, GBPUAT, Pantnagar
Reppoteurs : Dr. R.V. Kumar and Dr. Ranjan Katoch

At the outset the chairman welcomed the speakers and appreciated the selection of relevant topics for the session.

1st Speaker- Dr. A.K. Singh : Status of forage availability and strategies for bridging the deficit

- In the opening remarks, Dr. Singh highlighted the shortage for green fodder to tune of 53 percent, dry fodder to 33 percent and deficit of seed by 60 percent. He further informed that only 4 percent area is covered with improved varieties, rest 96 percent is still under local cultivars.
- He stressed that increase in green fodder production is must for increase in milk production. The fodder production can be increased by using of good quality seeds and research should be focused on improving genetic potential of fodder species with aim to develop short duration biotic and abiotic resistant varieties.
- He critically mentioned that as area is becoming constraint day by day, our main emphasis should be to increase the fodder biomass i.e. harvest more in air.
- He further stressed upon the need for inclusion of biotechnological interventions in developing genetically engineered varieties to break the yield plateau.

2nd Speaker- Dr. N.P. Melkania: Grazing resources-status and potential in hills with special reference to Uttrakhand

- Dr. Melkania informed the house that Mid Himalayan is facing maximum pressure for fodder. He mentioned that the crude protein is high in high elevation grasslands.
- He critically mentioned that as a progressive change there is growing interest on small-scale-stall-fed cattle husbandry. Simultaneously there are institutional motivations by the state for fodder resource development and animal husbandry services.
- He also stressed upon the challenges in grassland management like lack of concrete grazing policy, availability of quality seeds, technology for fodder storage, post harvest utilization, value addition and grassland management.

3rd Speaker- Dr. J.K. Bisht: Fodder production-problems and prospects in Uttrakhand

- Dr. Bisht informed the house that major constraints like agro-climatic constraints for fodder production, management constraints, social and policy constraints are hindering the fodder production plans in the state.
- He highlighted potential areas for fodder production like utilization of fallow lands, forest lands and cultivated lands etc.
- He further informed that introduction of legumes in grassland is very helpful in their improvement and the dual purpose varieties have more potential for improvement of fodder supply. He also stressed the inclusion of agro-forestry and silvi-horti system for improvement of fodder supply in hill states.

In the end, Chairman of the session thanked speakers for their informative presentations.

TECHNICAL SESSION- V
BREEDER SEED PRODUCTION

Chairman : Dr. N. P. Melkania, Former Project Coordinator (Forage Crops)
Co-Chairman : Dr, S. A. Faruqui, Project Coordinator (Forage Crops)
Rappporteurs : Dr. R. N. Arora & Dr. (Mrs.) T. Shashikala

At the outset the Chairman welcomed the speakers and delegates.

The First presentation was made by Dr. R. V. Kumar (PI, Plant Breeding) regarding status of Breeder Seed Production during *Kharif* - 2009 and targets for *Kharif* – 2010.

- A total of 170.5 q Breeder Seed of seven major forage crops was produced against the total indent of 141.1 q from nine different centres.
- It was mentioned that the Breeder Seed Production of all the crops was higher than the indented quantity except for teosinte.
- Two centres namely BAIF, Urulikanchan and GBPUAT, Pantnagar however produced more quantity than the indented.
- Indents for BSP – I for *kharif*- 2010 was supplied and discussed. In case of maize variety Pratap makka chari – 6, the actual allotment is given to MPUAT, Udiapur however in case of emergency situation, the alternate responsibility will be of RAU, Bikaner.
- In case of cowpea, variety HFC 42- 1, Dr. R. N. Arora from CCS, HAU, Hisar submitted that this variety is now out of seed chain due to its susceptibility toward CYMV and its nucleus seed is not available. It was suggested to produce more quantity of Haryana Lobia – 88 to substitute the indented variety HFC 42-1.
- In pearlmillet for variety Rajko Bajra, RAU, Bikaner submitted that it is not a released variety hence nucleus seed is not available. Therefore, it was suggested to seek its alternative from the indenter.
- In case of Teosinte variety TL 1, Dr. U. S. Tiwana from PAU, Ludhinana showed his apprehension to produce the indented quantity of Breeder Seed due to its non-synchronous maturity, shattering and lodging problems.

- Considering Guar, there is no indent as of now, if any received later it would conveyed to the concerned quarters by the PC unit.

The second presentation was made by Dr. (Mrs.) Anjali Kaul from NBPGR, New Delhi on 'Status of PGR in Forages at NBPGR, New Delhi'.

- The speaker reported that they have made a total of 2308 explorations in fourteen crops and they have got a total germplasm collections of 2,46,758 in their gene bank. Out of which 5% constitutes of forage crops.
- The speaker further narrated various aspects of PGR activities such as status of released varieties in NGB, procedures for registration and deregistration of germplasm, policy issues related to exchange of PGR procedures for import and export of germplasm, procedures for conservation and maintenance of registered germplasm.
- It has also been stated that seven hundred eighty two germplasm of various crops including forage crops were registered with NBPGR so far.

The session ended with vote of thanks to the chair and other dignitaries.

TECHNICAL SESSION-VI

PLENARY SESSION

Chairman : Dr. J.P. Tiwari, Dean Agriculture, GBPUAT, Pantnagar
Convener : Dr. S.A. Faruqui, Project Coordinator (Forage Crops)
Rapporteurs : Dr. R.V. Kumar and Dr. Sunil Kumar

The session started with introductory remarks of the chairman. He invited the rapporteurs of different technical sessions for presentation of proceedings. The aspects and issues pertaining to Kharif-2009-10 programme in specific and forage research in general were discussed. The recommendations of Technical sessions were discussed and accepted after approval of the house. Looking to future challenges, some specific recommendations were also made for strengthening the forage research and development in the country.

- Centres were advised to maintain active germplasm at their centers and after characterization, all the germplasm should be deposited in mid term storage facility at IGFRI Jhansi.
- Centres were directed to sent the passport data of all the collected germplasm to NBPGR New Delhi to get the IC NO. of all the germplasm.
- Plant Genetic Resource (PGR) register should be maintained at each centre and in the event of transfer of concerned breeder/scientist, all the germplasm/breeding lines should be handed over to new incumbent.
- Crop cafeteria having released varieties and potential genotypes of important forage crop species of that region must be developed at each centre.
- For the analysis of quality parameters in different forage crops, nodal centre facility should be utilized by other centers. These centres as in the past, will be provided additional contingency for the purpose.
- Centres can also take advantage of the newly created facility of sick plots for screening of their selected material for soil born diseases. The nodal

centres are being provided with additional funding for maintenance of these plots.

- To start special activity if additional facility/funding is required at any centre, self contained proposal should be submitted to PC, Forage crops.
- Voluntary Centres raised the issue of working contingency to meet the cost of inputs, which was not provided during the year. Decision was taken to financially support the voluntary centers for conducting trials of AICRP(FC) and such Centres which were not provided funds during previous year, will be provided financial support for that period also during this year depending upon the trials conducted.

At the end of the plenary session, Dr. Y.P. Joshi, OIC, AICRP-FC, GBPUAT, Pantnagar extended vote of thanks to the ICAR authorities, Project Coordinator and his team, participants and local team for successful conductance of NATIONAL Group Meet.

Dr. S.A. Faruqui, Project Coordinator (Forage Crops) also expressed thanks to the ICAR authorities for guidance, and Vice Chancellor, GBPUAT, Pntnagar, Dean Agriculture, Director Research, Chairman and members of organizing committee for providing all facilities and support for successful conductance of the meeting.

The meeting ended with vote of thanks to the chair.

Annexure-I.i

TECHNICAL PROGRAMME FOR FORAGE CROP IMPROVEMENT
KHARIF - 2010

(a) COORDINATED TRIALS

Abbreviations:

HZ= Hill Zone, NWZ= North West Zone, NEZ.=North East Zone,
CZ= Central Zone, SZ= South Zone.

1. IVTM – Initial varietal trial in Forage Maize (NEW)

Entries : **3+2 NC +1 ZC**
Contributors : Mandya(1), Hyderabad(1), Ranchi(1)
N C : African Tall, J- 1006,
ZC : Pratap Makka Chari-6 (NWZ)
Design : RBD with 4 replications
Plot size : 4 m x 1.8 m accommodating 4 m long 6 rows at 30 cm.
Fertilizers (N:P): 80 : 40 kg/ha basal
Seed rate : 60 kg/ha (50 g/plot)
Seed requirement from contributors : 5 Kg /entry

Location: (23): **HZ-** Srinagar, Rajouri, Palampur, **NWZ-** Ludhiana, Hisar, Pantnagar, Udaipur, Meerut , Jalour **NEZ-** Ranchi, Faizabad, Bhubaneswar, Jorhat; **CZ-** Anand, Jhansi , Jabalpur, Rahuri, Urulikanchan, Dhari **SZ-** Hyderabad, Coimbatore, Vellayani, Mandya

Note. The cut for green forage is to be taken at 50% flowering stage and per day productivity of each entry is to be reported.

2. IVTPM : Initial varietal trial in Forage Pearl millet (NEW)

Entries : **5 +2 checks**
Contributor: Faizabad (2) , Bikaner(1), Anand (1), Advanta (1)
Checks : Raj Bajra Chari-2, Giant Bajra
Design : RBD with 3 replications
Plot size : 4 m x 1.8 m accommodating 4 m long 6 rows at 30 cm.
Seed rate : 15 kg/ha (15 g /plot)
Fertilizers : 40 : 20 kg/ha (N : P) basal
Seed requirement from contributors : 1.50 Kg /entry

Location: (19): **NWZ-** Ludhiana, Hisar, Avikanagar, Bikaner, Jalour **NEZ-** Faizabad, Pusa , Bhubaneswar, **CZ-** Anand, Dhari Jabalpur, Rahuri, Urulikanchan, Jhansi, Jamnagar **SZ-** Hyderabad, Dharwad (IGFRI- RRS), Coimbatore, Mandya

Note. The cut for green forage is to be taken at 50% flowering stage and per day productivity of each entry is to be reported.

3. AVTPM -2: Second Advance Varietal Trial in Forage Pearl millet

Entries : **5+ 2 checks**

Checks Raj Bajra Chari-2, Giant Bajra

Entries Promoted from AVT-1 2009: NDFB-11, NDFB-13,AFB-3, AFB-4, JHPM-08-1

Design : RBD with 3 replications
Plot size : 4 m x 3.0 m accommodating 4 m long 10rows at 30 cm.
Seed rate : 15 kg/ha (20 g /plot)
Fertilizers : 40 : 20 kg/ha (N : P) basal
Seed requirement from contributors : 1.500 Kg /entry

Location: (18): **NWZ-** Ludhiana, Hisar, Avikanagar, Bikaner, Jalour **NEZ-** Faizabad, Ranchi, Bhubaneswar, **CZ-** Anand, Jamnagar, Jabalpur, Rahuri, Urulikanchan,Jhansi **SZ-** Hyderabad, Dharwad (IGFRI- RRS), Coimbatore, Mandya

Agronomy Trial : Location : NWZ- *Ludhiana, Hisar, Bikaner* ***NEZ-*** *Faizabad, Bhubaneswar,* ***CZ-*** *Rahuri, Anand* ***SZ-*** *Hyderabad, Coimbatore*
Seed requirement : 2.50 Kg/entry

Note. The cut for green forage is to be taken at 50% flowering stage and per day productivity of each entry is to be reported.

4. AVTPM -2 (Seed): Second Advance Varietal Trial in Forage Pearl millet

Entries : **5+ 2 checks**

Checks Raj Bajra Chari-2, Giant Bajra

Entries Promoted from AVT-1 2009: NDFB-11, NDFB-13,AFB-3, AFB-4, JHPM-08-1

Design : RBD with 3 replications
Plot size : 4 m x 4.5 m accommodating 4 m long 10rows at 45 cm.
Seed rate : 15 kg/ha (20 g /plot)
Fertilizers : 40 : 20 kg/ha (N : P) basal
Seed requirement from contributors : 1.500 Kg /entry
Location: (18): **NWZ-** Ludhiana, Hisar, Avikanagar, Bikaner, Jalour **NEZ-** Faizabad, Ranchi, Bhubaneswar, **CZ-** Anand, Jamnagar, Jabalpur, Rahuri, Urulikanchan,Jhansi **SZ-** Hyderabad, Dharwad (IGFRI- RRS), Coimbatore, Mandya

5. IVTC– Initial varietal trial in Forage Cowpea (New)

Entries : **4+ 2 (NC) +1 (ZC)**
Checks : National checks- Bundel Lobia -1, UPC- 5286
Zonal checks : Bundel Lobia -2 (NWZ);UPC - 622 (NEZ/HZ);UPC 9202 (CZ/SZ)

Contributors : Pantnagar (2), Hyderabad (1), Mandya (1)
Design : RBD with 3 replications
Plot size : 4 m x 1.8 m accommodating 4 m long 6 rows at 30 cm.
Seed rate : 35.0 kg/ha (30 g /plot)
Fertilizers (N : P) : 20:40 kg/ha basal

Seed requirement from contributors : 2.75 kg /entry

Location : (28): **HZ-** Rajouri, Palampur, Almora **NWZ** - Ludhiana, Hisar, Pantnagar, Bikaner, Meerut **NEZ-** Faizabad, Ranchi (Kanke), Kalyani, Bhubaneswar, Jorhat, Pusa, Imphal,Shillong **CZ-** Anand, Jhansi (IGFRI), Jabalpur, Rahuri, Urulikanchan, Kanpur **SZ-** Coimbatore, Vellayani, Mandya, Hyderabad (ANGRAU), Dharwar (IGFRI, RRS), Pondicherry

1. **Seed of Bundel Lobia-2 (Zonal check) is to be sent to the locations i.e.,** Ludhiana, Hisar, Pantnagar and Bikaner.
2. **Seed of UPC-622 (Zonal check) is to be sent to the locations i.e., NE** Faizabad, Ranchi, Kalyani, Bhubaneswar, Jorhat , Pusa, Imphal
   HZ i.e., Palampur, Rajouri, Almora
3. **Seed of UPC-9202 (Zonal check) is to be sent to the locations i.e., CZ-** Anand, Jhansi (IGFRI), Jabalpur, Rahuri, Urulikanchan, Kanpur **SZ-** Coimbatore, Vellayani, Mandya, Hyderabad (ANGRAU), Dharwar (IGFRI, RRS), Pondicherry

6. AVTC- 1 : First Advanced Varietal Trial in Forage Cowpea

Entries : **3+2(NC)+1 (ZC)**
Checks : NC- Bundel Lobia -1, UPC- 5286
Zonal checks : Bundel Lobia -2(NWZ);UPC - 622(NEZ/HZ);UPC 9202(CZ & SZ)
Entries promoted from IVT: 2009 : MFC-08-14, IL-1177, RR-3
Design : RBD with 4 replications
Plot size : 4 m x 3 m accommodating 4 m long 10 rows at 30 cm.
Fertilizers (N :P) : 20 : 40 kg/ha basal
Seed rate : 35.0 kg/ha (45 g /plot)

Seed requirement from contributors: 5.00 Kg/entry

Location : (26): **HZ-** Rajouri, Palampur, Almora **NWZ** - Ludhiana, Hisar, Pantnagar, Bikaner, **NEZ-** Faizabad, Ranchi (Kanke), Kalyani, Bhubaneswar, Jorhat, Pusa, Imphal **CZ-** Anand, Jhansi (IGFRI), Jabalpur, Rahuri, Urulikanchan, Kanpur **SZ-** Coimbatore, Vellayani, Mandya, Hyderabad (ANGRAU), Dharwar (IGFRI, RRS), Pondicherry

1. **Seed of Bundel Lobia-2 (Zonal check) is to be sent to the locations i.e.,** Ludhiana, Hisar, Pantnagar and Bikaner.
2. **Seed of UPC-622 (Zonal check) is to be sent to the locations i.e., NE** Faizabad, Ranchi, Kalyani, Bhubaneswar, Jorhat , Pusa, Imphal
   HZ i.e., Palampur, Rajouri, Almora
3. **Seed of UPC-9202 (Zonal check) is to be sent to the locations i.e., CZ-** Anand, Jhansi (IGFRI), Jabalpur, Rahuri, Urulikanchan, Kanpur **SZ-** Coimbatore, Vellayani, Mandya, Hyderabad (ANGRAU), Dharwar (IGFRI, RRS), Pondicherry

7. IVT (R. bean) ; Initial Varietal Trial in Ricebean (New)

Entries : 4 +1(NC)
Check : K-1 (Bidhan-1)
Contributors : Jorhat (2), Bhubneshwar (2), Jabalpur (1)

Plot size : 4 x 3 m accommodating 4 m long 10 rows at 30 cm
Design : RBD with 4 replications
Seed rate : 35 kg/ha (45 g/ Plot)
Fertilizers (N : P) : 20 : 40 kg/ha Basal
Seed Requirement from Contributors: 1.50 kg / entry
Location – (8) :Kalyani, Ranchi, Bhubaneswar, Jorhat, Pusha,Vellayani , Jabalpur, Shillong

8. AVT-2 (R. bean) ; Second Advanced Varietal Trial in Ricebean

Entries : 03 +1NC

Entries Promoted from AVT-1 2009 : JRBJ-05-2, KRB-19, JRB-10

Check : K-1 (Bidhan-1)

Plot size : 4 x 3 m accommodating 4 m long 10 rows at 30 cm
Design : RBD with 5 replications
Seed rate : 35 kg/ha (45 g/ Plot)
Fertilizers (N : P) : 20 : 40 kg/ha Basal

Seed Requirement from Contributors: 2.000 kg / entry.

Location – (8) :Kalyani, Ranchi, Bhubaneswar, Jorhat, Pusha,Vellayani ,Imphal, Jabalpur

Agronomy Trial : Location : *Kalyani, Jorhat, Jabalpur*
Seed requirement : 1.50 Kg/entry

9. AVT-2 (R. bean) (Seed) ; Second Advanced Varietal Trial in Ricebean

Entries : 03 +1NC

Entries Promoted from AVT-1 2009 : JRBJ-05-2, KRB-19, JRB-10

Check : K-1 (Bidhan-1)

Plot size : 4 x 3 m accommodating 4 m long 5 rows at 60 cm
Design : RBD with 5replications
Seed rate : 18 kg/ha (2 5g/ Plot)
Fertilizers (N : P) : 20 : 40 kg/ha Basal

Seed Requirement from Contributors: 1.000 kg / entry.

Location – (8) :Kalyani, Ranchi, Bhubaneswar, Jorhat, Pusha,Vellayani ,Imphal, Jabalpur

10. AVT - 1 (Soy)– First Advanced Varietal Trial in Forage Soybean

Entries : **4**

Entries Promoted from IVT 2009 : JS07-21-7, JS07-24-1, JS07-24-13, JS07-24-8,

Design : RBD with 5 replications
Plot size : 4.0 m x 3.0 m accommodating 4 m long 6 rows at 30 cm.
Seed rate : 80.0 kg/ha (1 00g /plot)
Fertilizers (N : P) : 20:40 kg/ha basal
Seed requirement from contributors : 3.5 kg /entry
Location : (7): Ranchi , Pusa , Imphal, Hisar Jhansi , Jabalpur, Rahuri

11. IVT Sewan : Initial Varietal Trial in Sewan Grass (*Lasiurus sindicus*)

Entries : **7**
Contributor : Bikaner (5), Jodhpur (2)
Design : RBD with 3 replications
Plot size : 4.0 m x 4.5 m accommodating 4 m long 6 rows at 75 cm.
Seed rate : 5.0 kg/ha (1 0g /plot)
Fertilizers (N : P) : 40:20 kg/ha basal
Seed requirement from contributors : 150g /entry

Location : (5): Jodhpur (CAZRI), Jaisalmer (CAZRI), Bikaner (RAU), Jalore, Fatehpur Shekhawati (RAU)

12. VTGG- 2009 (2nd Yr) : Varietal Trial in Guinea Grass (Perennial)

Entries : 4 + 3 checks
National check: **Riversdale, PGG-616, JHGG-96-5**
Locations:(10): Faizabad, Bhubneshwar, Urlikanchan, Mandya, Coimbatore, Dharwad, Anand, Ranchi, Hyderabad, Vellayani
(This trial will be continued in Kharif, 2010)

13. VT GG –2008 (3rd Yr) : Varietal Trial in Guinea Grass (Perennial)

Entries : 7 + 3 (Checks)
Checks : Riversdale, PGG-616, JHGG-96-5
Locations:(8): Faizabad, Vellayani, Dharwad, Mandya, Urulikanchan, Ranchi, Bhubneshwar, Anand
(This trial will be continued in Kharif, 2010)

14. VT GG –2007 (4th Yr) : Varietal Trial in Guinea Grass (Perennial)

Entries : 6 + 3 (Checks) *
Checks : Riversdale, PGG-616, JHGG-96e-5
Location: (11) : Hyderabad, Vellayani, Coimbatore, Ludhiana, Ranchi, Mandya, Bhubaneswar, , Rahuri, Jhansi, Bikaner, Anand

(This trial will be continued in Kharif 2010)

15. VTCC-2008 (3rd Yr): Varietal Trial in *Cenchrus ciliaris* (Perennial)

Entries : 4 + 2 (NC)
National checks : CAZRI-75, IGFRI- 3108

Location : (4): Jodhpur, Jalour , Jhansi , Rahuri,

(This trial will be continued in Kharif, 2010)

16. VT N x B hybrid -2008 (3rd Yr) : Varietal trial Napier x Bajra hybrid (Perennial)

Entries : 9+3 check
Checks : **CO-3, PNB-233 and NB-21**
Location : (14): Vellayani, Rahuri, Mandya, Hydeabad, Coimbatore, Palampur, Faizabad, Dharwad, Almora, Ludhiana, Ranchi, Urulikanchan, Bhubneshwar, Anand
(This trial will be continued in Kharif 2010)

17. VT Setaria-2008 (3rdYr): Varietal Trial in *Setaria ancep*

Entries : 3+ 2
Checks : **S-92, PSS-1**
Location (3): Almora, Palampur, Kullu

(This trial will be continued in Kharif 2010)

18. VT *C. setigerus* : Varietal Trial in *Cenchrus setigerus*

Entries : **7+ 1 (NC)**
National Check : CAZRI-76
Contributor : Bikaner (3), Jodhpur (3), Jalore (1)
Design : RBD with 3 replications
Plot size : 4.0 m x 3.0 m accommodating 4 m long 6 rows at 50 cm.
Seed rate : 5.0 kg/ha (6g /plot)
Fertilizers (N : P) : 40:20 kg/ha basal
Seed requirement from contributors : 250g /entry

Location : (12): **NWZ** – Jalore, Pali (CAZRI), Jodhpur (CAZRI), Bikaner, **NEZ-** Faizabad, Ranchi **CZ-** Jhansi (IGFRI), Rahuri, Dhari, Anand **SZ-** Coimbatore, , Hyderabad

19. VT Dinanath Grass : Varietal Trial in Dinanath Grass (*Pennisetum pedicellatum*)

Entries : 5**+ 2 (NC)**
National Check : Bundel Dinanath-1, Bundel Dinanath-2
Contributor : Ranchi (4), Jhansi (1)
Design : RBD with 3 replications
Plot size : 4.0 m x 3.0 m accommodating 4 m long 10 rows at 30 cm.
Seed rate : 7.0 kg/ha (10g /plot)
Fertilizers (N : P) : 80:40 kg/ha
40 kg N as basal dose,
40 kg N after first cut at preflowering stage
Seed requirement from contributors : 150g /entry

Location : (4): **Ranchi, Jorhat, Kalyani, Pusa**

TECHNICAL PROGRAMME FOR FORAGE CROP PRODUCTION
KHARIF - 2010

AST-1: Influence of resource conservation techniques on forage production and physico-chemical status of soil

Objectives:

To study the effect of resource conservation techniques (RCT) on forage yield of the system

To study the effect of RCT on physico - chemical properties of soil.

To study the economics of the system.

Year of start : *Kharif* 2009 (Establishment)

Duration : Five years

Methodology

Phase I : (2009)

Studies on initial physico-chemical status of the soil i.e., WHC, Infiltration rate, pH, OC (%), available N,P & K and microbial population .

Formulation of zone specific resource conservation techniques through forage crops in Pilot trial mode.

Phase II : (2010-2011)

Execution of the experiments as per the technical programme in the respective zone

Recording observation on growth, yield and quality in different seasons of the system in each year

Recording observation on soil fertility status after end of the in each year.

Phase III : (2013-14)

Recording final physico-chemical soil status after completion of the study

Computation of data and analysis and preparation of the report

Observations:

Crop growth:

Plant / shoot population at harvest (per m^2)

Plant height at harvest

Leaf : stem ratio

B) Yield (q/ha) :

Green fodder

Dry matter

Grain

Straw

Forage equivalent yield

C) Quality:

Crude protein content (%)

Crude protein yield (q/ha)

D) Economics:

Cost of cultivation (Rs./ha)

Gross monetary return (Rs./ha)

Net monetary return (Rs./ha)

Benefit : cost ratio

E) Soil studies:

Soil fertility status before and after completion of the sequence, i.e., pH, OC (%), EC, available NPK .

Microbial population before and after completion of experiment.

F) Soil moisture conservation studies:

Soil moisture data from 0-15 and 15-30 cm depth at initial, 15 days after germination and later on every 30 days interval.

NOTE: Specific observations will be recorded as per experimental need

1. Hill Zone : (Rainfed conditions)

Subtitle: Effect of vegetative barriers and improved forage species on conservation of degraded grassland

Design : Split

Replication (s) : 3

Treatments :

Main plot -Vegetative barriers

i. No vegetative barrier

ii. Napier Bajra Hybrid

iii. *Setaria*

Sub plot - Species

Local grass

Setaria

Desmodium

Setaria + *Desmodium*

Location (2): Palampur and Rajouri

2. North-West Zone

a) Irrigated conditions

Subtitle: Effect of different tillage practices on productivity of forage crop in the prevalent crop sequence

Design : RBD

Replication(s) : 3

Treatments

T_1-Conventional tillage – 3 cultivation – disc harrow + 2 cultivator

T_2–2 cultivation – 1 disc harrow + 1 cultivator

T_3–2 cultivation - rotavator

T_4–1 cultivation – disc harrow

T_5–1 cultivation – rotavator

T_6–Broadcast seed before T-3

T_7–Broadcast seed before T-5

T8-No cultivation (zero tillage)

Locations (3): Ludhiana, Hisar and Pantnagar

b) Rainfed conditions

Subtitle: Conservation of rangelands by incorporating grass species in alleys of improved variety of *Khejari* (*Prosopis cineraria*)

Design : Split plot
Replications : 3

Treatments

A. Main plot-Alley foliage utilization

i. 100 % foliage as fodder
ii. 100 % foliage incorporation as litter
iii. 50 % foliage as fodder + 50 % foliage as litter incorporation

Sub plot -Grass species

Lasiurus sindicus
Cenchrus ciliaris
Cenchrus setigerus
Panicum antidotale

Specific observation:

Rate of decomposition of litter
Nutrient mobilization in rhizosphere

Location (2): Bikaner and Jalore

3. **Central Zone:**

Sub title: Effect of planting methods and forage crop combinations on fodder productivity through moisture conservation

Design : RBD
Replication(s) : 3
Treatments :

A. Main plot- Moisture conservation techniques

Ridge and furrow
Flat bed

B. Sub plot -Combination of grasses and legumes

Cenchrus + *Desmenthus*
Cenchrus + *Stylosanthes*
Dicanthium + *Desmenthus*
Dicanthium + *Stylosanthes*

Location (4): Rahuri, Jabalpur, Anand and Urulikanchan

4. **North East Zone:**

Sub title: Effect of moisture conservation practices on production of perennial grasses

Design : RBD
Replication(s) : 3
Treatments

A. **Perennial grasses**

Brachiaria brizantha
Guinea grass/ Napier *Bajra* Hybrid
Setaria grass

B. **Moisture conservation**

Control (Without mulch)
Soil mulch
Live mulch with legume (cowpea / ricebean/berseem)

Location (5): Jorhat, Faizabad, Ranchi, Bhubaneswar and Kalyani

5. South Zone:

a) Sub title: Intensive forage production through silvipasture system under rainfed ecosystem

Design : RBD
Replication(s) : Three

Treatments

T_1 – Subabool + *Cenchrus ciliaris*
T_2 –Subabool + *Stylosanthes*
T_3 –Subabool + *Desmenthus*
T_4 –Subabool + *Cenchrus ciliaris* + *Stylosanthes* (3:1)
T_5 – Subabool + *Cenchrus ciliaris* + *Desmenthus* (3:1)
T_6 – Subabool + Sorghum + Horse gram (2:1)
T_7 – Subabool + Pearl millet + horse gram (2:1)
T_8- Subabool (Sole)

Note: Spacing of subabool – 3 m x 2 m

Locations (3): Hyderabad, Coimbatore and Mandya

b) Sub title: Cassava based sustainable alley farming system for rainfed areas of the humid tropics

Design : RBD
Replication : 3

Treatments

(A) Grasses

BN Hybrid
Brachiaria brizantha
No grass

(B) Legumes

Fodder cowpea
No fodder legume

(C) Biofertilizer

VAM
No biofertilizer

Location: Vellayani

AST- 2: Optimization of nitrogen for maize in different forage based cropping systems

Year of start : *Rabi*-2009-10
Duration : 3 years
Design : Split plot
Replications : 3
Plot size : 5m x 4m

Treatments : 4x4=16

(a) Cropping System (4)

Oat – Maize – Cowpea
Oat – Maize – Ricebean
Barley – Maize – Cowpea
Barley – Maize – Rice bean

(b) Nitrogen Levels (4)

50% of Recommended dose
75% of Recommended dose
100% of Recommended dose
125% of Recommended dose

Observations:

A. Crop Growth

Plant Population/m^2
Growth parameters (Plant height and leaf stem ratio)
Green fodder, dry matter, forage equivalent and crude protein yield (q/ha)

B. Economics (Rs./ha/year)

Cost of cultivation
Gross monetary returns
Net monetary returns
Benefit : Cost ratio

C. Nutrient Studies

Nitrogen uptake by each crop and entire system
Nitrogen use efficiency
Soil fertility status before and after completion of sequence

Note: N levels treatments will be applied to maize. Other crops of the sequence will be grown with recommended NPK doses and other packages.

Locations (2): Shillong and Imphal

AST-3: Optimization of nitrogen for sorghum in different cropping systems

Year of start : Rabi-2009-10
Duration : Three years
Design : Split plot
Replications : 3
Plot size : 5mx4m

Treatments : 6x4=24

(a) Cropping System (6)

Wheat – Sorghum (F)
Wheat – Maize (F)– Sorghum (F)
Wheat – Cowpea (F) – Sorghum (F)
Berseem – Sorghum (F)
Oat – Maize (F)– Sorghum (F)
Oat – Cowpea (F)– Sorghum (F)

(b) Nitrogen Levels (4)

50% of Recommended dose
75% of Recommended dose
100% of Recommended dose
125% of Recommended dose

Note: N levels treatments will be applied to sorghum. Other crops of the sequence will be grown with recommended NPK doses and other packages.

Observations:

A. Crop Growth

Plant Population/m^2
Growth parameters (Plant height and leaf stem ratio)
Green fodder, dry matter, forage equivalent and crude protein yield (q/ha)

B. Economics (Rs./ha/year)

Cost of cultivation
Gross monetary returns
Net monetary returns
Benefit : Cost ratio

C. Nutrient Studies

Nitrogen uptake by each crop and entire system
Nitrogen use efficiency
Soil fertility status before and after completion of sequence

Locations (3): Ludhiana, Hisar, Pantnagar

AST- 4: Forage production potential of Sorghum hybrid with forage legumes under varying seed rates of intercrop

Objectives

To access the effect of seed rate of intercrops on sorghum

Replications : 3
Design : RBD
Year of start : *Kharif 2010*
Duration : Two years

Treatments =9

a. Legumes (2)

Cowpea
Ricebean/guar

b. Seed rates of legumes (4)

25% of recommended seed rate
50% of recommended seed rate
75% of recommended seed rate
100 % of recommended seed rate

Treatments will comprise all possible combinations of a. and b. plus sole stand of Sorghum

Observations:

Plant height (cm)
Plant population/ shoot number (per m^2)

Green and dry fodder yield (q/ha)
Crude protein content (%) and yield (q/ha)
Economics of production
Yield indices

Note: Seed rate of each crop will be used on the basis of seed ratio in respective treatment

Locations (4) : Palampur, Ludhiana, Pantnagar, Bikaner

AST- 5: Performance of Forage crops raised through waste water under varied nutrient levels

Objectives

To access the production and quality of of various forage crops raised through waste water under varied nutrient level
To workout the economics

Year of Start : *Kharif* 2010
Duration : 3 years
Design : Split Plot
Replications : Three

Treatments

Main Plot -Forage Crops – 4

C_1 – Cumbu Napier Hybrid grass - CO(CN)4/ APBN-1
C_2 – Guinea Grass - CO(GG)3
C_3 – Multicut fodder sorghum - CO(FS)29 / Para grass
C_4 – Lucerne - CO 1

Sub Plot -Nutrient Levels – 5

S_0- Control
S_1- 25% RDF
S_2 – 50% RDF
S_3 – 75% RDF
S_4 – 100% RDF

Observations:

Plant population / m row, Plant height at harvest, Leaf stem ratio
Green fodder and dry matter yield (q/ha)
Crude protein content (%) and Crude protein yield (q/ha)
Economics (Rs/ha/yr)
Chemical analysis of waste water, soil and fodder for heavy metals
Soil fertility at initial and at end of the year

Locations (2): Coimbatore and Hyderabad

AST-6: Effect of tillage and nutrient management on productivity of rice – oat cropping system

Objective:

To study the effect of tillage and nutrient management in oats on the productivity of the system

Design : Split plot
Replication : 3
Plot size : Sub plot 4mx3m
Year of start : *Kharif* 2010

Treatment: 12

Main plot – Tillage practices (3)

S_1. Zero tillage

S_2. Minimal tillage

S_3. Conventional tillage

B) Sub Plot - nutrient management (4)

M_1 – 75 % Recommended Dose of NPK (RD)

M_2 – 75 % RD + Biofertilizers (*Azotobactor* + PSB)

M_3 – 100 % RD

M_4 – 100 % RD + Biofertilizers (*Azotobactor* + PSB)

Note: Tillage and nutrient management will be done in oat crop and residual effect of the treatments will be studied on *Kharif* rice

Observations:

1. Initial and final status of soil fertility and microbial population
2. Yield of grain and straw for rice
3. Yield of green and dry matter of oat
4. Weed studies
5. CP% and CP yield of oat
6. Economics.

Locations (4) : Bhubaneswar, Ranchi, Kalyani, Jorhat and Raipur

B- LOCATION SPECIFIC TRIALS

AST-7: Remunerative forage based cropping system for sustained productivity under irrigated conditions

Objectives:

To find out the most remunerative forage based cropping system

To identify the biologically suitable cropping system for the region on sustainable basis

Year of start : Kharif 2006

Duration : Five years

Design : RBD

Replications : 3

Plot size : 5 mX 4 m

Treatments	Kharif	Rabi	Summer
T_1	Ragi (G)	Field bean(G)	Sunflower (G)
T_2	Sorghum (F) (MC)	----------Lucerne----------	
T_3	Maize (F) + Cowpea (F)	Sunflower (G)	Ragi (G)
T_4	Maize (G)	Maize (F)+Cowpea (F)	Groundnut (S)
T_5	Sunflower (G)	Cowpea (S)	Maize (F) +Cowpea (F)
T_6	----------Napier *Bajra* hybrid (Perennial)----------		

Observations

1. Initial and final fertility (after completion of sequence) status of the soil
2. Plant population /m row length, plant height and Leaf: Stem ratio
3. Yield attributes in case of grain and seed crops
4. Seed and Stover yield (q/ha)
5. Green fodder, Dry matter yield (q/ha) and forage equivalent yield
6. Crude protein content (%) and Crude protein yield (q/ha)
7. Net monetary return (Rs./ha/yr)

Location: Mandya

AST- 8: Effect of soil amendments on productivity of rice-berseem and changes in soil properties of sodic soil

Year of start : *Kharif* 2009
Duration : Five years
Plot size : 4m x 3m
Design : RBD Replication : 3

Treatments:

T1- RDF= Recommended dose of fertilizer
T2- RDF + FYM 10 t/ha
T3- RDF + gypsum @ 75 % GR
T4- RDF + gypsum @ 50 % GR
T5- RDF + Pressmud @ 75 % GR
T6- RDF + Pressmud @ 50 % GR
T7- RDF + gypsum @ 75 % GR + FYM 10 t/ha
T8- RDF + gypsum @ 50 % GR + FYM 10 t/ha
T9- RDF + Pressmud @ 75 % GR + FYM 10 t/ha
T10- RDF + Pressmud @ 50 % GR + FYM 10 t/ha

Note: 1. All the soil amendment treatments will be applied to rice only. Hence, berseem crop will be grown with recommended fertilizer dose.
2. Calculation of doses of soil amendments will be based on gypsum requirement.

Observations

Plant /shoot population at harvest (per m^2) , Plant height at harvest, grain and straw yield and Harvest index (Rice).
GFY, DMY, Forage equivalent yield, CP % and CPY (Berseem)
Net monetary return (Rs/ha/yr)
Uptake of N, P and K (kg/ha) by each crop and entire system
Initial soil fertility status viz., pH, EC, Exch. Na, OC and available NPK
Soil fertility status after completion of sequence i.e. pH, EC, OC, available NPK and exchangeable sodium percentage

Location: Faizabad

AST-9: Effect of soil amendments on productivity of rice based cropping systems in acidic soil

Year of start : *Rabi* 2009
Duration : Five years
Plot size : 4m x 3m
Design : Split Plot
Replication : 3

Treatments:

Main Plot (2): Cropping System

Pea (F) – Rice
Lathyrus (F) – Rice

Sub Plots (6): Amendments

RDF= Recommended dose of fertilizer (control)
RDF + FYM 10 t/ha
RDF + Lime @ 75 % LR
RDF + Lime @ 50 % LR
RDF + Lime @ 75 % LR + FYM 10 t/ha
RDF + Lime @ 50 % LR + FYM 10 t/ha

Note: 1. All the soil amendment treatments will be applied to *Rabi* crops only.
2. Calculation of doses of soil amendments will be based on lime requirement.

Observations:

Plant /shoot population at harvest (per m^2) , Plant height at harvest, grain and straw yield and Harvest index (Rice).
GFY, DMY, Forage equivalent yield, CP % and CPY (Fodder crops)
Net monetary return (Rs/ha/yr)
Uptake of N, P and K (kg/ha) by each crop and entire system
Initial soil fertility status viz., pH, EC, OC and available NPK
Soil fertility status after completion of sequence i.e. pH, EC, OC, available NPK

Location: Shillong

AST- 10: Banana based fodder intercropping in the homesteads of Kerala
Objectives: To evaluate the production potential, quality and economics of fodder crops in banana based production system

Year of Start : *Kharif* 2010
Duration : 3 years
Design : RBD Replication : 3
Plot size : 5.8 m x 5.4 m

Treatments : 12

T_1 –Banana+ Guinea grass
T_2 – Banana + Hybrid Napier

T_3 – Banana + Congo signal
T_4 – Banana + cowpea
T_5 – Banana sole
T_6 – Guinea grass sole
T_7 – Hybrid Napier sole
T_8 – Congo signal sole
T_9 – Cowpea sole

Observations:

Banana

Bunch yield (q/ha)

Fodder Crops

Plant height at harvest (cm), plant population ,Leaf stem ratio
Forage yield and forage equivalent yield(q/ha)
Economics (Gross Returns, Net Returns and BC Ratio)
Crude protein content (%) and Crude protein yield (q/h)
Crude fibre content (%) and Crude fibre yield (q/ha)

D. Nutrient studies

NPK uptake by each crop and entire system
Nutrient use efficiency of NPK by each crop and entire system
Soil fertility status before and after completion of the sequence i.e., pH, OC (%)
EC, available NPK before and after completion of experiment

Location: Vellayani

AST- 11: Chemical control of *Acrachne racemosa* weeds in sorghum fodder

Objective: To find out the suitable herbicide for the control of *Acrekny* (*Acrachne racemosa)* weed in sorghum

Year of Start : *Kharif* 2010 Duration : Two years
Design : RBD Replications : 3

Treatments:

Control (weedy check)
Atrazine 1kg/ha PE
Stomp 2.5 lit/ha PE
Treflan 2.5 lit/ha PE
Lasso 2.5 lit/ha PE
Atrazine 0.75 kg + Stomp 2.5 lit/ha PE
Atrazine 0.75 kg + Treflan 2.5 lit/ha PE
Atrazine 0.75 kg + Lasso 2.5 lit/ha PE
Atrazine 1.0 + Stomp 2.5 lit/ha PE
Atrazine 1.0 kg + Treflan 2.5 lit/ha PE
Atrazine 1.0 kg + Lasso 2.5 lit/ha PE

Observations:

Plant Height at Harvest, Leaf Stem Ratio
Green fodder and Dry matter yield
Crude protein content and yield
Weed population
Weed dry weight
Economics (Gross Returns, Net Returns and BC Ratio)

Location: Ludhiana

AVT BASED TRIALS

AST- 12: Effect of nitrogen levels on forage yield of promising entries of *Setaria* grass

Year : *Kharif* 2010
Design : RBD
Replications : Three
Plot Size : 4m x 4m

Treatments -16

(A) Entries: 2+2(S-20, S-21, PSS-1, S-92)
(B) N-levels: 4 (0, 40, 80 and 120 kg N/ha)

Observations:

Plant population/m^2, Plant height and Leaf : stem ratio
Green fodder, dry matter yields (q/ha)
Crude protein content and crude protein yield (q/ha)

Location (1): Palampur

Seed requirement – 1200 root slips of each entry

AST- 13: Effect of nitrogen levels on forage yield of promising entries of pearl millet under rainfed conditions

Year : *Kharif* 2010
Design : RBD
Replications : Three
Plot Size : 4m x 3m

Treatments

(A) Entries: 5+2 (NDFB-11, NDFB-13, AEB-3,AEB-4, JHPM08-1, Raj Bajrachari-2, Giant Bajra)
(B) N-levels: 4 (0, 30, 60 and 90 kg N/ha)

Observations:

Plant population/m^2, Plant height and Leaf : stem ratio
Green fodder, dry matter yields (q/ha)
Crude protein content and crude protein yield (q/ha)

Locations (10): Ludhiana, Hisar, Bikaner, Rahuri, Urullikanchan, Faizabad, Bhubneshwar, Hyderabad, Combatore, Mandya

Seed requirement per entry - 2.5 kg seed of each entry will be supplied by contributing centre to coordinating unit

AST-14: Effect of phosphorus levels on forage yield of promising entries of ricebean

Year : *Kharif* 2010
Design : RBD
Replications : Three
Plot Size : 4m x 3m

Treatments

(A) Entries: 3+1 (JRPJ05-2, KRB-19, JRB-10, K-1 (Bidhan-1)
(B) P-levels: 4 (0, 30, 60 and 90 kg P/ha)

Observations:

Plant population/m^2, Plant length and Leaf : stem ratio
Green fodder, dry matter yields (q/ha)
Crude protein content and crude protein yield (q/ha)

Locations (3): Kalyani, Jorhat, Jabalpur

Seed requirement per entry = 1.5 kg seed of each entry will be supplied by contributing centre to coordinating unit

Annexure I.iii

TECHNICAL PROGRAMME for FORAGE CROP PROTECTION KHARIF 2010

PPT 1: Monitoring of disease, insect pests and nematodes in cowpea, maize, pearl millet and sorghum ecosystem.

Observations to be recorded:

1. All insects pests including natural enemies
2. Pathogens and other micro flora
3. Nematod population

Locations: Anand, Bhubaneswar, Hyderabad, Jhansi, Palampur, Rahuri and Ludhiana

PPT-2: Evaluation of Kharif breeding materials of cowpea, maize, pearl millet and sorghum for their resistance to diseases, insect and nematodes.

Locations: Anand, Bhubaneswar, Hyderabad, Jhansi, Palampur, Rahuri ,Ludhiana and Kanpur

PPT-7: Integrated disease management in fodder maize

Design: RBD **Plot Size** 3 x 2.25 m^2 **Replications**:3

Treatment details:

1. Seed treatment with Vitavax powder @ 2g/kg seed
2. Seed treatment with Trichoderma viride @5g/kg seed
3. Seed treatment with Pseudomonas fluorescenc @5g/kg seed
4. T1+spray of mancozeb @ 0.25%
5. T2 +spray of mancozeb @ 0.25%
6. T3+ spray of mancozeb @ 0.25%
7. T1+ spray of P.fluorescens @ 3 g/lit
8. T2+spray of P.fluorescens @ 3 g/lit
9. T3+ spray of P.fluorescens @ 3 g/lit
10. control

Locations: Palampur and Ludhiana

Observation To Be Recorded

1. Disease severity/ incidence at weekly interval
2. Note: 3 sprays will be given at 10 days interval, 1st spray being at appearance of the disease.

PPT 8: management of cowpea sucking pests and yellow mosaic virus in seed crop
Design :RBD Replication :3 Plot size: 3x4 m
Spacing : 30 cm between rows Variety:UPC-5286

Locations :Anand ,Bhubaneswar , Hyderabad, Rahuri , ludhiana and Palampur.

Treatments:

1. seed treatment with Imidacloprid 70WS @5g/kg of seed
2. Spraying of NES 5% at 10 days INTerval
3. Spraying of *Verticillium leccani* @ 5g/l at 10 days interval
4. Spraying of Imidacloprid 17.8 SL @ 0.3 ml/l at 15 days interval
5. 1+2
6. 1+3
7. 1+4
8. 1+2+3
9. Untreated control

Observation to be recorded:

1. per cent germination
2. No. of sucking pests/leaf
3. per cent disease incidence and severity
4. Seed yield q/ha

Note: Foliar sprays should start at the appearance of pest *Verticillium leccani* will be supplied by Haderabad center.
*Pantnagar center will supply seed of variety UPC-5286 to five centers except Rahuri (@i.25 kg/location) I.e.6.25 kg.

PPT 9: Management of shoot fly in forage sorghum.
Design : RBD Plot size:3 x 4 m^2 Replication : 3
Variety:Local susceptible variety

Treatments:

1. Seed treatment with Thiomethoxam @2g/kg of seed
2. seed treatment with neem seed kernal power @50g/kg of seed followed by NES foliar spray @5% at 10DAS.
3. Seed tratment with Imidacloprid @ 5g/kg of seed
4. Foliar spray of thiomethoxam 25 WSc @ 0.0125 at 10 days after sowing.
5. Floir spray with NSE @ 5% at 10 days after sowing.
6. Floir spray with Imidacloprid @0.3 ml/lit at 10 days after sowing.
7. Floir spray with Endosulfan @0.07 at 10 days after sowing.
8. Untreated control.

Observation to be recorded:

1. Percentage of dead hearts at 14 and 28 days after sowing
2. Green forage yield 9gfy)in q/ha.
3. Dry metter yield (DMY) inq/ha
4. Net monetary return (NMR) rs./ha/yr.

Locations: Haderabad ,Anand, Rahuri and jhansi.

PPT 10: Management of roor rot disease in cowpea.
Design : RBD Plot size:4 x $3m^2$ Replication :4 Variety: EC4216

Treatments:

1. Seed treatment with Trichoderma viride @5g/kg seed +FYM @ 2t/ha.
2. Seed treatment with Neem seed kernal Powder @50 g/kg of seed
3. Seed treatment with Pseudomonas fluorescens @5 g/kg seed-Fym @2t/ha
4. Seed treatment with carbendazim @ 2g/kg of seed
5. Seed soaking in solution of gum of Asafoetida@0.4 % for 4 hrs.
6. Soil drenching with 3% pitcher compost at the time of sowing.
7. Untreated control

Observations to be recorded:

1. per centage germination (invitro and in field)
2. vigour index of seedlings (invitro)
3. Green forage yield.
4. Dry matter yield
5. Net monetary return (NMr)

Location: Bhubaneswar.

List of Delegates attended National Group Meeting *Kh* - 2010 of AICRP on Forage Crops held at G.B.P.U.A & T. , Pantnagar w.e.f. 21-23 May, 2010.

Sl. No.	Name
1.	Dr. H. C. Lohithaswa, Mandya
2.	Dr. B. G. Shekara, Mandya
3.	Dr. G. B. Dash, OUAT, Bhubaneswar
4.	Mr. S. S. Mahapatra, OUAT, Bhubaneswar
5.	Dr. M. Mishra, OUAT, Bhubaneswar
6.	Dr. H. R. Kher, AAU, Anand
7.	Dr. C.C. Patel, AAU, Anand
8.	Dr. P. M. Patel, AAU, Anand
9.	Mr. N. N. Patel, AAU, Anand
10.	Mr. R. M. Patel, AAU, Anand
11.	Mr. D. B. Parmar, AAU, Anand
12.	Mr. P. S. Takawale, BAIF, Pune
13.	Mr. V. K. Kauthale, BAIF, Pune
14.	Dr. Naveen Kumar, C. S. K. H. P. K. V. , Palampur
15.	Dr. V. K. Sood, C. S. K. H. P. K. V. , Palampur
16.	Dr. D. K. Banyal, C. S. K. H. P. K. V. , Palampur
17.	Dr. Ranjan Katoch, C. S. K. H. P. K. V. , Palampur
18.	Dr. S. Karmakar, Kanke, Ranchi
19.	Dr. Surya Prakash, Kanke, Ranchi
20.	Dr. N. S. Yadav, RAU, Bikaner
21.	Mr. S. S. Sekhawat, RAU, Bikaner
22.	Dr. D. I. Suma Bai, KAU, Vellayani
23.	Smt. S. R. Sharu, KAU, Vellayani
24.	Dr. (Smt.) Ch. Chiranjeevi, ANGRAU, Hyderabad
25.	Dr. T. Sashikala, ANGRAU, Hyderabad
26.	Dr. V. Chandrika, ANGRAU, Hyderabad
27.	Dr. M. Shanti, ANGRAU, Hyderabad
28.	Dr. D. K. De, BCKV, Kalyani
29.	Dr. Champak Kundu, BCKV, Kalyani
30.	Dr. (Mrs.) Kalamani, TNAU, Coimbatore
31.	Dr. K. Velayudham, TNAU, Coimbatore
32.	Dr. R. N. Arora, C.C. S. Hissar
33.	Dr. D. S. Phogat, C.C.S. Hissar
34.	Dr. D. L. Vishwakarma, NDUA& T., Faizabad
35.	Dr. C. N. Ram, NDUA& T., Faizabad
36.	Mr. M. L. Maurya,NDUA& T., Faizabad
37.	Dr. Sushant Saxena, NDUA& T., Faizabad
38.	Dr. U. S. Tiwana, PAU, Ludhiana
39.	Dr. Rahul Kapoor, PAU, Ludhiana
40.	Dr. A. K. Mehta, JNKV, Jabalpur (Madhya Pradesh)

Sl. No.	Name
41.	Dr. S. K. Biliaya, JNKV, Jabalpur (Madhya Pradesh)
42.	Dr. K. K. Sharma, AAU, Jorhat, (Assam)
43.	Dr. (Mrs.) Seuji B. Neog, AAU, Jorhat, (Assam)
44.	Dr. A. H. Sonane, MPKV, Rahuri (Maharashtra)
45.	Shri S. H. Pathan, MPKV, Rahuri (Maharashtra)
46.	Dr. A. B. Tambe, MPKV, Rahuri (Maharashtra)
47.	Dr. P.P. Surana, MPKV, Rahuri (Maharashtra)
48.	Dr. S. K. Singh, Meerut (UP)
49.	Dr. N. A. Zerakh, S. K. U. A & T. , Srinagar, Kashmir (J & K)
50.	Dr. Gul Zafar, S. K. U. A & T. , Srinagar, Kashmir (J & K)
51.	Dr. N. K. Sharma, RAU Bikaner, Jalore (Rajasthan)
52.	Dr. D. K. Chandrakar, IGKV, Raipur (Chattisgarh)
53.	Dr. A. S. Panwar, Shillong (Assam)
54.	Dr. J. K. Bisht, Almora
55.	Dr. M. P. Rajora,
56.	Dr. A. K. Singh, NDDB, Anand
57.	Dr. Anjali Kak, NBPGR, New Delhi
58.	Dr. Mukesh Chaudhary, IGFRI, Jhansi
59.	Dr. S. A. Faruqui, IGFRI, Jhansi
60.	Dr. M. G. Gupta, IGFRI, Jhansi
61.	Dr. R. V. Kumar, IGFRI, Jhansi
62.	Dr. S. K. Tiwari, NRCA, Jhansi
63.	Pelican Equipments, Chennai
64.	Mr. Narayan Kolekar,
65.	Mr. M. V. Ramdevputri
66.	Dr. Raj Kumar
67.	Dr. Y. P. Joshi, G. B. P. U. A. & T. , Pantnagar
68.	Dr. J. S. Verma, G.B. P. U. A. & T., Pantnagar
69.	Dr. Indra Deo, G.B. P. U. A. & T., Pantnagar
70.	Dr. Kewalanand, G.B. P. U. A. & T., Pantnagar
71.	Dr. P. S. Bisht, G.B. P. U. A. & T., Pantnagar
72.	Dr. P. C. Pandey, G.B. P. U. A. & T., Pantnagar
73.	Dr. Chandra Bhushan, G.B. P. U. A. & T., Pantnagar
74.	Dr. S. C. Saxena , G.B. P. U. A. & T., Pantnagar
75.	Dr. V. P. S. Yadav,, G.B. P. U. A. & T., Pantnagar
76.	Dr. S. P. Singh,, G.B. P. U. A. & T., Pantnagar
77.	Dr. Rohitashava Singh, G.B. P. U. A. & T., Pantnagar
78.	Dr. Kranti Kumar, G.B. P. U. A. & T., Pantnagar
79.	Dr. C. S. Pandey, G.B. P. U. A. & T., Pantnagar
80.	Dr. Dheer Singh, G.B. P. U. A. & T., Pantnagar
81.	Dr. V. P. Singh, G.B. P. U. A. & T., Pantnagar
82.	Dr. Gurvinder Singh, G.B. P. U. A. & T., Pantnagar
83.	Dr. D. S. Pandey, G.B. P. U. A. & T., Pantnagar

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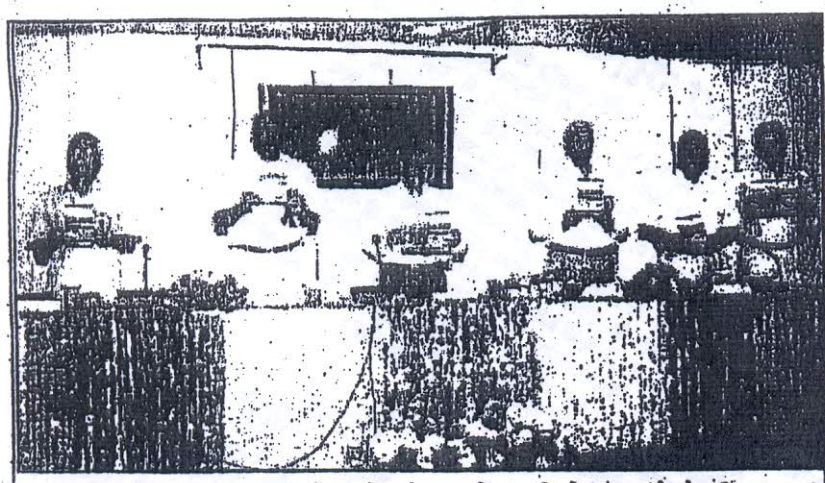
84.	Dr. O. P. S. Bana, G.B. P. U. A. & T., Pantnagar
85.	Dr. J. P. Sahu, G.B. P. U. A. & T., Pantnagar
86.	Dr. Sunita T. Pandey, G.B. P. U. A. & T., Pantnagar
87.	Dr. B. B. Sharma, G.B. P. U. A. & T., Pantnagar
88.	Dr. V. K. Singh, G.B. P. U. A. & T., Pantnagar
89	Dr. Anil Shukla, G.B. P. U. A. & T., Pantnagar
90.	Dr. Rajeev Shukla, G.B. P. U. A. & T., Pantnagar
91.	Dr. M. S. Yadav, G.B. P. U. A. & T., Pantnagar
92.	Dr. Sumit Chaturvedi, G.B. P. U. A. & T., Pantnagar
93.	Dr. Rajpal Singh, G.B. P. U. A. & T., Pantnagar
94.	Dr. K. S. Shekhar, G.B. P. U. A. & T., Pantnagar

चारा उत्पादन के लिए सेना की मदद लेगा विवि



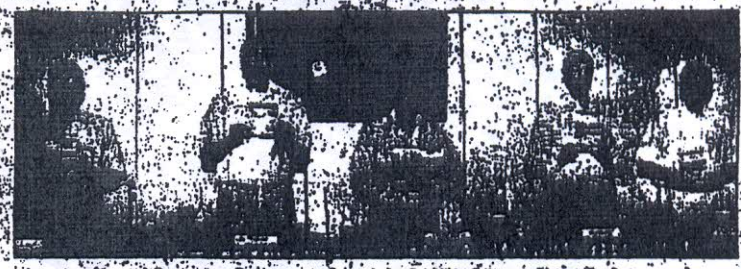
चारा विषयक राष्ट्रीय संगोष्ठी में नई पुस्तकों का विमोचन करते वैज्ञानिक।

पंतनगर। पंतनगर विश्वविद्यालय प्रदेश के सीमावर्ती क्षेत्रों में चारा उत्पादन हेतु सेना की मदद लेगा। इसके लिए सेना से मंजूरी प्राप्त कर ली गयीं है। स्थानीय किसानों की सहायता से खंदकों में पॉली हाउस में चारा उत्पादन किया जायेगा। पंत विश्वविद्यालय के वैज्ञानिकों व सेना अधिकारियों के समन्वित प्रयास से प्रदेश के सीमावर्ती क्षेत्रों में चारा उत्पादन कार्यक्रम संचालित होंगे।

चारा फसलों की अखिल भारतीय परियोजना की राष्ट्रीय गोष्ठी

शनिवार को पंतनगर में चारा फसलों से संबंधित राष्ट्रीय गोष्ठी के उद्घाटन समारोह में उक्त जानकारी देते हुए पंत विवि के कुलपति डॉ.बीएस बिष्ट ने कहा कि इस संबंध में सैन्य अधिकारियों की वांछित स्वीकृति प्राप्त हो चुकी है। इस कार्यक्रम के तहत सीमावर्ती क्षेत्रों में स्थित सैन्य कार्यालयों व आवासों का उपयोग अब वैज्ञानिकों के लिए संभव होगा। साथ ही स्थानीय कृषकों को विशेष रूप से प्रोत्साहित करते हुए असहज क्षेत्रों में भी पॉली-हाउसों के माध्यम से चारा उत्पादन का व्यापक अभियान शुरू होगा। इस योजना का मुख्य उद्देश्य सीमावर्ती व दुर्गम क्षेत्रों में प्रतिकूल परिस्थितियों में भी पशुओं हेतु पौष्टिक चारे की उपलब्धता सुनिश्चित करना है। चारा वैज्ञानिकों से चारा उत्पादन की लाभकारी नीतियों को अमल में लाने व वर्तमान में राष्ट्रीय स्तर पर 62 प्रतिशत हरे चारे व 22 प्रतिशत सूखे चारे की कमी को दूर करने की दिशा में प्रयासरत होने की अपेक्षा की। अधिष्ठाता डॉ.जे.पी.तिवारी ने दुग्ध उत्पादन में पौष्टिक चारे की अनिवार्यता पर बल देते हुए अधिकाधिक चारा उत्पादन वाली प्रजातियों के विकास व अधिकाधिक उत्पादन पर बल दिया। उन्होंने चारा बैंकों के संचालन हेतु भी इसे महत्वपूर्ण बताया। अखिल भारतीय समन्वित शोध परियोजना समन्वयक डॉ एसए फारूकी ने परियोजना के अंतर्गत अखिल भारतीय स्तर पर संपादित शोध व प्रजाति विकास विषयक अपना विशेष प्रतिवेदन प्रस्तुत किया। निदेशक शोध डा. एस.के. सैनी ने कहा कि चारा फसलें, सामान्य फसलों का महत्वपूर्ण भाग हैं एवं देश में पशुधन के विकास के लिए चारा फसलों का विकास एवं उत्पादन अत्यंत आवश्यक है। कार्यक्रम के दौरान चारा विषयक 6 नये प्रकाशनों का विमोचन भी किया गया।

सेना की मदद से संपादित होंगे चारा उत्पादन कार्यक्रम



पंतनगर में आयोजित चारा विषयक राष्ट्रीय संगोष्ठी में नयी पुस्तकों का विमोचन करते कुलपति डा. डा. बीएस बिष्ट व अन्य वैज्ञानिक। जागरण

पंतनगर: पंत विश्वविद्यालय के वैज्ञानिकों व सेना अधिकारियों के समन्वित प्रयास से प्रदेश के सीमावर्ती क्षेत्रों में चारा उत्पादन कार्यक्रम संचालित होंगे।

पंतनगर में चारा फसलों से संबंधित आयोजित राष्ट्रीय गोष्ठी के उद्घाटन समारोह में उक्त जानकारी देते हुए पंत विवि के कुलपति डा. बीएस बिष्ट ने कहा कि इस संबंध में सैन्य अधिकारियों की वांछित स्वीकृति प्राप्त हो चुकी है। इस कार्यक्रम के तहत सीमावर्ती क्षेत्रों में स्थित सैन्य कार्यालयों व आवासों का उपयोग अब वैज्ञानिकों के लिए संभव होगा। साथ ही स्थानीय कृषकों को विशेष रूप से प्रोत्साहित करते हुए असहज क्षेत्रों में भी पालीहाउसों के माध्यम से चारा उत्पादन का व्यापक अभियान शुरू होगा। इस योजना का मुख्य अतिथि उद्देश्य सीमावर्ती व दुर्गम क्षेत्रों में प्रतिकूल परिस्थितियों में भी पशुओं हेतु पौष्टिक चारे की उपलब्धता सुनिश्चित करना है इसके साथ ही डा. बिष्ट ने चारा उत्पादन की लाभकारी नीतियों को अमल में लाने व वर्तमान में राष्ट्रीय स्तर पर 62 प्रतिशत हरे चारे व 22 प्रतिशत सूखे चारे की कमी को दूर करने की दिशा में प्रयासरत होने की अपेक्षा की।

अधिष्ठाता डा. जेपी तिवारी ने दुग्ध उत्पादन में पौष्टिक चारे की अनिवार्यता पर बल देते हुए अधिकाधिक चारा उत्पादन वाली चारा प्रजातियों के विकास व अधिकाधिक उत्पादन पर बल दिया उन्होंने चारा बैंकों के संचालन हेतु भी इसे महत्वपूर्ण बताया इस अवसर पर अखिल भारतीय समन्वित शोध परियोजना समन्वयक डा. एसए फारूकी ने परियोजना के अन्तर्गत अखिल भारतीय स्तर पर संपादित शोध व प्रजाति विकास विषयक अपना विशेष प्रतिवेदन प्रस्तुत किया। कार्यक्रम के अंत में स्थानीय परियोजना समन्वयक डा. वाईपी जोशी ने धन्यवाद ज्ञापन प्रस्तुत किया।

चारा फसलों की अखिल भारतीय परियोजना की राष्ट्रीय गोष्ठी 22 से

पंतनगर (सुनील श्रीवास्तव): विश्वविद्यालय के शस्य विज्ञान विभाग द्वारा 21 से 23 मई के बीच चारा फसलों की अखिल भारतीय समन्वित शोध परियोजना की राष्ट्रीय गोष्ठी आयोजित की जा रही है। गोष्ठी का उद्घाटन प्रातः 22 मई को कृषि महाविद्यालय के सभागार में प्रातः 9.30 बजे से प्रारंभ होगा। कार्यक्रम के मुख्य अतिथि विश्वविद्यालय के कुलपति डा. बी.एस. बिष्ट होंगे तथा सत्र की अध्यक्षता भारतीय कृषि अनुसंधान परिषद, नई दिल्ली के उप-महानिदेशक (फसल विज्ञान) डा. स्वपन के. दत्ता करेंगे। इस अवसर पर परियोजना के देश भर में स्थित विभिन्न केन्द्रों में चारा अनुसंधान कार्य से जुड़े लगभग 125 चारा वैज्ञानिक, राष्ट्रीय अनुसंधान संस्थानों के पदाधिकारी तथा कृषि अनुसंधान से जुड़े विभिन्न राष्ट्रीय एवं अंतर्राष्ट्रीय कंपनियों के प्रतिनिधि उपस्थित होंगे जिनमें परिषद के सह-महानिदेशक डा. आर.पी. दुआ व परियोजना के राष्ट्रीय समन्वयक डा. एस.ए. फारूकी भी सम्मिलित हैं। डा. फारूकी परियोजना की रिपोर्ट प्रस्तुत करेंगे जबकि तीन दिन चलने वाली गोष्ठी में विभिन्न केन्द्रों के वैज्ञानिक चारा अनुसंधान से जुड़े विभिन्न कार्यक्रमों जैसे चारा प्रजातियों के विकास, चारा उत्पादन तकनीक, चारा फसलों की बीमारी एवं चारा गुणवत्ता आदि में अब तक की प्रगति की समीक्षा के साथ-साथ अपनी उपलब्धियों को प्रस्तुत करेंगे। साथ ही आगामी शोध रणनीति पर विचार-विमर्श कर इस गोष्ठी में अंतिम रूप दिया जायेगा। गोष्ठी का समापन सत्र 23 मई को आयोजित होगा।

चारा फसलों की राष्ट्रीय गोष्ठी आज

पंतनगरः पंतनगर विश्वविद्यालय के शस्य विज्ञान विभाग द्वारा चारा फसलों की अखिल भारतीय समन्वित शोध परियोजना की राष्ट्रीय गोष्ठी गुरुवार से शुरू होगी। कृषि महाविद्यालय के सभागार में आयोजित राष्ट्रीय गोष्ठी के मुख्य अतिथि विवि के कुलपति डा. बीएस बिष्ट होंगे जबकि भारतीय कृषि अनुसंधान परिषद, नई दिल्ली के उप महानिदेशक फसल विज्ञान डा. स्वपन के. दत्ता अध्यक्षता करेंगे। तीन दिन तक चलने वाली इस गोष्ठी में 125 चारा वैज्ञानिक, राष्ट्रीय अनुसंधान संस्थाओं के पदाधिकारी विभिन्न अंतर्राष्ट्रीय कंपनियों के प्रतिनिधि के अलावा आईसीएआर के सह महानिदेशक डा. आरपी दुआ व परियोजना के समन्वयक डा. एसए फारूकी भी इसमें अपना व्याख्यान देंगे। इस गोष्ठी में वैज्ञानिक चारा अनुसंधान से जुड़े विभिन्न कार्यक्रमों में चारा प्रजातियों के विकास, चारा उत्पादन, तकनीक, चारा फसलों की बीमारियों एवं चारा गुणवत्ता आदि की प्रगति की समीक्षा करेंगे। 21 से 23 मई तक चलने वाली गोष्ठी में आगामी शोध रणनीति पर विचार कर अंतिम रूप दिया जायेगा।

चारा उत्पादन में सेना की मदद लेंगे : डा. बिष्ट

● अमर उजाला ब्यूरो

पंतनगर। पंत विश्वविद्यालय के कुलपति डा. बीएस बिष्ट ने कहा कि चारे की समस्या के समाधान के लिए उत्तराखंड के सीमावर्ती क्षेत्रों में सेना की मदद से चारा उत्पादन कार्यक्रम शुरू किया जाएगा। कार्यक्रम के अंतर्गत विवि वैज्ञानिक एवं तकनीकी जानकारी देगा। सेना की ओर से आवासीय एवं कार्यालय संबंधी सुविधाएं दी जाएंगी। डा. बिष्ट शनिवार को प्रौद्योगिकी कॉलेज हाल में चारा फसलों की अखिल भारतीय समन्वित शोध परियोजना की राष्ट्रीय गोष्ठी में उद्घाटन भाषण दे रहे थे। उन्होंने कहा कि सीमावर्ती क्षेत्रों में स्थानीय किसानों की मदद से जंगलों में खाली जमीन में चारा उत्पादन किया जाएगा। देश में 475 मिलियन टन पशुधन है लेकिन इसकी दुग्ध उत्पादन क्षमता बहुत कम है। दुग्ध उत्पादन की कमी का मुख्य कारण देश में 62 प्रतिशत हरे और 22 प्रतिशत सूखे चारे की कमी है। [illegible] 30 लाख पशुओं की संख्या को [illegible] मिलियन टन हरे चारे और [illegible] मिलियन टन सूखे चारे की जरूरत है। उन्होंने प्रत्येक वर्ष बेकार पड़ी भूमि पर बंजर एवं चारा उत्पादन संबंधी संभावनाएं तलाशने की सलाह दी। [illegible] अधिक चारा उत्पादन [illegible] यंत्रीकरण की [illegible] खोज [illegible] कार्यक्रम के अखिल भारतीय परियोजना समन्वयक डा. [illegible] फारूकी, [illegible] निदेशक शोध डा. [illegible] तिवारी, परियोजना के पंतनगर केन्द्र के [illegible] जोशी ने भी विचार व्यक्त किए। चारा फसलों संबंधी छह नए प्रकाशनों का विमोचन भी किया गया।

चारा फसलों पर राष्ट्रीय गोष्ठी आज

पंतनगर। पंतनगर विश्वविद्यालय के शस्य विज्ञान विभाग द्वारा आयोजित चारा फसलों की अखिल भारतीय समन्वित शोध परियोजना की राष्ट्रीय गोष्ठी कल (आज) से प्रारम्भ हो रही है। कृषि महाविद्यालय सभागार में आयोजित होने वाली इस गोष्ठी के मुख्य अतिथि विवि के कुलपति डा. बी.एस. बिष्ट होंगे जबकि भारतीय कृषि अनुसंधान परिषद, नई दिल्ली के उप-महानिदेशक फसल विज्ञान डा. स्वपन के दत्ता अध्यक्षता करेंगे। तीन दिन तक चलने वाली इस गोष्ठी में 125 चारा वैज्ञानिक, राष्ट्रीय अनुसंधान संस्थाओं के पदाधिकारी, विभिन्न अंतर्राष्ट्रीय कंपनियों के प्रतिनिधि तथा आईसीएआर के सह-महानिदेशक डा. आरपी दुआ व परियोजना समन्वयक डा. एसए फारूकी भी भाग लेंगे।