

**AICRP ON FORAGE CROPS AND UTILIZATION**  
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**Proceedings of the National Group Meeting: Kharif 2015**  
**(Held at PJTSAU, Hyderabad during April 17-18, 2015)**

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## PREFACE

The National Group Meet, *Kharif* 2015 of 'All India Coordinated Research Project on Forage Crops and Utilization' was organized with the objectives to review the accomplishments of technical programme executed during *Kharif* 2014 at different coordinating and cooperating centres, in-house research activities, Breeder Seed Production, Forage Technology Demonstrations (FTDs), Tribal sub-plan (TSPs) and other activities carried out as well as to discuss and formulate technical programme for *Kharif* 2015. The meeting was jointly organized by Indian Council of Agricultural Research (ICAR) and PJTSAU, Hyderabad, during April, 17-18, 2015 at Hyderabad.

The meeting was attended by the scientists engaged in forage research, working at coordinating and collaborating centres located at different SAUs, CAU, ICAR institutes, NGOs and other institutions. All the important stakeholders contributed in the development and refinement of programme, linkages and collaborations and deciding future course of action in view of the changing agricultural needs of the farmers, livestock keepers and other stakeholders. The local participants included research managers, scientists and staff members from PJTSAU, Hyderabad and electronic and print media personnel of the region.

This compilation contains brief report of the National Group Meet, *Kharif* 2015 covering highlights on forage crop improvement, forage crop production, forage crop protection and proceedings of different technical sessions and technical programme for the *Kharif* 2015. The National Group Meet members discussed and planned future strategies for improving the forage productivity, quality, and soil health to address the regional and national forage security with sustainability for increasing livestock population. The finalized technical programme on forage crop improvement, forage crop production and forage crop protection for *Kharif* 2015 have been given in annexure.

The successful conductance of the event is attributed to the joint efforts made by the ICAR/IGFRI authorities, participating scientists, staff of the Project Coordinating Unit, authorities of PJTSAU, Hyderabad, Principal Investigators and other staff of IGFRI, Jhansi. The team of All India Coordinating Research Project on Forage Crops & Utilization sincerely acknowledges their guidance, active involvement, suggestions and cooperation for successful organization of the meeting.

We sincerely thank authorities at ICAR, particularly DG, DDG (Crop Science), ADG (FFC) and other unit members for their constant guidance, support and encouragement as well as financial and administrative approval. The authorities and organizing committee of PJTSAU, Hyderabad is especially thanked for successful and smooth conductance of the meeting.

A.K. Roy  
Project Coordinator

## INAUGURAL SESSION

National Group Meet *Kharif* 2015 of All India Coordinated Research Project of Forage Crops & Utilization was jointly organized by Prof Jayshankar Telangana State Agricultural University and ICAR during 17-18<sup>th</sup> April 2015 at PJTSAU, Hyderabad.

The meeting was inaugurated by Dr. I. S. Solanki, ADG (FFC), ICAR, New Delhi. In his address he stressed upon the need of bridging the gap of demand and supply in forages by strengthening research on high yielding and better quality fodder crops.

Dr. D. Raji Reddy, Director of Research, PJTSAU welcomed the delegates and presented a scenario of livestock and fodder situation in Telangana state. He highlighted the situation of shortage of milk and forage in the state and need to develop technologies for resource poor farmers in particular.

Dr. A. K. Roy, Project coordinator presented the overview of XII plan initiatives and the achievements of *Kharif* 2014 in the field of forage crop improvement, production, protection and breeder seed production as well as popularizing the technologies by Fodder Technology Demonstrations.

Dr. P. K. Ghosh, Director, IGFRI stressed upon the need for extension of already available technologies and generate proper database of forage resources in the country. He recommended that research outcome should also linked with soil health.

Dr Tirupattaiiah, Additional Director, Directorate of Animal Husbandry, Government of Telangana emphasized upon low productivity of animals in the state and need of technologies for both commercial dairies as well as small livestock keepers.

Dr. V. Praveen Rao, Registrar and Special Officer, PJSTAU, Hyderabad, highlighted the importance of meeting, need and the expectations of Telangana people from this group meet. Need for mechanization in fodder crops and use of alternate fodder crops was also highlighted.

During the session, various publications were also released by the dignitaries. It included Annual Report *Kharif* 2015; CD of Annual Report; Souvenir of NGM, *Kharif* 2015; Book on 'Forage Crops - Package of Practices' in Telugu language; Book on 'Tree Fodders' in Telugu language; Pamphlet on 'Improved Pasture establishment technique in Western Rajasthan' in Hindi language; Book on Research accomplishments of Forage and Millet section Dept. of Plant Breeding, PAU, Ludhiana; Pamphlet on 'Round the year green fodder production for milch animals' in Punjabi language.

Website of AICRP on forage crops & Utilization <http://aicrponforagecrops.res.in> was also inaugurated by ADG FFC and Director, IGFRI.

Dr. T. Shashikala, OIC AICRP FC&U, Hyderabad centre thanked the authorities, participants and all other who rendered the help in successful organization of event.

## TECHNOLOGIES GENERATED / RECOMMENDATIONS

### Varieties identified for release

1. **Oat (*Avena sativa*) - OS-403:** Identified for release in the North East (Assam, Manipur, Odhisha, West Bengal, Eastern UP, Bihar, Jharkhand) and South Zones (Telengana, Andhra Pradesh, Karnataka, Tamil Nadu) for cultivation under irrigated conditions during *rabi* season under single cut situation.
2. **Oat (*Avena sativa*) - JHO 2009-1:** Identified for release in Central Zone (UP, MP, Maharashtra, Gujarat) for cultivation under irrigated conditions during *rabi* season under single cut situation.
3. **Sewan Grass (*Lasiurus indicus*) - RLSB-11-50:** Identified for release in the arid areas of Rajasthan.
4. **Pearl millet (*Pennisetum glaucum*) APFB-09-1:** Identified for release in North East Zone (Odhisha, Jharkhand, West Bengal, eastern UP, Bihar, Assam) for cultivation under rainfed condition.

### Forage production

1. At Imphal, sowing of fodder maize on 26<sup>th</sup> May with seed rate of 60 kg/ha was found most productive (GFY 526.7q/ha) and remunerative (Rs. 62618/ha).
2. At Imphal, sowing of rice bean on 26<sup>th</sup> May with a row spacing of 35 cm was found most productive (GFY 323.5 q/ha) and remunerative (Rs 33133/ha).
3. Pearl Millet – dual purpose
  - (a) In North-West Zone, variety GFB-1 supplemented with 150% of RDN under one cutting at 50 DAS for green fodder and left for grain was found most productive and remunerative.
  - (b) In Central Zone, variety BAIF Bajra-1, supplemented with 150% of RDN, under two cuttings, first at 50 DAS and 2<sup>nd</sup> at 40 days after 1<sup>st</sup> cut and left for grain, was found most productive and remunerative.
  - (c) In South Zone, variety BAIF Bajra-1, supplemented with 150% of RDN, under one cutting at 50 DAS for green fodder and left for grain was found most productive and remunerative.
4. Growing of BN hybrid in unshaded condition supplemented with 125% of recommended N was found most productive and remunerative with good quality fodder in Hill zone, NWZ, CZ and South zone. Qualitatively fodder of BN hybrid grown under shaded condition was at par with that under unshaded condition.
5. At Ludhiana, application of Atrazine 0.75 kg + Pendimethalin @ 0.75 kg/ha as pre-emergence herbicides in BN hybrid was found most remunerative (Rs. 58177/ha).
6. At Ludhiana, application of Atrazine 0.375 kg + Pendimethalin @ 0.75 kg /ha as pre-emergence herbicides in multi - cut sorghum was found most productive in terms of GFY (910 q/ha), DMY (179 q/ha) and CPY (14 q/ha).

## TECHNICAL SESSION-I INTERACTIVE SESSION WITH STAKEHOLDERS

<b>Chairman</b>	: Dr. I. S. Solanki, ADG (FFC), ICAR New Delhi
<b>Guest of honour</b>	: Dr. P. K. Ghosh, Director, IGFRI Jhansi
<b>Guest of honour</b>	: Dr Tirupattiah, Directorate of Animal Husbandry, Government of Telangana
<b>Convenors</b>	: Dr. D. Raji Reddy, Director Research, PJTSAU ; Dr. A. K. Roy, PC
<b>Rapporteurs</b>	: Drs. Naveen Kumar, U. S. Tiwana and S. Bora Neog

The session was attended by various stakeholders including forage seed growers, livestock keepers, personnel involved in livestock sector business such as feed, fodder, dairy *etc.* besides the scientific and technical staff.

The session started with the introductory remarks of the Chairman. Thereafter, chairman invited the speakers to deliver their presentations.

Dr. D Nagalakshmi, Head, Department of Animal Nutrition, PJTSAU Hyderabad presented the scenario of feed and fodder at national level as well as of Telangana state. It was highlighted that over the years there is increase in the availability of crop residues but no appreciable increase in the availability of green fodder and concentrates has been observed. She highlighted the deficit of green fodder, dry fodder, concentrates, protein and total digestible nutrients. In Telangana state, paddy straw is the major source of fodder to the livestock and followed by maize and sorghum stover. The availability of rice bran as well as oilseed cakes needs to be increased to meet out the protein and energy requirement of livestock in the state.

Dr. Surya Prakash, Assistant Director, Animal Husbandry, highlighted the importance of fodder development and convergence of fodder development activities with the stakeholders. It was emphasized upon to have a strong linkage and coordination between different stakeholders, organizations engaged in the fodder research and development. It was also suggested to strengthen the conservation and preservation of surplus forage for use in lean months. In the region, pasture and grasslands management is need of the hour to mitigate the fodder deficiency, which will also help to minimize the migration of shepherd from one place to another.

Dr. D Vijay, Senior scientist, IGFRI, Jhansi, presented the issues related to seed production of forages. Seed yield of most of the range species is very-very low which needs to be addressed in the light of the factors and issues responsible for it. It was mentioned that range species are available for different climatic and soil conditions. It was emphasized upon that for optimum seed production crops must be grown with complete package of practices. The recent advances *viz. in-vitro* maturation of guinea grass, defluffing of *Dinanath* grass seed, high density nursery and *in-vitro* rooting in Napier Bajra Hybrid, and harvesting of berseem at physiological maturity standardized at IGFRI Jhansi were also presented.

Dr. I. S. Solanki, ADG (FFC) advised to develop IFS models for small and marginal farmers with more emphasis on the inclusion of multicut forages. Dr. P. K. Ghosh, Director IGFRI Jhansi suggested to work for the improvement of nutritive value of sorghum stover. It was suggested by Dr. A K Roy, PC that surplus seed in stock of any forage crops should be communicated to IGFRI/AICRP so that efforts could be made for their sale. It was also highlighted that rangeland development and improvement technologies have been developed for different locations but it needs better collaboration with different agencies and departments for its proper dissemination.

The session ended with a vote of thanks to the chair.

## TECHNICAL SESSION - II

### BREEDER SEED PRODUCTION

**Chairman** : Dr. P. K. Ghosh, Director, IGFRI, Jhansi  
**Rapporteurs** : Drs. M. R. Krishnappa and S. S. Shekhawat

The breeder seed production status report 2014 was presented by Dr. A. K. Mall, PI (PB), AICRP-FC & U, IGFRI, Jhansi. The breeder seed production was carried out in twelve varieties of four crops *viz.*, Maize, Pearl Millet, Cowpea and Guar as per indent received from DAC, Government of India. In Maize, the total indent quantity was 135.48 q in three varieties *viz.*, African Tall (59.68q), J-1006 (72.10 q) and Pratap Makka Chari (3.7 q). In Pearl Millet, the indented quantity was 0.20q in variety Avika Bajra Chari-19 – 0.20 q and 0.05 q in variety Giant Bajra. In Cowpea, total indent was 4.95 q in four varieties which included 1.50 q of UPC-628, 2.15 q of UPC-625, 0.90 q of EC-4216 and 0.40 q of CL-367. In Guar, there was an indent of 0.40 q of Ageta Guara-112, 0.40 q of Guara-80 and 0.20 q of Bundel Guar-3 making a total indent of 1.0q in this crop. The total indent was 141.68 q.

The BSP IV breeder seed production report indicated that the breeder seed production was higher than the allocated quantity. The total production was 156.10 q against the indent of 141.68 q which was 14.42 q higher. In Guar and Cowpea the breeder seed production was less than the allocated quantity, the target fell short by 3.0 q in cowpea and 0.20 q in guar, whereas there was surplus of 17.32 q in maize and 0.30q in pearl millet.

It was also informed that the price of breeder seed has been appreciably enhanced.

#### Following suggestions were given

- The centres should give information of surplus seed available with them to the Project Coordinator, AICRP-FC & U, so that it can be allocated for use to other stakeholders for the ensuing season.
- Concern was raised about very less quantity of breeder seed indent particularly the indent of cowpea and guar.
- Many of the varieties released are not in the seed production chain and also all the breeders were advised to make suitable arrangements for popularising the released varieties at the central / state level so that breeder seed indent may be enhanced.
- All the centers should maintain sufficient quantity of nucleus seed of the varieties released by their institutions to meet the demand of breeder seed.

The session ended with vote of thanks to the Chair.

## TECHNICAL SESSION-III PRESENTATION OF DISCIPLINE WISE REPORT

**Chairman** : Dr. I. S. Solanki, ADG (FFC), ICAR New Delhi  
**Co-chairman** : Dr. J.P. Yadavendra, QRT member  
**Rapporteurs** : Dr. C. Babu and Dr. Nitish Tiwari

**Crop Improvement:** The crop improvement report related to *kharif* 2014 was presented by Dr. A.K. Mall, PI (PB). During the season, 16 multilocation trials of 4 annual and 5 perennial forage crops comprising of test entries along with their respective national and zonal checks were conducted at 34 locations in five zones. The forage crops evaluated were maize, pearl millet, cowpea and rice bean in annual and *Dichanthium annulatum*, *Cenchrus ciliaris*, *Clitoria ternatea*, *Sehima nervosum* & Bajra x Napier hybrid in perennials. Promising entries in maize, pearl millet, cowpea and rice bean were proposed for further testing in advanced trials at national/zonal basis based on their performance *vis a vis* checks in IVT and AVT-1 trials.

- It was suggested that state released varieties should be used as one of the checks.
- More collaboration with Directorate of Maize and Pearl millet is needed on forage aspect in these crops.

**Crop Production:** Dr. R. K. Agrawal, PI (Agronomy) presented the results of crop production trials undertaken at 22 locations. In total 21 experiments, consisting of 11 in network mode (9 coordinated and 2 AVT based) and 11 in location specific mode were conducted. The major thrust of the trials were to generate technological interventions on resource conservation, tillage, nutrients and weed management in forage crops *vis-à-vis* food-fodder cropping systems, intercropping studies, production and quality of fodder under shaded condition in forages. During this period, six forage production technologies (four coordinated and two locations specific) were recommended.

- It was suggested that the recommendation emanating from location specific herbicide experiment conducted at PAU, Ludhiana must be validated in other AICRP centres of NWZ in larger area.

**Crop Protection:** The report on plant protection trials conducted at 6 locations was presented by Dr. (Mrs) Ritu Mawar, Sr. Scientist (PP). The experiments aimed to study the occurrence and abundance of major diseases and pests in forages, screening of breeding material and development of management technologies for the control of diseases and pests in maize, pearl millet, cowpea and rice bean. The most prevalent pest and diseases in *Kharif* forage crops observed through the monitoring trials was presented. During the period under report, zonate leaf spot of sorghum, leaf blight of maize, leaf spot of pearl millet and root rot and yellow mosaic of cowpea were the major diseases at various locations. Screening of breeding material at various locations resulted in the identification of resistant to moderately resistant sources in different crops.

- It is suggested to furnish the scoring data along with the findings while presenting the results and also the condition of screening whether field or artificial inoculation screening.

The session ended with a thank note by the chairman.



## TECHNICAL SESSION-IV (Concurrent Session) - FORAGE CROP IMPROVEMENT FORMULATION OF TECHNICAL PROGRAMME

<b>Chairman</b>	:	Dr. I. S. Solanki, ADG (FFC), ICAR New Delhi
<b>Co-chairman</b>	:	Dr. J.P. Yadavendra, QRT member
<b>Rapporteurs</b>	:	Drs. P. S. Takawale and A. H. Sonone
<b>Finalization of Technical Programme</b>	:	Dr. A. K. Mall

The session started with introductory remark by the Chairman and Co-chairman. Dr. A. K. Mall, PI, Plant Breeding presented the results of the *kharif* 2014 breeding trials and after detailed discussion, a total of 21 breeding trails in 14 different crops were constituted for *kharif* 2015. Based on discussion, suggestions following recommendations emerged out.

- Possibility of inclusion of latest state released variety should be explored as a local check in the breeding trials
- Bhubaneswar center reported paucity of land for breeding experiments which is adversely affecting the breeding programme. PC was advised to contact University officials for needful.
- The entries viz., MFM-6, PAC-746, MPC-1, AFM-4 and MFM-4 were promoted to AVTM-1 and the trial will be conducted in Hill Zone, North East and North West Zones only.
- No entry was promoted from AVTM-1 to AVTM-2.
- BAIF Bajra-1 should be included as zonal check in IVTPM in North West and Central Zone.
- No entry was promoted from IVTPM to AVTPM-1.
- The entry DFMH-30 was promoted from AVTPM-1 to AVTPM-2 and the trial will be conducted in North West and South Zone only.
- Since only one entry viz., MFC-09-13 from IVTC showed superiority at one location in Hill Zone, it will be tested again in IVTC.
- The Cowpea entry TNFC-0926 was promoted to AVTC-2 and the trial will be conducted in North East Zone only.
- None of the entry from IVT Rice bean was promoted to AVT Rice Bean.
- The perennial trials viz., VTBN-2013, VT *Dichanthium*-2013, VTCC-2013, VT Clitoria-2013 and VT *Sehima nurvosum*-2013 will be continued during *kharif* 2015.
- New perennial trials in *Cenchrus ciliaris*, *Cenchrus setigerus*, BN Hybrid, Setaria grass, Tall Fescue and Orchard grass were formulated.
- Centers namely Jalore, Avikanagar, Jodhpur and Dharwad will be additional testing locations for VT *Cenchrus ciliaris*-2015.
- For VT *Cenchrus setigerus*-2015, Avikanagar will be additional testing center and the centers from North East Zone will be deleted.
- VT Orchard grass-2015 will be conducted at Palampur, Bajoura, Almora, Coimbatore (Ooty) and Srinagar.

The session ended with vote of thanks to the chair.

## TECHNICAL SESSION IV (Concurrent Session) - FORAGE CROP PRODUCTION FORMULATION OF TECHNICAL PROGRAMME

<b>Chairman</b>	:	Dr. B. Joseph, Prof and Head, (Agron) PJTSAU, Hyderabad
<b>Rapporteurs</b>	:	Drs. B.G Shekhra and Birendra Kumar
<b>Finalization of Technical Programme</b>	:	Drs. R.K Agrawal and Naveen Kumar

In the introductory remarks chairman expressed satisfaction over on-going agronomic programme. Discussion was held on new trials proposed by the different centres for *Kharif* 2015. Chairman further suggested to send the data and report of trials conducted in system mode as per schedule already finalized. Based on the discussions, the following six recommendations emerged.

### Continuation of ongoing trials

- Six coordinated and five location specific trials will continue as per approved programme.

**New Experiments:** The following new trials have been formulated for different zones:

### A. Coordinated trials

1. Compatibility of *Stylosanthes scabra* with sewan and dhaman grass pastures under north-western India (Bikaner, Jalore and Fatehpur Shekhawati).
2. Development of climate resilient production technologies on productivity and economics of food - fodder based cropping systems (Pantnagar, Ranchi, Kalyani, Jabalpur & IVRI, Bareilly).
3. Intensive forage production through Agase based (*Sesbania grandiflora*) cropping system under protective irrigation (Mandya, Vellayani & Raichur).
4. Studies on carbon sequestration in perennial grass based cropping systems (Hyderabad, Coimbatore, Vellayani, Ranchi, Jabalpur & Anand).
5. Studies on the productivity and carbon stocking of silvipastoral systems in hills of north western Himalayas (Palampur & Srinagar).
6. Performance of multicut Sorghum and Pearl millet mixture at variable seed rates under different methods of sowing (Palampur & Ludhiana).

### B. Location specific trials

1. Studies on different models for year round green fodder production under irrigated condition (Mandya).
2. Effect of planting material on growth and fodder yield of Napier Bajra Hybrids (Dharwad).
3. Studies on Integrated nutrient management in Fodder Rice bean (Imphal).
4. Utilization of industrial effluents as source of irrigation water and its effect on productivity and profitability of forage based cropping systems. (Pantnagar).
5. Studies on carbon sequestration in subabul based silvi-pastoral cropping system under rainfed agriculture (Hyderabad).
6. Nutrient management in promising genotypes of BxN hybrid (Rahuri).
7. Screening of genotypes of fodder bajra and oat under sodic soil (Faizabad).

## TECHNICAL SESSION IV (Concurrent Session) - FORAGE CROP PROTECTION FORMULATION OF TECHNICAL PROGRAMME

Chairman	:	Dr. C. Srinivas, Head, Dept. of Entomology, PJTSAU, Hyderabad
Rapporteurs	:	Drs. D. K. Banyal and A. B. Tambe
Finalization of Technical Programme	:	Drs. Pradeep Saxena and Ritu Mawar

Crop Protection Scientists of the Forage group discussed in detail the results of the last *Kharif* season along with the ongoing technical programme. Scientists appraised the Chairman, regarding the results of last *Kharif* season along with the technical programme. The Chairman appreciated the work done by this small group and gave valuable suggestions. He emphasized on the importance of monitoring and surveillance of diseases and insect pests in forage crops.

Based on the discussions, the following recommendations emerged.

1. Area under sweet corn is increasing for corn as well as green fodder purpose. Chairman suggested the pest incidence should be monitored and an experiment on the management of pests should be planned. He also emphasized to study the forage quality of sweet corn.
2. The trials PPT-1, PPT-2, PPT-15, PPT-16 and PPT-17 will continue as such in *Kharif* 2015.
3. The PPT-14 was concluded and will be validated on large field (500m<sup>2</sup>) as a new trial PPT-18.
4. New trial PPT-19 "Efficacy of different bio-pesticides against aphids on forage cowpea" was formulated.

The session ended with vote of thanks to the chair.

## TECHNICAL SESSION - V

### REVIEW OF CENTRE -WISE ACTIVITIES

<b>Chairman</b>	: Dr. I. S. Solanki, ADG (FFC), ICAR
<b>Co Chairman</b>	: Dr. J. P. Yadavendra, QRT member
<b>Convener</b>	: Dr. A. K. Roy, Project coordinator (FC)
<b>Rapporteurs</b>	: Dr. A. Velayutham and Dr. A. K. Mehta

The session started with the introductory remark by the chairman. The centers were requested to present only the salient achievements and activities on in house breeding, germplasm enrichment, training, demonstrations etc. A total of 22 centers from different zones presented their activities and achievements.

#### Hill Zone

- Palampur centre has identified few *Setaria* germplasm accessions with high tiller numbers and low oxalic acid content. It was suggested to evaluate the material further.
- Srinagar centre has been advised on more exploration of germplasm on range grasses.
- Almora centre has identified Agro-forestry systems for sloppy lands. This model may be replicated in entire Uttaranchal region.

#### North West Zone

- Ludhiana centre highlighted the in-house breeding programme apart from contributing 4 entries; two each in maize and pearl millet for multilocation testing.
- Hisar centre is maintaining good number of germplasm accessions in cowpea, pearl millet and maize.
- Pantnagar centre has been instructed to put more emphasis on breeding programme especially in forage cowpea and oat and also to meet the breeder seed target.

#### North East Zone

- Ranchi centre was advised to increase the number of crosses to obtain good recombinants.
- Kalyani centre was advised to fill up the vacant post of plant breeder urgently.
- Bhubaneswar centre was advised to increase the number of crosses in rice bean rather than concentrating on the mutation breeding.
- Jorhat centre presented the in house breeding activities on rice bean and fodder maize.
- Imphal centre was advised to take necessary action to fill up the post of plant breeder.

#### Central Zone

- Anand centre has good collections of fodder maize, sorghum and bajra germplasm which may be shared by other centers as per their need.
- Jabalpur centre has good germplasm collections of rice bean and soybean.
- IGFR, Jhansi centre has carried out NIFTD programmes on large scale. Being the main institute, the chairman suggested concentrating more on *kharif* forage breeding programmes.
- Rahuri centre has highlighted the in house breeding programme on multicut fodder sorghum, maize and BN hybrid.
- BAIF, Urulikanchan is having good germplasm collections in maize and attempted five crosses using six promising inbred lines and African tall variety.
- The newly joined plant breeder at Raipur center was advised to acquaint with forage crops and start working on crossing programme.

### South Zone

- Hyderabad centre has initiated breeding programme for the development of inbred lines in fodder maize.
- Mandya centre has presented result on oil rich corn line for increasing the milk yield. Dr. J.P. Yadavendra, QRT member suggested to get the improved QPM lines from RVSKVV, Gwalior for high oil content.
- Coimbatore centre presented the good feedback from the farmers on BN hybrid COBN-5. They are also maintaining good germplasm collections in BN hybrid, cowpea and *Cenchrus setigerus*.
- Vellayani center has identified superior lines in guinea grass and BN hybrid.
- IGFRS, Dharwad presented good germplasm collections in Bracharia, BN hybrid and cowpea.

The chairman appreciated the efforts of all the centers in carrying out the AICRP-FC activities.

### The following suggestions were given to all the centers

- Send seed for the ensuing Kharif 2015 trials as per schedule given by PI Plant breeding and PI Agronomy.
- Send report of Rabi 2014-15 trial data before 31<sup>st</sup> May, 2015
- Send a copy of photographs along with package of practices and details of the state released varieties for documentation
- Send a copy of the endorsed variety in their states
- Send pdf copy of all the publications including those in regional languages for putting up on web site.
- Send 2-5 hard copies of all the publications including those in regional language for record at coordinating unit and further necessary action.
- Send the information regarding contingency plan in case of drought and erratic rainfall for the website

## TECHNICAL SESSION – VI FTD & TSP FORMULATION

**Chairman** : Dr. A. K. Roy, Project Coordinator  
**Finalisation of programme** : Drs. Ritu Mawar & A. K. Mall

At the outset, the chairman welcomed all the participants. Dr AK Mall and Dr Ritu Mawar discussed with scientists of AICRP (FC &U) coordinating and cooperating centres for allotting FTD for *Kharif* 2015.

A total of 935 FTD's were proposed to be allotted to 22 AICRP centres and three co-operating centre during *Kharif* 2015 for the crops *viz.*, BN hybrid, rice bean, maize, Maize + Cowpea, Setaria, bajra, guinea grass, cowpea and guar. Out of 935 FTD's, 290 were allocated to BN Hybrid, 35 to Rice bean, 225 to Maize, 45 to Maize + Cowpea, 40 to Setaria, 145 to Bajra, 70 to Cowpea, 40 to Guinea grass 10 to Rice bean/ cowpea, 5 to Guar and 30 to forage sorghum.

### **Regarding FTDs, it was emphasized that**

- There is budget constraint and centers should use the resources of their respective institutions for carrying out the activities.

### **Regarding TSP programme, it was emphasized that**

- The guidelines issued by Tribal Welfare Ministry, ICAR should be strictly followed.
- Centers can take help of KVK's and NGO's for effective execution of TSP programme
- Centers can use the budget for technology demonstration on fodder production and conservation, livestock development and distribution of small tools to tribal rural people.

### **All the centers need to provide following information regarding FTDs and TSPs**

- The list of beneficiaries and their details including mobile number.
- Area covered under the programme and the relevant data in yield level.
- Every year the village and farmers should be changed.
- Efforts should be made to collect data on vertical and horizontal transfer of technologies.

## Technical Session-VII

### Web site/ PGR/ Breeding/ Production/ Protection issues

Chairman : Dr. A. K. Roy, PC (FC)  
Rapporteurs : Dr. H.P. Parmar and D.K. Banyal

During the session various important issues of different disciplines were discussed

#### Web-site:

- It was informed that AICRP web site is now functional.
- All the centers were requested to provide literature, staff position and contingency plan etc in pdf / MS Word file for upload on the web site.
- Dr A K Mall, Dr R K Agrawal and Dr Ritu Mawar explained in detail various steps for data upload in the system.

#### PGR/ Plant Breeding:

- A meeting of plant breeders of AICRP center and IGFR should be convened to discuss specific thrust areas and national programme for hybridization and material sharing for both *Kharif* and *Rabi* crops at some suitable place in July or during the next workshop.
- Exploration programme should also be planned with multi -institutional teams. The programme should be finalized and team members identified for Kharif season.

#### Crop Production:

- It is suggested that in the trials conducted with high inputs, the physiochemical property of soil should be studied.
- More experiments on cropping system should be planned.
- Top feed from fodder trees should be popularized and be made a part in fodder production and utilization programme.

#### Crop Protection:

- Residue analysis should be conducted for pesticide and weedicide spray at regular interval for advising the livestock keepers.

The session ended with vote of thanks from the Chairman.

## Varietal Identification Committee Meeting

The meeting of Varietal Identification Committee of The AICRP on Forage Crops and Utilization was held under the chairmanship of Dr. I. S. Solanki, Assistant Director General (Food and Fodder Crops), and ICAR on 18.04.2015 at PJTSAU, Hyderabad.

Following members were present in the meeting

- |     |  |   |                  |
|-----|--|---|------------------|
| 1.  | Dr. I. S. Solanki, ADG (FFC), ICAR, New Delhi                    | : | Chairman         |
| 2.  | Dr. D Raji Reddy, Director Research, PJTSAU, Hyderabad           | : | Member           |
| 3.  | Dr. J P Yadvendra, QRT Member, IGFRI, Jhansi                     | : | Member           |
| 4.  | Dr. K K Dutta, QRT Member, IGFRI, Jhansi                         | : | Member           |
| 5.  | Dr. B Joseph, Head, Agronomy, PJTSAU, Hyderabad                  | : | Member           |
| 6.  | Dr. M. V. Sudhakar, NSC, Hyderabad                               | : | Member           |
| 7.  | Dr. T. Dayakar Reddy, Head PBG, PJTSAU, Hyderabad                | : | Member           |
| 8.  | Dr. K.V.S. Meena Kumari, Plant Pathologist & Comptroller, PJTSAU | : | Member           |
| 9.  | Dr. P. Rami Reddy, Agri Nova, Hyderabad                          | : | Member           |
| 10. | Dr. S.V. Naidu, Dept. of Animal Husbandary, Govt. of Telangana   | : | Member           |
| 11. | Dr. A K Roy, PC, AICRP FC&U, IGFRI, Jhansi                       | : | Member Secretary |

Following seven proposals were put before the committee

1. **Entry OS-403 (Oat):** The proposal was submitted by CCS HAU, Hisar for all India release. The committee considered the proposal and found that the variety has superiority for GFY, DMY and other characters for North East and South Zone. Hence the committee recommended its identification for release for cultivation in the North East (Assam, Manipur, Odhisha, West Bengal, Eastern UP, Bihar, Jharkhand) and South Zones (Telengana, Andhra Pradesh, Karnataka, Tamil Nadu) for cultivation under irrigated conditions during *rabi* season under single cut situation. **The proposed name is Central oat OS 403**
2. **Entry JHO 2009-1(Oat):** The proposal was submitted by IGFRI, Jhansi for Central Zone. The committee found that another entry from IGFRI, JHO 2009-2 is also equally superior and both had advantage over the checks. Based on crude protein yield and other parameters, JHO 2009-1 was identified for release for cultivation in Central Zone in the states of UP, MP, Maharashtra, Gujarat under irrigated conditions during *rabi* season under single cut situation. **The proposed name is Central oat JHO 2009-1**
3. **Entry DHM -117 (Hybrid Maize).** The proposal was submitted by PJTSAU, Hyderabad for release in NE zone. Committee observed that same variety was earlier notified for grain purpose and hence, did not consider it for identification
4. **Entry RLSB-11-50 [Sewan Grass (*Lasiurus indicus*)]:** The proposal was submitted by SKRAU, Bikaner for release in Sewan growing arid areas of North West Zone. The committee observed its superiority over other entries for green fodder yield, dry matter yield and crude protein over the general mean. Since there is no released variety in this crop, the general mean was considered as check. The committee recommended its release in the arid areas of Rajasthan, **The proposed name is Central Sewan RLSB 11-50**



5. **Entry APFB-09-1(Pearl millet):** The proposal was submitted by PJTSAU, Hyderabad for its cultivation in North East Zone. The committee observed its superiority or at par performance with checks, but it had distinct advantage for seed yield and furthermore, the variety was resistant to leaf spot disease. Hence the committee recommended for cultivation in North East Zone under rainfed condition for the states of Odhisha, Jharkhand, West Bengal, eastern UP, Bihar, Assam. **The proposed name is Central Forage Bajra APFB 09-1.**
6. **Entry IHTFM (Hybrid maize):** The proposal was submitted by Advanta Limited, Hyderabad for cultivation throughout India (North East, North West and South Zone). The committee observed that variety is not superior on mean basis in NE and South Zone over checks and qualifying entries. In North West Zone its performance was not consistent over the years and locations. Hence, the variety was not recommended for release.
7. **Entry PMH-1(Hybrid Maize):** The proposal was submitted by PAU, Ludhiana for North East Zone. The committee observed that the information provided is not complete and the variety was inferior to checks for biotic stress. Its performance was also not consistent in various locations over the years. Hence the committee did not recommended it for identification.

## PLENARY SESSION

Chairman	:	Dr. I. S. Solanki, ADG (FFC), ICAR
Co-Chairman	:	Dr. D. Raji Reddy, Director of Research
Convenor	:	Dr. A. K. Roy, Project Coordinator (FC & U)
Rapporteurs	:	Drs. Ritu Mawar & A K Mall

The session started with introductory remarks of the chairman. Dr. I. S. Solanki stressed upon the need to utilize modern and conventional breeding tools to develop new cultivars.

The rapporteurs of different technical sessions presented proceedings of respective sessions. The aspects and major issues related to *Kharif-2015* programme in specific and forage research in general were discussed. The recommendation of technical session were discussed, modified and accepted.

Dr. A. K. Roy, PC (FC &U) presented the recommendations of Varietal Identification committee

Dr. D. Raji Reddy, Director of Research emphasized on need to give more focus on extension activities for effective execution of forage production technologies.

Chairman appreciated the efforts of forage scientists across the country despite several limitations in terms of resources. He stressed upon the need of germplasm enrichment, variability creation and development of superior cultivars. Post harvest conservation and fodder bank concept should be given priority in meeting natural calamities.

Dr. D. Raji Reddy, Director of Research, PJTSAU, Hyderabad extended vote of thanks to the ICAR authorities, Project Coordinator and his team, participants, local team and media for successful conductance of National Group meet at the end of session.

Dr A K Roy, Project Coordinator, AICRP FC & U also extended a formal vote of thanks to the ICAR authorities, participants, local team and media for successful conductance of National Group meet at the end of session.

## TECHNICAL PROGRAMME FOR FORAGE CROP IMPROVEMENT - *Kharif-2015*

### 1. IVTM: Initial Varietal Trial in Forage Maize (New)

Entries No.	:	7 + 2 Checks
Entries Name	:	2 (Mandya), 1 (Anand), 1 (Hyderabad), 2 (IGFRI), 1 (Advanta)
Checks	:	African Tall & J-1006
Design	:	RBD with 3 replications
Plot size	:	4 m x 1.8 m accommodating 4 m long 6 rows at 30 cm
Seed rate	:	75 Kg/ha (60g/Plot)
Fertilizers	:	80:40 kg/ha (N:P) 40:40 kg/ha (N:P) basal+ 40 N after 30 days
Seed requirement	:	5 Kg/entry and 5 Kg/NC
Locations (22)	:	<b>HZ</b> -Palampur, Srinagar; <b>NWZ</b> -Ludhiana, Hisar, Udaipur, Pantnagar, Jalore <b>NEZ</b> -Faizabad, Bhubaneswar, Ranchi, Jorhat, Imphal ; <b>CZ</b> -Anand, Raipur, Jabalpur, Rahuri, Urulikanchan, Jhansi ; <b>SZ</b> -Hyderabad, Coimbatore, Mandya, Karaikal

### 2. AVTM-1: First Advanced Varietal Trial in Forage Maize

Entries No.	:	5 + 2 Checks
Entries Name	:	MFM-6, PAC-746, MPC-1, AFM-4 & MFM-4
Checks	:	African Tall, J-1006
Design	:	RBD with 3 replications
Plot size	:	4 m x 3 m accommodating 4 m long 10 rows at 30 cm
Seed rate	:	75 Kg/ha (90g/Plot)
Fertilizers	:	80:40 kg/ha (N:P) 40:40 kg/ha (N:P) basal+40 N after 30 days
Seed requirement	:	4.5 Kg/entry and 4.5 Kg/NC
Locations (12)	:	<b>HZ</b> -Palampur, Srinagar, Almora <b>NWZ</b> -Ludhiana, Hisar, Udaipur, Pantnagar, Jalore <b>NEZ</b> -Faizabad, Bhubaneswar, Ranchi, Jorhat

### 3. IVTPM: Initial Varietal Trial in Forage Pearl millet (New)

Entries No.	:	4 + 2 Checks + 3 (ZC)
Entries Name	:	1 (Anand), 2 (Bikaner), 1 (Hyderabad)
Checks	:	Raj Bajra Chari-2 (NC), Giant Bajra (NC), BAIF Bajra 1 (CZ) + AFB-3 (NWZ) + APFB-9-1 (NEZ)
Design	:	RBD with 4 replications
Plot size	:	4 m x 1.8 m accommodating 4 m long 10 rows at 30 cm
Seed rate	:	12 Kg/ha (10g/Plot)
Fertilizers	:	40:20 kg/ha (N:P) basal
Seed requirement	:	1 Kg/entry; 1 Kg/NC and 0.30 Kg/ZC
Locations (19)	:	<b>NWZ</b> -Ludhiana, Hisar, Bikaner, Jalore, Meerut <b>NEZ</b> -Faizabad, Pusa, Bhubaneswar, Ranchi <b>CZ</b> -Anand, Jamnagar, Jabalpur, Rahuri, Urulikanchan, Jhansi <b>SZ</b> -Coimbatore, Hyderabad, Mandya, Raichur

### 4. AVTPM-2: Second Advanced Varietal Trial in Forage Pearl millet

Entries No.	:	1 + 3
Entries Name	:	DFMH-30
Checks	:	Raj Bajra Chari-2, Giant Bajra, AVKB-19
Design	:	RBD with 5 replications
Plot size	:	4 m x 3 m accommodating 4 m long 10 rows at 30 cm
Seed rate	:	12 kg/ha (15g/plot)
Fertilizers	:	40:20 kg/ha (N:P) basal
Seed requirement	:	0.75 Kg/entry and 0.75 Kg/NC
Locations (8)	:	<b>NWZ</b> - Ludhiana, Hisar, Bikaner, Jalore <b>SZ</b> -Coimbatore, Hyderabad, Mandya, Karaikal

### 5. AVTPM-2 (Seed): Second Advanced Varietal Trial in Forage Pearl millet (Seed)

Entries No.	:	1 + 3
Entries Name	:	DFMH-30
Checks	:	Raj Bajra Chari-2, Giant Bajra, AVKB-19
Design	:	RBD with 5 replications
Plot size	:	4 m x 3 m accommodating 4 m long 10 rows at 30 cm
Seed rate	:	12 kg/ha (15g/plot)
Fertilizers	:	40:20 kg/ha (N:P) basal
Seed requirement	:	0.65 Kg/entry and 0.65 Kg/NC
Locations (6)	:	NWZ- Ludhiana, Hisar, Bikaner SZ-Coimbatore, Hyderabad, Mandya

### 6. IVTC: Initial Varietal Trial in Forage Cowpea (New)

Entries No.	:	8 + 2 (NC) + 5 (ZC)
Entries Name	:	3 (Mandya), 1 (Pantnagar), 1 (Hyderabad), 2 (Ludhiana), 1 (Vellyani)
Checks	:	National checks: Bundel Lobia-1, UPC-5286, Bundel Lobia-2 (NWZ), UPC-622 (HZ), UPC-628 (NEZ), UPC-9202 (CZ) & MFC-8-14 (SZ)
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	:	20:40 kg/ha (N:P) basal
Seed requirement	:	3 Kg/entry; 3 Kg/NC and 0.25 Kg/ZC
Locations (29)	:	HZ-Palampur, Srinagar, Almora NWZ-Ludhiana, Hisar, Pantnagar, Bikaner, Udaipur, Jalore, Meerut NEZ-Faizabad, Bhubaneswar, Ranchi, Jorhat, Kalyani, Imphal CZ-Anand, Rahuri, Urulikanchan, Jhansi, Kanpur, Raipur SZ-Coimbatore, Vellayani, Mandya, Hyderabad, Dharwad, Karaikal & Raichur

### 7. AVTC-2: Second Advanced Varietal Trial in Cowpea

Entries No.	:	1 + 2 NC + 1 ZC
Entries Name	:	TNFC-0926
Checks	:	National checks: Bundel Lobia-1, UPC-5286 ; Zonal checks: UPC-622 (NEZ)
Design	:	RBD with 5 replications
Plot size	:	4 m x 3 m accommodating 4 m long 10 rows at 30 cm
Seed rate	:	35.0 kg/ha (45 g/plot)
Fertilizers	:	20:40 kg/ha (N:P) basal
Seed requirement	:	1.5 Kg for entry, NC and ZC
Locations (5)	:	NEZ-Faizabad, Bhubaneswar, Ranchi, Jorhat, Kalyani

### 8. AVTC-2 (Seed): Second Advanced Varietal Trial in Cowpea for Seed

Entries No.	:	1 + 2 NC + 1 ZC
Entries Name	:	TNFC-0926
Checks	:	National checks: Bundel Lobia-1, UPC-5286, Zonal checks: UPC-622 (NEZ)
Design	:	RBD with 5 replications
Plot size	:	4 m x 3 m accommodating 4 m long 10 rows at 30 cm
Seed rate	:	35.0 kg/ha (45 g/plot)
Fertilizers	:	20:40 kg/ha (N:P) basal
Seed requirement	:	1.5 Kg for entry, NC and ZC
Locations (5)	:	NEZ-Faizabad, Bhubaneswar, Ranchi, Jorhat, Kalyani

### 9. IVT Rice bean: Initial Varietal Trial in Rice bean

Entries No.	:	7 + 3 Checks
Entries Name	:	6 (Jorhat) & 1 (Jabalpur)
Checks	:	K-1 (Bidhan-1), Bidhan-2, RBL-6
Design	:	4 m x 1.8 m accommodating 4 m long 10 rows at 30 cm
Plot size	:	RBD with 3 replications
Seed rate	:	35.0 kg/ha (30 g/plot)
Fertilizers	:	20:40 kg/ha (N:P) basal
Seed requirement	:	1.5 Kg/entry and 1.5 Kg/NC
Locations (10)	:	Kalyani, Ranchi, Bhubaneswar, Jorhat, Pusa, Vellayani, Jabalpur, Shillong, Imphal, & Palghar (Dapoli)

### 10. VT *Cenchrus ciliaris* -2015 (1<sup>st</sup> Year): Varietal Trial in *Cenchrus ciliaris* (Perennial)

Entries No.	:	6 + 3 Checks
Entries Name	:	3 (IGFRI), 2 (Bikaner) & 1(CAZRI)
Checks	:	IGFRI 3108, CAZRI 75 & IGFRI 727
Design	:	RBD with 3 replications
Plot size	:	4 x 3 m (6 rows of 4.0 m at 50 cm)
Seed rate	:	5 Kg/ha (6g/plot)
Fertilizers	:	90:50:40 kg N, P <sub>2</sub> O <sub>5</sub> , K <sub>2</sub> O/ha
Seed requirement	:	0.30 Kg/entry and 0.30 Kg/NC
Locations (15)	:	NWZ-Ludhiana, Hisar, Bikaner, Jodhpur, Avikanagar, Jalore CZ-Anand, Rahuri, Urulikanchan, Jhansi, Jabalpur, SZ-Coimbatore, Mandya, Hyderabad & Dharwad

### 11. VT *Cenchrus setigerus* -2015 (1<sup>st</sup> Year): Varietal Trial in *Cenchrus setigerus* (Perennial)

Entries No.	:	8 + 1 check
Entries Name	:	3 (Bikaner), 1 (Coimbatore), 1(CAZRI) & 3 (IGFRI)
Checks	:	CAZRI-76
Design	:	RBD with 3 replications
Plot size	:	4 x 3 m (6 rows of 4.0 m at 50 cm)
Seed rate	:	5 Kg/ha (6g/plot)
Fertilizers	:	90:50:40 kg N, P <sub>2</sub> O <sub>5</sub> , K <sub>2</sub> O/ha
Seed requirement	:	0.30 Kg/entry and 0.30 Kg/NC
Locations (13)	:	NWZ-Jalore, Pali (CAZRI), Jodhpur (CAZRI), Bikaner, Avikanagar CZ-Jhansi, Rahuri, Dhari, Anand SZ-Coimbatore, Mandya, Hyderabad & Karaikal

### 12. VTBN-2015 (1<sup>st</sup> Year): Varietal Trial in Bajra Napier Hybrid (Perennial)

Entries No.	:	6 + 3 checks
Entries Name	:	4 (BAIF), 1 (Ludhiana) & 1 (TNAU)
Checks	:	CO-3, NB-21, TNFC-074
Design	:	RBD with 3 replications
Plot size	:	4 m x 3 m (50 rooted slips)/60 x 50 cm
Seed rate	:	42 rooted slips/rep/entry
Fertilizers	:	150:50:40 kg N, P <sub>2</sub> O <sub>5</sub> , K <sub>2</sub> O/ha in split doses
Seed requirement	:	1000 rooted slips/entry
Locations (20)	:	HZ-Palampur, Almora NWZ-Ludhiana, Hisar, Bikaner NEZ-Bhubaneswar, Ranchi, Jorhat CZ-Anand, Rahuri, Urulikanchan, Jhansi, Raipur, Jabalpur, Palghar (Dapoli) SZ-Coimbatore, Mandya, Hyderabad, Vellayani & Dharwad

**13. VTBN-2013 (III<sup>rd</sup> Year): Varietal Trial in Bajra Napier Hybrid (Perennial)**

Entries No.	:	8 +3 checks
Entries Name	:	TNCN-1076, TNCN-1078, PBN-342, PBN-346, RBN-2004-03, RBN-2010-Y-1, RBN-2011-12 and DHN-15
Checks	:	CO-3, NB-21, PBN-233
Design	:	RBD with 3 replications
Plot size	:	4.2 m x 3 m (50 rooted slips)/60 x 50 cm
Seed rate	:	42 rooted slips/rep/entry
Fertilizers	:	150:50:40 kg N, P <sub>2</sub> O <sub>5</sub> , K <sub>2</sub> O/ha in split doses
Seed requirement	:	1000 rooted slips/entry
Locations (18)	:	HZ-Palampur, Almora NWZ-Ludhiana, Hisar, Bikaner NEZ-Bhubaneswar, Ranchi, Jorhat CZ-Anand, Rahuri, Urulikanchan, Jhansi, Jabalpur, Palghar (Dapoli) SZ-Coimbatore, Mandya, Hyderabad, Dharwad

**14. VT *Sehima*-2013 (III<sup>rd</sup> Year): Varietal Trial in *Sehima nervosum* (Perennial)**

Entries No.	:	6 +1 checks
Entries Name	:	JHS-13-1, JHS-13-2, JHS-13-3, JHS-13-4, JHS-13-5 and RSN-12-1
Checks	:	Bundel Sen Ghas-1 (IGS 9901)
Design	:	RBD with 4 replications
Plot size	:	4 x 3 m (48 rooted slips)/50 x 50 cm
Seed rate	:	48 rooted slips/rep/entry
Fertilizers	:	90:50:40 kg N, P <sub>2</sub> O <sub>5</sub> , K <sub>2</sub> O/ha in split doses
Seed requirement	:	0.4 kg/entry (0.15 kg)
Locations (15)	:	NWZ-Ludhiana, Hisar, Bikaner NEZ-Bhubaneswar, Ranchi CZ-Anand, Rahuri, Urulikanchan, Jhansi, Jabalpur SZ-Coimbatore, Mandya, Hyderabad, IGFRI RRS Dharwad

**15. VT *Dichanthium*-2013 (III<sup>rd</sup> Year): Varietal Trial in *Dichanthium annulatum* (Perennial)**

Entries No.	:	7 +1 checks
Entries Name	:	JHD-13-1, JHD-13-2, JHD-13-3, Marvel-09-1, Marvel-09-4 and Marvel-06-40
Checks	:	Marvel-8
Design	:	RBD with 3 replications
Plot size	:	4 x 3 m (48 rooted slips)/50 x 50 cm
Seed rate	:	48 rooted slips/rep/entry
Fertilizers	:	90:50:40 kg N, P <sub>2</sub> O <sub>5</sub> , K <sub>2</sub> O/ha
Seed requirement	:	0.15 kg/entry
Locations (15)	:	NWZ-Ludhiana, Hisar, Bikaner, NEZ-Bhubaneswar, Ranchi CZ-Anand, Rahuri, Urulikanchan, Jhansi, Jabalpur, SZ-Coimbatore, Mandya, Hyderabad, IGFRI RRS Dharwad

**16. VT *Cenchrus ciliaris*-2013 (III<sup>rd</sup> Year): Varietal Trial in *Cenchrus ciliaris* (Perennial)**

Entries No.	:	7 +2 checks
Entries Name	:	RCCB-03-23, RCCB-04-64, RCC-10-6, RCC-10-8, RCC-CS-10-4, RCC-CS-10-5 and RCC-CS-10-8
Checks	:	IGFRI 3108, CAZRI 75
Design	:	RBD with 3 replications
Plot size	:	4 x 3 m (6 rows of 4.0 m at 50 cm)
Seed rate	:	5 kg/ha (6g/plot)
Fertilizers	:	90:50:40 kg N, P <sub>2</sub> O <sub>5</sub> , K <sub>2</sub> O/ha
Seed requirement	:	0.15 kg/entry
Locations (11)	:	NWZ-Ludhiana, Hisar, Bikaner CZ-Anand, Rahuri, Urulikanchan, Jhansi, Jabalpur, SZ-Coimbatore, Mandya, Hyderabad

**17. VT *Clitoria*-2013 (III<sup>rd</sup> Year): Varietal Trial in *Clitoria ternatea* (Perennial)**

Entries No.	:	7
Entries Name	:	TJCT-4, TJCT-6, JGCT-2013-1, JGCT-2013-2, JGCT-2013-3, JGCT-2013-4 and JGCT-2013-5
Checks	:	As there is no released variety, General mean will be taken as check
Design	:	RBD with 4 replications
Plot size	:	4 m x 3 m (6 rows of 4.0 m at 50 cm)
Seed rate	:	30 kg/ha (36g/plot)
Fertilizers	:	20:40 (N:P) kg/ha Basal
Seed requirement	:	1.5 kg/entry
Locations (8)	:	NWZ-Ludhiana, Hisar, Bikaner CZ-Anand, Rahuri, Urulikanchan, Jhansi, Jabalpur

**18. VT *Setaria* grass -2015 (1<sup>st</sup> Year): Varietal Trial in *Setaria anceps* under cool sub- tropical and sub-temperate Himalayan Range lands (Perennial)**

Entries No.	:	3 + 3 Checks
Entries Name	:	S-4, S-6 & S-25 (Palampur)
Checks	:	PSS-1, S-18 & S-92
Design	:	RBD with 4 replications
Plot size	:	4 x 3 m
Planting	:	30 cm slip to slip and 40 cm row to row
Fertilizers	:	NPK 60:40:30 Kg/ha at the time of sowing and 30N after each cut
Root Slip requirement	:	Root slips/hill: 3600 root slips will be provided to each centre for multiplication and actual trial will be planted during <i>Kharif</i> -2016
Locations (4)	:	Palampur, Bajaura (Kullu), Almora, Mukteswar & Johrat

**19. VT Tall Fescue-2015 (1<sup>st</sup> Year): Varietal Trial in *Festuca arundinacea* under cool sub- tropical and sub-temperate Himalayan Range lands (Perennial)**

Entries No.	:	5
Entries Name	:	IGFRIRRS-Festuca-14, 16, 5, 15, 4 (RRS IGFR)
Checks	:	Hima 1 and Hima 4
Design	:	RBD with 3 replications
Plot size	:	4 x 3 m
Planting	:	
Fertilizers	:	NPK 60:40:30 Kg/ha at the time of sowing and 30N after each cut
Locations (4)	:	Palampur, Bajaura (Kullu), Srinagar

**20. VT Orchard Grass-2015 (1<sup>st</sup> Year): Varietal Trial in *Dactylis glomerata* under cool sub- tropical and sub-temperate Himalayan Range lands (Perennial)**

Entries No.	:	7
Entries Name	:	IGFRIRRS-Dactylis-11, 5, 9, 4, 3, 20, 6 (RRS IGFR)
Checks	:	General mean
Design	:	RBD with 3 replications
Plot size	:	4 x 3 m
Planting	:	
Fertilizers	:	NPK 60:40:30 Kg/ha at the time of sowing and 30N after each cut
Locations (4)	:	Palampur, Bajaura (Kullu), Srinagar, Almora, Coimbatore (ooty), Mukteswar

HZ: Hill Zone, NWZ: North West zone, NEZ: North East Zone, CZ: Central Zone, SZ: South Zone

Seed Requirement of the Check Varieties for Kharif 2015 Trials

S N	Crop	Variety	Quantity ( in kg)
1.	Maize	African Tall	10
		J-1006	10
2.	Pearl Millet	Raj Bajra Chari-2	4
		Giant Bajra	4
		AVKB-19	3
		BAIF Bajra-1	0.30
		AFB-3	0.30
		APFB-9-1	0.30
3.	Cowpea	Bundel Lobia-1	9
		UPC-5286	9
		Bundel Lobia-2	0.5
		UPC-622	6
		UPC-628	0.5
		UPC-9202	0.5
		MFC-8-14	0.5
4.	Rice Bean	Bidhan-1	2
		Bidhan-2	2
		RBL-6	2
5.	<i>Cenchrus ciliaris</i>	IGFRI-3108	0.30
		IGFRI-727	0.30
		CAZRI-75	0.30
6.	<i>Cenchrus setigerus</i>	CAZRI-76	0.30



## TECHNICAL PROGRAMME FOR FORAGE CROP PRODUCTION - *Kharif*-2015

### 1. Location Specific Trials:

**K-15-AST-1 L:** Studies on different models for year round green fodder production under irrigated condition

**Location:** Mandya

**Objectives:**

- ✓ To identify the sustainable cropping system with respect to soil fertility and crop productivity.
- ✓ To study the different combinations of perennial and seasonal fodder crops for productivity.
- ✓ To study economics of different models.

**Experimental Details:**

**Duration:** Three years

**Design:** RBD

**Replications:** 4

**Plot size :** Gross : 4.80 x 5.00 m

**No. of treatments:** 6

**Year of Start:** Kharif 2015

Treatments	Kharif	Rabi	Summer
T <sub>1</sub>	Fodder Maize + Cowpea (3:1)	Fodder Oat + Lucerne (3:1)	Pearl millet + Cowpea (3:1)
T <sub>2</sub>	Fodder Sorghum + Cowpea (3:1)	Fodder Maize +Cowpea (3:1)	Pearl millet + Cowpea (3:1)
T <sub>3</sub>	B N hybrid +Cowpea (2:8)	B N hybrid +Cowpea (2:8)	B N hybrid + Cowpea (2:8)
T <sub>4</sub>	B N hybrid + Lucerne (2:8)	Year round	
T <sub>5</sub>	B N hybrid + Desmanthus (2:8)	Year round	
T <sub>6</sub>	B N hybrid + <i>Sesbania sps.</i> (2:8)	Year round	

**Note:** B N hybrid will be raised in the paired row method (between pair 2.4 m & with in pair 0.6 m)

**Observations to be recorded:**

- a. Plant height (cm) at the time of harvest
- b. Green forage yield (q/ha)
- c. Dry matter yield (q/ha)
- d. Crude protein content (%) and yield (q/ha)
- e. Economics of the system (net returns, B:C ratio)
- f. Soil N, P, K, OC, PH and EC before sowing and after completion of the sequence

## **K-15-AST-2 L: Performance of napier bajra hybrids as influenced by nature of vegetative propagules**

**Location:** IGFRI, RRS, Dharwad

### **Objectives:**

- ✓ To study the establishment pattern in napier bajra hybrids through different vegetative propagules.
- ✓ To study the influence of vegetative propagules on fodder productivity.
- ✓ To work out the economics of vegetative propagules in napier bajra hybrids.

### **Experimental Details:**

**Design:** Split-Plot design

**Sub plots:** Vegetative propagules

**Main plots:** Hybrids

**Plot size:** 4 m x 3.6 m

**Replications:** Three

**Spacing:** 60 cm x 60 cm

### **Treatments**

#### **I. Hybrids: 3**

1. DHN 6 (Sampoorna)
2. Co (BN)- 5
3. IGFRI 7

#### **II. Planting material: 4**

1. Rooted slip 1 eyed
2. Rooted slip 2 eyed
3. Stem cutting 1 eyed
4. Stem cutting 2 eyed

### **Observations to be recorded:**

#### **Growth**

- No. of established plants at 30, 45, 60, 75 DAT
- No. of tillers at 60, 75, 90 DAT
- Height of tillers at 60, 75, 90 DAT
- Dry matter/hill (g) at 60, 75, 90 DAT
- Days to flowering
- No. of cuts (at 50% flowering) /annum

#### **Yield**

- GFY & DFY (t/ha/annum)
- Volume (cubic meter) & weight (kg) of planting material/ha

#### **Quality**

- Crude protein content (%) and yield (t/ha) at each cut

## K-15-AST-3 L: Studies on Integrated nutrient management in Fodder Rice bean

### Location: Imphal

#### Objectives:

- ✓ To assess effect of chemical fertilizer and poultry manure on productivity of fodder rice bean and soil health.
- ✓ To work out the economics.

#### Experimental Details:

Design : RBD

Plot Size : 4X3

Seed rate : 35 kg/ha

Replications: 3

Spacing: 30 cm (R-R)

Duration: 03 years

#### Treatments

T <sub>1</sub>	100% RDF
T <sub>2</sub>	75% RDF for phosphorus + 1 tonne Poultry manure
T <sub>3</sub>	75% RDF for phosphorus + 2 tonne Poultry manure
T <sub>4</sub>	50% RDF for phosphorus + 1 tonne Poultry manure
T <sub>5</sub>	50% RDF for phosphorus + 2 tonne Poultry manure
T <sub>6</sub>	25% RDF for phosphorus + 1tonne Poultry manure
T <sub>7</sub>	25% RDF for phosphorus + 2 tonne Poultry manure

#### Observation to be recorded:

I. Growth and yield parameters	II. Quality	III. Economics	IV. Soil health
Plant height	Crude protein content (%)	Net return	Available NPK content inbeing and of each year
Leaf Stem ratio	Crude protein yield (kg/ha)	Cost of cultivation	
Green forage yield (q/ha)		BC ratio	
Dry matter yield (q/ha)			

**K-15-AST4 L: Utilization of industrial effluent as source of irrigation water and its effect on productivity and profitability of forage based cropping systems.**

**Location: Pantnagar**

**Objectives**

- To find out the suitability of industrial effluent as alternate source of irrigation water
- To study effect of industrial effluent on productivity and profitability of forage based cropping systems
- Effect of industrial effluent on soil and plant health.

**Design : Split Plot Design**

**Replications: 3**

**Plot Size : 4m x 3m**

**Duration: 04 years**

**Main plot, (Industrial Water): 04**

1. Untreated Industrial Effluent
2. Diluted Industrial Effluent with ground water (1:1) (one Irrigation with Industrial Effluent followed by one irrigation with ground water)
3. Diluted Industrial Effluent with ground water (1:2) one Irrigation with Industrial Effluent followed by two irrigation with ground water)
4. Ground water alone

**Sub plot (Forage based Cropping systems) : 04**

1. Bajra Napier Hybrid (BN Hybrid)
2. *Panicum maximum* (Guinea Grass)
3. *Brachiaria* var. mulato (Mulato grass)
4. Sorghum – Berseem – Maize + Cowpea

**Observations**

**Before experimentation**

- Soil pH, soil organic carbon, N, P and K status of soil
- pH, TDS and EC of the industrial effluents and ground water
- Heavy metal content in effluent, forage and soil at beginning of experimentation

**During experimentation**

- Green forage yield
- Dry forage yield
- Leaf: Stem ratio
- CP content
- Forage yield equivalent of the system
- Economics of the system
- Nutrient content including heavy metals in sequential crops (every year)

**After experimentation**

- Soil pH
- Soil organic carbon
- N, P and K status of the soil.
- Heavy metal content in soil, plant and water
- Balance sheet of residual soil fertility

## **K-15-AST-5L: Studies on carbon sequestration in subabul based silvi-pastoral cropping system under rain fed agriculture**

**Location: Hyderabad**

### **Objectives**

- To study the organic matter input to soil through subabul based perennial fodder cropping system
- To study organic matter partitioning added through the ROTH-C

### **Experimental details**

**Design :** RBD

**Replications:** 3

**Treatments:** 8

**Duration:** 05 years

**Treatments** In subabul plantation

T<sub>1</sub> Subabul (Sole crop)

T<sub>2</sub> Subabul + APBN-1 as intercrop

T<sub>3</sub> Subabul + APBN-1 + *Desmanthus* in 3:1 ratio

T<sub>4</sub> Subabul + APBN-1 + *Desmanthus* (3:1) in stylo ground cover

T<sub>5</sub> Subabul + *Cenchrus ciliaris*

T<sub>6</sub> Subabul + *Cenchrus ciliaris* + *Desmanthus* intercrop (3:1 ratio) in Stylo ground cover

T<sub>7</sub> Subabul + *Cenchrus ciliaris* + *Desmanthus* intercrop (3:1 ratio)

T<sub>8</sub> Subabul + *Desmanthus* as intercrop

### **Observation to be recorded:**

- a. Growth parameters of Subabul and companion crop.
- b. GFY and DFY at flowering and at seed maturity
- c. CP%, CF% at flowering and at harvest crops.
- d. Monthly OM input surface soil 0-30 cm
- e. Root biomass and carbon assessment from all component species.

### **Inputs for model**

1. Clay % in soil
2. Plant residue input viz.,
  - a. Root biomass measured immediately after harvesting crop (Franzluebbers et al, 1999)
  - b. Rhizodeposition of C from root exudates and root turn over (Shamoot et al, 1968)
  - c. Leaf litter
3. Monthly mean temperature, rainfall, evaporation

**Note:** Studies will be continued & observations will be recorded in existing Subabul based Cropping system

## K-15-AST-6L: Nutrient Management in genotypes of B x Napier hybrid.

Location: MPKV, Rahuri

### Objectives:

- To find out the optimum fertilizer dose for various B x Napier Hybrid genotypes.
- To study the economics of different treatments.

### Experimental Details:

Crop: B x Napier Hybrid

Variety: As per treatment

Design: FRBD

Replications: 3

Season: Kharif-2015-16

Plot size: Gross : 4.50 x 6.00 m.

Net : 2.70 x 4.80 m.

Treatments: 8

Duration: 05 years

Treatment Details:
<b>A) Main Factor: Variety (2)</b>
V <sub>1</sub> - RBN 2011-12
V <sub>2</sub> - Phule Jaywant
<b>B) Sub-Factor: (Fertilizer levels-4)</b>
F <sub>1</sub> - 75 % RDF (112.5:37.5:30 Kg NPK ha <sup>-1</sup> )
F <sub>2</sub> - 100 % RDF (150:50:40 Kg NPK ha <sup>-1</sup> )
F <sub>3</sub> - 125 % RDF (187.5:62.5:50 Kg NPK ha <sup>-1</sup> )
F <sub>4</sub> - 150 % RDF (225:75:60 Kg NPK ha <sup>-1</sup> )

### Note:

- FYM - 10 t ha<sup>-1</sup> year<sup>-1</sup> before planting.
- Seed treatment with 250 g *Acetobactor* and PSB each 1000 rooted slips.
- Green forage cut will be taken at 60 days interval.

### Fertilizer application schedule per year

#### a) F<sub>1</sub>- 75 % RDF (112.5:37.5:30 Kg NPK ha<sup>-1</sup>)

- Basal dose- (37.5:18.75:15 Kg NPK ha<sup>-1</sup>)
- After six month of planting (At time of 1<sup>st</sup> earthing up) (15:18.75:15 Kg NPK ha<sup>-1</sup>)
- Top dressing after each cut 15 Kg N ha<sup>-1</sup>

#### b) F<sub>2</sub>- 100 % RDF (150:50:40 Kg NPK ha<sup>-1</sup>)

- Basal dose- (50:25:20 Kg NPK ha<sup>-1</sup>)
- After six month of planting (At time of 1<sup>st</sup> earthing up) (20:25:20 Kg NPK ha<sup>-1</sup>)
- Top dressing after each cut 20 Kg N ha<sup>-1</sup>

#### c) F<sub>3</sub>- 125 % RDF (187.5:62.5:50 Kg NPK ha<sup>-1</sup>)

- Basal dose- (62.5:31.25:25 Kg NPK ha<sup>-1</sup>)
- After six month of planting (At time of 1<sup>st</sup> earthing up) (25:31.25:25 Kg NPK ha<sup>-1</sup>)
- Top dressing after each cut 25 Kg N ha<sup>-1</sup>

#### d) F<sub>4</sub>- 150 % RDF (225:75:60 Kg NPK ha<sup>-1</sup>)

- Basal dose- (75:37.5:30 Kg NPK ha<sup>-1</sup>)
- After six month of planting (At time of 1<sup>st</sup> earthing up) (30:37.5:30 Kg NPK ha<sup>-1</sup>)
- Top dressing after each cut 30 Kg N ha<sup>-1</sup>

### Observations to be recorded:

- Number of tillers per tussock.
- Plant height (cm)
- Leaf: stem ratio
- Tussock persistency
- Tussock girth (perimeter)
- Green fodder yield (q ha<sup>-1</sup>)
- Dry matter yield (q ha<sup>-1</sup>)
- Crude protein yield (q ha<sup>-1</sup>)
- Crude Fiber (%)
- Acid Detergent Fiber (ADF) (%)
- Neutral Detergent Fiber (NDF) (%)
- In-vitro digestibility (IVDMD)
- Soil fertility status at initial stage
- Soil fertility status at initial stage after completion of experiment (pH, OC, EC, N, P, K) (each treatment)
- Soil fertility status at initial stage (Composite)
- Economics.

**K-15-AST-7L: Screening of genotypes of fodder bajra and oat under sodic soil.**

**Location: Faizabad**

**Objective:**

- To identify promising genotypes of bajra and oat for fodder production under sodic soil of eastern UP.

**Experimental detail:**

**Design** : RBD

**Replication** : Three

**Plot Size** : 4m x 5m

**Treatment:**

**Kharif**

Bajra genotypes: Eight

**Rabi**

Oat genotypes: Eight

**Observations to be recorded:**

- a. Plant height (cm) at 50% flowering, green forage yield, dry mater yield, CP%, CP yield and leaf: stem ratio for both the crops.
- b. Soil properties: Initial OC%, EC, pH, Exchangeable Na% and available NPK (kg/ha).

## 2. Coordinated Trials:

### K-15-AST-8 C: Compatibility of *Stylosanthes scabra* with sewan and dhaman grass pastures under north-western India

Locations: Bikaner, Jalore, Fatehpur-Shekhawati

Objectives:

- ✓ To study the effect of individual grass on pasture establishment and growth.
- ✓ To study the effects of *Stylosanthes scabra* and Sewan and Dhaman grass cropping systems on pasture establishment and fodder production.
- ✓ To analyses the quality of fodder and economic of treatments.
- ✓

Design : RBD

Replications: 3

Treatments: 8

Plot size: 6.0 x 4.0 m.

Start of experiment: Kharif 2015

Duration: 04 years

Treatments	(grass and grass +legume mixture study)
T <sub>1</sub>	100 % seed of sewan grass ( <i>Lasiurus indicus</i> L.)
T <sub>2</sub>	100 % seed of dhaman grass ( <i>Cenchrus ciliaris</i> L.)
T <sub>3</sub>	100 % seed of <i>Stylosanthes scabra</i> legume
T <sub>4</sub>	75 % seed of sewan grass+ 25% <i>Stylosanthes</i> legume
T <sub>5</sub>	75 % seed of dhaman + 25% <i>Stylosanthes</i> legume
T <sub>6</sub>	50 % seed of sewan grass+ 50% <i>Stylosanthes</i> legume
T <sub>7</sub>	50 % seed of dhaman + 50 % <i>Stylosanthes</i> legume
T <sub>8</sub>	33 % seed of every grass (1/3 sewan ,1/3 dhaman & 1/3 <i>Stylosanthes</i> legume)

Observations to be recorded:

After establishment (observations would be recorded twice in a year i.e. December and May months and data will be reported during Rabi season

Number of shoots/ clump	Dry fodder yield per year.
Shoot weight	Inter crop capability parameters
Root weight	Fodder quality parameters analyses
Shoot/ root weight ratio	Soil nutrient status (initial and final) each year

**Note:** Seed rates 6 kg/ha of grass/legume as individual crop would be used, and sowing at 50 cm row spacing will be done, finally maintaining the plant stand at the geometry 50 X 50 cm



**K-15-AST-9 C: Development of climate resilient production technologies on productivity and economics of food - fodder based cropping systems**

**Locations: (4) Pantnagar, Ranchi, Kalyani, Jabalpur & IVRI, Bareilly**

**Objectives**

- ✓ To study the effect of climate change on productivity and profitability of food– fodder based cropping systems.
- ✓ To find out the suitable climate resilient production technology for higher profitability of grain – fodder based cropping systems.

**Experimental detail:**

Duration of the experiment : 03 years                      Replication : 04  
Design : Split Plot Design                      Plot Size : 3m x 5 m

<b>Main plot: (Climate Resilient technology): 04</b>
1. Zero tillage- (All the crops)
2. Minimum tillage single pass of cultivator + sowing with seed drill.
3. Conventional tillage
4. Zero tillage- minimum tillage- Zero tillage.
<b>Sub plot (Cropping systems): 04</b>
1. Rice (upland) – Berseem - Maize + Cowpea
2. Maize (Baby corn) – Berseem – Sorghum (Fodder)
3. Maize (Baby corn) – Wheat – Rice bean (Fodder)
4. Sorghum (Fodder) – Berseem – Maize (Baby Corn)

**Observation to be recorded:**

- a. Growth attributes of all crops of the system
- b. Green forage yield
- c. Dry Forage yield
- d. Economic yield,
- e. Quality parameters (CP content and yield, NDF and ADF)
- f. Residual soil fertility status of the systems at beginning and end of each crop cycle.
- g. Forage equivalent yield of the systems,
- h. Economics of the systems.

## **K-15-AST-10 C: Intensive Forage Production through Agase based (*Sesbania grandiflora*) cropping system under Protective Irrigation**

**Locations (3): Mandya, Vellayani & Raichur**

**Objectives:**

- ✓ To study the effect of cropping system on fodder yield, quality & soil fertility.
- ✓ To work out the economics.

**Experimental Details:**

**No. of treatments :** 7

**Year of start:** Kharif 2015

**No. of replications:** 3

**Spacing:** 2.0m x 1.0 m (Agase Sole)

**Design:** RCBD

**Plot Size:** 6.0 x 5.0 m

**Treatment Details:**

T <sub>1</sub> - Agase + Congo Signal grass (2:4)	T <sub>2</sub> - Agase + Rhodes grass (2:3)
T <sub>3</sub> - Agase + Guinea grass (2:3)	T <sub>4</sub> - Agase + Napier Bajra hybrid (2:2)
T <sub>5</sub> - Agase + Paragrass (2:4)	T <sub>6</sub> - Agase + Perennial fodder Sorghum (2:6)
T <sub>7</sub> - Agase (Sole)	

Note: Agase will be raised in the paired row method (between pair 2mt & with in pair 1 mt)

**Observations to be recorded:**

- a. Plant height (cm) at the time of harvest
- b. Green forage yield (q/ha)
- c. Dry matter yield (q/ha)
- d. Crude protein content (%) and yield (q/ha)
- e. Economics of the system (net returns, B:C ratio)
- f. Soil N, P, K, OC, P<sup>H</sup> and EC before sowing and after completion of the sequence

## K-15-AST-11 C: Studies on carbon sequestration in perennial grass based cropping systems

Locations: Hyderabad, Coimbatore, Vellayani, Ranchi, Jabalpur & Anand

Objectives:

- ✓ To study the effect of cropping system on carbon sequestration
- ✓ To study the effect of cropping system on Fodder yield, quality, Soil fertility & economics

Experimental Details:

Design : RBD

Replications : 3

Period : Three years

Treatments

T<sub>1</sub> BN hybrid at recommended spacing

\*T<sub>2</sub> Guinea grass at recommended spacing

T<sub>3</sub> BN hybrid in paired rows (60/120 cm) + Fodder cowpea (Kharif) - Lucerne (Rabi)

T<sub>4</sub> BN hybrid in paired rows (60/120 cm) + *Desmanthus* (Perennial)

T<sub>5</sub> BN hybrid in paired rows (60/120 cm) + *Sesbania grandiflora*

\*T<sub>6</sub> Guinea grass in paired rows (60/120 cm) + Fodder cowpea (Kharif) - Lucerne (Rabi)

T<sub>7</sub> Guinea grass in paired rows (60/120 cm) + *Desmanthus* (Perennial)

T<sub>8</sub> Guinea grass in paired rows (60/120 cm) + *Sesbania grandiflora*

\*T<sub>2</sub> and T<sub>6</sub> cowpea included instead of lucerne at Kerala (Vellayani)

Observations to be recorded

Soil

- Pre sowing analysis – EC, pH, OC, NPK
- Post harvest analysis – EC, pH, OC, NPK

Growth and yield parameters

- Plant height, No. of tillers/ m<sup>2</sup> · Leaf length, Leaf breadth, Leaf stem ratio
- Green fodder yield, Dry matter yield
- Root weight, Root volume (After the end of three years)

Quality parameters

- Crude protein, Crude protein yield, Crude fibre

Economics

- Net return, B:C ratio

\*First year will be establishment year

## **K-15-AST-12 C: Studies on the productivity and carbon sequestration of silvipastoral systems in hills of north western Himalayas**

**Locations: Palampur and Srinagar**

**Objectives:**

- To study the system productivity and organic matter input to soil through silvipastoral system

**Experimental Details:**

- Design : Spilt plot
- Replications : 3
- Period : Three years

**Treatments:**

**Main plot treatments: Trees species**

- Salix (3 m x 3m)
- Morus (3m x 3m)

**Sub plot Treatments: Range species**

- Setaria grass (var. S-18) (30cm x 30 cm)
- Fescue grass (var. Hima-14) (30 cm x 30 cm)
- White clover (var. Palampur Composite) (Broadcast)
- Fescue grass + White clover (Fescue grass at 30 cm x 30 cm spacing and with broadcasting of white clover)
- Local system (Natural grasses cover)

**Replications: Three**

Note: Salix and Morus will be planted at 3 m x 3m spacing, White clover seed rate in sole stand 6 kg/ha and in mixed stand 3 kg/ha

**Observations:**

**Soil:**

- Pre sowing analysis – EC, pH, OC, NPK
- Post harvest analysis – EC, pH, OC, NPK
- Monthly OM content in 0-30 cm soil surface

**Growth and yield parameters**

- Fresh and dry weight (g/m<sup>2</sup>)
- Green and dry fodder yield (q/ha)
- Root weight (after the end of five years)
- Root volume (after the end of five years)

**Quality parameters**

- Crude protein and crude fibre contents (%)
- Crude protein and crude fibre yield (q/ha)

**Economics**

- Net return
- B:C ratio

\*First year will be establishment year

**K-15-AST-13 C: performance of multicut Sorghum and Pearl millet mixture at variable seed rates under different methods of sowing.**

**Location: Palampur & Ludhiana**

**Objective**

- To find out suitable method of sowing mixture of multicut sorghum and pearl millet with optimum seed rate.

**Experimental Details:**

<b>Design</b>	: RBD
<b>Replications</b>	: Three
<b>Plot size</b>	: Gross 4 x 5.5 m, Net 3.60 m x 5 m

**Treatments**

<b>A) Varieties</b>	Sorghum- PSC-4, Pearl millet- FBC-16 (different varieties for Palampur)
<b>b) *Seed rates</b>	Sorghum: pearl millet (5) 100: 0, 75:25, 50:50, 25:75, 0:100
<b>c) Sowing methods</b>	(2): Broadcast and line sowing (22.5 cm)
<b>Seed rate</b>	as per treatments
<b>Fertilizer</b>	As recommended for respective crop and in proportion of crop mixtures

\* Seed rate: Sorghum- 37.5 kg/ha and pearl millet – 20 kg/ha

**Observations to be recorded:**

**Growth parameters**

- Plant population, plant height (cm) and leaf: stem ratio of both the crops and equivalent ratio.

**Yield parameters**

- Green fodder and dry matter yield of mixture and individual crops.

**Quality parameters**

- CP content and yield.

**Soil fertility parameters**

- Soil fertility status before experiment and after experiment each year.

**Economics**

Net returns and BC ratio.

**Data Reporting:** Data will be reported in Kharif

## AGRONOMY TRIALS (AVT -2 Based)

Kharif 2015

**AVTPM-2: Second Advanced Varietal Trial in Forage Pearl millet (Agronomy) – Related to Trial no. 4 & 5 of Breeding trial**

Entries No.	:	1 + 3
Entries Name	:	DFMH-30
Checks	:	Raj Bajra Chari-2, Giant Bajra, AVKB-19
N Levels	:	Four (0 30 60 90 kg/ha)
Design	:	RBD with 3 replications
Plot size	:	4 m x 3 m accommodating 4 m long 10 rows at 30 cm
Seed rate	:	15 kg/ha (20g/plot)
Fertilizers	:	40:20 kg/ha (P:K) basal
Locations (6)	:	NWZ- Ludhiana, Hisar, Bikaner SZ-Coimbatore, Hyderabad, Mandya
Total plots	:	48
Seed requirement/entry /Centre	:	240g
Seed requirement/entry/all Centre	:	1440g Total/entry for 6 centres

**AVTC-2: Second Advanced Varietal Trial in Cowpea (Agronomy) – Related to Trial no. 7 & 8 of Breeding trial**

Entries No.	:	1 + 2 NC + 2 ZC
Entries Name	:	TNFC-0926
Checks	:	National checks: Bundel Lobia-1, UPC-5286, Zonal checks: UPC-622 (NEZ)
P Levels	:	Three (30 60 90 kg/ha)
Design	:	RBD with 3 replications
Plot size	:	4 m x 3 m accommodating 4 m long 10 rows at 30 cm
Seed rate	:	40 kg/ha (45g/plot)
Fertilizers	:	20:40 kg/ha (N:K) basal
Seed requirement	:	
Locations (5)	:	NEZ-Faizabad, Bhubaneswar, Ranchi, Jorhat, Kalyani
Total plots	:	45
Seed requirement	:	405g/ entry /Centre
Seed requirement/entry/all Centre	:	2025 g Total/entry for 5 centres

## FORAGE CROP PROTECTION COORDINATED TRIALS PROPOSED TECHNICAL PROGRAMME FOR *KHARIF* 2015

**PPT 1: Monitoring of diseases and insect pests in *Kharif* forage crops ecosystem.**

Locations: Bhubaneswar, Hyderabad, Jhansi, Palampur, Rahuri & Ludhiana

**PPT 2: Evaluation of *Kharif* breeding materials for their resistance to diseases and insect pests.**

Locations: Bhubaneswar, Hyderabad, Jhansi, Palampur, Rahuri, Karikal & Ludhiana

**PPT 15: Integrated management of root rot and foliar diseases of forage cowpea.**

Locations: Bhubaneswar, Palampur, Ludhiana and Jhansi

Design: Split plot Replication: 3 Plot size: 2 x 2 m<sup>2</sup> Variety : Local Susceptible Variety

Treatments :

Main plot: 3 (Date of Sowing)

T<sub>A</sub> = 1<sup>st</sup> Date of sowing i.e. 15 days before Normal Days of Sowing

T<sub>B</sub> = 2<sup>nd</sup> Date of sowing i.e. Normal Days of Sowing

T<sub>C</sub> = 3<sup>rd</sup> Date of sowing i.e. 15 days after Normal Days of Sowing

Sub plot: 4 (Treatments)

T<sub>1</sub> - No treatment

T<sub>2</sub> - Seed treatment with *Trichoderma viride* + *Paecilomyces lilacinus* @ 5 g/kg seed each followed by foliar sprays of propiconazole @ 1ml/l at 15 days interval.

T<sub>3</sub> - Seed treatment with tebuconazole 2DS @ 1g/kg seed + NSKP(50 g/kg seed) followed by foliar spray of propiconazole @ 1ml/l at 15 days interval.

T<sub>4</sub> - Seed treatment with metalaxyl 8% + Mancozeb 64% @ 2.5g/kg seed + NSKP(50 g/kg seed) followed by foliar spray of propiconazole @ 1ml/l at 15 days interval.

Target Diseases:

- i. Root rot/wilt (*Fusarium/Rhizoctonia/Phytophthora*)
- ii. Anthracnose (*Colletotrichum*)
- iii. Leaf blight (*Cercospora/Phomopsis* etc.)
- iv. Nematodes

Observations:

1. Incidence and severity of diseases will be recorded.
2. GFY and DMY.
3. Correlation of weather variable with disease (s) development.
4. Nematode population before sowing and at harvest.

**PPT 16: Efficacy of different biopesticides against aphids on forage sorghum**

Location: Rahuri

Design : RBD

Variety : Ruchira

Plot size : 3X 4 m<sup>2</sup>

Treatments:

T1- Foliar application of *Verticillium lecani* @ 10<sup>8</sup> CFU/g (5 g/lit)

T2- Foliar application of *V. lecani* @ 10<sup>8</sup> CFU/g (7.5 g/lit)

T3- Foliar application of *Beuveria bassiana* @ 10<sup>8</sup> CFU/g (5 g/lit)

T4- Foliar application of *B. bassiana* @ 10<sup>8</sup> CFU/g (7.5 g/lit)

T5- Foliar application of *Metarhizium anisopliae* @ 10<sup>8</sup> CFU/g (5 g/lit)

T6- Foliar application of *M. anisopliae* @ 10<sup>8</sup> CFU/g (7.5 g/lit)

T7- NSE 5%

T8- Azadirachtin 1% (Commercial neem product)

T9- Untreated control

Observations:

1. Survival population of aphids 5 and 7 days after treatment
2. Count of natural enemies 5 & 7 days after spray treatment
3. Crude protein content
4. Green forage and dry matter yield (q/ha)

#### **PPT 17: Biological management of defoliators on cowpea.**

Replication : 4                      Design: RBD                      Plot size: 3 x 4 cm<sup>2</sup>

**Locations:** Jhansi, Dharwar and Rahuri

**Treatments:**

T1: *Beauveria basiana* @ 5 g(cfu 10<sup>6</sup>)/lt

T2: *Nomurae relyi*@ 5 g(cfu 10<sup>6</sup>)/lt

T3: NSE 5%

T4: *Pseudomonas fluorescense* @5 g(cfu 10<sup>6</sup>)/lt

T5: Untreated control

Note: Bio-pesticides to be used in PPT 16 will be supplied by Rahuri center.

**Observations:**

1. Survival population of defoliators 5 and 7 days after treatment
2. Count of natural enemies at 5 & 7 days after spray treatment
3. Green forage and dry matter yield (q/ha)

#### **PPT 18 : Validation of Management of foliar diseases of forage sorghum**

Locations : Palampur, Ludhiana, Bhubaneswar and Jhansi

Design : Pair plot Plot size : 500 m<sup>2</sup>    Variety: Local Susceptible Variety

**Treatments :**

T<sub>1</sub> = Seed treatment with carbendazim @ 2 g/kg seed + Two foliar sprays of propiconazole @ 0.1%

T<sub>2</sub> = Untreated Control

**Observations:**

1. Incidence and severity of diseases will be recorded.
2. Recording of yield at 50 % flowering

Note: 1. Spray the crop at 30 and 45 DAS.

#### **PPT 19: Efficacy of different biopesticides against aphids on forage cowpea**

**Location:** Hyderabad

**Design :** RBD

**Variety :** local

**Plot size :** 3x 4 m<sup>2</sup>

**Treatments:**

T1- Foliar application of *Verticillium lecani* @ 10<sup>8</sup> CFU/g (5 g/lit)

T2- Foliar application of *V. lecani* @ 10<sup>8</sup> CFU/g (7.5 g/lit)

T3- Foliar application of *Beuveria bassiana* @ 10<sup>8</sup> CFU/g (5 g/lit)

T4- Foliar application of *B. bassiana* @ 10<sup>8</sup> CFU/g (7.5 g/lit)

T5- Foliar application of *Metarhizium anisopliae* @ 10<sup>8</sup> CFU/g (5 g/lit)

T6- Foliar application of *M. anisopliae* @ 10<sup>8</sup> CFU/g (7.5 g/lit)

T7- NSE 5%

T8- Azadirachtin 1% (Commercial neem product)

T9- Untreated control

**Observations:**

1. Survival population of aphids 5 and 7 days after treatment
2. Count of natural enemies 5 & 7 days after spray treatment
3. Crude protein content
4. Green forage and dry matter yield (q/ha)



## NATIONAL GROUP MEET–KHARIF-2015

Venue: PJTSAU, Hyderabad

Date: April 17-18, 2015

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National Workshop on Forage Crops and Utilization  
 Newspaper: **Andhra Jyothi**  
 Date: 18-04-2015



Research on Fodder Production  
 Newspaper: **Mana Telengana**  
 Date: 18-04-2015



High yielding Fodder Varieties have to be developed  
 Newspaper: **Sakshi**  
 Date: 18-04-2015



“Development of New high yielding varieties in fodder crops” –  
Dr. IS. Solanki, ADG, ICAR  
NEWS paper: vartha  
Dated: 18-04-2015



“New high yielding varieties to be developed in fodder crops  
NEWS paper: Andhra Bhoimi  
Dated: 18-04-2015



‘Encourage Fodder Production’  
NEWS paper: Namasthey Telangana  
Dated: 18-4-2015

‘Creation of new high yielding varieties in fodder crops’  
NEWS paper: Eenadu  
Dated: 18-04-2015



‘Fodder Production to be increased’  
NEWS paper: Andhra Prabha  
Dated: 18-5-2015

