

ICAR- Indian Grassland and Fodder Research Institute, Jhansi – Foundation day celebration

ICAR- Indian Grassland and Fodder Research Institute, Jhansi celebrated the diamond jubilee foundation day on 1st November, 2021.

On this occasion, Dr. T.R. Sharma, Deputy Director General (Crop Science), ICAR was the chief guest and delivered foundation day lecture. He highlighted the achievements of institute and exhorted all the staff members to work with positive approach and dedication for betterment of all stakeholders. He particularly referred to the world's largest ploidy series in Guinea grass and new development towards seed setting in Bajra Napier hybrid. Since the institute is entering the golden Jubilee year, it becomes responsibility of all the staff to work for achieving new heights. He advised to put more stress on pre-breeding, abiotic and biotic stress tolerance and biofortified forage varieties.



Dr. A. Arunachalam, Director, ICAR-Central Agroforestry Research Institute was the guest of honour. He highlighted the complementarity of agroforestry research with integrated component of fodder crops which is highly suitable for all parts of the country especially Bundelkhand region.

Dr. Amaresh Chandra, Director ICAR-IGFRI presented the highlights of the activities carried out during the past one year. He also presented the various new initiatives taken by institutes and also the programme to be undertaken in the diamond Jubilee year. On this occasion, various publications were released. Prizes for excellent work carried out during the year were also given to staff and teams. Dr. A.K. Roy, Project Co-ordinator, AICRP on Forage Crops welcomed the dignitaries and all the participants. Dr. K.K. Singh, Head, PAR Division presented vote of thanks.

A 'Farmers Fair and Technology Demonstration Exhibition' was also inaugurated by Chief Guest Dr. T.R. Sharma, Deputy Director General (Crop Science), ICAR. In this fair, technologies were put up by ICAR-IGFRI, ICAR-CAFRI, ICAR-IISWC, RLBCAU and other state government departments and NGOs as well as FPOs for the benefit of farmers.

Earlier in the day, Dr. T.R. Sharma, Deputy Director General (Crop Science), ICAR visited the farm and laboratory facilities and provided guidance to the scientific staff. The meeting was attended by all the staff of ICAR-IGFRI, its regional stations, participants from ICAR-CAFRI, RLBCAU and nearby institutions as well as superannuated staff.



Phenotypic characteristics of local goats of Bundelkhand region

AICRP on goat improvement, institute is working on identifying, conserving and improving the Bundelkhandi goat. These animals are hardy, have long legs, narrow face and are able to walk long distances and are highly suitable for grazing under resource scarce conditions of

Bundelkhand. Although these goats have not been recognized as breed, yet physical and production characteristics of the animals are similar. Therefore to give recognition as breed efforts are being made, so that these goats can be conserved and improved.



Fig. 1: Male Bundelkhandi goat



Fig. 2: Female Bundelkhandi goat

Phenotypic characteristics were recorded in the animals maintained at Institute farm as well as in the adapted villages under the project. Coat colour is mainly black and blackish brown colour is also observed in some animals. Shape of horn is either curved (41.5% in male, 15.9 % in female) or flat (58.49% in male and 84.09% in female) type (Fig.1 &2). Face is slightly convex in profile and face length is 21.85±0.63 cm in male and 19.0±0.36 cm in female. Ears are pendulous in both

the sex. Flat leafy type ears were found in 43.39% male and 43.18% females, while folded type ears were present in 56.60% males and 56.81% females. Ear length (right) was 15.14±0.63 cm in male and 14.90±0.54 cm in female. Tail is short, upright and bunchy in nature and tail length in male was 14.28±0.56 cm and in females was 12.9±0.67 cm. Body weight and body measurements of these goats were also recorded (Table 1).

Table 1. Phenotypic characteristics of Bundelkhandi goat

Body weight	Male			Female		
	Average	Range	N	Average	Range	N
Birth weight (kg)	2.0±0.26	1.7-2.8	122	1.95±0.15	1.5-2.6	135
Weight at 6 month(kg)	19.25±0.68	11.5-24.0	105	17.24±0.34	9.6-20.0	120
Adult weight(kg)	37.42±0.60	22.0-43.0	52	30.14±0.23	21.1-40.0	103
Body measurement						
Chest-girth (cm)	80.92±1.25	75-88	12	74.40±0.53	63-86	91
Body length (cm)	71.17±2.02	60-85	12	64.79±0.49	51-78	91
Height at withers (cm)	77.50±1.82	69-89	12	74.53±0.49	59-88	91

(Deepak Upadhyay, B P Kushwaha, SK Mahanta, Pooja Tamboli and K K Singh)

Happy New Year 2022

Exploration of forage germplasms from West Bengal, Madhya Pradesh and adjoining areas of Uttar Pradesh

The unexplored regions of Madhya Pradesh (adjoining areas of Chhattisgarh border) and West Bengal were explored for forage species germplasm by IGFRI, Jhansi in collaboration with NBPGR, New Delhi in November 2019. The explored regions include Sidhi, Singrauli and Shahdol districts of Madhya Pradesh and Murshidabad, Nadia and North 24 Parganas districts of West Bengal. Collection of forage germplasm from seven blocks of Jhansi district of Uttar Pradesh was also undertaken during the month of December 2020. A total of 63 accessions (cereals: 13, legumes: 20 and

grasses: 30) were collected from Madhya Pradesh which includes 31 species covering 26 genera. From West Bengal a total of 37 accessions (4 cereals, 4 millets, 2 legumes and 27 grasses) including 21 species from 17 genera were collected. Forage germplasm collected from Jhansi district includes 40 accessions of grasses from 11 genera and 4 unidentified accessions. Passport data of each accession was collected from the collection site. Live plants were collected if matured inflorescences were not available. Important plant characteristics were recorded at the site.



Discussing with scientists at KVK, Sidhi, M.P.



Collecting maize & other forage crops from Singrauli, M.P.



Apluda mutica L., Jhansi



Dichanthium annulatum (Forssk.) Stapf, Jhansi

Fig. 3: National collaborative exploration programmes of IGFRI Jhansi with NBPGR New Delhi to unexplored regions of West Bengal, Madhya Pradesh and Jhansi district of Uttar Pradesh.

(G Sahay, VC Tyagi, Anjula Pande, S Nivedita, DR Pani, BC Marndi, N Dikshit and Brijesh K. Mehta)

हिन्दी पखवाड़ा (10-24 सितम्बर, 2021) का आयोजन

संस्थान में हिन्दी पखवाड़ा 10-24 सितम्बर, 2021 का आयोजन श्री यशोवर्धन गुप्त, प्रधान संपादक, दैनिक जागरण, झाँसी के मुख्य आतिथ्य एवं डॉ. एन.डी. समाधिया, पूर्व प्राचार्य, डी.बी. कालेज, उरई के विशिष्ट आतिथ्य एवं संस्थान निदेशक डॉ. अमरेश चन्द्रा की अध्यक्षता में किया गया। पखवाड़ा के अंतर्गत प्रारूप एवं टिप्पणी लेखन, निबन्ध, शोध-पत्र

पोस्टर प्रदर्शन, कम्प्यूटर पर यूनिकोड टाइपिंग, काव्य पाठ एवं आशुभाषण प्रतियोगिताओं के आयोजन के संबंध में नीरज कुमार दुबे ने जानकारी प्रदान की। डॉ. सुनील कुमार, प्रभारी राजभाषा ने केन्द्रीय कृषि एवं किसान कल्याण राज्यमंत्री एवं महानिदेशक, भारतीय कृषि अनुसंधान परिषद के संदेश का वाचन किया।

Screening of oat (*Avena sativa* L.) genotypes for heat stress tolerance

The present investigation was undertaken to identify the promising heat tolerant lines and to evaluate their heat stress responses. Four hundred and forty five genotypes were studied in non-stressed (timely sown) and stressed (late sown) environments at CI Research Farm, IGFRI, during the cropping season of 2020-21. The morpho-physiological traits viz. plant vigour, ground coverage, plant height, no of leaves per plant, leaf length and leaf breadth, days to spike emergence, days to 50 % flowering, fresh weight, spike length, no of seed per spike, canopy temperature and seed yield contributing biomass and yield varied among the

genotypes under both timely and late sowing conditions. Total 20 genotypes were identified as heat tolerant genotypes based on their relative performance in respect to yield components and heat susceptibility index (HSI). The HSI of promising genotypes is ranged from 0.015-0.624. Identified genotypes might be ideal candidates to be used in developing climate resilient oat varieties and in genomics study in near future.

(Reetu, Shashikumara P, Maharishi Tomar, Parichita Priyadarshini, Rajesh K. Singhal, G Sahay and VK Yadav)

Survey on Spineless cactus adoption as non-conventional fodder in Bundelkhand region

A survey was conducted during July to September 2021 to assess the role of spineless cactus in livestock productivity and farm profitability in semi-arid regions of India under different farming situations. The present survey was conducted in Bundelkhand region of central India under special grant of fund under IGFRI-ICRDA cactus project. The four districts were identified where project activities carried out and which are located around the ICAR- Indian Grassland Fodder Research Institute, Jhansi. Three districts (Datia, Niwari and Tikamgarh) were from Madhya Pradesh, while one district (Jhansi) was from Uttar Pradesh. Total 21 villages (Datia – 06, Niwari – 01, Tikamgarh – 03, Jhansi – 11) were identified for the survey. Nearly 200 cactus farmers were surveyed through a well-structured proforma. Those livestock farmers who planted cactus were targeted for the survey. The results of survey indicated that farmer's interest is growing after introduction of spineless fodder

cactus types. The return under sole, inter-cropping and fencing system was Rs. 58000, Rs. 23400 and Rs.3200 /ha, respectively. Majority of the farmers used the cactus under cut and carry system. They harvested the cactus during green fodder deficit time, chopped and fed to the animals along with dry fodder. About 70% of the farmer's opined that cactus is profitable and very useful during fodder scarcity period. They reported that about 30-40% of the green fodder deficit was met by the spineless fodder cactus. They observed that the milk production from their animals was not significantly reduced during green fodder deficit period as they used cactus cladodes as fodder. A farmer can gain Rs. 53000-55000/ha if he adopts cactus as a source of fodder. Farmers can use it as a fodder source during green fodder scarcity period particularly during summers. They are considering it for growing on marginal lands and on the field boundaries.

(Sunil Kumar, D R Palsania and Prashant Kumar)

National Training Programme on “Innovations in Quality Seed Production of Forage Crops”

The three-day *National Training Programme on “Innovations in Quality Seed Production of Forage Crops”* organized by the ICAR-Indian Grassland and Fodder Research Institute, Jhansi, Uttar Pradesh from 22nd to 24th November, 2021. Dr. A. Arunachalam, Director, ICAR-CAFRI, Jhansi, Uttar Pradesh marked his presence as the Chief Guest of the valedictory ceremony. Earlier, Dr. Amaresh Chandra, ICAR-IGFRI, Jhansi, Uttar Pradesh and Dr. Sanjay Kumar, Director, ICAR-Indian Institute of Seed Science, Mau, Uttar Pradesh were present as

the Chief Guests of the occasion. The programme was aimed at creating the awareness among the stakeholders and disseminating the new technological advancements to achieve the goal of increased milk production through improved forage production in the country. A total of 26 Officers, Scientists and Technical Staff Members from the different State Agricultural Universities, Krishi Vigyan Kendras, Development Departments, National Dairy Development Board, Private Seed Companies and NGOs participated in the programme.

Success story of apple based hortipasture Technology

M/S Zaitoon Begum, a farmer from Ganderbal who has adopted horti-pasture technology for mitigating fodder shortage, has played a pivotal role in mobilizing other farmers of the area to take up this technology. M/S Zaitoon Begum-an innovative farmer from ChoontWaliwar village of Ganderbal district, has been a beneficiary farmer of IGFR TSP programme for the last three years. This village is rich in fruit diversity. Fruits like apple, grapes, cherry, peach, and walnut are grown in this picturesque region. There is ample scope of cultivating perennial fodder grasses and legumes, like *Dactylis*, tall fescue, sainfoin etc in these orchards for augmentation of forage availability and other benefits like weed control in fruit orchards, increasing soil fertility, pollination etc. She received technical guidance from RRS Srinagar for laying out demonstrations on horti-pasture technology in various fruit orchards. She has motivated more than 200 farmers to take up this activity in their orchards. Several orchards (covering more than 20 hectares) have been enriched with many fodder grasses, like *Dactylis*, tall fescue and red clover which have also



Fig. 4: Smt.Zaitoon Begum interacting with PM

increased soil fertility and microbial diversity simultaneously. On 28th September, 2021, she interacted with Honourable PM and informed him about how this technology helped the region in augmenting forage availability (20-25 per cent increase) which ultimately led to the enhancement of milk productivity by 10-15 per cent.

Parthenium Awareness Week

As part of the 16th "Parthenium Awareness Week" organized by ICAR-Directorate of Weed Science Research, Jabalpur, the ICAR- Indian Grassland and Fodder Research Institute, Jhansi organized "Parthenium Awareness Programs" in several locations i.e., institute premises and at Central Research Farm (Bajana Block, FSR site, and FMPHT yard) from 16-21 August, 2021. During the awareness program, the Director of IGFR and the Head and Scientists of the Crop Production Division explained the importance of eradicating Parthenium in crop fields and vacant areas. All scientists, technical staff, research associates, senior researchers and other IGFR workers were actively involved and demonstrated interest in the eradicating Parthenium. About 3-4 hectares of area which was having dense Parthenium infestation was totally cleared from weeds during awareness programmes. There was re-emphasis and drive to remove Parthenium



Fig. 5: Parthenium Awareness Week

infestation from respective division's farm area, general area and campus premises in team mode by involving all categories of citizens. A leaflet on "Parthenium & its Control Measures" was also provided to participants.

World Soil Day

The "World Soil Day" was organized on 5th December, 2021 on the theme 'Halt Soil Salinization, boost soil Productivity'. The aim of this programme is to create awareness about the importance of sustaining healthy soil ecosystem and human

wellbeing by addressing the problems associated with soil management practices. During this programme, 110 farmers from 8 villages belonging to district Jhansi were present. The chief guest of this function was Shri Ravindra



Fig. 6: Celebration of world soil day and distribution of soil health cards

Kumar, District Magistrate, Jhansi urged to use of balance fertilizers and insecticides to soil for better crop production and distributed the Soil Health Cards to the farmers. In total 83 Soil Health Cards were distributed to the farmers of the region. During this occasion District Magistrate visited fodder technology demonstration block and directed to Chief Development Officer and Chief Veterinary Officer for expanding BN hybrid, guinea grass, moringa and thorn less

cactus in Gausalas of district. Dr.Amaresh Chandra, Director, ICAR-IGFRI on his address highlighted the importance of Soil Health Cards for maintaining healthy soil for the benefits of coming generations and aware farmers about crop residue management and rain water harvesting. Dr. Sunil Kumar Tiwari, Head, Crop Production Division emphasized the need of soil testing and also explained the use of information in the soil health card.

Cactus Field Day



Fig. 7: Glimpses of cactus days

Under the ICAR-IGFRI - ICARDA collaborative programme, four cactus day were organized at Village - Tendol, Baruasagar (31.07.21), Institute's Central Research farm (20.08.21), Unnao Balaji, Datiya (23.08.2021) and Sakrar, Jhansi (16.09.2021). On these days, farmers were educated about the importance of cactus, its nutritional value and

growth and yield potential and trained for its cultivation, management, harvesting, chaffing and feeding practices. They were encouraged to adopt spineless fodder cactus especially on wastelands and field boundaries to get fodder during lean period. Farmers showed keen interest in cactus and cladodes were also distributed to willing farmers.

Transfers

Dr. H.M. Halli, Scientist (Agronomy) transferred to ICAR-NIABSM, Baramati on 27th November, 2021

Dr. G. Prabhu, Scientist (Agronomy) transferred to ICAR-IARI, New Delhi on 30th November, 2021

Use of Aerial Seeding Technology for Grassland Development: First of its kind in the country

Aerial seeding is a technique wherein seed are sprayed using aerial devices such as drones. It was taken up by in collaboration with Department of Animal Husbandry and Veterinary Services, Bengaluru and Aerosight technologies, Bengaluru. Site identified was 50 acre land of Livestock Breeding Farm, Hessarghatta (Bengaluru). Three crops *C. ciliaris*, Grazing guinea and *Stylosanthes hamata* were selected keeping in view the climatic conditions, soil type, hardiness, persistence and survivability. Sample of seed of these crops were given to M/s Aerosight to work on seed disbursal mechanism. Discussions were held to finalise the process. Since the use of drone technology was for the first time coupled with very tiny nature of fodder seeds, many trials were conducted for the proper dispersal of the seeds from

drone. After repeated trials, the seed sowing device suitable for tiny seeds sowing was designed and fabricated/integrated with the quad-copter agricultural drone. Actual aerial sowing of these grass seed in 50 acre land using drone was done in the month of September. The germination of grass seed is adjudged as very good. So, this leveraging of aerial seed sowing technology made developing vast grasslands a possibility. It saves the time besides reduces labour dependency.

This initiative of ICAR-IGFRI is first such attempt in India and the work lead to design of conveyor mechanism with precise seed dispersal and good germination. This brings closer to the reality of converting unreached common lands to productive grasslands in the country.



Fig. 8: Dr.Amaresh Chandra, Director, discussing with partners



Fig. 9: Aerial sowing of grass seed in progress



Fig. 10: Germination of aerielly sown grasses in two locations of the site

Vigilance awareness week

Vigilance awareness week was organized from 26th October to 31st October 2021 at Institute and its regional stations on theme “**Independent India @75: Self Reliance with Integrity**”. The vigilance week activities with pledge administered by Director to the institute employees on 26th October 2021. During the week many programmes like debate on “ Integrity: a tool to achieve self-reliance”, lecture on “Integrity and self reliance”, poster making on “Say No to Corruption”, writing competition on “Importance of Self reliance in education” were organised for staff and wards /children of

staff. Besides above, Institute regional research stations located at Srinagar (Kashmir), Dharwad (Karnataka) and Avikanagar (Rajasthan) has observed the vigilance week and various awareness programmes were organized. On 1st November, 2021, closing ceremony and prize distribution function was held and Director highlighted the importance of vigilance and its role in the organization. He appealed to the employees that to maintain integrity, transparencies in their official duties for smooth functioning of the administration and prosperity of the Institute.



ICAR-IGFRI, Jhansi



IGFRI-RRS Srinagar



IGFRI-RRS Dharwad

Fig. 11: Vigilance awareness week organized at ICFRI and its regional stations

Glimpses of IGFRI activities



Fig. 12: Kisan Diwas under Swachhta Pakhwada was celebrated in Village Palinda (16-31 Dec.2021)



Fig. 13: National Campaign on "Waste to Wealth" was organized by IGFRI in Khajraha Bujurg Village of Babina block on 12/10/2021



Fig. 14: 75th Independence Day Celebrated at ICAR-IGFRI, Jhansi

Retirements

Sh. Ramesh, Sr. Technician; Sh. Gopi, SSS; Sh. R.D. Rai, CTO; Sh. Harcharan, SSS; Sh. B.K. Pandurangaiah, ACTO; Smt. Shanti, SSS

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