



# Pearl Millet News

ICAR- All India Coordinated Research Project on Pearl Millet

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Number: 8

March, 2019

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## From Coordinator's Desk....

Pearl millet [*Pennisetum glaucum* (L.) R.Br.] is the most widely grown staple food crop of majority of poor and small land holders in Asia and Africa. It is consumed as both feed and fodder for livestock. Pearl millet excels all other cereals due to these features - C<sub>4</sub> plant with high photosynthetic efficiency and high dry matter production capacity. It is well adapted to grow under most adverse agro-climatic conditions characterized by drought, low soil fertility and high temperatures. In India, pearl millet is the fourth most widely cultivated food crop after rice, wheat and maize. It occupies 7.4 million ha with an average production of 9.13 million tonnes and productivity of 1237 kg/ha during 2017-18 (Directorate of Millets Development, 2019; Project Coordinator Review, 2019). The major pearl millet growing states are Rajasthan, Maharashtra, Uttar Pradesh, Gujarat and Haryana which produce 90% of total production of the country. Most of pearl millet in India is grown in rainy (kharif) season (June/July–September/October). It is also cultivated during summer season (February–May) in parts of Gujarat, Rajasthan and Uttar Pradesh and during the post-rainy (rabi) season (November–February) at a small scale in Maharashtra and Gujarat.



Pearl millet is a good source of energy, carbohydrate, fat, ash, dietary fibres, iron and zinc. It is high in fibre (1.2g/100g) and in  $\alpha$ -amylase activity when compared with other grains. Pearl millet is gluten free and retains its alkaline properties after being cooked which is ideal for gluten allergic people. It is a rich source of vitamins like thiamine, riboflavin, niacin and minerals (2.3mg/100g) like potassium, phosphorous, magnesium, iron, zinc, copper and manganese. Pearl millet is rich in fat content (5mg/100g) with better fat digestibility. It is rich source of unsaturated fatty acids (75%). It has high proportions of slowly digestible starch (SDS) and resistant starch (RS) which contribute to low glycemic index (GI) and is the need of the transforming diets, food habits and the food industry. Due to the excellent nutritional properties and resilience to climate change, pearl millet along with other millets is renamed as nutri-cereal (Gazette of

India, No. 133 dtd 13th April, 2018) for production, consumption and trade and included in Public distribution system. The MSP of pearl millet is increased to Rs. 1950 per quintal (raised by Rs. 525 which is 36.84 %) compared to the previous years MSP at Rs. 1425 resulting in highest returns of 96.97% over the cost incurred when compared to all other crops. To bring millets into mainstream for exploiting the nutritional rich properties and promoting their cultivation, Govt. of India has declared Year 2018 as the "Year of Millets".

Apart from the conductance of mandated coordinated multi location trials and evaluation of test entries, ICAR- AICRP on Pearl millet is committed to pearl millet improvement through research, technology generation and transfer. Till date, a total of 167 hybrids and 61 varieties were identified and released for cultivation in different agro ecological zones of the country through AICRP on Pearl millet. Pearl millet is the first crop where MAS strategies and tools have been applied to develop "Improved HHB 67". A number of production and protection technologies specific to different agro-ecological regions which will prove useful in enhancing the productivity of improved cultivars to commercial farming scales and increase the profitability of pearl millet growers were developed through this system.

ICAR-AICRP on Pearl millet is actively collaborating as technology and knowledge partner in several new research initiatives like UNEP-GEF project, Millet mission by NFSM, Niche area of excellence (NAE) programme from ICAR, ICAR-BMGF project etc. PC unit, ICAR-AICRP on Pearl millet, Jodhpur in collaboration with IIMR, Hyderabad organized a Germplasm field day during May 09-10, 2018 where breeders collected useful germplasm lines. Considering the need of digitalization and handling of huge data, a National Workshop on Digitalization of Pearl Millet Genetic Resources Management was also organized to train different scientists about the softwares.

Along with yield improvement, focus on the nutritional improvement was also given in Pearl millet. Biofortified varieties/hybrids with Fe and Zn was taken up as a priority area. During the 52<sup>nd</sup> Annual Group Meeting of ICAR- AICRP on Pearl millet at PAU, Ludhiana on 28<sup>th</sup> April, 2017, a landmark decision was taken by the Pearl millet researchers to include Fe and Zn concentrations as one of the promotion criteria for promoting entries in the coordinated trials. Other amendments proposed were inclusion of minimum disease incidence for important diseases like downy mildew, rust, blast, smut and ergot in promotion of entries.

Development of high yielding, dual purpose disease resistant cultivars for low rainfall areas i.e. A<sub>1</sub> zone is of utmost priority for increasing pearl millet productivity at national level. Refinement of technologies for processing of grain, development of value added products along with development of sound extension support for popularization of these technologies and products; spread of pearl millet cultivation in nontraditional areas and pearl millet hybrid seed production in North - Western part of the country is the need of the hour. These changes will certainly add to the national efforts of doubling the farmer's income.

### **53<sup>rd</sup> Annual Group Meeting of ICAR-AICRP on Pearl Millet**

53<sup>rd</sup> Annual Group Meeting of ICAR-All India Coordinated Research Project on Pearl Millet was held at Agriculture University, Jodhpur during March 22-24, 2018. Dr. Balraj Singh, Hon'ble Vice-Chancellor, Agriculture University, Jodhpur chaired the inaugural session. Dr. P. Raghava Reddy, Chairman QRT and Ex-Vice Chancellor, ANGRAU and Dr. O.P. Yadav, Director, ICAR-CAZRI, Jodhpur were the guests of honor and Dr. I.S. Solanki, ADG (F&FC) was the Chief Guest. Other QRT members including Dr. O.P. Govila, Prof. H.S. Shekhar Shetty and Dr. R.K. Pannu were also present during the occasion and provided their



valuable suggestions during the various technical sessions. Dr. I. S. Solanki, ADG (F&FC), ICAR, Chief Guest, highlighted the various gaps in pearl millet research and stressed upon the need of high yielding hybrids/varieties with disease pest resistance and high nutritional quality. He further emphasized upon the need to develop and disseminate the technologies for the benefit of farmers. Dr C. Tara Satyavathi, Project Coordinator, ICAR-AICRP on Pearl millet, Jodhpur presented research highlights of work done and salient achievements in pearl millet during 2017-18. Logo of ICAR-AICRP on Pearl millet and various publications were released during the occasion. Dr. Balraj Singh highlighted the importance of pearl millet and stressed on need of research and developmental activities to increase its production and area in the country.



## Notification of Release of New Hybrids and Varieties

- Nine pearl millet hybrids were notified and released for cultivation for various agro-ecologies of the country :

Hybrids	Notification number	Notification date	Area of adaptation
Central Pearl Millet Hybrid RHB 223 (MH 1998) (RHB 223)	S.O 1379(E)	27/03/2018	Rajasthan, Gujarat and Haryana
HHB 299 (MH 2076)	S.O 1379(E)	27/03/2018	Rajasthan, Haryana, Gujarat, Punjab, Delhi, Maharashtra and Tamil Nadu
PB 1705 (MH 2008)	S.O 1379(E)	27/03/2018	Rajasthan, Gujarat, Haryana, Punjab, Delhi, Madhya Pradesh and Uttar Pradesh
AHB 1200 Fe (MH 2072) (AHB 1200)	S.O 1379(E)	27/03/2018	Rajasthan, Gujarat, Haryana, Punjab, Delhi, Maharashtra, Telangana, Andhra Pradesh and Tamil Nadu
Pusa 1201 (MH 1849)	S.O 1379(E)	27/03/2018	National Capital Territory of Delhi
BHB-1202 (Bikaner Hybrid Bajra1202) (MH 1831)	S.O 1379(E)	27/03/2018	Rajasthan
Balwan (NBH 4903) (MH 1743)	S.O 1379(E)	27/03/2018	Rajasthan
GK 1116 (MH 1974)	S.O 1379(E)	27/03/2018	Rajasthan
NBH 4903 (MH 2035)	S.O 399(E)	24/01/2018	Maharashtra, Karnataka, Telangana, Andhra Pradesh and Tamil Nadu

- Eight hybrids viz. PB1756, DHBH1397, PB1720, MP7878, HHB311, RHB234, AHB1269, RHB 233 were identified for cultivation for various agro-ecologies of the country during 53<sup>rd</sup> Annual Group Meet.

### **Interaction Sessions/Trainings/Workshops/Seminars/Symposia Organized**

- An interaction session was organized at ICAR-AICRP on Pearl Millet, Jodhpur on 24<sup>th</sup> September, 2018 where Dr. P. Raghava Reddy, Chairman QRT and QRT members including Dr. O.P. Govila, Prof. H.S. Shekhar Shetty, Dr. R.K. Pannu, Dr. D.C. Uprety and Dr. M.L. Lodha interacted with farmers of Jodhpur region and discussed about several issues related to pearl millet improvement.



- A Training-cum-awareness programme on Farmer's Rights and DUS testing in Pearl millet was organized at ICAR-AICRP on Pearl Millet, Jodhpur during 24<sup>th</sup>-25<sup>th</sup> September, 2018. The programme was attended by 80 participants from public and private sectors, 20 students and 106



farmers in and around Jodhpur. Dr. C. Tara Satyavathi, Project Coordinator, ICAR-AICRP on Pearl millet welcomed the dignitaries and the participants. She emphasized on the need for awareness about the PPV&FR Act and DUS testing in pearl millet. Dr. Balraj Singh in his inaugural address emphasized on the importance of issues related to IPR and Farmers' Right. Dr. J.C. Rana, Bioversity International, shared his views and experiences related to the importance of pearl millet crop in arid zone and importance of DUS testing in pearl millet. During this event, a field visit was also organized to show different DUS characters in the field in live samples and display material. The participants obtained first hand information on the various characteristics used in DUS testing at one place.



- An interaction session was organized at ICAR-AICRP on Pearl Millet, Jodhpur on 25<sup>th</sup> September, 2018 where Dr. P. Raghava Reddy, Chairman QRT and QRT members including Dr. O.P. Govila, Prof. H.S. Shekhar Shetty, Dr. R.K. Pannu, Dr. D.C. Uprety and Dr. M.L. Lodha interacted with persons of State Department of Agriculture, ATARI, RSSC, Directors of Research, Education and Extension and researchers from AU, Jodhpur and discussed about various issues related to pearl millet improvement in the changing climatic scenario. They emphasized on public private partnership and participatory seed production projects that would benefit the farmers with the advanced technologies.





- A National Workshop on Digitalization of Pearl Millet Genetic Resources Management was jointly organized by PC Unit, ICAR - AICRP on Pearl millet, Jodhpur and IIMR, Hyderabad at IIMR, Hyderabad during 09.05.18-10.05.18.



- PMRS, JAU, Jamnagar has organized two special trainings on "Varietal Characterization & Seed Production Technology in Pearl Millet" on 3<sup>rd</sup> August, 2018 and 9<sup>th</sup> October, 2018.



- Dr. R. Narasimhulu, Scientist (Plant Breeding), AICRP on Pearl Millet, ARS, ANGRAU, Ananthapuram centre conducted 7 local training programmes during the year 2018-19 including a training on "Package of practice of pearl millet and implementation of pearl millet FLDs" at Burugapalli, Kadiri (Mandal), Ananthapuram on August 09, 2018.

- NARP, Aurangabad organized four trainings on Varietal improvement in Pearl millet on May 28, 2018; INM in pearl millet and pearl millet based cropping system on June 7, 2018; advanced techniques for pearl millet production on June 16, 2018; pest and disease management of pearl millet and seed treatment of Pearl millet by method demonstration on July 21, 2018.





### Field Days/ Kisan Mela

- Germplasm field day was organized at ICAR-AICRP on Pearl Millet, Jodhpur on 25<sup>th</sup> September, 2018 to show live germplasm in the field. Participants also had the opportunity to visit the national demonstration of released pearl millet hybrids and varieties at one place.
- A field day was organized at ICAR-AICRP on Pearl Millet, Jodhpur on 9<sup>th</sup> October, 2018 for seed and fertilizer dealers to give them the details of the new pearl millet hybrids released. On this occasion, around 40 dealers participated from Pali district, Rajasthan.



- Pearl millet Scientists Field day was organized at ICRISAT during 1<sup>st</sup>-2<sup>nd</sup> October, 2018. A number of pearl millet researchers from the coordinated centres of ICAR-AICRP on Pearl millet, voluntary centres and private sector participated in the field day. In an address to the pearl millet researchers, Dr. C. Tara Satyavathi, Project Coordinator emphasized on developing extra-early and drought-tolerant hybrid parents, especially for the A<sub>1</sub> zone (arid regions with low rainfall); accelerating identification and development of blast-



resistant cultivars to combat the rapidly advancing threat of blast disease; developing long panicle breeding materials in dwarf genetic backgrounds coupled with early-maturing traits and increasing mechanization in pearl millet cultivation.



- AICRP on Pearl Millet, Agricultural Research Station, Ananthapuram in collaboration with MYRADA Project of Kadiri, NGO conducted "Pearl Millet Field Day" and an awareness programme on millets promotion on 31.10.2018 at Burugapalli Village, Kadiri Mandal, Ananthapuram district. Over 100 participants, including Scientists, Representatives of NGOs, Officials of Department of Agriculture and Farmers of Kadiri and ODC mandals participated in this programme. They also organized millet exhibition to showcase the improved cultivars of millets especially Pearl Millet hybrids ABH 1 and ABH 6 and a central variety ABV 04 in Kisan Mela at ARS, Kadiri, Ananthapuram district on 20.10.2018 as well as at RARS, Nandyal, Kurnool District on 21.11.2018.





- NARP, Aurangabad conducted a Field day on Pearl Millet at Lakhegaon village tq. Paithan, Dist. Aurangabad under FLD programme and a National Millet Day was celebrated at Village Lakhegao, Tq. Paithan Dist. Aurangabad on November 16, 2018.



- Three Field days and Farmers rallies were organized by ICAR-AICRP on Pearl Millet, Bajra Research Scheme, Dhule at Village-Samode, Tal-Sakri, Dist-Dhule on September 4, 2018; at Village-Kesurdi, Tal-Khandala, Dist-Satara on September 18, 2018 and at Village-Balapur, Tal-Dhule on September 22, 2018.



- A Poushtik Anyadhanya Diwas was organized by KVK, Dhule and College of Agriculture, Dhule on November 16, 2018.
- A university level Farm Mela was organized during October 4-5, 2018 at Hisar. More than 60,000 farmers participated in this event and thousands of farmers were apprised of varietal, production technologies and plant protection aspects of Pearl millet crop.
- Krishimela was organized at UAS, Dharwad during September 22-25, 2018 and team of AICRP on pearl millet, Vijayapur participated in it and around 7 lakh people attended it.



- A Krishimela was organized at CAZRI, Jodhpur on January 28, 2019 where PC unit participated and demonstrated various pearl millet hybrids/varieties and technology to the farmers.



- A Field day on Bajra was organized at Hullur, Muddebihal Taluka, Vijayapur on October 8, 2018 and 28 people participated in it.

- A Pearl millet germplasm field day was organized at ICAR-IIMR, Hyderabad on 9<sup>th</sup> May, 2018 to facilitate the pearl millet researchers to know about the pearl millet diversity.



### Technology Exhibition

Bird Scaring Equipment was developed at ARS, Ananthapuram center by improving the Indigenous Technical Knowledge (ITK) by using unproductive tools to curtail the labour wages in the cost of cultivation of Pearl millet.



### Appointments

- Dr. R. Narasimhulu, Scientist (Plant Breeding) was appointed in the existing sanctioned scientist post of AICRP on Pearl Millet, ARS, ANGRAU, Ananthapuram centre w.e.f. 4.4.2018.
- Dr. D.K. Patil appointed as Pearl millet Breeder at AICRP on Pearl millet, Auranagabad w.e.f. June 01, 2018.
- Dr. N.S. Ugale joined as Asstt. Professor (Agronomy) in AICRP on Pearl millet, Dhule w.e.f. 4.5.2018.
- Dr. (Mrs.) Seema Sharma, Associate Professor (Agronomy) joined AICRP on Pearl millet, RARI Durgapura w.e.f. 4.7. 2018.

- Dr. M. K. Tripathi, Plant Breeder was posted in AICRP on Pearl millet at Gwalior in place of Dr. A. K. Singh w.e.f. 6.7.2018.
- Dr. Jagdish Prasad Bishnoi joined as Asstt. Professor (Plant Pathology) in PC Unit w.e.f. 19.1.2019.

### Trainings/Workshops/Seminars/Symposia/Conferences Attended

- Dr. C. Tara Satyavathi, Project Coordinator participated in the National meet on "Roadmap of Implementation of National Year of Millets-2018 at IIMR, Hyderabad on August 25, 2018.



- Dr. C. Tara Satyavathi, Project Coordinator (Pearl Millet) participated in a panel discussion on Advanced Genomics and Breeding Technologies for Accelerating Genetic Gains at Centre of Excellence in Genomics Systems Biology, ICRISAT, Hyderabad on December 20, 2018.



- Project Coordinator, Dr. C. Tara Satyavathi participated and delivered a lecture on "Indian Pearl millet breeding for resilience to changing climate" at 13<sup>th</sup> International Conference on Development of Drylands held at CAZRI, Jodhpur during February 11-14, 2019.



- Dr. K.D. Mungra, Assoc. Res. Scientist, JAU, Jamnagar has delivered the lecture on "Pearl Millet hybrid seed production technology" in a national level training "Quality seed production technology of Arid crops" on 11.10. 2018 organized by AAU, Anand. The participants in this training were from various fields such as Seed certification agency, STL, NSC, R&D staff of different SAU, NGO etc.
- Dr. Supriya, Dr. Ruchika Bhardwaj and Dr. Anuradha attended International training course on "Breeding approaches for enhancing genetic gains in grain legumes and dry land cereals" at NASC Complex organized by CGIAR Research Program on Grain Legumes and Dryland Cereals (GLDC) from December 10-14, 2018.
- Dr. R. Narasimhulu, Dr. G.P. Jagtap, Dr. S.K. Parmar, Dr. R.C. Sawant and Dr. S.P. Singh attended National Workshop on Digitalization of Pearl Millet Genetic Resources Management held at IIMR, Hyderabad during 9.05.2018-10.05.2018.
- Dr. R. Narasimhulu, AICRP on Pearl Millet, ARS, Ananthapuram participated in training programme on "Seed Production in different field crops" at KVK, Reddipalli on 05.06.18.
- Dr. H.M. Bhuva, Assoc. Res. Scientist (Agro) participated in National level Workshop on Nutri-cereals (Millets) jointly organized by Department of Agriculture, Cooperation & Farmers Welfare & ICAR, Govt. of India and Dept. of Agriculture, Govt. of Maharashtra, held at VAMNICOM, Pune on September 28, 2018.
- Dr S.P. Singh attended a Hindi workshop on the subject how to fill up "Rajbhasha Timahree Report (Bhag1 and 2) and information on Hindi Rajbhasha policies and rules" in Auditorium of CESCRA, IARI, New Delhi on 29.6.18.
- Dr. R. Narasimhulu, AICRP on Pearl Millet ARS, Ananthapuram participated in workshop on "Implementation of cluster Front Line Demonstrations (cFLDs)" at ICAR-IIMR, Hyderabad on 17.08.18.
- Dr. Supriya and Mr. Manoj Kumar participated in the International Seminar on "Recent Trends and Experimental Approaches in Science, Technology, Nature & Management (Chapter-2)" held at FDDI, Jodhpur on December 23-24, 2018.
- Dr. H.M. Bhuva, Assoc. Res. Scientist (Agro) participated in XXI Biennial National Symposium on "Doubling farmers' income through agronomic interventions under changing scenario" organized by ISA & ICAR, New Delhi and MPUA&T, Udaipur held at MPUA&T, Udaipur during October 24-26, 2018.
- Dr. Vinod Kumar, Asstt. Plant Pathologist participated and presented paper in National Symposium on Alternative approaches in plant health management for enhancing farmers held at Department of Plant pathology, Dr. Y.S. Parmar University of Horticulture and Forestry from November 2-3, 2018.
- Dr. R.C. Meena and Dr. B.R. Beniwal participated in 7<sup>th</sup> International Conference on Agriculture, Horticulture and Plant Sciences during June 28-29, 2018 organized by Society of Tropical Agriculture, New Delhi held at Shimla.
- Dr. Vikas Khandelwal, Dr. RC Meena, Dr. Supriya attended 13<sup>th</sup> International Conference on Development of Drylands held at CAZRI, Jodhpur during February 11-14, 2019.
- Dr Nirupma Singh attended International Conference on Global Research Initiatives for Sustainable Agriculture & Allied Sciences, 28<sup>th</sup>-30<sup>th</sup> October, 2018 held at Rajasthan Agricultural Research Institute, Durgapura, Rajasthan.
- Dr S.P Singh and Mr. Mukesh Sankar participated in 1<sup>st</sup> National Genetics Congress (NGC) 2018 on "Genetics for Sustainable Food, Health, and Nutrition Security" held at Dr B.P. Pal Auditorium,

ICAR-IARI, Pusa, New Delhi during December 14-16, 2018.

- Dr. Anil Kumar participated in the Agronomist Meet on 28.08.2018 in 'Meeting the Challenges in weed management in India' organized by Haryana agronomist association in collaboration with International Weed Science Society at Department of Agronomy, CCS HAU, Hisar.

### Awards and Nominations

- Dr. C. Tara Satyavathi was honored with National Siridhanya Award- Outstanding Scientist for pearl millet improvement by Organic and Millets 2019, Govt. of Karnataka on 20<sup>th</sup> January, 2019 at Bengaluru.



- Dr. H.T. Patil, Associate Professor (Breeding) was awarded Best Scientific Article-Asia for 2018 in the Research Program-Asia given by ICRISAT on 14.12.2018 for his Research Paper, "Phenotypic data from inbred parents can improve genomic prediction in pearl millet hybrids" published in Journal Genetics, vol. 2, 2018.
- Dr. S. Chandra Nayaka received early career Research Award 2018 from Department of Science and Technology, Govt. of India; HC Dubey Outstanding Scientist award- 2018 by Indian Society of Mycology and Plant pathology, India for his significant contribution in the field of plant pathology; Best Researcher award- 2018 by the National Council of Educational Research and Training, Government of India and Special Jury reward (2018) by University Grant commission, for the research video

- "Millets for next generation" and Congress Bursary award/APPS Recognition award ICPP-2018, Boston.
- Dr. D.M. Lomte, Pearl millet Agronomist received state level "Agroworld Jiwan Gaurav Award" on 6.01.2018 with the hands of Sh. Balasaheb Thorath, Ex. Revenue and Agricultural Minister.



- Dr. Supriya received Emerging Scientist Award for outstanding contribution in the field of Biotechnology and Molecular Biology during International Seminar held at FDDI, Jodhpur organized by Society for Science and Nature during December 23-24, 2018.



- Dr. S.P. Singh was awarded Fellowship of Indian Society of Genetics and Plant Breeding (ISGPB) on 14.12.2018 during 1<sup>st</sup> National Genetics Congress held at IARI, New Delhi.
- Dr. L.D. Sharma, Professor & Incharge, Millet, RARI, Durgapura received Certificate of Appreciation from Hon'ble Vice Chancellor, SKNAU, Jobner on Republic Day, 26.1.2019.



- Mr. Mukesh Sankar S was selected for funding in CAAST programme under National Higher Education Project (NAHEP) funded by World Bank for his PhD research work in the area of Association mapping of foliar blast resistance genes in pearl millet.

## MoUs

- A MoU was signed between Agriculture University, Jodhpur and Sri Laxmi Venkateswara Seeds, Kurnool, Andhra Pradesh on August 9, 2018 for non-exclusive license of production and selling foundation/certified seed of MPMH 21 Bajra hybrid.
- A MoU was signed between Agriculture University, Jodhpur and Sampoorana Seeds, Adoni, Andhra Pradesh on October 22, 2018 for non-exclusive license of production and marketing of seed of MPMH 21 Bajra hybrid.
- Agriculture University, Jodhpur and M/S Manak Hybrid Seeds, Jodhpur has signed a MoU on February 7, 2019 for non-exclusive license of production and selling of seed of MPMH 17 Bajra hybrid.
- Agriculture University, Jodhpur and M/S Dharti Putra Beri, Jodhpur has signed a MoU on February 6, 2019 for non-exclusive license of production and selling of seed of MPMH 17 Bajra hybrid.

## QRT Visits

- QRT visited ICAR-AICRP on Pearl millet, Jodhpur during 53<sup>rd</sup> Annual Group meeting of ICAR-AICRP on Pearl millet and interacted with participants from March 22-24, 2018.
- QRT visited pearl millet hybrid seed production centres/processing facility of Bayer & JK Agritech Armoor districts & Nizamabad to see off-season pearl millet seed production, pearl millet team of ICRISAT, Hyderabad and a meeting of QRT members was held with Director and Scientists of IIMR, Hyderabad from May 7-10, 2018.



- The QRT team under the Chairmanship of Dr. Raghva Reddy, Ex V.C. ANGRAU and his team member Dr. O.P. Govila (Plant Breeder), Dr. R.K. Pannu (Agronomist), Dr. D.C. Upreti (Physiologist) along with Drs. CTara Satyavathi, Project Coordinator, AICRP-PM, Jodhpur and Dr. I.S. Solanki, ADG (FFC), ICAR, New Delhi visited the AICRP-JAU, Jamnagar station from 17.05.2018 to 18.05.2018 for reviewing the project activities carried during 2012-13 to 2016-17.



- QRT visited at SDAU, SK Nagar to see summer pearl millet in farmer's fields and evaluation of SK Nagar voluntary centre on May 16, 2018.





- Evaluation of centre wise presentations of A & A<sub>1</sub> zone were done by QRT during 11-13 June 2018 at ICAR-IIMR, New Delhi office. QRT evaluated centre wise presentations of Zone B from 19<sup>th</sup>-21<sup>st</sup> June, 2018 at NARP, Aurangabad.



- SKNAU, Jaipur Centre evaluation during crop season and interaction with RSSC Jaipur by QRT on 15<sup>th</sup> Sept. 2018.



- QRT evaluated CCSHAU, Hisar Centre during crop season and meeting was held with Heads of Divisions, Centre of Excellence on Pearl millet, CCSHAU, Hisar on 16<sup>th</sup> Sept. 2018.



- QRT visited ICAR, IARI, Delhi Centre for evaluation during crop season on 17<sup>th</sup> Sept., 2018.



- QRT team visited pearl millet breeding block and genetic gain study trials at ARS, Bikaner on Sept. 22, 2018.



- QRT visited ICAR-CAZRI, Jodhpur for evaluation of voluntary centre on 23<sup>rd</sup> Sept., 2018 and fields of ICAR-AICRP on Pearl millet, Jodhpur on 24<sup>th</sup> September, 2018.





- Dr. P. Raghava Reddy, QRT Chairman, Pearl Millet and Dr. C. Tara Satyavathi Project Coordinator, AICRP on Pearl Millet, Jodhpur visited Dhule on 15.10.2018.

### Visits by Dignitaries

- Sh. Radha Mohan Singh, Hon'ble Union Minister, Ministry of Agriculture & Farmers' Welfare, Govt. of India visited pearl millet stall during National level Workshop on nutriceal on 28.9.2018 at VAMNICOM, Pune.



- Dr. Trilochan Mohapatra, Secretary, Department of Agricultural Research and Education & Director General, ICAR, New Delhi visited ICAR-AICRP on Pearl Millet, Jodhpur (PC Unit) on October 1, 2018.



- Dr. Jambolkar, Scientist, BARC, Mumbai visited ICAR-AICRP on Pearl millet, Jodhpur on Sept.15, 2018
- Dr. S.K. Gupta and Dr. Jan Debane, ICRISAT visited ICAR-ICRISAT partnership trials conducted at ICAR-AICRP on Pearl millet, Jodhpur on October 7, 2018.



- Dr. A.K. Vyas, ADG (HR), visited ICAR-AICRP on Pearl millet, Jodhpur (PC Unit) on Sept. 10, 2018.
- Visit of Dr. K. P. Viswanatha, Hon'ble Vice Chancellor and Dr. S. R. Gadakh, Director of Research, MPKV, Rahuri to Bajra trial plot on 15.09.18.



- Dr. Janki Ram, ADG (Horticulture) visited ICAR-AICRP on Pearl millet, Jodhpur on February 02, 2019. Dr. J.C. Rana, Bioversity International and Dr. P.N. Mathur, Kirkhouse Trust visited ICAR-AICRP on Pearl millet, Jodhpur on February 11, 2019.





- Dr. Peter Carberry, DG, ICRISAT and Dr. Rajeev Varshney, Director, Genetic Gains, ICRISAT visited ICAR-AICRP on Pearl millet, Jodhpur on February 12, 2019.



- Dr. Panjab Singh, President, National Academy of Agricultural Sciences; Ex-Director General, Indian Council of Agricultural Research (ICAR), Ex-Vice-Chancellor, Banaras Hindu University, Varanasi, Ex-Vice-Chancellor, Jawaharlal Nehru Agricultural University, Jabalpur and Dr. Balram Sharma, Ex-Head & Professor, Division of Genetics, IARI, New Delhi visited ICAR-AICRP on Pearl millet, Jodhpur on February 12<sup>th</sup>, 2019.



- Dr. T. Nagarathana, Registrar, PPV& FR Authority monitored DUS trials in the fields of ICAR-AICRP on Pearl millet, Jodhpur on October 11, 2018.



## Research Papers

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पब्लिशिंग ऑफिस नं. 33004/99

REGD. NO. D. L.-33004/99

# भारत का राजपत्र The Gazette of India

असाधारण  
EXTRAORDINARY

भाग I—खण्ड 1

PART I—Section 1

प्रकाशित

PUBLISHED BY AUTHORITY

सं. 133]

No. 133]

नई दिल्ली, बुधवार, अप्रैल 13, 2018/चैत्र 23, 1940

NEW DELHI, FRIDAY, APRIL 13, 2018/CHAITRA 23, 1940

कृषि एवं किसान कल्याण मंत्रालय

(कृषि, सहकारिता एवं किसान कल्याण विभाग)

अधिसूचना

नई दिल्ली, 10 अक्टूबर, 2018

का. सं. 4-4/2017-एनएफएसएम (ई)—मिलेट (ज्वार, बाजरा, रागी आदि) में देश की खाद्य एवं पोषण संबंधी सुरक्षा में योगदान देने की बहुत अधिक क्षमता है और इस प्रकार ये न केवल पोषक तत्वों का भंडार हैं बल्कि वे जलवायु सौम्यशीलता वाली फसलें भी हैं और इनमें अव्युत्पन्न पोषण संबंधी विशेषताएं भी हैं।

और जबकि, हाल में किए गए अनुसंधान निष्कर्षों से यह भी पता चलता है कि ज्वार-बाजरा आदि में मधुमेह रोधी गुण होते हैं तथा मिलेट आधारित खाद्य पदार्थों में कम जीआई होती है। इससे पोस्ट ग्लाइसेमिक इंडेक्स न्यूनकोज लेबल तथा ग्लाइसेमिक इंडेक्स भी कम होता है।

और जबकि, पोषण संबंधी जरूरत को बेहतर करने के लिए जल मिश्रण प्रणाली (पीडीएस) में ज्वार-बाजरा आदि को शामिल करने की आवश्यकता के लिए केन्द्र सरकार द्वारा गठित समिति ने मिलेट को देश भर में सार्वजनिक वितरण प्रणाली में शामिल करने की सिफारिश की है। केन्द्र सरकार ने इस सिफारिशों को स्वीकार कर लिया है।

केन्द्र सरकार एनएफएसएम (ज्वार), पर्ल मिलेट (बाजरा) किंगडम मिलेट (रागी/महुआ) छोटी मिलेट अर्थात् चोमसटेन मिलेट (बंगनी/काकुल), प्रोसो मिलेट (चीना), कोदो मिलेट (कोदो), जर्नबाई मिलेट (साबा/साबा/संनोरा) छोटी मिलेट (बुटनी) तथा दो मूंडी मिलेट (अमर) (कुदर) तथा जमेरायण (चीनाई), जिनकी पोषक क्षमता बहुत अधिक होती है, को उत्पादन, उपभोग तथा व्यापार के दृष्टिकोण से 'पोषक भंडार' घोषित करती है।

सी. बी. राजेन्द्र, संयुक्त सचिव (फसलें)

2168 GU/2018

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**Published by**  
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**ICAR - All India Coordinated Research Project on Pearl Millet**  
Agriculture University, Mandor, Jodhpur 342 304, Rajasthan, India  
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