

DRR Dhan 52 [IET 23354 (RP5125-12-5-3-B-IR84898-B-B)]

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The first heat tolerant variety DRR Dhan 52 was notified in 2019 for cultivation in Haryana, Gujarat and Odisha. It was developed from the cross IR78877-208-B-1-1/IR78878-53-2-2-2 under the IRRI-India collaborative project ‘Stress Tolerant Rice for Asia and South Africa’ (STRASA). Initial cross of DRR Dhan 52 was made at IRRI, Philippines based on the selection of donors for yield under vegetative/reproductive stage drought stress at multi-location trials (MLTs) across the centres in partnering countries (India, Nepal and Bangladesh) under STRASA. ICAR-IIRR, Hyderabad is part of MLT. Bulk seed with designation ‘IR84898-B-B’ in segregating generation (F₃) was received from IRRI and single plant selections for superior segregants from F₃ to F₅ generation, progeny rows evaluation and yield trials were done at ICAR-IIRR. Semi-dwarf plant height, earliness, grain type, drought tolerance and high yield are the traits considered in the selection and evaluation process. The line selected was designated as RP5125-12-5-3-B-IR84898-B-B, in which the former part of the designation (RP5125-12-5-3-B) indicates sequential selections from F₃ onwards at ICAR-IIRR and latter part of the designation indicates the initial cross made at IRRI. DRR Dhan 52 (IET No. 23354) was evaluated in All India Coordinated Rice Improvement Project (AICRIP) in Early Transplanted (ETP) trial during 2013-2015 and 2017 and yielded 5428 kg/ha with +9.71, +23.68 and +10.88% yield advantage over national, zonal and local checks, respectively on over all mean in the states released.

Significant increase of Chlorophyll a, Chlorophyll b, total chlorophyll and carotenoids during heat stress (42°C/36°C day/night for five days) at vegetative as well as reproductive stages were observed in DRR Dhan 52, as compared to well established high temperature tolerant

rice cultivar N22. Further, gaseous exchange parameters and gene expression data suggests that DRR Dhan 52 has more robust physiological and molecular machinery to cope with heat stress as compared to N22. DRR Dhan 52 showed resistance to blast, moderate resistance to neck blast, brown spot, sheath rot and rice tungro disease.



Figure 1: Paddy, brown, polished and cooked rice of IET 23354 (DRR Dhan 52)

DRR Dhan 52 has high milling recovery (71 %) and head rice recovery (66%), long bold grain with 6.23 mm kernel length, 2.34 mm kernel breadth and 2.67 L/B ratio. It has intermediate alkali spreading value (4.0), amylose content (20%) and GC (55 mm) with very occasional chalkiness indicating good cooking quality (Fig.1). DRR Dhan 52 is distinguishable through morphological features like strong culm, anthocyanin coloration of basal leaf sheath, light green foliage, creamish septum, long white split ligules, apiculus non pigmented, white stigma, late senescence, erect and wide flag leaf, compact, heavy and well exerted panicles and 90 day flowering duration. DRR Dhan 52 would certainly increase and stabilize the production of rice in irrigated ecology in the states of Haryana, Gujarat and Odisha.



Dr. Sishtha Venkata Seetharama Shastry

4 November 1928 - 5 February 2019

Dr. SVS Shastry, a pioneer of rice research in India, departed his soul on 5 February, 2019, at the age of 91 years. He obtained his Bachelor's degree from Agriculture College, Bapatla and his Master of Science and Doctoral degree from University of Wisconsin in 1958. He started his career as Assistant Professor (Cytogenetics) in 1958-61 and Botanist, 1961-1966 at the Indian Agricultural Research Institute (IARI), New Delhi. He took over as the Project Coordinator (Rice) in 1966 and served till 1977. He joined as Senior Agricultural Officer, Agricultural Production and Protection and then as Executive Secretary, International Rice Commission, Food and Agriculture Organisation (FAO), Rome from 1975-1977. He served as Director of Research, International Institute of Tropical Agriculture (IITA), Nigeria from 1977-1983. He also served as the Honorary Trustee and Vice-Chairman of the Programme Committee of International Rice Research Institute (IRRI), Philippines during 1970-

73 and Chairman, Steering committee and Member, Scientific and Technical Committee, West Africa Rice Development Association (WARDA) from 1977-82.

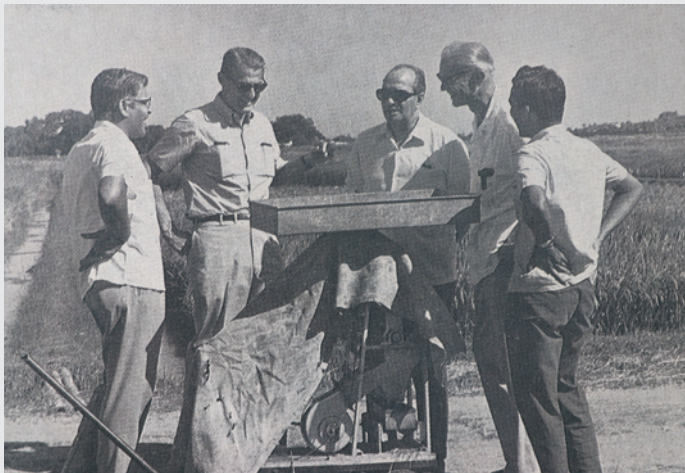
Taking forward the expertise gained on pachytene analysis in *Melilotus* species at the University of Wisconsin, he published the seminal report on the pachytene stage of rice chromosomes (Shastry *et al.*, 1960). He published a series of papers on cytology of cultivated and wild species, their interspecific hybrids and re-interpretation of species relationships in the genus, *Oryza* (Shastry and Mishra, 1961; Shastry *et al.*, 1961; Shastry and Ranga Rao, 1961; Shastry 1964a, b). Through his exhaustive biosystematic analysis, he could delineate two new species of *Oryza* namely, *Oryza nivara* and *O. collina* (Sharma & Shastry 1965a, b). Based on their studies, they proposed that *O. nivara* is the progenitor of cultivated rice (Shastry and Sharma, 1973). One of the collections of *O. nivara* was found to be resistant to grassy stunt virus disease of rice at IRRI which helped in the development of grassy stunt

virus resistant rice varieties. His research spanned wide range of subjects including Cytogenetics, Taxonomy, Genetics, Plant Breeding, Physiology, Crop Science, Agronomy, Extension and Development. He guided three Ph.D. students and developed four rice varieties namely Jaya, Phalguna, Prakash and Sona. All of these varieties were very popular among the farmers and noteworthy among these is Jaya, which is still popular with the farmers.

Through his futuristic vision, he has been instrumental in planning and establishment of the then All Indian Coordinated Rice Improvement Project (AICRIP) at Rajendranagar, Hyderabad which later evolved as Directorate of Rice Research (DRR). The state-of-the-art rice quality lab and glass house facilities developed by him at the present day ICAR-Indian Rice Research Institute (IIRR) is a standing testimony of his monumental contribution for the rice fraternity as outstanding researcher and administrator.

Recognising his monumental contributions in the area of science and technology especially in rice research, the President of India honored him with the Padma Shri award in 1971. He has also been recipient of Borlaug Award in 1974, Janna Reddy Venkatareddy Prize in 1974, Tonnage Club Medal, 1974; West Godavari Farmers' Trophy, 1975. He was elected as Fellow of two prestigious science academies of India viz., Indian National Science Academy (INSA) and National Academy of Agricultural Sciences (NAAS). He had a pleasing personality and has been a role model for many rice workers.

Society for Advancement of Rice Research (SARR) pays its respects and deep sense of gratitude to the departed soul and prays the almighty that his soul rests in peace. We also convey our deep condolences to the bereaved family.



Dr S V S Shastri with International Scientists at IIRR Farm