PROCEEDINGS

One Day Brainstorming Workshop on

SEED QUALITY STANDARDS FOR TRADITIONAL VARIETIES (TVs)

Dr. Babu Rajendra Prasad Convention Centre,
GKVK Campus, Bengaluru

26th June 2025

One Day Brainstorming Workshop on

"SEED QUALITY STANDARDS FOR TRADITIONAL VARIETIES (TVS)"

JUNE 26th, 2025

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One Day Brainstorming Workshop on

"SEED QUALITY STANDARDS FOR TRADITIONAL VARIETIES (TVS)"

Dr. Babu Rajendra Prasad Convention Centre, GKVK Campus, Bengaluru

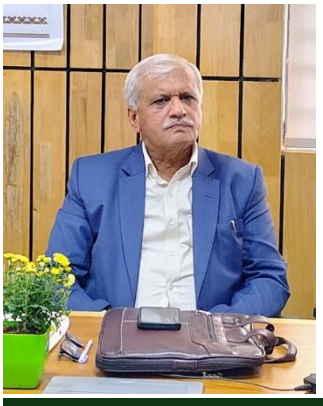
25th June 2025

A state level workshop was organised on "**Seed quality standards for Traditional Varieties (TVs)**" by WASSAN / RRA Network at Dr. Babu Rajendra Prasad Convention Centre, GKVK Campus, Bengaluru, on 26th June 2025. The consultation was attended by scientists from various research stations, representatives from State Agriculture Universities, SWISSAID, Civil Society Organisations (SCO's) and farmers from various states (*Details in Annexure - 1*).

Mrs Bhagyalaxmi, *Associate Director, WASSAN*, has opened the consultation session, giving a brief overview of various activities undertaken so far in mainstreaming of Traditional Varieties (TVs) in Karnataka. Following her session, all the participants introduced themselves with their existing professional association. Later, introductory speeches were given by Dr. Sanjay Kumar, *Director, National Institute on Seed Science and Technology (NISST)*, Dr P. L. Patil, *Vice Chancellor of University of Agricultural Sciences-Dharwad* and *Dr. K.S.Varaprasad Former Director, Indian Council of Agricultural Research (ICAR), Indian Institute of Oilseed Research (IIOR)*.

Bhagyalaxmi, *WASSAN*

Dr P.L. Patil, *Vice Chancellor, UAS-Dharwad* expressed his happiness in being part of the collective effort in identifying and promoting the TVs. He reflected on how this journey began with a brainstorming workshop in Delhi, which led to key decisions and the drafting of a seed system framework for traditional varieties, with valuable contributions from Dr. KSV and others.

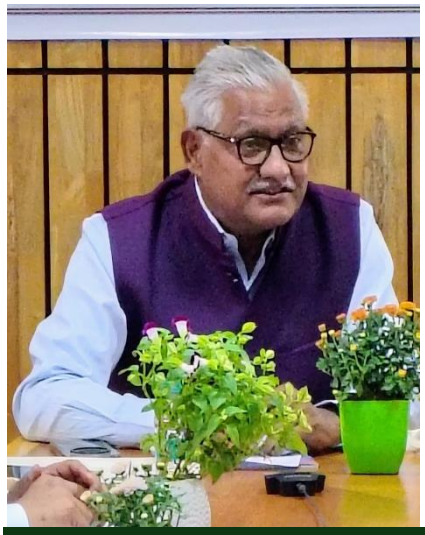


Dr. P.L. Patil, *VC UAS Dharwad*

He highlighted the systematic approach taken during a meeting with Directors of Research from all state agricultural universities in Karnataka, where responsibilities were shared to identify crops suited to different agro-climatic zones. Special Officers at Seed, under their directors, were tasked with collecting the information.

Looking ahead, he emphasized that verifying and evaluating these collected TVs is the next crucial step, drawing lessons from Odisha's model to strengthen nutrition and food security. While India is now food-secure due to the Green Revolution, he stressed the need to shift focus toward nutritional security, for which traditional varieties will be vital, especially with the growing emphasis on organic and natural farming. He noted that trials with high-yielding varieties have shown yield declines under natural farming, which could be reduced by purifying and releasing TVs that are naturally resilient and nutritionally superior. He commended WASSAN's efforts so far and called for the formal institutionalization of traditional seed systems, urging universities to start with one or two crops each to ensure a structured, realistic, and impactful approach.

Dr. Sanjay Kumar, *Director of the National Institute on Seed Science & Technology (NISST)*, acknowledged key individuals, including Dr. K.S. Varaprasad, Mrs. Bhagyalakshmi and her team from WASSAN/RRA Network, as well as the university faculty and staff from the regional station for organizing the workshop. He noted that this one-day brainstorming workshop was both timely and highly relevant. Emphasizing that quality seeds are fundamental to achieving the full potential of any crop or variety, he pointed out that while the formal seed system covers about 60% of the cultivated area, the remaining 40%, which relies on informal systems such as farmer-saved and traditional seeds—requires greater focus.



Dr. Sanjay Kumar, *Director, NISST*

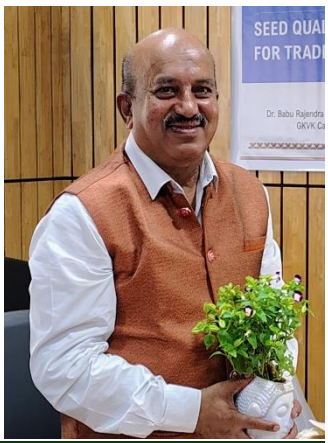
He stressed the need to integrate traditional and informal seed systems into the mainstream seed chain and commended Odisha's pioneering efforts in this direction, despite the challenges faced. He also appreciated the role of WASSAN/RRA Network in bringing together all four agricultural universities in Karnataka to work collaboratively on improving traditional varieties and incorporating them into the seed system.

Dr. Kumar underscored that clear standards are essential for the inclusion of traditional varieties in the seed chain and highlighted that defining varietal traits should be led by the communities that cultivate them. He cautioned against indiscriminate adoption of varieties from outside regions, as this risks losing regional specificity. He applauded Karnataka's achievement in mapping its traditional varieties and emphasized that the next critical step is the systematic characterization of these varieties. He emphasized the need for greater convergence among the currently fragmented efforts by NGOs, FPOs, SHGs, and international organizations. He urged that these initiatives should be unified under a comprehensive policy to strengthen traditional seed systems. He warned that without focused improvement of traditional varieties; large sections of the farming community would continue to be excluded from the benefits of quality seeds. Dr. Kumar expressed hope that the workshop would generate actionable steps to achieve this convergence and reiterated his institute's commitment, along with WASSAN/RRA Network and other partners, to support Karnataka as a model for replication in other states.

Dr. K.S. Vararpasad,
Former Director, ICAR-IIOR

Dr. K.S.Varaprasad, *Former director ICAR IIOR*, emphasized the importance of collective effort and regional specificity in traditional seed systems, advocating for developing state-specific models and broader seed quality standards that include microbiome, trait-based purity, and region-specific validation. He highlighted the need for collaboration among various sectors and the integration of farmer knowledge into scientific validation, emphasizing that traditional and Green Revolution varieties are allies, not enemies, and that India's contributions to global food security should be respected. He called for mapping local Traditional varieties, ensuring regional validation, and developing quality standards through institutional partnerships, reaffirming his commitment to advancing the traditional seed system agenda.

He stressed that actionable steps should be taken collaboratively, with a focus on practical, farmer-relevant standards that go beyond traditional metrics. He underscored the importance of mapping the local landraces specific to regions and not confusing them with those from distant geographies. He cited the example of medicinal rice- Navara from Kerala which may not retain its properties when grown in Karnataka. Hence, landrace validation and regional specificity must precede mainstreaming efforts. He suggested that the NISST should initiate a project to develop quality standards for traditional seed varieties. He assured us that they are fully prepared to extend whatever support is needed from their side.



Dr. Biradar,
Director of Research, UAS-D

Dr. Biradar, Director of Research (DOR), UAS-Dharwad discussed the importance of TVs for sustainable agriculture, highlighting their resilience, nutritional benefits, and ecological advantages over modern high-yield varieties. He emphasized the need for a revised seed system that recognizes and promotes TVs through regional release processes, GI tagging, and market integration. Progress includes policy foundations from 2012, recent initiatives in Karnataka with substantial funding, ongoing evaluations of landraces and each state agricultural university given some crops under these initiatives. The roadmap involves phenotypic and molecular assessments, seed certification standards, and conservation strategies. The focus remains on ensuring economic viability for farmers and integrating TVs into organic and regenerative farming systems, with ongoing training and evaluation efforts.

Dr. Sanjay Kumar, Director of NISST, delivered a comprehensive presentation outlining the institute's development, including its upgrade in 2016 and the formation of a unified AICRP on Seeds. He highlighted their vision of achieving seed security for sustainable agriculture through research, capacity building, and policy engagement across five thematic areas and 67 centers nationwide. While focusing on formal seed systems, he acknowledged the continued dominance of informal systems in many crops and the growing role of the private sector. He stressed the need to formalize informal seed systems, promote participatory breeding, and use digital platforms for seed exchange. Citing the Odisha model of community-led landrace registration, he emphasized participatory approaches, institutional coordination, and capacity building at community seed banks. He concluded by advocating for a blended seed system and greater use of traditional seed resources for national benefit.

Mrs. M. Leelavathi from *WASSAN/RRA Network* gave a detailed presentation on the interventions taken under CROPS 4HD project in Karnataka, West Bengal and Odisha. The local partners like Sahaja Samrudha, Bittibhumi, and DRCSC are engaged in field-level implementation, while WASSAN supports policy work across all three states. She mentioned that the initiative focuses on Neglected and Underutilized Species (NUS) crops through policy engagement and community participation. She explained the efforts made (mapping TVs, establishing demo plots, PVS, capacity building, establishing seed quality standards) in promoting TVs. These efforts were in assistance with KVK scientists, and professors from universities, especially in fixing the seed quality standards. Consensus emerged on parameters like physical purity, germination rate, and admixtures, but genetic purity sparked debate. Farmers argued that 98–100% purity is unrealistic and advocated for some genetic diversity to support agro ecological resilience. This community-defined framework, though not yet scientifically validated, reflects a bottom-up approach to seed quality. Leela highlighted its value for grassroots seed systems like FPOs and CSBs.

Mr Susanta Sekhar Choudhury, from *WASSAN (Odisha)*, focused on the process of standardization of seed quality standards for landraces, citing the mapping of around 255 villages using diverse methodologies suited to demographic features, varietal matrices, and four cell analysis. A community-based approach was employed to develop seed quality standards. He shared his experience in the process, where in 11 districts, different formulations of seed standards emerged, particularly in terms of physical purity. While some districts emphasized zero tolerance for mixtures, others permitted up to 2–5%. In some cases, farmers were less able to identify mixtures, and for such instances, germination standards were suggested at 70–85%. These standards also extended to pulses and oilseeds and allowed for certain levels of admixtures in millets where different landraces such as Bottomandia, Ashramandia, and Sunmandia co-exist due to staggered harvesting. A 1–10% range was considered acceptable in such cases.

Mr Choudhury pictorially shared his experience in Odisha in various activities like documentation, crop calendars, varietal matrices, and field-based sale analyses for the traditional varieties to understand cropping patterns. Based on this data, a pilot proposal was submitted to the Odisha government to promote Ragi landraces in rice fallow areas using available moisture in coastal ecosystems. Some important landraces identified through community consultations were suggested for release and seed multiplication through Truthful Labeling (TL), aiming to conserve rare and nearly extinct varieties through cryogenic, in-situ, or community conservation plots.

Following the presentation by Mr Choudhury, Mrs Bhagya Laxmi encouraged institutions to collaborate in developing quality standards, packages of practices, and scientific support which will play a significant role in scaling up TVs.

Dr S. Rajendra Prasad, Former VC, UAS- Bengaluru stressed the importance of two parameters—genetic purity and ODV —in assessing seed quality of traditional varieties. He explained the confusion around visually similar varieties and how slight physical differences require careful scrutiny to ensure purity. Citing rice as an example, he noted that certified seed limits were 40 per kg, and foundation seeds 20 per kg—exceeding which, even by one, would cause rejection. The standards need to be very specific and vary based on the mode of pollination of the crop. In Odisha, the existing systems among tribal communities served as the primary source material, with universities tasked to maintain nucleus seed stock.

He also mentioned that Odisha's seed certification system included distinct tag colors to mark identity, purity levels and helped in traceability. Acknowledging the impossibility of 100% purity, Dr S. Rajendra noted that even Odisha moved to DNA fingerprinting to justify these standards. Traits were matched to original sources and certified accordingly, though uniformity in traditional varieties still posed challenges during processing. He opined that protocols for grain size and processing needed development due to variance in uniformity.

During the post-lunch session, participants were divided into three groups, each assigned a specific topic. Following discussions within their groups, they shared their insights, demonstrating collaborative analysis and critical thinking.

Group Details	Discussion Topic
Group 1: Consisted of representatives of universities	• Border guideline for seed quality standards develop in TVs
Group 2: Consisted of the scientists of various regional centers	• Genetic purity in Traditional Varieties and how to interpret genetic purity (trait purity) of TVs
Group 3: Consisted of members of civil society organisations	• Scaling up the process of TVs

Outcomes from the Group - 1: The seed samples (min 25 samples) should be collected from seed growers from the same location in the same season and all the seed standards should be evaluated and compared with existing Indian Minimum Seed Certification Standards.

Outcomes from Group – 2:

- The quantification of traits defining TVs should be systematically characterised.
- Understanding the genetic architecture of TV population is key: Genetic and molecular characterisation of TVs should be carried out to understand the genetic architecture of the TV population. Estimation of heterogeneity of the TV population is very important, and high-density SNPs will greatly help the understanding of the population dynamics of TVs in their natural habitat. This gives insight of rare and major alleles and their distribution in the population.
- Genetic variation resulting from segregation should be preserved within the population to maintain the heterogeneity of the TVs. This can be carried out using genome wide SNPs/whole genome resequencing the TV of importance.
- Genetic purity should be maintained to rule out the possibility of admixtures and off types. It is important to maintain the original genetic purity of TV by preserving the natural genetic variations/heterogeneity which support continued natural evolution.

Outcomes from the Group – 3: For scaling up the variety, the concerned department should be informed and confirm their participation in various activities like mapping, conducting and monitoring trials, and preparation of proposals. The trials *viz.,* first for screening, second - for identification of true-to-type over two years, and third- multilocation trial are essential steps. SAUs need to conduct multi location evaluations along with checks. Formal communication should be made to concerned departments about the trials, involving stakeholders such as departments, NGOs, SAUs, experts, and farmers from the initiation of the work. Evaluation outside specific regions is necessary to identify additional potential regions for variety. Universities should provide seeds from multilocation trials, which will be distributed to seed villages for multiplication. The variety should not be claimed as property by the university; it should be a community claim. All processes should be in the public domain.

ACTION POINTS

- UAS-Dharwad
    - UAS-D will organize a meeting with the Director of Agriculture to involve other SAUs in advancing the progress of traditional varieties in Karnataka.
    - Utilisation of GIS technology to map the area, recording detailed information on traditional varieties, including production area, yield, and specific traits. This mapping data should be compiled into bullet points for publication by UAS-D.
    - Initiate a research project aimed at developing seed standards for traditional varieties.
    - Launch a network project through UAS-D to engage stakeholders and mainstream traditional varieties.
    - UAS-D facilitates NISST to supervise the seed quality standards in collaboration with universities on the mentioned crops and NISST will come with the final recommendation of seed quality standards and field standards.
    - The Department of Agriculture, Government of Karnataka, has given projects to the universities regarding traditional varieties. UAS-Dharwad will discuss with all the universities to make it a network project for uniformity, harmony across the universities.
    - Special officers of Seeds from each university representing select crops for DUS characterization and research on developing seed and field standards of selected crops in their respective areas. UAS-D will share the proceedings with each university to initiate the work.

Institution Name	Crop	Responsible Person
UAS-Raichur	Pigeon pea	Dr. Arunkumar Hosamani, Special Officer Seed
UAS-Bengaluru	Finger millet	Dr. Madhusudan, Special Officer Seed
UAS-Dharwad	Sorghum, Dicoccum wheat, Moth bean	Dr. T.R. Shashidhar, Special Officer Seed
UAS-Shimoga	Paddy	Dr. S.U. Patil, Special Officer Seed
NISST	Paddy	C. Giresh, Principal Scientist

- NISST
    - NISST will undertake a one-year project to develop comprehensive guidelines on seed standards, covering genetic purity, seed health, DUS characteristics, seed production protocols, certification, conservation, and the roles of CSBs. These guidelines should be publicly accessible.
    - Dr. Sanjay Kumar, Director of NISST, announced the initiation of a program on traditional varieties as part of the AICRP project at the regional office in Bengaluru, involving relevant scientists.
    - NISST will start a research project on Genetic Characterization and Conservation of Traditional Varieties (TVs) for Preserving Natural Heterogeneity and Purity.

- WASSAN
    - Identify traditional varieties and collaborate with NISST, WASSAN, and SAUs to scale up efforts.
    - WASSAN coordinates with SAUs, NISST, and the Department of Agriculture on the initiative to develop the seed quality standards, which are accepted at the Karnataka and national levels.

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