Guidelines for State Varietal Release

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Guidelines for State Varietal Release

To develop stable high-yielding varieties with better quality and improved resistance/ tolerance to biotic and abiotic stresses and to combat climate change, systematic and uniform guidelines are needed. Since such a testing mechanism provides ample opportunity to evaluate materials for their agronomic performance under a wide range of environmental conditions and for assessing their reactions to various diseases and insect-pests across different agro-climatic zones. Very often plot sizes and number of replications do not commensurate with the minimum requirements to properly assess genotypes for their yielding ability. In some cases, the number of testing locations are also not adequate, while in some crops, sufficient information is not generated even on the key components of yield, reaction to major diseases and insect-pests. In some cases no attempts are made to study responses to agronomic variables and adaptation to abiotic stresses. Testing of the newly generated improved materials at several locations over a range of environments helps analyzing genotype × environmental interactions and adaptation of genotypes under the specific environmental conditions, which ultimately help in identification of a promising genotype as the variety.

For uniform functioning of such a large network across the state, similar norms and guidelines for testing are required. In this direction, an attempt was made to develop “Guidelines for State Varietal Release”. This publication will help uniformly adopting norms of testing across the crops. With the passage of time, some of the norms demanded updating and modification to reach proper conclusion. Proforma for identification and release of varieties had some shortcomings and was not followed uniformly, causing difficulty to the Central Sub-Committee on Crop Standards, Notification and Release of Varieties while releasing and notifying varieties. This has been updated, and is a part of the publication. The information about the base material used in developing crop varieties, molecular profiling of varieties and contribution of personnel in variety development, which is very important in protection of plant variety and breeders' right, has also been included. These revised guidelines would serve as a useful document for a transparent and rational decision-making process, which would lead to identification of promising material for food and nutritional security of the Telangana state and country.

Contents

General Guidelines in entries promotion & nomination to State Sub-Committee on Crop Standards and release of Varieties

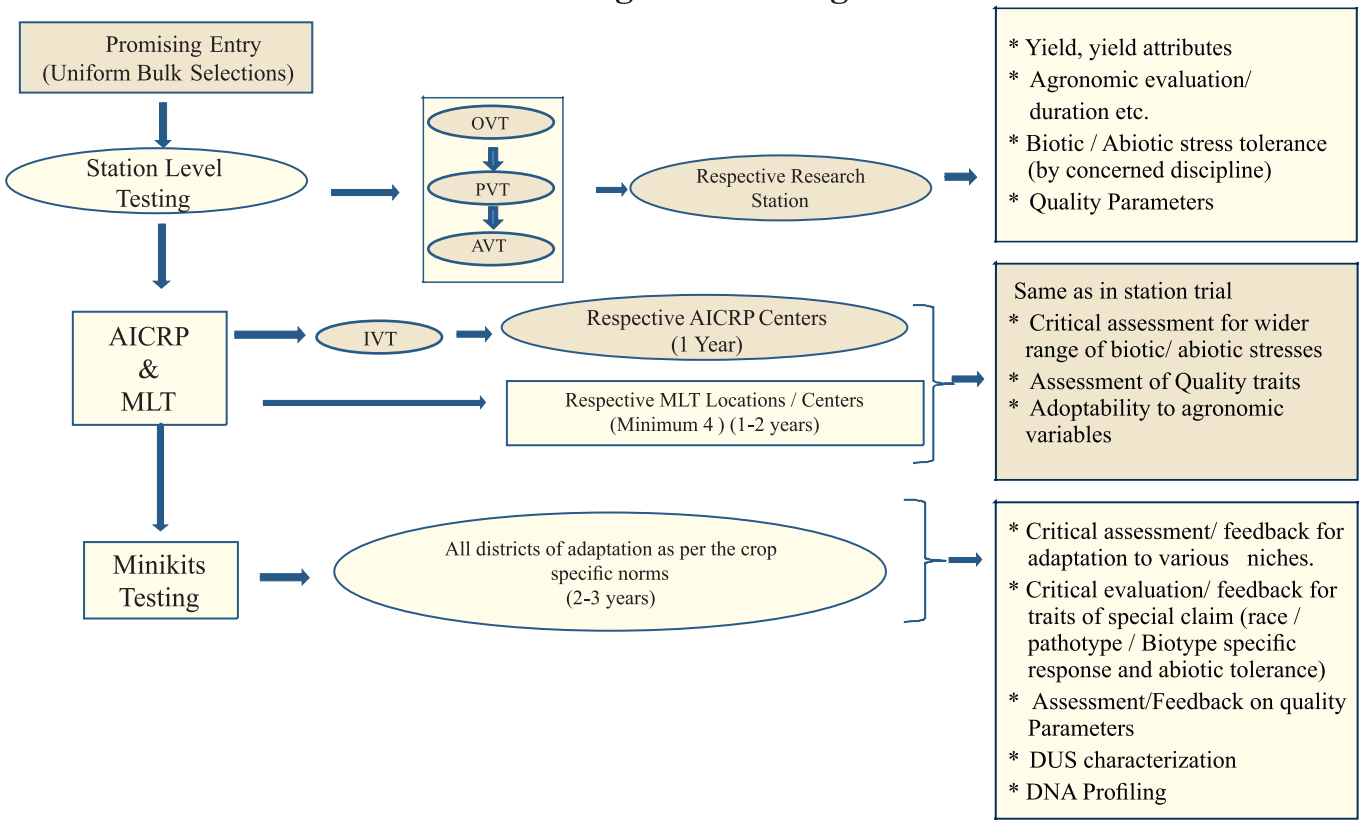
- The experiments in various stages of testing should be carried out with outmost precision duly following the procedures of experimentation depending on the agro ecological situations of the respective research stations.
- The entries to be promoted in various stages must be undergone critical evaluation/screening in the station trials, which are conducted by the respective breeder.
- All the data generated in the station and MLT trials on yield and other important agronomic attributes, reaction to insect-pests and diseases and relevant quality parameters are to be made available.
- The entries shall be included based on their superior performance for yield and/or other desirable traits such as resistance/tolerance to key biotic/abiotic stresses, superior quality components, etc.
- The entries must be characterized by a high degree of phenotypic uniformity and genotypic stability.
- Germination and physical purity standards of the seeds supplied for testing entry should confirm to the minimum seed certification standards of that crop.
- The entries shall possess some distinct diagnostic features, making them different/identifiable from the varieties of common knowledge or use.
- All information about the pedigree/parentage of the entry must be made available to the concerned Principal Scientist of the crop before nomination stage itself by the sponsoring breeder.
- Preference shall be given to induct entries with diverse parentage/genetic base, if performance level is similar.
- The plot size and inclusion of the checks should be strictly adhered as per the guidelines of PJTSAU and ICAR depending upon the crop and region of testing.
- Parentage with details of its pedigree including source from which variety/Inbred/A, B and R lines of hybrid has been developed

- Source of material in case of introduction (IC/EC numbers provided by NBPGR) should be indicated clearly.
- In case of material (segregating generations, parents of hybrids or varieties) obtained from ICAR or international institutes the relevant information and associated scientists from respective institutes and their consent needs to be included in proposal.
- Molecular/ DNA profile of variety/hybrid/A, B, R line of hybrid vis-à-vis check variety/ line (details of unique amplicons that distinguishing markers along with photographs) should be made available.
- Detailed description of hybrid/variety and detailed description of the parental lines of hybrid should be presented while proposing entry for release.
- Specific recommendations, if any, for seed production (staggered sowing, plating ratio of parental lines of hybrids in foundation and certified seed production, probable area of seed production *etc.*) has to be provided in case of hybrids.
- Vivid presentation including field view, close -up of single plant and seed with the help of photographs of the variety needs to be presented in JPEG format.
- Package of practices clearly indicating the areas of adaptation should be provided.
- Information on DUS characteristics of the entry should be generated which is a must for PPVFRA registration
- Utmost care should be taken by the breeders to maintain the pedigree records of the entries along with storage of data in digital form pertaining to the entries proposed for release.
- General yield levels: In the case of irrigated conditions, trials with extremely low yields (less than state/region/district average), normally attributable to poor crop management, or exceptionally high yields, which can be considered unrealistic and presumably arising out of various types of errors, are to be discarded.
- In case of trials under restrictive environments such as rainfed, salt-affected, waterlogged conditions etc., the above criterion should not be applied, and all trials where the check entries have produced reasonable yields should be considered for analysis, irrespective of

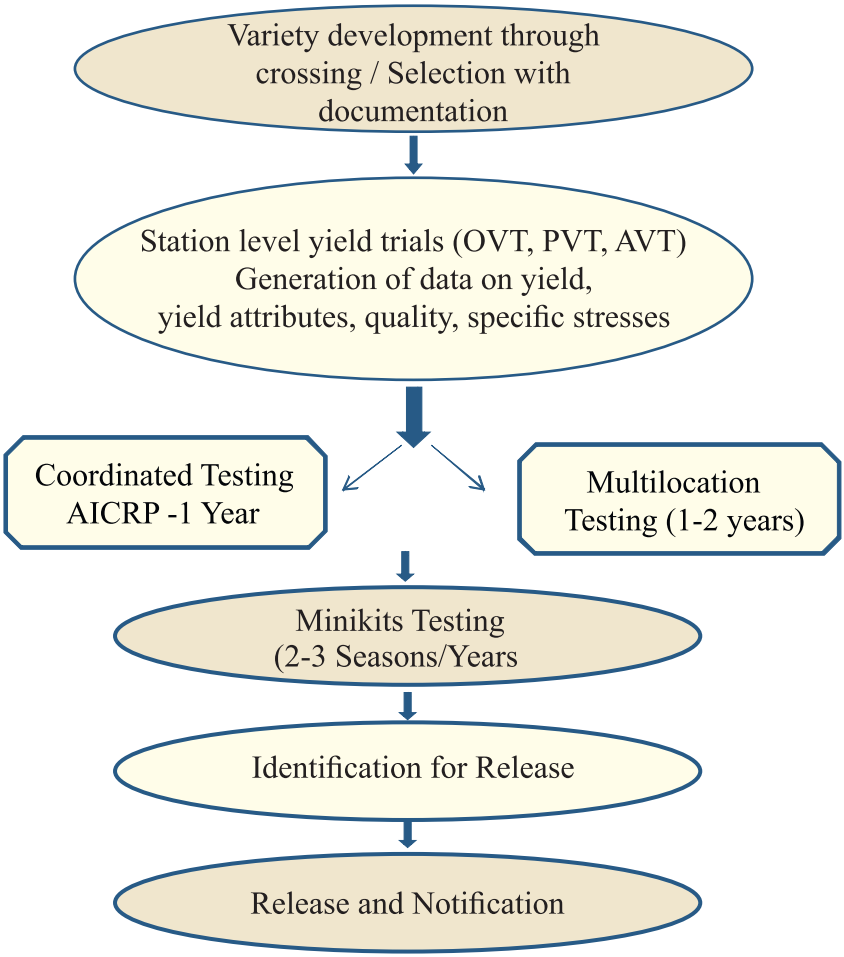
the poor overall trial average yield/extremely poor performance of any test entry.

- CV levels: Irrigated trials showing highly erratic behaviour of genotypes over replications (resulting in non- acceptable high CV levels), arising from extremely heterogeneous fields, patchy plant stands, hazards like bird/animal/hail-storm damages, may be discarded.
- In case of trials under rainfed/restrictive environments, all those showing significant genotypic differences and reasonable yield level of the checks should be considered. Trials with extremely low/negligible CV should be considered cautiously.
- Trials, where performance of the checks is low and unrepresentative of the general trial performance, may be considered cautiously.
- The entries with yield marginally lower than the best performing check but outstanding in one or more strategic features relevant to the crop such as extra earliness, specific industrial product property, export quality, nutritional superiority etc., which will result in higher cash returns per unit area to the cultivator will also be considered for promotion to next level of testing and release.
- The entries with yield/main produce of economic importance at par with the best performing check but significantly superior in some features of specific importance such as disease/insect-pest resistance/or some specific quality traits will also be considered for promotion to next level of testing and release.
- The minikit entries which are claimed for specific traits (biotic and abiotic) must be tested in respective environments.
- Any other pertinent information.

Flow chart for testing of Promising entries



Flow chart for development and release of crop cultivars through State Sub-Committee on Crop Standards and release of Varieties



Rice

1. Guidelines for evaluation of cultures in various stages

S. No	Particulars	Guidelines
1	Station level evaluation	Entries must be tested in three stages OVT, PVT and AVT in station trials for yield and yield contributing traits including the corresponding checks.
2	Testing of cultures in Multi location trials	Entries must be tested in three / four locations over one/two seasons for yield and yield contributing traits.
3	Plot Size particulars	OVT : Minimum 6 Square Meters PVT : Minimum 8 Square Meters AVT : Minimum 10 Square Meters MLT : Minimum 12 Square Meters
4	Minikit evaluation	➢ Entry must be tested for three years (targeted seasons) ➢ However based on performance minimum two years will also be considered ➢ **100 minikits** should be tested for each year ➢ Must include popular released check/ private check ➢ If entry is tested in AICRP trials in our zone two years of minikit data is to be considered for release ➢ Area of testing: 0.25 acres

2. Criteria for promotion

- **The entry should be significantly superior over the corresponding yield check in respective duration group. In case of hybrids 10 percent over the best check should be the criteria**
- The entry should be tested against promising insect pests and diseases in appropriate screening trials
- The entry should qualify in grain quality parameters as below
  a. Head Rice Recovery (HRR) of the entry should be more than 45% for aromatic long grain and 55% for hybrids & varietal entries
  b. Should have intermediate amylose content (20-25%)
  c. If amylose content is between 25-27% it should have more than 40 gel consistency and alkali spreading value between 5-7
  d. If amylose content is more than 27% gel consistency should be more than 60 and alkali spreading value more than 5

Amylose (%)	Gel consistency (mm)	Alkali Spreading Value
20-25	20-80	4-7
25-27	>40	5-7
>27	>60	>5

Maize, Sorghum, Pearl Millet and Minor Millets

(Finger millet, Foxtail millet, Proso millet, Barnyard millet, Kodo millet and Little millet)

1. Guidelines for evaluation of cultures in various stages

S.No	Particulars	Guidelines		
1	Station level evaluation	Entries must be tested for three years in station trials for yield and yield contributing traits by comparing with latest/popular variety/hybrid		
2	Testing of cultures in Multilocation trials	Cultures must be tested in at least three locations for two consecutive seasons (two kharif/two *rabi*) for yield and yield contributing traits by comparing with the popular variety/hybrid as check.		
3	Plot Size particulars	**Crop**	**Row length / Spacing**	**Trial/ No of rows**
		Maize	4.0 m 60 x 20 cm	OHT (2) PHT (4) AHT (6) MLT (6)
		Sorghum	5.5 m 45 x 15 cm	OVT (4) IVT (4) AVT (6) MLT (6)
		Pearl Millet	4.0 m 50 x 10 cm	OHT (3) PHT (3) AHT (6) MLT (6)
		Minor Millets	3.0 m 22.5 x 10 cm	OVT (4) PVT (4) AVT (10) MLT (10)
4	Minikit evaluation	➢ Entry must be tested for three years (targeted seasons). How ever based on performance minimum two years will also be considered ➢ **50 minikits** should be tested for each year ➢ Must include popular released check/ private check ➢ If genotype is tested in AICRP trials in the zone where the respective state is included, two years of minikit data can be considered for release ➢ Area of testing: 0.25 acres		

2. Criteria for promotion of entries

Maize (Field corn, sweet corn, popcorn & baby corn)

- The entry should possess 5% yield superiority in case of late maturity group and 10% yield superiority in case of medium & early maturity group
- The disease reaction of test entries to the disease of national average will be considered for promotion. If an entry is showing susceptible or moderately susceptible reaction in the scale of 1-9 to a prevalent disease it will not be promoted
- Sweet corn: The TSS values measured using Brix meter should be >15%
- Popcorn: Popping percentage should be >85% with minimum expansion ratio of 1:15

Sorghum

Kharif Sorghum

- The entry should possess 10% or more grain yield increase over the best check
- The entries with 5% increase in grain yield over best check, fodder yield more than the best check, and Shoot fly(SF) and grain mold (GM) incidence numerically less or on par with the best check with moderate level of resistance to downy mildew will also be considered
- In case of early duration hybrids (Extra early: <60 DF and <100 DM; Early: <65 DF and <105 DM), >5% increase in GY over the best early check, and SF and GM incidence numerically less or on par with the best check with moderate level of resistance to downy mildew will be considered
- GY and FY numerically on par or more than the best check and significantly superior for major pest and disease (SF/SB/GM) resistance or significantly superior for grain or Stover quality traits will also be considered
- **Dual-purpose sorghum**: The entry should have 5% increase in both grain and fodder yields over the best dual-purpose check, with GM and SF resistance
- **Specialty sorghum**: The entry should possess yield on par or less up to 5% compared to the high yielding check and should have special trait

***Rabi* Sorghum**

- The entry should possess 10% or more increase in grain yield over the best check
- 5% increase in grain yield over best check, fodder yield more than the best check, and SF and CR incidence numerically less or on par with the best check will also be considered
- In case of early duration hybrids/varieties (Flowering 65-70 days and maturity between 105-110 days) >5% increase in GY over the elite early check/popular variety, and SF and CR incidence numerically less or on par with the elite check/popular variety will be considered
- Hybrid based on diverse cytoplasm with numerical superiority or on par with the best check on all the traits of interest will be considered
- **Specialty sorghum** : Grain yield on par or less by 5% compared to the high yielding check and has some special trait will be considered

Pearl Millet

- Grain yield higher than best check or 10% higher over relevant check in early and medium group and 5% over relevant check in late group will be considered
- Downy mildew (60 DAS) under sick plot equal to or less than 5% in hybrids and populations is desirable
- Blast (Score) equal to or less than 3 (by using 0-9 scale) in hybrids will be considered
- Iron content ≥42 ppm and Zinc content ≥32ppm in all the trials is mandatory

Minor Millets (Finger millet, Foxtail millet, Proso millet, Barnyard millet, Kodo millet and Little millet)

- Outstanding performance for yield/main produce of the economic importance (by a margin of 10%) over the best performing check without compromising on other important features
- More than 5% increase in GY over elite check, fodder yield on par or more than the check and disease/pest incidence numerically less or on par with the elite check will be considered
- In case of early duration varieties, more than 5% increase in GY over the elite early duration check, fodder yield on par/more than the check, and disease/pest incidence numerically less or on par with the elite check will be considered
- Grain yield numerically on par or more than the elite check and significantly superior for major pest and disease resistance or significantly superior for grain and fodder quality will be considered

Soybean

1. Guidelines for evaluation of cultures in various stages

S.No	Particulars	Guidelines		
1	Station level evaluation	Entries must be tested for three years in station trials for yield and yield contributing traits including the corresponding checks.		
2	Testing of cultures in Multilocation trials	Cultures must be tested in three/ four locations over one/two seasons for yield and yield contributing traits including the corresponding checks.		
3	Plot Size particulars	**Trail**	**Row length (m)**	**No of rows**
		OVT PVT AVT MLT	3 4 5 5	3 5 6 8
4	Minikit evaluation	➢ Entry must be tested for three years (targeted seasons). However based on performance minimum two years will also be considered ➢ 50 minikits should be tested each year ➢ Must include popular released check/ private check ➢ If entry is tested in AICRP trials in our zone two years of minikit data is to be considered for release ➢ Area of testing: 0.25 acres		

2. Criteria for promotion

- The entry should be 10 percent superior over the corresponding yield check in respective duration group
- The entry should be tested against promising insect pests and diseases in appropriate screening trials
- The entry should have 5 percent of yield advantage over check provided if it possess specific quality traits like drought tolerance, water logging tolerance, high oleic acid (>40 %), high oil content (above 21 %) and nul KTI

Oil Seeds

(Castor, Groundnut, Sunflower, Sesamum and Safflower)

1. Guidelines for evaluation of cultures in various stages

S.No	Particulars	Guidelines		
1	Station level evaluation	Entries must be tested for three years in station trials for yield and yield contributing traits including the corresponding checks.		
2	Testing of cultures in Multilocation trials	Cultures must be tested in three/ four locations over one/two seasons for yield and yield contributing traits including the corresponding checks.		
3	Plot Size particulars	**Crop**	**Row length (m)**	**Trial/ No of rows**
		Castor	6.0	PV/HT (1) AV/HT (3) MLT (6)
		Groundnut	5.0	OVT (5) PVT (5) AVT (5) MLT (5)
		Safflower	5.0	OVT (3) PVT (5) AVT (6) MLT (6)
		Sesame	3.0	OVT (4) PVT (6) AVT (8) MLT (6)
		Sunflower	4.5	OHT (2) PHT (3) AHT(5) MLT(5)

S.No	Particulars	Guidelines
4	Minikit evaluation	➢ Entry must be tested for three years (targeted seasons). However based on performance minimum two years will also be considered ➢ 50 minikits tested for groundnut, sesame and safflower and 30 minikits for castor and sunflower for each year ➢ Must include popular released check/ private check ➢ If entry is tested in AICRP trials in our zone two years of minikit data is to be considered for release ➢ Area of testing: 0.25 acres

2. Criteria for promotion

Castor:

- The entry with 10% higher seed yield over the best performing check and numerically at par oil yield or 10% higher oil yield over the best performing check and numerically at par seed yield will be considered
- Numerically at par seed or oil yield for early duration (Rainfed: <90 days; Irrigated: <120 days to first picking) or any other character of zonal/national importance will be considered
- The entry should possess <20% wilt incidence in wilt sick plot (Rainfed: IIOR and/or Palem; Irrigated: SK Nagar)
- Other characters desirable are, resistance to root rot (<20% incidence in sick plot at Junagadh), whitefly (Grade 0-2: 0-100 nymphs and pupae/3 leaves/plant), leafhopper (grade 0-1: 0-10% hopper burn) and gray mold (grade 1- 3: 1-25% capsules infected) can be taken as additional traits after ensuring standard screening procedures

Groundnut:

- OVT to PVT will be based on >5% superior kernel yield over best check. Similarly, promotion of entries from PVT to AVT will be based on >10% superior kernel yield or >5% higher oil yield than best check

- For drought, salinity tolerance and early maturity traits with at par yield performance with the best check will be promoted
- Large seeded trial should be conducted under assured high input conditions and entries should be promoted to next stage of testing/identification with the bench mark of >60g Hundred kernel weight, >3000 kg/ha pod yield and good blanchability (>80%). Shelling percent for promotion of Spanish entries should be ≥70% and for Virginia entries should be ≥65%
- Desirable pests and disease resistance/tolerance bench marks : Minimum disease pressure for foliar diseases *i.e.*, Early leaf spot, Late leaf spot, rust and alternaria leaf blight and the entries showing < 3.0 scale in 1-9 disease score scale will be promoted
- For soil borne diseases (collar rot, stem rot, dry root rot) and viral diseases (PBND, PSND), the entries showing disease incidence <5% will be promoted
- Minimum insect pressure for insect pests *i.e.*, *Spodoptera*, *Helicoverpa*, Leaf miner, Leaf hoppers, Thrips and Aphids and the entries showing < 3.0 scale in 1-9 scale will be promoted

Safflower

- The entry with 10% higher seed yield over the best performing check and numerically at par oil yield or 10% higher oil yield over the best performing check and numerically at par seed yield will be considered
- Numerically at par seed or oil yield with high oleic acid (more than 60%) or any other character of zonal/national importance
- The entry should have less than 20% wilt incidence in wilt sick plots with moderately tolerant reaction to aphids

Sunflower

- The entry should possess 10% higher seed yield over the best performing check and numerically at par oil yield with 0% downy mildew incidence
- The entry should possess 10% higher oil yield over the best performing check and numerically at par seed yield with 0% downy mildew incidence

- Specialty types like **high oleic type**, with numerically at par seed or oil yield and more than 70% oleic acid content with 0% downy mildew incidence will be considered
- **Early maturity,** with numerically at par seed or oil yield and at least 10 days early in duration with 0% downy mildew incidence will be considered
- Moderately resistant reaction to leaf blight, powdery mildew, *Alternaria* leaf spot and necrosis is desirable

Sesame

- The entry should possese10% higher seed yield over the best performing check
- Entries having 10% higher oil yield increase over the best oil yielding check with seed yield on par with the best seed yielding check will be considered
- Moderately resistant reaction to *Macrophomina* stem rot and root rot (<20%) under sick plot (Mandor and Vridhachalam) is required

Pulses

(Redgram, Greengram, Blackgram and Chickpea)

1. Guidelines for evaluation of cultures in various stages

S.No	Particulars	Guidelines		
1	Station level evaluation	Entries must be tested for three years in station trials for yield and yield contributing traits including the corresponding checks.		
2	Testing of cultures in Multilocation trials	Cultures must be tested in three/ four locations over one/two seasons for yield and yield contributing traits including the corresponding checks.		
3	Plot Size particulars	**Crop**	**Row length (m)**	**Trial/ No of rows**
		Redgram	4.0	OVT (2) PVT(3) AVT(4) MLT(6)
		Greengram	4.0	OVT (3) PVT (4) AVT (6) MLT (6)
		Blackgram	4.0	OVT (3) PVT (4) AVT (6) MLT (6)
		Chickpea	4.0	OVT (3) PVT (4) AVT (6) MLT (6)

S.No	Particulars	Guidelines
4	Minikit evaluation	➢ Entry must be tested for three years (targeted seasons). However based on performance minimum two years will also be considered ➢ **50 minikits** should be tested for each season ➢ Must include popular released check/ private check ➢ If entry is tested in AICRP trials in our zone two years of minikit data is to be considered for release ➢ Area of testing: 0.25 acres

2. Criteria for promotion

Redgram

- The entry should possess 5 percent yield superiority over best check for promotion
- The wilt (less than 30 percent) and SMD (less than 30 percent) are mandatory requirements for promotion

Greengram

- The entry should possess 5 percent yield superiority over best check for promotion
- The YMV resistance is mandatory requirement for promotion

Blackgram

- The entry should possess 5 percent yield superiority over best check for promotion
- The YMV resistance is mandatory requirement for promotion

Chickpea

- The entry should possess 5 percent yield superiority over best check for promotion
- Test entries should be resistant to *Fusarium* wilt (not more than 10% disease incidence)

Cotton

1. Guidelines for evaluation of cultures in various stages

<table>
<tr><th>S.No</th><th>Particulars</th><th colspan="3">Guidelines</th></tr>
<tr><td>1</td><td>Station level evaluation</td><td colspan="3">Entries must be tested in three stages OVT, PVT and AVT in station trials for seed cotton yield and fibre properties including the corresponding checks.</td></tr>
<tr><td>2</td><td>Testing of cultures in Multilocation trials</td><td colspan="3">Entries must be tested in three / four locations over one/two seasons for yield and yield contributing traits.</td></tr>
<tr><td rowspan="2">3</td><td rowspan="2">Plot Size particulars</td><td>Trial</td><td>Row length (m)</td><td>No of rows</td></tr>
<tr><td>OVT
PVT
AVT
MLT</td><td>6
6
6
6</td><td>2
4
4
4</td></tr>
<tr><td>4</td><td>Minikit evaluation</td><td colspan="3">➢ Entry must be tested for three years (targeted seasons). However based on performance minimum two years will also be considered
➢ 100 minikits should be tested for each year
➢ Must include popular released check/ private check
➢ If entry is tested in AICRP trials in our zone two years of minikit data is to be considered for release
➢ Area of testing: 0.25 acres</td></tr>
</table>

2. Criteria for promotion

- The entry (both varieties and hybrids) should possess 10 percent yield superiority over the corresponding yield check. If any variety or hybrid possess resistance to any biotic or abiotic stresses yield advantage of 5 percent can also be considered
- The entry should be tested against promising insect pests and diseases in appropriate screening trials

Sugarcane

1. Guidelines for evaluation of cultures in various stages

<table>
<tr><th>S.No</th><th>Particulars</th><th colspan="3">Guidelines</th></tr>
<tr><td>1</td><td>Station level evaluation</td><td colspan="3">Entry must be tested in trials of PYT, MYT 1, MYT 2 and ratoon for quality (sucrose%) yield (t/ha) including</td></tr>
<tr><td>2</td><td>Testing of cultures in Multilocation trials</td><td colspan="3">Entry must be tested in three / four locations over one / two seasons for yield , quality (sucrose%) including pest and disease resistance.</td></tr>
<tr><td rowspan="2">3</td><td rowspan="2">Plot Size particulars</td><td>Trial</td><td>Row length (m)</td><td>No of rows</td></tr>
<tr><td>PYT
MYT-Plant -1
MYT-Plant -2
MYT-Plant -R</td><td>3
6
6
6</td><td>4
8
8
8</td></tr>
<tr><td>4</td><td>Minikit evaluation</td><td colspan="3">➢ Entry must be tested for three years (targeted seasons). However based on performance minimum two years will also be considered
➢ 20 minikits should be tested for each year
➢ Must include popular released check/ private check
➢ If entry is tested in AICRP trials in our zone two years of minikit data is to be considered for release
➢ Area of testing: 0.25 acres</td></tr>
</table>

2. Criteria for promotion

- The entry (clones) should possess superiority of 8 - 10% over the corresponding yield of the check variety
- The entry (clones) should possess superiority of 3% over corresponding quality check
- Desirable for moderately resistant to red rot reaction
- Entries should be tested against promising insect pests and diseases appropriate screening trails
- The entry must be tested in AICRP(IVT) trials for yield(t/ha) and quality (sucrose%).
- The sugar industry must conduct run over mill test for entry (separately) in a consolidated period (or single shift period). The report of industry containing particulars of entry cane crushed during test period, brix(%), purity(%) and recovery(%) of the clone. However the recovery percentage at mill must be more than 9.8% for early and 10.3 % for midlate varieties
- Supporting information on flowering data, juice recovery, jaggery etc is needed

Forage crops

1. Guidelines for evaluation of cultures in various stages

S.No	Particulars	Guidelines		
1	Station level evaluation	Entries must be tested for three years in station trials for yield and yield contributing traits including the corresponding checks		
2	Testing of cultures in Multilocation trials	Cultures must be tested in three/ four locations over one/two seasons for yield and yield contributing traits including the corresponding checks		
3	Plot Size particulars	**Crop**	**Row length (m)**	**Trial/ No of rows**
		Forage Maize (*Zea Mays L.*,)	4.0	OVT/OHT (2) PVT /PHT(4) AVT/AHT (6) MLT (6)
		Forage Pearl millet (*Pennisetum glaucum L.*,) (Single cut / Multicut)	4.0	OVT/OHT (2) PVT /PHT(4) AVT/AHT (6) MLT (6)
		Forage Sorghum (Single cut and Multicut)	4.0	OVT/OHT (2) PVT /PHT(4) AVT/AHT (6) MLT (6)
		Forage Sorghum (Perennial) (*Sorghum bicolor L.*,)	4.0	OVT (1) PVT (2) AVT (4) MLT (4)
		Forage Cowpea (*Vigna unguiculata L.*,)	4.0	OVT (2) PVT (4) AVT (6) MLT (6)
		Bajra Napier hybrid (Perennial) (*P.glacum x P.purpureum*)	4.0	OVT (1) PVT (2) AVT (3) MLT (3)

3	Plot Size particulars	**Crop**	**Row length (m)**	**Trial/ No of rows**
		Hedge Lucerne (Perennial) (*Desmanthus virgatus L.,*)	4.0	OVT (1) PVT (2) AVT (4) MLT (4)
		Lucerne (*Medicago sativa L.,*) (Multi cut annual)	4.0	OVT (1) PVT (2) AVT (4) MLT (4)
		Lucerne (*Medicago sativa*) (Perennial)	4.0	OVT (1) PVT (2) AVT (4) MLT (4)
4	Minikit evaluation	➢ Entry must be tested for three years (targeted seasons) However, based on performance minimum two years will also be considered ➢ 1st year of minikit: 9 minikits for annual forage crops should be tested, while for perennial forage crops 6 minikits (Two in each zone) 2nd& 3rd year of minikits: **20 minikits** for annual forage crops should be tested, while for perennial forage crops 9 minikits (Three in each zone) ➢ Must include popular released check/ private check ➢ If genotype is tested in AICRP trials in our zone, two years of minikit data is to be considered for release ➢ Area of testing: 0.125 acres		

2. Criteria for promotion

Annual as well as perennial forage crops

➢ The entry should possess 5% superiority for Green Fodder Yield (GFY) and Dry Fodder Yield (DFY) over the best check

Green Manure Crops

1. Guidelines for evaluation of cultures in various stages

<table>
<tr><th>S.No</th><th>Particulars</th><th colspan="3">Guidelines</th></tr>
<tr><td>1</td><td>Station level evaluation</td><td colspan="3">Entries must be tested for three years in station trials for green fodder yield and yield contributing traits including the corresponding checks</td></tr>
<tr><td>2</td><td>Testing of cultures in Multilocation trials</td><td colspan="3">Cultures must be tested in three/ four locations over one/two seasons for yield and yield contributing traits including the corresponding checks</td></tr>
<tr><td rowspan="3">3</td><td rowspan="3">Plot Size particulars</td><td>Crop</td><td>Row length (m)</td><td>Trial/ No of rows</td></tr>
<tr><td>Dhiancha (Sesbania aculeate L.,)</td><td>4.0</td><td>OVT (3)
PVT (6)
AVT (6)
MLT (6)</td></tr>
<tr><td>Sunhemp (Crotalaria juncia L.,)</td><td>4.0</td><td>OVT (3)
PVT (6)
AVT (6)
MLT (6)</td></tr>
<tr><td>4</td><td>Minikit evaluation</td><td colspan="3">➢ Entry must be tested for three years (targeted seasons). However based on performance minimum two years will also be considered
➢ A minimum of 20 minikits shoud be tested for each year
➢ Must include popular released check/ private check / Local varierty
➢ If genotype is tested in AICRP trials in our zone two years of minikit data is to be considered for release
➢ Area of testing: 0.25 acres</td></tr>
</table>

2. Criteria for promotion

➢ The entry should possess 10% superiority for seed yield over the best check / poplar local variety / private check

Submission of crop variety
to
State Sub - Committee on Crop Standards and Release of Varieties

RELEASE PROPOSAL OF ----- CULTURE

XXXX

(IET XXX)

PROFESSOR JAYASHANKAR TELANGANA STATE AGRICULTURAL UNIVERSITY
Rajendranagar, Hyderabad - 500 030.

Contents

Brief summary of the proposed entry

Proforma for Submission of Proposal for release of Crop Varieties/hybrids to State Sub - Committee on Crop Standards and Release of Varieties

01.	Name of the Crop and Species	:	
02.	a) Name of the variety under which tested.	:	
	b) Proposed name of the variety	:	
03.	Sponsored by	:	
04.	a) Institution or Agency responsible for development of variety (with address)	:	
	b) Name of persons who involved in the development of variety	:	
5.	a) Parentage with details of its pedigree	:	
	b) Source of material in case of introduction	:	
	c) Brief History	:	
	d) Breeding method	:	Annexure I
	e) Breeding objective	:	
6.	State the varieties which most closely resemble the proposed variety in general characteristics	:	

7. a) Whether recommended by seminar/conference/work - shop/ state seed sub- committee :

   b) If so, its recommendations with specific justification for the release of proposed variety :

   c) Specific areas of its adaptation :

8. Recommended ecology :

9. Description of variety/hybrid :

   a) Plant height :

   b) Distinguishing morphological characters. : Annexure II & Annexure III

   c) Maturity (range in number of days) seeding/Transplanting to flowering, seed to seed :

   d) Maturity group (early, medium and late wherever such classification exists) :

   e) Reaction to major diseases under field and controlled condition (reaction to physio-logical strains/races/ bio- types to be indicated where ever possible) :

   f) Reactions to major pests (under field and controlled conditions including stored pests) :

   g) Agronomic features e.g. resistance to lodging, shattering, fertilizer responsiveness, suitability for early, late, seed rate etc.

h) Quality of produce of grain forage/fiber including nutritive value, where relevant

i) Reaction to stresses :

10. Description of parents of the hybrid/Variety : Female Male

a) Plant height :

b) Distinguishing morphological characters :

c) Days to 50% flowering :

d) Maturity range (seed to seed) :

e) Reaction to major diseases :

f) Reaction to major pests :

g) Agronomic features :

11. a) Yield data in regional trials :

b) Average yield under normal conditions (yield in kg/ha) :

12. a) Agency responsible for maintaining breeder seed :

b) Quantity of breeder seed in stock :

13. Information on the acceptability of the variety by farmers/ consumers/industry :

14.	Specific recommendations, if any for seed production	:	
15.	Any other pertinent information	:	
16.	Vivid presentation with the help of photographs of the variety is to be submitted by the breeder	:	Enclosed
17.	Acknowledgement particulars about submission of germplasm sample with NBPGR	:	Annexure V
18.	DNA fingerprinting	:	Annexure VI

SIGNATURE OF
THE BREEDER

SIGNATURE OF
HEAD OF STATION

VIVID PRESENTATION
(field view, close-up of single plant and seed)

ANNEXURE I
PEDIGREE FLOW CHART

ANNEXURE II
CHARACTERISTICS OF THE PROPOSED ENTRY

ANNEXURE III
BRIEF DISCRIPTORS OF THE PROPOSED ENTRY

YIELD AND OTHER TABLES
(Table 1 to ….)

CERTIFICATE REGARDING INVOLVEMENT OF SCIENTISTS IN DEVELOPMENT OF PROPOSED ENTRY FOR RELEASE

Certified that, the following scientists were involved at various stages for evolving proposed entry _____for release as verified from records.

S. No.	Name of the Scientist	Stage of development	Period of involved	Signature
Plant Breeding				
Associated in generating ancillary data				
1				
2				
Principal Scientist (Crop)				
1				
2				
3				
Head of the station				
1				
2				
Associate Director of Research				
1				
2				

It is to certify that, the order of placement of the names of the scientists are in accordance with the contributions made by them in evolving and release of the proposed entry.

Signature of the proposing Breeder | Signature of the Principal Scientist(Crop) | Signature of the Head of the station

ANNEXURE IV

MINIKITS DATA / OFD

Performance of culture _____ in minikits in Telangana state

S. No.	Year/ Season	Name of the farmer	Village	Mandal	District	Grain Yield (kg/ha)	Check Yield (kg/ha)	Check variety
1								
2								
3								
4								
5								
Average								% improvement

ANNEXURE V

NBPGR CERTIFICATE

जननद्रव्य संरक्षण विभाग

Division of Germplasm Conservation

भाकृअनुप-राष्ट्रीय पादप आनुवंशिक संसाधन ब्यूरो

ICAR - National Bureau of Plant Genetic Resources

पूसा कैम्पस, नई दिल्ली – 110 012

Pusa Campus, New Delhi – 110 012

NBPGR

ICAR

Phone: +91-011-25802784 (O)
+91-011-25802707 (O)

E-mail:nbpgr.conservation@icar.gov.in
anju.singh@icar.gov.in

डॉ अंजु महेन्द्रू सिंह

Dr Anju Mahendru Singh

प्रधान वैज्ञानिक एवं विभागाध्यक्ष

Principal Scientist and Head

DGC/RV/August/2023

Date: 10.08.2023

ACKNOWLEDGEMENT CERTIFICATE

ANNEXURE VI

DNA PROFILING

ANNEXURE VII

PACKAGE OF PRACTICES

Name of the crop: Variety:

S. No.	Particulars	Details of the proposed variety
1	Suitability of the variety for the area (recommended area for which variety has been released / recommended)	
2	Selection of field / land preparation type of topography, soil condition, tillage operations for seed bed etc.)	
3	Seed treatment (recommended chemical with doses)	
4	Sowing time (optimum sowing period)	
5	Seed rate sowing method-line sowing with row to row and plant to plant distance	
6	Fertilizer doses & time of fertilizer's application (Type and quantity of fertilizers per acre)	
7	Weed control (name of weedicide (s) with doses and timing of mechanical weeding, if any	
8	Major diseases and pest control (type of pest and diseases with name of chemicals and doses & timing of application)	
9	Irrigation schedule (critical stages for irrigation and method of irrigation)	
10	Harvesting (approximate days of harvestable maturity)	
11	Quality characteristics of the variety, if any (prominent characteristics of variety)	
12	Expected yield of the variety per acre (yield subject to use under area of adaption and the recommended climatic conditions and adoption of package of practices)	

ANNEXURE VIII

TESTIMONIES

For official use only

PROPOSAL FOR THE NOTIFICATION OF _____ VARIETY

XXXX
(IET XXX)

Submitted to

Central Sub-committee on Crop Standards, Notification and Release of Varieties for Agricultural Crops

Under section 5 of the seed act, 1966

PROFESSOR JAYASHANKAR TELANGANA STATE AGRICULTURAL UNIVERSITY
Rajendranagar, Hyderabad - 500 030.

Contents

Brief summary of the proposed entry

Submission of Proposal for Notification of Crop Varieties to the Central Sub-Committee on Crop Standards, Notification and Release of Varieties

1	Name of the crop and species	:	
2	a) Name of the variety under which tested	:	
	b) Proposed name of the variety	:	
3	Sponsoring institute	:	Professor Jayashankar Telangana State Agricultural University (PJTSAU), Rajendranagar, Hyderabad, Telangana
4	a) Institution or agency responsible for developing variety (with full Address)	:	
	b) Person name, who helped developing variety	:	
	Developers	:	
	Collaborators	:	
5	a) Parentage (with details of pedigree, including the source from which variety/inbred/A, B and R lines of hybrid have been developed)	:	
	b) Source of the material in case of introduction	:	
	c) DNA profile of variety/hybrid/ inbred/A,B,R lines of the hybrid vis-a vis check variety/line	:	
	d) Breeding method used	:	
	E) Breeding objective	:	
6	State varieties which most closely resemble the proposed variety in general characters	:	

7	Recommended production ecology (rainfed/irrigated; high/low fertility; season)	:	
8	Specific area of its adaptation (zones and states for which variety is proposed) and the recommended production ecology	:	
9	Description of hybrid/variety	:	
	a) Plant height	:	
	b) Distinguishing morphological characters	:	
	c) Maturity (range in number of days) (from seedling/transplanting to flowering, seed-to-seed)	:	
	d) Maturity group (early, medium and late, wherever such classification exists)	:	
	e) Reaction to major diseases under field and controlled conditions (reaction to physiological strains/ races/pathotypes/bio-types is to be indicated, wherever possible)	:	
	f) Reaction to major pests (under field and controlled conditions, including storage pests)	:	
	g) Agronomic features (e.g., resistance to lodging, shattering, fertilizer responsiveness, suitability to early or late sown conditions, seed rate, etc.	:	
	h) Quality of produce	:	
	a) Grain quality	:	
	b) Fodder quality	:	
	I) Reaction to Stresses	:	
10	Description of hybrid/variety	:	NA
	a) Plant height (cm)	:	
	b) Distinguishing morphological characters	:	

10	c) Days to flowering	:	
	d) Days to maturity (range in number of days-from seed-to-seed)	:	
	e) Is there any problem of synchronization? If yes, its method to overcome	:	
	f) Reaction to major diseases (under field and controlled conditions, reaction to physiological strains /races/bio-types/pathotypes to be indicated wherever possible)	:	
	g) Reaction to major pests (under field and controlled conditions, including storage pests)	:	
	h) Agronomic features (e.g., resistance to lodging, shattering fertilizer responsiveness, suitability to early or late-sown conditions, seed rate, etc.)	:	
	i) Reaction to stresses	:	
11	a) Yield data in the trials (breeding, agronomy, pathology entomology, quality etc) and regional/inter regional district trials year-wise (level of fertilizer application, density of plant population and superiority over local control/ standard variety) to be indicated	:	
	b) Yield data from national demonstration/large-scale demonstrations	:	
12	a) Agency responsible for maintaining the breeder seed	:	
	b) Quantity of breeder seed in stock (kg) Variety/A line/B line/R line/ Hybrid	:	
13	Specific recommendations, if any, for seed production (e.g., staggered sowing, planting ratio of parental lines of hybrids in foundation and certified seeds production, probable areas of seed production)	:	

14	Vivid presentation (field view, close-up of a single plant and seeds/economic parts)	:	
15	a) Whether recommended by any workshop, seminar, conference, state seed committee etc.	:	
	b) If so, the recommendations with specific justifications for release of the proposed variety	:	
16	Specific area of its adaptation	:	
17	Acknowledgement of submission of seed variety/hybrid/inbred/A,B and R lines of the hybrid from the NBPGR and IC number	:	
18	Package of practices along with attainable yield levels	:	
19	Information on the acceptability of the variety by farmer/ consumer/ Industry	:	
20	Any other pertinent information	:	

Signature of
the Breeder

Joint Director of Agriculture (Seeds)
and Co-Convener, Telangana State
Seed Sub Committee on Varietal
Release

CERTIFICATE REGARDING INVOLVEMENT OF SCIENTISTS IN DEVELOPMENT OF PROPOSED ENTRY FOR RELEASE

Certified that, the following scientists were involved at various stages for evolving proposed entry _____for release as verified from records.

S. No.	Name of the Scientist	Stage of development	Period of involved	Signature
Plant Breeding				
Associated in generating ancillary data				
1				
2				
Principal Scientist (Crop)				
1				
2				
3				
Head of the station				
1				
2				
Associate Director of Research				
1				
2				

It is to certify that, the order of placement of the names of the scientists are in accordance with the contributions made by them in evolving and release of the proposed entry.

Signature of the proposing Breeder | Signature of the Principal Scientist(Crop) | Signature of the Head of the station

Checklist for proforma for submission of proposal for notification of crop-variety to central sub-committee on crop standards notification and release of varieties

Details/document	Attached	
Parentage with details of its pedigree including source from which variety/Inbred/A, B and R lines of hybrid has been developed	Yes	No
Source of material in case of introduction (IC/EC numbers provided by NBPGR)-NA	Yes	No
Flow chart of details of development of variety/ parental lines of hybrids	Yes	No
Molecular/ DNA profile of variety/hybrid/A, B, R line of hybrid vis-à-vis check variety/ line (details of unique amplicons that distinguishing markers along with photographs)	Yes	No
Detailed description of hybrid/variety	Yes	No
Detailed description of the parental lines of hybrid-NA	Yes	No
Yield data and other data on diseases, insect-pest, quality etc. from coordinated trials	Yes	No
Yield data from national, demonstration/large scale demonstrations	Yes	No
Specific recommendations, if any, for seed production (e.g. staggered sowing, plating ratio of parental lines of hybrids in foundation and certified seed production, probable area of seed production etc.)-NA	Yes	No
Vivid presentation (field view, close-up of single plant and seed) with the help of photographs of the variety	Yes	No
Recommendation of workshop, conference etc.	Yes	No
Acknowledgement of submission of seed sample of variety/hybrid/ A, B and R lines of hybrid submitted to NBPGR	Yes	No
Package of practices	Yes	No
Proforma signed by all co-authors and Head of Organization	Yes	No
Any other pertinent information	Yes	No

Signature of Head of Institution

YIELD AND OTHER TABLES

(Table 1 to ….)

Annexure I

NBPGR – National Identity Number

जननद्रव्य संरक्षण विभाग

Division of Germplasm Conservation

भाकृअनुप-राष्ट्रीय पादप आनुवंशिक संसाधन ब्यूरो

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डॉ अंजु महेन्द्रू सिंह

Dr Anju Mahendru Singh

प्रधान वैज्ञानिक एवं विभागाध्यक्ष

Principal Scientist and Head

DGC/RV/August/2023

Date: 10.08.2023

ACKNOWLEDGEMENT CERTIFICATE

Annexure II

Pedigree flow chart of XXXX (IET XXX) development

Pedigree Details and Pedigree Tree of XXXX (IET XXX)

Annexure III

DNA profiling of XXXX (IET XXX)

Annexure IV

DISCRIPTORS of the proposed entry XXXX (IET XXX)

Annexure V

DUS characters of proposed entry XXXX (IET XXX)

Annexure VI

Proceeding of the Telangana State Seed Sub-Committee on Varietal Release

Annexure VII

PACKAGE OF PRACTICES of proposed entry XXXX (IET XXX)

VIVID PRESENTATION

(field view, close-up of single plant and seed)

Pub No.:10/BC/PJTSAU/2024

PJTSAU Varieties for Farmers Prosperity

Striving for a Greener Tomorrow...

PROFESSOR JAYASHANKAR TELANGANA STATE AGRICULTURAL UNIVERSITY

Rajendranagar, Hyderabad - 500 030.

www.pjtsau.edu.in