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DUS characterization and assessing the diversity of varieties in onion and garlic

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Abstract

DUS test (Distinctness, Uniformity and Stability) are essential for registering new varieties under Protection of Plant Varieties and Farmers Rights Act 2001 (PPV&FRA) in our country and 150 crops/ species have been notified for registration including onion and garlic in India. The variety must be clearly distinguishable by one or more essential characters from any other variety, whose existence is a matter of common knowledge at the time when the protection is applied. The variety is deemed uniform if subjected to variation that may be expected from the particular features of its propagation. It should be sufficiently uniform in its relevant characters. DUS test guidelines for onion and garlic were notified by PPV&FRA in 2009 in India with 34 DUS test characters for onion varieties and 32 characters for garlic varieties. All the available short day varieties of onion and garlic are being maintained at DOGR, Rajgurunagar and IARI, New Delhi; long day varieties are maintained at CITH, Srinagar; and multiplier onion varieties are being maintained at TNAU, Coimbatore. Thirty-eight *rabi* onion varieties including land races are being maintained during *rabi* season whereas 10 onion varieties being maintained during *kharif* season. All the 17 garlic varieties including land races being maintained during *rabi* season. To register varieties it needs to be applied to PPV&FR Authority, New Delhi in prescribed format. Certain guidelines were given for registration of onion and garlic and rules for farmers are relaxed and they have equal rights for registration. The candidate variety was tested for DUS characters in two seasons at two locations; whereas farmers' variety was tested only in one season at two locations.

Key words: Variety, DUS Test, Protection, Registration, Farmers and Breeders Rights

Introduction

In order to provide the establishment of an effective system for the protection of plant varieties and to encourage the development of new varieties of plants it has been considered necessary to recognize and to protect the rights of the farmers' and plant breeders in respect of their contributions made at any time in conserving, improving and making available plant genetic resources for the development of new plant varieties. The Government of India enacted "The Protection of Plant Varieties and Farmers' Rights (PPV&FR) Act, 2001" adopting *sui generis* system. Indian legislation is not only in conformity with International Union for the Protection of New Varieties of Plants (UPOV) 1978, but also have sufficient provisions to protect the interests of public/ private sector breeding institutions and the farmers. The legislation recognizes the contributions of both commercial plant breeders and farmers in plant breeding activity and also provides to implement TRIPs in a way that supports the specific socio-economic interests of all the stakeholders including private, public sectors and research institutions as well as resource-constrained farmers. To implement the provisions of the Act the Department of Agriculture and Cooperation, Ministry of Agriculture established the Protection of Plant Varieties and Farmers' Rights Authority on 11th November, 2005.

In India, about sixty onion and twenty garlic varieties have been released from different public organizations and their number is expected to increase in future. Onion and garlic varieties attain acceptance when the farmers get genetically pure seeds/ cloves of high standards as well as their yield and quality performance. For this purpose, each onion and garlic variety should be properly defined with suitable descriptors so as to maintain its identity during seed/ bulb production through field inspection and certification. Apart from this,

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characterization of onion and garlic varieties is also required for their protection under Plant Variety Protection (PVP) legislation, because varietal testing for Distinctiveness, Uniformity and Stability (DUS) is the basis for grant of protection of new plant varieties under the PPV&FR Act 2001. The Act has the provision to compare the novel candidate variety with the varieties of common knowledge on a set of relevant characteristics prescribed in the DUS Test Guidelines of onion and garlic (PPV&FR Authority, 2009) and commonly accepted for this purpose at the time of filling of application. The varieties have not so far been extensively described for various heritable morphological traits to enable the identification of these varieties. Thus, the present study was undertaken to characterize the onion and garlic varieties on the basis of morphological characters as prescribed in the DUS Test Guidelines.

Materials and Methods

Present investigation was carried out for successive 3 years during 2011-12, 2012-13 and 2013-14 to carry out characterization of released onion and garlic varieties at the Experimental Farm of ICAR-Directorate of Onion and Garlic Research, Rajgurunagar, Pune, India. The experimental material comprised 38 *rabi* varieties of onion *viz*., Agrifound Rose, Agrifound White, Agrifound Light Red, Arka Bindu, Arka Niketan, Arka Pitamber, Arka Pragati, Bhima Kiran, Bhima Raj, Bhima Red, Bhima Shakti, Bhima Shweta, Early Grano, GWO-1, Hissar-2, Hissar-3, Kalyanpur Red Round, N-2-4-1, NHRDF Red (L-28), NHRDF Red-2 (L-355), NHRDF Red-3 (L-625), Palam Lohit, PKV White, Phule Safed, Phule Samarth, Phule Suwarna, Phursungi Local, Pilipatti Junagadh, Punjab Naroya, Pusa Madhavi, Pusa Red, Pusa White Flat, Pusa White Round, Panchganga ES, Telagi Local, Udaipur-102, Sukhsagar and VL Piaz-3; 10 *kharif* varieties of onion *viz*., Agrifound Dark Red, Arka Kalyan, B-780, Bhima Raj, Bhima Red, Bhima Shubhra, Bhima Shweta, Bhima Super, Bhima Dark Red and N-53; and 17 garlic varieties *viz*., Bhima Omkar, Bhima Purple, G-1, G-41, G-50, G-282, G-323, G-386, GG-2, GG-3, GG-4, Godawari, Ooty Local, Phule Baswant, Rani Bennur Local, Sikkim Local and Silkuei Local were sown in a bed size of 3×2 m with row-to-row and plant-to-plant spacing of 15×10 cm in randomized block design with three replications. A total of 400 plants were accommodated in each plot. All the recommended package of practices was followed to raise a healthy crop. Observations were recorded from 10 randomly selected plants for each character described in the DUS test guidelines.

Table 1: Reference varieties of onion and garlic under maintenance

Name of the Varieties	Source of Varieties
Common Onion (*Allium cepa* L.)	
Pusa Red, Pusa White Round, Pusa White Flat , Pusa Madhavi, Early Grano* and Brown Spanish*	IARI, New Delhi
Arka Niketan, Arka Pitambar, Arka Pragati, Arka Bindu and Arka Kalyan	IIHR, Bangalore
Bhima Super, Bhima Red, Bhima Raj, Bhima Kiran, Bhima Shakti, Bhima Dark Red, Bhima Shweta and Bhima Shubhra	DOGR, Rajgurunagar
VL Piaz-3*	VPKAS, Almora
B-780, Phule Samarth, Phule Safed and Phule Suwarna	MPKV, Rahuri
ADR, ALR, AFW, AFR, NHRDF Red, NHRDF Red-2 and NHRDF Red-3	NHRDF, Nashik
Hissar-2 and Hissar-3	HAU, Hissar
N-2-4-1 and N-53	Agril. Dept., MS
Punjab Naroya	PAU, Ludhiana
PKV White	PDKV, Akola
Udaipur-102	RAU, Udaipur
GWO-1	GAU, Junagadh
Kalyanpur Red Round	CSAUA&T, Kanpur
Palam Lohit*	CSKHPAU, Palampur
Phursungi Local, Sukhsagar, Pilipatti Junagadh and Telagi Local	Farmers' Varieties
Multiplier Onion (*Allium cepa* var. *aggregatum*)	
CO-1**, CO-2**, CO-3**, CO-4** and CO-5**	TNAU, Coimbatore
Garlic (*Allium sativum* L.)	
Bhima Omkar and Bhima Purple	DOGR, Rajgurunagar
VL Garlic-1* and VL Garlic-2*	VPKAS, Almora
GG-2, GG-3 and GG-4	GAU, Junagadh
Godawari and Phule Baswant	MPKV, Rahuri
G-1, G-41, G-50, G-282, G-323, G-386 and Agrifound Parvati*	NHRDF, Karnal
Rani Bennur Local, Sikkim Local, Silkuei Local and Ooty Local	Farmers' Varieties

* Maintained at CITH, Srinagar, ** Maintained at TNAU, Coimbatore

Results and Discussion

ICAR-DOGR is maintaining 38 *rabi* and 10 *kharif* varieties of onion and 17 varieties of garlic (Table 1) which were taken for study. Twenty-five DUS characteristics of common onion and thirty-two characteristics of garlic were recorded in above mentioned varieties of onion and garlic in consecutive three years as per DUS guidelines. All DUS characters recorded in *kharif* onion varieties are given in Table 2 and garlic varieties in Table 3. Gupta et al. (2011) reported that thirty-eight onion varieties and seventeen garlic varieties were maintained as reference varieties under PPV&FRA project.

On the basis of experimental results of onion varieties using 25 DUS characteristics, distinctness of almost all varieties were expressed. Similar attempts for establishment of distinctness were made in soybean (Ravikumar and Narayanswamy 1999), oat (Kumar et al. 2002), rice (Joshi et al. 2007), jute (Kumar et al. 2008) and maize (Yadav and Singh 2010). All DUS descriptors did not show any variation in their states of expression over the three years and less number of off-types was observed. As per DUS test guidelines of onion, to fulfill the criteria of uniformity, the number of off-types should not exceed 4 in 400**,** *i.e.* 1% and if a variety exhibits its uniformity for two consecutive years, the variety is considered as stable. In our present study, the percentage of off-types recorded in each plot over the years was below 1% which is under permissible off-types and indicated the uniformity of the varieties. Expression of each characteristic was also found to be stable in three years for the respective varieties affirming their consistency and stability. Therefore, it may be inferred that all the onion and garlic varieties were uniform and stable. The morphological characteristics studied are stable due to a low genotype-environment interaction in the expression and are controlled by single or two genes with simple dominant or recessive inheritance. Apart from this, during the development of varieties, onion and garlic breeders have purposefully emphasized on the stability and uniformity of these morphological characteristics. Though some onion and garlic varieties were released long back, those are stable even now with regard to these morphological characteristics. The present result confirms the findings of Gupta and Mahajan (2013) and Ahmed et al. (2013). Breeders or farmers who want to register their varieties need to apply to competent authority in the Ministry for registration. Applicant will have to supply minimum 100 g good quality seed of onion/ 1200 bulblets of multiplier onion/ 50 bulbs of male sterile lines of onion/ 2000 viable cloves of garlic per season of each variety along with full details of characters in general and distinct characters in particular. Applicant will have to indicate geographical areas for suitability of candidate variety.

On the basis of above investigation, it can be concluded that onion and garlic varieties can be easily differentiated from one another due to their distinctive, uniform and stable expression of morphological markers over years by DUS testing. Thirty-eight *rabi* onion, ten *kharif* onion

Table 2: DUS characterization of *kharif* onion varieties

S. No.	Entries	1	2	3	4	5	15	16	17	18	19	20	21
		Plant: Number of leaves per pseudo-stem	Foliage: Length (from pseudostem to tip of leaf) (cm)	Bulb: Time of maturity (from date of sowing) (days)	Bulb: Height (cm)	Bulb: Diameter (cm)	Foliage: Attitude	Leaf: Diameter (Max) (cm)	Foliage: Waxiness	Foliage: Intensity of green colour	Foliage: Cranking	Pseudostem: Length (up to last emerged green leaf) (cm)	Pseudostem: Diameter (at midpoint of length) (cm)
1	ADR	Few	Long	Medium	Tall	Medium	Semi-erect	Medium	Present	Medium	Weak	Small	Small
2	Arka Kalyan	Few	Medium	Medium	Medium	Medium	Semi-erect	Small	Present	Medium	Weak	Small	Small
3	B-780	Few	Medium	Medium	Medium	Medium	Semi-erect	Small	Present	Medium	Weak	Small	Small
4	Bhima Dark Red	Few	Long	Medium	Medium	Medium	Semi-erect	Medium	Present	Medium	Weak	Small	Small
5	Bhima Raj	Few	Long	Medium	Medium	Medium	Semi-erect	Medium	Present	Medium	Weak	Small	Small
6	Bhima Red	Few	Long	Medium	Tall	Medium	Semi-erect	Small	Present	Medium	Weak	Small	Small
7	Bhima Shubhra	Few	Long	Medium	Medium	Medium	Semi-erect	Medium	Present	Medium	Weak	Small	Small
8	Bhima Shweta	Few	Medium	Medium	Tall	Medium	Semi-erect	Small	Present	Light	Weak	Small	Small
9	Bhima Super	Few	Long	Medium	Medium	Medium	Semi-erect	Medium	Present	Medium	Weak	Small	Small
10	N-53	Few	Long	Medium	Medium	Medium	Semi-erect	Small	Present	Medium	Weak	Small	Small

Contd... Table 2: DUS characterization of *kharif* onion varieties

S. No.	Entries	22	23	24	25	26	27	28	29	30	31	32	33	34
		Bulb: Thickness of neck (cm)	**Bulb: General shape (in longitudinal section)**	**Bulb: Basic colour of dry skin**	**Bulb: Adherence of skin after harvest**	**Bulb: Thick-ness of rings (mm)**	**Bulb: Fir-mness of flesh (lbf)**	**Bulb: Colour of epider-mis of fleshy scale**	**Bulb : Position of root disc**	**Bulb: Predominant number of axes**	**Bulb: Cross section**	**Bulb: Degree of splitting into bulblet**	**Bulb: Total Soluble Solids (%)**	**Male sterility (under microscope)**
1	ADR	Thin	Flat Globe	Dark Red	Medium	Thin	Strong	Reddish	At surface	Single	Symm.	Medium	Medium	Absent
2	Arka Kalyan	Thin	Flat Globe	Dark Red	Medium	Thin	Strong	Reddish	Exerted	Single	Symm.	Medium	Medium	Absent
3	B-780	Thin	Globe	Dark Red	Medium	Thin	Strong	Purplish	At surface	Single	Symm.	Medium	Medium	Absent
4	Bhima Dark Red	Medium	Flat Globe	Dark Red	Medium	Thin	Strong	Purplish	Exerted	Single	Symm.	Medium	Medium	Absent
5	Bhima Raj	Thin	Globe	Dark Red	Medium	Thin	Strong	Purplish	Exerted	Multiple	Symm.	Medium	Medium	Absent
6	Bhima Red	Thin	Globe	Light Red	Medium	Thin	Strong	Reddish	At surface	Single	Symm.	Medium	Medium	Absent
7	Bhima Shubhra	Medium	Globe	White	Medium	Thin	Strong	Whitish	At surface	Multiple	Symm.	Medium	Medium	Absent
8	Bhima Shweta	Thin	Globe	White	Medium	Thin	Strong	Whitish	At surface	Single	Symm.	Medium	Medium	Absent
9	Bhima Super	Medium	Globe	Light Red	Medium	Thin	Strong	Reddish	Exerted	Single	Symm.	Medium	Medium	Absent
10	N-53	Thin	Flat Globe	Dark Red	Medium	Thick	Strong	Reddish	At surface	Single	Symm.	High	Medium	Absent

Symm. = Symmetrical

Table 3: DUS characterization of garlic varieties

S. No.	Entries	1	2	3	4	5	6	7	8	9	10	11
		Plant: Density of Leaves	**Plant: No. of Leaves per pseud-ostem**	**Foliage: Attitude**	**Leaf: Intensity of Green Colour**	**Leaf: Waxiness**	**Leaf: Length (Longest Leaf) (cm)**	**Leaf: Width (Widest Leaf) (cm)**	**Leaf: Shape in cross section**	**Pseudostem: Length up to 1st emerged green leaf (cm)**	**Pseud-ostem: Width of base (cm)**	**Pseudostem: intensity of anthocyanin colouration at base**
1	Bhima Omkar	Dense	Medium	Erect	Dark	Present	Medium	Narrow	Slightly concave	Medium	Narrow	Present
2	Bhima Purple	Dense	Few	Semi-erect	Dark	Present	Short	Narrow	Strongly concave	Medium	Narrow	Present
3	G-1	Dense	Medium	Erect	Dark	Present	Medium	Narrow	Strongly concave	Medium	Narrow	Present
4	G-282	Sparse	Few	Semi-erect	Light	Present	Medium	Narrow	Strongly concave	Medium	Narrow	Present
5	G-323	Medium	Few	Semi-erect	Medium	Absent	Short	Narrow	Strongly concave	Medium	Narrow	Present
6	G-386	Dense	Medium	Erect	Dark	Absent	Medium	Narrow	Slightly concave	Long	Narrow	Present
7	G-41	Medium	Medium	Erect	Dark	Present	Medium	Narrow	Slightly concave	Medium	Narrow	Present
8	G-50	Medium	Medium	Semi-erect	Dark	Present	Short	Narrow	Slightly concave	Medium	Narrow	Present
9	GG-2	Medium	Few	Erect	Dark	Present	Short	Narrow	Strongly concave	Medium	Narrow	Present
10	GG-3	Sparse	Medium	Semi-erect	Light	Present	Short	Narrow	Slightly concave	Medium	Narrow	Present
11	GG-4	Medium	Few	Semi-erect	Dark	Present	Short	Narrow	Slightly concave	Medium	Narrow	Present
12	Godawari	Medium	Few	Erect	Dark	Present	Medium	Narrow	Slightly concave	Medium	Narrow	Present
13	Ooty Local	Medium	Few	Semi-erect	Dark	Absent	Short	Narrow	Slightly concave	Medium	Narrow	Present
14	Phule Baswant	Dense	Few	Semi-erect	Medium	Present	Medium	Narrow	Strongly concave	Medium	Narrow	Present
15	Rani Bennur Local	Sparse	Few	Semi-erect	Medium	Present	Medium	Narrow	Strongly concave	Medium	Narrow	Present
16	Sikkim Local	Sparse	Few	Semi-erect	Light	Present	Short	Narrow	Strongly concave	Medium	Narrow	Present
17	Silkuei Local	Medium	Few	Erect	Dark	Present	Medium	Narrow	Slightly concave	Medium	Narrow	Present

Contd... **Table 3:** DUS characterization of garlic varieties

S. No.	Entries	12	13	14	15	16	17	18	19	20	21	22
		Flowering Stem	Flowering stem: Curvature	Flowering Stem: Length	Flowering stem: Bulbils	Time of bulb maturity	Bulb: Size (Diameter) (cm)	Bulb: Shape in longitudinal section	Bulb: Shape in cross section	Bulb: Position of cloves at tip of bulb	Bulb: Position of root disc	Bulb: Shape of base
1	Bhima Omkar	Absent	Absent	Nil	Absent	Early	Medium	Elliptic	Elliptic	Inserted	At surface	Flat
2	Bhima Purple	Absent	Absent	Nil	Absent	Early	Medium	Ovate	Elliptic	Inserted	At surface	Flat
3	G-1	Absent	Absent	Nil	Absent	Early	Medium	Ovate	Elliptic	Inserted	At surface	Recessed
4	G-282	Absent	Absent	Nil	Absent	Early	Medium	Ovate	Circular	Inserted	At surface	Flat
5	G-323	Absent	Absent	Nil	Absent	Early	Medium	Ovate	Circular	Inserted	Exerted	Flat
6	G-386	Absent	Absent	Nil	Absent	Early	Medium	Ovate	Circular	Inserted	At surface	Recessed
7	G-41	Absent	Absent	Nil	Absent	Early	Medium	Circular	Circular	Inserted	At surface	Flat
8	G-50	Absent	Absent	Nil	Absent	Early	Medium	Ovate	Circular	Exerted	At surface	Flat
9	GG-2	Absent	Absent	Nil	Absent	Early	Medium	Ovate	Elliptic	Inserted	At surface	Flat
10	GG-3	Absent	Absent	Nil	Absent	Early	Medium	Circular	Circular	Inserted	Inserted	Recessed
11	GG-4	Absent	Absent	Nil	Absent	Early	Medium	Ovate	Elliptic	Inserted	At surface	Flat
12	Godawari	Absent	Absent	Nil	Absent	Early	Medium	Elliptic	Elliptic	Inserted	Exerted	Recessed
13	Ooty Local	Absent	Absent	Nil	Absent	Early	Small	Ovate	Elliptic	Inserted	At surface	Flat
14	Phule Baswant	Absent	Absent	Nil	Absent	Early	Medium	Elliptic	Elliptic	Exerted	At surface	Flat
15	Rani Bennur Local	Absent	Absent	Nil	Absent	Early	Medium	Circular	Circular	Inserted	At surface	Flat
16	Sikkim Local	Absent	Absent	Nil	Absent	Early	Medium	Circular	Circular	Inserted	At surface	Flat
17	Silkuei Local	Absent	Absent	Nil	Absent	Early	Small	Elliptic	Elliptic	Exerted	Exerted	Flat

Contd... **Table 3:** DUS characterization of garlic varieties

S. No.	Entries	23	24	25	26	27	28	29	30	31	32
		Bulb: Compactness of cloves	Bulb: Ground colour of dry external scales	Bulb: Anthocyanin stripes on dry external scales	Bulb: No. of cloves	Bulb: Distribution of cloves	Bulb: External cloves	Bulb: Skin adherence of dry external scales	Clove: Size (Diameter) (cm)	Clove: Colour of scale	Clove: Colour of Flesh
1	Bhima Omkar	Compact	White	Present	Medium	Non-radial	Absent	Strong	Medium	White	White
2	Bhima Purple	Compact	Purple	Present	Medium	Non-radial	Absent	Strong	Small	Purple	White
3	G-1	Medium	White	Absent	Medium	Non-radial	Absent	Medium	Medium	White	White
4	G-282	Compact	White	Absent	Medium	Radial	Absent	Medium	Medium	White	White
5	G-323	Medium	White	Absent	Medium	Non-radial	Absent	Medium	Medium	White	Yellow
6	G-386	Compact	Purple	Present	Medium	Non-radial	Absent	Strong	Small	Purple	Yellow
7	G-41	Medium	White	Absent	Medium	Non-radial	Absent	Medium	Small	White	Yellow
8	G-50	Medium	White	Absent	Medium	Non-radial	Absent	Medium	Medium	White	White
9	GG-2	Medium	White	Present	Medium	Non-radial	Absent	Medium	Medium	White	Yellow
10	GG-3	Compact	White	Absent	Medium	Radial	Absent	Strong	Medium	White	White
11	GG-4	Medium	White	Absent	Medium	Non-radial	Absent	Medium	Medium	White	White
12	Godawari	Medium	Purple	Present	Medium	Non-radial	Absent	Medium	Small	Purple	Yellow
13	Ooty Local	Compact	White	Absent	Medium	Non-radial	Absent	Strong	Medium	White	White
14	Phule Baswant	Medium	Purple	Present	Medium	Non-radial	Present	Medium	Small	Purple	Yellow
15	Rani Bennur Local	Compact	Purple	Present	Medium	Non-radial	Absent	Medium	Small	Purple	White
16	Sikkim Local	Compact	White	Absent	Medium	Radial	Absent	Strong	Small	White	White
17	Silkuei Local	Medium	Purple	Present	Medium	Non-radial	Absent	Medium	Small	Purple	Yellow

and 17 garlic varieties have been characterized as per DUS test guidelines which is essential for protection through PPV&FR Authority in India. It was also noted that each variety has specific traits and found diverse to each other.

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हमारे देश में पौध किस्म और कृषक अधिकार संरक्षण अधिनियम 2001 (पीपीवी और एफआरए) के तहत नई किस्मों को पंजीकृत करने के लिए डीयूएस परीक्षण (विशिष्टता, एकरूपता और स्थायित्व) आवश्यक है तथा भारत में पजीकरण के लिए 150 फसलों/जातियों

को अधिसूचित किया गया है जिसमें प्याज और लहसुन फसलें भी शामिल हैं। प्रजाति में जन्म दर एकरूपता बनी रहनी चाहिए तथा उसमें विविधता प्रदर्शित नहीं होनी चाहिए। प्रजाति सम्बन्धित गुणों में पर्याप्त एकरूपता होनी चाहिए। प्याज एवं लहसुन के लिए डीयूएस परीक्षण दिशा–निर्देशों में पीपीवी और एफआरए द्वारा भारत में प्याज की किस्मों के लिए 34 डीयूएस परीक्षण विशेषताओं और लहसुन की किस्मों के लिए 32 परीक्षण विशेषताओं को अधिसूचित किया गया है। राजगुरूनगर, पुणे में प्याज और लहसुन के लिए डीयूएस परीक्षण करने के लिए नोडल केन्द्र के रूप में काम कर रहा है। प्याज और लहसुन की सभी उपलब्ध अल्प दिन वाली किस्मों को भा.कृ.अनु.प. –प्याज एवं लहसुन अनुसंधान निदेशालय, राजगुरूनगर और भा.कृ. अनु.प.–भारतीय कृषि अनुसंधान संस्थान, नई दिल्ली में अनुरक्षण किया जा रहा है जबकि भा.कृ.अनु.प.– केन्द्रीय शीतोष्ण बागवानी संस्थान, श्रीनगर में लंबे दिन वाली किस्मों का अनुरक्षण किया जा रहा है। तमिलनाडु कृषि विश्वविद्यालय, कोयंबटूबर में मल्टीप्लायर प्याज की किस्मों का अनुरक्षण किया जा रहा है। रबी मौस में कृषक प्रजातियों सहित 38 प्याज की किस्में, खरीफ मौसम में 10 प्याज की किस्में एवं रबी में 17 लहसुन की किस्मों का अनुरक्षण किया जाता है। प्याज एवं लहसुन के प्रजातियों के पंजीकरण के लिए दिशा–निर्देश दिए गए है जबकि किसानों के प्रजातियों के पंजीकरण के लिए नियमों में छूट दी गई है और उन्हें पंजीकरण का समान अधिकार है। प्रत्याशी किस्म को दो मौसमों में दो स्थानों पर जबकि किसानों की किस्मों को केवल एक मौसम में दो स्थानों पर डीयूएस परीक्षण किया जाता है।

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