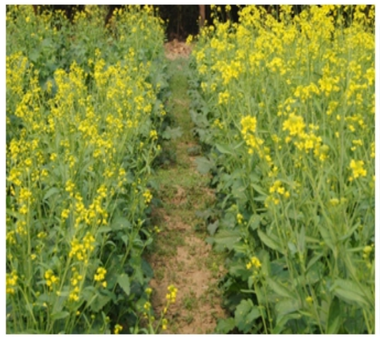
MUSTARD DUS TEST ACHIEVEMENTS

Year	Details of DUS Testing of Rapeseed & Indian Mustard Entries						Remarks
	New		Farmers Variety		VCK/RV	Total	
	1st Year entries	2nd Year entries	1st Year entries	2nd Year entries			
2017-18	1	6	-	30	16	**53**	Data Submitted to DRMR Bharatpur Rajasthan and PPV& FR Authority
2018-19	2	1	8	28	8	**47**	
2019-20	-	2	12	5	5	**24**	
2020-21	-	-	6	9	5	**20**	
2021-22	1	-	5	8	6	**20**	

Field view of Mustard entereis under DUS Test

Field view of Mustard entereis under DUS Test

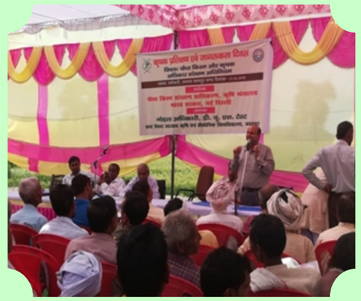


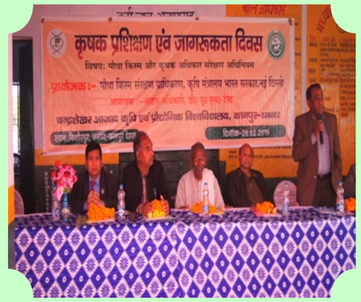
Field view of Mustard entereis under DUS Test

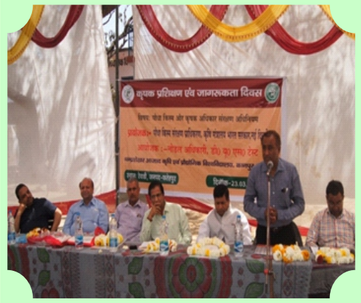
Field view of Mustard entereis under DUS Test

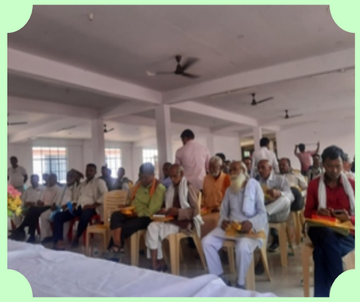
"FARMERS RIGHTS" AWARENESS TRAINING PROGRAMME

Year	Place of Training	No. of Participants		Total
		Male	Female	
2017-18	Village Shiivdhari Kanpur Dehat	98	12	110
2018-19	Village Kishor pur Kanpur Dehat	100	10	110
	Village Revari Fatehpur	140	15	155
2019-20	Village Baduri Fatehpur	112	7	117
2020-21	Village Ramaipur Kanpur Nagar	98	6	104









PARTICIPATION IN ANNUAL DUS REVIEW MEETING AND INTERNATIONAL WORKSHOP

Date & Year	Details	Place of Meeting/ International workshop/Webinar
27th -28th Feb. 2017	DUS Review meeting	IGKV, Raipur
15th -17th January 2018	DUS Review meeting	IISR, Lucknow,
31st May 2018	Annual DUS Review Meeting	PPV&FRA, New Delhi.
4th October, 2018	Rabi Workshop on DUS testing procedures	PPV&FRA, New Delhi.
26th & 27th September, 2019	Annual DUS Review Meeting	PPV&FRA, New Delhi.
13th & 14th February, 2020	International workshop on "DUS testing of Rapeseed and Mustard"	DRMR –Bharatpur Rajasthan
6th & 7th October, 2020	International webinar on DUS testing data management/Automation/Image Analysis	Online, Zoom
17th june,2021	Annual DUS Review Meeting	Online Zoom

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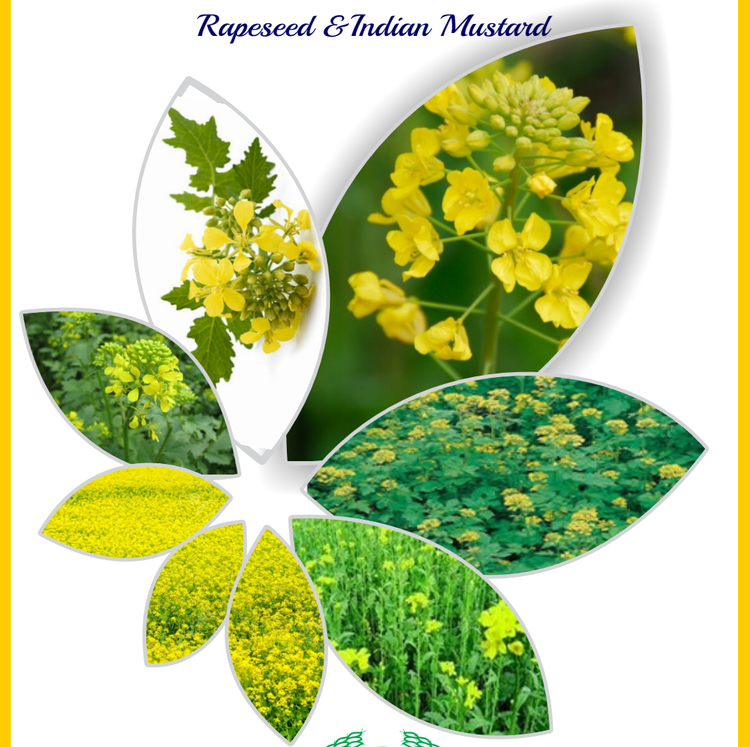
Vice Chancellor
CSAUA&T, Kanpur

PPV & FR Authority

Accomplishment of Task DUS Test Project

on

Rapeseed &Indian Mustard



(PPV&FRA, MoA, Govt. of India New Delhi)
C.S. Azad University of Agriculture & Technology Kanpur-02

OVERVIEW

In order to provide for the establishment of an effective system for the protection of plant varieties, the rights of farmers and plant breeders 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 in respect their contributions made at any time in conserving, improving and making available plant genetic resources for the development of new plant varieties. The Govt. of India enacted "The Protection of Plant Varieties and Farmers' Rights (PPV&FR) Act.2001" adopting *sui generis* system. Indian legislation is not only 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 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 intuitions, 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 11 November, 2005. The chairperson is the Chief Executive of the Authority. Besides the Chairperson is the Authority has 15 members, as notified by the Government of India (GOI). Eight of them are ex-officio Members representing various Department/Ministries, three from SAUs and the State Government, one representative each for farmers, tribal organization, seed industry and women organization associated with agriculture activities are nominated by the Central Government. The Register General is the ex-officio Member secretary of the Authority. Authority DUS Test centers for different crops in country. Chandra Shekhar Azad University of Ag. & Tech. Kanpur is one of the oldest DUS Test centre, has been working since inception of PPV& FR act 2001. Previously this centre has been given a responsibility for generation of data base of extant varieties of wheat, Linseed & Indian Mustard. Presently this is a Nodal DUS Centre of Rapeseed & Indian mustard crops maintaining a multiplication of reference collection, example variety and generation of data base for DUS descriptors as per DUS guidelines.

OBJECTIVES OF THE PPV & FR ACT,2001

1. To establish an effective system for the protection of plant verities, the rights of Farmers and breeders and to encourage the development of new varieties of plants.
2. To recognize and protect rights of farmers in respect of their contribution made at any time in conserving, improving and making available plant genetic resources for the development of new plant varieties.
3. To accelerate agricultural development in the country, protect plant breeders' rights; stimulate investment for research and development both in public & private sector for the development new of the plant varieties.
4. Facilitate the growth of seed industry in the country which will ensure the availability of high-quality seeds and planting material to the farmers.

RIGHTS UNDER THE ACT

Breeders' Rights

Breeders will have exclusive right to produce, sell, market, distribute, import or export the protected variety. Breeder can appoint agent/ licensee and may exercise for civil remedy in case of infringement of right.

Researcher's Rights

Researcher can use any of the registered variety under the Act for conducting experiment research. This includes the use of a variety as an initial source of variety for the purpose of developing another variety but repeated use needs prior permission of the registered breeder.

FARMERS' RIGHTS

- A farmer who was involved or developed a new variety is entitled for registration and protection in like manner as a breeder of a variety.
- Farmers variety can also be registered an extant variety.
- A Farmer can save, use, sow, re-sow, exchange, share or sell his farm produce including seed of a variety protected under the PPV&FR Act, 2001 in the same manner as he was entitled before the coming into force of this Act provided farmer shall not be entitled to sell braded seed of a variety protected under the PPV&FR Act,2001.
- Farmers are eligible for recognition and rewards for the conservation of Plant Genetic Resources of land races and wild relatives of economic plants.
- There is also a provision for compensation to the farmers for non-performance of variety under Section 39 (2) of the Act,2001 and Farmer shall not be liable to pay any fee in any proceeding before the Authority of Registrar or the Tribunal or the High Court under the Act.

DUS TEST GUIDELINES OF RAPESEED & INDIAN MUSTARD

S.No.	Characteristics	States	Notes	Example varieties		Stage of observation(Code No.)	Type of assessment
				B. juncea	*B. carinata*		
1	2	3	4	5	6	7	8
1. (+)	Leaf: Hairiness	Absent	1	Basanti, RH 781	Kiran, PC 5	50-60	VS
		Sparse	3	Varuna, Pusa Bold	-		
		Dense	5	CS 52, Geeta	-		
2. (*)	Leaf: Colour	Light green	1	NDRE 4	-	50-60	VG
		Medium green	2	Varuna, BIO 902	-		
		Dark green	3	GM 1	Kiran, PC 5		
3.(*) (+)	Leaf: Lobes	Absent	1	-	-	50-60	VS
		Present	9	Varuna	Kiran, PC 5		
4. (*)	Leaf: Number of lobes	Low (≤ 5)	3	-	-	50-60	MS
		Medium (6 – <8)	5	Kranti	PC 5		
		High (> 8)	7	CS 52, RH 819	Kiran		
5.(*)(+)	Leaf: Dentation of margin	Entire	1	-	Kiran, PC 5	50-60	VS
		Dentate	2	Varuna, BIO 902	-		
		Serrate	3	NDRE 4			
6.	Leaf: Length (cm)	***B. juncea***					
		Short (≤ 25)	3	NDRE 4		50-60	MS
		Medium(26 – ≤30)	5	Varuna			
		Long (>30)	7	RH 781, PCR 7			
		B. carinata					
		Short (≤ 30)	3		-	50-60	MS
		Medium(31-≤35)	5		PC 5		
		Long (> 35)	7		Kiran		
7.	Leaf: Width (cm)	Narrow (≤10)	3	NDRE 4	-	50-60	MS
		Medium(10 – 12)	5	Varuna, GM 1	PC 5		
		Broad(> 12)	7	RH 781, PCR 7	Kiran		
8. (*)	Flower: Time of flowering (50 % of the plant with at least one open flower)	***B. juncea***					
		Early(≤40 days)	3	NDRE 4		60-62	MG
		Medium(41 - ≤50 days)	5	BIO 902, GM 1			
		Late(> 50 days)	7	RH 8113			
		B. carinata					
		Early(≤ 50 days)	3		-	60-62	MG
		Medium(51 – ≤60 days)	5		PC 5		
		Late(> 60 days)	7		Kiran		
9.(*)	Flower: Colour of petals	White	1	-	-	60-62	VG
		Light yellow	2	Pusa Mahak	-		
		Yellow	3	Varuna, BIO 902	Kiran, PC 5		
		Orange	4	-	-		
10.	Flower: Length of petals (cm)	Short(<1.2)	3	NDRE 4	-	60-62	MS
		Medium(1.2-1.5)	5	Pusa Bold, Rohini	Kiran		
		Long (>1.5)	7	-	PC 5		
11.	Flower: Width of petals(cm)	Narrow(<0.6)	3	-	-	60-62	MS
		Medium(0.6-0.7)	5	Basanti, BIO 902	-		
		Broad (>0.7)	7	RL 1359	Kiran, PC 5		
12.(*)	Plant: Main shoot length(cm)	Short(< 40)	3	-	Kiran	79	MS
		Medium(41- ≤50)	5	RCC 4	JTC 1		
		Long (51 - ≤60)	7	GM 1	-		
		Very long (>60)	9	Rohini, Geeta	-		
13.(*)	Plant : Height(cm)	Short (≤ 130)	3	NDRE 4	-	79	MS
		Medium(131- <150)	5	S. Asech	-		
		Tall(151 - ≤170)	7	Varuna, Pusa Bold	Kiran		
		Very tall(> 170)	9	Basanti, RH 819	PC 5		
14.(*)(+)	Siliqua: Length(cm)	Short(< 4.5)	3	Kanti	Kiran	85	MS
		Medium (4.5-5.5)	5	RH 30	PC 5		
		Long(> 5.5)	7	Pusa Bold	-		
15.	Siliqua: Length of beak(cm)	Short(<0.8)	3	Geeta	PC 5	85	MS
		Medium(0.8 – <1.2)	5	PBR 97, PCR 7	-		
		Long(> 1.2)	7	Pusa Bahar	-		
16.(*)	Siliqua: Number on main shoot	Very few(≤40)	3	NDRE 4	Kiran, PC 5	85	MS
		Few (41 -≤50)	5	Varuna	JTC 1		
		Medium(51 - ≤60)	7	Rohini	-		
		Many (> 60)	9	Geeta	-		
17.(+)	Siliqua: Density on main shoot	Low (<0.7)	3	NDRE 4	PC 5	85	MS
		Medium(0.7 - 0.8)	5	Varuna	-		
		High (>0.8)	7	-	Kiran		
18.(*)(+)	Siliqua: Angle with main shoot	Appressed	1	Sanjucta Asech	PusaSwarnim	85	VG
		Semi appressed	2	Rohini, Geeta	PC 5		
		Open	3	Varuna	Kiran		
19.(*) (+)	Siliqua : Texture	Smooth	3	-	-	85	VS
		Undulated	5	Varuna	-		
		Constricted	7	Basanti	Kiran, PC 5		
20.(*)	Siliqua: Number of seeds per siliqua	Very few(≤12)	3	-	-	85	MS
		Few (13-≤16)	5	GM 1, Varuna	PC 5		
		Medium (17-≤20)	7	CS 52, Sej-2	-		
		Many (> 20)	9	Geeta	-		
21.(*)(+)	Maturity period	***B. juncea***					
		Early(≤110 days)	3	NDRE 4		90	MG
		Medium(111 -≤130 days)	5	SEJ 2			
		Late(131-≤150 days)	7	Varuna, Rohini			
		Very late (> 150 days)	9	-			
		B. carinata					
		Early (<120days)	3		-	90	MG
		Medium (120-≤140 days)	5		PC 5		
		Late (140-≤160 days)	7		Kiran		
		Very late (>160 days)	9		-		
22.(*)	Seed: Seed colour	Yellow	1	Basanti	Kiran	100	VG
		Reddish brown	2	CS 52	PC 5		
		Brown	3	RCC 4	-		
		Dark brown	4	BIO 902	-		
		Black	5	-	-		
23.(*)	Seed: Size (Weight of 1000 seeds)	***B. juncea***					
		Small (<5.0g)	3	Kranti		100	MG
		Medium (5.0-6.0 g)	5	Rohini			
		Bold (>6.0 g)	7	Pusa Bold			
		B. carinata					
		Small (<4.0g)	3		-	100	MG
		Medium(4.0-6.0 g)	5		Kiran, PC 5		
		Bold (>6.0 g)	7		-		
24.(*)(+)	Seed: Oil content (%)	Low (<38)	3	-	PC 5	100	MG
		Medium(38 – <42)	5	CS 52, Varuna	Kiran		
		High (42- 46)	7	Rohini	-		
		Very high(>46)	9	-	-		