

IMPROVED CULTIVARS OF OILSEEDS AND ACCESS TO QUALITY SEEDS

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The improved varieties of oilseed crops increases the seed yield of farmers by 20-30%. However in some situations the increase goes above 50%. In case of self pollinated crops, the increase may be lower - 10-20%. However in case of cross pollinated crops more than 30-50% is observed. The supply of quality seed of high yielding varieties is essential to the farmers to realize the true genetic potential of the new cultivars. Though the seed requirement is low, the ICAR system produces very large quantities.

Table 1. Seed Requirement in Oilseeds

Crop/Area (ha)	SRR/Seed rate (kg/ha)	Seed requirement (q)		
		Certified	Foundation	Breeder
Soybean (10000000)	20/80	1600000	F1: 160000 F2: 16000	1600
Groundnut (6000000)	20/150	1800000	F1: 225000 F2: 225000	3516
Rapeseed-mustard (6000000)	30/5	90000	450	2.25
Sunflower (2000000)	100/5	100000	1000	10
Sesame (1800000)	20/5	18000	180	1.8
Safflower (300000)	20/10	6000	60	0.6
Niger (400000)	20/5	4000	57	0.8
Linseed (400000)	20/4	32000	64	13
Castor (900000)	100/5	45000	300	2

Though number of varieties are available, very few are very popular covering vast areas of the crop. The SRR in oil seeds is very low except in hybrid crops.

Table 2. Oilseed Varieties in Seed Chain - Quality Seed (2008-09)

Crop	No. of varieties	No. of varieties in seed chain	SRR (%) (2007-08)
Groundnut	163	59 (4/86) *	2
Rapeseed-mustard	138	65 (6/78)	36
Soybean	101	37 (2/81)	6
Sunflower	50	12 (5/70)	69
Sesame	69	29 (4/80)	7
Safflower	34	17 (3/62)	15
Niger	22	8 (4/90)	<1
Linseed	54	25 (5/73)	1
Castor	39	12 (3/70)	50
Total	670	264	9

* Number of varieties and their contribution to breeder seed indent

Oil seeds are cultivated under diverse situations and varieties are available for such specific niches.

Table 3. Varieties Suitable for Specific Situations

Soybean	Early maturity, rust resistance, suitable for <i>rabi</i> , disease and insect pest resistance, drought tolerance
Groundnut	Early duration, disease resistance, drought resistance, acidity tolerance, low temperature tolerance, HPS types
Rapeseed-Mustard	Early duration, high oil, salinity tolerance, high temperature tolerance, late sown, drought tolerance, foliar disease resistance
Sesame	White seeded, short duration, drought resistance, phyllody resistance, high temperature tolerance
Safflower	CMS hybrids, non spiny varieties/hybrids
Castor	Wilt resistance

Though large quantities of breeder seed is lifted the seed chain is very weak with very low multiplication efficiency.

Table 4. Seed Multiplication Efficiency in Oilseeds

Crop	Breeder seed lifted (q)	Foundation seed produced (q) (2006-07)	Certified seed produced (q) (2007-08)	Certified seed to be produced as per norms (q)
Rapeseed-mustard	17.64	1521	40456	176400 (23% [*])
Sunflower	2.80	19	755	7000 (11%)
Sesame	5.89	66	1280	36812 (3%)
Safflower	18.26	561	17110	65736 (26%)
Castor	0.73	12	615	2628 (23%)
Linseed	20.26	84	1780	50650 (4%)

*** Seed multiplication efficiency**

The seed indents of some of the varieties are continuously higher due to its popularity.

SOYBEAN – POPULAR VARIETIES

- JS 95-60, JS 335
- JS 97-52, JS 93-65
- MAUS 6, MAUS 71
- NRC 37, NRC 7

GROUNDNUT - POPULAR VARIETIES

- K-6, K-9
- NARAYANI, TAG24
- GG20, TG37A
- KGS 76

RAPSEED-MUSTARD - POPULAR VARIETIES

- NRCHB506, NRCHB101
- RH30, PUSA BOLD
- PUSA JAIKISAN, VARUN
- KRANTI, PT 303

⊙ LINSEED - POPULAR VARIETIES

- LCK9313
- SHUBHRA
- SWETA
- NEELAM
- GARIMA

SAFFLOWER - POPULAR VARIETIES

- NARI-H-15
- NARI-6
- PARBHANI KUSUM

- PHULE KUSUMA
- AKS 207
- SHARDA

The ICAR system always produces larger quantity of breeder seed, though the indents are unrealistic and very high.

Table 5. BREEDER SEED PRODUCTION (2011-12) (Q)

CROP	INDENT	PRODUCTION
GROUNDNUT	18115	20076
SOYBEAN	22972	20583
SUNFLOWER	31.5	47.8
NIGER	11.4	14.68
CASTOR	11.49	28.0
SESAME	41.56	67.06
RAPESEED-MUSTARD	49.3	150.5
LINSEED	145.0	156.5
SAFFLOWER	26.7	52.65
TOTAL	41404	41446

The improved cultivars for different states are as follows

Table 6. IMPROVED CULTIVARS FOR DIFFERENT STATES - GROUNDNUT

ANDHRA PRADESH	ICGV 86590, K-134, TIRUPATI-3, ICGV-86325, DRG-12, KADIRI-4, JCC-88, KADIRI-5, KADIRI-6, ICGS-76, APOORVA
GUJARAT	SOMNATH, ICGS-37, GG-20, TG-26, GG-7, Dh-86, GG-4, GG-5, GG-13, GG-3, GAUG-11
KARNATAKA	ICGV-86590, ICGV-86325, DRG-12, R-8808, R-9251, GPBD-4, DSG-1
MAHARASHTRA	TAG-24, TKG-19A, JL-220, LGN-2, AK-159, TG-26, PHULE VYAS, MANIKYA, MANJIRA
ORISSA	RSHY-1, OG-52-1, ICGS-44, Dh-86, TG-3, SMRUTI
RAJASTHAN	CSMG-84-1, DRG-17, CSMG-884, HNG-10, GG-14, TG-37A, PRAKASH, MUKTA
TAMILNADU	ICGV-86590, VRI-2, ICGV-86325, DRG-12, VRI-4, ALR-2, BSR- 1, ALR-3, VRI-5, Co-4, GPBD-4, APOORVA, VEMANA, CO-3, ICGS-76

Table 7. IMPROVED CULTIVARS – MUSTARD

STATE	VARIETIES
PUNJAB & HARYANA	LAXMI, RLM-619, CS-52, GEETA
RAJASTHAN	T-9, BHAVANI, PT-303, PT-507, JT-1, PUSA JAIKISAN, GM-2, PCR-7
UTTAR PRADESH	JAGANNATH, VARUNA, ROHINI, URVASHI
MADHYA PRADESH	BASANTI, NDR-8501, JM-1, CS-52
GUJARAT	RAGINI, PUSA JAIKISAN, GM-2, PCR-7
WEST BENGAL	M-27, B-54, ANURADHA, B-9

Table 8. IMPROVED CULTIVARS – SOYBEAN

ZONES	VARIETY	RECOMMENDED
NORTHERN HILL ZONE (HIMACHAL PRADESH, UTTARANCHAL)	PK-416, PUSA 16, PUSA 20, AHILYA-1, VLS 47, HIMSO 1563, VLS 21, BRAGG	
NORTHERN PLAIN ZONE (PUNJAB, HARYANA, DELHI, NE PLAINS OF UTTAR PRADESH, WESTERN BIHAR)	PK 416, PK 472, VLS 21, PUSA 16, PS 1024, PS 1042, PS 1029, PS 1092, SL 295, PS 1241, SL 525, BRAGG	
CENTRAL ZONE (MADHYA PRADESH, BUNDELKHAND REGION OF UTTAR PRADESH, RAJASTHAN, GUJARAT, WESTERN PARTS OF MAHARASHTRA)	JS 71-05, JS 80-21, JS 335, JS 90-41, AHILYA 1, AHILYA 2, AHILYA 3, AHILYA 4, INDIRA SOYA 9, MAUS 32, MAUS 47, MAUS 61-2, MAUS 81, JS 93-05, PS 1024, PS 1029(RUST TOLERANT), PK 416(YMV TOLERANT), PUSA 16, PK 472, JS 75-46, BRAGG	
SOUTHERN ZONE(SOUTHERN PARTS OF MAHARASHTRA, KARNATAKA, TAMILNADU, ANDHRA PRADESH, KERALA)	HARDEE, KHsb 2, PS 1029, MACS 124, MAUS 2(POOJA), MACS 450, JS 335, MAUS 61, LSb-1, BRAGG	

NORTH EASTERN ZONE(ASSAM, WEST BENGAL, MEGHALAYA, JHARKHAND, EASTERN BIHAR, ORISSA AND CHATTISGARH)

JS 80-21, PK 472, BRAGG, PUSA 16, RAUS 5, JS 335, MAUS 71

Table 9. IMPROVED CULTIVARS – LINSEED

STATE	UTERA	SITUATION RAINFED	IRRIGATED
BIHAR	KL-224	SWETA, SHEKHAR	T-397, GARIMA, SHUBHRA, GAURAV, SHIKHA, RASHMI, MEERA, PARVATI
HIMACHAL PRADESH	SURABHI KL-224	SHEELA	HIMALINI, JEEVAN, NAGARKOT, KL-210, LC-54
JAMMU & KASHMIR	KL-224	SHEELA	KL-210
MAHARASHTRA		KIRAN, MADHAVI, NL-97, LMS-4-47, RLC-81	JAWAHAR-23, SLS-27
ORISSA		KIRAN, PADMINI, LMS-4-47, RLC-81	SLS-27
RAJASTHAN		KIRAN, PADMINI, RASHMI, MEERA	JAWAHAR-23, NAGARKOT, T-397, HIMALINI, RL-914, SLS-27, NL-142
ASSAM		SWETA, SHEKHAR	T-397, GARIMA, SHUBHRA, GAURAV, NAGARKOT, SHIKHA, RASHMI, MEERA, PARVATI
UTTAR PRADESH		LAKSHMI-27, KIRAN, SWETA, SHEKHAR	SHUBHRA, LAKSHMI-27, T-397, NEELAM, GARIMA, GAURAV, NAGARKOT, SHIKHA, RASHMI, MEERA, PARVATI, NL-142
WEST BENGAL		SWETA, SHEKHAR	GARIMA, SHUBHRA, GAURAV, NAGARKOT, RASHMI, MEERA, PARVATI

The non-availability of quality seed is one of the serious concerns in oil seed crops. The improved varieties and quality seed have clearly demonstrated the superiority of technologies in oilseed crops which resulted in the doubling of the average seed yields.