Highlights of Crop Improvement Research

A. Maintenance and multiplication of groundnut germplasm

A total of Six thousand six one hundred and forty-two germplasm accessions have been multiplied and maintained at 11 centres (Table A) during *kharif* 2016. This included 60 wild accessions; 299 interspecific derivatives; exotic collection; 2076 Spanish bunch accessions; 26 Valencia accessions; 644 Virginia Bunch accessions; 271 Virginia Runner accessions; 2000 base collection accessions; and 1407 other germplasm accessions. Under Consortium Research Platform on Agro-Biodiversity (CRP-AB), 3002 accessions were also multiplied in *kharif* 2016 at three centres (Table A2).

Table A1. Details of groundnut germplasm maintained at AICRP-G

Centre	Wild species/ Derivatives	Spanish Bunch	Valencia	Virginia Bunch	Virginia Runner	Others	Total
Akola	4	209	11	52	26	163	465
Dharwad	168 (ID)	-	-	-	-	119 (EC) 160 (ICRISAT) 184 (Exotic; ABL); 264 (NBPGR) 122 (NRCG)	858
Durgapura	-	15	3	60	41	-	119
Jalgaon	-	296	2	1	-	-	299
Kadiri	12 (ID)	600	-	214	-	141 (RV) 1000 (CRP-AB) 149 (CC-WUE)	1689
Kanke	-	18	-	32	-	-	50
Mainpuri	-	140	10	195	190	-	535
Mohanpur	-	81	-	-	-	24 (DGR) 36 (ICRISAT) 16 (BARC) 5 (AICRP)	162
Shirgaon	-	-	-	-	-	107 (RV) 80 (Svalbard-NBPGR)	187
Vridhachalam	60 (wild acc.) 119 (ID)	717	-	90	14	1000 (CRP-AB)	821
Total	359	2076	26	644	271	3407	6142

ID= interspecific hybrid derivatives; RV=Released Varieties; EC=Exotic collection; CRP- AB= Consortium Research Platform on Agro-Biodiversity; CC-WUE= Composite collection for Water Use Efficiency

Table A2. Germplasm multiplied under Consortium Research Platform on Agro-Biodiversity (CRP-AB)

Centre	Total no. of accessions characterized
ICAR-DGR, Junagadh	1002
ANGRAU-Kadiri	1000
TNAU- Vridhachalam	1000
Total	3002

B. Evaluation of germplasm accessions and pre-breeding lines

At Dharwad, few promising advanced breeding lines have been identified for specific traits (high yield, high oleic acid content, high shelling; tolerance of LLS over their respective best checks (B1).

Table B1. Promising germplasm identified at Dharwad

S.No.	Genotypes	Stage of trial	Trait
1	Dh 256	MLT (State)	Higher pod and kernel yield over best checks; High shelling
2	Dh 257		
3	TMV 2x GM-6-1-5	LYT-I	
4	TMV 2x GM-6-1-5	LYT-I	
5	TMV 2 x G-2-52-16	LYT-II	
6	TMV 2 x G-2-52-57	LYT-II	
7	GM 6-1 x 278-18-25	LYT-III	
8	GM 6-1 x 278-18-95	LYT-IV	
9	GM 6-1 x 278-18-102	LYT-IV	
10	ICG-2381 x GM-6-1-1	LYT-V	
11	ICG-2381 x GM-6-1-53	LYT-V	
12	GPBD-4 x 34-36	LYT-V	
13	GPBD-4 x 34-31	LYT-V	
14	GPBD-4 x 34-35	LYT-V	
15	Higholeic-163	LYT-VI	High oleic acid content
16	Higholeic-161	LYT-VI	
17	Higholeic-162	LYT-VI	
18	Higholeic-153	LYT-VI	
19	Higholeic-112	LYT-VI	
20	Higholeic-132	LYT-VI	

At Shirgaon, twelve promising germplasm accessions have been identified as high yielding, large seeded coupled with early maturity (Table B2). Three accessions namely Rate Rakhuda (65g; 84 days maturity); LSVT I-2008-3 (65.4g; 84 days maturity) and LSVT I-2012-6 (65.g; 84 days maturity) have been identified as large seeded types with early maturity.

B2. Promising accessions identified at Shirgaon from base collection accessions

ICG No.	Pod yield/plant (g)	100-Seed weight (g)	Shelling (%)	Days to maturity
1750	10.6	56.0	70.2	83
1760	11	44.0	72.4	86
1768	11	45.8	70.4	83

B2. Promising accessions identified at Shirgaon from base collection accessions contd.

ICG No.	Pod yield/plant (g)	100-Seed weight (g)	Shelling (%)	Days to maturity
1774	10.6	53.6	68.8	102
2870	17.4	47.6	68.4	102
2874	13.2	64.3	62.6	102
3442	10	50.4	62.3	102
4876	10.4	55.8	62.6	84
5559	11.8	60.2	63.4	88
568	12.6	48.6	63.8	83
376	10.6	60.2	59.4	102

C. Maintenance of wild *Arachis* species, interspecific derivatives and details of interspecific crossing programme undertaken at RRS-Vridhachalam (TNAU)

C1.1 Maintenance of wild *Arachis* species

Sixty accessions belonging to twenty-four wild species of six sections of *Arachis* are being maintained at RRS, Vridhachalam (TNAU). The details of the 24 wild species maintained are detailed below (Table C1).

Table C1. Details of wild *Arachis* species maintained

S.No.	Wild species	Number of accessions
Section: *Arachis*		
1	*Arachis batizocoi*	5
2	*Arachis duranensis*	5
3	*Arachis stenosperma*	5
4	*Arachis ipaensis*	1
5	*Arachis kuhlmannii*	2
6	*Arachis otavioi*	1
7	*Arachis helodes*	4
8	*Arachis villosa*	1
9	*Arachis cardenasii*	2
10	*Arachis correntina*	1
11	*Arachis kempf-mercadoi*	2
12	*Arachis diogoi*	3
13	*Arachis monticola*	2
14	*Arachis cruziana*	1
15	*Arachis benensis*	5
Section: *Erectoides*		
16	*Arachis paraguariensis*	3
17	*Arachis rigonii*	5
18	*Arachis appressipilla*	3
19	*Arachis hermanii*	1
Section: *Caulorhizae*		
20	*Arachis pintoi*	2

Table C1. Details of wild *Arachis* species maintained contd.

Section: *Rhizomatosae*		
21	*Arachis glabrata*	2
Section: *Extranervosae*		
22	*Arachis marginata*	1
23	*Arachis villosulicarpa*	1
Section: *Heteranthae*		
24	*Arachis pusilla*	2
Total		**60**

C1.2 Maintenance of perennial interspecific derivatives

Different pathways viz., triploid, (auto) tetraploid, hexaploid and amphidiploids have been constantly employed by the centre to introgress rust and LLS resistance genes from the wild species. As the triploids, hexaploids and amphidiploids are perennials/semi-perennials, the derivatives thus developed are being maintained under field conditions for further hybridization and introgression of novel resistant gene (s). Four triploids are being maintained in the centre (Table C1.2.1).

Table C1.2.1 Perennial triploids maintained

S.No.	Cultivated parent (♀)	Diploid species (♂)
1	VRI 4	(*A. correntina* X *A. helodes*)
2	VRI 2	*A. correntina*
3	VRI 2	*A. kempff-mercadoi*
4	VRI 2	*A. cardenasii*

Three auto-tetraploids (colchiploids 2n=4x=40) have been developed by the centre earlier through colchicine treatment of diploid species (2n=20). The species used in the development of the auto tetraploids were *A.villosa*, *A.rigonii*, and *A.stenosperma*. Similarly two hexaploid derivatives (colchiploids 2n=6x=40) have also been developed using two cross combinations *viz.* VRI 2 x *A. cardenasii* and VRI 2 x *A. correntina* to obtain effective seed set upon hybridization with tetraploid cultivated types. Eleven amphidiploids have also been produced to have novel combination of genes conferring resistance to various insect pests and diseases. The amphidiploids produced and maintained are as follows.

Table C1.2.2. Perennial amphidiploids maintained

Amphidiploid species combinations	
A. villosa x A. stenosperma	*A. correntina x A. helodes*
A. stenosperma x A. cardenasii	*A. duranensis x A. stenosperma*
A. batizocoi x A. kuhlmannii	*A. cardenasii x A. villosa*
A. duranensis x A. villosa	*A. duranensis x A. cardenasii*
A. duranensis x A. kuhlmanii	*A. helodes x A. pusilla*
A. pintoi x A. helodes	

C2. New interspecific crosses attempted

Sixteen fresh crosses were effected involving four foliar and fungal diseases susceptible groundnut varieties as ovule parents (VRI 2, TMV 12, JL 24 and K 6) and resistant amphidiploids and tetraploids as male parents. Eight crosses involved two resistant amphidiploid male parents (*A. cardenasii* x *A. villosa*; *A. duranensis* x *A. villosa*) and in eight other crosses two autotetaploids (*A. villosa* (4x) and *A. duranensis* (4x)) have been used (Table C2).

In general, the success rate (based on pod setting) was very low irrespective of the crosses made during the season and ranged as low as 1.9% to 20.1%. Pod set (%) was highest in the crosses involving autotetraploids {VRI 2 x *A. duranensis* (4x) (20.1%); VRI 2 x *A. villosa* (4x) (13.0%)}. In general, pod set was low (<10%) in crosses involving amphidiploids except in one cross {VRI 2 x (*A. cardenasii* x *A. villosa*)} which recorded a seed set of 12.4%. Pod set was the lowest (1.9%) in the cross, TMV 12 x *A. villosa* (4x).

C3. Introgression of genes resistance to late leaf spot and rust through triploid pathway

The diploid wild species viz., *Arachis diogoi* and Arachis *benensis* are potential sources of novel genes for the genetic improvement of cultivated groundnut owing to their higher level of resistance to late leaf spot and rust. The seeds obtained from the five crosses made (involving three cultivated types and two wild species, *Arachis diogoi* and *Arachis benensis*) during previous *rabi*-summer 2015-16 season were sown during the *kharif* 2016 season for further evaluation.

Although number of pods obtained in each cross were substantial (Table C2), recovery of true triploid hybrids was very poor irrespective of the crosses studied and ranged from 1 to 10. However the cross, VRI 3 x *A. diogoi* registered maximum number of 10 triploids.

Table C2. Interspecific hybridisation undertaken in *kharif* 2016 at RRS Vridhachalam

S.No.	Crosses	No. of pollinations made	No. of pods obtained	Pod setting %
1	VRI 2 x (*A. cardenasii* x *A. villosa*)	741	92	12.4
2	TMV 12 x (*A. cardenasii* x *A. villosa*)	724	69	9.5
3	JL 24 x (*A. cardenasii* x *A. villosa*)	706	55	7.8
4	K 6 x (*A. cardenasii* x *A. villosa*)	687	56	8.2
5	VRI 2 x (*A. duranensis* x *A. villosa*)	724	69	9.5
6	TMV 12 x (*A. duranensis* x *A. villosa*)	761	42	5.5
7	JL 24 x (*A. duranensis* x *A. villosa*)	722	37	5.1
8	K 6 x (*A. duranensis* x *A. villosa*)	719	41	5.7
9	VRI 2 x *A. villosa* (4x)	728	95	13.0
10	TMV 12 x *A. villosa* (4x)	759	15	2.0
11	JL 24 x *A. villosa* (4x)	643	40	6.2
12	K 6 x *A. villosa* (4x)	695	22	3.2
13	VRI 2 x *A. duranensis* (4x)	670	135	20.1
14	TMV 12 x *A. duranensis* (4x)	746	14	1.9
15	JL 24 x *A. duranensis* (4x)	663	42	6.3
16	K 6 x *A. duranensis* (4x)	559	50	8.9

Table C3. Details of true F_1s (triploid) obtained from interspecific crosses

S.No.	Crosses	No. of pods harvested	No. of true triploids obtained	Success rate (%)
1	VRI 3 x *A. benensis*	68	3	4.4
2	VRI 3 x *A. diogoi*	111	10	9.0
3	JL 24 x *A. benensis*	60	1	1.7
4	JL 24 x *A. diogoi*	82	1	1.2
5	K-1719 (AIS-2014-8) X *A. diogoi*	31	2	6.5

C4. Evaluation of triploids

True F_1s (triploids) of five crosses made (involving three cultivated types and two wild species, *Arachis diogoi* and *Arachis benensis*; Table C3) during previous *rabi*-summer season (2015-16) were sown during the *kharif* 2016 season for further evaluation for 20 morpho-metric traits along with their parents. Most of the triploids exhibited slow and poor growth and produced only a very few (one or two) flowers in a period of 150 days. Hence, meiotic studies for the confirmation of chromosome numbers could not be undertaken. However, observations made on the five different triploid hybrid progenies along with their respective parents are briefly summarized below cross-wise.

C4.1 Triploid of JL 24 x *A. diogoi*

Only one true triploid could be identified in this cross. The triploid F_1 was semi-erect and wide variations could be observed for 20 morpho-metric traits and flower production between the Parents and F_1 (Table C4.1). The triploid was taller (44.7 cm) than their respective parents. The most useful morphological characters for identification of true triploid hybrid were reduced leaf size (1.52 cm) with mottled in appearance and decreased stipule length (1.04 cm) when compared to the parents. The triploid produced only two flowers with orange coloured standard petal.

C4.2 Triploid of JL 24 x *A. benensis*

Only one triploid could be identified and evaluated for various biometrical traits. The triploid F_1 was found to be intermediate in height (21.0 cm) with semi-erect in growth habit when compared with parents (Table C4.2). The leaves were small (1.42 cm) with reduced stipule and petiole length and crinkled. The triploid produced only two flowers with orange colour standard petal. The following table shows various observations made in the triploid.

C4.3 Triploid of VRI 3 x *A. diogoi*

Ten true triploids could be obtained and evaluated with their respective parents. The triploid showed intermediate in height (35.85 cm) and semi-erect in growth habit. The leaves were very small (1.85 cm) with reduced petiole and stipule length than their respective parents (Table C4.3). The triploids produced very few flowers with orange coloured standard petal.

C4.4 VRI 3 x *A. benensis*

Three true triploid F_1s were identified and studied for various biometrical traits (Table C4.4). The triploids were semi-erect and slow in growth with intermediate height (30.6 cm) when compared with parents. The leaves were very small (1.01 cm) with reduced petiole and stipule length and exhibited mottled appearance. The triploids hardly produced one or two flowers with orange coloured standard petal.

C4.5 K-1719 (AIS-2014-8) x *A. diogoi*

Only one triploid could be obtained in this cross. The triploid was semi-erect in growth habit and slow growing. The hybrid showed intermediate in height (36.5 cm) and very smaller leaves (1.00 cm), smaller petioles and stipules than their respective parents. The triploid produced two flowers with orange coloured standard petal. The details of observations made are provided in the Table C4.5.

D. Hybridization programme undertaken during *kharif* 2016

For developing high-yielding groundnut cultivars possessing resistance to various biotic and biotic stresses which limit yield in *kharif* season, a of hybridization programme was undertaken at 13 AICRP-G centers. The particulars of centre-wise fresh crosses effected are given in the Tables D1.

Altogether, 165 single-crosses (Table D2) using different cultivars/advanced breeding lines, germplasm accessions were made during kharif 2016. Of 20 participating centres in the *kharif* programme, only 11 centres undertook hybridisation programme. Three new centres viz. Hiriyur (Karnataka), Bikaner (Rajasthan), and Gwalior (Madhya Pradesh) and six regular centres viz. Tirupati, Raichur, Kanke, Bhubaneswar, Imphal, and Jagtial, and did not undertake this activity. Two Of the parents used in these crosses, none were germplasm accessions, and the rest were advanced breeding lines or recently released varieties. The details of different donor parents used in hybridization programme, for specific traits at different AICRP-G centres are provided in Table D2.

Table D1. Details of crosses effected at different centers during *kharif* 2016

Centre	Crosses effected (no.)	Objective
Akola	7	High yield and oil, development of promising Valencia types, fresh seed dormancy in Spanish types, earliness
Durgapura	5	High yield, large seed, synchronous maturity, drought tolerance, multiple diseases resistance
Dharwad	25	High yield; large seeds with high oleic acid content; Foliar diseases resistance, drought tolerance; large seeds; tolerance to drought and pre-harvest *A. flavus* contamination
Jagtial	9	High yield, earliness, resistance to LLS, tolerance to stem rot, large seeds
Jalgaon	10	High yield, drought tolerance bold seed, tolerance to *Spodoptera,* resistance to multiple disease resistance
Junagadh	19	High yield and shelling out-turn, large seeds, stem rot resistance and multiple disease resistance

Kadiri	25	Tolerant to drought; thrips, PBND, LLS, Leaf Miner
Mainpuri	4	Tolerance of PBND, earliness, high yield, compact fruiting
Mohanpur	5	Early maturity, High yield
Shirgaon	10	High yield, earliness, high shelling, multiple diseases resistance
Tindivanam	13	High yield, drought tolerance, foliar disease resistance
Udaipur	3	High yield, foliar disease resistance
Vridhachalam	30	High yield, foliar disease resistance and drought tolerance
Total	**165**	

Table D2. Particulars of donor parents of economic attributes used in hybridization programme during *kharif* 2016

Centre	Economic attribute(s)	Donor parents
Akola	Earliness	Chico
	Valencia types	Kopergaon-3
	High yield	TAG 24, AK 159, AK 303, AK 3356042
	High oil	AK 159
	Fresh Seed Dormancy	G 201
Dharwad	High yield	KCG 6, KCG 11, Kadiri-9, Dh 86
	High oleic acid content	ICGV 07214, Dh 245, GM 6000, GM 6-1
	Large seeds	TG 76, ICGV 06189
	Drought tolerance	Dh 257
	A.flavus tolerance	ICG 2266, JG 18
	Large seeds	TG 47, TPG 41, ICGV 06189
	Foliar diseases resistance	Dh 257, ICGV 86699, GPBD 5
Durgapura	High yield	RG 578, RG 510, RG 559-3
	High shelling	RG 510
	Drought tolerance	RG 425
	Large seeds	RG 382, RG 438
	Synchronous maturity	TG 37A
	Tolerance to pre-harvest *A flavus* contamination	GAUG 10
	Multiple disease resistance	ICGV 350
Jagtial	High yield	IVK 2015-21, ICGV 00348
	Tolerance to LLS	GPBD-4
	Tolerance to stem rot	ICGV 00348
	Large seeds	Kadiri Bold (K-8)
Jalgaon	High yield	ICGV 03061, VG 9406
	Foliar diseases resistance	FDRICG x 020063, JL 1085
	High oil	JL 578, INS-I-2014-20
	Drought tolerance	JALW 27, PFDRGVT 1-9, ISK-I-2014-18
	Tolerance to *Spodoptera*	JL 1232

	Earliness	JL 1085, JL 1232
	Tolerance to stem rot	JL-1085
Junagadh	High yield and shelling	GJG 17, R 33-1, RG 592-3, GJG 22, PBS 22067, TLG 45, TG 75, GAUG 10, TCGS-1157, TAG 24, K 1710, GG 20
	Large seeds	IVK-I-2016-2, AK-355, LSVT-I-2016-4, TG-73, LSVT-I-2016-2, Kaushal, Mallika, IVK-I-2016-2, JL-501
	Stem rot resistance	CS-319, CS-19
	Multiple diseases resistance	KDG-128, ICGV 03043, ICGV 05155
	Low oil, high O/L	Mallika, ICGV 07359
Kadiri	Resistance to LLS	K 1909
	Tolerance to thrips	K 1535
	Tolerance to PBND	K 1811
	Tolerance to Drought	K 1819
	Tolerance to leaf miner	K 1563
Mainpuri	Compact fruiting	TG-37A, CSMG 2014
	Earliness	TG 37A
	High yield	TG 37A, Kaushal
	Tolerance to PBND	ICGV86031
Shirgaon	Earliness	ICG-5571
	High yield and shelling	KDG-123, GAUG-1, NRCGCS-281-40-4, NRCGCS-25-2-21, Dh-3-30
	Resistance to rust, LLS	NRCGCS-77
	Tolerance of pre-harvest *A. flavus* contamination	GAUG-1
	Multiple diseases resistance	ALR 3
Tindivanam	High yield	CO 7, ICGV 06138, BSG 0912, RG 426, R 2001-2, TG 60, TG 37A
	Resistance to foliar diseases	RG 426, JDR 66, R 2001-2
	Drought tolerance	JDR 66, R 2001-2, RG 426
Vridhachalam	High yield, drought tolerance	VRI 2, ASK 2015-6, ISK 2015-4,8,
	High yield, earliness	VG 13110, VG 13113, ISK 2015-4 TMV Gn 13
	Tolerance to LLS, rust	ASK 2015-6

E. Advancement of generations and selections made in inter and intra varietal crosses
Different segregating generations of objective specific inter varietal and intra varietal crosses effected at 18 AICRP-G centers (16 regular and 2 voluntary) earlier, were advanced to their respective next filial generations during *kharif* 2015. A large number of single plants/line or progeny bulks were selected (Table E) from these crosses at different filial generations.

During *kharif* season, progenies of 873 crosses were advanced to their respective next filial generation from which very large number of (10716) selections were made. The selections comprised of large number (9608) of single plants and 1108 progeny bulks. Of the total crosses, which were advanced to different filial generations 503 crosses were in early generations (F_1- F_4) and 612 crosses in advanced generations (F_5 onwards). A vast majority number of single plant selections made during the last season were in early generations (6467) and the rest (3141) in advanced generations.

Table E. Details of generation advancement and selections made at different AICRP (G) centers: *kharif* 2016

Centre	Generation	Crosses	Selections made (no.)		Objectives
			Progeny bulks	Single plants	
Akola	F_2	6	5	43	High yield, earliness, quality improvement
	F_3	5	8	71	High yield, Improvement of Valencia types and quality, tolerance of stem rot and cold
	F5	11	13	86	High yield, high biomass, quality and foliar disease resistance, pod size, low oil, early maturity, large seeds, drought tolerance
	F6	14	9	30	High yield, large seeds
Dharwad	F1	19	-	531	Large seeds with high oleic acid content
	F2	37	-	792	High shelling, high oleic acid, large seeds, foliar disease resistance, tolerance to pre-harvest *A.flavus* contamination, foliar disease resistance
	F3	23	-	702	High yield, earliness, foliar disease resistance
	F4	9	-	273	High yielding, foliar disease resistance, tolerance to pre-harvest *A.flavus* contamination
	F5	14	-	608	High yielding with foliar disease resistance
	F6	5		50	High yield, bold kernels with foliar disease tolerance
Durgapura	F2	4	4	-	High yield, drought tolerance
	F3	5	5	18	High yield, large seeds, collar rot resistance, compact plant types, earliness
	F4	5	-	19	High yield, large seeds, collar rot resistance, compact plant types, earliness
	F5	28	-	28	High yield and earliness, drought tolerance, collar rot resistance
	F6	1	-	5	High yield and earliness, drought tolerance, collar rot resistance
Imphal	F1	21	-	-	High yield
	F5	28	-	-	High yield, foliar diseases resistance, short and medium duration
	F6	1	-	-	High yield, earliness
	F7	8	-	40	High yield, large seeds
	F8	1		5	High yield, large seeds

Table E. Details of generation advancement and selections made at different AICRP (G) centers: Kharif 2016 contd.

Jagtial	F_2	6	5	43	High yield, drought tolerance, large seeds, tolerance to LLS
	F_3	5	8	71	
	F5	11	13	86	
	F6	14	9	30	
	F1	19	-	531	
Jalgaon	F2	37	-	792	High yield, high oil content, earliness, foliar disease resistance, drought tolerance, low aflatoxin content
	F3	23	-	702	High yield, drought tolerance bold seed, Spodoptera and rust resistance, multiple disease resistance
	F4	9	-	273	High yield, Earliness, high oil content
	F5	14	-	608	High yield, earliness, *Spodoptera* and multiple disease resistance
	F6	5		50	High yield, foliar disease resistance, drought tolerance
Junagadh	F2	4	4	-	High yield, high shelling, large seeds, drought tolerance, compact fruiting, fresh seed dormancy
	F3	5	5	18	High yield, drought tolerance, foliar disease resistance, tolerance to *A. flavus,* low oil, large seeds, multiple diseases resistance
	F4	5	-	19	High yield, high shelling, stem rot resistance, large seeds, drought tolerance, earliness, fresh seed dormancy, high O/L
	F5	28	-	28	High yield, high shelling, high oil content, drought tolerance, large seeds, earliness, drought resistance, stem rot resistance, high O/L
	F6	1	-	5	High yield, high shelling, high oil content, foliar disease resistance, stem rot resistance, short duration, fresh seed dormancy, large seeds, multiple diseases resistance
	F1	21	-	-	High yield, high shelling, high oil content, large seeds, earliness, Stem rot resistance, *Alternaria* resistance, foliar disease resistance, fresh seed dormancy
	F5	28	-	-	For creation of variability
Kadiri	F6	1	-	-	Earliness, tolerance to thrips, large seeds
	F7	8	-	40	Earliness, tolerance to thrips, large seeds
	F8	1		5	High yield, resistance to LLS, tolerance to drought, stem rot, and leaf miner
	F_2	6	5	43	Earliness, tolerance to thrips, tolerance to drought
	F_3	5	8	71	Tolerance to thrips, LLS, drought
	F5	11	13	86	tolerance to thrips, LLS, drought

Latur	F4	15	-	175	High yield
	F4	12	1	135	High yield, foliar disease resistance
	F4	9	-	117	High oil content
	F5	6	31	287	High yield, foliar disease resistance, drought tolerance, large seeds
	F6	3	19	126	High yield, foliar disease resistance
Mainpuri	F1	6	-	-	High yield, earliness, , high shelling, compact fruiting, PBND resistance
	F2	10	-	-	
	F3	10	-	-	
	F4	10	67	-	
	F5	10	71	-	
	F6	10	100	-	
Shirgaon	F1	16	-	-	Early, high yield, medium bold pods, multiple disease resistance, high oil, fresh seed dormancy
	F2	4	25	-	
	F3	23	-	109	
	F4	10	-	68	
	F5	16	163	-	
	F6	14	43	-	
Tindivanam	F1	8	-	-	High yield, drought tolerance
	F2	8		140	High yield, drought tolerance, foliar disease resistance, high oil content
	F4	4	-	286	High yield, foliar disease resistance, drought tolerance, high oil content, large seeds
	F5	18	-	39	High yield, drought tolerance
	F6	4	-	950	High yield, high oil content
	F7	7	-	35	High yield, earliness, drought Tolerance
Tirupati	F2	13	130	-	Fresh seed dormancy, short stature, acceptable pod and seed traits along with high yield; drought resistance, earliness
	F3	2	108	74	Fresh seed dormancy, short stature, acceptable pod and seed traits along with high yield
	F4	9	87	13	Drought resistance, high yield, acceptable pod and seed traits, earliness, bold seed, high oleic acid content
Udaipur	F2	3	-	202	High yield, earliness, foliar diseases resistance
	F3	8	-	250	High yield, earliness, foliar diseases resistance
	F4	7	34	-	High yield, tolerance to drought and PBND
	F5	4	13	-	tolerance to drought and
	F6	5	27	-	High yield, tolerance of drought and PBND
	F7	2	11	-	High yield, tolerance of drought and PBND
	F8	9	90	-	High yield, earliness, tolerance of drought and PBND
Vriddhachalam	F2	16	-	-	High yield, foliar disease resistance, drought tolerance
	F3	16	-	-	
	F4	16	-	-	
	F5	16	-	-	
	F6	24	-	-	

Table C3.1. Morpho-metric data of triploid of JL 24 x *A. diogoi*

S.No.	Characters	Triploid (3x)		JL 24 (4x) (Female)		*A. diogoi* (2x) (Male)	
		Mean± S.E	Range	Mean± S.E	Range	Mean± S.E	Range
1.	Height of main stem (cm)	44.7	-	38.6±2.75	32.0-46.0	15.95±0.45	15.5-16.4
2.	Number of primary branches	10.0	-	3.8±0.20	3.0-4.0	6.5±0.50	6.0-7.0
3.	Number of secondary branches	27.0	-	1.4±0.40	0.0-2.0	15.0±1.00	14.0-16.0
4.	Number of tertiary branches	-	-	-	-	19.5±1.50	18.0-21.0
5.	Length of primary branches (cm)	26.72±4.64	9.00–51.5	25.57±0.83	18.0 – 29.0	39.1±1.58	29.7-46.8
6.	Length of secondary branches (cm)	23.88±1.65	10.5 – 37.7	11.18±0.65	9.5-12.9	22.5±1.11	15.627.2
7.	Length of tertiary branches (cm)	-	-	-	-	13.24±0.76	10.2-18.1
8.	Length of petioles (cm)	1.45±0.01	1.2–1.8	4.25±0.15	3.5 – 6.0	3.58±0.22	2.4 – 5.2
9.	Leaflet length (cm)	1.52±0.03	1.4–1.7	6.25±0.10	4.8 – 7.0	3.01±0.07	2.5 – 3.6
10.	Leaflet width (cm)	0.83±0.04	0.6–1.0	2.95±0.07	1.9 – 3.6	1.18±0.03	0.9 – 1.4
11.	Stipule length (cm)	1.04±0.02	1.0–1.1	4.35±0.06	3.9 – 4.9	2.22 ± 0.09	1.7 – 2.9
12.	Sepal joined (cm)	0.43±0.03	0.4-0.5	0.50±0.05	0.4-0.6	0.66±0.03	0.6 – 0.7
13.	Sepal single (cm)	0.43±0.03	0.4-0.5	0.57±0.03	0.5-0.6	0.8±0.00	0.8 – 0.8
14.	Hypanthium length (cm)	1.90±0.05	1.8-2.0	2.53±0.03	2.5-2.6	4.93±0.14	4.7 – 5.2
15.	Standard petal length (cm)	1.13±0.03	1.1-1.2	1.23±0.03	1.2-1.3	1.46±0.03	1.4 – 1.5
16.	Standard petal width (cm)	1.47±0.03	1.4-1.5	1.47±0.06	1.4-1.6	1.73±0.03	1.7 – 1.8
17.	Wing petal length (cm)	0.77±0.03	0.7-0.8	0.87±0.03	0.8-0.9	0.96±0.02	0.9 – 1.0
18.	Wing petal width (cm)	0.37±0.03	0.3-0.4	0.43±0.03	0.4-0.5	0.7±0.03	0.6 – 0.8
19.	Keel petal length (cm)	0.40±0.00	0.4-0.4	0.53±0.03	0.5-0.6	0.66±0.03	0.6 – 0.7
20.	Keel petal width (cm)	0.20±0.00	0.2-0.2	0.27±0.03	0.2-0.3	0.2±0.00	0.2 – 0.2
21.	Pollen fertility (%)	6.0	-	94.5	-	87.5	-

Table C3.2. Morpho-metric data of triploid of JL 24 x *A. benensis*

S.No.	Characters	Triploid (3x)		JL 24 (4x) (Female)		*A. benensis* (2x) (Male)	
		Mean± S.E	Range	Mean± S.E	Range	Mean± S.E	Range
1.	Height of main stem (cm)	21	-	38.6±2.75	32.0-46.0	25.2±0.75	24.5-26.0
2.	Number of primary branches	3	-	3.8±0.20	3.0-4.0	9.00±1.00	8.0-10.0
3.	Number of secondary branches	11	-	1.4±0.40	0.0-2.0	17.5±1.50	16.0-19.0
4.	Number of tertiary branches	-	-	-	-	24.00±2.00	22.0-26.0
5.	Length of primary branches (cm)	35.33±1.64	33.0-38.5	25.57±0.83	18.0 – 29.0	48.91±0.42	46.5-51.0
6.	Length of secondary branches (cm)	5.90±0.61	2.0-8.0	11.18±0.65	9.5-12.9	34.55±0.92	30.4-39.7
7.	Length of tertiary branches (cm)	-	-	-	-	21.95±0.60	20.1-26.1
8.	Length of petioles (cm)	1.4±0.04	1.3-1.5	4.25±0.15	3.5 – 6.0	2.74±0.06	2.3-3.0
9.	Leaflet length (cm)	1.42±0.05	1.2-1.5	6.25±0.10	4.8 – 7.0	2.85±0.07	2.3-3.5
10.	Leaflet width (cm)	0.78±0.04	0.6-0.9	2.95±0.07	1.9 – 3.6	1.16±0.02	1.0-1.4
11.	Stipule length (cm)	1.52±0.03	1.4-1.6	4.35±0.06	3.9 – 4.9	2.02±0.04	1.5-2.3
12.	Sepal joined (cm)	0.47±0.03	0.4-0.5	0.50±0.05	0.4-0.6	0.76±0.03	0.7-0.8
13.	Sepal single (cm)	0.40±0.00	0.4-0.4	0.57±0.03	0.5-0.6	0.9±0.11	0.7-1.1
14.	Hypanthium length (cm)	2.13±0.03	2.1-2.2	2.53±0.03	2.5-2.6	6.66±0.50	5.7-7.4
15.	Standard petal length (cm)	1.23±0.03	1.2-1.3	1.23±0.03	1.2-1.3	1.23±0.14	1.0-1.5
16.	Standard petal width (cm)	1.53±0.03	1.5-1.6	1.47±0.06	1.4-1.6	1.6±0.15	1.4-1.9
17.	Wing petal length (cm)	0.80±0.00	0.8-0.8	0.87±0.03	0.8-0.9	0.93±0.05	0.8-1.1
18.	Wing petal width (cm)	0.40±0.00	0.4-0.4	0.43±0.03	0.4-0.5	0.73±0.05	0.6-0.9
19.	Keel petal length (cm)	0.37±0.03	0.3-0.4	0.53±0.03	0.5-0.6	0.6±0.00	0.6-0.6
20.	Keel petal width (cm)	0.2±0.00	0.2-0.2	0.27±0.03	0.2-0.3	0.10±0.00	0.1-0.1
21.	Pollen fertility (%)	6.0	-	94.5	-	89.0	-

Table C3.3. Morpho-metric data of triploid of VRI 3 x *A. diogoi*

S.No.	Characters	Triploid (3x)		*A. hypogaea* L. Cv. VRI 3 (4x) (Female)		*A. diogoi* (2x) (Male)	
		Mean± S.E	Range	Mean± S.E	Range	Mean± S.E	Range
1.	Height of main stem (cm)	35.85±2.00	24.5 – 49.5	54.5±2.75	48.0-60.0	15.95±0.45	15.5-16.4
2.	Number of primary branches	5.6±0.70	4.0-11.0	4.0±0.00	4.0-4.0	6.5±0.50	6.0-7.0
3.	Number of secondary branches	10.3±2.10	3.0-26.0	3.5±0.86	2.0-6.0	15.0±1.00	14.0-16.0
4.	Number of tertiary branches	1.6±0.73	0.00-6.0	-	-	19.5±1.50	18.0-21.0
5.	Length of primary branches (cm)	22.04±1.81	2.0 - 49.0	21.53±1.19	13.5-28.0	39.1±1.58	29.7-46.8
6.	Length of secondary branches (cm)	8.71±0.84	1.0 - 44.0	9.8±0.57	8.4-11.1	22.5±1.11	15.627.2
7.	Length of tertiary branches (cm)	5.90±1.06	1.5-14.0	-	-	13.24±0.76	10.2-18.1
8.	Length of petioles (cm)	1.98±0.02	1.9-2.0	5.28±0.16	4.0-6.6	3.58±0.22	2.4 – 5.2
9.	Leaflet length (cm)	1.85-0.06	1.6-2.1	5.89±0.16	4.6-7.6	3.01±0.07	2.5 – 3.6
10.	Leaflet width (cm)	1.12±0.11	0.8-1.6	2.86±0.08	2.5-3.6	1.18±0.03	0.9 – 1.4
11.	Stipule length (cm)	1.52±0.03	1.4-1.6	3.92±0.08	3.3-4.4	2.22 ± 0.09	1.7 – 2.9
12.	Sepal joined (cm)	0.53±0.03	0.5-0.6	0.7±0.05	0.6-0.8	0.66±0.03	0.6 – 0.7
13.	Sepal single (cm)	0.50±0.00	0.5-0.5	0.7±0.04	0.6-0.8	0.8±0.00	0.8 – 0.8
14.	Hypanthium length (cm)	2.43±0.03	2.4-2.5	2.92±0.23	2.5-3.5	4.93±0.14	4.7 – 5.2
15.	Standard petal length (cm)	1.33±0.03	1.3-1.4	1.0±0.05	0.9-1.1	1.46±0.03	1.4 – 1.5
16.	Standard petal width (cm)	1.63±0.03	1.6-1.7	1.37±0.07	1.2-1.5	1.73±0.03	1.7 – 1.8
17.	Wing petal length (cm)	0.83±0.03	0.8-0.9	0.8±0.00	0.8-0.8	0.96±0.02	0.9 – 1.0
18.	Wing petal width (cm)	0.43±0.03	0.4-0.5	0.45±0.01	0.4-0.5	0.7±0.03	0.6 – 0.8
19.	Keel petal length (cm)	0.40±0.00	0.4-0.4	0.7±0.04	0.6-0.8	0.66±0.03	0.6 – 0.7
20.	Keel petal width (cm)	0.20±0.00	0.2-0.2	0.2±0.00	0.2-0.2	0.2±0.00	0.2 – 0.2
21.	Pollen fertility (%)	6.5	-	93.0	-	87.5	-

Table C4.4. Morpho-metric data of triploid of VRI 3 x *A. benensis*

S.No.	Characters	Triploid (3x)		VRI 3 (4x) (Female)		*A. benensis* (2x) (Male)	
		Mean± S.E	Range	Mean± S.E	Range	Mean± S.E	Range
1.	Height of main stem (cm)	30.6±2.16	28.5-35.0	54.5±2.75	48.0-60.0	25.2±0.75	24.5-26.0
2.	Number of primary branches	6.66±0.88	5.0-8.0	4.0±0.00	4.0-4.0	9.00±1.00	8.0-10.0
3.	Number of secondary branches	22.0±7.0	9.0-33.0	3.5±0.86	2.0-6.0	17.5±1.50	16.0-19.0
4.	Number of tertiary branches	7.66±3.17	4.0-14.0	-	-	24.00±2.00	22.0-26.0
5.	Length of primary branches (cm)	21.35±2.13	7.5-39.0	21.53±1.19	13.5-28.0	48.91±0.42	46.5-51.0
6.	Length of secondary branches (cm)	7.81±0.70	1.0-29.0	9.8±0.57	8.4-11.1	34.55±0.92	30.4-39.7
7.	Length of tertiary branches (cm)	5.20±1.20	0.8-22.0	-	-	21.95±0.60	20.1-26.1
8.	Length of petioles (cm)	1.48±0.02	1.4-1.5	5.28±0.16	4.0-6.6	2.74±0.06	2.3-3.0
9.	Leaflet length (cm)	1.01±0.02	0.9-1.1	5.89±0.16	4.6-7.6	2.85±0.07	2.3-3.5
10.	Leaflet width (cm)	0.43±0.01	0.4-0.5	2.86±0.08	2.5-3.6	1.16±0.02	1.0-1.4
11.	Stipule length (cm)	1.03±0.01	1.0-1.1	3.92±0.08	3.3-4.4	2.02±0.04	1.5-2.3
12.	Sepal joined (cm)	0.60±0.00	0.6-0.6	0.7±0.05	0.6-0.8	0.76±0.03	0.7-0.8
13.	Sepal single (cm)	0.57±0.03	0.5-0.6	0.7±0.04	0.6-0.8	0.9±0.11	0.7-1.1
14.	Hypanthium length (cm)	2.53±0.03	2.5-2.6	2.92±0.23	2.5-3.5	6.66±0.50	5.7-7.4
15.	Standard petal length (cm)	0.93±0.03	0.9-1.0	1.0±0.05	0.9-1.1	1.23±0.14	1.0-1.5
16.	Standard petal width (cm)	1.23±0.03	1.2-1.3	1.37±0.07	1.2-1.5	1.6±0.15	1.4-1.9
17.	Wing petal length (cm)	0.80±0.00	0.8-0.8	0.8±0.00	0.8-0.8	0.93±0.05	0.8-1.1
18.	Wing petal width (cm)	0.40±0.00	0.4-0.4	0.45±0.01	0.4-0.5	0.73±0.05	0.6-0.9
19.	Keel petal length (cm)	0.57±0.03	0.5-0.6	0.7±0.04	0.6-0.8	0.6±0.00	0.6-0.6
20.	Keel petal width (cm)	0.20±0.00	0.2-0.2	0.2±0.00	0.2-0.2	0.10±0.00	0.1-0.1
21.	Pollen fertility (%)	5.0	-	93.0	-	89.0	-

Table C3.5. Morpho-metric data of triploid of K-1719 x *A. diogoi*

S.No.	Characters	Triploid (3x)		K-1719 (4x) (Female)		*A. diogoi* (2x) (Male)	
		Mean± S.E	Range	Mean± S.E	Range	Mean± S.E	Range
1.	Height of main stem (cm)	36.5±13.5	23.0-50.0	39.8±2.54	32.0-46.	15.95±0.45	15.5-16.4
2.	Number of primary branches	14.5±4.5	10.0-19.0	4.0±0.00	4.0-4.0	6.5±0.50	6.0-7.0
3.	Number of secondary branches	53.5±22.5	31.0-76.0	5.6±0.93	2.0-7.0	15.0±1.00	14.0-16.0
4.	Number of tertiary branches	34.5±28.5	6.0-63.0	-	-	19.5±1.50	18.0-21.0
5.	Length of primary branches (cm)	28.2±3.27	4.0-65.0	25.54±0.44	24.2-26.5	39.1±1.58	29.7-46.8
6.	Length of secondary branches (cm)	14.9±1.04	2.0-48.5	9.48±0.46	8.0-10.5	22.5±1.11	15.627.2
7.	Length of tertiary branches (cm)	11.80±0.87	1.7-29.0	-	-	13.24±0.76	10.2-18.1
8.	Length of petioles (cm)	1.96±0.09	1.4-2.3	4.29±0.09	3.8-5.4	3.58±0.22	2.4 – 5.2
9.	Leaflet length (cm)	1.00±0.08	0.7-1.9	4.78±0.12	3.8-5.9	3.01±0.07	2.5 – 3.6
10.	Leaflet width (cm)	0.45±0.05	0.3-1.0	2.26±0.06	1.8-2.8	1.18±0.03	0.9 – 1.4
11.	Stipule length (cm)	1.06±0.04	1.00-1.50	4.08±0.08	3.6-4.6	2.22 ± 0.09	1.7 – 2.9
12.	Sepal joined (cm)	0.67±0.03	0.6-0.7	0.8±0.05	0.7-0.9	0.66±0.03	0.6 – 0.7
13.	Sepal single (cm)	0.77±0.03	0.7-0.8	0.9±0.05	0.8-1.0	0.8±0.00	0.8 – 0.8
14.	Hypanthium length (cm)	2.17±0.03	2.1-2.2	0.83±0.13	0.7-1.1	4.93±0.14	4.7 – 5.2
15.	Standard petal length (cm)	1.03±0.03	1.0-1.1	1.06±0.03	1.0-1.1	1.46±0.03	1.4 – 1.5
16.	Standard petal width (cm)	1.47±0.03	1.4-1.5	1.46±0.08	1.3-1.6	1.73±0.03	1.7 – 1.8
17.	Wing petal length (cm)	0.87±0.03	0.8-0.9	0.86±0.02	0.8-0.9	0.96±0.02	0.9 – 1.0
18.	Wing petal width (cm)	0.47±0.03	0.4-0.5	0.53±0.02	0.5-0.6	0.7±0.03	0.6 – 0.8
19.	Keel petal length (cm)	0.60±0.00	0.6-0.6	0.63±0.03	0.6-0.7	0.66±0.03	0.6 – 0.7
20.	Keel petal width (cm)	0.20±0.00	0.2-0.2	0.1±0.00	0.1-0.1	0.2±0.00	0.2 – 0.2
21.	Pollen fertility (%)	6.0	-	93.0	-	89.0	-

VARIETAL EVALUATION AT MULTI-LOCATION

A three tier system of evaluation of groundnut entries under the nomenclature of Initial Varietal Trial-Stage I (IVT-I); Initial Varietal Trial-Stage II (IVT-II) and Advanced Varietal Trial (AVT) is being adopted and the trials were allotted to the following 29 locations distributed over five eco-geographical zones.

Zone I (5)	Mainpuri, Bikaner, Durgapura, Bawal, Ludhiana*
Zone II (5)	Junagadh, Amreli*, Talod*, Udaipur, Pratapgarh*
Zone III (6)	Gwalior, Jalgaon, Akola*, Shirgaon, Latur, Raigarh*
Zone IV (4)	Mohanpur, Imphal, Kanke, Bhubaneshwar
Zone V (9)	Vridhachalam, Jagtial, Kadiri, Tirupati, Dharwad, Raichur, Tindivanam, Digraj, Hiriyur

* Voluntary centres

The trial sets for *kharif* 2016 IVT I and AVT were coded at ICAR-DGR, Junagadh and dispatched to the assigned locations along with technical details. The trial sets of IVT II were constituted at the centres concerned by using the harvest of IVT-I stage trials conducted in *kharif* 2015 and retaining the same code.

Decoding of IVT-II entries was done during analysis of data of two years. However, decoding of IVT I trials was not done because the trials would be repeated in *kharif* 2017, as such as IVT-II.

Statistical Analysis:

1. The mean performances of entries (pod and kernel yields) including check varieties were compared on the basis of LSD.
2. Mean pod and kernel yields of entries of IVT-I and IVT-II were pooled for decision making on promotion to AVT stage.
3. Mean pod and kernel yields of entries of AVT over three years along with ancillary observations and their reactions to pests and diseases were considered for identification of a variety

Tabulation and presentation of data:

For each trial conducted during *kharif* 2016, the data have been presented in separate tables as:

a) Pod and kernel yields separately (as kg/ha)
b) Ancillary characters viz. plant stand in number/plot, crop duration in days, shelling out turn as percent, 100-kernel weight in g, sound matured kernel in percentage and oil and protein contents in percentage along with the ranks of each entry based on their numerical superiority.

Pooling of data: For promoting an entry to AVT, the pooled-data of both IVT-I and IVT-II was considered. For promoting an entry to AVT, the performance of the entry over locations of the zone and years was taken into account. For identification of an entry at AVT, the data of IVT-I, pooled data of IVT-I and II, and AVT were considered together along with weighted mean in addition to other ancillary traits and reactions to key pests and diseases at hot spot locations.

INITIAL VARIETAL TRIAL STAGE-I

Habit Group: Spanish Bunch

In this trial, 13 entries were tested in all the 5 zones along with respective zonal checks **(Table R).** The different checks used in this trial are presented below. The trial was allotted to 28 centres and all of them have conducted and reported the trial data except for Bikaner centre. The zone-wise results were summarized in **Table 1a through Table 5c**. Decoding of entries was not done because the trial will be repeated as such in all the centres in *kharif* 2017, by using the harvest of IVT I at each centre as the source of seed for IVT II. No decision needs to be taken from this trial because the promotion or rejection of entries will be decided based on the pooled analysis to be carried out and presented in the next workshop.

Table R. The zonal check varieties used in *kharif* 2016 in IVT stage-I trials (Habit group: Spanish bunch)

Zone →	I	II	III	IV	V
Check variety→	TAG 24 TG 37A	TG 37A GG 7 SG 99 JL 501 GJG 9	TAG 24 GG 8 AK 159 JL 776	OG 52-1 Girnar 3 GPBD 5 R 2001-2	R 2001-2 GPBD 4 VG 9816 R 2001-3

Habit Group: Virginia

In this trial, 8 entries were tested in all the 4 zones with respective zonal checks (**Table S**). The trial was allotted to 21 centres. All the centres conducted the trial and have reported the data. The zone-wise results are summarized in **Table 6a through Table 9c**. Decoding of entries was not done because the trial would be repeated as such in all the centres in *kharif* 2016, by using the harvest of IVT-I at each centre as the source of seed for IVT II. No decision was required to be taken from this trial because the promotion or rejection of entries would be decided on the basis the pooled analysis to be carried out and presented in the next workshop.

Table S. The zonal check varieties used in *kharif* 2016 in IVT stage-I trials (habit group: Virginia)

Zone →	I	II	IV	V
Check variety→	Girnar 2 GG 21 HNG 69 HNG 123 CSMG 9510 CSMG 2003-19 Raj. Mungaphali-1 RG 559-3	GG 20 Somnath KDG 128	KDG 123 ICGS 76 BAU 13 JSP 49 (GJG 18) RG 578	KDG 123 KDG 128 ICGS 76 GG 16 ICGV 00348

Initial Large Seeded Varietal Trial (ILSVT-Stage I)

The trial was allotted to six centres viz Ludhiana, Durgapura, Junagadh, Dharwad, Shirgaon and Rahuri. There were seven entries, JSSP-LS-55, RG 598, JSSP-HPS-52, RG 615, JSSP-LS-54, JSSP-HPS-53 and TG 79. The check varieties used were BAU 13, TPG 41, GJG (HPS) 1, TKG 19 A, ICGV 86564 and Mallika. The center-wise performance of the entries for pod and kernel yield is provided separately in Tables 10a and 10b. The ancillary observation pooled over seven centers are also provided in Table 10c. No decision needs to be taken, as this trial would be repeated as such for one more year as LSVT Stage II during *kharif* 2017.

ZONE I

Table 1a: INITIAL VARIETAL TRIAL (SPANISH) STAGE I KHARIF 2016

Pod yield (kg/ha)

S.N.	Entry	Mainpuri	Durgapura	Ludhiana	Bawal	Mean	R
1	ISK I 2016-1	1528	3201	1666	1924	2080	10
2	ISK I 2016-2	1169	3476	1774	-	2140	7
3	ISK I 2016-3	1227	2553	932	-	1570	12
4	ISK I 2016-4	1042	2756	2590	2060	2112	9
5	ISK I 2016-5	1968	3554	2578	-	2700	5
6	ISK I 2016-6	2084	3296	3078	-	2819	3
7	ISK I 2016-7	949	2228	1210	1673	1515	14
8	ISK I 2016-8	1100	2697	1719	-	1838	11
9	ISK I 2016-9	1563	4961	2084	2905	2878	2
10	ISK I 2016-10	926	3597	1838	-	2121	8
11	ISK I 2016-13	984	3101	448	-	1511	15
12	ISK I 2016-14	1621	4132	3477	3035	3066	1
13	ISK I 2016-15	1736	3858	1635	2475	2426	6
14	ISK I 2016-27	1551	3703	2954	2793	2750	4
15	ISK I 2016-28	1007	2994	927	1166	1524	13
	GM	1363	3340	1927	2254	2203	
	S.E. Diff. Mean	69.9	283.8	179.3	-	-	
	CD at 5%	141.1	572.7	361.9	-	-	
	CV%	7.3	12.0	13.2	-	-	

Table 1b: INITIAL VARIETAL TRIAL (SPANISH) STAGE I KHARIF 2016

Kernel yield (kg/ha)

S.N.	Entry	Mainpuri	Durgapura	Ludhiana	Bawal	Mean	R
1	ISK I 2016-1	1070	2306	1131	1328	1459	8
2	ISK I 2016-2	771	2444	1049	-	1421	9
3	ISK I 2016-3	846	1823	597	-	1089	12
4	ISK I 2016-4	708	1938	1668	1524	1459	7
5	ISK I 2016-5	1378	2641	1731	-	1917	5
6	ISK I 2016-6	1478	2211	2185	-	1958	2
7	ISK I 2016-7	666	1702	814	1153	1084	13
8	ISK I 2016-8	781	1829	1206	-	1272	11
9	ISK I 2016-9	1093	3393	1391	1891	1942	3
10	ISK I 2016-10	611	2387	1180	-	1392	10
11	ISK I 2016-13	680	2064	288	-	1010	15
12	ISK I 2016-14	1086	2832	2491	2095	2126	1
13	ISK I 2016-15	1232	2711	1185	1789	1729	6
14	ISK I 2016-27	1102	2606	1988	2032	1932	4
15	ISK I 2016-28	725	2136	618	832	1078	14
	GM	948	2335	1301	1581	1524	
	S.E. Diff. Mean	47.0	199.7	124.4	-	-	
	CD at 5%	94.8	403.0	251.0	-	-	
	CV%	7.0	12.1	13.5	-	-	

Table 1c: INITIAL VARIETAL TRIAL (SPANISH) STAGE I KHARIF 2016

Ancillary traits

S.N.	Entry	Trait	Mainpuri	Durgapura	Ludhiana	Mean
1	ISK I 2016-1	PS	285	321	196	267
		D	115	107	113	112
		S	70	72	68	70
		HKW	29	31	36	32
		SMK	89	80	88	86
		O	49	48	52	49
		P	27	30	27	28
2	ISK I 2016-2	PS	278	313	194	262
		D	105	109	108	107
		S	66	70	59	65
		HKW	37	56	42	45
		SMK	85	86	85	85
		O	49	48	50	49
		P	26	30	29	28
3	ISK I 2016-3	PS	271	310	96	226
		D	100	108	103	104
		S	69	71	64	68
		HKW	35	53	39	42
		SMK	88	94	83	88
		O	49	49	49	49
		P	27	31	30	29
4	ISK I 2016-4	PS	285	318	182	262
		D	100	107	104	104
		S	68	70	64	68
		HKW	35	52	41	43
		SMK	88	93	86	89
		O	50	50	51	50
		P	26	28	29	27
5	ISK I 2016-5	PS	301	311	274	295
		D	105	113	101	106
		S	70	74	67	70
		HKW	36	45	39	40
		SMK	97	82	82	87
		O	50	51	52	51
		P	25	28	28	27
6	ISK I 2016-6	PS	303	319	276	300
		D	106	106	111	108
		S	71	67	71	70
		HKW	32	36	37	35
		SMK	94	90	89	91
		O	53	51	55	53
		P	26	29	28	27
7	ISK I 2016-7	PS	285	326	108	240
		D	95	108	113	105
		S	70	76	67	71
		HKW	41	47	35	41
		SMK	84	89	81	85
		O	51	49	51	50
		P	25	29	27	27
8	ISK I 2016-8	PS	259	319	113	231
		D	100	114	101	105
		S	71	68	70	70
		HKW	38	31	38	36
		SMK	89	80	81	83
		O	50	50	51	50
		P	26	29	30	28

S.N.	Entry	Trait	Mainpuri	Durgapura	Ludhiana	Mean
9	ISK I 2016-9	PS	303	322	150	258
		D	105	112	108	108
		S	70	68	67	68
		HKW	45	48	44	46
		SMK	96	90	86	91
		O	51	50	51	51
		P	25	28	27	27
10	ISK I 2016-10	PS	271	321	222	271
		D	106	110	108	108
		S	66	66	64	65
		HKW	34	32	28	31
		SMK	86	90	86	87
		O	50	50	54	51
		P	25	29	28	27
11	ISK I 2016-13	PS	306	315	218	280
		D	107	110	116	111
		S	69	67	64	67
		HKW	30	32	34	32
		SMK	89	82	83	85
		O	52	50	53	52
		P	25	29	28	27
12	ISK I 2016-14	PS	292	318	282	297
		D	103	106	111	107
		S	67	69	72	69
		HKW	35	35	35	35
		SMK	94	92	80	89
		O	52	50	53	51
		P	27	29	27	28
13	ISK I 2016-15	PS	302	319	195	272
		D	95	108	107	103
		S	71	70	72	71
		HKW	30	42	33	35
		SMK	97	88	85	90
		O	51	52	53	52
		P	26	29	29	28
14	ISK I 2016-27	PS	306	314	268	296
		D	106	109	129	115
		S	71	70	67	70
		HKW	38	46	40	41
		SMK	96	92	80	89
		O	51	50	55	52
		P	26	28	29	28
15	ISK I 2016-28	PS	238	318	149	235
		D	100	109	122	110
		S	72	71	67	70
		HKW	37	40	35	37
		SMK	90	90	84	88
		O	51	50	53	51
		P	27	28	27	27
Final plant stand (000/ha)						
	G.M		286	318	195	266
	S.E. Diff. Mean		8.8	4.1	20.2	-
	CD at 5%		17.8	8.3	40.8	-
	CV %		4.4	1.8	14.7	-

ZONE II

Table 2a: INITIAL VARIETAL TRIAL (SPANISH) STAGE I KHARIF 2016

Pod yield (kg/ha)

S.N.	Entry	Junagadh	Amreli	Talod	Udaipur	Pratapgarh	Mean	R
1	ISK I 2016-1	2956	3689	1929	2821	2789	2837	12
2	ISK I 2016-2	3281	3418	2122	4170	1892	2977	9
3	ISK I 2016-3	3744	3333	1698	2969	1806	2710	15
4	ISK I 2016-4	3559	3264	1945	3501	2025	2859	10
5	ISK I 2016-5	3044	3488	2083	3715	1910	2848	11
6	ISK I 2016-6	4728	4630	3241	3843	3038	3896	1
7	ISK I 2016-7	2737	2577	961	2561	1887	2144	17
8	ISK I 2016-8	2575	3171	2361	3626	2055	2758	14
9	ISK I 2016-9	3033	3326	2894	4505	3548	3461	3
10	ISK I 2016-10	2868	3465	2315	2500	2732	2776	13
11	ISK I 2016-13	2014	3006	1115	2844	3519	2499	16
12	ISK I 2016-14	3773	3634	2894	3203	3704	3442	4
13	ISK I 2016-15	2772	3241	2469	3926	3721	3226	6
14	ISK I 2016-28	2657	1967	1161	1487	1782	1811	18
15	ISK I 2016-29	3457	3434	2469	3678	2564	3120	8
16	ISK I 2016-30	4138	3897	3704	4159	3067	3793	2
17	ISK I 2016-31	3431	3534	2701	3504	3096	3253	5
18	ISK I 2016-32	3333	3920	2315	3192	2871	3126	7
	GM	3228	3388	2243	3345	2667	2974	
	S.E. Diff. Mean	319.9	373.8	237.2	343.2	298.6	-	
	CD at 5%	642.2	750.5	476.1	689.1	599.5	-	
	CV%	14.0	15.6	15.0	14.5	15.8	-	

Table 2b: INITIAL VARIETAL TRIAL (SPANISH) STAGE I KHARIF 2016

Kernel yield (kg/ha)

S.N.	Entry	Junagadh	Amreli	Talod	Udaipur	Pratapgarh	Mean	R
1	ISK I 2016-1	2038	2316	1216	2001	1938	1902	11
2	ISK I 2016-2	2218	1991	1670	3139	1202	2044	9
3	ISK I 2016-3	2732	2031	1132	2098	1320	1862	12
4	ISK I 2016-4	2449	2002	1233	2301	1213	1839	13
5	ISK I 2016-5	1942	2201	1083	2583	1156	1793	14
6	ISK I 2016-6	3333	3071	2158	2396	2139	2619	1
7	ISK I 2016-7	1865	1447	540	1907	1181	1388	17
8	ISK I 2016-8	1958	2276	1683	2663	1386	1993	10
9	ISK I 2016-9	1946	2148	1785	3172	2412	2293	4
10	ISK I 2016-10	1777	2107	1470	1536	1564	1691	15
11	ISK I 2016-13	1337	1839	706	1943	2071	1579	16
12	ISK I 2016-14	2578	2402	1921	2126	2658	2337	3
13	ISK I 2016-15	1922	1958	1662	2560	2550	2130	8
14	ISK I 2016-28	1830	1281	693	990	1128	1184	18
15	ISK I 2016-29	2557	2253	1798	2606	1713	2185	6
16	ISK I 2016-30	2883	2674	2333	3061	2004	2591	2
17	ISK I 2016-31	2435	2371	1788	2412	2181	2237	5
18	ISK I 2016-32	2391	2678	1590	2303	1945	2181	7
	GM	2233	2169	1470	2322	1764	1992	
	S.E. Diff. Mean	226.9	272.6	157.2	237.8	201.3	-	
	CD at 5%	455.5	547.2	315.6	477.3	404.1	-	
	CV%	14.4	17.8	15.1	14.5	16.1	-	

Table 2c: INITIAL VARIETAL TRIAL (SPANISH) STAGE I KHARIF 2016

Ancillary traits

S.N.	Entry	Trait	Junagadh	Amreli	Talod	Udaipur	Pratapgarh	Mean
1	ISK I 2016-1	PS	305	219	182	333	252	258
		D	112	108	128	100	105	111
		S	69	63	63	71	70	67
		HKW	26	28	30	45	-	32
		SMK	87	95	-	91	-	91
		O	49	-	-	47	-	48
		P	27			29		28
2	ISK I 2016-2	PS	317	217	160	333	255	256
		D	109	113	`128	101	110	108
		S	68	58	79	75	64	69
		HKW	45	39	49	46	-	45
		SMK	93	96	-	90	-	93
		O	49	-	-	49	-	49
		P	25			28		27
3	ISK I 2016-3	PS	306	225	150	333	245	252
		D	112	104	128	95	102	108
		S	73	61	67	71	73	69
		HKW	51	36	54	44	-	46
		SMK	99	97	-	90	-	95
		O	51	-	-	50	-	50
		P	27			29		28
4	ISK I 2016-4	PS	320	219	152	333	237	252
		D	110	106	127	99	95	107
		S	69	61	63	66	60	64
		HKW	40	34	48	48	-	43
		SMK	91	96	-	89	-	92
		O	52	-	-	49	-	51
		P	24	-	-	27	-	26
5	ISK I 2016-5	PS	277	225	181	333	255	254
		D	108	114	126	101	105	111
		S	64	63	52	70	61	62
		HKW	33	36	42	47	-	39
		SMK	86	96	-	82	-	88
		O	50	-	-	49	-	50
		P	23	-	-	28	-	25
6	ISK I 2016-6	PS	322	223	214	333	226	263
		D	115	103	127	102	110	111
		S	71	66	67	62	70	67
		HKW	35	37	44	42	-	40
		SMK	91	97	-	83	-	90
		O	52	-	-	53	-	52
		P	26	-	-	28	-	27

S.N.	Entry	Trait	Junagadh	Amreli	Talod	Udaipur	Pratapgarh	Mean
7	ISK I 2016-7	PS	261	183	107	221	240	202
		D	112	105	128	99	97	108
		S	68	56	56	75	63	64
		HKW	35	35	39	50	-	40
		SMK	93	97	-	83	-	91
		O	50	-	-	49	-	49
		P	25	-	-	29	-	27
8	ISK I 2016-8	PS	289	224	170	333	230	249
		D	111	106	126	97	99	108
		S	76	71	71	73	68	72
		HKW	41	47	48	53	-	47
		SMK	92	98	-	83	-	91
		O	50	-	-	48	-	49
		P	27	-	-	30	-	28
9	ISK I 2016-9	PS	325	222	208	333	226	263
		D	110	107	126	99	112	111
		S	64	65	62	71	68	66
		HKW	36	43	53	47	-	45
		SMK	85	97	-	86	-	89
		O	49	-	-	50	-	49
		P	24	-	-	27	-	26
10	ISK I 2016-10	PS	315	198	179	333	232	251
		D	109	104	128	103	98	108
		S	62	61	64	62	57	61
		HKW	26	30	32	40	-	32
		SMK	85	95	-	81	-	87
		O	51	-	-	51	-	51
		P	27	-	-	29	-	28
11	ISK I 2016-13	PS	321	221	186	333	236	259
		D	115	109	128	96	108	111
		S	66	61	63	69	59	64
		HKW	30	28	30	38	-	31
		SMK	88	97	-	84	-	90
		O	52	-	-	51	-	51
		P	26	-	-	29	-	27
12	ISK I 2016-14	PS	326	223	216	333	240	267
		D	115	105	128	99	110	111
		S	68	66	66	67	72	68
		HKW	33	35	39	44	-	38
		SMK	83	98	-	89	-	90
		O	51	-	-	51	-	51
		P	27	-	-	28	-	28
13	ISK I 2016-15	PS	299	213	209	333	237	258
		D	109	109	128	96	107	110
		S	69	61	67	65	69	66
		HKW	27	27	32	46	-	33
		SMK	82	95	-	88	-	88
		O	51	-	-	50	-	50
		P	26	-	-	29	-	27

S.N.	Entry	Trait	Junagadh	Amreli	Talod	Udaipur	Pratapgarh	Mean
14	ISK I 2016-28	PS	237	156	93	113	229	166
		D	106	111	128	101	100	109
		S	69	65	60	67	63	65
		HKW	34	41	36	51	-	41
		SMK	89	97	-	86	-	91
		O	51	-	-	49	-	50
		P	24	-	-	28	-	26
15	ISK I 2016-29	PS	318	220	196	333	249	263
		D	109	107	127	101	108	110
		S	74	66	73	71	67	70
		HKW	43	41	52	49	-	46
		SMK	87	98	-	89	-	91
		O	50	-	-	47	-	49
		P	25	-	-	28	-	26
16	ISK I 2016-30	PS	321	225	215	333	252	269
		D	108	104	126	101	105	109
		S	70	69	63	74	65	68
		HKW	42	46	46	47	-	45
		SMK	86	96	-	82	-	88
		O	51	-	-	49	-	50
		P	23	-	-	28	-	26
17	ISK I 2016-31	PS	307	213	197	333	240	258
		D	110	105	126	100	102	109
		S	71	67	66	69	71	69
		HKW	32	41	37	45	-	39
		SMK	91	97	-	84	-	91
		O	49	-	-	48	-	48
		P	23	-	-	27	-	25
18	ISK I 2016-32	PS	314	224	181	333	240	258
		D	112	110	127	103	98	110
		S	72	68	69	72	68	70
		HKW	40	42	52	49	-	46
		SMK	96	98	-	82	-	92
		O	50	-	-	46	-	48
		P	24	-	-	29	-	26
Final plant stand (000/ha)								
	G.M		304	214	177	315	240	250
	S.E. Diff. Mean		11.4	5.4	10.5	7.6	11.3	-
	CD at 5%		22.9	10.8	21.2	15.2	NS	-
	CV %		5.3	3.6	8.4	3.4	6.7	-

ZONE III

Table 3a: INITIAL VARIETAL TRIAL (SPANISH) STAGE I KHARIF 2016

Pod yield (kg/ha)

S.N.	Entry	Gwalior	Akola	Jalgaon	Latur	Raigarh	Shirgaon	Mean	R
1	ISK I 2016-1	2353	2485	3209	2328	1936	2465	2462	7
2	ISK I 2016-2	2454	2697	2413	1614	3116	4215	2751	4
3	ISK I 2016-3	2492	3113	2629	1890	2065	3033	2537	6
4	ISK I 2016-4	1979	2747	2205	1788	2701	3866	2548	5
5	ISK I 2016-5	2905	2898	1635	1681	2630	1912	2277	13
6	ISK I 2016-6	1827	2566	2893	3208	3241	3003	2790	3
7	ISK I 2016-7	1320	2312	1519	1192	1707	2207	1709	17
8	ISK I 2016-8	2453	2169	2782	1555	1732	-	2138	14
9	ISK I 2016-9	2563	2436	2130	1518	2210	3153	2335	12
10	ISK I 2016-10	1712	2358	1930	2081	2053	1801	1989	16
11	ISK I 2016-13	2492	2364	1731	3166	1749	2961	2410	10
12	ISK I 2016-14	2458	2419	3189	2868	3332	3412	2946	2
13	ISK I 2016-15	2654	3220	2913	2179	1624	2093	2447	8
14	ISK I 2016-27	2536	2575	2504	1184	2312	3378	2415	9
15	ISK I 2016-33	2488	2751	2485	1836	1904	2955	2403	11
16	ISK I 2016-34	2135	2456	2492	1570	1501	2385	2090	15
17	ISK I 2016-35	2030	2978	3092	3012	3076	4256	3074	1
	GM	2285	2620	2456	2039	2287	2943	2431	
	S.E. Diff. Mean	94.7	257.6	224.3	176.6	74.2	-	-	
	CD at 5%	190.5	518.0	451.0	355.1	149.1	-	-	
	CV%	5.9	13.9	12.9	12.2	4.6	-	-	

Table 3b: INITIAL VARIETAL TRIAL (SPANISH) STAGE I KHARIF 2016

Kernel yield (kg/ha)

S.N.	Entry	Gwalior	Akola	Jalgaon	Latur	Raigarh	Shirgaon	Mean	R
1	ISK I 2016-1	1594	1589	2063	1591	1341	1533	1618	11
2	ISK I 2016-2	1662	1802	1551	1117	2011	2979	1853	4
3	ISK I 2016-3	1689	2082	1775	1317	1322	2125	1718	5
4	ISK I 2016-4	1297	1862	1371	1235	1790	2717	1712	6
5	ISK I 2016-5	2012	1774	1043	1130	1897	1175	1505	13
6	ISK I 2016-6	1196	1729	2054	2252	2343	2108	1947	3
7	ISK I 2016-7	904	1502	1000	786	1084	1501	1129	17
8	ISK I 2016-8	1681	1580	1989	1103	1130	-	1496	14
9	ISK I 2016-9	1718	1554	1437	1033	1492	2386	1603	12
10	ISK I 2016-10	1138	1464	1260	1389	1343	1199	1299	16
11	ISK I 2016-13	1700	1770	1164	2233	1267	2080	1702	7
12	ISK I 2016-14	1652	1729	2272	1897	2457	2390	2066	2
13	ISK I 2016-15	1805	2424	1974	1500	1168	1317	1698	8
14	ISK I 2016-27	1724	1793	1689	806	1745	2075	1639	9
15	ISK I 2016-33	1667	1976	1549	1248	1208	2103	1625	10
16	ISK I 2016-34	1442	1847	1626	1124	923	1628	1432	15
17	ISK I 2016-35	1390	2083	2179	1981	2291	3178	2184	1
	GM	1545	1798	1647	1396	1577	2031	1660	
	S.E. Diff. Mean	68.4	183.8	157.4	122.0	54.2	-	-	
	CD at 5%	137.6	369.6	316.4	245.3	108.9	-	-	
	CV%	6.3	14.5	13.5	12.4	4.9	-	-	

Table 3c: INITIAL VARIETAL TRIAL (SPANISH) STAGE I KHARIF 2016

Ancillary traits

S.N.	Entry	Trait	Gwalior	Akola	Jalgaon	Latur	Raigarh	Shirgaon	Mean
1	ISK I 2016-1	PS	247	278	265	315	326	287	286
		D	110	119	105	112	133	92	112
		S	68	64	64	68	69	62	66
		HKW	35	36	23	33	50	29	34
		SMK	89	89	90	88	96	84	89
		O	49	51	48	49	-	47	49
		P	27	26	26	26	-	29	27
2	ISK I 2016-2	PS	267	259	252	309	314	318	286
		D	107	115	102	104	136	87	108
		S	68	67	64	69	65	71	67
		HKW	41	61	38	49	60	63	52
		SMK	91	81	96	89	97	86	90
		O	49	51	49	49	-	47	49
		P	27	24	26	24		29	26
3	ISK I 2016-3	PS	266	285	242	318	329	323	294
		D	108	116	101	105	136	88	109
		S	68	67	68	70	64	70	68
		HKW	42	57	45	46	43	49	47
		SMK	91	89	94	86	97	80	89
		O	48	53	52	51	-	49	50
		P	28	25	27	24	-	28	26
4	ISK I 2016-4	PS	208	295	241	295	330	307	279
		D	109	118	104	108	127	93	110
		S	66	68	63	69	66	70	67
		HKW	43	43	33	41	48	48	43
		SMK	90	87	97	88	95	89	91
		O	51	53	52	53	-	48	51
		P	26	25	24	22	-	28	25
5	ISK I 2016-5	PS	296	288	247	319	329	308	298
		D	110	119	107	113	126	87	110
		S	69	61	64	67	72	62	66
		HKW	39	40	28	42	45	41	39
		SMK	88	87	93	88	87	87	88
		O	51	51	51	50	-	47	50
		P	26	23	24	23	-	27	25
6	ISK I 2016-6	PS	198	298	281	312	321	312	287
		D	110	112	109	110	125	94	110
		S	66	67	71	70	72	70	69
		HKW	39	45	32	40	37	55	41
		SMK	88	75	96	89	95	83	88
		O	52	54	53	54	-	49	52
		P	25	24	25	25	-	27	25

S.N.	Entry	Trait	Gwalior	Akola	Jalgaon	Latur	Raigarh	Shirgaon	Mean
7	ISK I 2016-7	PS	76	170	200	260	333	269	218
		D	109	115	107	106	126	91	109
		S	69	65	66	66	64	68	66
		HKW	41	49	29	36	51	40	41
		SMK	87	85	96	88	97	91	90
		O	50	51	50	49	-	47	49
		P	26	24	27	23	-	27	25
8	ISK I 2016-8	PS	263	248	254	319	317	-	280
		D	109	117	102	111	136	-	115
		S	69	73	72	71	65	-	70
		HKW	42	57	37	42	54	-	46
		SMK	89	92	96	89	97	-	92
		O	49	51	50	50	-	-	50
		P	28	25	26	24	-		26
9	ISK I 2016-9	PS	248	317	256	313	333	288	293
		D	108	116	109	104	131	94	110
		S	67	64	67	68	68	76	68
		HKW	43	34	37	51	45	49	43
		SMK	88	88	96	88	96	87	90
		O	50	52	49	49	-	48	50
		P	27	23	24	23	-	27	25
10	ISK I 2016-10	PS	187	258	239	298	325	272	263
		D	110	117	110	111	129	116	115
		S	67	62	65	67	66	67	65
		HKW	34	37	27	36	37	73	41
		SMK	87	84	96	91	95	86	90
		O	52	51	52	55	-	49	52
		P	26	25	28	26	-	28	27
11	ISK I 2016-13	PS	240	278	262	321	320	296	286
		D	109	116	109	105	123	96	110
		S	68	75	67	71	73	70	71
		HKW	35	43	23	38	34	36	35
		SMK	86	69	94	87	92	79	84
		O	52	53	53	53	-	50	52
		P	26	26	26	27	-	29	27
12	ISK I 2016-14	PS	251	304	318	315	314	291	299
		D	110	117	110	107	123	92	110
		S	67	71	71	66	74	70	70
		HKW	41	33	33	40	40	34	37
		SMK	89	74	97	90	95	90	89
		O	52	53	51	52	-	48	51
		PS	26	26	27	27	-	28	27
13	ISK I 2016-15	PS	273	290	268	308	317	312	295
		D	110	118	109	112	127	94	112
		S	68	75	68	69	72	63	69
		HKW	42	38	26	37	42	38	37
		SMK	88	61	98	89	93	84	85
		O	52	53	51	51	-	48	51
		P	27	25	25	24	-	28	26

S.N.	Entry	Trait	Gwalior	Akola	Jalgaon	Latur	Raigarh	Shirgaon	Mean
14	ISK I 2016-27	PS	251	274	271	305	325	300	288
		D	109	117	102	110	124	87	108
		S	68	70	67	68	76	62	68
		HKW	42	47	28	36	43	39	39
		SMK	88	70	96	87	91	84	86
		O	51	53	51	50	-	48	51
		P	26	23	26	22	-	26	25
15	ISK I 2016-33	PS	262	296	248	303	328	314	292
		D	109	118	103	113	134	88	111
		S	67	72	62	68	64	71	67
		HKW	38	42	27	38	38	35	36
		SMK	86	73	94	88	97	91	88
		O	51	53	52	54	-	50	52
		P	27	25	26	24	-	26	26
16	ISK I 2016-34	PS	263	291	254	317	329	302	293
		D	109	118	102	107	129	86	108
		S	68	75	66	72	62	68	68
		HKW	37	47	31	38	48	40	40
		SMK	84	73	94	89	93	87	86
		O	49	51	49	49	-	46	49
		P	27	24	24	22	-	27	25
17	ISK I 2016-35	PS	190	266	274	307	317	308	277
		D	106	118	110	106	127	101	111
		S	69	70	71	66	75	75	71
		HKW	41	52	35	41	44	43	42
		SMK	88	83	97	89	98	82	89
		O	51	52	51	52	-	49	51
		P	28	27	27	25	-	30	28
Final plant stand (000/ha)									
	G.M		234	276	257	308	324	300	283
	S.E. Diff. Mean		8.5	16.3	18.9	5.8	3.2	-	-
	CD at 5%		17.1	32.8	38.1	11.7	6.3	-	-
	CV %		5.1	8.4	10.4	2.7	1.4	-	-

ZONE IV

Table 4a: INITIAL VARIETAL TRIAL (SPANISH) STAGE I KHARIF 2016

Pod yield (kg/ha)

S.N.	Entry	Bhubaneswar	Imphal	Kanke	Mohanpur	Mean	R
1	ISK I 2016-1	1794	2561	2280	1807	2110	10
2	ISK I 2016-2	1476	2159	2431	1484	1887	14
3	ISK I 2016-3	1684	2836	1869	1678	2017	12
4	ISK I 2016-4	1592	2763	2720	2344	2354	6
5	ISK I 2016-5	1522	2538	2199	3171	2357	5
6	ISK I 2016-6	2413	3406	2211	2629	2665	3
7	ISK I 2016-7	1418	971	1482	3660	1883	15
8	ISK I 2016-8	1458	2894	2118	773	1811	16
9	ISK I 2016-9	2315	3729	2442	3834	3080	1
10	ISK I 2016-10	1979	632	1742	2024	1594	17
11	ISK I 2016-13	1424	2788	3264	1762	2309	7
12	ISK I 2016-14	2500	3450	2466	3255	2918	2
13	ISK I 2016-15	2193	3481	1950	1253	2219	8
14	ISK I 2016-36	1719	2329	2552	1985	2146	9
15	ISK I 2016-37	1406	2600	2222	2101	2082	11
16	ISK I 2016-38	1869	1544	2448	1852	1928	13
17	ISK I 2016-39	2060	3144	2170	2449	2456	4
	GM	1813	2578	2269	2239	2225	
	S.E. Diff. Mean	68.1	267.6	223.9	171.4	-	
	CD at 5%	136.9	538.0	450.1	344.6	-	
	CV%	5.3	14.7	14.0	10.8	-	

Table 4b: INITIAL VARIETAL TRIAL (SPANISH) STAGE I KHARIF 2016

Kernel yield (kg/ha)

S.N.	Entry	Bhubaneswar	Imphal	Kanke	Mohanpur	Mean	R
1	ISK I 2016-1	1120	1821	1410	1242	1398	11
2	ISK I 2016-2	974	1513	1465	1028	1245	14
3	ISK I 2016-3	1106	2106	1071	1140	1356	12
4	ISK I 2016-4	1084	1860	1951	1660	1638	6
5	ISK I 2016-5	937	1720	1260	2184	1525	8
6	ISK I 2016-6	1653	2460	1327	1844	1821	3
7	ISK I 2016-7	922	717	996	2605	1310	13
8	ISK I 2016-8	939	2197	1228	545	1227	16
9	ISK I 2016-9	1389	2727	1385	2736	2059	1
10	ISK I 2016-10	1262	442	979	1393	1019	17
11	ISK I 2016-13	945	2052	2335	1253	1646	5
12	ISK I 2016-14	1701	2530	1570	2245	2011	2
13	ISK I 2016-15	1402	2549	1281	855	1522	9
14	ISK I 2016-36	1195	1805	1781	1378	1539	7
15	ISK I 2016-37	900	1990	1336	1495	1430	10
16	ISK I 2016-38	1173	1150	1316	1287	1231	15
17	ISK I 2016-39	1433	2279	1511	1709	1733	4
	GM	1184	1877	1424	1565	1512	
	S.E. Diff. Mean	50.5	196.9	151.9	126.3	-	
	CD at 5%	101.6	395.9	305.4	253.9	-	
	CV%	6.0	14.8	15.1	11.4	-	

Table 4c: INITIAL VARIETAL TRIAL (SPANISH) STAGE I KHARIF 2016

Ancillary traits

S.N.	Entry	Trait	Bhubaneswar	Imphal	Kanke	Mohanpur	Mean
1	ISK I 2016-1	PS	297	279	238	285	275
		D	117	118	122	105	116
		S	63	77	62	69	68
		HKW	26	35	39	42	36
		SMK	77	69	85	89	80
		O	-	48	48	-	48
		P	-	28	27	-	27
2	ISK I 2016-2	PS	280	273	250	256	265
		D	102	113	122	104	110
		S	66	72	60	69	67
		HKW	41	57	53	57	52
		SMK	86	58	98	87	82
		O	-	48	49	-	48
		P	-	27	28	-	28
3	ISK I 2016-3	PS	269	286	278	278	278
		D	103	112	112	105	108
		S	66	70	58	68	65
		HKW	47	50	49	61	52
		SMK	86	66	95	87	83
		O	-	47	48	-	47
		P	-	29	30	-	29
4	ISK I 2016-4	PS	291	275	241	286	273
		D	104	114	120	108	112
		S	68	67	72	71	69
		HKW	39	45	47	56	47
		SMK	87	56	92	90	81
		O	-	49	50	-	49
		P	-	26	28	-	27
5	ISK I 2016-5	PS	289	289	257	295	283
		D	116	117	114	102	112
		S	62	69	58	69	64
		HKW	33	41	39	53	42
		SMK	76	49	87	87	75
		O	-	49	48	-	49
		P	-	25	27	-	26
6	ISK I 2016-6	PS	280	285	252	281	275
		D	114	118	120	107	115
		S	69	72	60	70	68
		HKW	31	51	41	43	42
		SMK	81	77	88	88	84
		O	-	50	51	-	51
		P	-	28	28	-	28
7	ISK I 2016-7	PS	277	58	137	307	195
		D	112	119	112	112	114
		S	65	77	67	71	70
		HKW	22	48	46	39	39
		SMK	88	71	75	86	80
		O	-	53	50	-	51
		P	-	23	28	-	26

S.N.	Entry	Trait	Bhubaneswar	Imphal	Kanke	Mohanpur	Mean
8	ISK I 2016-8	PS	275	293	275	129	243
		D	102	114	118	108	111
		S	64	79	58	70	68
		HKW	33	49	36	61	45
		SMK	90	77	93	90	87
		O	-	50	48	-	49
		P	-	27	27	-	27
9	ISK I 2016-9	PS	285	260	259	290	273
		D	113	118	121	113	116
		S	60	76	57	71	66
		HKW	35	55	50	57	49
		SMK	82	76	90	87	84
		O	-	50	48	-	49
		P	-	26	26	-	26
10	ISK I 2016-10	PS	280	151	185	275	223
		D	115	122	120	103	115
		S	64	75	56	69	66
		HKW	34	36	41	39	38
		SMK	77	67	81	89	79
		O	-	52	49	-	51
		P	-	28	29	-	28
11	ISK I 2016-13	PS	306	307	278	292	296
		D	114	118	117	109	115
		S	67	74	72	71	71
		HKW	28	37	34	40	35
		SMK	83	57	86	88	79
		O	-	53	52	-	53
		P	-	26	29	-	28
12	ISK I 2016-14	PS	311	289	266	311	294
		D	111	118	120	105	114
		S	68	79	64	69	70
		HKW	30	44	35	45	38
		SMK	83	72	82	88	81
		O	-	51	49	-	50
		P	-	28	29	-	28
13	ISK I 2016-15	PS	322	303	278	199	275
		D	112	122	115	107	114
		S	64	77	66	68	69
		HKW	24	40	38	43	36
		SMK	81	66	82	89	79
		O	-	51	51	-	51
		P	-	26	29	-	27
14	ISK I 2016-36	PS	303	278	271	301	288
		D	105	114	118	110	112
		S	70	87	70	69	74
		HKW	33	42	39	47	40
		SMK	93	71	93	87	86
		O	-	50	49	-	49
		P	-	27	28	-	27

S.N.	Entry	Trait	Bhubaneswar	Imphal	Kanke	Mohanpur	Mean
15	ISK I 2016-37	PS	274	273	236	288	268
		D	110	115	118	112	114
		S	64	80	60	71	69
		HKW	25	43	33	45	36
		SMK	90	71	84	88	83
		O	-	49	47	-	48
		P	-	26	26	-	26
16	ISK I 2016-38	PS	282	272	215	211	245
		D	112	120	122	108	116
		S	63	75	54	70	66
		HKW	26	39	34	44	36
		SMK	77	63	89	89	79
		O	-	50	50	-	50
		P	-	26	26	-	26
17	ISK I 2016-39	PS	277	297	250	291	279
		D	104	114	120	110	112
		S	70	74	70	70	71
		HKW	26	37	36	43	36
		SMK	87	55	87	88	79
		O	-	50	49	-	50
		P	-	25	26	-	26
Final plant stand (000/ha)							
	G.M		288	263	245	269	266
	S.E. Diff. Mean		7.2	15.1	20.2	15.6	-
	CD at 5%		14.5	30.3	40.6	31.4	-
	CV %		3.5	8.1	11.7	8.2	-

ZONE V

Table 5a: INITIAL VARIETAL TRIAL (SPANISH) STAGE I KHARIF 2016

Pod yield (kg/ha)

S.N.	Entry	Dharwad	Raichur	Hiriyur	Tirupati	Jagtial	Kadiri	Vriddhachalam	Tindivanam	Mean	R
1	ISK I 2016-1	3653	5975	2966	2463	2964	492	1998	2106	2827	2
2	ISK I 2016-2	2734	3292	1971	2025	2207	321	1823	844	1902	11
3	ISK I 2016-3	2477	1452	1806	1688	1075	347	1916	1116	1485	15
4	ISK I 2016-4	3885	2109	2612	1713	1926	347	1513	942	1881	12
5	ISK I 2016-5	1552	1764	2087	1917	1621	246	1793	1241	1527	14
6	ISK I 2016-6	3992	2287	2710	2969	3516	750	3328	1969	2690	4
7	ISK I 2016-7	2661	3969	1014	1317	650	77	922	299	1363	16
8	ISK I 2016-8	3574	4027	2425	2555	1567	434	2393	1510	2311	9
9	ISK I 2016-9	3381	2733	2512	2725	2713	679	2148	2021	2364	7
10	ISK I 2016-10	3188	3797	2253	2891	2609	648	2109	1012	2313	8
11	ISK I 2016-13	3497	1195	2803	2369	1711	504	1508	862	1806	13
12	ISK I 2016-14	4220	3333	2960	3304	3798	816	3094	2248	2971	1
13	ISK I 2016-15	3416	5781	2333	2456	2907	656	1911	2014	2684	5
14	ISK I 2016-39	3890	4891	3410	2708	2900	599	2659	1295	2794	3
15	ISK I 2016-40	3948	2399	2406	2264	1644	648	1087	1174	1946	10
16	ISK I 2016-41	4121	2471	3803	2453	2719	556	2234	1283	2455	6
	GM	3387	3217	2504	2363	2283	507	2027	1371	2207	
	S.E. Diff. Mean	425.0	450.1	311.8	260.6	150.0	62.0	246.6	65.2	-	
	CD 5%	855.9	906.5	628.1	524.8	302.2	125.0	496.6	131.3	-	
	CV%	17.7	19.8	17.6	15.6	9.3	17.3	17.2	6.7	-	

Table 5b: INITIAL VARIETAL TRIAL (SPANISH) STAGE I KHARIF 2016

Kernel yield (kg/ha)

S.N.	Entry	Dharwad	Raichur	Hiriyur	Tirupati	Jagtial	Kadiri	Vriddhachalam	Tindivanam	Mean	R
1	ISK I 2016-1	2556	3614	2182	1570	1969	332	1215	1476	1864	2
2	ISK I 2016-2	2052	2052	1439	1140	1417	203	1098	561	1245	12
3	ISK I 2016-3	1932	911	1246	1000	648	228	1133	773	984	14
4	ISK I 2016-4	2910	1368	1882	1006	1217	228	952	699	1283	11
5	ISK I 2016-5	1116	953	1463	1110	898	159	1100	827	953	15
6	ISK I 2016-6	2766	1437	1822	1788	2354	517	2098	1423	1776	5
7	ISK I 2016-7	1974	2385	751	754	394	49	434	201	867	16
8	ISK I 2016-8	2847	2406	1652	1772	1133	332	1715	1110	1621	7
9	ISK I 2016-9	2370	1779	1745	1618	1636	444	1258	1308	1520	8
10	ISK I 2016-10	2079	2298	1562	1744	1535	418	1288	694	1452	9
11	ISK I 2016-13	2788	708	2034	1427	959	344	640	571	1184	13
12	ISK I 2016-14	2934	2116	2180	2085	2475	545	1946	1674	1994	1
13	ISK I 2016-15	2556	3790	1545	1530	1854	457	1178	1449	1795	4
14	ISK I 2016-39	2912	3081	2497	1611	1531	406	1695	867	1825	3
15	ISK I 2016-40	3156	1682	1706	1314	970	450	532	808	1327	10
16	ISK I 2016-41	3092	1479	2843	1535	1647	383	1436	877	1661	6
	GM	2502	2004	1784	1438	1415	343	1232	957	1459	
	S.E. Diff. Mean	313.4	322.7	250.4	171.9	112.6	42.5	151.1	43.8	-	
	CD 5%	631.2	650.0	504.3	346.1	226.8	85.6	304.3	88.2	-	
	CV%	17.7	22.8	19.8	16.9	11.3	17.5	17.3	6.5	-	

Table 5c: INITIAL VARIETAL TRIAL (SPANISH) STAGE I KHARIF 2016

Ancillary traits

S.N.	Entry	Trait	Dharwad	Raichur	Hiriyur	Tirupati	Jagtial	Kadiri	Vriddhachalam	Tindivanam	Mean
1	ISK I 2016-1	PS	168	222	174	282	302	277	231	278	242
		D	108	118	127	126	102	116	110	117	115
		S	70	61	84	64	67	68	60	70	68
		HKW	33	31	38	22	19	26	25	31	28
		SMK	93	94	-	72	82	84	73	93	84
		O	48	48	48	49	48	46	48	53	48
		P	28	27	28	25	26	29	27	26	27
2	ISK I 2016-2	PS	151	220	154	237	322	276	241	242	230
		D	105	117	127	126	103	113	90	116	112
		S	75	62	85	57	64	63	60	66	67
		HKW	60	29	45	32	34	37	47	44	41
		SMK	97	94	-	80	91	87	80	96	89
		O	48	47	49	47	49	46	48	51	48
		P	28	26	26	27	24	28	26	26	26
3	ISK I 2016-3	PS	138	218	169	288	259	266	205	299	230
		D	105	115	127	126	102	112	95	116	112
		S	78	63	80	60	61	65	59	69	67
		HKW	65	34	33	33	33	35	44	51	41
		SMK	97	93	-	83	92	84	77	94	88
		O	47	47	51	49	51	46	48	51	49
		P	30	26	28	28	24	29	27	27	27
4	ISK I 2016-4	PS	211	216	176	267	268	266	168	273	231
		D	106	115	127	123	102	114	90	116	112
		S	75	65	82	58	63	66	63	74	68
		HKW	55	41	33	27	33	34	41	42	38
		SMK	98	95	-	81	92	86	73	94	88
		O	50	48	50	49	52	47	49	52	50
		P	27	27	27	27	24	29	26	26	27
5	ISK I 2016-5	PS	152	219	157	279	315	240	309	281	244
		D	106	118	127	123	102	110	105	117	113
		S	72	54	80	58	56	65	61	67	64
		HKW	47	25	48	27	30	33	39	39	36
		SMK	93	93	-	73	88	84	67	98	85
		O	49	48	51	49	48	48	48	51	49
		P	26	25	28	26	23	28	25	25	26
6	ISK I 2016-6	PS	225	219	178	292	299	311	310	277	264
		D	109	116	127	126	105	113	110	120	116
		S	69	63	84	60	67	69	63	72	68
		HKW	36	33	42	27	28	33	38	52	36
		SMK	89	92	-	77	87	78	68	90	83
		O	52	47	54	51	52	48	51	52	51
		P	28	26	27	28	25	28	27	27	27
7	ISK I 2016-7	PS	181	223	178	159	205	126	142	95	164
		D	108	113	127	123	103	116	95	125	114
		S	74	60	81	57	61	63	58	67	65
		HKW	45	29	36	28	28	27	37	37	33
		SMK	96	93	-	66	88	83	62	80	81
		O	48	47	49	48	49	46	48	51	48
		P	27	25	28	27	25	28	26	27	26
8	ISK I 2016-8	PS	216	222	170	267	281	299	263	289	251
		D	108	116	127	123	103	111	95	116	112
		S	81	60	79	70	72	77	72	74	73
		HKW	55	24	49	37	35	35	45	41	40
		SMK	97	96	-	89	90	89	88	97	92
		O	49	47	50	48	52	48	48	52	49
		P	28	24	28	28	24	30	27	27	27

S.N.	Entry	Trait	Dharwad	Raichur	Hiriyur	Tirupati	Jagtial	Kadiri	Vriddhachalam	Tindivanam	Mean
9	ISK I 2016-9	PS	194	216	155	271	325	281	237	275	244
		D	110	112	127	126	108	112	110	118	115
		S	70	65	70	59	60	65	59	65	64
		HKW	53	39	61	31	27	38	51	50	44
		SMK	95	95	-	80	88	82	76	97	88
		O	49	49	50	48	48	47	51	51	49
		P	25	25	27	26	22	28	24	25	25
10	ISK I 2016-10	PS	221	220	157	264	306	231	219	138	220
		D	110	111	127	126	106	115	110	119	115
		S	65	60	76	60	59	65	61	69	64
		HKW	32	27	29	24	23	28	33	32	28
		SMK	85	95	-	76	86	85	72	96	85
		O	52	49	52	50	51	49	51	54	51
		P	28	24	27	28	26	29	26	26	27
11	ISK I 2016-13	PS	235	221	132	305	315	309	310	297	266
		D	110	111	127	123	106	110	105	117	114
		S	80	60	85	60	55	69	43	66	65
		HKW	38	41	41	25	18	29	26	29	31
		SMK	95	93	-	74	79	82	58	88	81
		O	52	48	50	50	51	48	48	54	50
		P	28	27	27	28	24	28	25	24	26
12	ISK I 2016-14	PS	230	219	166	313	289	307	300	246	259
		D	109	112	127	126	107	111	110	118	115
		S	70	63	89	63	65	67	64	74	69
		HKW	38	36	40	27	26	32	37	38	34
		SMK	93	94	-	80	81	80	61	93	83
		O	50	48	51	49	50	48	48	52	49
		P	28	24	28	28	26	29	27	26	27
13	ISK I 2016-15	PS	196	219	170	295	315	297	278	270	255
		D	108	113	127	123	106	116	110	119	115
		S	75	66	85	62	64	70	62	72	69
		HKW	38	29	35	24	24	32	35	31	31
		SMK	93	94	-	72	88	84	66	81	82
		O	52	51	51	50	50	48	49	52	50
		P	27	25	28	27	24	28	25	25	26
14	ISK I 2016-39	PS	247	220	164	258	300	288	288	320	261
		D	107	112	127	123	106	115	95	120	113
		S	75	62	86	60	53	68	64	67	67
		HKW	39	28	49	25	21	29	35	33	32
		SMK	92	94	-	78	85	82	62	96	84
		O	50	50	50	48	48	47	49	51	49
		P	25	27	26	26	23	27	27	25	25
15	ISK I 2016-40	PS	221	216	131	293	286	273	288	310	252
		D	106	113	127	126	107	114	105	117	114
		S	80	70	73	58	59	70	48	69	66
		HKW	37	35	29	23	19	29	28	32	29
		SMK	95	94	-	78	79	87	60	94	84
		O	52	49	52	50	52	48	48	54	51
		P	28	27	29	27	23	28	26	25	27
16	ISK I 2016-41	PS	193	219	154	251	291	304	246	238	237
		D	107	118	127	123	105	113	105	120	115
		S	75	60	88	62	61	69	64	68	68
		HKW	41	25	51	24	24	30	36	32	33
		SMK	94	92	-	76	92	83	63	95	85
		O	50	49	50	48	48	47	47	50	49
		P	25	26	25	26	22	27	25	24	25
Final plant stand (000/ha)											
	G.M		199	219	162	270	292	272	252	258	241
	S.E. Diff. Mean		21.7	3.4	17.3	18.6	9.3	20.7	24.4	11.6	-
	CD at 5%		43.8	NS	NS	37.5	18.7	41.7	49.2	23.3	-
	CV %		15.5	2.2	15.2	9.8	4.5	10.8	13.7	6.3	-

ZONE I

Table 6a: INITIAL VARIETAL TRIAL (VIRGINIA) STAGE I KHARIF 2016

Pod yield (kg/ha)

S.N.	Entry	Mainpuri	Durgapura	Bikaner	Ludhiana	Bawal	Mean	R
1	IVK I 2016-1	1537	3467	3098	1316	1825	2248	15
2	IVK I 2016-2	1301	5083	2554	1383	1303	2324	14
3	IVK I 2016-3	1348	4268	2349	2319	1926	2442	8
4	IVK I 2016-4	1182	4287	2982	2265	3062	2756	2
5	IVK I 2016-5	2206	3509	2976	2306	1308	2461	7
6	IVK I 2016-6	1418	4564	3071	2568	2091	2743	3
7	IVK I 2016-7	2333	3929	2762	1164	1878	2413	10
8	IVK I 2016-8	1970	3687	2827	2257	1280	2404	11
9	IVK I 2016-10	1892	3609	2983	1624	1698	2361	12
10	IVK I 2016-11	1521	2898	4069	1108	1376	2194	16
11	IVK I 2016-12	1458	3985	2831	1379	2121	2355	13
12	IVK I 2016-13	2049	4145	2612	2620	2174	2720	4
13	IVK I 2016-14	2207	3799	2542	1728	3018	2659	5
14	IVK I 2016-15	1978	4674	3996	2462	2298	3081	1
15	IVK I 2016-16	1497	3915	2412	2128	2403	2471	6
16	IVK I 2016-17	1537	4298	2996	1245	2025	2420	9
	G.M	1714	4007	2941	1867	1986	2503	
	S.E. Diff. Mean	84.8	325.0	171.6	136.3	118.0	-	
	CD at 5%	170.8	654.6	345.7	274.4	237.7	-	
	CV %	7.0	11.5	8.3	10.3	8.4	-	

Table 6b: INITIAL VARIETAL TRIAL (VIRGINIA) STAGE I KHARIF 2016

Kernel yield (kg/ha)

S.N.	Entry	Mainpuri	Durgapura	Bikaner	Ludhiana	Bawal	Mean	R
1	IVK I 2016-1	1091	2600	1905	911	1191	1540	15
2	IVK I 2016-2	898	3760	1614	849	893	1603	12
3	IVK I 2016-3	963	2895	1419	1545	1248	1614	11
4	IVK I 2016-4	827	2967	1642	1584	2176	1839	5
5	IVK I 2016-5	1568	2603	1817	1523	839	1670	8
6	IVK I 2016-6	964	3286	1737	1774	1442	1841	4
7	IVK I 2016-7	1609	2925	1773	773	1282	1672	7
8	IVK I 2016-8	1380	2724	1672	1493	834	1621	10
9	IVK I 2016-10	1287	2306	2039	1115	1181	1585	14
10	IVK I 2016-11	1065	2147	2583	750	926	1494	16
11	IVK I 2016-12	991	2883	1740	904	1430	1589	13
12	IVK I 2016-13	1476	3036	1640	1747	1510	1881	2
13	IVK I 2016-14	1562	2810	1806	1094	2049	1864	3
14	IVK I 2016-15	1345	3558	2496	1652	1635	2137	1
15	IVK I 2016-16	1048	2795	1588	1418	1657	1701	6
16	IVK I 2016-17	1060	3160	1772	804	1370	1633	9
	G.M	1196	2903	1827	1246	1354	1705	
	S.E. Diff. Mean	64.8	235.8	161.6	100.3	81.2	-	
	CD at 5%	130.6	475.0	325.5	201.9	163.6	-	
	CV %	7.7	11.5	12.5	11.4	8.5	-	

Table 6c: INITIAL VARIETAL TRIAL (VIRGINIA) STAGE I KHARIF 2016
Ancillary traits

S.N.	Entry	Trait	Mainpuri	Durgapura	Bikaner	Ludhiana	Bawal	Mean
1	IVK I 2016-1	PS	137	151	113	121	98	124
		D	126	130	-	128	127	128
		S	71	75	62	69	65	69
		HKW	50	71	-	39	59	55
		SMK	88	90	-	85	90	88
		O	50	50	-	53	49	50
		P	24	30	-	27	24	26
2	IVK I 2016-2	PS	139	141	97	93	98	113
		D	128	127	-	125	125	126
		S	69	74	63	62	69	67
		HKW	45	94	-	63	74	69
		SMK	85	95	-	74	92	86
		O	49	52	-	54	52	51
		P	22	28	-	25	24	25
3	IVK I 2016-3	PS	134	143	104	98	99	115
		D	116	127	-	126	126	124
		S	72	68	61	67	65	66
		HKW	45	59	-	54	57	54
		SMK	88	85	-	90	87	87
		O	49	51	-	51	52	51
		P	25	29	-	28	25	27
4	IVK I 2016-4	PS	134	148	108	136	104	126
		D	120	129	-	118	129	124
		S	70	69	55	70	71	67
		HKW	39	41	-	38	46	41
		SMK	86	87	-	86	84	86
		O	51	51	-	53	51	52
		P	25	29	-	29	27	28
5	IVK I 2016-5	PS	131	144	105	111	98	118
		D	119	128	-	118	126	123
		S	71	74	61	66	64	67
		HKW	46	61	-	49	50	52
		SMK	95	90	-	88	83	89
		O	51	50	-	53	53	52
		P	24	28	-	28	25	26
6	IVK I 2016-6	PS	134	148	113	187	102	137
		D	127	130	-	124	131	128
		S	68	72	57	69	69	67
		HKW	38	58	-	45	50	48
		SMK	88	91	-	92	91	91
		O	45	49	-	53	50	49
		P	25	28	-	28	25	26
7	IVK I 2016-7	PS	139	152	116	135	101	129
		D	118	128	-	125	128	125
		S	69	74	64	66	68	68
		HKW	43	48	-	38	44	43
		SMK	93	90	-	82	83	87
		O	49	52	-	54	52	52
		P	22	29	-	27	26	26
8	IVK I 2016-8	PS	135	141	118	143	101	128
		D	124	127	-	124	128	126
		S	70	74	59	66	65	67
		HKW	34	50	-	37	47	42
		SMK	90	94	-	88	84	89
		O	50	51	-	55	53	52
		P	25	29	-	27	24	26

S.N.	Entry	Trait	Mainpuri	Durgapura	Bikaner	Ludhiana	Bawal	Mean
9	IVK I 2016-10	PS	132	148	109	159	98	129
		D	120	127	-	129	125	125
		S	68	64	69	69	70	68
		HKW	40	56	-	58	55	52
		SMK	94	89	-	78	84	86
		O	51	50	-	54	52	52
		P	22	27	-	26	24	25
10	IVK I 2016-11	PS	136	143	129	92	99	120
		D	117	126	-	124	126	123
		S	70	74	64	68	67	69
		HKW	38	58	-	49	56	50
		SMK	89	91	-	87	79	87
		O	52	51	-	54	54	53
		P	23	28	-	27	24	25
11	IVK I 2016-12	PS	136	146	125	85	96	118
		D	124	128	-	123	128	126
		S	68	72	62	65	68	67
		HKW	42	56	-	48	61	52
		SMK	88	83	-	82	86	85
		O	49	50	-	51	52	50
		P	23	28	-	26	24	25
12	IVK I 2016-13	PS	131	142	113	183	100	134
		D	126	128	-	124	128	126
		S	72	73	63	67	70	69
		HKW	45	71	-	59	70	61
		SMK	95	84	-	87	88	88
		O	49	49	-	51	51	50
		P	23	28	-	27	24	25
13	IVK I 2016-14	PS	139	145	103	140	103	126
		D	116	126	-	123	126	123
		S	71	74	71	63	68	69
		HKW	46	67	-	55	60	57
		SMK	97	80	-	86	91	89
		O	49	51	-	54	51	51
		P	24	28	-	25	24	25
14	IVK I 2016-15	PS	134	143	111	184	104	135
		D	120	129	-	122	129	125
		S	68	76	62	67	71	69
		HKW	40	58	-	49	61	52
		SMK	96	95	-	87	88	92
		O	50	50	-	52	51	51
		P	23	28	-	26	26	26
15	IVK I 2016-16	PS	137	145	103	118	100	121
		D	121	129	-	123	128	125
		S	70	71	66	66	69	68
		HKW	45	64	-	56	64	57
		SMK	89	95	-	83	79	86
		O	49	50	-	52	51	50
		P	23	29	-	27	25	26
16	IVK I 2016-17	PS	137	145	88	102	98	114
		D	124	128	-	128	124	126
		S	69	74	59	64	68	67
		HKW	50	85	-	69	89	73
		SMK	90	90	-	79	79	84
		O	52	51	-	55	51	52
		P	21	28	-	26	27	26
Final plant stand (000/ha)								
	GM		135	145	110	130	100	124
	S.E. Diff. Mean		3.3	6.0	8.4	12.5	3.9	
	CD at 5%		NS	NS	16.9	25.2	NS	
	CV %		3.4	5.8	10.8	13.6	5.5	

ZONE II

Table 7a: INITIAL VARIETAL TRIAL (VIRGINIA) STAGE I KHARIF 2016

Pod yield (kg/ha)

S.N.	Entry	Junagadh	Amreli	Talod	Mean	R
1	IVK I 2016-1	2817	3848	2315	2993	5
2	IVK I 2016-2	2015	3976	2277	2756	6
3	IVK I 2016-3	2003	3195	1930	2376	7
4	IVK I 2016-4	2640	3849	3006	3165	4
5	IVK I 2016-5	1888	3067	1717	2224	8
6	IVK I 2016-6	2853	4375	2662	3297	3
7	IVK I 2016-7	1754	2847	1736	2112	9
8	IVK I 2016-8	1411	3015	1894	2107	11
9	IVK I 2016-18	1636	2142	967	1582	12
10	IVK I 2016-19	1456	3096	1775	2109	10
11	IVK I 2016-20	2754	3918	3472	3381	1
12	IVK I 2016-21	2906	4016	3086	3336	2
	G.M	2178	3445	2236	2620	
	S.E. Diff. Mean	185.2	302.0	250.4	-	
	CD at 5%	376.7	614.4	509.4	-	
	CV %	12.0	12.4	15.8	-	

Table 7b: INITIAL VARIETAL TRIAL (VIRGINIA) STAGE I KHARIF 2016

Kernel yield (kg/ha)

S.N	Entry	Junagadh	Amreli	Talod	Mean	R
1	IVK I 2016-1	2066	2725	1732	2174	5
2	IVK I 2016-2	1379	2583	1482	1815	6
3	IVK I 2016-3	1277	2029	1290	1532	7
4	IVK I 2016-4	1612	2725	2221	2186	4
5	IVK I 2016-5	1201	1958	1121	1427	8
6	IVK I 2016-6	1901	2962	1837	2233	3
7	IVK I 2016-7	1022	1936	1238	1398	10
8	IVK I 2016-8	822	1966	1364	1384	11
9	IVK I 2016-18	1114	1397	668	1060	12
10	IVK I 2016-19	895	2120	1235	1417	9
11	IVK I 2016-20	1820	2747	2590	2386	1
12	IVK I 2016-21	1856	2781	2225	2287	2
	G.M	1414	2327	1583	1775	
	S.E. Diff. Mean	119.2	214.9	185.5	-	
	CD at 5%	242.4	437.2	377.4	-	
	CV %	11.9	13.1	16.6	-	

Table 7c: INITIAL VARIETAL TRIAL (VIRGINIA) STAGE I KHARIF 2016

Ancillary traits

S.N.	Entry	Trait	Junagadh	Amreli	Talod	Mean
1	IVK I 2016-1	PS	143	108	161	137
		D	124	124	127	125
		S	73	71	75	73
		HKW	64	52	57	58
		SMK	97	97	-	97
		O	49	-	38	44
		P	29	-	-	29
2	IVK I 2016-2	PS	143	107	160	137
		D	123	125	126	125
		S	68	65	65	66
		HKW	70	58	69	66
		SMK	91	96	-	93
		O	52	-	39	46
		P	24	-	-	24
3	IVK I 2016-3	PS	137	111	155	134
		D	122	121	127	123
		S	64	63	67	65
		HKW	39	42	46	42
		SMK	77	95	-	86
		O	50	-	39	44
		P	26	-	-	26
4	IVK I 2016-4	PS	136	96	201	144
		D	126	116	126	123
		S	61	71	74	69
		HKW	27	40	44	37
		SMK	68	97	-	83
		O	50	-	42	46
		P	27	-	-	27
5	IVK I 2016-5	PS	139	106	156	134
		D	123	124	127	125
		S	64	64	65	64
		HKW	39	39	43	40
		SMK	85	96	-	90
		O	50	-	39	44
		P	26	-	-	26
6	IVK I 2016-6	PS	139	109	204	150
		D	123	123	127	124
		S	67	68	69	68
		HKW	49	55	58	54
		SMK	80	99	-	89
		O	48	-	35	42
		P	27	-	-	27

S.N.	Entry	Trait	Junagadh	Amreli	Talod	Mean
7	IVK I 2016-7	PS	132	102	163	133
		D	122	121	126	123
		S	58	68	71	66
		HKW	26	37	39	34
		SMK	59	97	-	78
		O	50	-	43	47
		P	26	-	-	26
8	IVK I 2016-8	PS	135	111	181	143
		D	124	118	125	122
		S	58	65	72	65
		HKW	26	37	46	36
		SMK	71	97	-	84
		O	51	-	44	47
		P	24			24
9	IVK I 2016-18	PS	105	98	77	93
		D	124	123	125	124
		S	68	65	69	67
		HKW	48	46	48	47
		SMK	87	96	-	92
		O	52	-	41	47
		P	24	-	-	24
10	IVK I 2016-19	PS	140	108	145	131
		D	123	116	127	122
		S	61	68	70	66
		HKW	42	44	54	47
		SMK	76	98	-	87
		O	53	-	41	47
		P	25	-	-	25
11	IVK I 2016-20	PS	138	107	201	149
		D	122	115	127	121
		S	66	70	75	70
		HKW	33	38	40	37
		SMK	87	97	-	92
		O	51	-	42	47
		P	29	-	-	29
12	IVK I 2016-21	PS	140	106	178	141
		D	121	117	127	122
		S	64	69	72	68
		HKW	30	41	41	37
		SMK	80	98	-	89
		O	50	-	42	46
		P	29	-	-	29
Final plant stand (000/ha)						
	G.M.		136	106	165	136
	S.E. Diff. Mean		4.5	3.7	9.5	-
	CD at 5%		9.2	7.5	19.3	-
	CV %		4.7	5.0	8.1	-

ZONE IV

Table 8a: INITIAL VARIETAL TRIAL (VIRGINIA) STAGE I KHARIF 2016

Pod yield (kg/ha)

S.N.	Entry	Bhubaneswar	Kanke	Imphal (Manipur)	Mohanpur	Mean	R
1	IVK I 2016-1	2274	1931	2890	1660	2189	6
2	IVK I 2016-2	1954	2297	2239	2348	2209	4
3	IVK I 2016-3	2057	2147	1981	2783	2242	3
4	IVK I 2016-4	2080	2033	3100	2456	2417	1
5	IVK I 2016-5	2120	1959	2388	2984	2363	2
6	IVK I 2016-6	1817	1580	2711	2135	2061	10
7	IVK I 2016-7	1659	1352	1155	1682	1462	13
8	IVK I 2016-8	2242	2120	2908	1527	2199	5
9	IVK I 2016-21	1875	2116	3026	1058	2019	11
10	IVK I 2016-22	1643	1931	2480	1424	1869	12
11	IVK I 2016-23	1627	2234	1953	2577	2098	8
12	IVK I 2016-24	1797	2116	2086	2697	2174	7
13	IVK I 2016-25	1765	1820	2530	2246	2090	9
	G.M	1916	1972	2419	2121	2107	
	S.E. Diff. Mean	67.1	145.1	263.6	122.7	-	
	CD at 5%	136.0	294.3	534.7	248.8	-	
	CV %	4.9	10.4	15.4	8.2	-	

Table 8b: INITIAL VARIETAL TRIAL (VIRGINIA) STAGE I KHARIF 2016

Kernel yield (kg/ha)

S.N.	Entry	Bhubaneswar	Kanke	Imphal (Manipur)	Mohanpur	Mean	R
1	IVK I 2016-1	1380	1287	2177	1185	1507	4
2	IVK I 2016-2	1221	1683	1576	1674	1538	3
3	IVK I 2016-3	1264	1330	1412	1950	1489	7
4	IVK I 2016-4	1400	1447	2230	1704	1695	1
5	IVK I 2016-5	1282	1297	1621	2131	1583	2
6	IVK I 2016-6	1208	1104	2017	1538	1467	9
7	IVK I 2016-7	1009	870	815	1096	947	13
8	IVK I 2016-8	1386	1425	2021	1073	1476	8
9	IVK I 2016-21	1148	1480	2274	717	1405	11
10	IVK I 2016-22	1046	1356	1950	1014	1342	12
11	IVK I 2016-23	1003	1450	1432	1805	1422	10
12	IVK I 2016-24	1138	1439	1495	1953	1506	5
13	IVK I 2016-25	1127	1285	1958	1636	1501	6
	G.M	1201	1342	1767	1498	1452	
	S.E. Diff. Mean	56.6	98.4	192.2	89.0	-	
	CD at 5%	114.8	199.6	389.8	180.5	-	
	CV %	6.7	10.4	15.4	8.4	-	

Table 8c: INITIAL VARIETAL TRIAL (VIRGINIA) STAGE I KHARIF 2016

Ancillary traits

S.No	Entry	Trait	Bhubaneswar	Kanke	Imphal (Manipur)	Mohanpur	Mean
1	IVK I 2016-1	PS	122	128	120	95	116
		D	122	121	123	118	121
		S	61	67	75	71	69
		HKW	34	65	71	65	59
		SMK	81	95	78	87	85
		O	-	46	49	-	48
		P	-	27	26	-	26
2	IVK I 2016-2	PS	130	139	136	151	139
		D	115	120	121	116	118
		S	63	74	70	71	70
		HKW	27	79	71	72	62
		SMK	95	93	57	89	84
		O	-	49	50	-	49
		P	-	28	25	-	27
3	IVK I 2016-3	PS	137	125	122	144	132
		D	118	116	121	115	118
		S	62	62	71	70	66
		HKW	24	62	60	56	50
		SMK	92	95	65	88	85
		O	-	50	51	-	50
		P	-	28	25	-	27
4	IVK I 2016-4	PS	129	120	125	101	119
		D	121	118	121	116	119
		S	67	71	72	69	70
		HKW	36	52	48	52	47
		SMK	89	91	68	88	84
		O	-	50	51	-	51
		P	-	29	27	-	28
5	IVK I 2016-5	PS	136	140	129	141	137
		D	124	115	121	109	117
		S	61	66	68	71	67
		HKW	32	72	50	59	53
		SMK	83	91	57	88	80
		O	-	50	50	-	50
		P	-	28	24	-	26
6	IVK I 2016-6	PS	121	110	124	75	107
		D	122	121	123	114	120
		S	67	70	74	72	71
		HKW	48	76	66	62	63
		SMK	92	88	69	87	84
		O	-	51	48	-	49
		P	-	29	25	-	27
7	IVK I 2016-7	PS	121	113	81	61	94
		D	124	120	130	116	123
		S	61	64	71	65	65
		HKW	26	56	56	50	47
		SMK	89	81	64	87	80
		O	-	50	52	-	51
		P	-	29	28	-	28

S.No	Entry	Trait	Bhubaneswar	Kanke	Imphal (Manipur)	Mohanpur	Mean
8	IVK I 2016-8	PS	141	142	136	140	140
		D	117	120	128	116	120
		S	62	67	70	70	67
		HKW	20	61	45	49	44
		SMK	90	92	68	89	85
		O	-	51	51	-	51
		P	-	29	28	-	28
9	IVK I 2016-21	PS	141	136	137	48	115
		D	121	123	122	119	121
		S	61	70	75	68	68
		HKW	23	56	51	48	45
		SMK	91	96	73	87	87
		O	-	50	51	-	50
		P	-	30	28	-	29
10	IVK I 2016-22	PS	137	139	136	52	116
		D	124	119	123	112	120
		S	64	70	79	71	71
		HKW	24	59	59	59	50
		SMK	89	95	79	89	88
		O	-	50	50	-	50
		P	-	29	27	-	28
11	IVK I 2016-23	PS	129	115	120	78	110
		D	122	123	124	119	122
		S	62	65	73	70	67
		HKW	24	73	81	53	58
		SMK	85	90	74	88	84
		O	-	52	50	-	51
		P	-	28	28	-	28
12	IVK I 2016-24	PS	128	129	129	101	122
		D	124	120	121	117	121
		S	63	68	72	72	69
		HKW	25	56	67	52	50
		SMK	82	83	69	89	81
		O	-	49	50	-	49
		P	-	27	28	-	28
13	IVK I 2016-25	PS	136	139	131	97	126
		D	116	123	121	109	117
		S	64	71	77	73	71
		HKW	34	71	68	50	56
		SMK	86	90	77	88	85
		O	-	50	50	-	50
		P	-	27	27	-	27
Final plant stand (000/ha)							
	G.M.		131	129	125	99	121
	S.E. Diff. Mean		4.4	6.1	4.4	19.3	-
	CD at 5%		8.9	12.4	8.9	39.2	-
	CV %		4.7	6.7	5.0	27.7	-

ZONE V

Table 9a: INITIAL VARIETAL TRIAL (VIRGINIA) STAGE I KHARIF 2016

Pod yield (kg/ha)

S.N.	Entry	Dharwad	Raichur	Hiriyur	Vriddhachalam	Tindivanam	Kadiri	Jagtial	Tirupati	Digraj	Mean	R
1	IVK I 2016-1	2375	1247	2792	1291	2280	528	1022	1804	2288	1736	11
2	IVK I 2016-2	2038	1561	2235	1407	2422	733	964	2053	2156	1730	12
3	IVK I 2016-3	3385	2065	2182	1345	1895	798	1175	1643	2489	1886	6
4	IVK I 2016-4	3643	1388	2464	2052	2452	824	2558	1566	4198	2349	3
5	IVK I 2016-5	2364	2113	2377	1276	1707	648	977	1762	2713	1771	9
6	IVK I 2016-6	3685	1367	2837	1685	2227	924	1312	2186	2915	2126	5
7	IVK I 2016-7	3237	1732	2271	996	1619	579	1590	1553	2506	1787	8
8	IVK I 2016-8	3886	1700	2742	1747	1970	652	1344	2318	3915	2252	4
9	IVK I 2016-20	3329	1403	2879	2082	2374	826	2356	2293	4285	2425	2
10	IVK I 2016-21	3385	1352	2385	2564	2254	902	2878	2136	4052	2434	1
11	IVK I 2016-22	2250	2035	2816	812	1619	668	1481	1324	3231	1804	7
12	IVK I 2016-26	2540	1325	2094	1278	1647	738	1028	1598	2267	1613	13
13	IVK I 2016-28	2458	1624	1608	1016	1400	441	1805	1254	4098	1745	10
	G.M	2967	1608	2437	1504	1990	712	1576	1807	3162	1974	
	S.E. Diff. Mean	492.2	191.1	256.0	278.8	137.5	98.5	116.8	219.6	319.6	-	
	CD at 5%	998.2	387.6	519.3	565.5	278.9	199.8	236.8	445.3	648.2	-	
	CV %	23.5	16.8	14.9	26.2	9.8	19.6	10.5	17.2	14.3	-	

Table 9b: INITIAL VARIETAL TRIAL (VIRGINIA) STAGE I KHARIF 2016

Kernel yield (kg/ha)

S.N.	Entry	Dharwad	Raichur	Hiriyur	Vriddhachalam	Tindivanam	Kadiri	Jagtial	Tirupati	Digraj	Mean	R
1	IVK I 2016-1	1887	857	2029	780	1573	387	670	1107	1567	1206	8
2	IVK I 2016-2	1471	1044	1621	788	1531	464	563	1079	1576	1126	12
3	IVK I 2016-3	2566	1482	1394	750	1246	486	601	865	1842	1248	6
4	IVK I 2016-4	2750	916	1707	1238	1760	552	1605	895	2495	1546	3
5	IVK I 2016-5	1766	1341	1697	705	1130	401	567	982	1922	1168	11
6	IVK I 2016-6	2742	962	1926	1093	1521	645	806	1324	1938	1439	5
7	IVK I 2016-7	2470	1121	1591	597	1137	376	898	867	1619	1186	10
8	IVK I 2016-8	2994	1100	1951	878	1417	424	744	1316	2403	1469	4
9	IVK I 2016-20	2520	910	2097	1425	1727	541	1413	1262	2652	1616	2
10	IVK I 2016-21	2574	843	1773	1752	1581	597	1866	1243	2561	1643	1
11	IVK I 2016-22	1749	1351	1987	553	1132	431	870	779	2290	1238	7
12	IVK I 2016-26	1921	937	1408	800	1025	464	610	926	1354	1049	13
13	IVK I 2016-28	1896	1083	1037	580	934	290	1142	726	3008	1188	9
	G.M	2254	1073	1709	918	1363	466	950	1028	2094	1317	
	S.E. Diff. Mean	374.6	120.7	192.4	179.1	93.1	67.2	90.5	153.3	203.7	-	
	CD at 5%	759.7	244.7	390.2	363.2	188.9	136.3	183.5	310.8	413.1	-	
	CV %	23.5	15.9	15.9	27.6	9.7	20.4	13.5	21.1	13.8	-	

Table 9c: INITIAL VARIETAL TRIAL (VIRGINIA) STAGE I KHARIF 2016

Ancillary traits

S.N	Entry	Trait	Dharwad	Raichur	Hiriyur	Vriddhachalam	Tindivanam	Kadiri	Jagtial	Tirupati	Digraj	Mean
1	IVK I 2016-1	PS	136	230	99	122	130	127	143	122	142	139
		D	121	111	128	115	127	120	120	137	117	122
		S	79	69	73	60	69	73	66	61	68	69
		HKW	66	47	98	53	56	37	30	31	53	52
		SMK	95	93	-	75	97	85	89	78	90	88
		O	47	49	49	50	52	47	50	48	45	48
		P	26	27	29	25	25	26	21	26	27	26
2	IVK I 2016-2	PS	134	231	113	139	140	137	145	127	139	145
		D	122	115	128	120	127	125	121	137	121	124
		S	72	67	72	55	63	63	59	53	73	64
		HKW	79	32	70	46	63	36	41	33	52	50
		SMK	93	93	-	78	92	84	85	85	91	88
		O	47	51	49	49	51	48	51	49	46	49
		P	25	28	27	25	26	25	22	25	26	25
3	IVK I 2016-3	PS	124	228	115	86	141	139	143	123	140	138
		D	119	114	128	120	129	120	113	137	118	122
		S	76	72	64	56	66	61	52	53	74	64
		HKW	57	41	71	46	47	32	28	29	58	45
		SMK	95	93	-	74	98	84	81	78	90	87
		O	48	47	50	50	52	47	50	49	49	49
		P	26	28	27	25	25	26	23	26	28	26
4	IVK I 2016-4	PS	135	233	109	124	105	119	142	117	140	136
		D	117	119	128	115	129	115	114	137	122	122
		S	76	66	69	61	72	67	63	57	60	66
		HKW	46	37	59	37	41	28	25	20	52	38
		SMK	94	93	-	65	96	86	79	74	92	85
		O	51	49	50	50	52	48	51	48	50	50
		P	28	24	29	27	27	27	26	27	28	27
5	IVK I 2016-5	PS	116	231	101	112	124	131	136	119	142	135
		D	120	110	128	116	127	117	114	137	118	121
		S	75	64	71	56	66	62	58	56	71	64
		HKW	56	33	62	42	49	31	26	27	53	42
		SMK	97	93	-	80	97	82	84	81	90	88
		O	49	49	50	50	52	48	49	48	49	49
		P	26	23	26	24	25	26	23	25	26	25

S.N	Entry	Trait	Dharwad	Raichur	Hiriyur	Vriddhachalam	Tindivanam	Kadiri	Jagtial	Tirupati	Digraj	Mean
11	IVK I 2016-22	PS	130	226	118	105	95	142	147	115	141	135
		D	120	119	128	118	129	119	120	137	118	123
		S	78	67	71	68	70	64	59	59	71	67
		HKW	48	36	86	41	44	31	26	25	57	44
		SMK	95	94	-	74	83	84	84	77	90	85
		O	48	49	50	49	52	47	50	48	49	49
		P	25	24	27	25	24	26	24	25	27	25
12	IVK I 2016-26	PS	127	225	101	128	129	138	142	122	138	139
		D	119	120	128	118	130	120	113	137	119	123
		S	76	71	67	63	62	63	59	58	60	64
		HKW	64	37	66	53	48	32	30	28	55	46
		SMK	97	93	-	79	96	83	86	79	91	88
		O	49	49	50	50	51	48	49	48	48	49
		P	26	24	27	26	25	26	28	25	26	26
13	IVK I 2016-28	PS	130	232	112	138	111	115	144	126	139	139
		D	118	119	128	116	129	120	121	137	121	123
		S	77	67	64	58	67	66	63	58	74	66
		HKW	38	34	50	34	38	23	24	21	47	34
		SMK	95	94	-	52	96	82	90	75	91	84
		O	52	52	52	52	54	50	51	50	51	52
		P	26	25	28	25	25	25	24	25	27	25
Final plant stand (000/ha)												
	G.M.		132	229	108	129	124	134	142	124	140	140
	S.E. Diff. Mean		11.1	2.3	13.1	20.1	8.9	13.8	2.7	9.8	2.0	-
	CD at 5%		NS	4.6	NS	40.8	18.1	NS	NS	NS	NS	-
	CV %		11.9	1.4	17.3	22.1	10.2	14.6	2.7	11.2	2.1	-

S.N	Entry	Trait	Dharwad	Raichur	Hiriyur	Vriddhachalam	Tindivanam	Kadiri	Jagtial	Tirupati	Digraj	Mean
6	IVK I 2016-6	PS	136	230	104	135	133	142	143	126	141	143
		D	121	115	128	115	130	120	121	137	123	123
		S	75	70	68	66	68	70	62	60	66	67
		HKW	59	48	91	46	56	39	33	37	52	51
		SMK	95	95	-	71	96	84	88	84	90	88
		O	46	49	49	48	52	49	49	47	46	48
		P	26	25	27	25	24	27	23	26	27	25
7	IVK I 2016-7	PS	136	231	112	124	103	141	143	124	142	140
		D	121	115	128	116	130	120	114	137	120	122
		S	77	65	70	60	70	65	57	56	64	65
		HKW	46	33	65	36	49	32	27	26	51	40
		SMK	94	92	-	69	98	83	86	83	90	87
		O	49	50	52	50	53	50	51	49	49	50
		P	26	25	27	26	26	25	25	25	28	26
8	IVK I 2016-8	PS	138	229	93	148	144	131	143	132	139	144
		D	118	115	128	116	130	115	121	137	119	122
		S	77	65	71	53	72	65	56	57	61	64
		HKW	47	34	67	41	44	32	26	27	48	41
		SMK	93	94	-	72	92	82	89	84	91	87
		O	50	49	52	50	54	49	51	50	50	50
		P	26	24	27	26	25	26	23	25	28	26
9	IVK I 2016-20	PS	140	230	107	161	119	151	143	139	143	148
		D	119	116	128	115	130	120	120	137	117	122
		S	76	65	73	68	73	66	60	55	62	66
		HKW	46	41	58	39	44	29	29	19	50	39
		SMK	98	93	-	77	91	86	89	77	91	88
		O	51	48	51	50	52	49	51	48	49	50
		P	28	25	29	28	27	26	26	27	29	27
10	IVK I 2016-21	PS	136	228	115	154	133	135	139	128	138	145
		D	119	120	128	116	129	120	121	137	117	123
		S	76	63	75	68	70	66	65	58	64	67
		HKW	46	40	54	40	40	27	26	20	48	38
		SMK	96	94	-	71	95	84	81	76	90	86
		O	50	49	50	50	51	48	50	47	49	49
		P	28	28	27	28	27	27	27	27	28	27

Table 10a: LARGE SEEDED VARIETAL TRIAL KHARIF 2016

Pod yield (kg/ha)

S.N.	Entry	Ludhiana	Durgapura	Shirgaon	Dharwad	Junagadh	Rahuri	Mean	R
1	LSVT-I- 2016-1	2873	4144	1371	2255	2774	2511	2655	2
2	LSVT-I- 2016-2	1749	3286	1243	1875	2735	1805	2115	7
3	LSVT-I- 2016-3	1001	2427	1322	1948	2296	2091	1848	12
4	LSVT-I- 2016-4	1583	3432	1320	1981	2018	2671	2167	6
5	LSVT-I- 2016-5	2407	2475	1199	1820	1667	2577	2024	9
6	LSVT-I- 2016-6	1135	3223	855	2318	1990	2518	2006	10
7	LSVT-I- 2016-7	2138	4157	1295	1081	2277	2060	2168	5
8	LSVT-I- 2016-9	1180	2722	1695	2167	1746	2904	2069	8
9	LSVT-I- 2016-10	3250	4356	1501	2322	1788	3215	2739	1
10	LSVT-I- 2016-11	3331	3777	1096	1244	2618	2023	2348	4
11	LSVT-I- 2016-12	1198	2483	1087	2419	1733	2343	1877	11
12	LSVT-I- 2016-13	816	2558	1158	1496	1307	-	1467	13
13	LSVT-I- 2016-14	2782	4291	1623	2158	2596	2349	2633	3
	G.M	1957	3333	1290	1929	2119	2422	2163	
	S.E. Diff. Mean	150.4	218.5	145.1	253.7	191.3	-	-	
	CD at 5%	305.0	443.0	294.3	514.5	387.9	-	-	
	CV %	10.9	9.3	15.9	18.6	12.8	-	-	

Table 10b: LARGE SEEDED VARIETAL TRIAL KHARIF 2016

Kernel yield (kg/ha)

S.N.	Entry	Ludhiana	Durgapura	Shirgaon	Dharwad	Junagadh	Rahuri	Mean	R
1	LSVT-I- 2016-1	1935	2980	1001	1673	1919	1694	1867	2
2	LSVT-I- 2016-2	1118	2320	641	1320	1858	1229	1414	7
3	LSVT-I- 2016-3	612	1804	911	1371	1441	1437	1262	12
4	LSVT-I- 2016-4	1005	2545	824	1366	1317	1778	1472	5
5	LSVT-I- 2016-5	1620	1697	907	1352	1084	1772	1405	9
6	LSVT-I- 2016-6	790	2317	626	1752	1382	1705	1428	6
7	LSVT-I- 2016-7	1202	2922	867	784	1349	1353	1413	8
8	LSVT-I- 2016-9	749	1833	1186	1578	1122	1961	1404	10
9	LSVT-I- 2016-10	2185	3177	1076	1707	1214	2202	1927	1
10	LSVT-I- 2016-11	2126	2753	814	947	1730	1397	1628	4
11	LSVT-I- 2016-12	716	1792	679	1832	1201	1600	1303	11
12	LSVT-I- 2016-13	551	1775	845	1085	841	-	1019	13
13	LSVT-I- 2016-14	1824	3033	1201	1535	1753	1594	1823	3
	G.M	1264	2381	890	1408	1401	1643	1490	
	S.E. Diff. Mean	107.5	154.5	98.7	184.4	118.5	-	-	
	CD at 5%	218.0	313.4	200.1	373.9	240.4	-	-	
	CV %	12.0	9.2	15.7	18.5	12.0	-	-	

Table 10c: LARGE SEEDED VARIETAL TRIAL KHARIF 2016

Ancillary traits

S.N.	Entry	Trait	Ludhiana	Durgapura	Shirgaon	Dharwad	Junagadh	Rahuri	Mean
1	LSVT-I- 2016-1	PS	179	136	73	140	140	130	133
		D	125	129	117	121	121	116	121
		S	67	72	73	74	69	67	70
		HKW	70	88	66	88	68	80	77
		SMK	92	70	88	97	85	92	88
		O	52	49	48	47	49	-	49
		P	28	27	28	25	25	-	27
2	LSVT-I- 2016-2	PS	132	142	74	118	140	112	120
		D	122	112	108	110	117	113	114
		S	64	71	52	70	68	68	65
		HKW	54	75	85	54	65	64	66
		SMK	94	81	85	97	92	95	91
		O	50	49	47	46	49	-	48
		P	26	28	28	26	25	-	26
3	LSVT-I- 2016-3	PS	109	140	75	116	137	119	116
		D	130	130	117	118	120	114	122
		S	61	74	69	70	63	69	68
		HKW	47	88	93	86	73	76	77
		SMK	80	85	81	98	93	94	88
		O	50	48	49	46	49	-	48
		P	26	27	28	25	25	-	26
4	LSVT-I- 2016-4	PS	98	145	76	133	138	128	120
		D	126	128	117	119	123	116	121
		S	64	74	62	69	65	67	67
		HKW	67	89	62	77	68	72	72
		SMK	83	77	90	95	78	91	86
		O	53	51	49	47	50	-	50
		P	26	28	30	25	25	-	27
5	LSVT-I- 2016-5	PS	181	143	76	126	143	126	133
		D	122	126	115	120	122	109	119
		S	67	69	76	74	65	69	70
		HKW	63	75	83	76	66	63	71
		SMK	91	82	83	96	92	94	90
		O	53	51	51	49	51	-	51
		P	28	30	29	27	26	-	28
6	LSVT-I- 2016-6	PS	166	139	80	139	147	126	133
		D	126	127	115	117	121	113	120
		S	69	72	73	76	69	68	71
		HKW	47	67	99	72	56	65	68
		SMK	90	90	85	98	91	91	91
		O	53	53	50	48	52	-	51
		P	29	28	29	25	26	-	27
7	LSVT-I- 2016-7	PS	147	142	77	115	137	135	126
		D	109	110	109	113	121	113	112
		S	56	70	67	73	59	66	65
		HKW	50	78	94	58	54	69	67
		SMK	84	87	85	97	82	94	88
		O	51	51	48	46	51	-	49
		P	26	27	30	26	24	-	27

S.N.	Entry	Trait	Ludhiana	Durgapura	Shirgaon	Dharwad	Junagadh	Rahuri	Mean
8	LSVT-I- 2016-9	PS	168	145	77	131	138	143	134
		D	123	129	112	121	121	109	119
		S	63	67	70	73	64	68	68
		HKW	46	61	74	66	58	65	62
		SMK	84	88	83	96	94	88	89
		O	54	52	50	49	51	-	51
		P	28	29	30	27	26	-	28
9	LSVT-I- 2016-10	PS	149	143	80	137	142	136	131
		D	124	128	118	122	124	114	122
		S	67	73	72	74	68	69	70
		HKW	52	68	84	62	46	68	63
		SMK	93	90	88	97	89	93	91
		O	52	51	50	48	50	-	50
		P	28	29	29	25	25	-	27
10	LSVT-I- 2016-11	PS	142	142	76	111	137	123	122
		D	114	125	114	110	121	114	116
		S	64	73	74	76	66	69	70
		HKW	51	78	79	55	52	65	63
		SMK	83	91	84	96	93	90	90
		O	54	51	51	48	53	-	51
		P	28	28	29	26	24	-	27
11	LSVT-I- 2016-12	PS	118	137	75	131	141	118	120
		D	124	126	121	118	121	112	120
		S	60	72	62	76	69	68	68
		HKW	34	74	45	52	45	68	53
		SMK	92	82	91	94	84	90	89
		O	53	50	48	47	51	-	50
		P	27	28	30	27	27	-	28
12	LSVT-I- 2016-13	PS	93	143	75	68	75	-	91
		D	126	127	112	120	123	-	122
		S	68	69	73	73	64	-	69
		HKW	62	77	85	66	52	-	69
		SMK	81	96	81	93	87	-	88
		O	52	50	49	50	49	-	50
		P	27	28	28	25	25	-	27
13	LSVT-I- 2016-14	PS	147	139	74	131	140	126	126
		D	116	128	118	121	122	109	119
		S	66	71	74	71	68	68	69
		HKW	63	83	86	77	72	72	75
		SMK	89	80	81	93	95	90	88
		O	52	49	50	45	49	-	49
		P	27.6	27.6	28	24.7	26	-	27
Final plant stand (000/ha)									
	GM		141	141	76	123	135	127	123
	S.E. Diff. Mean		13.2	2.6	2.9	10.9	2.9	-	-
	CD at 5%		26.9	5.2	NS	22.1	5.9	-	-
	CV %		13.3	2.6	5.3	12.6	3.1	-	-

Initial Varietal Trial (IVT stage I & II- Pooled)

Habit Group: Spanish Bunch

In this trial there were 13 entries. The check varieties used were TAG 24 (ZC) and TG 37A (ZC) in **Zone I**; TG 37A (ZC), GG 7 (ZC), SG 99 (ZC), JL 501 (ZC) and GJG 9 (ZC) in **Zone II**; TAG 24 (ZC), AK 159 (ZC), GG 8 (ZC) and JL 776 (ZC) in **Zone III**; OG 52-1 (ZC), Girnar 3 (ZC), GPBD 5 (ZC) and R 2001-2 (ZC) in **Zone IV**; and R 2001-2 (ZC), R 2001-3 (ZC), GPBD 4 (ZC), and VG 9816 (ZC) in **Zone V**. The trial was allotted to 24 locations/centres and all of them have conducted the trial for over two years and reported the data. The zone-wise results are presented below (**Tables 11a through 15c**).

Whenever, the coefficient of variation exceeded 25% in a particular location over two years or the mean yield of the location fell below 1412 kg/ha (triennial national average of *kharif season*, 2014 to 2016), the data could not be included in the pooled analyses.

ZONE I

There were four locations in this zone namely Mainpuri (Uttar Pradesh), Durgapura and Bikaner (Rajasthan) and Ludhiana (Punjab). The trials have been conducted over two years by all the four centres. The centre-wise results are presented below (**Tables 11a through 11c**). The Coefficient of variation (CV %) was about 11% both for pod and kernel yield and the CV% was well within limits at three centres, except for Bikaner centre where the CV% was 37.3% in the first year (2015) due to very low plant stand while the CV% in the second year (2016) was very low (7.2%) in spite of the very low plant stand at harvest. Hence the data of this centre was not included in the pooled analysis. The centre-wise results are presented below.

Mainpuri
In this location, the mean pod and kernel yield of the genotypes over two years were 1615 kg/ha and 1143 kg/ha respectively. Over the two test years the zonal check, TG 37A was the best for both pod (1916 kg/ha) and kernel (1372 kg/ha) yield. Among the test genotypes, GKVK 5 was the best and recorded significant higher pod (2234 kg/ha) and kernel yield (1564 kg/ha) over the best check, TG 37A (ZC).

Durgapura
The mean pod (4286 kg/ha) and kernel (2922 kg/ha) yield levels over the two test years in this location were very high. Over the two test years, the zonal check variety, TAG 24 recorded a high pod and kernel yield of 4997 kg/ha and 3656 kg/ha respectively. Among the test genotypes, VG 13127 was the best and recorded numerically higher pod (5347 kg/ha) and kernel yield (3817 kg/ha) over the best check, TAG 24 (ZC) but remained at par for both pod and kernel yield.

Bikaner
The mean pod (3035 kg/ha) and kernel (1852 kg/ha) yield levels over the two test years in this location were high. Over the two test years, the zonal check variety, TG 37A recorded a very high pod and kernel yield of 3552 kg/ha and 2105 kg/ha respectively. Among the test genotypes, VG 13127 was the best with a higher pod (3744 kg/ha) and

kernel yield (2263 kg/ha) over the best check, TG 37A (ZC) but remained at par with the best check, TG 37A (ZC) for both pod and kernel yield.

Ludhiana

The mean pod (2393 kg/ha) and kernel (1615 kg/ha) yield levels over the two test years in this location were moderate. The plant stand was low during both the years. Over the two test years, the zonal check variety, TAG 24 recorded a very high pod yield of 3084 kg/ha and kernel yield of 2169 kg/ha respectively. Although the test genotype TG 80 was found the best and recorded a high pod (3352 kg/ha) and kernel (2244 kg/ha) yield but the yield differences in yields were at par with the best check TAG 24 (ZC).

Zonal Mean performances

At Bikaner centre the CV% was 37.3% in the first year (2015) and the plant stand was also very low while the CV% in the second year (2016) was very low (7.2%) in spite of the very low plant stand at harvest. Hence the data of this centre was not included in the pooled analysis. The mean pod (2765 kg/ha) and kernel (1893 kg/ha) yield levels over the two test years and three locations in this zone were high. Across three test locations and over two years, TAG 24 (ZC) was the best check for pod and kernel yield (3262 and 2240 kg/ha) respectively. Among the test genotypes, GKVK 5 was the best for pod (3393 kg/ha) and next to the best in terms of kernel yield (2407 kg/ha) whereas for pod yield, JL 1085 was next to the best for pod (3383 kg/ha) yield but remained the best for kernel (2449 kg/ha) yield among the test genotypes. Both these two genotypes remained at par with the yield levels of the best check TAG 24 (ZC).

Ancillary Observation

The plant stand was low at Bikaner and Ludhiana during both the years. The test genotypes and check varieties matured around 115 days. Shelling outturn was high (~69%) in many genotypes and high (73%) in JL 1085. Seed size was small (35g/100 kernel) and large (47 g/100 kernel) in TAG 24 (ZC). Oil content was 51% in all the genotypes except for NRCG CS 363 and NRCG CS 332 which was 50%. Protein content was high (27%) in all the genotypes **(Table 11c).**

Conclusion

Since none of the test genotypes could significantly surpass the yield levels of the best check, TAG 24 (ZC) over three locations and two years, none deserves promotion to Advanced Varietal Trial (AVT).

ZONE II

There were four test locations in this zone. Three centres in Gujarat (Junagadh, Amreli, and Talod) and one in southern Rajasthan (Udaipur). The centre-wise results are presented below (**Tables 12a through 12c**). The Coefficient of variation (CV %) was about 12% for pod and 13% for kernel yield the CV% was well within limits at all the four centres. The centre-wise results are presented below.

Junagadh

Over two years, the pod and kernel yields in this centre were high (3187 kg/ha and 2113 kg/ha). Over two years among the five check varieties used, the zonal check variety, JL 501 was the best for both pod (3909 kg/ha) and kernel yield (2677 kg/ha).

Among the 13 test genotypes, JL 1085 was the best for pod (4126 kg/ha) and kernel yield (2830 kg/ha) but remained at par with those of the best check JL 501.

Amreli

Over two years, the pod and kernel yields in this centre were high (3629 kg/ha of pod and 2470 kg/ha of kernel). Over two years among the five check varieties used, the zonal check variety, JL 501 was the best for both pod (3800 kg/ha) and kernel yield (2657 kg/ha) and none of the test genotypes exhibited significant superior yields over this best check. However, among the test genotype, JL 1085 was the best for pod (4321 kg/ha) and kernel (3009 kg/ha) yield.

Talod

The mean pod (3546 kg/ha) and kernel (2408 kg/ha) yield levels over the two test years in this location were high. Over the two test years, for pod (4401 kg/ha) and kernel (2927 kg/ha) yield, SG 99 (ZC) was the best and out yielded all the 13 test genotypes for both pod and kernel yield. Among the test genotypes, TG 80 was superior for pod (4316 kg/ha) while VG 13127 was superior for kernel (3020 kg/ha) yields.

Udaipur

In this location, over two years, the mean pod (2920 kg/ha) and kernel yield (2041 kg/ha) were high. Over two years among the five check varieties used, the zonal check variety, JL 501 was the best for both pod (3555 kg/ha) while SG 99 (ZC) was the best for kernel yield (2525 kg/ha) and both the checks out yielded all the test genotypes for pod and kernel yield respectively. Among the test genotypes, J 88 was superior for pod (3476 kg/ha) while TG 80 was superior for kernel (2530 kg/ha) yields.

Zonal Mean Performances

The mean pod (3321 kg/ha) and kernel (2258 kg/ha) yield levels over the two test years in this zone were high. Across the four locations and over two years, zonal check variety, JL 501 was the best for pod (3745 kg/ha) and kernel (2604 kg/ha) yield. None of the test genotypes exhibited significant superior yields over this best check. However, among the test genotype, TG 80 was the best for pod (3876 kg/ha) while JL 1085 was superior for kernel (2676 kg/ha) yield.

Ancillary Observation

Plant population was very low in Talod and low in Amreli. The test genotypes and check varieties matured around 110 days. Shelling outturn was low (63%) in VG 13153 and whereas it was high (74%) in NRCGCS 363 and (73%) in PBS 15041. Seed Weight was low (37 g) in VG 13127 and high (46 g) in SG 99 (ZC). In general oil content was low (~45%) in most of the genotypes during first year at Talod and Udaipur centre leading to very low mean oil contents in most of the genotypes over locations. Oil content ranged from 45% to a moderate level of 48% in J 88.

Conclusion

Over two years and four locations, none of the test genotype exhibited significant yield superiority over those of the best zonal check variety, JL 501 and hence none deserves promotion to AVT.

Zone III

The trial was allotted to five locations and all of them conducted the trial and reported the data. There were four checks, TAG 24 (ZC), AK 159 (ZC), GG 8 (ZC) and JL 776 (ZC). The Coefficient of variation (CV%) was about 16% both for pod and kernel yield and the CV% was high (26%) during 2015 at Gwalior, just above the acceptable limit. The centre-wise results are presented below. The centre-wise results are presented below (**Tables 13a through 13c**).

Gwalior
In this location, over two years, the mean pod (2396 kg/ha) and kernel yield (1585 kg/ha) were high. The zonal check variety, TAG 24 was the best with a high pod (3130 kg/ha) and kernel yield (2115 kg/ha) and out yielded all the other checks and test genotypes. Among the test genotypes, J 89 was the best for pod (2916 kg/ha) and kernel (1976 kg/ha) yields.

Akola
In this location, over two years, the mean pod (2748 kg/ha) and kernel yield (1786 kg/ha) were high. Over two years in this location there were no significant differences among the checks and test genotypes. Under this circumstance, the zonal check variety, AK 159 was the best with a very high pod (3065 kg/ha) and kernel yield (2024 kg/ha). While among the test genotypes, JL 1085 was the best for pod (3360 kg/ha) and kernel (2232 kg/ha) yields.

Jalgaon
In this centre, over two years, the mean pod (2240 kg/ha) and kernel yield (1524 kg/ha) were low. The zonal check variety, JL 776 was the best for pod (3035 kg/ha) and kernel yield (2100 kg/ha). One entry JL 1085 recorded significant higher pod (3491 kg/ha) and kernel (2481 kg/ha) yields over this best check variety.

Shirgaon
Over two years in this centre, the mean pod (3824 kg/ha) and kernel yield (2668 kg/ha) were very high. The zonal check variety, JL 776 was the best for pod (4572 kg/ha) and kernel yield (3300 kg/ha). None of the test entries could significantly surpass the yield levels of this check variety. Among the test genotypes, RTNG 42 was the best for pod (4580 kg/ha) and kernel (3355 kg/ha) yields.

Latur
Over two years in this centre, the mean pod (1982 kg/ha) and kernel yield (1339 kg/ha) were high looking in to *kharif* situation at this centre. The zonal check variety, JL 776 was the best for pod (2314 kg/ha) and kernel yield (1518 kg/ha). Two test entries significantly surpassed the yield levels of this check variety. These test genotypes were VG 13127 with 2822 kg of pod and 1921 kg of kernel per ha and JL 1085 with 2821 kg of pod and 1944 kg of kernel per ha.

Zonal Mean Performances
The mean pod (2638 kg/ha) and kernel (1781 kg/ha) yield levels over the two test years in this zone were very high. Across the five locations, and over two years, JL 776 (ZC) was the best check for pod (3047 kg/ha) as well as kernel yield (2079 kg/ha). None of the test entries could significantly surpass the yield levels of this check variety. Among

the test genotypes, JL 1085 was the best for pod (3249 kg/ha) and kernel (2187 kg/ha) yields.

Ancillary Observation

The plant population was suboptimal at Akola, and Gwalior. The test genotypes and check varieties matured around 110 days. Shelling out-turn ranged from 64% in VG 13153 to 69% in NRCG CS 363 and PBS 15041. The 100-seed weight was medium (41 g) in VG 13153 and large (50 g) in TG 80. Oil content of the genotypes was high in this centre and it was ≥50% eight out of 14 genotypes. Protein content was between 24% to 26% in these genotypes.

Conclusion

Over two years and five locations, none of the test genotypes exhibited significant yield superiority over those of the best zonal check variety, JL 776 and hence none deserves promotion to AVT.

Zone IV

There were four centres in this zone. Imphal (Manipur), Bhubaneswar (Odisha), Kanke (Jharkhand) and Mohanpur (West Bengal). The Bhubaneswar centre did not provide the data of the first year (2015) and hence the data of this centre could not be included for pooled analyses. The check varieties used were OG 52-1 (ZC), Girnar-3 (ZC), GPBD-5 (ZC) and R 2001-2 (ZC). The Coefficient of variation (CV%) was about 14% both for pod and kernel yield and the CV% was well within the limits across the locations. The centre-wise results are presented below (**Tables 14a through 14c**).

Imphal

Over two years, in this centre, the mean yields of this centre was high (2509 kg/ha of pod and 1767 kg/ha of kernel). The zonal check variety, OG 52-1 was the best for pod (2627 kg/ha) and kernel (1931 kg/ha) yield. Though two genotypes VG 13163 (3306 kg/ha) and VG 13153 (3232 kg/ha) could significantly surpass the pod yield of this check variety but for kernel yield they lost their significance level.

Kanke

In this location, over two years, the mean pod (1773 kg/ha) and kernel yield (1102 kg/ha) were moderate. The zonal check variety, Girnar-3 was the best check of this centre over two years for pod (1927 kg/ha) and kernel (1071 kg/ha) yield. None of the genotypes could significantly surpass the pod yield of this check variety. However, for kernel yield three genotypes significantly surpassed the best check Girnar-3.The pod and kernel yield of these genotypes were: GKVK 5 (2251 kg of pod; 1461 kg of kernel per ha); J 89 (2034 kg of pod; 1427 kg of kernel per ha); and NRCG CS 332 (1508 kg of pod; 1328 kg of kernel per ha) significantly surpassed the kernel yield of the best check Girnar-3.

Mohanpur

Over two years, the mean pod (2197 kg/ha) and kernel (1525 kg/ha) yield of this centre were high. However, over two years, there were no significant differences between the test genotypes and check varieties both for pod and kernel yield. Under these conditions the zonal check variety, R 2001-2 was the best check of this centre over two years for pod (3194 kg/ha) and kernel (2277 kg/ha) yield. None of the test entries could

significantly surpass the yield levels of this check variety. Among the test genotypes, J 89 was the best for pod (2634 kg/ha) and kernel (1853 kg/ha) yields.

Bhubaneswar

The centre has conducted the trial for only one year. Hence, this data could not be included for pooled analysis. The average yields of entries and checks in this centre were 1992 kg of pod and 1257 kg of kernel per ha. Among the checks, R 2001-2 (ZC) was the best while among the test genotypes, VG 13163 was the best for pod (2575 kg/ha) and kernel (1712 kg/ha) yield.

Zonal Mean Performances

Across the three test locations and over two years, the mean pod (2160 kg/ha) and kernel yield (1464 kg/ha) were high. The zonal check variety, R 2001-2 was the best of this zone for pod (2470 kg/ha) and for kernel (1708 kg/ha) yield this check out-yielded all the other check varieties and test genotypes. Among the test genotypes, VG 13153 was the best for pod (2475 kg/ha) and kernel (1691 kg/ha) yield.

Ancillary observation

The plant population was sub-optimal at most centres. The test genotypes and checks matured around 115 days. The shelling outturn ranged from 62% (VG 13127) to NRCG CS 332 (71%). The seed size ranged between 37 g (NRCG CS 363) to 45g (TG 80) per 100 kernels. Data on oil content was not reported by Mohanpur centres for two years. and by Kanke for one year. The available data on oil content reported by Imphal centre for the first year was unreasonably low and hence not reliable. Based on the data, oil content was high (49%) in GKVK 5. Protein content was high (29%) in VG 13163.

Conclusion

Over two years and three locations, none of the test genotypes exhibited significant yield superiority over the best zonal check variety R 2001-2, none deserves promotion to AVT.

ZONE V

In this zone the trial was allotted to eight centres and all of them have reported the data. The four check varieties used were: R 2001-2 (ZC), GPBD 4 (ZC), R 2001-3 (ZC) and VG 9816 (ZC). The Coefficient of variation (CV%) was about 15% both for pod and kernel yield. Whenever, the coefficient of variation exceeded 25% in any particular location or the mean yield of the location fell below 1412 kg/ha (triennial national average of *kharif* season, 2014 to 2016) the data could not be included in the analyses. Mean pod yield of the Kadiri centre fell below 1412 kg/ha and hence the data of this centre could not be included in the pooled analyses. The centre-wise results are presented below (**Tables 15a through 15c**).

Dharwad

Over two years the mean pod (5440 kg/ha) and kernel (3970 kg/ha) yield levels in this location were very high. The zonal check variety, R 2001-2 was the best among the four check varieties for pod (5730 kg/ha) and kernel yield (4280 kg/ha). None of the test genotypes could significantly surpass the pod and kernel yield of these check varieties. Among the test genotypes, VG 13153 was the best for pod (6456 kg/ha) and kernel yield (4501 kg/ha).

Raichur

Over two years the mean pod (2538 kg/ha) and kernel (1661 kg/ha) yield levels in this location were high. The zonal check variety, R 2001-2 was the best check of this centre for pod (2811 kg/ha) and kernel (1837 kg/ha) yield. One test genotype, JL 1085 recorded significant higher pod (3654 kg/ha) and kernel (2486 kg/ha) yield over this best check variety.

Hiriyur

The mean pod and kernel yield levels in this location over two years were moderate (3198 kg/ha and 2314 kg/ha respectively). VG 9816, the zonal check variety, was the best for pod (3427 kg/ha) and kernel yield (2515 kg/ha). One test genotype, JL 1085 recorded significant higher pod (4190 kg/ha) and kernel (3111 kg/ha) yield over this best check variety.

Tirupati

The mean pod and kernel yield levels in this location over two years were moderate (1828 kg/ha and 1121 kg/ha respectively). There were no significant differences between checks and test genotypes. Under this circumstances, R 2001-3, the zonal check variety, was the best for pod (2238 kg/ha) and kernel (1380 kg/ha) yield. Among the test genotypes, JL 1085 was the best for both pod (2088 kg/ha) and kernel (1285 kg/ha) yield.

Jagtial

The mean pod and kernel yield levels in this location over two years were high (2484 kg/ha and 1575 kg/ha respectively). The zonal check variety, R 2001-3 was the best for pod (3248 kg/ha) and kernel yield (2090 kg/ha) yield. None of the test genotypes could significantly surpass the kernel yield of this check variety. Among the test genotypes, JL 1085 was the best for pod (3178 kg/ha) and kernel (2013 kg/ha) yield.

Kadiri

The mean pod and kernel yield levels in this location over two years were very low (641 kg/ha and 420 kg/ha respectively). The zonal check variety, R 2001-2 was the best for pod (698 kg/ha) and kernel (467 kg/ha) yield. Among the test genotypes, VG 13153 was significantly surpassed the best check for pod (941 kg/ha) and kernel yield (595 kg/ha).

Vriddhachalam

The mean pod and kernel yield levels in this location over two years were moderate (1829 kg/ha and 1161 kg/ha respectively). The zonal check variety, R 2001-2 was the best for pod (2096 kg/ha) and kernel yield (1329 kg/ha). Over this best check variety, the test genotype, VG 13163 recorded numerically superior pod yield (2621 kg/ha) but for kernel yield (1767 kg /ha), this genotype significantly surpassed those of the best check, R 2001-2.

Tindivanam

Over two years the mean pod and kernel yield levels in this location were 2331 kg/ha and 1616 kg/ha respectively. The zonal check variety, R 2001-3 was the best for pod (2206 kg/ha) and kernel (1560 kg/ha) yield. Seven out of 13 test genotypes, exhibited significant higher pod and kernel yield. Among these seven genotypes, GKVK 5 was

the best for pod (3357 kg/ha) while for kernel yield VG 13127 was the best (2016 kg/ha).

Zonal Mean Performances

The mean pod and kernel yield across eight locations and over two years high (2807 kg/ha and 1917 kg/ha respectively). The check variety, R 2001-3 was the best check of this zone for pod (3041 kg/ha) and kernel yield (2094 kg/ha). None of the test genotypes could significantly surpass the pod and kernel yield of this check variety. Among the test genotypes, JL 1085 was the best for pod (3344 kg/ha) and kernel yield (2329 kg/ha).

Ancillary Observation

The test genotypes and check varieties matured around 110 days. The shelling outturn was low (64%) in GKVK 5 and high (70%) in TG 80% and PBS 15041. Seed size was small (36 g/100-kernel) and bold (45 g/100-kernel) in TG 80. Data on oil content for the first year was not reported by all the eight centres Based on the available data, oil content was low (46%) in J 86. Oil content was the high (51%) in VG 13163, GKVK 5 and GPBD 4 (ZC). The protein content was between 25-28%, the highest being in RTNG 42 followed by VG 13163. This genotype also recorded high oil content.

Conclusion

Over two years and eight locations none of the test genotypes exhibited significant yield superiority over the best zonal check variety R 2001-3. However, the test genotype, JL 1085 which recorded 10% higher kernel yield over the best check is promoted to AVT.

ZONE I

Table 11a: INITIAL VARIETAL TRIAL (SPANISH) STAGE I (Kh. 2015) AND STAGE II (Kh. 2016) POOLED

Pod yield (kg/ha)

S.N.	Entry	Mainpuri			Durgapura			Bikaner*			Ludhiana			Pooled mean (3 ctrs)	R
		2015	2016	Mean	2015	2016	Mean	2015	2016	Mean	2015	2016	Mean		
1	ISK I 2015-1	1447	1505	1476	5010	3938	4474	1100	5333	3217	2149	3070	2609	2853	7
	J 88														
2	ISK I 2015-2	1273	1042	1157	3339	3658	3499	1200	3970	2585	1386	1323	1355	2003	13
	TVG 0924														
3	ISK I 2015-3	1852	984	1418	5500	4531	5015	2017	2300	2158	2737	3968	3352	3262	4
	TG 80														
4	ISK I 2015-4	1794	1551	1672	3860	3927	3894	2083	3934	3008	1437	4213	2825	2797	9
	VG 13163														
5	ISK I 2015-5	1910	1621	1765	5490	4556	5023	1417	5622	3519	2904	2848	2876	3221	5
	J 89														
6	ISK I 2015-6	1968	2026	1997	5318	5377	5347	2084	5404	3744	2012	3490	2751	3365	3
	VG 13127														
7	ISK I 2015-7	984	1389	1186	3871	2542	3206	867	4242	2554	1053	1387	1220	1871	14
	PBS 15041														
8	ISK I 2015-8	1505	1447	1476	4972	3975	4473	1167	3660	2413	1909	2906	2407	2785	10
	VG 13153														
9	ISK I 2015-9	2315	2153	2234	4379	5365	4872	1667	4900	3283	2476	3672	3074	3393	1
	GKVK 5														
10	ISK I 2015-10	1389	1852	1620	4456	4556	4506	1933	5307	3620	1611	2214	1912	2680	11
	RTNG 42														
11	ISK I 2015-11	1447	1273	1360	2179	2663	2421	817	4164	2490	1231	1206	1218	1666	15
	NRCG CS 332														
12	ISK I 2015-12	1562	1215	1389	3732	2957	3344	1283	4547	2915	1746	1616	1681	2138	12
	NRCG CS 363														
13	ISK I 2015-13	1945	2060	2002	5045	4682	4863	1517	4587	3052	2270	4298	3284	3383	2
	JL 1085														
14	ISK I 2015-23	1563	1551	1557	5551	4442	4997	1550	5268	3409	2099	4069	3084	3212	6
	TAG 24 (ZC)														
15	ISK I 2015-24	2037	1794	1916	5492	3220	4356	2267	4837	3552	1465	3028	2247	2839	8
	TG 37A (ZC)														
	GM	1666	1564	1615	4546	4026	4286	1531	4538	3035	1899	2887	2393	2765	
	S.E. Diff. Mean	100.9	79.1	90.6	209.0	342.9	284.2	404.1	230.1	328.8	140.4	233.2	192.5	204.8	
	CD at 5%	203.7	159.6	180.4	421.8	692.0	565.6	815.4	464.4	654.2	283.4	470.6	383.0	401.5	
	CV%	8.6	7.2	7.9	6.5	12.0	9.4	37.3	7.2	15.3	10.5	11.4	11.4	10.5	

Table 11b: INITIAL VARIETAL TRIAL (SPANISH) STAGE I (Kh. 2015) AND STAGE II (Kh. 2016) POOLED

Kernel yield (kg/ha)

S.N.	Entry	Mainpuri			Durgapura			Bikaner*			Ludhiana			Pooled mean (3 ctrs)	R
		2015	2016	Mean	2015	2016	Mean	2015	2016	Mean	2015	2016	Mean		
1	ISK I 2015-1	986	1054	1020	3066	2568	2817	635	3608	2122	1424	2044	1734	1857	9
	J 88														
2	ISK I 2015-2	894	740	817	2116	2397	2257	672	2330	1501	873	792	832	1302	13
	TVG 0924														
3	ISK I 2015-3	1278	689	983	3848	3211	3529	1173	1440	1307	1817	2671	2244	2252	5
	TG 80														
4	ISK I 2015-4	1291	1102	1197	2449	2623	2536	1239	2434	1836	924	2843	1883	1872	8
	VG 13163														
5	ISK I 2015-5	1300	1134	1217	3468	2989	3228	830	3642	2236	1591	1717	1654	2033	6
	J 89														
6	ISK I 2015-6	1415	1478	1446	3760	3874	3817	1329	3197	2263	1418	2499	1958	2407	3
	VG 13127														
7	ISK I 2015-7	700	1000	850	2547	1774	2160	558	2908	1733	719	955	837	1282	14
	PBS 15041														
8	ISK I 2015-8	1022	1057	1040	3022	2567	2794	651	2378	1514	1154	1843	1499	1777	11
	VG 13153														
9	ISK I 2015-9	1620	1507	1564	3082	3853	3468	947	2989	1968	1738	2644	2191	2407	2
	GKVK 5														
10	ISK I 2015-10	1002	1314	1158	2915	3089	3002	1179	3207	2193	1116	1510	1313	1824	10
	RTNG 42														
11	ISK I 2015-11	1026	917	971	1383	1927	1655	460	2647	1553	847	779	813	1146	15
	NRCG CS 332														
12	ISK I 2015-12	1094	851	973	2481	2074	2277	739	2744	1741	1232	1062	1147	1466	12
	NRCG CS 363														
13	ISK I 2015-13	1399	1473	1436	3547	3376	3462	961	2390	1675	1653	3244	2448	2449	1
	JL 1085														
14	ISK I 2015-23	1110	1088	1099	4054	3259	3656	988	3081	2034	1512	2827	2169	2308	4
	TAG 24 (ZC)														
15	ISK I 2015-24	1468	1275	1372	3949	2397	3173	1476	2735	2105	982	2036	1509	2018	7
	TG 37A (ZC)														
	GM	1173	1112	1143	3046	2798	2922	922	2782	1852	1266	1964	1615	1893	
	S.E. Diff. Mean	72.0	61.0	66.7	140.5	236.1	194.3	239.1	185.6	214.1	97.7	170.9	139.2	143.2	
	CD at 5%	145.3	123.0	132.7	283.5	476.5	386.6	482.5	374.5	426.0	197.3	344.9	277.0	280.8	
	CV%	8.7	7.8	8.3	6.5	11.9	9.4	36.7	9.4	16.1	10.9	12.3	12.2	10.7	

* The centre not included in the overlocation analysis because of its high CV % for pod and kernel yield during kharif 2015

Table 11c: INITIAL VARIETAL TRIAL (SPANISH) STAGE I (Kh. 2015) AND STAGE II (Kh. 2016) POOLED

Ancillary traits

S.N.	Entry	Trait	Mainpuri			Durgapura			Bikaner*			Ludhiana			Pooled mean (3 ctrs)
			2015	2016	Mean	2015	2016	Mean	2015	2016	Mean	2015	2016	Mean	
1	ISK I 2015-1	PS	287	310	299	325	329	327	50	152	101	138	135	137	254
	J 88	D	108	110	109	109	108	109	-	-	-	116	112	114	110
		S	68	70	69	61	65	63	58	68	63	66	67	66	66
		HKW	40	38	39	41	43	42	44			48	41	45	42
		SMK	95	90	93	80	85	83	-	-	-	94	94	94	90
		O	-	51	51	48	50	49	-	-	-	49	53	51	50
		P	-	26	26	-	29	29	-	-	-	-	28	28	28
2	ISK I 2015-2	PS	310	289	300	302	326	314	155	177	166	128	135	132	248
	TVG 0924	D	111	112	112	108	109	109	-	-	-	120	113	116	112
		S	70	71	71	64	65	65	56	59	57	63	60	61	65
		HKW	42	44	43	37	37	37	42			38	33	36	38
		SMK	90	85	88	86	89	88	-	-	-	92	92	92	89
		O	-	51	51	48	50	49	-	-	-	50	50	50	50
		P	-	25	25	-	29	29	-	-	-	-	28	28	28
3	ISK I 2015-3	PS	301	287	294	312	330	321	90	115	102	131	120	125	247
	TG 80	D	110	108	109	109	109	109	-	-	-	120	114	117	112
		S	69	70	70	70	71	70	58	63	61	67	67	67	69
		HKW	47	45	46	55	55	55	56			54	52	53	51
		SMK	92	89	91	81	84	83	-	-	-	93	75	84	86
		O	-	51	51	48	48	48	-	-	-	50	51	51	50
		P	-	24	24	-	31	31	-	-	-	-	27	27	27
4	ISK I 2015-4	PS	299	308	303	313	335	324	100	207	154	146	150	148	258
	VG 13163	D	104	107	106	111	109	110	-	-	-	115	118	116	111
		S	72	71	72	64	67	65	60	62	61	64	67	66	68
		HKW	45	46	46	44	46	45	50			44	42	43	44
		SMK	94	87	91	83	86	85	-	-	-	95	93	94	90
		O	-	52	52	49	50	49	-	-	-	50	52	51	51
		P	-	26	26	-	29	29	-	-	-	-	29	29	28
5	ISK I 2015-5	PS	301	312	307	307	328	317	96	218	157	163	132	147	257
	J 89	D	112	114	113	110	111	111	-	-	-	118	113	115	113
		S	68	70	69	63	66	64	59	65	62	55	60	58	64
		HKW	44	40	42	45	47	46	42			44	39	41	43
		SMK	89	92	91	86	88	87	-	-	-	95	91	93	90
		O	-	50	50	49	50	50	-	-	-	51	51	51	50
		P	-	24	24	-	29	29	-	-	-	-	27	27	26
6	ISK I 2015-6	PS	296	309	303	315	333	324	105	191	148	157	131	144	257
	VG 13127	D	114	112	113	116	115	116	-	-	-	120	123	121	117
		S	72	73	73	71	72	71	64	59	61	70	72	71	72
		HKW	42	39	41	40	42	41	36			39	40	39	40
		SMK	88	97	93	83	87	85	-	-	-	92	94	93	90
		O	-	54	54	48	49	49	-	-	-	49	43	46	49
		P	-	24	24	-	28	28	-	-	-	-	28	28	27
7	ISK I 2015-7	PS	294	308	301	321	332	327	36	154	95	107	118	113	247
	PBS 15041	D	112	115	114	110	110	110	-	-	-	116	106	111	111
		S	71	72	72	66	70	68	65	69	67	68	69	69	69
		HKW	43	40	42	46	46	46	40			39	41	40	42
		SMK	91	89	90	88	83	86	-	-	-	93	76	85	87
		O	-	51	51	49	49	49	-	-	-	51	51	51	51
		P	-	26	26	-	29	29	-	-	-	-	28	28	27
8	ISK I 2015-8	PS	303	312	308	322	332	327	57	151	104	127	117	122	252
	VG 13153	D	108	110	109	110	109	110	-	-	-	118	114	116	112
		S	68	73	71	61	65	63	56	66	61	60	63	62	65
		HKW	40	38	39	47	49	48	48			48	47	47	45
		SMK	90	86	88	85	87	86	-	-	-	96	87	91	88
		O	-	52	52	48	48	48	-	-	-	50	55	52	51
		P	-	24	24	-	31	31	-	-	-	-	29	29	28

S.N.	Entry	Trait	Mainpuri			Durgapura			Bikaner*			Ludhiana			Pooled mean (3 ctrs)
			2015	2016	Mean	2015	2016	Mean	2015	2016	Mean	2015	2016	Mean	
9	ISK I 2015-9	PS	310	310	310	318	330	324	192	173	182	195	148	172	269
	GKVK 5	D	110	109	110	114	113	114	-	-	-	115	116	115	113
		S	70	70	70	71	72	71	57	61	59	70	72	71	71
		HKW	43	41	42	43	45	44	46			41	41	41	42
		SMK	92	96	94	84	86	85	-	-	-	94	92	93	91
		O	-	54	54	49	48	48	-	-	-	47	53	50	51
		P	-	24	24	-	30	30	-	-	-	-	27	27	27
10	ISK I 2015-10	PS	292	310	301	311	329	320	123	188	156	140	133	136	252
	RTNG 42	D	102	107	105	113	111	112	-	-	-	117	122	119	112
		S	72	71	72	66	68	67	61	60	60	69	68	69	69
		HKW	38	42	40	39	41	40	54			38	35	37	39
		SMK	90	93	92	80	82	81	-	-	-	92	92	92	88
		O	-	52	52	48	49	49	-	-	-	50	53	52	51
		P	-	23	23	-	28	28	-	-	-	-	28	28	27
11	ISK I 2015-11	PS	308	294	301	319	336	328	166	197	182	100	118	109	246
	NRCG CS 332	D	101	104	103	108	107	108	-	-	-	121	107	114	108
		S	71	72	72	64	72	68	56	64	60	69	64	67	69
		HKW	42	40	41	37	40	39	50			39	33	36	38
		SMK	92	96	94	82	83	83	-	-	-	88	80	84	87
		O	-	50	50	49	47	48	-	-	-	51	50	51	50
		P	-	24	24	-	28	28	-	-	-	-	27	27	27
12	ISK I 2015-12	PS	310	299	304	326	333	330	121	179	150	114	122	118	251
	NRCG CS 363	D	105	106	106	109	107	108	-	-	-	122	115	118	111
		S	70	70	70	67	70	68	58	60	59	71	66	68	69
		HKW	37	39	38	35	36	35	40			36	30	33	35
		SMK	91	89	90	85	84	85	-	-	-	95	92	94	89
		O	-	50	50	49	48	49	-	-	-	51	50	51	50
		P	-	25	25	-	29	29	-	-	-	-	28	28	27
13	ISK I 2015-13	PS	303	312	308	319	333	326	82	202	142	147	146	146	260
	JL 1085	D	104	107	106	113	111	112	-	-	-	106	109	107	108
		S	72	72	72	71	72	72	64	52	58	73	75	74	73
		HKW	43	40	42	41	43	42	50			45	45	45	43
		SMK	92	95	94	90	91	91	-	-	-	90	93	92	92
		O	-	53	53	48	51	49	-	-	-	50	53	51	51
		P	-	25	25	-	28	28	-	-	-	-	27	27	27
14	ISK I 2015-23	PS	296	273	285	310	337	323	102	153	128	158	173	166	258
	TAG 24 (ZC)	D	98	100	99	112	112	112	-	-	-	114	102	108	106
		S	71	70	70	73	73	73	64	58	61	72	70	71	71
		HKW	42	44	43	51	52	52	54			51	43	47	47
		SMK	90	91	91	94	90	92	-	-	-	93	94	93	92
		O	-	51	51	49	50	49	-	-	-	51	54	52	51
		P	-	25	25	-	29	29	-	-	-	-	28	28	27
15	ISK I 2015-24	PS	308	317	312	321	337	329	168	170	169	99	127	113	251
	TG 37A (ZC)	D	100	101	101	113	112	113	-	-	-	117	109	113	109
		S	72	71	72	72	74	73	65	57	61	67	67	67	71
		HKW	45	43	44	48	41	44	53			45	40	43	44
		SMK	88	94	91	88	91	90	-	-	-	92	94	93	91
		O	-	52	52	49	48	48	-	-	-	50	53	51	51
		P	-	24	24	-	28	28	-	-	-	-	28	28	27
Final plant stand (000/ha)															
	G.M		301	303	302	316	332	324	110	175	142	137	134	135	254
	S.E. Diff. Mean		6.7	7.4	7.1	5.8	6.0	5.9	12.6	10.8	11.8	13.1	15.9	14.6	10.0
	CD at 5%		13.6	14.9	14.1	11.6	NS	NS	25.5	21.9	23.4	26.5	NS	29.0	19.5
	CV %		3.2	3.4	3.3	2.6	2.5	2.6	16.3	8.7	11.7	13.6	16.9	15.3	5.6

* The centre not included in the overlocation analysis because of its high CV % for pod and kernel yield during kharif 2015

ZONE II

Table 12a: INITIAL VARIETAL TRIAL (SPANISH) STAGE I (Kh. 2015) AND STAGE II (Kh. 2016) POOLED Pod yield (kg/ha)

S.N.	Entry	Junagadh			Amreli			Talod			Udaipur			Pooled mean	R
		2015	2016	Mean	2015	2016	Mean	2015	2016	Mean	2015	2016	Mean		
1	ISK I 2015-1	3038	3513	3275	3526	4174	3850	4033	3048	3541	2791	4161	3476	3536	6
	J 88														
2	ISK I 2015-2	2720	3901	3310	3233	3233	3233	3277	2701	2989	2484	2963	2724	3064	13
	TVG 0924														
3	ISK I 2015-3	3038	4080	3559	4159	4175	4167	5546	3086	4316	3085	3843	3464	3876	1
	TG 80														
4	ISK I 2015-4	2593	2807	2700	3434	4128	3781	3529	3048	3288	2318	3501	2910	3170	11
	VG 13163														
5	ISK I 2015-5	2928	3258	3093	3519	3580	3549	4537	2701	3619	2188	3186	2687	3237	10
	J 89														
6	ISK I 2015-6	3125	3617	3371	4097	4367	4232	4537	4051	4294	2178	3024	2601	3624	5
	VG 13127														
7	ISK I 2015-7	2865	3171	3018	2901	3727	3314	3477	2160	2819	2116	2570	2343	2873	18
	PBS 15041														
8	ISK I 2015-8	2500	2575	2537	2786	3704	3245	4234	2508	3371	2277	3244	2760	2978	14
	VG 13153														
9	ISK I 2015-9	2633	3021	2827	4028	4352	4190	4640	3627	4133	2715	2488	2602	3438	8
	GKVK 5														
10	ISK I 2015-10	2575	3096	2836	4028	3742	3885	3781	3472	3626	1695	2399	2047	3098	12
	RTNG 42														
11	ISK I 2015-11	3791	3032	3411	3148	2716	2932	3025	1929	2477	3051	2697	2874	2924	16
	NRCG CS 332														
12	ISK I 2015-12	2460	2512	2486	3233	2932	3083	4486	2276	3381	2636	3111	2873	2955	15
	NRCG CS 363														
13	ISK I 2015-13	3878	4375	4126	4198	4444	4321	4285	3279	3782	3162	3261	3211	3860	2
	JL 1085														
14	ISK I 2015-24	3183	4167	3675	3110	3665	3387	4640	2701	3670	3238	3455	3346	3520	7
	TG 37A (ZC														
15	ISK I 2015-25	2691	3507	3099	3125	3110	3117	3477	2546	3012	1975	2955	2465	2923	17
	GG 7 (ZC)														
16	ISK I 2015-26	2691	3576	3134	3434	3943	3688	4789	4012	4401	2958	3996	3477	3675	4
	SG 99 (ZC)														
17	ISK I 2015-27	3501	4317	3909	3334	4267	3800	4537	2893	3715	3199	3912	3555	3745	3
	JL 501 (ZC)														
18	ISK I 2015-28	2639	3368	3004	3256	3827	3542	4084	2701	3392	2848	3457	3152	3272	9
	GJG 9 (ZC)										-				
	GM	2936	3438	3187	3475	3783	3629	4162	2930	3546	2606	3234	2920	3321	
	S.E. Diff. Mean	282.9	265.5	274.2	245.8	367.6	312.6	282.6	231.4	258.3	235.7	292.8	265.8	278.5	
	CD at 5%	567.9	533.0	548.1	493.5	737.9	624.9	567.4	464.5	516.3	473.2	587.8	531.2	545.9	
	CV%	13.6	10.9	10.2	10.0	13.7	12.2	9.6	11.2	10.3	12.8	12.8	12.9	11.9	

Table 12b: INITIAL VARIETAL TRIAL (SPANISH) STAGE I (Kh. 2015) AND STAGE II (Kh. 2016) POOLED

S.N.	Entry	Kernel yield (kg/ha)													
		Junagadh			Amreli			Talod			Udaipur			Pooled mean	R
		2015	2016	Mean	2015	2016	Mean	2015	2016	Mean	2015	2016	Mean		
1	ISK I 2015-1	1833	2178	2005	2095	2556	2325	2658	1814	2236	1945	2973	2459	2256	9
	J 88														
2	ISK I 2015-2	1740	2734	2237	2205	2255	2230	2300	1750	2025	1554	1891	1722	2054	15
	TVG 0924														
3	ISK I 2015-3	1988	2791	2389	2837	2955	2896	3688	1963	2825	2228	2833	2530	2660	2
	TG 80														
4	ISK I 2015-4	1678	1854	1766	2415	2890	2652	2333	2045	2189	1473	2290	1882	2122	11
	VG 13163														
5	ISK I 2015-5	1856	2164	2010	2152	2368	2260	2890	1718	2304	1308	2022	1665	2060	14
	J 89														
6	ISK I 2015-6	1961	2295	2128	2772	2892	2832	3104	2937	3020	1385	1989	1687	2417	6
	VG 13127														
7	ISK I 2015-7	1955	2380	2168	2154	2813	2484	2532	1372	1952	1576	1955	1765	2092	12
	PBS 15041														
8	ISK I 2015-8	1461	1641	1551	1750	2313	2031	2697	1311	2004	1557	2264	1911	1874	18
	VG 13153														
9	ISK I 2015-9	1538	1872	1705	2709	2881	2795	3035	2945	2990	1872	1645	1758	2312	7
	GKVK 5														
10	ISK I 2015-10	1583	2044	1814	2774	2577	2676	2700	2087	2393	1152	1584	1368	2063	13
	RTNG 42														
11	ISK I 2015-11	2451	2214	2333	2227	1878	2052	2220	1196	1708	2214	2010	2112	2051	16
	NRCG CS 332														
12	ISK I 2015-12	1612	1867	1739	2382	2067	2224	3248	1839	2543	2021	2393	2207	2179	10
	NRCG CS 363														
13	ISK I 2015-13	2699	2960	2830	2852	3166	3009	3141	1853	2497	2336	2402	2369	2676	1
	JL 1085														
14	ISK I 2015-24	2193	2809	2501	2040	2476	2258	3438	1607	2523	2311	2516	2414	2424	5
	TG 37A (ZC														
15	ISK I 2015-25	1717	2468	2093	2229	2042	2135	2525	1747	2136	1407	2157	1782	2036	17
	GG 7 (ZC)														
16	ISK I 2015-26	1613	2389	2001	2260	2571	2415	3209	2644	2927	2103	2946	2525	2467	4
	SG 99 (ZC)														
17	ISK I 2015-27	2376	2979	2677	2277	3037	2657	3267	2162	2714	2137	2602	2369	2604	3
	JL 501 (ZC)														
18	ISK I 2015-28	1713	2460	2087	2349	2724	2536	3010	1710	2360	1981	2442	2211	2299	8
	GJG 9 (ZC)										-				
	GM	1887	2339	2113	2360	2581	2470	2888	1928	2408	1809	2273	2041	2258	
	S.E. Diff. Mean	188.9	187.4	188.1	178.6	290.1	240.8	197.2	167.7	183.0	175.7	213.8	195.7	203.2	
	CD at 5%	379.3	376.2	376.1	358.5	582.3	481.4	395.9	336.6	365.8	352.7	429.3	391.1	398.3	
	CV%	14.2	11.3	12.6	10.7	15.9	13.8	9.7	12.3	10.8	13.7	13.3	13.6	12.7	

Table 12c: INITIAL VARIETAL TRIAL (SPANISH) STAGE I (Kh. 2015) AND STAGE II (Kh. 2016) POOLED

Ancillary traits

S.N.	Entry	Trait	Junagadh			Amreli			Talod			Udaipur			Pooled
			2015	2016	Mean	2015	2016	Mean	2015	2016	Mean	2015	2016	Mean	mean
1	ISK I 2015-1	PS	303	302	303	205	223	214	177	185	181	332	333	333	258
	J 88	D	106	111	109	105	107	106	131	128	130	94	96	95	110
		S	60	62	61	60	61	61	66	60	63	70	72	71	64
		HKW	31	35	33	35	41	38	61	45	53	45	46	46	42
		SMK	90	89	89	97	96	97	-	-	-	86	90	88	91
		O	51	50	51	-	-	-	43	-	43	49	49	49	48
		P	-	24	-	-	-	-			-	-	27	27	27
2	ISK I 2015-2	PS	303	308	306	200	224	212	166	191	179	330	333	332	257
	TVG 0924	D	107	111	109	111	114	112	130	127	129	96	96	96	111
		S	64	70	67	69	70	69	70	65	68	63	64	64	67
		HKW	31	38	35	33	39	36	59	43	51	42	43	43	41
		SMK	82	97	89	96	97	97	-	-	-	95	87	91	92
		O	48	50	49	-	-	-	43	-	43	47	48	47	46
		P	-	25	-			-			-	-	28	28	28
3	ISK I 2015-3	PS	326	315	321	218	222	220	166	172	169	335	333	334	261
	TG 80	D	105	111	108	106	109	108	131	128	130	94	96	95	110
		S	66	68	67	68	71	69	67	64	65	72	74	73	69
		HKW	33	39	36	42	44	43	66	55	61	44	47	46	46
		SMK	82	92	87	98	97	98	-	-	-	92	88	90	92
		O	49	49	49	-	-	-	42	-	42	46	48	47	46
		P	-	23	-			-			-	-	27	27	27
4	ISK I 2015-4	PS	312	319	316	197	218	207	148	207	177	321	333	327	257
	VG 13163	D	105	110	108	107	105	106	130	127	129	104	102	103	111
		S	65	66	65	70	70	70	66	67	67	64	66	65	67
		HKW	33	36	34	45	48	46	65	50	58	40	46	43	45
		SMK	88	80	84	98	98	98	-	-	-	90	91	91	91
		O	51	52	51	-	-	-	45	-	45	45	49	47	48
		P	-	26	-			-			-	-	28	28	28
5	ISK I 2015-5	PS	310	297	304	203	220	211	157	163	160	328	333	331	251
	J 89	D	107	109	108	106	111	108	130	126	128	99	100	100	111
		S	63	66	65	62	66	64	64	64	64	60	64	62	64
		HKW	35	33	34	37	38	37	60	43	51	46	46	46	42
		SMK	88	86	87	97	96	97	-	-	-	84	85	85	89
		O	48	49	49	-	-	-	40	-	40	45	47	46	45
		P	-	24	-			-			-	-	28	28	28
6	ISK I 2015-6	PS	310	311	311	193	221	207	163	195	179	322	333	328	256
	VG 13127	D	107	114	111	109	114	111	131	127	129	104	103	104	114
		S	63	63	63	68	66	67	68	73	70	64	66	65	66
		HKW	28	26	27	32	35	33	51	42	47	39	42	41	37
		SMK	81	83	82	97	97	97	-	-	-	95	93	94	91
		O	50	52	51	-	-	-	45	-	45	48	52	50	49
		P	-	25	-			-			-	-	29	29	29
7	ISK I 2015-7	PS	274	314	294	181	223	202	142	141	142	328	333	330	242
	PBS 15041	D	107	107	107	108	104	106	131	127	129	96	97	97	110
		S	68	75	72	74	76	75	73	64	68	75	76	76	73
		HKW	30	36	33	41	42	41	64	46	55	38	39	39	42
		SMK	87	98	93	96	96	96	-	-	-	91	91	91	93
		O	49	52	51	-	-	-	42	-	42	45	49	47	46
		P	-	23	-			-			-	-	27	27	27

S.N.	Entry	Trait	Junagadh			Amreli			Talod			Udaipur			Pooled mean
			2015	2016	Mean	2015	2016	Mean	2015	2016	Mean	2015	2016	Mean	
8	ISK I 2015-8	PS	313	307	310	191	224	207	154	166	160	328	333	331	252
	VG 13153	D	105	107	106	108	103	105	131	127	129	100	100	100	110
		S	58	64	61	63	62	63	64	52	58	69	70	70	63
		HKW	30	36	33	39	41	40	57	51	54	47	47	47	43
		SMK	85	92	89	98	97	98	-	-	-	89	90	90	92
		O	53	52	52	-	-	-	46	-	46	45	51	48	49
		P	-	25	-			-			-	-	28	28	28
9	ISK I 2015-9	PS	318	308	313	211	222	216	157	213	185	333	333	333	262
	GKVK 5	D	107	113	110	111	110	111	130	127	129	104	103	104	113
		S	59	62	61	67	66	67	65	81	73	69	66	68	67
		HKW	25	25	25	34	37	35	53	49	51	47	44	46	39
		SMK	84	74	79	96	95	96	-	-	-	93	93	93	89
		O	51	52	52	-	-	-	45	-	45	44	52	48	48
		P	-	25	-			-			-	-	28	28	28
10	ISK I 2015-10	PS	271	298	285	179	223	201	131	183	157	330	333	331	243
	RTNG 42	D	108	115	112	110	106	108	130	127	129	103	103	103	113
		S	62	66	64	69	69	69	71	60	66	68	66	67	66
		HKW	28	31	29	37	39	38	58	39	49	40	41	41	39
		SMK	80	76	78	97	97	97	-	-	-	90	90	90	88
		O	49	51	50	-	-	-	42	-	42	44	48	46	46
		P	-	26	-			-			-	-	27	27	27
11	ISK I 2015-11	PS	314	322	318	214	225	219	151	180	165	332	333	332	259
	NRCG CS 332	D	106	112	109	108	106	107	131	128	130	92	94	93	110
		S	65	73	69	71	69	70	73	62	68	73	75	74	70
		HKW	31	38	35	37	41	39	70	42	56	42	44	43	43
		SMK	89	92	90	96	96	96	-	-	-	91	90	91	92
		O	49	50	50	-	-	-	39	-	39	44	48	46	45
		P	-	25	-			-			-	-	28	28	28
12	ISK I 2015-12	PS	306	304	305	220	225	222	173	185	179	329	333	331	259
	NRCG CS 363	D	105	108	107	112	111	111	131	128	130	94	96	95	111
		S	65	74	70	74	70	72	72	81	77	77	77	77	74
		HKW	28	31	30	32	32	32	62	38	50	40	43	42	38
		SMK	85	95	90	95	95	95	-	-	-	94	92	93	93
		O	50	52	51	-	-	-	41	-	41	46	48	47	46
		P	-	24	-			-			-	-	28	28	28
13	ISK I 2015-13	PS	311	324	318	207	222	214	146	204	175	331	333	332	260
	JL 1085	D	106	111	109	110	106	108	130	128	129	103	104	104	112
		S	70	68	69	68	71	70	73	57	65	74	74	74	69
		HKW	34	31	33	30	38	34	69	41	55	44	45	45	42
		SMK	84	81	83	94	98	96	-	-	-	87	86	87	88
		O	52	51	51	-	-	-	43	-	43	47	49	48	47
		P	-	25	-			-			-	-	27	27	27
14	ISK I 2015-24	PS	314	312	313	218	222	220	157	173	165	333	333	333	258
	TG 37A (ZC	D	104	107	106	110	105	107	130	128	129	98	99	99	110
		S	69	67	68	66	67	67	74	60	67	72	73	73	68
		HKW	43	37	40	37	45	41	74	43	58	44	47	46	46
		SMK	93	95	94	96	96	96	-	-	-	87	89	88	93
		O	50	51	51	-	-	-	41	-	41	46	48	47	46
		P	-	24	-			-			-	-	27	27	27

S.N.	Entry	Trait	Junagadh			Amreli			Talod			Udaipur			Pooled mean
			2015	2016	Mean	2015	2016	Mean	2015	2016	Mean	2015	2016	Mean	
15	ISK I 2015-25	PS	306	307	307	199	217	208	158	162	160	330	333	332	252
	GG 7 (ZC)	D	106	111	109	108	112	110	131	128	130	72	96	84	108
		S	64	70	67	71	66	68	73	69	71	71	73	72	70
		HKW	32	43	38	42	40	41	71	48	60	42	42	42	45
		SMK	90	98	94	97	97	97	-	-	-	90	91	91	94
		O	49	50	49	-	-	-	40	-	40	44	46	45	45
		P	-	24	-			-			-	-	27	27	27
16	ISK I 2015-26	PS	308	304	306	214	222	218	173	189	181	328	333	331	259
	SG 99 (ZC)	D	107	112	110	111	105	108	130	128	129	106	105	106	113
		S	60	67	63	66	65	65	67	66	66	71	74	73	67
		HKW	32	39	36	40	45	42	62	46	54	51	52	52	46
		SMK	89	87	88	96	96	96	-	-	-	94	92	93	92
		O	48	50	49	-	-	-	44	-	44	45	49	47	47
		P	-	23	-			-			-	-	25	25	25
17	ISK I 2015-27	PS	311	325	318	202	222	212	141	191	166	333	333	333	257
	JL 501 (ZC)	D	106	112	109	112	110	111	131	128	130	98	99	99	112
		S	68	69	68	68	71	70	72	75	73	67	67	67	70
		HKW	32	30	31	33	38	36	56	43	49	46	46	46	41
		SMK	88	90	89	95	94	95	-	-	-	89	89	89	91
		O	48	49	48	-	-	-	43	-	43	46	50	48	46
		P	-	22	-			-			-	-	27	27	27
18	ISK I 2015-28	PS	305	310	308	204	227	215	155	175	165	332	333	333	255
	GJG 9 (ZC)	D	106	108	107	111	110	110	131	128	130	96	98	97	111
		S	65	73	69	72	71	71	74	63	69	70	71	71	70
		HKW	30	43	37	44	46	45	70	50	60	51	50	51	48
		SMK	86	95	90	96	96	96	-	-	-	93	87	90	92
		O	50	50	50	-	-	-	39	-	39	44	47	45	45
		P	-	24	-			-			-	-	28	28	28
Final plant stand (000/ha)															
	G.M		306	310	308	203	222	213	156	182	169	330	333	331	255
	S.E. Diff. Mean		11.1	8.0	9.4	8.2	4.1	6.5	4.5	10.1	7.8	5.3	0.6	3.8	7.3
	CD at 5%		22.2	16.0	18.7	16.5	NS	12.9	9.1	20.3	15.6	NS	NS	NS	14.2
	CV %		5.1	3.6	4.4	5.7	2.6	4.3	4.1	7.9	6.5	2.3	0.2	1.6	4.0

ZONE III

Table 13a: INITIAL VARIETAL TRIAL (SPANISH) STAGE I (Kh. 2015) AND STAGE II (Kh. 2016) POOLED

Pod yield (kg/ha)

S.N.	Entry	Gwalior			Akola			Jalgaon			Shirgaon			Latur			Pooled mean	R
		2015	2016	Mean	2015	2016	Mean	2015	2016	Mean	2015	2016	Mean	2015	2016	Mean		
1	ISK I 2015-1	2680	2192	2436	2485	3148	2816	2159	2107	2133	2973	4400	3686	2129	2152	2141	2642	10
	J 88																	
2	ISK I 2015-2	1814	1745	1780	2697	2639	2668	1605	2413	2009	4024	3038	3531	1293	2306	1799	2357	13
	TVG 0924																	
3	ISK I 2015-3	2796	2097	2446	3113	2917	3015	1374	2008	1691	3049	3431	3240	2052	1556	1804	2439	11
	TG 80																	
4	ISK I 2015-4	3107	2170	2638	2747	2743	2745	2515	2192	2353	3634	4972	4303	1482	2512	1997	2807	6
	VG 13163																	
5	ISK I 2015-5	3265	2567	2916	2898	3038	2968	2171	2154	2162	3577	3936	3756	2420	2141	2281	2817	5
	J 89																	
6	ISK I 2015-6	3063	2124	2594	2566	2656	2611	3035	2617	2826	3102	4377	3739	2107	3538	2822	2918	4
	VG 13127																	
7	ISK I 2015-7	1613	2674	2144	2312	2489	2400	1366	2384	1875	3559	3084	3322	1428	1816	1622	2272	16
	PBS 15041																	
8	ISK I 2015-8	2634	2300	2467	2169	2784	2476	1533	1746	1639	3366	3949	3658	1644	2126	1885	2425	12
	VG 13153																	
9	ISK I 2015-9	2759	2306	2532	2436	3241	2838	3183	3189	3186	3187	4659	3923	2036	3145	2590	3014	3
	GKVK 5																	
10	ISK I 2015-10	2664	2078	2371	2358	2784	2571	2347	2747	2547	4419	4741	4580	1159	2655	1907	2795	7
	RTNG 42																	
11	ISK I 2015-11	1203	2447	1825	2364	2546	2455	1251	1819	1535	2829	4085	3457	1078	1493	1286	2111	17
	NRCG CS 332																	
12	ISK I 2015-12	1696	2306	2001	2419	2708	2563	1294	2208	1751	3221	4300	3761	1420	1265	1342	2284	15
	NRCG CS 363																	
13	ISK I 2015-13	2611	2363	2487	3220	3501	3360	3302	3679	3491	4087	4089	4088	2429	3213	2821	3249	1
	JL 1085																	
14	ISK I 2015-23	3655	2605	3130	2575	2581	2578	1322	2868	2095	3198	4413	3806	1790	1514	1652	2652	9
	TAG 24 (ZC)																	
15	ISK I 2015-29	2966	2451	2708	2751	3380	3065	1611	2543	2077	3263	3689	3476	2023	2042	2032	2672	8
	AK 159 (ZC)																	
16	ISK I 2015-30	1370	2229	1799	2456	3009	2732	1096	2262	1679	3552	4667	4109	1158	1658	1408	2346	14
	GG 8 (ZC)																	
17	ISK I 2015-31	2390	2535	2462	2978	2720	2849	3177	2894	3035	4454	4690	4572	1859	2770	2314	3047	2
	JL 776 (ZC)							-										
	GM	2487	2305	2396	2620	2875	2748	2020	2460	2240	3500	4148	3824	1736	2229	1982	2638	
	S.E. Diff. Mean	457.1	61.4	326.1	257.6	282.6	270.4	179.2	216.8	198.8	417.3	437.4	427.4	145.9	197.3	173.5	293.9	
	CD at 5%	919.1	123.4	648.9	518.0	568.2	NS	360.3	435.8	395.7	839.1	879.4	850.6	293.4	396.7	345.2	576.0	
	CV%	26.0	3.8	19.3	13.9	13.9	13.9	12.5	12.5	12.6	16.9	14.9	15.8	11.9	12.5	12.4	15.8	

Table 13b: INITIAL VARIETAL TRIAL (SPANISH) STAGE I (Kh. 2015) AND STAGE II (Kh. 2016) POOLED

Kernel yield (kg/ha)

S.N.	Entry	Gwalior			Akola			Jalgaon			Shirgaon			Latur			Pooled mean	R
		2015	2016	Mean	2015	2016	Mean	2015	2016	Mean	2015	2016	Mean	2015	2016	Mean		
1	ISK I 2015-1	1728	1512	1620	1475	2041	1758	1303	1368	1335	2032	2849	2440	1451	1476	1463	1723	10
	J 88																	
2	ISK I 2015-2	1174	1200	1187	1701	1767	1734	1049	1626	1337	2788	2179	2483	896	1607	1251	1599	12
	TVG 0924																	
3	ISK I 2015-3	1647	1446	1546	1979	1959	1969	934	1440	1187	2248	2428	2338	1429	1015	1222	1652	11
	TG 80																	
4	ISK I 2015-4	1931	1508	1719	1684	1752	1718	1681	1567	1624	2568	3553	3060	980	1675	1327	1890	7
	VG 13163																	
5	ISK I 2015-5	2200	1752	1976	1748	1961	1854	1412	1504	1458	2550	2869	2709	1658	1348	1503	1900	6
	J 89																	
6	ISK I 2015-6	2032	1476	1754	1543	1594	1569	2016	1745	1880	2277	2942	2610	1348	2493	1921	1947	4
	VG 13127																	
7	ISK I 2015-7	1002	1805	1403	1684	1748	1716	941	1729	1335	2564	2078	2321	1013	1200	1106	1576	14
	PBS 15041																	
8	ISK I 2015-8	1690	1541	1615	1286	1670	1478	899	1095	997	2330	2533	2431	1071	1386	1228	1550	16
	VG 13153																	
9	ISK I 2015-9	1841	1586	1713	1447	2211	1829	2137	2282	2210	2187	3342	2765	1312	2140	1726	2048	3
	GKVK 5																	
10	ISK I 2015-10	1700	1428	1564	1466	1873	1669	1522	1905	1714	3281	3428	3355	742	1846	1294	1919	5
	RTNG 42																	
11	ISK I 2015-11	759	1645	1202	1565	1791	1678	824	1270	1047	2028	2672	2350	765	1030	897	1435	17
	NRCG CS 332																	
12	ISK I 2015-12	1101	1597	1349	1628	1889	1758	882	1575	1228	2323	2846	2585	991	863	927	1569	15
	NRCG CS 363																	
13	ISK I 2015-13	1649	1648	1648	2028	2435	2232	2296	2666	2481	2937	2320	2629	1671	2217	1944	2187	1
	JL 1085																	
14	ISK I 2015-23	2426	1804	2115	1687	1638	1662	874	1938	1406	2247	3304	2776	1269	998	1133	1818	8
	TAG 24 (ZC)																	
15	ISK I 2015-29	1929	1545	1737	1713	2335	2024	1052	1840	1446	2263	2547	2405	1332	1396	1364	1795	9
	AK 159 (ZC)																	
16	ISK I 2015-30	884	1504	1194	1602	2083	1842	728	1534	1131	2422	3186	2804	785	1094	939	1582	13
	GG 8 (ZC)																	
17	ISK I 2015-31	1497	1705	1601	1933	1818	1875	2153	2047	2100	3246	3355	3300	1220	1816	1518	2079	2
	JL 776 (ZC)																	
	GM	1599	1571	1585	1657	1915	1786	1335	1714	1524	2488	2849	2668	1172	1506	1339	1781	
	S.E. Diff. Mean	307.4	42.0	219.4	170.3	207.1	189.6	122.7	146.1	134.9	301.5	318.7	310.2	96.3	138.3	119.2	206.2	
	CD at 5%	618.1	84.4	436.5	342.4	416.4	377.3	246.7	293.7	268.4	606.3	640.8	617.3	193.6	278.1	237.1	404.2	
	CV%	27.2	3.8	19.6	14.5	15.3	15.0	13.0	12.1	12.5	17.1	15.8	16.4	11.6	13.0	12.6	16.4	

Table 13c: INITIAL VARIETAL TRIAL (SPANISH) STAGE I (Kh. 2015) AND STAGE II (Kh. 2016) POOLED

Ancillary traits

S.N.	Entry	Trait	Gwalior			Akola			Jalgaon			Shirgaon			Latur			Pooled
			2015	2016	Mean	2015	2016	Mean	2015	2016	Mean	2015	2016	Mean	2015	2016	Mean	mean
1	ISK I 2015-1	PS	283	214	248	302	232	267	291	242	266	321	277	299	307	322	315	279
	J 88	D	112	114	113	112	120	116	110	109	110	108	99	104	113	110	112	111
		S	65	69	67	59	65	62	61	65	63	68	65	67	68	69	68	65
		HKW	36	43	39	34	55	44	31	31	31	48	42	45	57	50	53	42
		SMK	90	88	89	95	84	89	86	93	89	88	83	86	89	87	88	88
		O	52	51	51	47	51	49	48	50	49	-	49	49	-	49	49	50
		P	-	25	25	-	25	25	-	25	25	-	28	28	-	23	23	25
2	ISK I 2015-2	PS	282	141	211	267	221	244	278	267	272	318	286	302	297	325	311	268
	TVG 0924	D	105	112	108	111	119	115	111	103	107	104	94	99	100	102	101	106
		S	65	69	67	63	67	65	65	68	66	69	72	71	69	70	70	68
		HKW	29	37	33	31	44	38	31	29	30	57	71	64	61	54	58	44
		SMK	90	87	88	94	88	91	92	93	92	86	84	85	90	88	89	89
		O	52	52	52	47	51	49	47	50	49	-	49	49	-	52	52	50
		P	-	25	25	-	25	25	-	26	26	-	28	28	-	24	24	26
3	ISK I 2015-3	PS	292	219	256	302	273	288	273	251	262	318	279	299	293	314	304	281
	TG 80	D	107	108	108	117	116	117	112	104	108	108	105	107	96	103	99	108
		S	59	69	64	64	67	65	68	72	70	74	71	72	70	65	67	68
		HKW	39	41	40	37	65	51	30	31	31	62	69	66	67	60	64	50
		SMK	96	88	92	92	86	89	89	94	92	86	87	87	90	90	90	90
		O	50	51	50	48	50	49	51	50	51	-	49	49	-	48	48	49
		P	-	23	23	-	24	24	-	23	23	-	29	29	-	21	21	24
4	ISK I 2015-4	PS	288	204	246	278	238	258	230	219	224	316	273	295	293	315	304	265
	VG 13163	D	108	111	109	112	119	116	113	107	110	108	109	109	98	106	102	109
		S	62	70	66	61	64	63	67	72	69	71	72	71	66	67	67	67
		HKW	29	41	35	39	45	42	34	33	34	60	51	56	58	51	55	44
		SMK	92	91	91	90	83	86	89	96	92	90	88	89	91	90	90	90
		O	52	51	52	51	52	51	51	52	51	-	49	49	-	52	52	51
		P	-	26	26	-	26	26	-	26	26	-	28	28	-	24	24	26
5	ISK I 2015-5	PS	270	251	260	295	252	274	273	275	274	321	270	296	306	319	312	283
	J 89	D	107	110	109	116	120	118	112	106	109	107	110	109	111	111	111	111
		S	68	68	68	60	65	62	65	70	67	72	73	72	69	63	66	67
		HKW	34	42	38	34	53	43	34	31	32	54	49	52	63	56	59	45
		SMK	90	87	88	96	87	91	88	93	91	81	89	85	93	89	91	89
		O	50	50	50	48	50	49	46	50	48	-	51	51	-	49	49	49
		P	-	25	25	-	25	25	-	25	25	-	28	28	-	22	22	25
6	ISK I 2015-6	PS	254	193	224	255	238	247	266	240	253	318	299	309	297	314	306	268
	VG 13127	D	110	109	109	115	121	118	114	109	112	110	101	106	108	108	108	110
		S	66	70	68	60	60	60	67	67	67	74	67	70	64	71	67	67
		HKW	33	42	37	27	38	32	28	30	29	53	51	52	56	49	52	41
		SMK	93	88	90	88	70	79	89	93	91	82	80	81	90	88	89	86
		O	55	52	53	49	53	51	50	51	50	-	49	49	-	53	53	51
		P	-	25	25	-	24	24	-	25	25	-	28	28	-	26	26	26
7	ISK I 2015-7	PS	240	278	259	241	233	237	265	266	266	307	296	302	317	317	317	276
	PBS 15041	D	106	101	104	110	121	116	113	100	107	110	101	106	102	104	103	107
		S	63	68	65	73	70	71	69	73	71	72	67	70	71	66	69	69
		HKW	33	36	34	38	51	44	31	29	30	48	62	55	65	58	62	45
		SMK	92	89	90	96	85	90	90	93	91	84	89	87	90	89	89	89
		O	49	50	49	48	51	50	50	51	50	-	48	48	-	50	50	49
		P	-	26	26	-	26	26	-	26	26	-	28	28	-	23	23	26
8	ISK I 2015-8	PS	241	222	232	258	244	251	241	270	256	315	289	302	312	322	317	272
	VG 13153	D	108	110	109	115	120	118	110	107	109	110	96	103	106	109	107	109
		S	64	67	66	59	60	60	59	63	61	69	64	67	65	65	65	64
		HKW	28	45	36	34	45	39	33	31	32	53	55	54	57	50	54	43
		SMK	93	90	92	90	82	86	89	94	92	87	86	87	91	90	90	89
		O	54	53	54	49	52	51	51	52	51	-	50	50	-	52	52	51
		P	-	26	26	-	25	25	-	27	27	-	29	29	-	23	23	26
9	ISK I 2015-9	PS	254	223	239	297	285	291	273	284	278	312	290	301	311	318	315	285
	GKVK 5	D	108	110	109	113	120	117	114	109	112	112	112	112	102	102	102	110
		S	67	69	68	59	68	64	67	72	69	69	72	70	65	68	66	67
		HKW	32	42	37	26	47	36	30	32	31	63	45	54	54	47	51	42
		SMK	94	88	91	87	83	85	87	95	91	86	81	84	89	88	88	88
		O	53	52	53	48	53	50	51	52	52	-	50	50	-	52	52	51
		P	-	25	25	-	24	24	-	25	25	-	28	28	-	26	26	26

S.N.	Entry	Trait	Gwalior			Akola			Jalgaon			Shirgaon			Latur			Pooled mean
			2015	2016	Mean	2015	2016	Mean	2015	2016	Mean	2015	2016	Mean	2015	2016	Mean	
10	ISK I 2015-10	PS	259	197	228	235	275	255	257	288	273	314	276	295	299	318	309	272
	RTNG 42	D	110	112	111	113	119	116	110	110	110	114	105	110	109	109	109	111
		S	63	69	66	62	67	65	65	70	67	74	72	73	64	70	67	68
		HKW	27	40	34	31	45	38	29	32	30	76	58	67	55	48	52	44
		SMK	91	86	88	94	86	90	89	96	92	90	80	85	88	88	88	89
		O	52	52	52	48	51	49	51	50	50	-	50	50	-	51	51	51
		P	-	26	26	-	26	26	-	28	28	-	28	28	-	26	26	27
11	ISK I 2015-11	PS	262	270	266	289	220	255	287	268	278	307	291	299	315	319	317	283
	NRCG CS 332	D	109	109	109	112	119	116	110	101	106	118	106	112	101	103	102	109
		S	64	67	66	66	70	68	66	70	68	72	65	69	71	69	70	68
		HKW	27	39	33	37	53	45	33	29	31	67	46	57	62	55	59	45
		SMK	95	87	91	93	88	91	88	92	90	85	86	86	89	88	88	89
		O	47	50	48	47	51	49	48	48	48	-	48	48	-	48	48	48
		P	-	26	26	-	26	26	-	25	25	-	28	28	-	23	23	26
12	ISK I 2015-12	PS	256	241	249	306	222	264	297	261	279	313	273	293	295	323	309	279
	NRCG CS 363	D	104	107	106	111	118	115	113	101	107	109	107	108	104	105	104	108
		S	65	69	67	68	69	69	68	72	70	72	66	69	70	68	69	69
		HKW	34	33	34	25	44	34	30	27	28	44	53	49	65	58	61	41
		SMK	93	88	90	94	92	93	91	93	92	84	88	86	90	89	89	90
		O	48	50	49	45	52	49	51	50	51	-	49	49	-	50	50	49
		P	-	27	27	-	24	24	-	24	24	-	28	28	-	21	21	25
13	ISK I 2015-13	PS	269	242	255	281	245	263	303	280	291	316	274	295	304	318	311	283
	JL 1085	D	106	110	108	114	118	116	110	109	110	102	104	103	110	110	110	109
		S	64	70	67	63	70	66	70	73	71	72	57	64	69	69	69	67
		HKW	33	42	37	30	53	41	31	32	31	52	36	44	63	56	60	43
		SMK	95	90	92	91	85	88	91	93	92	83	87	85	91	89	90	89
		O	54	52	53	48	52	50	52	52	52	-	50	50	-	51	51	51
		P	-	25	25	-	25	25	-	26	26	-	27	27	-	23	23	25
14	ISK I 2015-23	PS	260	259	260	273	246	260	289	286	287	308	280	294	302	317	309	282
	TAG 24 (ZC)	D	103	109	106	113	117	115	110	100	105	105	108	107	108	108	108	108
		S	67	69	68	66	64	65	66	68	67	70	75	73	71	66	69	68
		HKW	34	38	36	34	51	42	32	32	32	53	40	47	66	59	62	44
		SMK	94	88	91	93	89	91	91	92	92	82	87	85	90	89	89	89
		O	51	51	51	49	53	51	50	52	51	-	50	50	-	50	50	51
		P	-	25	25	-	24	24	-	25	25	-	28	28	-	21	21	24
15	ISK I 2015-29	PS	249	245	247	297	267	282	262	280	271	316	301	309	296	321	308	283
	AK 159 (ZC)	D	114	110	112	111	118	115	112	103	108	108	101	105	113	111	112	110
		S	65	63	64	62	69	66	66	72	69	70	69	70	66	68	67	67
		HKW	27	36	32	26	52	39	31	31	31	59	55	57	58	51	54	43
		SMK	89	87	88	94	91	92	92	95	94	82	86	84	90	90	90	89
		O	53	52	52	48	54	51	48	51	50	-	48	48	-	53	53	51
		P	-	26	26	-	26	26	-	27	27	-	28	28	-	23	23	26
16	ISK I 2015-30	PS	291	221	256	288	232	260	291	268	279	311	282	297	317	323	320	282
	GG 8 (ZC)	D	110	110	110	114	116	115	113	101	107	111	108	110	105	105	105	109
		S	64	68	66	65	69	67	66	68	67	68	68	68	68	66	67	67
		HKW	28	41	34	31	51	41	31	27	29	53	55	54	62	55	59	43
		SMK	94	87	91	94	90	92	93	91	92	82	89	86	90	89	89	90
		O	47	50	49	46	50	48	45	48	47	-	49	49	-	49	49	48
		P	-	26	26	-	26	26	-	25	25	-	28	28	-	22	22	25
17	ISK I 2015-31	PS	252	251	251	306	242	274	295	293	294	307	287	297	305	323	314	286
	JL 776 (ZC)	D	108	107	107	116	121	119	112	111	112	108	110	109	104	104	104	110
		S	63	67	65	65	67	66	68	71	69	73	72	72	66	66	66	68
		HKW	30	41	35	31	42	36	29	30	29	59	46	53	56	49	53	41
		SMK	94	86	90	92	90	91	90	93	92	85	85	85	89	89	89	89
		O	53	52	53	47	52	50	49	51	50	-	49	49	-	51	51	50
		P	-	26	26	-	27	27	-	27	27	-	28	28	-	25	25	27
Final plant stand (000/ha)																		
	G.M		265	228	246	281	245	263	275	267	271	314	284	299	304	319	312	278
	S.E. Diff. Mean		9.4	8.0	8.7	16.0	18.4	17.3	13.4	18.9	16.4	3.6	10.1	7.6	10.3	4.7	8.0	12.4
	CD at 5%		18.8	16.1	17.3	32.2	37.1	34.4	27.0	38.0	32.6	7.2	NS	15.0	NS	NS	NS	24.2
	CV %		5.0	5.0	5.0	8.1	10.6	9.3	6.9	10.0	8.6	1.6	5.0	3.6	4.8	2.1	3.6	6.3

ZONE IV

Table 14a: INITIAL VARIETAL TRIAL (SPANISH) STAGE I (Kh. 2015) AND STAGE II (Kh. 2016) POOLED

Pod yield (kg/ha)

S.N.	Entry	Imphal			Kanke			Mohanpur			Bhubaneswar *	Pooled mean (3 ctrs.)	R
		2015	2016	Mean	2015	2016	Mean	2015	2016	Mean	2016		
1	ISK I 2015-1	2193	2813	2503	1291	1782	1536	1986	1986	1986	2055	2009	13
	J 88												
2	ISK I 2015-2	2125	3185	2655	1146	1580	1363	1764	1764	1764	2304	1927	15
	TVG 0924												
3	ISK I 2015-3	2588	2802	2695	1707	1360	1534	2315	2315	2315	1534	2181	10
	TG 80												
4	ISK I 2015-4	3635	2977	3306	1649	2188	1918	2107	2107	2107	2575	2444	3
	VG 13163												
5	ISK I 2015-5	2025	2980	2503	1910	2159	2034	2634	2634	2634	2130	2390	4
	J 89												
6	ISK I 2015-6	983	2767	1875	1591	2066	1829	1306	1306	1306	2471	1670	16
	VG 13127												
7	ISK I 2015-7	3045	2840	2943	1649	1869	1759	2310	2310	2310	1823	2337	5
	PBS 15041												
8	ISK I 2015-8	3132	3332	3232	1273	2274	1774	2419	2419	2419	1418	2475	1
	VG 13153												
9	ISK I 2015-9	2340	2847	2594	2083	2419	2251	1725	1725	1725	1597	2190	9
	GKVK 5												
10	ISK I 2015-10	812	2200	1506	1505	2228	1866	1565	1565	1565	2344	1645	17
	RTNG 42												
11	ISK I 2015-11	1957	2442	2199	2055	1725	1890	2155	2155	2155	1649	2081	11
	NRCG CS 332												
12	ISK I 2015-12	2540	2530	2535	1522	1493	1508	1993	1993	1993	1701	2012	12
	NRCG CS 363												
13	ISK I 2015-13	2516	2428	2472	1765	2373	2069	2327	2327	2327	2402	2289	8
	JL 1085												
14	ISK I 2015-32	2256	2998	2627	1389	1753	1571	2740	2740	2740	2234	2313	6
	OG 52-1 (ZC)												
15	ISK I 2015-33	1768	2920	2344	1881	1974	1927	2625	2625	2625	1898	2299	7
	Girnar 3 (ZC)												
16	ISK I 2015-34	2031	2067	2049	1707	1725	1716	2192	2192	2192	1447	1986	14
	GPBD 5 (ZC)												
17	ISK I 2015-35	1785	3467	2626	1186	1997	1591	3194	3194	3194	2280	2470	2
	R 2001-2 (ZC)				-								
	GM	2219	2800	2509	1606	1939	1773	2197	2197	2197	1992	2160	
	S.E. Diff. Mean	214.3	301.2	260.4	209.4	227.1	218.5	129.6	129.6	129.5	63.1	210.3	
	CD at 5%	430.9	605.6	518.3	421.1	456.7	434.8	260.5	260.5	NS	126.9	412.3	
	CV%	13.7	15.2	14.7	18.4	16.6	17.4	8.3	8.3	8.3	4.5	13.8	

* The centre not included in the pooled analysis because of one year data.

Table 14b: INITIAL VARIETAL TRIAL (SPANISH) STAGE I (Kh. 2015) AND STAGE II (Kh. 2016) POOLED

Kernel yield (kg/ha)

S.N.	Entry	Imphal			Kanke			Mohanpur			Bhubaneswar *	Pooled mean (3 ctrs.)	R
		2015	2016	Mean	2015	2016	Mean	2015	2016	Mean	2016		
1	ISK I 2015-1	1448	1952	1700	718	943	830	1343	1325	1334	1285	1288	15
	J 88												
2	ISK I 2015-2	1484	2356	1920	802	1059	931	1168	1181	1175	1410	1342	13
	TVG 0924												
3	ISK I 2015-3	1723	2095	1909	1175	898	1036	1604	1623	1614	975	1520	9
	TG 80												
4	ISK I 2015-4	2406	2008	2207	990	1226	1108	1429	1431	1430	1712	1582	6
	VG 13163												
5	ISK I 2015-5	1296	2075	1686	1359	1494	1427	1866	1839	1853	1388	1655	3
	J 89												
6	ISK I 2015-6	590	1950	1270	834	1152	993	870	888	879	1573	1047	17
	VG 13127												
7	ISK I 2015-7	2284	2208	2246	1021	1085	1053	1593	1595	1594	1198	1631	4
	PBS 15041												
8	ISK I 2015-8	2091	2361	2226	865	1437	1151	1700	1695	1697	868	1691	2
	VG 13153												
9	ISK I 2015-9	1427	2087	1757	1396	1526	1461	1177	1191	1184	995	1467	11
	GKVK 5												
10	ISK I 2015-10	494	1560	1027	1037	1423	1230	1061	1067	1064	1487	1107	16
	RTNG 42												
11	ISK I 2015-11	1389	1802	1595	1473	1183	1328	1492	1515	1503	1041	1475	10
	NRCG CS 332												
12	ISK I 2015-12	1569	1810	1690	926	899	912	1365	1353	1359	1038	1320	14
	NRCG CS 363												
13	ISK I 2015-13	1918	1774	1846	1039	1326	1183	1627	1649	1638	1547	1556	7
	JL 1085												
14	ISK I 2015-32	1624	2237	1931	933	1085	1009	1976	1923	1950	1336	1630	5
	OG 52-1 (ZC)												
15	ISK I 2015-33	1204	2153	1678	1028	1114	1071	1840	1821	1830	1146	1527	8
	Girnar 3 (ZC)												
16	ISK I 2015-34	1461	1532	1496	1059	975	1017	1548	1529	1538	900	1350	12
	GPBD 5 (ZC)												
17	ISK I 2015-35	1161	2536	1848	763	1237	1000	2290	2265	2277	1467	1708	1
	R 2001-2 (ZC)				-								
	GM	1504	2029	1767	1025	1180	1102	1526	1523	1525	1257	1464	
	S.E. Diff. Mean	141.4	220.6	185.2	130.6	148.9	128.7	97.8	93.6	95.6	53.3	145.0	
	CD at 5%	284.2	443.5	368.6	262.6	299.3	256.1	196.5	188.2	NS	107.1	284.2	
	CV%	13.3	15.4	14.8	18.0	17.8	18.0	9.1	8.7	8.9	6.0	14.0	

* The centre not included in the pooled analysis because of one year data.

Table 14c: INITIAL VARIETAL TRIAL (SPANISH) STAGE I (Kh. 2015) AND STAGE II (Kh. 2016) POOLED

Ancillary traits

S.N.	Entry	Trait	Imphal			Kanke			Mohanpur			Bhubaneswar *	Pooled mean (3 ctrs.)
			2015	2016	Mean	2015	2016	Mean	2015	2016	Mean	2016	
1	ISK I 2015-1	PS	293	306	300	282	288	285	273	278	275	265	287
	J 88	D	118	120	119	105	109	107	121	118	120	102	115
		S	66	69	68	56	52	54	67	67	67	63	63
		HKW	39	44	42	39	41	40	42	43	42	33	41
		SMK	49	64	56	91	90	91	87	88	88	89	78
		O	40	48	44	-	51	51	-	-	-	-	47
		P	-	26	26	-	27	27	-	-	-	-	27
2	ISK I 2015-2	PS	286	304	295	267	286	277	273	280	277	285	283
	TVG 0924	D	112	114	113	101	103	102	122	120	121	102	112
		S	70	74	72	70	67	69	66	67	67	61	69
		HKW	34	43	38	38	37	38	42	43	42	24	40
		SMK	59	79	69	95	84	89	88	87	88	87	82
		O	42	48	45	-	50	50	-	-	-	-	47
		P	-	29	29	-	28	28	-	-	-	-	28
3	ISK I 2015-3	PS	290	313	301	268	271	270	286	280	283	280	285
	TG 80	D	112	114	113	105	106	106	118	119	119	104	112
		S	67	75	71	69	66	68	69	70	70	64	69
		HKW	43	48	46	53	38	45	45	45	45	29	45
		SMK	53	67	60	93	89	91	88	87	88	92	79
		O	39	47	43	-	49	49	-	-	-	-	46
		P	-	28	28	-	27	27	-	-	-	-	27
4	ISK I 2015-4	PS	274	313	294	232	287	260	269	275	272	284	275
	VG 13163	D	121	121	121	108	113	111	112	113	113	106	115
		S	66	67	67	60	56	58	68	68	68	67	64
		HKW	42	41	42	38	41	39	45	45	45	34	42
		SMK	53	56	54	96	91	93	87	86	87	91	78
		O	41	50	45	-	50	50	-	-	-	-	48
		P	-	29	29	-	29	29	-	-	-	-	29
5	ISK I 2015-5	PS	291	300	295	287	267	277	299	287	293	271	288
	J 89	D	119	119	119	105	117	111	121	119	120	105	117
		S	64	70	67	71	69	70	71	70	70	65	69
		HKW	32	45	38	39	40	39	46	46	46	31	41
		SMK	42	68	55	90	94	92	88	86	87	75	78
		O	41	47	44	-	49	49	-	-	-	-	46
		P	-	28	28	-	26	26	-	-	-	-	27
6	ISK I 2015-6	PS	81	310	196	198	253	225	248	260	254	278	225
	VG 13127	D	121	123	122	108	115	112	114	110	112	104	115
		S	60	71	66	52	56	54	67	68	68	64	62
		HKW	31	37	34	33	40	37	44	45	45	32	38
		SMK	40	59	50	90	79	85	89	88	89	83	74
		O	41	44	43	-	52	52	-	-	-	-	47
		P	-	-	-	-	28	28	-	-	-	-	28
7	ISK I 2015-7	PS	304	299	302	218	253	236	282	275	278	286	272
	PBS 15041	D	115	116	116	106	116	111	115	113	114	102	114
		S	75	78	77	62	58	60	69	69	69	66	68
		HKW	40	43	41	38	44	41	43	44	44	34	42
		SMK	64	82	73	88	93	90	89	89	89	93	84
		O	44	48	46	-	50	50	-	-	-	-	48
		P	-	29	29	-	29	29	-	-	-	-	29
8	ISK I 2015-8	PS	303	312	308	213	292	252	282	285	284	266	281
	VG 13153	D	117	118	118	104	116	110	111	113	112	106	113
		S	67	71	69	68	63	66	70	70	70	61	68
		HKW	37	42	39	30	41	35	45	44	45	32	40
		SMK	54	74	64	91	87	89	90	88	89	80	81
		O	41	50	45	-	51	51	-	-	-	-	48
		P	-	29	29	-	28	28	-	-	-	-	28
9	ISK I 2015-9	PS	304	311	308	285	285	285	275	287	281	281	291
	GKVK 5	D	121	122	122	108	120	114	115	115	115	104	117
		S	61	73	67	67	63	65	68	69	69	62	67
		HKW	34	37	35	37	40	38	47	46	47	37	40
		SMK	44	69	56	88	96	92	88	87	88	78	78
		O	41	51	46	-	52	52	-	-	-	-	49
		P	-	29	29	-	28	28	-	-	-	-	28

S.N.	Entry	Trait	Imphal			Kanke			Mohanpur			Bhubaneswar *	Pooled mean (3 ctrs.)
			2015	2016	Mean	2015	2016	Mean	2015	2016	Mean	2016	
10	ISK I 2015-10	PS	83	315	199	155	293	224	241	264	252	288	225
	RTNG 42	D	122	123	123	110	118	114	115	113	114	103	117
		S	61	71	66	69	64	67	68	68	68	64	67
		HKW	29	35	32	41	32	37	45	46	46	33	38
		SMK	40	57	48	98	82	90	89	88	89	76	76
		O	39	49	44	-	49	49	-	-	-	-	47
		P	-	29	29	-	28	28	-	-	-	-	28
11	ISK I 2015-11	PS	299	325	312	280	266	273	273	269	271	287	285
	NRCG CS 332	D	112	115	114	103	105	104	109	108	109	102	109
		S	71	74	73	72	69	71	69	70	70	63	71
		HKW	33	42	37	41	40	41	47	45	46	28	41
		SMK	62	64	63	89	97	93	87	88	88	91	81
		O	45	49	47	-	49	49	-	-	-	-	48
		P	-	27	27	-	28	28	-	-	-	-	28
12	ISK I 2015-12	PS	299	303	301	273	262	267	271	266	269	302	279
	NRCG CS 363	D	115	117	116	105	108	107	110	112	111	102	111
		S	62	72	67	61	60	61	69	68	68	61	65
		HKW	32	34	33	35	32	34	42	44	43	18	37
		SMK	49	64	57	92	89	91	86	87	87	88	78
		O	42	49	45	-	49	49	-	-	-	-	47
		P	-	27	27	-	26	26	-	-	-	-	27
13	ISK I 2015-13	PS	281	315	298	267	283	275	275	280	278	292	284
	JL 1085	D	112	114	113	105	113	109	109	108	109	115	110
		S	76	73	75	59	56	58	70	71	70	65	67
		HKW	32	35	34	28	42	35	46	45	45	30	38
		SMK	63	65	64	92	90	91	88	89	89	77	81
		O	35	49	42	-	51	51	-	-	-	-	47
		P	-	27	27	-	27	27	-	-	-	-	27
14	ISK I 2015-32	PS	289	291	290	253	297	275	289	292	291	307	285
	OG 52-1 (ZC)	D	114	115	115	103	111	107	110	112	111	102	111
		S	72	75	74	67	62	65	72	70	71	60	70
		HKW	36	40	38	39	43	41	43	45	44	23	41
		SMK	58	67	63	92	96	94	89	88	89	90	82
		O	43	49	46	-	50	50	-	-	-	-	48
		P	-	27	27	-	29	29	-	-	-	-	28
15	ISK I 2015-33	PS	294	297	295	285	299	292	299	306	302	285	297
	Girnar 3 (ZC)	D	115	116	116	106	115	111	109	110	110	110	112
		S	68	74	71	55	57	56	70	69	70	61	66
		HKW	37	41	39	36	34	35	45	43	44	28	39
		SMK	48	66	57	83	92	88	87	87	87	79	77
		O	38	48	43	-	48	48	-	-	-	-	46
		P	-	26	26	-	26	26	-	-	-	-	26
16	ISK I 2015-34	PS	287	281	284	274	264	269	266	275	271	271	275
	GPBD 5 (ZC)	D	112	114	113	106	116	111	110	111	111	108	112
		S	72	74	73	63	57	60	71	70	70	62	68
		HKW	36	35	36	43	32	37	43	44	44	28	39
		SMK	57	68	63	84	83	84	88	88	88	81	78
		O	40	50	45	-	49	49	-	-	-	-	47
		P	-	27	27	-	27	27	-	-	-	-	27
17	ISK I 2015-35	PS	275	296	285	263	250	256	306	288	297	275	280
	R 2001-2 (ZC)	D	113	116	115	106	118	112	112	110	111	102	113
		S	65	73	69	65	62	64	72	71	71	64	68
		HKW	35	40	37	43	34	38	43	45	44	22	40
		SMK	49	71	60	86	90	88	89	88	89	90	79
		O	42	48	45	-	50	50	-	-	-	-	48
		P	-	26	26	-	27	27	-	-	-	-	26
Final plant stand (000/ha)													
	G.M		267	305	286	253	276	265	277	279	278	283	276
	S.E. Diff. Mean		10.4	11.0	10.7	15.9	13.7	14.8	7.3	6.8	7.0	6.6	11.3
	CD at 5%		20.9	22.1	21.3	31.9	27.5	29.5	14.6	13.6	14.0	13.2	22.1
	CV %		5.5	5.1	5.3	8.9	7.0	7.9	3.7	3.4	3.6	3.3	5.8

* The centre not included in the pooled analysis because of one year data.

ZONE V

Table 15a: INITIAL VARIETAL TRIAL (SPANISH) STAGE I (Kh. 2015) AND STAGE II (Kh. 2016) POOLED

Pod yield (kg/ha)

S. N.	Entry	Dharwad (1)			Raichur (2)			Hiriyur (3)			Tirupati (4)			Jagtial (5)		
		2015	2016	Mean	2015	2016	Mean	2015	2016	Mean	2015	2016	Mean	2015	2016	Mean
1	ISK I 2015-1	7575	3406	5490	2861	1984	2423	3491	2560	3026	1099	2374	1736	2917	2393	2655
	J 88															
2	ISK I 2015-2	6842	2828	4835	2205	2602	2403	2717	2300	2509	1258	2577	1917	2891	2263	2577
	TVG 0924															
3	ISK I 2015-3	8495	3832	6163	3028	1981	2504	2978	2186	2582	1362	2171	1767	3394	1883	2639
	TG 80															
4	ISK I 2015-4	7347	4446	5896	3396	2217	2806	3990	2615	3302	1012	2710	1861	3054	2593	2824
	VG 13163															
5	ISK I 2015-5	7500	4574	6037	3056	2149	2602	3396	3141	3269	1024	2771	1897	3225	2290	2758
	J 89															
6	ISK I 2015-6	6913	4335	5624	1941	3176	2558	4375	3174	3774	1252	2831	2042	3398	2883	3141
	VG 13127															
7	ISK I 2015-7	6362	2788	4575	1719	2014	1866	3190	2716	2953	802	1773	1288	2038	1150	1594
	PBS 15041															
8	ISK I 2015-8	8531	4382	6456	3351	3048	3200	3672	2298	2985	1472	2778	2125	2619	1940	2279
	VG 13153															
9	ISK I 2015-9	7811	4494	6153	2361	2885	2623	4299	2308	3303	1428	2393	1910	3701	2093	2897
	GKVK 5															
10	ISK I 2015-10	6836	3322	5079	3302	2793	3047	4064	3424	3744	1193	2661	1927	2689	2520	2604
	RTNG 42															
11	ISK I 2015-11	6711	1986	4349	1632	1698	1665	3069	2832	2950	982	2092	1537	2155	1303	1729
	NRCG CS 332															
12	ISK I 2015-12	5988	2074	4031	1806	1410	1608	3282	1910	2596	1009	1977	1493	2036	1434	1735
	NRCG CS 363															
13	ISK I 2015-13	7727	3742	5734	3427	3882	3654	4674	3706	4190	1399	2776	2088	3063	3294	3178
	JL 1085															
14	ISK I 2015-35	7191	4269	5730	3023	2600	2811	4286	1914	3100	1289	2879	2084	3030	2980	3005
	R 2001-2 (ZC)															
15	ISK I 2015-36	7027	3499	5263	2604	1589	2097	4121	2610	3365	634	2196	1415	1901	1174	1537
	GPBD 4 (ZC)															
16	ISK I 2015-37	7310	3730	5520	2629	2942	2785	4143	2435	3289	1332	3145	2238	3183	3314	3248
	R 2001-3 (ZC)															
17	ISK I 2015-38	7390	3709	5549	3177	1821	2499	3906	2948	3427	1146	2351	1749	2478	1187	1832
	VG 9816 (ZC)															
	GM	7268	3613	5440	2677	2399	2538	3744	2651	3198	1158	2497	1828	2810	2158	2484
	S.E. Diff. Mean	486.4	328.9	421.3	281.3	285.1	283.2	351.0	293.6	323.5	157.0	318.9	251.3	397.5	153.8	301.3
	CD 5%	977.9	661.4	838.3	565.6	573.2	563.5	705.7	590.2	643.8	315.7	641.2	NS	799.2	309.3	599.7
	CV%	9.5	12.9	10.8	14.9	16.8	15.8	13.3	15.7	14.3	19.2	18.1	19.5	20.0	10.1	17.2

Table 15a: contd...

Pod yield (kg/ha)

S. N.	Entry	Kadiri* (6)			Vriddhachalam (7)			Tindivanam (8)			Pooled mean (7 ctrs)	R
		2015	2016	Mean	2015	2016	Mean	2015	2016	Mean		
1	ISK I 2015-1	689	420	554	1941	1552	1746	2023	1442	1732	2687	12
	J 88											
2	ISK I 2015-2	680	515	597	2132	1485	1809	2489	1705	2097	2592	13
	TVG 0924											
3	ISK I 2015-3	648	495	571	1778	1033	1405	2396	2232	2314	2768	10
	TG 80											
4	ISK I 2015-4	857	665	761	3907	1335	2621	3211	2309	2760	3153	3
	VG 13163											
5	ISK I 2015-5	777	483	630	2363	1426	1895	2537	2942	2739	3028	8
	J 89											
6	ISK I 2015-6	695	773	734	2194	1472	1833	3274	2397	2836	3115	5
	VG 13127											
7	ISK I 2015-7	587	324	456	1085	749	917	1993	1523	1758	2136	17
	PBS 15041											
8	ISK I 2015-8	1004	878	941	3758	1086	2422	3329	2356	2842	3187	2
	VG 13153											
9	ISK I 2015-9	917	737	827	3168	1173	2170	2785	2965	2875	3133	4
	GKVK 5											
10	ISK I 2015-10	619	744	682	2326	2193	2259	2325	3070	2697	3051	6
	RTNG 42											
11	ISK I 2015-11	631	379	505	2016	1686	1851	1687	2346	2017	2300	15
	NRCG CS 332											
12	ISK I 2015-12	649	515	582	1746	1502	1624	2167	2043	2105	2170	16
	NRCG CS 363											
13	ISK I 2015-13	1066	266	666	2686	1127	1906	2400	2911	2656	3344	1
	JL 1085											
14	ISK I 2015-35	801	595	698	2462	1730	2096	2624	1615	2120	2992	9
	R 2001-2 (ZC)											
15	ISK I 2015-36	576	321	449	1243	322	782	1476	1865	1670	2304	14
	GPBD 4 (ZC)											
16	ISK I 2015-37	677	589	633	2231	1763	1997	2318	2094	2206	3041	7
	R 2001-3 (ZC)											
17	ISK I 2015-38	662	576	619	2326	1207	1766	2503	1898	2200	2718	11
	VG 9816 (ZC)											
	GM	737	545	641	2315	1343	1829	2443	2218	2331	2807	
	S.E. Diff. Mean	35.1	72.9	57.3	313.0	238.6	278.2	169.7	98.0	138.6	294.7	
	CD 5%	70.6	146.6	114.0	629.3	479.8	553.5	341.2	197.1	275.7	577.6	
	CV%	6.7	18.9	12.6	19.1	25.1	21.5	9.8	6.2	8.4	14.9	

* The centre not included in the pooled analysis because its pod yield was below triennial national average (1412 kg/ha).

Table 15b: INITIAL VARIETAL TRIAL (SPANISH) STAGE I (Kh. 2015) AND STAGE II (Kh. 2016) POOLED

Kernel yield (kg/ha)

S. N.	Entry	Dharwad (1)			Raichur (2)			Hiriyur (3)			Tirupati (4)			Jagtial (5)		
		2015	2016	Mean	2015	2016	Mean	2015	2016	Mean	2015	2016	Mean	2015	2016	Mean
1	ISK I 2015-1	5251	2434	3843	1801	1443	1622	2517	1853	2185	653	1382	1018	1730	1464	1597
	J 88															
2	ISK I 2015-2	4921	2119	3520	1350	1853	1602	1921	1754	1838	834	1596	1215	1879	1369	1624
	TVG 0924															
3	ISK I 2015-3	6641	2942	4792	1888	1416	1652	2266	1585	1925	882	1399	1140	2225	1305	1765
	TG 80															
4	ISK I 2015-4	5099	3191	4145	2117	1535	1826	3003	1936	2470	642	1730	1186	1974	1753	1863
	VG 13163															
5	ISK I 2015-5	5405	3283	4344	1914	1526	1720	2451	2168	2309	624	1602	1113	1930	1485	1707
	J 89															
6	ISK I 2015-6	4714	3010	3862	1213	2129	1671	3050	2332	2691	768	1561	1164	2168	1833	2000
	VG 13127															
7	ISK I 2015-7	4726	2211	3469	1044	1424	1234	2222	2036	2129	561	1162	861	1367	800	1084
	PBS 15041															
8	ISK I 2015-8	5948	3054	4501	2028	2177	2102	2604	1712	2158	898	1563	1230	1522	1154	1338
	VG 13153															
9	ISK I 2015-9	5398	3177	4287	1454	1789	1621	2967	1570	2269	877	1331	1104	2351	1298	1824
	GKVK 5															
10	ISK I 2015-10	4684	2354	3519	2044	1852	1948	2811	2553	2682	755	1585	1170	1696	1639	1667
	RTNG 42															
11	ISK I 2015-11	5041	1573	3307	980	1156	1068	2264	2041	2152	698	1344	1021	1342	847	1095
	NRCG CS 332															
12	ISK I 2015-12	4596	1652	3124	1155	1003	1079	2438	1359	1898	684	1277	980	1396	986	1191
	NRCG CS 363															
13	ISK I 2015-13	5843	2798	4321	2266	2706	2486	3609	2614	3111	943	1626	1285	1922	2105	2013
	JL 1085															
14	ISK I 2015-35	5318	3242	4280	1883	1792	1837	2951	1342	2146	834	1706	1270	1933	1913	1923
	R 2001-2 (ZC)															
15	ISK I 2015-36	5273	2772	4023	1569	1028	1298	2986	1893	2439	384	1269	827	1113	694	903
	GPBD 4 (ZC)															
16	ISK I 2015-37	5332	2862	4097	1603	2071	1837	3011	1845	2428	856	1903	1380	2054	2125	2090
	R 2001-3 (ZC)															
17	ISK I 2015-38	5318	2806	4062	1970	1296	1633	2955	2076	2515	739	1436	1087	1430	744	1087
	VG 9816 (ZC)															
	GM	5265	2675	3970	1663	1658	1661	2707	1922	2314	743	1498	1121	1766	1383	1575
	S.E. Diff. Mean	357.0	248.5	307.6	177.5	204.5	191.4	277.5	235.5	268.7	102.4	200.7	159.3	245.0	119.5	192.7
	CD 5%	717.8	499.7	612.1	356.8	411.2	380.9	558.0	473.5	534.6	205.8	403.5	NS	492.6	240.2	383.5
	CV%	9.6	13.1	11.0	15.1	17.4	16.3	14.5	17.3	15.2	19.5	18.9	20.2	19.6	12.2	17.3

Table 15b: contd...

Kernel yield (kg/ha)

S. N.	Entry	Kadiri* (6)			Vriddhachalam (7)			Tindivanam (8)			Pooled mean (7 ctrs)	R
		2015	2016	Mean	2015	2016	Mean	2015	2016	Mean		
1	ISK I 2015-1	419	268	344	1079	898	989	1378	947	1163	1773	12
	J 88											
2	ISK I 2015-2	456	351	403	1284	946	1115	1711	1177	1444	1765	13
	TVG 0924											
3	ISK I 2015-3	442	345	394	1178	665	921	1662	1603	1632	1975	10
	TG 80											
4	ISK I 2015-4	577	443	510	2737	796	1767	2158	1543	1851	2158	2
	VG 13163											
5	ISK I 2015-5	479	293	386	1400	902	1151	1780	1934	1857	2029	9
	J 89											
6	ISK I 2015-6	431	475	453	1310	901	1106	2347	1686	2016	2073	5
	VG 13127											
7	ISK I 2015-7	436	230	333	706	456	581	1404	1102	1253	1516	17
	PBS 15041											
8	ISK I 2015-8	634	556	595	2644	621	1632	2232	1469	1850	2116	3
	VG 13153											
9	ISK I 2015-9	571	453	512	1870	786	1328	1943	1889	1916	2050	7
	GKVK 5											
10	ISK I 2015-10	390	467	428	1436	1446	1441	1677	2239	1958	2055	6
	RTNG 42											
11	ISK I 2015-11	443	251	347	1344	1136	1240	1230	1742	1486	1624	14
	NRCG CS 332											
12	ISK I 2015-12	471	373	422	1149	1017	1083	1561	1384	1472	1547	16
	NRCG CS 363											
13	ISK I 2015-13	696	174	435	1723	754	1238	1719	1977	1848	2329	1
	JL 1085											
14	ISK I 2015-35	541	393	467	1512	1146	1329	1866	1187	1526	2044	8
	R 2001-2 (ZC)											
15	ISK I 2015-36	376	206	291	731	172	451	1005	1259	1132	1582	15
	GPBD 4 (ZC)											
16	ISK I 2015-37	459	396	428	1354	1177	1265	1672	1447	1560	2094	4
	R 2001-3 (ZC)											
17	ISK I 2015-38	433	357	395	1458	751	1104	1779	1236	1507	1857	11
	VG 9816 (ZC)											
	GM	485	355	420	1466	857	1161	1713	1519	1616	1917	
	S.E. Diff. Mean	25.7	52.7	41.4	204.9	154.1	181.2	111.5	65.8	92.6	207.8	
	CD 5%	51.6	105.9	82.4	411.9	309.8	360.6	224.1	132.2	184.2	407.3	
	CV%	7.5	21.0	13.9	19.8	25.4	22.1	9.2	6.1	8.1	15.3	

* The centre not included in the pooled analysis because its pod yield was below triennial national average (1412 kg/ha).

Table 15c: INITIAL VARIETAL TRIAL (SPANISH) STAGE I (Kh. 2015) AND STAGE II (Kh. 2016) POOLED

Ancillary traits

S.No.	Entry	Trait	Dharwad (1)			Raichur (2)			Hiriyur (3)			Tirupati (4)			Jagtial (5)		
			2015	2016	Mean	2015	2016	Mean	2015	2016	Mean	2015	2016	Mean	2015	2016	Mean
1	ISK I 2015-1	PS	309	158	234	339	339	339	217	198	207	170	227	199	350	325	338
	J 88	D	108	110	109	108	109	108	120	123	122	114	126	120	91	106	98
		S	69	72	70	63	73	68	72	72	72	60	58	59	59	61	60
		HKW	51	48	49	39	37	38	51	58	55	30	29	30	24	33	29
		SMK	93	95	94	65	92	78	-	-	-	77	80	79	93	88	90
		O	45	49	47	-	50	50	-	50	50	47	49	48	-	49	49
		P	-	26	26	-	25	25	-	27	27	-	26	26	-	25	25
2	ISK I 2015-2	PS	313	195	254	334	335	335	270	202	236	231	284	258	433	312	373
	TVG 0924	D	109	108	109	101	105	103	120	123	122	114	126	120	91	105	98
		S	72	75	73	61	71	66	71	76	73	66	62	64	65	61	63
		HKW	49	42	46	40	34	37	47	50	49	29	29	29	34	30	32
		SMK	91	97	94	65	94	79	-	-	-	81	81	81	98	90	94
		O	46	50	48	-	50	50	-	49	49	48	48	48	-	51	51
		P	-	28	28	-	25	25	-	27	27	-	28	28	-	24	24
3	ISK I 2015-3	PS	280	141	211	330	326	328	236	147	192	192	189	191	476	225	351
	TG 80	D	109	111	110	105	108	106	120	123	122	114	126	120	89	103	96
		S	78	77	78	62	72	67	76	73	74	65	65	65	66	69	67
		HKW	67	57	62	39	37	38	48	52	50	31	31	31	42	37	39
		SMK	96	97	97	64	93	79	-	-	-	76	77	77	96	96	96
		O	44	47	45	-	49	49	-	49	49	48	48	48	-	50	50
		P	-	26	26	-	25	25	-	26	26	-	25	25	-	23	23
4	ISK I 2015-4	PS	204	214	209	343	333	338	234	137	186	87	204	146	260	319	290
	VG 13163	D	110	109	110	106	111	109	120	123	122	114	126	120	91	105	98
		S	70	72	71	63	69	66	75	74	75	63	64	64	65	68	66
		HKW	55	52	53	40	41	40	48	50	49	34	33	34	33	38	36
		SMK	91	95	93	67	92	79	-	-	-	80	81	81	95	95	95
		O	46	50	48	-	50	50	-	52	52	49	51	50	-	52	52
		P	-	28	28	-	25	25	-	29	29	-	26	26	-	25	25
5	ISK I 2015-5	PS	313	214	264	330	332	331	270	196	233	202	304	253	418	312	365
	J 89	D	107	109	108	107	109	108	120	123	122	114	126	120	89	105	97
		S	72	72	72	63	71	67	73	68	70	60	58	59	60	65	62
		HKW	49	44	46	40	38	39	47	63	55	26	28	27	33	34	34
		SMK	95	92	93	71	92	81	-	-	-	81	77	79	92	93	93
		O	44	47	45	-	48	48	-	48	48	46	47	46	-	49	49
		P	-	26	26	-	23	23	-	26	26	-	26	26	-	23	23
6	ISK I 2015-6	PS	336	234	285	328	336	332	170	199	185	144	250	197	330	314	322
	VG 13127	D	112	113	113	101	105	103	120	123	122	114	126	120	91	104	98
		S	68	70	69	62	67	65	70	74	72	61	55	58	64	64	64
		HKW	40	35	38	38	35	36	44	72	58	25	22	24	36	25	31
		SMK	87	90	88	67	95	81	-	-	-	76	74	75	93	87	90
		O	47	52	50	-	50	50	-	51	51	48	50	49	-	48	48
		P	-	28	28	-	24	24	-	28	28	-	26	26	-	22	22
7	ISK I 2015-7	PS	309	171	240	336	332	334	191	148	170	139	184	162	348	308	328
	PBS 15041	D	107	110	109	104	111	108	120	123	122	114	126	120	90	105	98
		S	74	79	77	61	71	66	70	75	72	70	66	68	68	70	69
		HKW	46	45	46	38	35	36	43	52	47	32	29	31	37	32	35
		SMK	89	96	92	66	92	79	-	-	-	78	75	77	94	92	93
		O	44	47	46	-	49	49	-	49	49	48	47	48	-	51	51
		P	-	27	27	-	26	26	-	27	27	-	27	27	-	24	24
8	ISK I 2015-8	PS	294	178	236	328	337	333	213	188	200	141	237	189	338	275	307
	VG 13153	D	108	110	109	106	107	106	120	123	122	114	126	120	91	106	98
		S	70	70	70	61	72	66	71	74	73	61	56	59	58	60	59
		HKW	63	55	59	42	37	39	49	52	51	32	34	33	38	34	36
		SMK	94	95	94	67	93	80	-	-	-	77	81	79	96	91	93
		O	47	50	49	-	51	51	-	51	51	49	51	50	-	51	51
		P	-	27	27	-	25	25	-	28	28	-	27	27	-	25	25
9	ISK I 2015-9	PS	317	230	274	333	334	334	223	186	204	200	232	216	473	302	388
	GKVK 5	D	110	112	111	109	111	110	120	123	122	114	126	120	91	107	99
		S	69	71	70	62	62	62	69	68	68	61	55	58	64	62	63
		HKW	41	39	40	38	31	34	42	48	45	25	23	24	31	30	31
		SMK	90	90	90	67	94	81	-	-	-	74	73	74	94	85	90
		O	47	52	50	-	51	51	-	51	51	48	50	49	-	51	51
		P	-	28	28	-	25	25	-	29	29	-	26	26	-	25	25

Table 15c: contd...

Ancillary traits

S.No.	Entry	Trait	Kadiri* (6)			Vriddhachalam (7)			Tindivanam (8)			Pooled mean (7ctrs.)
			2015	2016	Mean	2015	2016	Mean	2015	2016	Mean	
1	ISK I 2015-1	PS	282	274	278	178	150	164	325	269	297	254
	J 88	D	116	116	116	103	105	104	101	112	107	110
		S	61	64	62	56	57	57	68	66	67	65
		HKW	26	33	29	41	44	43	43	33	38	40
		SMK	89	81	85	64	76	70	95	89	92	84
		O	49	49	49	-	50	50	-	51	51	49
		P	-	29	29	-	27	27	-	27	27	26
2	ISK I 2015-2	PS	260	296	278	229	158	194	325	287	306	279
	TVG 0924	D	111	114	113	104	95	100	100	112	106	108
		S	67	68	67	60	64	62	69	69	69	67
		HKW	26	32	29	41	42	42	47	31	39	39
		SMK	92	88	90	68	84	76	97	83	90	86
		O	49	48	48	-	48	48	-	50	50	49
		P	-	27	27	-	27	27	-	25	25	26
3	ISK I 2015-3	PS	268	271	270	166	82	124	326	296	311	244
	TG 80	D	113	115	114	103	90	97	98	113	106	108
		S	68	70	69	66	64	65	69	72	71	70
		HKW	30	36	33	49	46	47	51	40	46	45
		SMK	96	86	91	78	70	74	97	90	93	86
		O	48	46	47	-	50	50	-	51	51	49
		P	-	28	28	-	25	25	-	27	27	25
4	ISK I 2015-4	PS	198	258	228	174	153	164	322	284	303	233
	VG 13163	D	120	117	119	108	110	109	99	115	107	111
		S	68	66	67	70	59	64	68	67	67	68
		HKW	30	38	34	48	44	46	42	34	38	42
		SMK	92	82	87	90	73	82	95	85	90	86
		O	46	50	48	-	51	51	-	52	52	51
		P	-	28	28	-	27	27	-	27	27	27
5	ISK I 2015-5	PS	269	306	288	219	115	167	323	306	314	275
	J 89	D	118	114	116	102	105	104	99	116	108	109
		S	62	61	61	59	64	62	70	66	68	66
		HKW	27	31	29	41	42	41	46	36	41	40
		SMK	87	81	84	70	68	69	95	95	95	85
		O	49	46	48	-	50	50	-	50	50	48
		P	-	27	27	-	25	25	-	25	25	25
6	ISK I 2015-6	PS	195	226	211	118	135	127	320	303	312	251
	VG 13127	D	120	118	119	103	110	107	100	115	108	110
		S	62	62	62	59	63	61	72	71	71	66
		HKW	26	30	28	34	35	35	44	34	39	37
		SMK	88	79	84	77	83	80	94	80	87	83
		O	47	50	48	-	51	51	-	53	53	50
		P	-	27	27	-	25	25	-	26	26	26
7	ISK I 2015-7	PS	230	275	253	152	92	122	322	286	304	237
	PBS 15041	D	112	114	113	100	95	98	99	113	106	108
		S	74	71	72	66	61	64	71	73	72	70
		HKW	28	32	30	45	42	44	45	38	41	40
		SMK	92	88	90	74	88	81	81	80	81	84
		O	49	48	48	-	49	49	-	50	50	49
		P	-	28	28	-	27	27	-	27	27	26
8	ISK I 2015-8	PS	249	278	264	174	106	140	324	269	296	243
	VG 13153	D	120	115	118	105	105	105	97	112	105	109
		S	63	63	63	70	58	64	67	63	65	65
		HKW	31	40	36	40	45	43	43	35	39	43
		SMK	96	86	91	88	77	83	97	96	96	88
		O	49	50	50	-	52	52	-	53	53	51
		P	-	27	27	-	26	26	-	25	25	26
9	ISK I 2015-9	PS	302	224	263	310	100	205	319	276	298	274
	GKVK 5	D	121	116	119	106	110	108	97	114	106	111
		S	62	61	62	59	66	63	70	64	67	64
		HKW	25	29	27	43	36	40	41	31	36	36
		SMK	88	78	83	65	73	69	92	91	91	82
		O	46	49	48	-	52	52	-	52	52	51
		P	-	26	26	-	26	26	-	27	27	26

S.No.	Entry	Trait	Dharwad (1)			Raichur (2)			Hiriyur (3)			Tirupati (4)			Jagtial (5)		
			2015	2016	Mean	2015	2016	Mean	2015	2016	Mean	2015	2016	Mean	2015	2016	Mean
10	ISK I 2015-10	PS	202	219	211	328	334	331	212	191	201	121	305	213	257	299	278
	RTNG 42	D	112	113	113	106	113	110	120	123	122	114	126	120	91	107	99
		S	69	71	70	62	66	64	69	74	72	63	60	62	63	65	64
		HKW	43	40	42	37	35	36	44	73	58	29	24	27	39	29	34
		SMK	89	93	91	69	94	81	-	-	-	80	75	78	95	83	89
		O	46	50	48	-	50	50	-	50	50	48	49	48	-	50	50
		P	-	28	28	-	27	27	-	29	29	-	28	28	-	27	27
11	ISK I 2015-11	PS	289	171	230	333	330	332	276	177	227	190	278	234	495	253	374
	NRCG CS 33	D	107	110	109	104	110	107	120	123	122	114	126	120	89	107	98
		S	75	79	77	60	68	64	74	72	73	71	65	68	63	65	64
		HKW	50	48	49	36	36	36	42	53	47	32	33	33	34	32	33
		SMK	94	96	95	69	95	82	-	-	-	82	79	81	94	89	92
		O	44	48	46	-	47	47	-	49	49	48	47	48	-	48	48
		P	-	28	28	-	25	25	-	27	27	-	29	29	-	24	24
12	ISK I 2015-12	PS	323	177	250	339	329	334	214	162	188	231	302	267	472	278	375
	NRCG CS 36	D	108	108	108	107	107	107	120	123	122	114	126	120	89	106	98
		S	77	80	78	64	71	68	74	71	73	68	65	67	69	69	69
		HKW	44	43	43	37	28	33	37	44	40	28	28	28	35	27	31
		SMK	93	97	95	66	94	80	-	-	-	77	77	77	97	86	92
		O	44	48	46	-	49	49	-	50	50	48	48	48	-	50	50
		P	-	27	27	-	24	24	-	27	27	-	28	28	-	23	23
13	ISK I 2015-13	PS	316	198	257	340	333	336	261	159	210	223	275	249	399	311	355
	JL 1085	D	108	113	111	109	110	110	120	123	122	114	126	120	91	107	99
		S	76	75	75	66	70	68	77	70	74	68	59	64	63	64	63
		HKW	45	41	43	39	32	36	43	74	59	28	26	27	31	29	30
		SMK	92	94	93	65	94	79	-	-	-	86	77	82	90	87	89
		O	47	50	49	-	50	50	-	51	51	48	49	48	-	51	51
		P	-	27	27	-	24	24	-	27	27	-	27	27	-	24	24
14	ISK I 2015-35	PS	321	194	258	338	328	333	199	208	203	191	267	229	414	287	350
	R 2001-2 (ZC)	D	110	112	111	108	113	111	120	123	122	114	126	120	91	106	98
		S	74	76	75	62	69	65	69	70	69	65	59	62	64	64	64
		HKW	40	39	40	34	26	30	37	43	40	26	22	24	25	25	25
		SMK	86	93	89	67	92	80	-	-	-	78	73	76	94	89	91
		O	45	49	47	-	48	48	-	48	48	46	47	46	-	48	48
		P	-	26	26	-	24	24	-	27	27	-	25	25	-	23	23
15	ISK I 2015-36	PS	299	211	255	324	334	329	244	193	218	165	247	206	414	247	330
	GPBD 4 (ZC)	D	108	110	109	108	110	109	120	123	122	114	126	120	91	107	99
		S	75	79	77	60	65	62	73	73	73	61	58	60	59	59	59
		HKW	35	38	36	35	26	31	40	38	39	20	21	21	27	26	27
		SMK	91	93	92	64	91	77	-	-	-	74	72	73	88	92	90
		O	47	52	49	-	50	50	-	51	51	49	51	50	-	52	52
		P	-	29	29	-	25	25	-	28	28	-	27	27	-	23	23
16	ISK I 2015-37	PS	327	177	252	332	338	335	196	181	188	182	304	243	376	325	351
	R 2001-3 (ZC)	D	110	109	110	110	111	110	120	123	122	114	126	120	91	106	98
		S	73	77	75	61	70	66	73	75	74	64	61	63	65	64	64
		HKW	41	40	40	37	28	33	40	46	43	27	23	25	28	25	27
		SMK	89	97	93	62	94	78	-	-	-	80	74	77	92	89	91
		O	45	49	47	-	47	47	-	48	48	45	47	46	-	48	48
		P	-	25	25	-	25	25	-	27	27	-	25	25	-	22	22
17	ISK I 2015-38	PS	309	237	273	325	335	330	227	185	206	195	298	247	383	249	316
	VG 9816 (ZC)	D	109	110	110	106	114	110	120	123	122	114	126	120	91	109	100
		S	72	76	74	62	71	67	76	70	73	65	61	63	58	63	61
		HKW	37	34	35	35	29	32	40	47	44	24	22	23	25	22	24
		SMK	91	89	90	67	94	81	-	-	-	82	78	80	91	79	85
		O	46	49	47	-	50	50	-	51	51	47	49	48	-	51	51
		P	-	27	27	-	24	24	-	26	26	-	26	26	-	24	24
Final plant stand (000/ha)																	
	G.M		298	195	246	333	333	333	227	180	203	177	258	217	390	291	341
	S.E. Diff. Mean		25.7	27.1	26.4	1.1	3.473	2.6	29.9	22.9	26.6	20.8	18	143.3	20.9	12	17.0
	CD at 5%		51.7	54.49	52.6	2.2	6.983	5.1	60.1	NS	53.0	41.9	36.1	285.2	41.9	24	33.8
	CV %		12.2	19.62	15.2	0.5	1.473	1.1	18.5	18	18.5	16.7	9.85	12.7	7.5	5.81	7.0

S.N.	Entry	Trait	Kadiri* (6)			Vriddhachalam (7)			Tindivanam (8)			Pooled mean (7ctrs.)
			2015	2016	Mean	2015	2016	Mean	2015	2016	Mean	
10	ISK I 2015-10	PS	172	248	210	138	167	153	318	288	303	241
	RTNG 42	D	120	115	118	110	110	110	100	110	105	111
		S	63	63	63	62	67	64	72	73	73	67
		HKW	25	33	29	37	37	37	41	30	36	38
		SMK	90	84	87	82	83	83	93	93	93	86
		O	48	48	48	-	50	50	-	50	50	49
		P	-	27	27	-	27	27	-	27	27	28
11	ISK I 2015-11	PS	304	277	291	250	145	198	323	296	310	272
	NRCG CS 33	D	120	113	117	101	95	98	96	111	104	108
		S	70	66	68	67	68	67	73	74	73	70
		HKW	28	30	29	41	40	40	42	33	37	39
		SMK	92	83	88	71	74	72	94	95	94	86
		O	48	45	46	-	48	48	-	51	51	48
		P	-	27	27	-	26	26	-	26	26	26
12	ISK I 2015-12	PS	285	323	304	284	145	215	324	266	295	275
	NRCG CS 36	D	112	110	111	101	105	103	107	116	112	110
		S	73	73	73	66	68	67	72	68	70	70
		HKW	28	27	28	34	40	37	35	24	30	35
		SMK	95	85	90	80	83	81	96	94	95	87
		O	48	46	47	-	52	52	-	54	54	50
		P	-	27	27	-	25	25	-	23	23	25
13	ISK I 2015-13	PS	291	255	273	234	139	187	324	271	298	270
	JL 1085	D	114	115	115	102	95	99	97	113	105	109
		S	65	64	65	64	67	65	72	68	70	68
		HKW	28	29	29	43	36	40	37	34	36	38
		SMK	93	83	88	76	69	72	97	97	97	85
		O	47	49	48	-	49	49	-	53	53	50
		P	-	26	26	-	25	25	-	24	24	25
14	ISK I 2015-35	PS	302	282	292	192	141	167	322	285	304	263
	R 2001-2 (ZC)	D	120	116	118	105	105	105	108	118	113	111
		S	68	66	67	61	67	64	71	74	72	67
		HKW	24	27	25	40	37	39	40	25	32	33
		SMK	90	80	85	54	65	59	96	95	96	82
		O	47	47	47	-	48	48	-	49	49	48
		P	-	26	26	-	25	25	-	26	26	25
15	ISK I 2015-36	PS	288	230	259	296	66	181	321	271	296	259
	GPBD 4 (ZC)	D	124	114	119	102	105	104	108	118	113	111
		S	65	64	65	61	54	57	68	68	68	65
		HKW	25	28	26	34	31	32	35	26	31	31
		SMK	93	84	89	58	73	66	93	90	92	82
		O	49	48	48	-	51	51	-	51	51	51
		P	-	27	27	-	26	26	-	26	26	26
16	ISK I 2015-37	PS	248	285	267	201	175	188	319	270	294	264
	R 2001-3 (ZC)	D	122	115	119	105	105	105	98	117	108	110
		S	68	67	68	61	67	64	73	69	71	68
		HKW	22	28	25	37	35	36	41	25	33	34
		SMK	92	83	88	52	70	61	96	98	97	83
		O	49	48	48	-	48	48	-	50	50	48
		P	-	25	25	-	24	24	-	25	25	25
17	ISK I 2015-38	PS	297	289	293	266	129	198	322	272	297	267
	VG 9816 (ZC)	D	123	118	121	103	105	104	97	113	105	110
		S	65	62	63	63	62	62	71	65	68	67
		HKW	23	26	25	35	32	34	34	35	35	32
		SMK	92	85	89	68	71	69	96	94	95	83
		O	49	47	48	-	49	49	-	52	52	50
		P	-	27	27	-	27	27	-	26	26	26
Final plant stand (000/ha)												
	G.M		261	270	266	211	129	170	322	282	302	259
	S.E. Diff. Mean		17.8	19.423	18.7	38.2	21.278	309.3	4.6	13.028	9.8	21.2
	CD at 5%		35.8	39.053	37.1	76.9	42.783	615.4	NS	26.194	19.4	41.5
	CV %		9.6	10.157	9.9	25.7	23.287	25.7	2.0	6.531	4.6	11.5

* The centre not included in the pooled analysis because its pod yield was below triennial national average (1412 kg/ha).

Initial Varietal Trial (IVT stage-I & II Pooled)
Habit Group: Virginia (Virginia Runner & Virginia Bunch)

There were eight test genotypes in this trial. The trial was allotted to 21 centres located across four zones (excluding zone III where Virginia genotypes are not grown). All the 20 centres have conducted the trial for over two years and reported the data. Bhubaneswar centre has conducted only second year trial (2016). The zone and centre-wise results are presented below (**Tables 16a through 19c**). Whenever, either the coefficient of variation exceeded 25% in a particular location over two years or the mean yield of the location fell below 1412 kg/ha (triennial national average of *kharif season*, 2014 to 2016) the data could not be included in the pooled analysis.

Zone I

There were four locations in this zone, Mainpuri (Uttar Pradesh), Durgapura, Bikaner (Rajasthan) and Ludhiana (Punjab). The seven check varieties used in this zone were Girnar-2 (ZC), GG 21 (ZC), HNG 69 (ZC), CSMG 9510 (ZC), CSMG 2003-19, Raj Mungfali-1 (ZC) and RG 559-3 (ZC). The Coefficient of variation (CV%) was about 10% both for pod and kernel yield and the CV% was well within the limits in three locations. At Bikaner centre, the CV% was 90% in the first year while in the second year the CV% was 11%. The plant stand was very marginal (<100) at Bikaner and in the other three centres it was very low. The data of Bikaner centre could not be included in the pooled analysis. The centre-wise results are presented below (**Tables 16a through 19c**).

Mainpuri
In this location, the mean pod and kernel yield of the genotypes over two years were moderate (1957 kg/ha and 1387 kg/ha respectively). Over the two test years the zonal check, GG 21 (ZC) was the best check of this centre for pod (2179 kg/ha) and kernel yield (1534 kg/ha). Over two years the test genotype, CSMG 2010-11 exhibited significant pod (2549 kg/ha) and kernel yield (1811 kg/ha) over the best check GG 21 (ZC).

Durgapura
The mean pod (3930 kg/ha) and kernel (2747 kg/ha) yield over two years were high at this centre. Over two years, the zonal check variety, Utkarsh (ZC) was the best with a very high pod (4518 kg/ha) and kernel (3302 kg/ha) yield. Among the test genotypes, RG 532-3 was the best for pod (4889 kg/ha) and kernel yield (3478 kg/ha) but remained at par with those of the best check, Utkarsh (ZC).

Bikaner
The mean pod (2524 kg/ha) and kernel (1546 kg/ha) yield over two years.. Over two years, the zonal check variety, Utkarsh (ZC) was the best for pod (3603 kg/ha) while for kernel (2289 kg/ha) yield, Raj Mungfali-1 (ZC) was the best. Among the test genotypes, JSP 60 was found the best for pod (3151 kg/ha) and kernel (1937 kg/ha) yield.

Ludhiana
The mean pod (2115 kg/ha) and kernel (1359 kg/ha) yield over two years were moderate at this centre. Over two years, the zonal check variety, Girnar-2 was the best for pod (3378 kg/ha) and for kernel yield (2184 kg/ha) was the best and out-yielded the other test genotypes. Among the test genotypes, PBS 25033 was the best for pod (2764 kg/ha) and kernel (1709 kg/ha) yield.

Zonal Mean Performances
The mean pod (2667 kg/ha) and kernel (1831 kg/ha) yield over two years were high in this zone. Across the three locations and over two years, the zonal check, Girnar-2 was the best for pod (3039 kg/ha). For kernel yield, the zonal check, Raj Munhphali-1 was found the best (2129 kg/ha) and out-yielded all the test genotypes and check varieties. Among the test genotypes, CSMG 2010-11 was the best for pod (3117 kg/ha) and kernel yield (2073 kg/ha).

Ancillary Observation
In all the test centres, the plant stand was very low. The genotypes matured around 125 days. Shelling outturn was high (70%) in Girnar-2, Raj Munhphali-1 and Utkarsh and moderate (67%) in PBS 22080 and CSMG 2010-11. The 100-seed weight was low (44g/100 kernel) in PBS 25053 and high (70 g/100 kernel) in CSMG 2010-11 followed by RG 559-3. Oil content of all the genotypes was around 49% and ranged from 49% to 51%, the highest in NRCG CS 414. Protein content of all the genotypes was around 25% and ranged from 25% to 27%.

Conclusion
Across the four locations and over two years none of the test genotypes significantly surpassed the yield levels of the best check, Raj Munhphali-1 (ZC) and hence none deserves promotion to AVT.

Zone II

The trial was conducted in four centres, Junagadh, Amreli, and Talod in Gujarat and Udaipur in Rajasthan over two years. The check varieties used were Kaushal (NC), GG 20 (ZC), Somnath (ZC) and KDG 128 (ZC). The centre-wise results are presented below (**Tables 17a through 17c**).

Junagadh
In this location, the mean pod (2324 kg/ha) and kernel yield (2170 kg/ha) of the genotypes over two years were high. Over the two test years among checks, KDG 128 (ZC) was the best check of this centre with a very high pod (3236 kg/ha) and kernel (2170 kg/ha) yield respectively and out-yielded all the other checks and test gentypes. Among the test genotypes, CSMG 2010-11 was found the best for pod (3520 kg/ha) while for kernel yield, JSP 61 was the best (1504 kg/ha).

Amreli
In this location, the mean pod and kernel yield of the genotypes over two years were high (3053 kg/ha and 1922 kg/ha respectively). There were no significant difference between the test genotypes and check varieties for pod and kernel yields. Over the two test years among checks, KDG 128 (ZC) was the best check of this centre with a very

high pod (3776 kg/ha) and kernel (2595 kg/ha) yield respectively. The test genotype JSP 60 was found the best both for pod (3144 kg/ha) and for kernel yield, PBS 22080 was found the best (1968 kg/ha).

Talod

In this location, the mean pod (2903 kg/ha) and kernel (1955 kg/ha) yields of the genotypes over two years were high. The zonal check variety, KDG 128 was the best for pod (2891 kg/ha) and kernel (1970 kg/ha) yield over two years. Over this check, two genotypes, RG 595 (3463 kg of pod and 2425 kg of kernel/ha) and JSP 61(3463 kg of pod and 2230 kg of kernel/ha) were found significantly superior over the best check KDG 128 (ZC).

Udaipur

In this location, the mean pod (2578 kg/ha) and kernel yields (1827 kg/ha) of the genotypes over two years were high. The zonal check variety, KDG 128 was the best for pod (2712 kg/ha) while for kernel yield, GG 20 (ZC) was the best (1901 kg/ha) yield over two years. None of the test genotypes could significantly out yield the best check either for kernel yield as for pod yield there were no significant differences among all the genotypes. Among the test genotypes, PBS 22080 was the best for pod (2986 kg/ha) and for kernel yield (2127 kg/ha).

Zonal Mean Performances

The mean pod (2714 kg/ha) and kernel yields (1797 kg/ha) of the genotypes in this zone over two years were high. Across four locations and over two years, KDG 128 (ZC) was the best for pod (3154 kg/ha) and kernel yield and surpassed all the other check varieties and test genotypes. Among the test genotypes, JSP 61 was the best for pod (2951 kg/ha) and kernel (1883 kg/ha) yield.

Ancillary Observation

The plant stand was very low in all the four locations. The genotypes matured around 118-120 days. The shelling out turn was low (64%) in JSP 61 and high (69%) in ICGV Somnath (ZC). The100-seed weight was low (36 g) in PBS 25033 and high (55 g) in CSMG 2010-11. Data on oil content was not reported by Amreli (for two years) centre. Oil content was very low at Talod centre and hence meaningful conclusion could not be made. However oil content was high (48%) in NRCG CS 414.

Conclusion

Across the four locations and over two years none of the test genotypes significantly surpassed the yield levels of the best check, KDG 128 (ZC) and hence none deserves promotion to AVT.

Zone IV

There were four centres, (Kanke, Imphal, Mohanpur and Bhubaneswar) in this zone. Bhubaneswar centre did not report the data for the first year. Hence the data of this centre could not be included in the analysis. The check varieties used were ICGS 76 (ZC) and BAU 13 (ZC), JSP 49 (ZC) and RG 578 (ZC). The Coefficient of variation (CV%) was within limits in this zone for both for pod (11%) and kernel yield. The centre-wise results are presented below (**Tables 18a through 18c**).

Kanke

In this location, the mean pod and kernel yields of the genotypes over two years were moderate (1727 kg/ha and 1119 kg/ha respectively). The zonal check variety, RG 578 was the best for pod (1897 kg/ha) and kernel (1177 kg/ha) yield over two years. Among the test genotypes, CSMG 2010-11 was the best for pod (2067 kg/ha) and kernel yield (1315 kg/ha) but remained at par with those of the best check RG 578.

Imphal

In this location, the mean pod and kernel yields of the genotypes over two years were high (2852 kg/ha and 2131 kg/ha respectively). Among the check varieties, RG 578 was the best for pod (3244 kg/ha) and kernel (2575 kg/ha) yield. Among the test genotypes, PBS 25053 was the best for pod (3038 kg/ha) and kernel yield (2379 kg/ha) but remained at par with those of the best check RG 578.

Mohanpur

In this location, the mean pod and kernel yields of the genotypes over two years were moderate (2255 kg/ha and 1578 kg/ha respectively). Over two years, there were no significant difference between the test genotypes and check varieties for pod and kernel yields. The zonal check variety, RG 578 was the best for pod (3150 kg/ha) and kernel (2236 kg/ha) yield. Hence, the real genetic worth of these genotypes could not be assessed. Under these circumstances, among the test genotypes, JSP 61was the best for pod (2739 kg/ha) and for kernel yield, CSMG 2010-11 was the best (1795 kg/ha).

Bhubaneswar

The centre has conducted the trial for only one year. Hence, this centre's data could not be included for pooled analysis. The average yields of entries and checks in this centre were 1939 kg of pod and 1212 kg of kernel per ha. Among the checks, ICGS 76 (ZC) was the best (1939 kg of pod and 1275 kg of kernel per ha). Among the test genotypes, NRCG CS 414 was the best for pod (2297 kg/ha) while for kernel yield JSP 60 was the best (1428 kg/ha).

Zonal Mean Performances

In this zone, the mean pod and kernel yields of the genotypes over two years were high (2278 kg/ha and 1609 kg/ha respectively). Across the two locations and over two years, the zonal check variety, RG 578 was the best for pod (2764 kg/ha) and kernel (1996 kg/ha) yield and surpassed all the other checks and test genotypes. Among the test genotypes, CSMG 2010-11 was the best for pod (2615 kg/ha) and kernel (1812 kg/ha) yield.

Ancillary Observation
The plant stand was very low at all the test locations. The test genotypes and checks matured around 115 days. Shelling outturn was high (73%) in PBS 22080, RG 532, ICGS 76. Seed size was large in this zone and ranged from 50g (PBS 22080) to 62g (NRCG CS 414 and BAU 13). In general oil content was very low at IMPHAL centre in the first year. Hence meaningful conclusion could not be made on oil content. The range for content observed was 47%-50%. Protein content ranged from 26%-28% highest in JSP 60.

Conclusion
Across the two locations and over two years, none of the test genotypes significantly surpassed the yield levels of the best check, RG 578 (ZC) and hence none deserves promotion to AVT.

Zone V

There were 9 centres in this zone. The check varieties used were GG 16 (ZC), ICGV 00348 (ZC) and KDG 128. The Coefficient of variation (CV%) was 17% for pod and 19% kernel yields. The mean pod yields at two centres viz. Virudhachalam and Kadiri were below national average of 1412 kg/ha (TE 2014-16) of *kharif* season. Hence, the data of these two centres could not be included in the analysis. The centre-wise results are presented below (**Tables 19a through 19c**).

Dharwad
In this location, the mean pod and kernel yields of the genotypes over two years were high (3286 kg/ha and 2379 kg/ha respectively). Over two years, the zonal check variety, KDG 128 was the best for pod (4447 kg/ha) and kernel yield (3209 kg/ha) and out-yielded all the genotypes. The test genotype, CSMG 2010-11 recorded high pod (4214 kg/ha) and kernel (2965 kg/ha) yield.

Raichur
In this location, the mean pod and kernel yields of the genotypes over two years were high (2279 kg/ha and 1535 kg/ha respectively). Over two years, the zonal check variety, KDG 128 was the best for pod (3582 kg/ha) and kernel yield (2289 kg/ha) and surpassed the yield levels of the checks and test genotypes. Among the test genotypes, JSP 61 recorded high pod (2345 kg/ha) and kernel yield (1607 kg/ha).

Hiriyur
In this centre over two years the pod (1949 kg/ha) and kernel yield (1390 kg/ha) were moderate. Over two years, there were no significant difference between the test genotypes and check varieties for pod and kernel yields. The zonal check variety, GG 16 was the best for pod (2072 kg/ha) while KDG 128 (ZC) was the best for kernel yield (1552 kg/ha). Among the test genotypes, NRCG CS 414 was the best for pod (2413 kg/ha) while JSP 60 was the best for kernel yield (1497 kg/ha).

Vriddhachalam
In this centre over two years the pod (1211 kg/ha) and kernel yield (740 kg/ha) were low. The mean pod yield at this centre was below national average of 1412 kg/ha (TE 2014-16) of *kharif* season. Hence, the data of this centre could not be included in the analysis. The zonal check variety, KDG 128 was the best for pod (1666 kg/ha) and

kernel yield (1034 kg/ha). None of the test genotypes could significantly surpass the pod and kernel yield of this best check. Among the test genotypes, JSP 60 was the best for pod (1506 kg/ha) and kernel (934 kg/ha) yield.

Tindivanam

In this location, the mean pod and kernel yields of the genotypes over two years were moderate (1521 kg/ha and 1022 kg/ha respectively). The zonal check variety, ICGV 00348 was the best for pod (1553 kg/ha) and kernel yield (1053 kg/ha). One test genotype, JSP 61 could significantly surpass for pod (1822 kg/ha) and kernel (1211 kg/ha) yield over those of the best check.

Kadiri

In this location, the mean pod and kernel yields of the genotypes over two years were very low (751 kg/ha and 483 kg/ha respectively). The mean pod yield at this centre was below national average of 1412 kg/ha (TE 2014-16) of *kharif* season. Hence, the data of this centre could not be included in the analysis. Over two years, the zonal check variety, KDG 128 was the best for pod (935 kg/ha) and kernel yield (621 kg/ha). Among the test genotypes, JSP 61 (1012 kg/ha of pod and 643 kg/ha of kernel) was found the best for pod and kernel yield but remained at par with those of the the best check KDG 128 (ZC).

Jagtial

In this centre over two years the pod (1712 kg/ha) and kernel yield (1059 kg/ha) were moderate. There were no significant difference between the test genotypes and check varieties for pod and kernel yields. Over two years, the zonal check variety, KDG 128 was the best for pod (3666 kg/ha) and kernel yield (2653 kg/ha) and out yielded all the other genotypes. The test genotype, PBS 22080 was the best for pod (2225 kg/ha) and kernel (1357 kg/ha) yield.

Tirupati

In this location, the mean pod (1725 kg/ha) and kernel (1022 kg/ha) yields of the genotypes over two years were moderate. The zonal check variety, KDG 128 was the best for pod (2958 kg/ha) and kernel (1748 kg/ha) yield and surpassed the yield levels of the checks and test genotypes. Among the test genotypes, JSP 60 was the best for pod (1659 kg/ha) and kernel yield (1019 kg/ha).

Digraj

In this location, the mean pod and kernel yields of the genotypes over two years were high (2462 kg/ha and 1644 kg/ha respectively). Over two years, the zonal check variety, KDG 128 was the best for pod (3815 kg/ha) and kernel yield (2521 kg/ha) and surpassed the yield levels of the checks and test genotypes. Among the test genotypes, PBS 22080 was the best for pod (2899 kg/ha) and kernel (1939 kg/ha) yield.

Zonal Mean Performances

In this zone, the mean pod and kernel yields of the genotypes over two years and three locations were moderate (2158 kg/ha and 1460 kg/ha respectively). Across seven locations and over two years, the zonal check variety, KDG 128 was the best for pod (3109 kg/ha) and kernel (2122 kg/ha) yield and surpassed both the pod and kernel

yields of the other check varieties and test genotypes. Among the test genotypes, JSP 61 was the best for pod (2242 kg/ha) and kernel yield (1576 kg/ha).

Ancillary Observation

Plant stand was low in almost all the centres. The test genotypes and checks matured around 120 days. Shelling outturn was low (64%) in RG 595 and high (69%) in NRCG CS 414 followed (68%) by JSP 60, KDG 128 (ZC) and ICGV 00348. The 100-seed weight was low in ICGV 00348 (37g) and PBS 25033 (38g) and high (62 g) in CSMG 2010-11 followed by RG 595 (51g). Data on oil content was not reported by all the seven centres for 1 year viz., Dharwad, Raichur, Hiriyur, Vridhachalam, Tindivanam Jagtial, and Digraj. At Tirupati oil content was generally low in all the genotypes during first year. Based on the available data, it was observed that oil content ranged from 48%-52%, highest in ICGV 00348. Protein content ranged from 24%-28%, highest in KDG 128.

Conclusion

None of the test genotypes could significantly surpass the yield levels of the best check, KDG 128 for pod as well as kernel yields. Hence, none deserve promotion to AVT.

ZONE I

Table 16a: INITIAL VARIETAL TRIAL (VIRGINIA) STAGE I (Kh. 2015) AND STAGE II (Kh. 2016) POOLED

Pod yield (kg/ha)

S.N.	Entry	Mainpuri			Durgapura			Bikaner*			Ludhiana			Pooled mean (3 ctrs)	R
		2015	2016	Mean	2015	2016	Mean	2015	2016	Mean	2015	2016	Mean		
1	IVK I 2015-1	1852	1261	1556	3466	3233	3349	911	2365	1638	1501	2371	1936	2280	14
	PBS 22080														
2	IVK I 2015-2	1623	2065	1844	4391	3612	4001	1267	3531	2399	1711	2747	2229	2691	7
	JSP 61														
3	IVK I 2015-3	1576	2364	1970	3823	3407	3615	1634	2809	2221	2616	2913	2764	2783	6
	PBS 25033														
4	IVK I 2015-4	1655	1892	1773	3662	3408	3535	889	4069	2479	1188	2439	1813	2374	13
	RG 595														
5	IVK I 2015-5	1931	1970	1950	4064	3163	3614	2067	4236	3151	1576	2577	2076	2547	9
	JSP 60														
6	IVK I 2015-6	1813	1655	1734	5011	4768	4889	1078	3265	2171	802	3375	2088	2904	5
	RG 532														
7	IVK I 2015-7	2143	2080	2112	3884	2665	3275	1211	3856	2533	1225	1548	1386	2258	15
	NRCG CS 414														
8	IVK I 2015-8	2537	2561	2549	4150	4382	4266	3023	2263	2643	2646	2425	2535	3117	1
	CSMG-2010-11														
9	IVK I 2015-11	2128	1655	1891	4487	3205	3846	1634	2478	2056	3005	3752	3378	3039	2
	Girnar 2 (ZC)														
10	IVK I 2015-12	2112	2246	2179	4501	2864	3683	1134	2840	1987	1516	1788	1652	2504	10
	GG 21 (ZC)														
11	IVK I 2015-13	1734	2167	1950	3818	3157	3487	778	3583	2180	1661	2145	1903	2447	11
	HNG 69 (ZC)														
12	IVK I 2015-14	2049	2128	2088	4251	4785	4518	3189	4018	3603	1357	1399	1378	2661	8
	Utkarsh (ZC)														
13	IVK I 2015-15	2144	2088	2116	5014	3492	4253	2267	3541	2904	2779	2246	2512	2960	4
	CSMG 2003-19 (ZC)														
14	IVK I 2015-16	1970	2246	2108	4910	3961	4435	1956	4948	3452	2495	2506	2501	3015	3
	Raj. Mungaphali-1 (ZC)														
15	IVK I 2015-18	1497	1576	1537	4996	3383	4189	1222	3671	2447	1269	1882	1576	2434	12
	RG 559-3 (ZC)														
	G.M	1917	1997	1957	4295	3565	3930	1617	3431	2524	1823	2407	2115	2667	
	S.E. Diff. Mean	125.7	123.0	124.3	185.3	332.3	269.0	103.3	254.5	751.1	124.6	155.0	140.6	189.4	
	CD at 5%	253.7	248.2	248.6	373.9	670.6	537.7	NS	513.6	1501.4	251.4	312.8	281.0	371.1	
	CV %	9.3	8.7	9.0	6.1	13.2	9.7	90.2	10.5	42.1	9.7	9.1	9.4	10.0	

*The centre not included in the overlocation analysis because of its high CV% for pod and kernel yield during kharif 2015

Table 16b: INITIAL VARIETAL TRIAL (VIRGINIA) STAGE I (Kh. 2015) AND STAGE II (Kh. 2016) POOLED

Kernel yield (kg/ha)

S.N.	Entry	Mainpuri			Durgapura			Bikaner*			Ludhiana			Pooled mean (3 ctrs)	R
		2015	2016	Mean	2015	2016	Mean	2015	2016	Mean	2015	2016	Mean		
1	IVK I 2015-1	1295	870	1083	2321	2153	2237	524	1398	961	960	1549	1254	1525	15
	PBS 22080														
2	IVK I 2015-2	1169	1446	1308	2982	2577	2780	844	2532	1688	1124	1742	1433	1840	8
	JSP 61														
3	IVK I 2015-3	1135	1679	1407	2559	2354	2456	1070	1514	1292	1679	1739	1709	1857	7
	PBS 25033														
4	IVK I 2015-4	1133	1343	1238	2467	2397	2432	469	2338	1403	751	1500	1126	1598	13
	RG 595														
5	IVK I 2015-5	1391	1418	1404	2736	2251	2493	1196	2678	1937	1034	1688	1361	1753	9
	JSP 60														
6	IVK I 2015-6	1284	1207	1246	3483	3473	3478	669	2113	1391	517	2165	1341	2021	5
	RG 532														
7	IVK I 2015-7	1544	1457	1500	2780	1864	2322	780	2241	1510	839	966	902	1575	14
	NRCG CS 414														
8	IVK I 2015-8	1778	1844	1811	2602	2934	2768	1786	1315	1551	1742	1536	1639	2073	3
	CSMG-2010-11														
9	IVK I 2015-11	1511	1190	1351	3183	2372	2777	1074	1459	1266	2065	2303	2184	2104	2
	Girnar 2 (ZC)														
10	IVK I 2015-12	1477	1592	1534	3257	2051	2654	725	1702	1214	1025	1074	1049	1746	10
	GG 21 (ZC)														
11	IVK I 2015-13	1248	1581	1415	2511	2191	2351	447	2270	1359	1056	1366	1211	1659	12
	HNG 69 (ZC)														
12	IVK I 2015-14	1432	1511	1471	2984	3621	3302	1834	2443	2138	900	921	910	1895	6
	Utkarsh (ZC)														
13	IVK I 2015-15	1525	1440	1483	3487	2486	2987	1314	2188	1751	1761	1434	1598	2022	4
	CSMG 2003-19 (ZC)														
14	IVK I 2015-16	1381	1595	1488	3513	2933	3223	1122	3456	2289	1676	1675	1676	2129	1
	Raj. Mungaphali-1 (ZC)														
15	IVK I 2015-18	1034	1103	1068	3477	2419	2948	675	2213	1444	821	1169	995	1670	11
	RG 559-3 (ZC)														
	G.M	1356	1418	1387	2956	2538	2747	968	2124	1546	1197	1522	1359	1831	
	S.E. Diff. Mean	90.8	86.7	88.8	124.5	234.7	187.8	599.3	199.7	192.1	81.2	118.8	101.7	133.6	
	CD at 5%	183.3	175.1	177.5	251.3	473.6	375.5	NS	403.1	384.0	164.0	239.8	203.2	261.8	
	CV %	9.5	8.6	9.1	6.0	13.1	9.7	87.5	13.3	40.9	9.6	11.0	10.6	10.3	

*The centre not included in the overlocation analysis because of its high CV% for pod and kernel yield during kharif 2015

Table 16c: INITIAL VARIETAL TRIAL (VIRGINIA) STAGE I (Kh. 2015) AND STAGE II (Kh. 2016) POOLED
Ancillary traits

S.N.	Entry	Trait	Mainpuri			Durgapura			Bikaner*			Ludhiana			Pooled mean (3 ctrs)
			2015	2016	Mean	2015	2016	Mean	2015	2016	Mean	2015	2016	Mean	
1	IVK I 2015-1	PS	136	140	138	146	145	146	101	81	91	89	180	134	139
	PBS 22080	D	113	115	114	129	128	129	-	-	-	120	119	119	121
		S	70	69	70	67	67	67	58	59	58	64	66	65	67
		HKW	48	50	49	49	48	48	49	-	49	55	45	50	49
		SMK	90	92	91	86	90	88	-	-	-	93	94	93	91
		O	-	50	50	48	49	49	-	-	-	48	52	50	50
		P	-	23	23	-	27	27	-	-	-	-	27	27	26
2	IVK I 2015-2	PS	137	142	139	149	148	149	102	102	102	74	114	94	127
	JSP 61	D	120	122	121	131	130	131	-	-	-	123	122	122	125
		S	72	70	71	68	71	70	67	72	69	66	63	65	68
		HKW	52	54	53	55	58	56	62		62	66	52	59	56
		SMK	89	88	89	93	83	88	-	-	-	94	94	94	90
		O	-	49	49	49	51	50	-	-	-	49	53	51	50
		P	-	25	25	-	28	28	-	-	-	-	27	27	27
3	IVK I 2015-3	PS	131	143	137	136	149	143	97	100	99	94	171	132	137
	PBS 25033	D	122	120	121	132	131	132	-	-	-	117	118	117	123
		S	72	71	72	67	69	68	66	54	60	64	60	62	67
		HKW	44	47	46	39	46	42	41		41	50	39	44	44
		SMK	92	94	93	90	94	92	-	-	-	87	93	90	92
		O	-	48	48	49	49	49	-	-	-	50	51	50	49
		P	-	26	26	-	29	29	-	-	-	-	27	27	27
4	IVK I 2015-4	PS	132	140	136	136	149	143	95	92	93	70	131	100	126
	RG 595	D	125	126	126	129	129	129	-	-	-	123	123	123	126
		S	69	71	70	67	70	69	53	57	55	63	61	62	67
		HKW	55	60	58	67	75	71	52		52	61	52	56	62
		SMK	91	93	92	90	94	92	-	-	-	88	90	89	91
		O	-	49	49	49	50	49	-	-	-	49	52	50	49
		P	-	24	24	-	29	29	-	-	-	-	28	28	27
5	IVK I 2015-5	PS	139	142	140	136	146	141	94	101	98	89	116	102	128
	JSP 60	D	115	118	117	130	130	130	-	-	-	115	116	115	121
		S	72	72	72	67	71	69	58	63	60	66	66	66	69
		HKW	56	55	56	55	60	58	52		52	51	53	52	55
		SMK	90	91	91	94	86	90	-	-	-	92	97	95	92
		O	-	49	49	49	51	50	-	-	-	48	53	51	50
		P	-	26	26	-	28	28	-	-	-	-	28	28	27
6	IVK I 2015-6	PS	139	142	140	149	141	145	77	87	82	72	187	130	138
	RG 532	D	115	120	118	130	129	130	-	-	-	120	121	120	122
		S	71	73	72	70	73	71	63	65	64	65	64	64	69
		HKW	55	58	57	54	66	60	64		64	54	48	51	56
		SMK	88	92	90	89	86	88	-	-	-	93	95	94	90
		O	-	46	46	49	52	50	-	-	-	49	54	51	49
		P	-	24	24	-	27	27	-	-	-	-	25	25	25
7	IVK I 2015-7	PS	140	139	140	139	135	137	88	96	92	94	134	114	130
	NRCG CS 414	D	122	124	123	128	127	128	-	-	-	118	118	118	123
		S	72	70	71	72	70	71	65	58	62	69	62	65	69
		HKW	60	64	62	62	55	58	62		62	50	41	46	55
		SMK	92	96	94	97	86	92	-	-	-	90	93	91	92
		O	-	51	51	48	53	51	-	-	-	47	55	51	51
		P	-	24	24	-	27	27	-	-	-	-	26	26	26
8	IVK I 2015-8	PS	143	142	143	141	152	147	115	88	101	89	188	138	143
	CSMG-2010-1	D	118	120	119	128	127	128	-	-	-	122	121	121	123
		S	70	72	71	63	67	65	60	58	59	66	63	65	67
		HKW	71	67	69	58	77	68	68		68	74	75	74	70
		SMK	95	97	96	90	82	86	-	-	-	84	93	88	90
		O	-	48	48	49	50	49	-	-	-	48	53	51	49
		P	-	24	24	-	26	26	-	-	-	-	26	26	25

S.N.	Entry	Trait	Mainpuri			Durgapura			Bikaner*			Ludhiana			Pooled mean (3 ctrs)
			2015	2016	Mean	2015	2016	Mean	2015	2016	Mean	2015	2016	Mean	
9	IVK I 2015-11	PS	140	139	139	146	146	146	102	84	93	105	182	144	143
	Girnar 2 (ZC)	D	125	128	127	131	131	131	-	-	-	124	123	124	127
		S	71	72	72	71	74	73	67	59	63	69	61	65	70
		HKW	53	54	54	57	55	56	60		60	53	64	58	56
		SMK	90	89	90	89	90	90	-	-	-	95	93	94	91
		O	-	50	50	49	51	50	-	-	-	48	54	51	50
		P	-	25	25	-	27	27	-	-	-	-	26	26	26
10	IVK I 2015-12	PS	136	140	138	149	140	145	114	89	101	83	175	129	137
	GG 21 (ZC)	D	120	124	122	127	127	127	-	-	-	117	117	117	122
		S	70	71	71	73	72	72	65	60	63	68	60	64	69
		HKW	57	57	57	59	58	58	54		54	47	40	43	53
		SMK	92	95	94	98	90	94	-	-	-	91	91	91	93
		O	-	48	48	49	52	51	-	-	-	48	55	51	50
		P	-	26	26	-	28	28	-	-	-	-	26	26	26
11	IVK I 2015-13	PS	136	139	137	149	151	150	95	97	96	70	141	105	131
	HNG 69 (ZC)	D	124	127	126	130	129	130	-	-	-	120	120	120	125
		S	72	73	73	66	69	68	58	64	61	64	64	64	68
		HKW	55	53	54	47	59	53	50		50	55	49	52	53
		SMK	91	94	93	93	86	90	-	-	-	96	95	95	92
		O	-	49	49	50	51	50	-	-	-	49	52	51	50
		P	-	25	25	-	27	27	-	-	-	-	27	27	26
12	IVK I 2015-14	PS	139	142	140	139	147	143	104	97	101	85	158	122	135
	Utkarsh (ZC)	D	125	129	127	131	130	131	-	-	-	116	116	116	124
		S	70	71	71	70	76	73	58	61	59	67	66	66	70
		HKW	58	59	59	63	68	66	58		58	59	52	55	60
		SMK	94	96	95	89	88	89	-	-	-	89	90	89	91
		O	-	49	49	48	50	49	-	-	-	49	52	51	50
		P	-	24	24	-	27	27	-	-	-	-	25	25	25
13	IVK I 2015-15	PS	140	140	140	142	149	146	104	90	97	72	153	112	133
	CSMG 2003-1	D	124	122	123	131	129	130	-	-	-	119	119	119	124
		S	71	69	70	70	71	70	58	62	60	64	64	64	68
		HKW	57	55	56	69	63	66	60		60	56	51	54	59
		SMK	92	93	93	94	91	93	-	-	-	95	93	94	93
		O	-	48	48	49	51	50	-	-	-	49	52	51	49
		P	-	23	23	-	27	27	-	-	-	-	27	27	26
14	IVK I 2015-16	PS	128	139	133	146	146	146	103	100	102	100	176	138	139
	Raj. Mungapha	D	120	123	122	128	127	128	-	-	-	116	116	116	122
		S	70	71	71	72	74	73	58	70	64	67	67	67	70
		HKW	52	54	53	54	65	60	56		56	50	47	48	54
		SMK	90	90	90	91	92	92	-	-	-	93	94	94	92
		O	-	47	47	49	50	49	-	-	-	48	53	51	49
		P	-	23	23	-	28	28	-	-	-	-	26	26	26
15	IVK I 2015-18	PS	128	139	133	151	146	149	96	80	88	73	187	130	137
	RG 559-3 (ZC)	D	118	119	119	130	129	130	-	-	-	120	120	120	123
		S	69	70	70	70	72	71	55	61	58	65	63	64	68
		HKW	65	66	66	69	85	77	60		60	69	56	63	68
		SMK	89	92	91	97	92	95	-	-	-	89	90	89	91
		O	-	48	48	49	50	50	-	-	-	48	54	51	49
		P	-	23	23	-	27	27	-	-	-	-	26	26	25
Final plant stand (000/ha)															
	GM		136	141	138	144	146	145	99	92	96	84	159	122	135
	S.E. Diff. Mean		3.7	2.3	3.1	3.9	3.7	3.8	8.9	10.1	9.5	3.7	19.5	14.0	8.6
	CD at 5%		7.5	NS	6.1	7.8	7.6	7.6	17.9	NS	NS	7.5	39.3	28.0	16.8
	CV %		3.9	2.3	3.1	3.8	3.6	3.7	12.6	15.5	14.1	6.3	17.3	16.3	9.0

*The centre not included in the overlocation analysis because of its high CV% for pod and kernel yield during kharif 2015

ZONE II

Table 17a: INITIAL VARIETAL TRIAL (VIRGINIA) STAGE I (Kh. 2015) AND STAGE II (Kh. 2016) POOLED Pod yield (kg/ha)

S.N.	Entry	Junagadh			Amreli			Talod			Udaipur			Pooled mean	R
		2015	2016	Mean	2015	2016	Mean	2015	2016	Mean	2015	2016	Mean		
1	IVK I 2015-1	2486	1887	2187	2674	3663	3168	2973	2674	2823	2552	3420	2986	2791	4
	PBS 22080														
2	IVK I 2015-2	2738	2052	2395	2703	3622	3162	4033	2893	3463	2166	3404	2785	2951	2
	JSP 61														
3	IVK I 2015-3	2522	2159	2340	2222	3594	2908	3529	2701	3115	2194	3424	2809	2793	3
	PBS 25033														
4	IVK I 2015-4	2470	1156	1813	2257	3114	2685	4033	3079	3556	1861	3172	2516	2643	8
	RG 595														
5	IVK I 2015-5	2600	1800	2200	2601	3686	3144	4084	2353	3219	1547	2547	2047	2652	7
	JSP 60														
6	IVK I 2015-6	2628	1896	2262	2309	3374	2842	3832	957	2395	1854	2923	2389	2472	10
	RG 532														
7	IVK I 2015-7	2876	1613	2244	2257	2992	2625	3076	2508	2792	2101	3066	2583	2561	9
	NRCG CS 414														
8	IVK I 2015-8	3042	1789	2415	2147	3825	2986	3025	2893	2959	2219	2831	2525	2721	5
	CSMG-2010-11														
9	IVK I 2015-19	2550	1671	2110	2430	3484	2957	3277	1351	2314	2055	2691	2373	2438	11
	Somnath (ZC)														
10	IVK I 2015-20	3069	1658	2363	2818	3837	3328	3277	1536	2406	2275	2995	2635	2683	6
	GG 20 (ZC)														
11	IVK I 2015-21	3420	3052	3236	3322	4230	3776	2773	3009	2891	2440	2985	2712	3154	1
	KDG 128 (ZC)										-				
	G.M	2764	1885	2324	2522	3584	3053	3447	2359	2903	2115	3041	2578	2714	
	S.E. Diff. Mean	253.5	145.5	206.6	216.5	253.2	235.5	184.2	166.6	175.5	180.6	257.0	222.1	211.1	
	CD at 5%	517.6	297.2	413.3	442.1	517.0	NS	376.1	340.3	351.0	368.9	524.9	NS	413.8	
	CV %	13.0	10.9	12.6	12.1	10.0	10.9	7.6	10.0	8.6	12.1	12.0	12.2	11.0	

Table 17b: INITIAL VARIETAL TRIAL (VIRGINIA) STAGE I (Kh. 2015) AND STAGE II (Kh. 2016) POOLED Kernel yield (kg/ha)

S.N.	Entry	Junagadh			Amreli			Talod			Udaipur			Pooled mean	R
		2015	2016	Mean	2015	2016	Mean	2015	2016	Mean	2015	2016	Mean		
1	IVK I 2015-1	1623	1233	1428	1611	2325	1968	1995	1698	1846	1811	2443	2127	1842	4
	PBS 22080														
2	IVK I 2015-2	1750	1258	1504	1560	2221	1890	2698	1763	2230	1453	2364	1908	1883	2
	JSP 61														
3	IVK I 2015-3	1614	1317	1466	1296	2280	1788	2534	1731	2133	1586	2493	2039	1856	3
	PBS 25033														
4	IVK I 2015-4	1584	670	1127	1312	1868	1590	2996	1853	2425	1310	2322	1816	1739	6
	RG 595														
5	IVK I 2015-5	1674	955	1314	1488	2285	1887	3039	1448	2243	1045	1742	1393	1709	9
	JSP 60														
6	IVK I 2015-6	1687	1082	1384	1359	2106	1732	2594	581	1588	1334	2114	1724	1607	11
	RG 532														
7	IVK I 2015-7	1909	1061	1485	1484	1977	1730	2030	1703	1867	1487	2147	1817	1725	8
	NRCG CS 414														
8	IVK I 2015-8	1883	1038	1460	1154	2404	1779	2126	1739	1933	1577	1981	1779	1738	7
	CSMG-2010-11														
9	IVK I 2015-19	1689	1136	1413	1587	2325	1956	2326	902	1614	1521	1905	1713	1674	10
	Somnath (ZC)														
10	IVK I 2015-20	2042	1095	1569	1886	2568	2227	2290	1017	1653	1664	2138	1901	1837	5
	GG 20 (ZC)														
11	IVK I 2015-21	2399	1940	2170	2196	2994	2595	1938	2001	1970	1708	2060	1884	2155	1
	KDG 128 (ZC)										-				
	G.M	1805	1162	1484	1539	2305	1922	2415	1494	1955	1500	2155	1827	1797	
	S.E. Diff. Mean	168.1	88.7	134.4	132.1	164.7	149.3	127.3	106.1	117.2	138.5	178.1	173.6	141.0	
	CD at 5%	343.4	181.2	268.8	269.9	336.4	NS	260.0	216.7	234.3	282.8	363.7	347.3	276.4	
	CV %	13.2	10.8	12.8	12.1	10.1	11.0	7.5	10.0	8.5	13.1	11.7	12.5	11.1	

Table 17c: INITIAL VARIETAL TRIAL (VIRGINIA) STAGE I (Kh. 2015) AND STAGE II (Kh. 2016) POOLED

Ancillary traits

S.N.	Entry	Trait	Junagadh			Amreli			Talod			Udaipur			Pooled mean
			2015	2016	Mean	2015	2016	Mean	2015	2016	Mean	2015	2016	Mean	
1	IVK I 2015-1	PS	145	138	142	164	105	135	131	199	165	147	148	148	147
	PBS 22080	D	124	120	122	116	118	117	130	126	128	107	105	106	118
		S	65	65	65	60	63	62	67	64	65	71	72	72	66
		HKW	36	39	37	36	39	37	53	42	48	43	47	45	42
		SMK	90	84	87	97	98	98	-	-	-	91	90	91	92
		O	49	50	49	-	-	-	39	37	38	40	47	44	44
		P	-	24	24	-	-	-	-	-	-	-	27	27	25
2	IVK I 2015-2	PS	147	145	146	164	94	129	140	177	158	146	148	147	145
	JSP 61	D	120	121	121	118	123	121	131	126	129	104	106	105	119
		S	64	61	63	58	61	60	67	61	64	67	70	69	64
		HKW	39	31	35	34	38	36	52	43	48	48	48	48	42
		SMK	87	74	80	96	97	97	-	-	-	84	85	85	87
		O	49	48	49	-	-	-	39	39	39	41	50	45	44
		P	-	24	24	-	-	-	-	-	-	-	28	28	26
3	IVK I 2015-3	PS	145	144	145	163	95	129	154	194	174	145	148	147	149
	PBS 25033	D	122	124	123	116	116	116	130	126	128	101	102	102	117
		S	64	61	63	59	64	61	72	64	68	72	73	73	66
		HKW	32	27	30	25	33	29	50	34	42	43	45	44	36
		SMK	85	80	82	95	96	96	-	-	-	90	87	89	89
		O	51	48	50	-	-	-	40	39	39	43	47	45	45
		P	-	25	25	-	-	-	-	-	-	-	28	28	27
4	IVK I 2015-4	PS	144	137	141	163	99	131	134	192	163	146	147	147	145
	RG 595	D	121	125	123	115	124	119	131	125	128	102	102	102	118
		S	64	58	61	59	60	59	74	60	67	70	73	72	65
		HKW	41	34	38	44	45	45	72	47	60	47	49	48	47
		SMK	93	72	82	99	99	99	-	-	-	94	93	94	92
		O	48	49	48	-	-	-	41	40	40	42	50	46	45
		P	-	24	24	-	-	-	-	-	-	-	28	28	26
5	IVK I 2015-5	PS	142	144	143	162	100	131	147	164	156	146	147	147	144
	JSP 60	D	120	122	121	120	123	122	131	125	128	105	106	106	119
		S	65	53	59	57	62	60	74	62	68	68	69	69	64
		HKW	30	23	26	32	38	35	54	40	47	44	43	44	38
		SMK	88	67	78	97	96	97	-	-	-	95	91	93	89
		O	50	48	49	-	-	-	41	38	40	41	51	46	45
		P	-	25	25	-	-	-	-	-	-	-	28	28	27
6	IVK I 2015-6	PS	140	139	140	164	101	133	154	169	162	146	148	147	145
	RG 532	D	122	121	122	117	123	120	130	126	128	103	104	104	118
		S	64	57	61	59	62	61	68	61	64	72	72	72	64
		HKW	42	30	36	37	43	40	68	56	62	41	43	42	45
		SMK	86	75	80	96	95	96	-	-	-	92	91	92	89
		O	50	48	49	-	-	-	38	39	38	40	50	45	44
		P	-	23	23	-	-	-	-	-	-	-	27	27	25

S.N.	Entry	Trait	Junagadh			Amreli			Talod			Udaipur			Pooled mean
			2015	2016	Mean	2015	2016	Mean	2015	2016	Mean	2015	2016	Mean	
7	IVK I 2015-7	PS	148	141	145	164	92	128	152	154	153	145	148	147	143
	NRCG CS 414	D	122	123	123	123	118	120	131	126	129	101	102	102	118
		S	67	66	66	66	66	66	66	68	67	71	70	71	67
		HKW	40	41	41	40	48	44	68	54	61	41	43	42	47
		SMK	88	85	87	96	96	96	-	-	-	91	91	91	91
		O	52	53	53	-	-	-	45	44	44	44	51	47	48
		P	-	23	23	-	-	-	-	-	-	-	28	28	25
8	IVK I 2015-8	PS	141	144	143	161	101	131	154	174	164	147	147	147	146
	CSMG-2010-11	D	122	126	124	114	122	118	132	126	129	104	105	105	119
		S	62	58	60	54	63	58	70	60	65	71	70	71	64
		HKW	57	47	52	43	54	49	89	65	77	43	45	44	55
		SMK	83	86	85	97	97	97	-	-	-	89	91	90	91
		O	48	49	49	-	-	-	42	35	39	42	50	46	44
		P	-	23	23	-	-	-	-	-	-	-	27	27	25
9	IVK I 2015-19	PS	141	144	143	140	96	118	157	151	154	147	148	148	141
	Somnath (ZC)	D	119	124	122	114	120	117	132	126	129	106	107	107	119
		S	67	68	67	65	67	66	71	67	69	74	71	73	69
		HKW	36	46	41	45	42	43	71	49	60	49	48	49	48
		SMK	94	90	92	98	98	98	-	-	-	94	92	93	94
		O	51	52	52	-	-	-	45	44	44	40	51	45	47
		P	-	25	25	-	-	-	-	-	-	-	28	28	26
10	IVK I 2015-20	PS	142	144	143	162	104	133	168	159	164	148	148	148	147
	GG 20 (ZC)	D	121	125	123	118	122	120	131	125	128	105	106	106	119
		S	67	66	66	67	67	67	70	66	68	73	72	73	68
		HKW	37	46	41	41	41	41	72	53	63	50	49	50	49
		SMK	83	92	87	99	98	99	-	-	-	84	86	85	90
		O	52	53	52	-	-	-	44	43	44	42	50	46	47
		P	-	24	24	-	-	-	-	-	-	-	28	28	26
11	IVK I 2015-21	PS	144	140	142	162	91	127	155	170	162	147	148	148	145
	KDG 128 (ZC)	D	120	123	122	121	115	118	131	125	128	105	107	106	118
		S	70	64	67	66	71	68	70	67	68	70	69	70	68
		HKW	32	28	30	35	40	37	44	39	41	43	44	44	38
		SMK	88	77	83	95	95	95	-	-	-	90	89	90	89
		O	52	51	51	-	-	-	44	41	43	45	51	48	47
		P	-	27	27	-	-	-	-	-	-	-	29	29	28
Final plant stand (000/ha)															
	G.M.		144	142	143	161	98	130	150	173	161	146	148	147	145
	S.E. Diff. Mean		3.3	2.6	3.0	3.1	4.7	4.0	6.1	11.6	9.3	1.5	0.4	1.1	5.3
	CD at 5%		NS	5.4	NS	6.4	NS	7.9	12.4	23.8	18.6	NS	NS	NS	10.4
	CV %		3.3	2.6	3.0	2.7	6.8	4.4	5.7	9.5	8.1	1.4	0.4	1.1	5.2

ZONE IV

Table 18a: INITIAL VARIETAL TRIAL (VIRGINIA) STAGE I (Kh. 2015) AND STAGE II (Kh. 2016) POOLED Pod yield (kg/ha)

S.N.	Entry	Kanke			Imphal (Manipur)			Mohanpur			Bhubaneswar*	Pooled mean (3ctrs)	R
		2015	2016	Mean	2015	2016	Mean	2015	2016	Mean	2016		
1	IVK I 2015-1	1675	1907	1791	3297	2865	3081	1976	2053	2014	2207	2295	5
	PBS 22080												
2	IVK I 2015-2	1891	1671	1781	3076	2803	2939	2801	2678	2739	2139	2487	3
	JSP 61												
3	IVK I 2015-3	1773	2333	2053	1858	1993	1925	1967	1931	1949	1805	1976	11
	PBS 25033												
4	IVK I 2015-4	1813	1769	1791	2833	2800	2817	2187	2226	2206	1761	2271	7
	RG 595												
5	IVK I 2015-5	1300	2128	1714	3036	3073	3054	2148	2084	2116	2187	2295	6
	JSP 60												
6	IVK I 2015-6	1340	1493	1416	2903	3358	3131	2027	2054	2040	2269	2196	9
	RG 532												
7	IVK I 2015-7	1438	1537	1487	2530	2620	2575	1417	1595	1506	2297	1856	12
	NRCG CS 414												
8	IVK I 2015-8	1852	2281	2067	3455	3084	3269	2495	2526	2510	1596	2615	2
	CSMG-2010-11												
9	IVK I 2015-23	1253	1340	1296	2758	2346	2552	2143	2107	2125	1939	1991	10
	ICGS 76 (ZC)												
10	IVK I 2015-24	1537	1753	1645	3028	2391	2709	2267	2332	2299	1635	2218	8
	BAU 13 (ZC)												
11	IVK I 2015-25	1844	1722	1783	3278	2587	2932	2455	2364	2409	1738	2375	4
	JSP 49 (ZC)												
12	IVK I 2015-26	1931	1864	1897	3561	2927	3244	3196	3104	3150	1698	2764	1
	RG 578 (ZC)												
	G.M	1637	1816	1727	2968	2737	2852	2256	2254	2255	1939	2278	
	S.E. Diff. Mean	178.1	132.0	156.8	131.9	226.3	185.2	183.0	159.4	171.6	68.5	172.3	
	CD at 5%	362.4	268.6	313.5	268.3	460.5	370.4	372.3	324.4	NS	139.3	337.7	
	CV %	15.4	10.3	12.8	6.3	11.7	9.2	11.5	10.0	10.8	5.0	10.7	

Table 18b: INITIAL VARIETAL TRIAL (VIRGINIA) STAGE I (Kh. 2015) AND STAGE II (Kh. 2016) POOLED Kernel yield (kg/ha)

S.N.	Entry	Kanke			Imphal (Manipur)			Mohanpur			Bhubaneswar*	Pooled mean (3ctrs)	R
		2015	2016	Mean	2015	2016	Mean	2015	2016	Mean	2016		
1	IVK I 2015-1	1237	1370	1303	2521	2066	2294	1381	1414	1398	1322	1665	4
	PBS 22080												
2	IVK I 2015-2	1178	1002	1090	2430	2056	2243	1945	1878	1912	1302	1748	3
	JSP 61												
3	IVK I 2015-3	1173	1463	1318	1379	1413	1396	1379	1331	1355	1140	1356	11
	PBS 25033												
4	IVK I 2015-4	1265	1229	1247	1989	2026	2008	1520	1503	1511	1092	1588	7
	RG 595												
5	IVK I 2015-5	758	1319	1038	2208	2243	2226	1510	1479	1495	1428	1586	8
	JSP 60												
6	IVK I 2015-6	979	1051	1015	2344	2526	2435	1398	1424	1411	1362	1620	6
	RG 532												
7	IVK I 2015-7	923	1018	971	2062	1894	1978	991	1115	1053	1394	1334	12
	NRCG CS 414												
8	IVK I 2015-8	1096	1535	1315	2513	2217	2365	1737	1774	1755	1062	1812	2
	CSMG-2010-11												
9	IVK I 2015-23	886	960	923	2062	1792	1927	1532	1488	1510	1275	1453	10
	ICGS 76 (ZC)												
10	IVK I 2015-24	964	970	967	2141	1674	1907	1556	1620	1588	1048	1487	9
	BAU 13 (ZC)												
11	IVK I 2015-25	1117	1010	1063	2598	1833	2215	1737	1682	1710	1057	1663	5
	JSP 49 (ZC)												
12	IVK I 2015-26	1153	1202	1177	2884	2265	2575	2294	2178	2236	1068	1996	1
	RG 578 (ZC)												
	G.M	1061	1177	1119	2261	2000	2131	1582	1574	1578	1212	1609	
	S.E. Diff. Mean	124.7	100.0	113.0	98.8	165.2	136.1	135.2	124.1	129.7	62.6	126.6	
	CD at 5%	253.8	203.4	226.0	200.9	336.0	272.1	275.0	252.5	NS	127.3	248.2	
	CV %	16.6	12.0	14.3	6.2	11.7	9.0	12.1	11.2	11.6	7.3	11.1	

* The centre not included in the pooled analysis because of one year data.

Table 18c: INITIAL VARIETAL TRIAL (VIRGINIA) STAGE I (Kh. 2015) AND STAGE II (Kh. 2016) POOLED

Ancillary traits

S.No	Entry	Trait	Kanke			Imphal (Manipur)			Mohanpur			Bhubaneswar *	Pooled mean
			2015	2016	Mean	2015	2016	Mean	2015	2016	Mean	2016	(3ctrs)
1	IVK I 2015-1	PS	129	131	130	129	132	131	122	125	124	128	128
	PBS 22080	D	107	112	110	112	114	113	118	116	117	115	113
		S	74	72	73	77	72	77	70	69	69	60	73
		HKW	43	57	50	51	45	48	53	53	53	36	50
		SMK	88	95	91	58	54	56	88	86	87	81	78
		O	-	50	50	50	48	49	-	-	-	-	49
		P	-	28	28	-	26	26	-	-	-	-	27
2	IVK I 2015-2	PS	134	127	130	135	146	141	133	128	131	133	134
	JSP 61	D	111	117	114	111	113	112	114	115	115	118	114
		S	63	60	62	79	73	79	69	70	70	61	70
		HKW	59	56	58	59	50	55	57	57	57	40	56
		SMK	97	94	95	76	59	68	89	88	89	82	84
		O	-	49	49	47	51	49	-	-	-	-	49
		P	-	29	29	-	27	27	-	-	-	-	28
3	IVK I 2015-3	PS	128	142	135	129	136	133	120	122	121	136	130
	PBS 25033	D	112	120	116	110	112	111	113	112	113	120	113
		S	66	63	64	74	71	75	70	69	70	63	69
		HKW	75	73	74	46	42	44	45	45	45	26	54
		SMK	93	97	95	58	47	53	87	88	88	95	78
		O	-	50	50	39	49	44	-	-	-	-	47
		P	-	27	27	-	26	26	-	-	-	-	27
4	IVK I 2015-4	PS	128	130	129	132	139	136	117	120	119	134	128
	RG 595	D	111	113	112	110	112	111	115	113	114	117	112
		S	70	70	70	70	72	74	70	68	69	62	71
		HKW	72	61	66	70	48	59	52	52	52	27	59
		SMK	92	93	93	62	70	66	90	88	89	88	83
		O	-	51	51	49	49	49	-	-	-	-	50
		P	-	28	28	-	27	27	-	-	-	-	27
5	IVK I 2015-5	PS	126	141	134	129	137	133	124	129	127	135	131
	JSP 60	D	110	118	114	112	114	113	116	114	115	125	114
		S	58	62	60	73	73	74	70	71	71	65	68
		HKW	62	58	60	57	48	53	47	47	47	26	53
		SMK	93	93	93	62	59	60	86	84	85	82	79
		O	-	50	50	44	50	47	-	-	-	-	49
		P	-	28	28	-	27	27	-	-	-	-	28
6	IVK I 2015-6	PS	132	128	130	126	141	134	113	118	116	133	126
	RG 532	D	108	115	112	112	114	113	116	115	116	116	113
		S	73	70	72	81	75	80	69	69	69	60	73
		HKW	66	54	60	71	45	58	51	51	51	34	56
		SMK	97	92	94	90	71	81	87	85	86	94	87
		O	-	49	49	41	49	45	-	-	-	-	47
		P	-	28	28	-	27	27	-	-	-	-	27

S.No	Entry	Trait	Kanke			Imphal (Manipur)			Mohanpur			Bhubaneswar *	Pooled mean (3ctrs)
			2015	2016	Mean	2015	2016	Mean	2015	2016	Mean	2016	
7	IVK I 2015-7	PS	126	127	126	130	135	133	111	114	113	128	124
	NRCG CS 414	D	110	120	115	114	116	115	112	110	111	122	114
		S	64	66	65	82	72	82	70	70	70	61	72
		HKW	70	63	66	66	48	57	63	63	63	32	62
		SMK	98	95	96	81	68	75	86	84	85	96	85
		O	-	51	51	47	52	49	-	-	-	-	50
		P	-	27	27	-	26	26	-	-	-	-	26
8	IVK I 2015-8	PS	132	143	138	134	137	136	123	126	124	125	132
	CSMG-2010-11	D	107	118	113	125	125	125	121	118	120	121	119
		S	59	67	63	73	72	76	70	70	70	67	69
		HKW	53	49	51	81	42	61	65	65	65	30	59
		SMK	97	91	94	64	83	73	88	86	87	89	85
		O	-	49	49	40	49	44	-	-	-	-	47
		P	-	27	27	-	26	26	-	-	-	-	26
9	IVK I 2015-23	PS	125	123	124	128	144	136	121	114	118	133	126
	ICGS 76 (ZC)	D	107	118	113	116	118	117	120	121	121	120	117
		S	70	72	71	75	76	76	72	70	71	66	73
		HKW	54	66	60	51	45	48	52	52	52	29	53
		SMK	89	96	92	65	50	57	89	84	87	86	79
		O	-	51	51	46	49	48	-	-	-	-	49
		P	-	26	26	-	27	27	-	-	-	-	27
10	IVK I 2015-24	PS	118	134	126	138	140	139	127	131	129	132	131
	BAU 13 (ZC)	D	107	126	117	128	128	128	116	114	115	119	120
		S	63	55	59	71	70	74	69	69	69	64	67
		HKW	60	58	59	79	46	63	64	64	64	21	62
		SMK	97	80	89	62	84	73	87	87	87	84	83
		O	-	50	50	51	51	51	-	-	-	-	50
		P	-	26	26	-	28	28	-	-	-	-	27
11	IVK I 2015-25	PS	128	122	125	133	139	136	117	122	119	127	127
	JSP 49 (ZC)	D	113	121	117	116	118	117	118	117	118	118	117
		S	61	59	60	79	71	79	71	71	71	61	70
		HKW	60	68	64	56	40	48	59	59	59	24	57
		SMK	96	92	94	68	58	63	87	89	88	80	82
		O	-	50	50	39	49	44	-	-	-	-	47
		P	-	28	28	-	27	27	-	-	-	-	27
12	IVK I 2015-26	PS	126	127	126	125	143	134	123	127	125	141	128
	RG 578 (ZC)	D	107	118	113	113	115	114	117	115	116	124	114
		S	60	65	63	81	77	82	72	70	71	63	72
		HKW	36	47	41	63	46	54	63	63	63	26	53
		SMK	95	92	94	76	62	69	88	89	89	95	84
		O	-	49	49	46	51	48	-	-	-	-	49
		P	-	28	28	-	27	27	-	-	-	-	27
Final plant stand (000/ha)													
	G.M.		128	131	129	131	139	135	121	123	122	132	129
	S.E. Diff. Mean		7.2	5.1	6.2	4.6	5.5	5.1	8.4	8.4	8.4	-	6.7
	CD at 5%		NS	10.3	NS	NS	NS	NS	NS	NS	NS	-	NS
	CV %		8.0	5.4	6.8	5.0	5.5	5.3	9.8	9.7	9.7	-	7.4

* The centre not included in the pooled analysis because of one year data.

ZONE V

Table 19a: INITIAL VARIETAL TRIAL (VIRGINIA) STAGE I (Kh. 2015) AND STAGE II (Kh. 2016) POOLED

Pod yield (kg/ha)

S.N.	Entry	Dharwad (1)			Raichur (2)			Hiriyur (3)			Vriddhachalam *(4)			Tindivanam (5)			Kadiri * (6)			Jagtial (7)			Tirupati (8)			Digraj (9)			Pooled mean (7 ctrs)	R
		2015	2016	Mean	2015	2016	Mean	2015	2016	Mean	2015	2016	Mean	2015	2016	Mean	2015	2016	Mean	2015	2016	Mean	2015	2016	Mean	2015	2016	Mean		
1	IVK I 2015-1	3856	2350	3103	2104	2096	2100	2498	969	1734	1007	646	827	1754	1539	1646	453	532	493	2325	2125	2225	433	2667	1550	1722	4076	2899	2180	5
	PBS 22080																													
2	IVK I 2015-2	4358	2798	3578	2175	2514	2345	2799	1032	1916	2061	616	1338	1958	1687	1822	1062	961	1012	2030	1856	1943	1566	1855	1711	2673	2091	2382	2242	3
	JSP 61																													
3	IVK I 2015-3	3074	1703	2388	2092	1685	1889	2395	1104	1749	1333	824	1078	1489	1605	1547	985	699	842	1820	1985	1903	1373	1825	1599	2363	2205	2284	1908	9
	PBS 25033																													
4	IVK I 2015-4	3239	1564	2402	1807	1508	1657	2782	1288	2035	939	621	780	1582	1553	1567	570	552	561	1111	1108	1110	967	1802	1385	2143	1835	1989	1735	11
	RG 595																													
5	IVK I 2015-5	3671	2477	3074	2222	2123	2173	2792	1308	2050	2376	636	1506	1242	1708	1475	1043	922	983	1554	1797	1675	1208	2110	1659	2793	2145	2469	2082	6
	JSP 60																													
6	IVK I 2015-6	3894	1796	2845	2246	1457	1851	2294	1432	1863	1251	602	927	1201	1605	1403	597	763	680	1740	1132	1436	1479	1819	1649	2286	1714	2000	1864	10
	RG 532																													
7	IVK I 2015-7	3599	3142	3371	1681	2398	2039	2893	1437	2165	2116	648	1382	1088	1808	1448	418	469	443	1332	1450	1391	1258	1746	1502	2555	1645	2100	2002	8
	NRCG CS 414																													
8	IVK I 2015-8	5580	2849	4214	2306	2181	2244	2524	1280	1902	1574	524	1049	1566	1734	1650	586	751	669	1725	1832	1779	1356	1783	1569	1978	2363	2170	2218	4
	CSMG-2010-11																													
9	IVK I 2015-21	5359	3536	4447	2837	4328	3582	2936	1107	2022	2245	1087	1666	989	1559	1274	1058	812	935	4055	3278	3666	2188	3729	2958	3107	4523	3815	3109	1
	KDG 128 (ZC)																													
10	IVK I 2015-27	3687	2701	3194	2173	2291	2232	2846	1298	2072	2200	729	1464	1322	1372	1347	889	948	918	1885	1585	1735	1589	1602	1596	2421	1370	1895	2010	7
	GG 16 (ZC)																													
11	IVK I 2015-29	4607	2449	3528	2704	3212	2958	2680	1183	1931	1708	900	1304	1673	1433	1553	893	559	726	1750	2012	1881	1095	2497	1796	2002	4151	3077	2389	2
	ICGV 00348 (ZC)																													
	G.M	4084	2488	3286	2213	2345	2279	2676	1222	1949	1710	712	1211	1442	1600	1521	778	724	751	1939	1833	1886	1319	2130	1725	2367	2556	2462	2158	
	S.E. Diff. Mean	401.5	204.7	318.7	209.9	299.1	258.4	323.3	157.7	254.3	257.0	152.6	211.3	111.0	79.5	96.5	25.2	72.9	54.5	404.4	130.0	300.3	142.5	234.7	194.1	329.7	264.6	299.7	256.2	
	CD at 5%	820.0	418.1	637.4	428.7	610.8	516.7	NS	NS	NS	524.8	311.7	422.6	226.6	162.3	192.9	51.4	148.9	109.1	825.9	265.6	NS	291.0	479.3	388.3	673.3	540.4	599.5	502.2	
	CV %	13.9	11.6	13.7	13.4	18.0	16.0	17.1	18.3	18.4	21.3	30.3	24.7	10.9	7.0	9.0	4.6	14.2	10.3	29.5	10.0	22.5	15.3	15.6	15.9	19.7	14.6	17.2	16.8	

*The centre not included in the pooled analysis because its pod yield was below triennial national average (1412 kg/ha).

Table 19b: INITIAL VARIETAL TRIAL (VIRGINIA) STAGE I (Kh. 2015) AND STAGE II (Kh. 2016) POOLED

Kernel yield (kg/ha)

S.N.	Entry	Dharwad (1)			Raichur (2)			Hiriyur (3)			Vriddhachalam *(4)			Tindivanam (5)			Kadiri * (6)			Jagtial (7)			Tirupati (8)			Digraj (9)			Pooled mean (7 ctrs)	R
		2015	2016	Mean	2015	2016	Mean	2015	2016	Mean	2015	2016	Mean	2015	2016	Mean	2015	2016	Mean	2015	2016	Mean	2015	2016	Mean	2015	2016	Mean		
1	IVK I 2015-1	2872	1781	2327	1450	1511	1481	1868	713	1290	641	394	518	1135	1038	1087	311	328	320	1393	1322	1357	255	1588	922	1063	2815	1939	1486	4
	PBS 22080																													
2	IVK I 2015-2	3079	2091	2585	1484	1730	1607	1975	735	1355	1253	358	805	1296	1127	1211	699	587	643	1571	1087	1329	920	1112	1016	1691	1473	1582	1526	3
	JSP 61																													
3	IVK I 2015-3	2266	1259	1762	1384	1126	1255	1712	830	1271	835	499	667	1037	1110	1073	692	429	561	1158	1224	1191	754	997	875	1427	1630	1528	1279	9
	PBS 25033																													
4	IVK I 2015-4	2203	1097	1650	1168	1025	1097	1881	914	1397	564	358	461	1137	949	1043	370	329	349	632	625	629	568	1027	797	1271	1316	1294	1129	11
	RG 595																													
5	IVK I 2015-5	2572	1853	2213	1397	1458	1428	2038	956	1497	1451	418	934	843	1074	958	703	561	632	1120	1064	1092	731	1307	1019	1827	1563	1695	1414	6
	JSP 60																													
6	IVK I 2015-6	2771	1348	2059	1515	959	1237	1692	1034	1363	758	369	563	808	1030	919	410	448	429	1171	668	920	841	1064	952	1524	1188	1356	1258	10
	RG 532																													
7	IVK I 2015-7	2548	2326	2437	1159	1680	1419	1805	992	1399	1369	402	886	793	1297	1045	294	302	298	1045	910	977	810	1126	968	1603	1186	1394	1377	7
	NRCG CS 414																													
8	IVK I 2015-8	3888	2042	2965	1573	1514	1543	1675	911	1293	944	298	621	1063	1080	1071	385	430	407	966	1034	1000	756	1027	891	1194	1598	1396	1451	5
	CSMG-2010-11																													
9	IVK I 2015-21	3742	2677	3209	1905	2672	2289	2291	813	1552	1485	583	1034	672	1099	886	721	521	621	3132	2174	2653	1237	2259	1748	2159	2883	2521	2122	1
	KDG 128 (ZC)																													
10	IVK I 2015-27	2620	2075	2347	1398	1627	1513	2090	875	1483	1342	408	875	890	893	892	597	570	583	1290	904	1097	931	999	965	1572	971	1271	1367	8
	GG 16 (ZC)																													
11	IVK I 2015-29	3363	1861	2612	1823	2221	2022	1944	840	1392	1033	519	776	1161	945	1053	586	349	467	1248	1288	1268	657	1530	1093	1289	2928	2108	1650	2
	ICGV 00348 (ZC)																													
	G.M	2902	1855	2379	1478	1593	1535	1906	874	1390	1061	419	740	985	1058	1022	524	441	483	1339	1118	1228	769	1276	1022	1511	1777	1644	1460	
	S.E. Diff. Mean	298.7	163.4	240.7	151.3	222.8	190.5	259.2	117.7	201.3	165.4	97.8	135.9	88.0	53.1	72.6	17.5	48.2	36.3	333.8	86.1	243.8	80.3	161.2	127.4	210.7	189.1	200.2	191.1	
	CD at 5%	610.0	333.7	481.4	309.1	455.1	380.9	NS	NS	NS	337.8	NS	271.7	179.6	108.4	145.3	35.8	98.5	72.5	681.8	175.9	NS	164.1	329.2	254.7	430.2	386.2	400.4	374.6	
	CV %	14.6	12.5	14.3	14.5	19.8	17.5	19.2	19.1	20.5	22.0	33.0	26.0	12.6	7.1	10.0	4.7	15.5	10.6	35.3	10.9	28.1	14.8	17.9	17.6	19.7	15.0	17.2	18.5	

*The centre not included in the pooled analysis because its pod yield was below triennial national average (1412 kg/ha).

Table 19c: INITIAL VARIETAL TRIAL (VIRGINIA) STAGE I (Kh. 2015) AND STAGE II (Kh. 2016) POOLED

Ancillary traits

S.No	Entry	Trait	Dharwad (1)			Raichur (2)			Hiriyur (3)			Vriddhachalam * (4)			Tindivanam (5)			Kadiri * (6)			Jagtial (7)			Tirupati (8)			Digraj (9)			Pooled mean
			2015	2016	Mean	2015	2016	Mean	2015	2016	Mean	2015	2016	Mean	2015	2016	Mean	2015	2016	Mean	2015	2016	Mean	2015	2016	Mean	2015	2016	Mean	(7 ctrs)
1	IVK I 2015-1	PS	149	134	142	144	148	146	117	106	111	90	57	74	135	130	133	121	111	116	131	139	135	125	145	135	136	139	138	134
	PBS 22080	D	120	114	117	114	120	117	131	116	124	116	120	118	125	127	126	134	125	130	102	119	111	127	137	132	122	122	122	121
		S	75	76	75	69	72	71	75	73	74	64	61	62	65	68	66	69	62	65	59	62	61	59	60	60	62	69	65	67
		HKW	60	49	55	39	45	42	55	-	55	42	49	45	50	45	48	29	30	29	36	32	34	34	22	28	29	56	43	43
		SMK	96	93	94	65	90	77	-	-	-	63	75	69	80	96	88	90	89	90	85	91	88	69	78	74	92	91	92	85
		O	44	47	45	-	49	49	-	48	48	-	50	50	-	51	51	47	48	47	-	48	48	48	49	48	-	47	47	48
		P	-	25	25	-	24	24	-	26	26	-	25	25	-	24	24	-	25	25	-	23	23	-	27	27	-	26	26	25
2	IVK I 2015-2	PS	145	139	142	147	148	147	130	114	122	129	63	96	137	117	127	147	119	133	138	142	140	122	138	130	138	140	139	135
	JSP 61	D	120	117	119	113	114	114	131	116	124	116	120	118	125	128	127	136	125	131	102	118	110	127	137	132	119	123	121	121
		S	71	75	73	69	69	69	70	71	71	61	59	60	66	67	66	66	61	63	76	59	67	59	60	60	64	71	68	67
		HKW	68	51	60	43	29	36	54	-	54	48	46	47	47	48	48	31	35	33	37	29	33	37	29	33	34	54	44	44
		SMK	97	94	96	62	79	71	-	-	-	88	77	82	96	96	96	90	88	89	92	91	91	81	80	81	91	91	91	87
		O	44	47	46	-	51	51	-	50	50	-	50	50	-	52	52	49	48	49	-	48	48	47	48	47	-	46	46	49
		P	-	25	25	-	25	25	-	29	29	-	25	25	-	24	24	-	25	25	-	22	22	-	25	25	-	26	26	25
3	IVK I 2015-3	PS	145	121	133	143	150	146	135	102	119	132	112	122	135	123	129	153	147	150	128	145	136	144	134	139	137	140	139	134
	PBS 25033	D	125	119	122	114	117	115	131	116	124	120	120	120	125	126	126	138	125	132	99	118	108	127	137	132	120	119	120	121
		S	74	74	74	66	67	67	72	76	74	63	61	62	70	69	69	70	61	66	62	62	62	56	54	55	61	74	67	67
		HKW	48	37	43	48	31	39	43	-	43	37	37	37	46	44	45	26	25	26	36	28	32	28	24	26	34	39	36	38
		SMK	96	91	94	61	84	72	-	-	-	81	67	74	97	97	97	89	84	87	94	92	93	80	82	81	92	93	92	88
		O	42	46	44	-	48	48	-	49	49	-	48	48	-	49	49	48	46	47	-	47	47	47	47	47	-	45	45	47
		P	-	27	27	-	26	26	-	27	27	-	26	26	-	27	27	-	27	27	-	24	24	-	27	27	-	27	27	26
4	IVK I 2015-4	PS	135	79	107	149	152	151	129	109	119	96	129	113	143	129	136	143	119	131	120	144	132	108	122	115	140	141	140	129
	RG 595	D	120	121	121	114	115	114	131	116	124	118	120	119	125	130	128	135	125	130	101	116	109	127	137	132	117	120	119	121
		S	68	70	69	64	68	66	68	71	70	60	57	58	72	61	66	65	60	62	57	56	56	59	57	58	59	72	65	64
		HKW	83	65	74	54	45	49	70	-	70	40	46	43	42	51	46	33	35	34	42	34	38	40	32	36	33	48	41	51
		SMK	97	95	96	68	82	75	-	-	-	85	76	81	89	93	91	88	87	88	89	88	88	75	80	78	91	91	91	86
		O	44	49	47	-	50	50	-	48	48	-	50	50	-	51	51	49	47	48	-	49	49	47	49	48	-	46	46	48
		P	-	26	26	-	24	24	-	25	25	-	25	25	-	25	25	-	25	25	-	23	23	-	24	24	-	24	24	24
5	IVK I 2015-5	PS	141	138	140	142	148	145	133	104	119	136	76	106	131	121	126	141	136	139	143	139	141	125	131	128	140	139	140	134
	JSP 60	D	120	121	121	114	116	115	131	116	124	120	115	118	125	125	125	137	125	131	99	118	109	127	137	132	118	117	118	120
		S	70	75	72	63	69	66	73	73	73	61	65	63	68	63	65	67	61	64	71	59	65	61	62	62	66	73	69	68
		HKW	67	52	59	49	39	44	52	-	52	53	40	47	51	45	48	29	33	31	35	31	33	35	30	33	35	55	45	45
		SMK	97	97	97	68	94	81	-	-	-	86	79	82	80	91	86	89	88	89	89	90	89	77	81	79	89	93	91	87
		O	45	47	46	-	49	49	-	50	50	-	51	51	-	52	52	49	48	48	-	49	49	47	49	48	-	47	47	49
		P	-	26	26	-	24	24	-	25	25	-	25	25	-	25	25	-	25	25	-	22	22	-	25	25	-	26	26	25
6	IVK I 2015-6	PS	136	132	134	147	147	147	127	107	117	118	102	110	136	134	135	139	141	140	126	143	135	112	141	127	138	139	138	133
	RG 532	D	125	119	122	118	120	119	131	116	124	116	120	118	126	127	127	135	130	133	102	118	110	127	137	132	120	119	119	122
		S	71	75	73	68	66	67	74	73	74	61	62	62	68	64	66	69	59	64	67	59	63	57	58	58	67	69	68	67
		HKW	78	61	69	57	36	47	54	-	54	44	46	45	50	51	51	35	33	34	41	35	38	39	32	36	40	46	43	48
		SMK	94	94	94	66	90	78	-	-	-	83	63	73	96	91	94	89	83	86	91	90	90	77	80	79	91	93	92	88
		O	44	48	46	-	49	49	-	50	50	-	49	49	-	51	51	49	47	48	-	50	50	47	48	47	-	47	47	48
		P	-	25	25	-	24	24	-	26	26	-	24	24	-	25	25	-	24	24	-	22	22	-	23	23	-	24	24	24

S.No	Entry	Trait	Dharwad (1)			Raichur (2)			Hiriyur (3)			Vriddhachalam * (4)			Tindivanam (5)			Kadiri * (6)			Jagtial (7)			Tirupati (8)			Digraj (9)			Pooled mean (7 ctrs)
			2015	2016	Mean	2015	2016	Mean	2015	2016	Mean	2015	2016	Mean	2015	2016	Mean	2015	2016	Mean	2015	2016	Mean	2015	2016	Mean	2015	2016	Mean	
7	IVK I 2015-7	PS	144	136	140	147	148	147	130	106	118	161	110	136	144	134	139	135	126	131	138	141	139	129	138	134	141	141	141	137
	NRCG CS 414	D	125	119	122	114	116	115	130	116	123	116	115	116	125	128	127	135	125	130	99	116	107	127	137	132	123	121	122	121
		S	71	74	72	69	70	70	63	69	66	65	61	63	73	72	72	70	64	67	78	63	71	65	65	65	63	72	67	69
		HKW	72	64	68	61	45	53	77	-	77	44	53	48	56	55	56	34	35	35	45	38	41	39	34	37	41	54	47	54
		SMK	94	96	95	71	94	82	-	-	-	83	63	73	91	98	94	94	89	92	98	94	96	81	84	83	94	91	93	90
		O	46	49	47	-	51	51	-	51	51	-	52	52	-	54	54	48	49	48	-	53	53	48	51	49	-	51	51	51
		P	-	26	26	-	24	24	-	28	28	-	25	25	-	25	25	-	25	25	-	22	22	-	24	24	-	23	23	25
8	IVK I 2015-8	PS	141	138	140	148	149	149	134	99	117	123	88	106	140	119	129	142	128	135	128	147	138	126	93	110	136	143	139	132
	CSMG-2010-11	D	120	122	121	115	117	116	131	116	124	115	120	118	125	128	127	135	125	130	102	118	110	127	137	132	117	119	118	121
		S	70	72	71	69	69	69	66	71	68	60	57	58	68	62	65	66	57	61	55	57	56	56	57	57	61	68	64	64
		HKW	83	67	75	63	53	58	87	-	87	57	56	56	71	63	67	41	49	45	49	44	47	50	39	45	46	66	56	62
		SMK	95	96	95	72	93	82	-	-	-	77	79	78	95	96	95	93	91	92	92	94	93	84	84	84	92	91	91	90
		O	44	46	45	-	48	48	-	50	50	-	50	50	-	52	52	48	48	48	-	48	48	45	48	46	-	47	47	48
		P	-	24	24	-	22	22	-	26	26	-	24	24	-	24	24	-	24	24	-	21	21	-	23	23	-	25	25	24
9	IVK I 2015-21	PS	143	139	141	142	150	146	133	106	119	181	106	144	134	117	125	150	130	140	134	142	138	126	125	126	138	142	140	134
	KDG 128 (ZC)	D	120	115	118	113	115	114	131	116	124	116	122	119	125	127	126	136	120	128	101	121	111	127	137	132	123	122	122	121
		S	70	76	73	67	62	64	78	73	76	66	53	60	68	71	70	68	64	66	78	66	72	57	60	59	70	64	67	68
		HKW	54	45	49	35	35	35	51	-	51	41	36	38	46	45	45	26	26	26	32	32	32	29	24	27	34	52	43	40
		SMK	97	97	97	69	89	79	-	-	-	80	64	72	91	94	93	90	83	87	95	92	93	80	81	81	92	91	91	89
		O	47	50	48	-	51	51	-	52	52	-	50	50	-	52	52	47	48	48	-	50	50	48	49	49	-	49	49	50
		P	-	28	28	-	27	27	-	29	29	-	26	26	-	27	27	-	26	26	-	26	26	-	27	27	-	29	29	28
10	IVK I 2015-27	PS	136	138	137	150	151	151	134	106	120	123	87	105	133	125	129	135	122	129	130	136	133	130	111	121	138	142	140	133
	GG 16 (ZC)	D	128	118	123	116	111	114	131	116	124	115	120	118	125	127	126	135	130	133	102	120	111	127	137	132	120	120	120	121
		S	71	77	74	65	71	68	74	68	71	61	53	57	68	65	67	67	61	64	69	57	63	59	62	61	65	71	68	67
		HKW	67	61	64	45	41	43	61	-	61	47	47	47	53	44	48	33	35	34	42	35	38	38	33	36	39	67	53	49
		SMK	91	97	94	68	83	75	-	-	-	91	74	82	98	95	96	89	88	89	92	89	91	78	80	79	91	91	91	88
		O	45	48	46	-	50	50	-	51	51	-	49	49	-	51	51	49	48	48	-	47	47	47	49	48	-	48	48	49
		P	-	26	26	-	25	25	-	28	28	-	25	25	-	25	25	-	26	26	-	24	24	-	26	26	-	27	27	26
11	IVK I 2015-29	PS	138	135	137	147	149	148	126	107	117	132	121	127	142	118	130	138	125	132	145	144	144	114	137	126	138	140	139	134
	ICGV 00348 (ZC)	D	120	115	118	113	115	114	131	116	124	116	115	116	124	128	126	135	125	130	102	118	110	127	137	132	119	121	120	120
		S	73	76	75	68	69	68	73	72	72	60	60	60	69	66	67	66	62	64	71	64	68	60	61	61	64	70	67	68
		HKW	48	36	42	43	33	38	47	-	47	37	35	36	36	40	38	22	28	25	29	24	26	25	25	25	33	54	43	37
		SMK	96	94	95	68	80	74	-	-	-	60	55	57	88	93	91	88	89	89	89	89	89	79	81	80	90	92	91	87
		O	48	50	49	-	52	52	-	54	54	-	51	51	-	54	54	48	51	50	-	52	52	48	51	50	-	52	52	52
		P	-	26	26	-	25	25	-	27	27	-	25	25	-	26	26	-	25	25	-	24	24	-	25	25	-	26	26	26
Final plant stand (000/ha)																														
	G.M.		141	130	136	146	149	148	130	106	118	129	96	112	137	124	131	140	128	134	133	142	137	124	129	126	138	141	139	134
	S.E. Diff. Mean		8.1	11.8	10.1	0.5	1.4	1.0	3.1	8.7	6.5	18.6	12.9	16.0	6.0	6.4	6.2	11.1	9.5	10.3	7.1	3.8	5.7	7.8	12.0	10.1	2.6	1.9	2.2	6.8
	CD at 5%		NS	24.1	20.3	1.0	2.9	2.1	6.4	NS	NS	38.0	26.3	32.0	NS	13.0	NS	NS	19.4	NS	14.5	NS	11.3	16.0	24.5	20.2	NS	NS	NS	13.3
	CV %		8.2	12.9	10.6	0.5	1.3	1.0	3.4	11.6	7.9	20.4	19.1	20.2	6.2	7.2	6.7	11.2	10.5	11.0	7.6	3.8	5.9	8.9	13.2	11.3	2.6	1.9	2.3	7.2

*The centre not included in the pooled analysis because its pod yield was below triennial national average (1412 kg/ha).

ADVANCED VARIETAL TRIAL (AVT)
Habit Group: Spanish Bunch (SB)

Zone III

One entry, TCGS 1157 was promoted to AVT in zone III comprising the states of Maharashtra and Madhya in *kharif* 2016. The trial was allotted to five centres–four centres–Jalgaon, Akola, Latur, and Shirgaon in Maharashtra and Gwalior in Madhya Pradesh. Four varieties, TAG 24, AK 159, GG 8 and AK 335 were used as zonal checks in this trial. The centre-wise results are presented below (**Tables 20a through 20c**).

Whenever, either the coefficient of variation exceeded 20% in any particular location or the mean pod yield of any the location fell below 1516 kg/ha (triennial national average yield of *kharif* season ending 2016), the data could not be included in the analyses. Across five locations, the coefficient of variation (CV %) was about 13% for pod and kernel yield and well within the limits. The centre-wise results are presented below (**Tables 20a through 20c**).

Jalgaon
The mean yield levels of this centre were very high (1845 kg/ha of pod and 1325 kg/ha of kernel). Among the check varieties, the zonal check variety, AK 159 was the best for pod (1810 kg/ha) and kernel (1310 kg/ha) yield. The test genotype TCGS 1157 significantly out yielded the best check, AK 159 and other checks for both pod (2517 kg/ha) and kernel (1836 kg/ha) yield.

Akola
The mean yield levels of this centre were very high (3577 kg/ha of pod and 2471 kg/ha of kernel). There were no significant differences either for pod or for kernel yield among the test genotype and check varieties. Among the check varieties, the zonal check variety, AK 335 was the best for pod (3835 kg/ha) and kernel (2604 kg/ha) yield. The test genotype TCGS 1157 recorded a pod yield of 2517 kg/ha and kernel yield of 2613 kg/ha.

Latur
The mean yield levels of this centre were 2011 kg/ha of pod and 1377 kg/ha of kernel respectively and were high There were no significant differences either for pod or for kernel yield among the test genotype and check varieties. Among the check varieties, the zonal check variety, AK 335 was the best for pod (2208 kg/ha) and kernel (1547 kg/ha) yield. The test genotype TCGS 1157 recorded a pod yield of 1956 kg/ha and kernel yield of 1374 kg/ha.

Shirgaon
The mean yield levels of this centre were very high (2768 kg/ha of pod and 1864 kg/ha of kernel). There were no significant differences for pod and kernel yield among the test genotype and check varieties. Among the check varieties, the zonal check variety, AK 335 was the best for pod (3123 kg/ha) and kernel (2189 kg/ha) yield. The test genotype TCGS 1157 recorded a pod yield of 2888 kg/ha and kernel yield of 1918 kg/ha.

Gwalior
The mean yield levels of this centre were high (2069 kg/ha of pod and 1404 kg/ha of kernel). The zonal check variety, TAG 24 was the best for pod (2244 kg/ha) and kernel yield (1517 kg/ha). The test entry TCGS 1157 recorded marginal superiority for pod and kernel yield (2269 kg and 1575 kg per ha respectively) but remained at par with those of the best check.

Zonal Mean Performances

The mean yields across the five centres of this zone were high with 2454 kg of pod and 1688 kg of kernel per ha. Across the five locations, the zonal check variety, AK 335 was the best for pod (2478 kg/ha) and kernel (1712 kg/ha) yield. Over this check variety, although the test genotype, TCGS 1157 recorded a high pod (2673 kg/ha) and kernel (1863 kg/ha) yields, but it remained at par with those of the best check AK 335 (ZC).

Ancillary Observations

The plant population was sub-optimal in most centres. The entries and checks matured around 110 days. The shelling outturn ranged between 67% (TAG 24) to 70% (TCGS 1157) in the test materials. Seed size was between 38 g/100 kernels (TAG 24) to 47g/100 kernels (TCGS 1157). In general the oil content ranged between 49-51%, the highest being found in TAG 24 (ZC). Protein content in the test materials ranged from 25% (TAG 24) to 27% (TCGS 1157).

Past performances of the test entry ICGV 03043

As the real genetic worth of **TCGS 1157** could not be ascertained at AVT due to the non-significant results at three out of five test locations, the past performances of the entry **TCGS 1157** was observed. The entry **TCGS 1157** was proposed by RARS, Tirupati for multi-locational evaluation in kharif 2014. It was promoted to AVT in kharif 2016. The entry TCGS 1157 is a selection from the cross, TAG 24 x Jyoti. Results on performances of this entry across different stages of testing are provided in Tables 20d through 20g.

Across different stages of testing from 2014 to 2016, the zonal check variety, GG 8 was the best both for pod (2088 kg/ha) and kernel (1442 kg/ha) yield. This was closely followed by the other two check varieties, TAG 24 (ZC) with a mean pod and kernel yield of 2055 kg/ha and 1356 kg/ha; and AK 159 (ZC) with a mean pod and kernel yield of 2036 kg/ha and 1352 kg/ha. The mean pod yield of the entry **TCGS 1157** across different stages of evaluation was 2657 kg/ha and kernel yield was 1836 kg/ha.

Over different check varieties, the increase in pod yield of **TCGS 1157** was 30.6% over AK 1589; 29.3% over TCGS 1157; and 27.2% over GG 8. Whereas increase in kernel yield of this genotype over these check varieties was 35.8% over AK 159; 35.4% over TAG 24; AND 27.3% over GG 8 (Table 20d). The genotype **TCGS 1157** matured in 112d with 69% of shelling; 47 g as Hundred Seed Mass, which was comparatively higher over the check varieties and with a moderately high oil content (49%) and 27% protein which was 13% higher over the check varieties (Table 20e).

Conclusion

As the test entry, TCGS 1157 exhibited yield superiority over different stages of testing with high levels of pod and kernel yields and possessed more than 20% higher kernel yields over the best check varieties of the zone deserve identification. More over groundnut variety (central) released last in this zone for *kharif* season was GG 8 in 2006 and AK 159 in 2002; and in the state, TAG 24 in 1992 and AK 335 in 2010 have been released for Maharashtra; whereas for Madhya Pradesh it was JGN 23 released in 2007. Thus there is a greater need for new and improved groundnut varieties in these two states.

ZONE III

Table 20a: ADVANCED VARIETAL TRIAL (SPANISH) KHARIF 2016

Pod yield (kg/ha)

S.N.	Entry	Jalgaon	Akola	Latur	Shirgaon	Gwalior	Mean	R
1	ASK 2016-1	1545	3536	1837	2873	2244	2407	3
	TAG 24 (NC)							
2	ASK 2016-2	1810	3389	2057	2416	2145	2363	4
	AK 159 (ZC)							
3	ASK 2016-3	1736	3387	1999	2541	2084	2349	5
	GG 8 (ZC)							
4	ASK 2016-4	1618	3835	2208	3123	1604	2478	2
	AK 335 (Entry)							
5	ASK 2016-5	2517	3736	1956	2888	2269	2673	1
	TCGS 1157 (Entry)							
	G.M	1845	3577	2011	2768	2069	2454	
	S.E. Diff. Mean	129.7	245.4	140.1	328.4	39.3	203.0	
	CD at 5%	274.9	NS	NS	NS	83.3	404.0	
	CV %	11.1	10.8	11.0	18.8	3.0	13.1	

Table 20b: ADVANCED VARIETAL TRIAL (SPANISH) KHARIF 2016

Kernel yield (kg/ha)

S.N.	Entry	Jalgaon	Akola	Latur	Shirgaon	Gwalior	Mean	R
1	ASK 2016-1	1079	2384	1231	1829	1517	1608	5
	TAG 24 (NC)							
2	ASK 2016-2	1310	2324	1363	1703	1429	1626	4
	AK 159 (ZC)							
3	ASK 2016-3	1252	2432	1373	1679	1421	1631	3
	GG 8 (ZC)							
4	ASK 2016-4	1146	2604	1547	2189	1075	1712	2
	AK 335 (Entry)							
5	ASK 2016-5	1836	2613	1374	1918	1575	1863	1
	TCGS 1157 (Entry)							
	G.M	1325	2471	1377	1864	1404	1688	
	S.E. Diff. Mean	92.0	176.8	101.3	215.2	29.6	139.4	
	CD at 5%	195.0	NS	NS	NS	62.8	277.5	
	CV %	11.0	11.3	11.6	18.3	3.3	13.1	

Table 20c: ADVANCED VARIETAL TRIAL (SPANISH) KHARIF 2016

Ancillary traits

S.N.	Entry	Trait	Jalgaon	Akola	Latur	Shirgaon	Gwalior	Mean
1	ASK 2016-1	PS	296	271	307	298	197	274
	TAG 24 (NC)	D	105	116	113	96	109	108
		S	70	67	67	64	68	67
		HKW	28	53	35	29	43	38
		SMK	94	94	88	82	89	89
		O	51	52	51	49	51	51
		P	25	24	22	29	25	25
2	ASK 2016-2	PS	294	282	322	306	203	281
	AK 159 (ZC)	D	105	116	110	104	109	109
		S	72	69	66	70	67	69
		HKW	28	41	36	64	47	43
		SMK	96	95	90	86	87	91
		O	53	53	52	51	52	52
		P	26	26	23	30	26	26
3	ASK 2016-3	PS	288	287	313	315	203	281
	GG 8 (ZC)	D	105	115	114	109	109	110
		S	72	72	69	66	68	69
		HKW	31	48	35	35	45	39
		SMK	94	95	89	87	90	91
		O	50	50	49	47	49	49
		P	26	26	23	29	26	26
4	ASK 2016-4	PS	259	262	322	313	155	262
	AK 335 (Entry)	D	105	115	109	102	107	108
		S	71	68	70	70	67	69
		HKW	30	57	39	43	40	42
		SMK	95	89	89	81	88	88
		O	51	49	49	47	50	49
		P	24	25	23	29	25	25
5	ASK 2016-5	PS	285	279	315	305	235	284
	TCGS 1157 (Entry)	D	105	116	113	107	109	110
		S	73	70	70	66	69	70
		HKW	41	63	42	46	44	47
		SMK	97	91	88	85	89	90
		O	49	49	49	48	51	49
		P	27	28	25	29	25	27
Final plant stand (000/ha)								
	GM		284	276	316	307	199	276
	S.E. Diff. Mean		10.8	8.5	6.5	7.2	5.4	7.9
	CD at 5%		22.9	NS	NS	NS	11.3	15.7
	CV %		6.0	4.9	3.3	3.7	4.3	4.5

Table 20d: Past performance of TCGS 1157 in Zone III

S.No.	Entry/ Variety	Trait	IVT I 2014 (2 Cntrs.)	IVT II 2015 (2 Cntrs.)	Pooled Mean (IVT I & II)	AVT 2016 (5 Cntrs.)	Mean (Pooled + AVT)	Weighted mean (9 cntrs)	% yield increase over Weighted mean		
									TAG 24	AK 159	GG 8
1	TCGS 1157 (entry)	P	2350	2925	2638	2673	2655	2657	29.3	30.6	27.2
		K	1646	1958	1802	1863	1832	1836	35.4	35.8	27.3
2	TAG 24 (Check)	P	1426	1806	1616	2407	2011	2055			
		K	907	1173	1040	1608	1324	1356			
3	AK 159 (Check)	P	1126	2126	1626	2363	1994	2036			
		K	677	1344	1010	1626	1318	1352			
4	GG 8 (Check)	P	1584	1940	1762	2349	2056	2088			
		K	1100	1310	1205	1631	1418	1442			

Table 20e: Ancillary Observations over stages

S.No.	Entry/ Variety	Trait	IVT I 2014 (2 Cntrs.)	IVT II 2015 (2 Cntrs.)	Pooled Mean (IVT I & II)	AVT 2016 (5 Cntrs.)	Mean (Pooled + AVT)	Weighted mean (9 cntrs)
1	TCGS 1157 (entry)	D	114	114	114	110	112	112
		S	69	67	68	70	69	69
		HKW	47	45	46	47	46	47
		SMK	95	92	93	90	92	91
		O	48	50	49	49	49	49
		P	-	-	-	27	27	27
2	TAG 24 (Check)	D	110	112	111	108	109	109
		S	64	65	64	67	66	66
		HKW	32	34	33	38	35	35
		SMK	93	92	93	89	91	91
		O	50	50	50	51	50	50
		P	-	-	-	25	25	25
3	AK 159 (Check)	D	112	112	112	109	110	110
		S	62	64	63	69	66	66
		HKW	30	32	31	43	37	38
		SMK	94	92	93	91	92	92
		O	51	49	50	52	51	51
		P	-	-	-	26	26	26
4	GG 8 (Check)	D	110	110	110	110	110	110
		S	70	68	69	69	69	69
		HKW	36	37	37	39	38	38
		SMK	93	94	93	91	92	92
		O	48	49	48	49	49	49
		P	-	-	-	26	26	26

'Constitution of a special trial for evaluation of Near Isogenic Lines (NILs)'
Habit Group: Spanish Bunch

Stage of Trial: Advanced Varietal Trial-I (AVT-I)

A major QTL governing resistance to rust from the popular variety of interspecific origin namely GPBD-4 (as donor) and also contributing to LLS tolerance was introgressed using marker-assisted backcrossing (MABC) approach into three popular groundnut varieties, TAG 24, JL 24 and ICGV 91114 by ICRISAT. The objective of the MABC approach was to introgress rust resistance in to early maturing genetic background which would other-wise be late maturing.

Preliminary evaluation was carried out by ICRISATat few target locations. The results showed an increase in pod yield of 20-96% over the recurrent parents and a disease score of 2 (on 1-9 scale) similar to donor parent (GPBD 4). Hence it was conceptualized that a large scale evaluation at multi locations of these MABC lines at hot spotsfor both rust and LLS would result in identification of location-specific elite genotypes which may on further evaluation through AICRP-G, be recommended for release in the target areas. Simultaneously the same approach can also be carried out at state level for release.

Accordingly, a project was formulated and submitted for funding under CRP with ICRISAT as a Lead Centre and ICAR-DGR as a Partner Lead Institution along with five collaboratorsviz. University of Agricultural Sciences- Dharwad; Tamil Nadu Agricultural University-Aliyarnagar; Mahatma Phule Krishi Vidyapeeth-Digraj; Mahatma Phule KrishiVidyapeeth-Jalgaon; Acharya NG Ranga Agril. University-Kadiri.

The project was sanctioned and the multi-location evaluation of 57 MABC lines, three recurrent parents and one donor parent were carried out in rainy season of 2015 at all the seven target sites. The genotypes were evaluated separately in three different sets with codes: i) as rainfed (41 MABCs+3RPs+1D genotypes+3LCs), ii) with supplemental irrigation at critical stages of crop growth (41 MABCs+3RPs+1D genotypes+3LCs) and iii) as rainfed (14 MABCs+3RPs+1D genotypes+3LCs). The location specific promising high yielding lines possessing desired level of resistance to rust and LLS have been identified at each of the centres separately for irrigated, rainfed conditions and for both. These lines are phenotypically stable with distinct morphological features differing from their respective recurrent parents for one or the other traits.

As these genotypes are near-isogenic for resistance to rust and LLS, a special trial was constituted on **'Evaluation of Near Isogenic Lines for rust and LLS'** in *kharif* season (rainy) of 2016 for the first time in India under AICRP-G in Zone V comprising the states of Tamil Nadu, Andhra Pradesh, Telengana, Karnataka and Maharashtra where rust and LLS are predominant. The target sites included Vridhachalam and Aliyarnagar in Tamil Nadu; Kadiri and Tirupati in Andhra Pradesh; Palem in Telengana; Dharwad and Raichur in Karnataka; and Digraj in southern Maharashtra.

Twelve promising NILs were proposed by six centres (**Table NILs-1**). Among the twelve NILs proposed, four (ICGVs 14421, 14410, 13193, 13189) were of ICGV 91114 derived; five (ICGVs

13219, 14415, 13221, 13229, 13220) were derived from JL 24 and three (ICGVs 13207, 14431, 13200) were NILs of TAG 24. The trial was constituted along with the three recurrent parents (ICGV 91114, TAG 24, and JL 24); one donor parent (GPBD-4) along with a high yielding check of the zone, R 2001-2 and evaluated in the eight target locations. All the guidelines of the Council for NILs have been followed for laying out this trial.

Out of the eight centres which have conducted the trial all of them except Palem centre reported the data. The Coefficient of variation (CV%) was about 21% both for pod and kernel yield across eight locations and the CV% was well within limits at all the centres. The trial was conducted with supplemental irrigation at critical stages of crop growth. The centre-wise results are presented below (**Table 21a through 21c**).

Table NILs-1. Details of Near Isogenic entries (NILs) under testing in *Kharif* 2016

S. No.	Decode	Pedigree	Proposed by
1	ICGV 14421	ICGV 91114 x GPBD 4	MPKV-Jalgaon
2	ICGV 13207	TAG 24 x GPBD 4	MPKV-Digraj
3	ICGV 13219	JL 24 x GPBD 4	DGR-Junagadh
4	ICGV 14415	JL 24 x GPBD 4	DGR-Junagadh
5	ICGV 14410	ICGV 91114 x GPBD 4	UAS-Dharwad
6	ICGV 13193	ICGV 91114 x GPBD 4	ICRISAT
7	ICGV 13189	ICGV 91114 x GPBD 4	UAS-Dharwad
8	ICGV 14431	TAG 24 x GPBD 4	MPKV-Digraj
9	ICGV 13221	JL 24 x GPBD 4	MPKV-Digraj
10	ICGV 13200	TAG 24 x GPBD 4	ICRISAT
11	ICGV 13229	JL 24 x GPBD 4	TNAU-Tindivanam
12	ICGV 13220	JL 24 x GPBD 4	TNAU-Tindivanam
	Checks		
1	TAG 24	-	Recurrent Parent
2	ICGV 91114	-	Recurrent Parent
3	JL 24	-	Recurrent Parent
4	GPBD 4 (ZC)	-	Donor Parent & Zonal Check
5	R 2001-2 (ZC)	-	Zonal Check

Centres (8): Vridhachalam, Aliyarnagar, Kadiri, Tirupati, Palem, Dharwad, Raichur, Digraj

Vridhachalam

In this location, the mean pod and kernel yield of the genotypes and checks were 1133 kg/ha and 706 kg/ha respectively. Among the three recurrent parents,ICGV 91114 was the best for both pod (1608 kg/ha) and kernel (1031 kg/ha) yield. Over this recurrent parent, only one genotype ICGV 14421 exhibited significant higher pod (2007 kg/ha) yield but for kernel (1236 kg/ha) yield, this genotype lost its significance level marginally by 11 kg.

The pod (733 kg/ha) and kernel (438kg/ha) yield of the recurrent parent TAG 24 was very low. Over this recurrent parent, two genotypes in order of merit, ICGV 13200 (1376kg/ha of pod; 939kg/ha of kernel) and ICGV14431 (1098 kg/ha of pod; 642kg/ha of kernel) recorded higher

yields over the recurrent parent, TAG 24. But the yield levels of ICGV 13200 only were found significant over the recurrent parent TAG 24.

The pod (536 kg/ha) and kernel (320 kg/ha) yield of the recurrent parent JL 24 was the lowest among the three recurrent parents. Three out of five NILs of JL 24 recorded significant higher yields over JL 24. But only two genotypes exhibited significant superiority for pod and kernel yields. The pod and kernel yields of these two genotypes were: 1295 kg of pod and 868 kg of kernel per ha in ICGV 13220; and in case of ICGV 13229 it was 1217 kg of pod and 801 kg of kernel per ha respectively.

Interestingly, the genotype ICGV 14421, a NIL of ICGV 91114, out-yielded the high yielding zonal check variety R 2001-2 for pod yield (2007 kg/ha) while for kernel yield (1236 kg/ha) it lost its significance level just by 7.0 kg per ha.

Kadiri

In this centre, the mean pod (443 kg/ha) and kernel (290 kg/ha) yield of the genotypes and checks were very low due to the very low rainfall. A total of 170.7 mm of rainfall had been received during the crop period (July to November) compared to the decennial mean of 379.9 mm (55% deficit rainfall over normal). Three dry spells, first one for longer period(about 48 days; from 31st July to 16th September)coinciding with flower initiation as well as pegging stages of crop growth; a second dry spell fora short period (12 days; from 28th September to 9th October) coinciding pod development and filling and the third one again for longer spell (of 52 days was occurred from 11th October to 1st December) which coincided with maturation stage leading to very poor yields.

Among the three recurrent parents, ICGV 91114 was the best for both pod (498 kg/ha) and kernel (347 kg/ha) yield. Over this recurrent parent, three of its NILs, ICGV 14410 (733 kg of pod; 500 kgof kernel/ha); ICGV 14421 (706 kg of pod; 470 kg of kernel/ha) and ICGV 13189 (675 kg of pod; 470 kg of kernel/ha) exhibited significant higher yields over ICGV 91114.

The recurrent parent TAG 24 recorded a very low pod (281 kg/ha) and kernel (193kg/ha) yield and out yielded all of its three NILs for both pod and kernel yield.

The pod (277 kg/ha) and kernel (187kg/ha) yield of the recurrent parent JL 24 was the lowest among the three recurrent parents. Out of five NILs of JL 24, only one genotype, ICGV 13220 significantly surpassed the yields of JL 24. The pod and kernel yield of this genotype was 479 kg of pod and 327 kg of kernel per ha.

Tirupati

The rainfall received was 628 mm in 35 rainy days sufficient for a good crop although short dry spells have occurred during August and September. The mean pod (1642 kg/ha) and kernel (1084 kg/ha) yield of the genotypes and checks were high for a *kharif* crop.

The pod (1470 kg/ha) and kernel (1395 kg/ha) yield of ICGV 91114 was the moderate. Two genotypes (NILs of JL 24) recorded significant and very higher pod and kernel yields over JL 24.

They were ICGV 14421 (2213 kg of pod; 1515 kg of kernel/ha) and ICGV 144410 (2100 kg of pod; 1416 kg of kernel/ha).

The recurrent parent TAG 24 recorded a moderate pod (1214 kg/ha) and kernel (755 kg/ha) yield. Over this parent, one of its NILs, ICGV 13207 recorded significant higher pod (2014 kg/ha) and kernel (1417 kg/ha) yield. As regards the NILs of JL 24, none of them could significantly surpass its pod (1470 kg/ha) and kernel (991 kg/ha) yield.

Dharwad

The mean pod (3869 kg/ha) and kernel (3030 kg/ha) yield of the genotypes and checks were high in this centre. More than the recurrent parents, and their NILs, the rust resistant donor GPBD recorded the highest pod (4886 kg/ha) and kernel (3912 kg/ha) yield. Among the recurrent parents, JL 24 was the high yielder with a pod and kernel yield of 4152 kg of pod and 3251 kg of kernel per ha followed by TAG 24 (3621 kg of pod and 2780 kg of kernel kg/ha) and ICGV 91114 (2925 kg of pod and 2293 kg of kernel kg/ha).

Over JL 24 none of the NILs could significantly surpass its pod and kernel yield. Where as in case of NILs of TAG 24 one of the NILs, ICGV 13207, though was at par (4424 kg/ha) for pod yield with its recurrent parent, for kernel yield (3596 kg/ha) it exhibited significant superiority. As far as the other recurrent parent ICGV 91114, one of its NILs ICGV 13189 exhibited significant higher pod (3972 kg/ha) and kernel (3125 kg/ha) yield.

Raichur

The mean pod (1599 kg/ha) and kernel (1156 kg/ha) yield of the genotypes and checks were high in this centre. The pod and kernel yields of the three recurrent parents, TAG 24 (1146 kg of pod; 817 kg of kernel/ha); ICGV 91114 (1076 kg of pod; 782 kg of kernel/ha) and JL 24 (1111 kg of pod; 806 kg of kernel/ha)were low.

Over the recurrent parent, ICGV 91114 all of its four NILs, ICGV 14421 (2233 kg of pod and 1638 kg of kernel/ha); ICGV 14410 (1875 kg of pod and 1362 kg of kernel/ha); ICGV 13193 (1793 kg of pod and 1282 kg of kernel/ha) and ICGV 13189 (2212 kg of pod and 1619 kg of kernel/ha) recorded significant higher yields.

In case of TAG 24, two of its NILs, ICGV 13207 (2055 kg of pod and 1500 kg of kernel/ha) and ICGV 14431 (1649 kg of pod and 1183 kg of kernel/ha) recorded significant higher yields.

Four NILs of JL 24 namely ICGV 13219 (1997 kg of pod and 1490 kg of kernel/ha); ICGV 13221 (1639 kg of pod and 1195 kg of kernel/ha); ICGV 13229 (1805 kg of pod and 1335 kg of kernel/ha) and ICGV 13220 (1701 kg of pod and 1259 kg of kernel/ha) exhibited significant higher yields over JL 24.

Digraj

The mean pod (1782 kg/ha) and kernel (1274 kg/ha) yield of the genotypes and checks were high in this centre. The pod and kernel yields of the three recurrent parents, TAG 24 (944 kg of pod; 687 kg of kernel/ha); ICGV 91114 (1203 kg of pod; 887 kg of kernel/ha) and JL 24 (1259 kg of pod; 930 kg of kernel/ha) were low to moderate.

Four NILs of ICGV 91114 namely ICGV 14421 (2550 kg of pod and 1803 kg of kernel/ha); ICGV 14410 (2044 kg of pod and 1488 kg of kernel/ha); ICGV 13193 (1982 kg of pod and 1439kg of kernel/ha) and ICGV 13189 (2343 kg of pod and 1668 kg of kernel/ha), recorded significant higher yields.

In case of TAG 24, all the three of its NILs, ICGV 13207 (2165 kg of pod and 1521 kg of kernel/ha); ICGV 14431 (1710 kg of pod and 1282 kg of kernel/ha) and ICGV 13200 (1903 kg of pod and 1325 kg of kernel/ha), recorded significant higher yields.

Two NILs of JL 24 namely, ICGV 13229 (2090 kg of pod and 1521 kg of kernel/ha) and ICGV 13220 (2002 kg of pod and 1436 kg of kernel/ha) exhibited significant higher yields over JL 24.

Mean Yield performances of NILS, recurrent parents and checks over seven locations

Across seven locations, the mean pod (1745 kg/ha) and kernel (1257 kg/ha) yield of the genotypes and checks were high. Among the recurrent parents, JL 24 was the best (over seven locations) for pod (1467 kg/ha) and kernel (1081 kg/ha) yield. This yield levels were inflated due to the very high yields recorded by this parent at Dharwad centre. This was followed by ICGV 91114 with 1451 kg of pod and 1058 kg of kernel per ha; and TAG 24 with 1323 kg of pod and 945 kg of kernel per ha.

Two NILs of ICGV 91114, namely ICGV 14421 (2230 kg of pod and 1599 kg of kernel per ha) and ICGV 13189 (2063 kg of pod and 1505 kg of kernel per ha); one of TAG 24 viz. ICGV 13207 (1990 kg of pod and 1467 kg of kernel per ha) exhibited significant higher yields over their respective parents.

Over JL 24 though none of its NILs exhibited significant higher yields, the yield levels (1964 kg of pod and 1469 kg of kernel per ha) of one of its NILs, ICGV 13220 were at par with those of JL 24.

Rust and LLS diseases reactions of NILS, recurrent parents and checks (Table NILs-2, 3)

The reactions of the 12 NILs to the rust disease along with three recurrent parents, resistant donor and the zonal check, R 2001-2 were assessed at seven locations with few local checks wherever applicable. At kadiri, as the rainfall was low and consequently the weather was dry, the incidence of rust disease was almost nil. In six other locations the incidence of rust disease in the test genotypes scored on a 1 to 9 scale is presented in Table NILs-2. Similarly, the incidence of late leaf spot disease in the test genotypes scored on a 1 to 9 scale is presented in Table NILs-3.

For rust, the disease pressure was high only at Digraj where two of the three recurrent parents (except JL 24) scored a disease score of 9.0 followed by a sub-optimal disease pressure of 7.0 at Aliyarnagar as evidenced by a disease score of 7.0 (recorded by the susceptible check, TMV 7). Under these circumstances, two high yielding NILs of ICGV 91114 namely ICGV 14421 and ICGV 13189 and the one of TAG 24 viz. ICGV 13207 recorded a rust disease score of 1.0 (Immune) as against the disease score of 4.0 and 5.0 recorded by the three recurrent parents.

While the same two high yielding NILs of ICGV 91114 recorded a disease score of 3.0, exhibiting resistance reaction to rust at Digraj against the disease score of 9.0 recorded by ICGV 91114. Whereas the lone high yielding of NILs of TAG 24 i.e. ICGV 13207 recorded a disease score of 7.0 exhibiting susceptible reaction to rust disease at Digraj against the disease score of 9.0 recorded by TAG 24.

In none of the other four centres, the rust disease incidence was high. Hence the disease score in the recurrent parents were more towards tolerance. Hence, the disease reactions of the NILs could not be assessed properly.

For late leaf spot, though the disease pressure was high both at Dharwad and Digraj centres the data were contradictory. At Dharwad, the disease pressure was very high and none of the NILs, recurrent parents, donor parent, zonal check and other local checks exhibited resistance. While at Raichur, the two high yielding NILS of recorded a LLS disease score of 3.0 (ICGV 14421) and 7.0 (ICGV 13189) respectively indicating resistance and susceptibility to LLS by these two genotypes.

At Digraj, the two recurrent parents, ICGV 91114 and TAG 24 recorded a LLS disease score of 9.0 each. Against this high disease pressure, the two high two yielding NILs of ICGV 91114 recorded a LLS disease score of 3.0 (ICGV 14421) and 7.0 (ICGV 13189) respectively indicating resistance and susceptibility to LLS by these two genotypes. While the high yielding NIL of TAG 24 i.e. ICGV 13207, recorded a disease score of 3.0 exhibiting resistance reaction to LLS disease at the centre.

Ancillary observations

The plant stand was sub-optimal at most of the centres. The genotypes matured between 110-114 d. The shelling ranged from 59% (ICGV 14415) to 72% (ICGV 91114, ICGV 13220). Seed size was mostly small in all the genotypes which ranged from 32 g (ICGV 14431) to 41 g (ICGV 13229, ICGV 14415). Oil content varied between 47% (ICGV 91114) to 50% (GPBD 4, ICGV 13207). Protein content varied as low as 25% (ICGV 14421) and as high as 28% (ICGV 13219, 14415, 13221, 13229, 13220).

Conclusion

i) ICGV 14421 which exhibited significant yield superiority over its recurrent parent, ICGV 91114 with desired levels of resistance to rust and tolerance to LLS;
ii) ICGV 13189 exhibited significant yield superiority over its recurrent parent ICGV 91114 with desired levels of resistance to rust;
iii) ICGV 13207 which was found high yielding over its recurrent parent TAG 24 with a desired level of resistance to rust are promoted to AVT-I.

Table NILs-2. Rust disease score recorded by NILs at six locations

NILs	Aliyarnagar	Vridhachalam	Tirupati	Dharwad	Raichur	Digraj
MABC-2016-1 ICGV 14421	1	0	2	5	3	3
MABC-2016-3 ICGV 13207	1	2	2	4	2	3
MABC-2016-5 ICGV 13219	1	5	2	5	3	1
MABC-2016-6 ICGV 14415	1	3	2	4	3	1
MABC-2016-7 ICGV 14410	2	0	3	4	2	3
MABC-2016-8 ICGV 13193	2	2	2	4	3	3
MABC-2016-11 ICGV 13189	1	4	2	4	2	7
MABC-2016-13 ICGV 14431	1	1	1	4	2	1
MABC-2016-14 ICGV 13221	1	1	1	5	3	7
MABC-2016-15 ICGV 13200	1	3	2	4	3	1
MABC-2016-16 ICGV 13229	1	1	2	5	2	3
MABC-2016-17 TAG 24 (RP)	4	4	5	4	2	9
MABC-2016-18 ICGV 91114 (RP)	5	3	6	5	3	9
MABC-2016-19 JL 24 (RP)	5	3	6	5	3	3
MABC-2016-20 GPBD 4 (ZC)	1	0	1	3	2	7
MABC-2016-21 R 2001-2 (ZC)	1	2	3	4	2	9
MABC- 2016-22 ICGV 13220	1	3	2	5	3	7
Local Check (s)	7 (TMV 7)	3 (VRI Gn 6)	5 (Dharani)	3 (GPBD 5)	-	1 (KDG 160)
	-	4 (VRI Gn 8)	-	3 (G2-52)	-	-
	-	-	-	5 (JL 24)	-	-

Table NILs-3. Late Leaf Spot disease score recorded by NILs at six locations

NILs	Aliyarnagar	Vridhachalam	Tirupati	Dharwad	Raichur	Digraj
MABC-2016-1 ICGV 14421	2	5	3	9	3	1
MABC-2016-3 ICGV 13207	1	8	3	9	4	3
MABC-2016-5 ICGV 13219	2	8	3	9	6	1
MABC-2016-6 ICGV 14415	2	6	4	9	7	3
MABC-2016-7 ICGV 14410	2	5	4	9	7	5
MABC-2016-8 ICGV 13193	3	8	5	9	7	3
MABC-2016-11 ICGV 13189	3	8	5	9	7	5
MABC-2016-13 ICGV 14431	1	5	2	9	4	3
MABC-2016-14 ICGV 13221	1	7	3	9	7	3
MABC-2016-15 ICGV 13200	1	7	2	9	6	1
MABC-2016-16 ICGV 13229	1	6	5	9	8	5
MABC-2016-17 TAG 24 (RP)	5	8	5	9	8	9
MABC-2016-18 ICGV 91114 (RP)	3	6	4	9	8	9
MABC-2016-19 JL 24 (RP)	4	8	6	9	8	3
MABC-2016-20 GPBD 4 (ZC)	1	4	2	9	8	1
MABC-2016-21 R 2001-2 (ZC)	1	6	3	9	7	3
MABC- 2016-22 ICGV 13220	1	7	3	9	8	3
Local checks	7 (TMV 7)	6 (VRI Gn 6)	5 (Dharani)	6 (GPBD 5)	-	1 (KDG 160)
	-	6 (VRI Gn 8)	-	6 (G2-52)	-	-
	-	-	-	9 (JL 24)	-	-

Table 21a:SPECIAL TRIAL ON NEAR ISOGENIC ENTRIES (NILs) KHARIF 2016

Pod yield (kg/ha)

S.N.	Entry	Vriddhachalam	Kadiri	Tirupati	Dharwad	Raichur	Digraj	Mean	R
1	MABC- 2016-1	2007	706	2213	3671	2233	2550	2230	1
	ICGV 14421								
2	MABC- 2016-3	949	335	2014	4424	2055	2165	1990	4
	ICGV 13207								
3	MABC- 2016-5	1217	374	1385	4439	1997	1542	1825	7
	ICGV 13219								
4	MABC- 2016-6	664	420	1274	4170	868	1400	1466	14
	ICGV 14415								
5	MABC- 2016-7	1214	733	2100	2718	1875	2044	1780	9
	ICGV 14410								
6	MABC- 2016-8	1396	605	1762	3410	1743	1982	1816	8
	ICGV 13193								
7	MABC- 2016-11	1267	675	1913	3972	2212	2343	2063	3
	ICGV 13189								
8	MABC- 2016-13	1098	221	1017	2903	1649	1710	1433	16
	ICGV 14431								
9	MABC- 2016-14	844	392	1618	4087	1639	1357	1656	11
	ICGV 13221								
10	MABC- 2016-15	1376	166	1214	3139	1486	1903	1547	12
	ICGV 13200								
11	MABC- 2016-16	874	258	1513	4482	1805	2090	1837	6
	ICGV 13229								
12	MABC- 2016-17	733	281	1214	3621	1146	944	1323	17
	TAG 24 (RP)								
13	MABC- 2016-18	1608	498	1395	2925	1076	1203	1451	15
	ICGV 91114 (RP)								
14	MABC- 2016-19	536	277	1470	4152	1111	1259	1467	13
	JL 24 (RP)								
15	MABC- 2016-20	687	447	1449	4886	955	1940	1727	10
	GPBD 4 (ZC)								
16	MABC- 2016-21	1500	660	2722	4111	1632	1859	2081	2
	R 2001-2 (ZC)								
17	MABC- 2016-22	1295	479	1642	4665	1701	2002	1964	5
	ICGV 13220								
	G.M	1133	443	1642	3869	1599	1782	1745	
	S.E. Diff. Mean	165.8	62.4	206.1	480.1	234.0	169.5	254.2	
	CD at 5%	333.4	125.5	414.3	965.3	470.5	340.7	500.4	
	CV %	20.7	19.9	17.7	17.5	20.7	13.5	20.6	

Table 21b:SPECIAL TRIAL ON NEAR ISOGENIC ENTRIES (NILs) KHARIF 2016

Kernel yield (kg/ha)

S.N.	Entry	Vriddhachalam	Kadiri	Tirupati	Dharwad	Raichur	Digraj	Mean	R
1	MABC- 2016-1	1236	470	1515	2933	1638	1803	1599	1
	ICGV 14421								
2	MABC- 2016-3	528	240	1417	3596	1500	1521	1467	3
	ICGV 13207								
3	MABC- 2016-5	801	229	957	3527	1490	1097	1350	6
	ICGV 13219								
4	MABC- 2016-6	302	197	650	3105	565	951	962	16
	ICGV 14415								
5	MABC- 2016-7	711	500	1416	2148	1362	1488	1271	9
	ICGV 14410								
6	MABC- 2016-8	948	427	1171	2675	1282	1439	1324	7
	ICGV 13193								
7	MABC- 2016-11	866	476	1275	3125	1619	1668	1505	2
	ICGV 13189								
8	MABC- 2016-13	642	141	642	2317	1183	1282	1035	15
	ICGV 14431								
9	MABC- 2016-14	499	264	1191	3227	1195	973	1225	11
	ICGV 13221								
10	MABC- 2016-15	939	108	809	2466	1084	1325	1122	12
	ICGV 13200								
11	MABC- 2016-16	487	126	856	3335	1335	1521	1276	8
	ICGV 13229								
12	MABC- 2016-17	438	193	755	2780	817	687	945	17
	TAG 24 (RP)								
13	MABC- 2016-18	1031	347	1011	2293	782	887	1058	14
	ICGV 91114 (RP)								
14	MABC- 2016-19	320	187	991	3251	806	930	1081	13
	JL 24 (RP)								
15	MABC- 2016-20	355	287	869	3912	644	1376	1240	10
	GPBD 4 (ZC)								
16	MABC- 2016-21	1027	420	1730	3134	1090	1272	1445	5
	R 2001-2 (ZC)								
17	MABC- 2016-22	868	327	1184	3693	1259	1436	1461	4
	ICGV 13220								
	G.M	706	290	1084	3030	1156	1274	1257	
	S.E. Diff. Mean	107.4	43.2	154.3	385.8	166.8	140.5	197.3	
	CD at 5%	216.0	86.9	310.2	775.7	335.5	282.6	388.4	
	CV %	21.5	21.1	20.1	18.0	20.4	15.6	22.2	

Table 21c:SPECIAL TRIAL ON NEAR ISOGENIC ENTRIES (NILs) KHARIF 2016

Ancillary traits

S.N.	Entry	Trait	Vriddhachalam	Kadiri	Tirupati	Dharwad	Raichur	Digraj	Mean
1	MABC- 2016-1	PS	275	292	302	235	330	212	274
	ICGV 14421	D	105	116	118	108	118	112	113
		S	62	67	68	80	73	71	70
		HKW	27	25	26	38	46	45	35
		SMK	75	83	82	96	93	92	87
		O	49	48	49	49	50	50	49
		P	26	27	26	25	24	25	25
2	MABC- 2016-3	PS	192	252	286	267	332	214	257
	ICGV 13207	D	100	118	118	110	104	113	110
		S	56	72	70	81	73	70	70
		HKW	23	25	25	38	43	43	33
		SMK	80	82	75	96	93	93	86
		O	50	47	52	49	53	50	50
		P	25	26	26	26	23	25	25
3	MABC- 2016-5	PS	215	288	279	264	327	137	252
	ICGV 13219	D	100	115	121	109	114	113	112
		S	66	61	69	79	75	74	71
		HKW	32	23	26	44	43	44	35
		SMK	83	79	87	97	92	91	88
		O	50	48	49	48	50	48	49
		P	28	28	29	27	27	27	28
4	MABC- 2016-6	PS	127	213	224	225	330	218	223
	ICGV 14415	D	105	116	121	110	118	111	114
		S	48	47	51	75	65	68	59
		HKW	30	25	34	58	42	59	41
		SMK	69	77	80	97	94	89	84
		O	48	46	48	48	49	48	48
		P	28	27	29	28	25	28	28
5	MABC- 2016-7	PS	271	254	288	229	327	219	265
	ICGV 14410	D	115	113	121	109	111	113	114
		S	58	68	67	79	73	73	70
		HKW	27	27	26	35	41	42	33
		SMK	70	78	80	94	92	92	84
		O	48	46	47	48	49	49	48
		P	26	27	27	27	27	25	26
6	MABC- 2016-8	PS	331	242	257	254	326	216	271
	ICGV 13193	D	105	116	121	108	111	113	112
		S	68	71	67	78	74	72	72
		HKW	30	37	31	50	41	46	39
		SMK	88	85	84	98	95	92	90
		O	48	47	48	48	47	49	48
		P	27	29	26	28	26	27	27
7	MABC- 2016-11	PS	245	260	273	226	333	219	259
	ICGV 13189	D	100	114	121	108	111	113	111
		S	68	71	67	79	73	71	71
		HKW	27	34	31	46	43	48	38
		SMK	78	88	77	96	96	89	87
		O	47	47	48	48	48	48	48
		P	27	28	27	27	26	26	27

S.N.	Entry	Trait	Vriddhachalam	Kadiri	Tirupati	Dharwad	Raichur	Digraj	Mean
8	MABC- 2016-13	PS	194	246	236	234	332	212	242
	ICGV 14431	D	100	113	121	110	110	112	111
		S	59	61	63	80	72	75	68
		HKW	25	22	22	40	37	45	32
		SMK	81	79	69	96	95	89	85
		O	49	48	49	49	50	50	49
		P	25	27	27	26	24	26	26
9	MABC- 2016-14	PS	257	293	282	274	332	217	276
	ICGV 13221	D	95	116	121	110	108	113	110
		S	60	67	74	79	73	71	71
		HKW	25	23	26	42	42	38	33
		SMK	68	83	87	98	94	92	87
		O	50	48	49	48	50	48	49
		P	25	28	29	28	28	28	28
10	MABC- 2016-15	PS	257	214	247	238	334	217	251
	ICGV 13200	D	100	112	121	108	114	112	111
		S	68	65	66	79	73	70	70
		HKW	32	23	24	39	43	39	33
		SMK	81	79	75	96	93	91	86
		O	49	48	51	49	49	49	49
		P	28	25	26	27	25	27	27
11	MABC- 2016-16	PS	153	259	224	214	332	216	233
	ICGV 13229	D	105	115	121	109	113	113	113
		S	56	49	56	75	74	73	64
		HKW	35	30	31	55	39	56	41
		SMK	65	81	81	96	93	90	84
		O	49	47	49	49	50	48	48
		P	28	29	29	28	28	28	28
12	MABC- 2016-17	PS	181	219	215	186	337	219	226
	TAG 24 (RP)	D	95	117	121	108	111	114	111
		S	60	69	63	77	72	73	69
		HKW	31	31	31	40	49	39	37
		SMK	72	85	79	94	84	91	84
		O	49	48	50	47	50	48	49
		P	27	26	26	26	24	25	26
13	MABC- 2016-18	PS	222	275	222	216	336	215	248
	ICGV 91114 (RP)	D	105	114	121	110	110	112	112
		S	64	70	73	78	73	73	72
		HKW	31	27	29	42	38	36	34
		SMK	80	86	84	98	87	92	88
		O	48	46	48	47	47	47	47
		P	26	27	27	27	24	25	26
14	MABC- 2016-19	PS	139	234	242	198	337	215	227
	JL 24 (RP)	D	100	113	121	110	110	114	111
		S	60	68	67	78	73	74	70
		HKW	31	29	31	46	37	43	36
		SMK	77	84	80	98	85	90	86
		O	49	48	49	49	49	48	49
		P	26	27	27	27	28	26	27

S.N.	Entry	Trait	Vriddhachalam	Kadiri	Tirupati	Dharwad	Raichur	Digraj	Mean
15	MABC- 2016-20	PS	238	270	272	247	339	215	263
	GPBD 4 (ZC)	D	110	116	121	108	104	112	112
		S	51	64	60	80	68	71	66
		HKW	20	26	24	37	39	37	30
		SMK	80	78	76	97	84	92	84
		O	49	48	51	51	51	50	50
		P	26	28	28	28	25	28	27
16	MABC- 2016-21	PS	206	249	249	266	336	218	254
	R 2001-2 (ZC)	D	110	114	121	107	110	111	112
		S	68	64	64	76	67	68	68
		HKW	29	24	28	41	42	40	34
		SMK	76	81	76	95	96	90	86
		O	48	46	48	49	48	48	48
		P	26	26	26	25	24	25	25
17	MABC- 2016-22	PS	287	266	247	230	332	197	260
	ICGV 13220	D	100	112	121	110	106	112	110
		S	67	68	72	79	74	72	72
		HKW	36	25	28	43	47	39	36
		SMK	71	84	87	97	94	91	87
		O	49	48	50	50	50	50	49
		P	27	29	28	28	26	28	28
Final plant stand (000/ha)									
	GM		223	254	256	235	332	210	252
	S.E. Diff. Mean		31.9	26.3	20.0	33.7	3.5	7.1	23.5
	CD at 5%		64.2	NS	40.1	NS	7.1	14.4	46.2
	CV %		20.3	14.6	11.0	20.2	1.5	4.8	13.2

Special Trial on C3-CAM Transition

In the Microbiology section of ICAR-DGR, Junagadh, variants were isolated while working with endo-bacterial experiments with the improved and popular Spanish Bunch groundnut TG 37A. These are natural selections from TG 37A. These selectionsare found to be drought tolerant, water use efficient, early maturing and have the potential to reduce irrigation water. Hence it has been proposed to test these materials at target locations for their performances. The materials were coded and the checks used were the parental source, TG 37A and a drought tolerant variety ICGV 91114 and conducted at Kadiri, Anantapur (AP); Hiriiyur (Karnataka) and Tindivanam (TN) where occurrence of drought is frequent.

The centre-wise data/results are presented in Table 22a through 22c. Perusal of the data clearly indicates that the plant population was very low at all the four centres (91000-146000/ha). Especially the plant stand of the check variety was 61 (Kadiri), 7 (Ananatapur), 90 (Hiriyur), 13 (Tindivanam) and the mean plant stand was 43 per plot. This was due to the lack of seed viability which resulted in poor germination. Hence comparison of genotypes became difficult and unrealistic.

At Hiriyur, though, the mean pod yield was 2308 kg/ha when compared to the plant stand of all the genotypes it was unrealistic. Days to maturity also exhibited wide variation across the centres ranging from 100 to 123 days. Pod yield also ranged widely (166 kg at Anantapur to 735 kg at Tindivanam).

Looking to the very low plant stand of the checks and other genotypes, the trial is vitiated at this stage (IVT-I) and will be initiated afresh during *kharif* 2017.

Table 22a:SPECIAL TRIAL ON DROUGHT TOLERANT AND WUE MODULATION OF CAM TRANSITION KHARIF 2016

Pod yield (kg/ha)

S.N.	Entry	Kadiri	DGR, RRS-Anantpur	Hiriyur	Tindivanam	Mean	R
1	DTWUE- 2016-1	359	170	2778	609	979	3
2	DTWUE- 2016-2	296	156	2533	768	938	6
3	DTWUE- 2016-3	293	243	2813	723	1018	1
4	DTWUE- 2016-4	343	234	2342	750	917	7
5	DTWUE- 2016-5	386	177	2545	778	971	4
6	DTWUE- 2016-6	301	187	2252	781	880	8
7	DTWUE- 2016-7	309	210	2704	615	959	5
8	DTWUE- 2016-8	258	17	1077	8	340	9
9	DTWUE- 2016-9	538	166	1733	1588	1006	2
	G.M	343	173	2308	735	890	
	S.E. Diff. Mean	40.1	27.9	303.6	78.3	-	
	CD at 5%	82.7	57.5	626.5	161.5	-	
	CV %	16.6	22.7	18.6	15.1	-	

Table 22b:SPECIAL TRIAL ON DROUGHT TOLERANT AND WUE MODULATION OF CAM TRANSITION KHARIF 2016

Kernel yield (kg/ha)

S.N.	Entry	Kadiri	DGR, RRS-Anantpur	Hiriyur	Tindivanam	Mean	R
1	DTWUE- 2016-1	233	106	1804	398	635	3
2	DTWUE- 2016-2	192	100	1720	499	628	5
3	DTWUE- 2016-3	192	154	1698	468	628	4
4	DTWUE- 2016-4	212	147	1525	510	599	6
5	DTWUE- 2016-5	236	114	1482	484	579	8
6	DTWUE- 2016-6	176	120	1541	499	584	7
7	DTWUE- 2016-7	190	132	1999	395	679	1
8	DTWUE- 2016-8	155	10	663	5	208	9
9	DTWUE- 2016-9	362	98	1079	1089	657	2
	G.M	216	109	1501	483	577	
	S.E. Diff. Mean	29.0	17.1	252.7	55.3	-	
	CD at 5%	59.9	35.2	521.5	114.1	-	
	CV %	19.0	22.1	23.8	16.2	-	

Table 22c:SPECIAL TRIAL ON DROUGHT TOLERANT AND WUE MODULATION OF CAM TRANSITION KHARIF 2016

Ancillary traits

S.N.	Entry	Trait	Kadiri	DGR, RRS-Anantpur	Hiriyur	Tindivanam	Mean
1	DTWUE- 2016-1	PS	153	76	98	144	118
		D	100	-	125	121	115
		S	64	63	65	65	64
		HKW	28	22	56	29	34
		SMK	85	49	-	89	75
		O	46	48	50	48	48
		P	26	25	26	27	26
2	DTWUE- 2016-2	PS	145	87	79	139	113
		D	100	-	125	121	115
		S	65	64	68	65	66
		HKW	26	20	55	31	33
		SMK	86	51	-	81	73
		O	47	48	50	48	48
		P	27	25	25	27	26
3	DTWUE- 2016-3	PS	158	107	107	149	130
		D	105	-	125	122	117
		S	66	64	60	65	63
		HKW	27	19	58	29	33
		SMK	85	47	-	88	73
		O	46	47	50	47	48
		P	27	26	25	27	26
4	DTWUE- 2016-4	PS	192	96	85	171	136
		D	105	-	125	120	117
		S	62	63	65	68	64
		HKW	26	22	54	30	33
		SMK	83	55	-	85	74
		O	46	47	50	48	48
		P	26	25	26	27	26
5	DTWUE- 2016-5	PS	170	87	84	150	123
		D	110	-	125	122	119
		S	61	65	57	62	61
		HKW	26	19	58	28	33
		SMK	79	46	-	88	71
		O	47	47	49	48	48
		P	26	25	25	27	26
6	DTWUE- 2016-6	PS	145	70	84	158	114
		D	105	-	125	122	117
		S	58	64	68	64	64
		HKW	25	20	53	27	31
		SMK	81	50	-	79	70
		O	45	47	50	48	48
		P	27	26	25	28	26

7	DTWUE- 2016-7	PS	148	91	103	147	122
		D	100	-	125	122	116
		S	61	63	73	64	65
		HKW	27	21	57	28	33
		SMK	87	51	-	81	73
		O	47	47	51	49	49
		P	26	25	26	26	26
8	DTWUE- 2016-8	PS	61	7	90	13	43
		D	100	-	125	121	115
		S	60	63	62	60	61
		HKW	26	26	51	32	33
		SMK	85	67	-	94	82
		O	47	48	51	50	49
		P	25	26	26	27	26
9	DTWUE- 2016-9	PS	146	46	90	179	115
		D	115	-	125	123	121
		S	67	59	63	69	64
		HKW	25	25	50	30	33
		SMK	84	52	-	95	77
		O	46	49	50	49	49
		P	26	26	26	28	26
Final plant stand (000/ha)							
	GM		146	74	91	139	113
	S.E. Diff. Mean		14.7	13.6	10.1	14.5	-
	CD at 5%		30.3	28.0	NS	29.8	-
	CV %		14.2	26.0	15.7	14.7	-