ANNUAL PROGRAM

OF

RESEARCH WORK

KAHRIF 2018-19

VEGETABLE RESEARCH INSTITUTE

FAISALABAD

Table of Contents

1. MUSKMELON (Cucumis melo L.)

1. TITLE

DEVELOPMENT OF INBREAD AND HYBRIDS IN MUSKMELON

OBJECTIVE

Hybrid seed production in muskmelon

RESEARCH WORKERS

Kaiser Latif Cheema
Dr. Tasdiq Hussain Shahid
Muhammad Najeebullah

LOCATION

VRI, Faisalabad.

DURATION /TREATMENTS

2019
Lines: 25
Cross Combinations: 08

S.No	Cross Combinations	S.No	Cross Combinations
1	VRIM-9 × VRIM-10	5	NO- 3 x VRIM-10
2	RAVI X T-96	6	RAVI X VRIM-10
3	T-96 X VRIM -9	7	GREEN FLESH X VRIM- 9
4	VRI-3 X VRIM-9	8	T-96 X VRIM- 10

RAVI
T-96

METHODOLOGY

Above selected inbred lines will be sown during 2nd fortnight of November 2018, keeping plant to plant and row to row distance of 60 cm and 300 cm, respectively, under plastic tunnel to enhance temperature. During first week of March, 2019 the tunnel will be covered with nylon net to make isolation chamber to avoid pollinators. Female flowers will be crossed with respective male parent manually. Furthermore all genotypes will be selfed/sibed to get at least one mature fruit in each genotype. Selfed fruits as well as F_1 fruits will be harvested for next year evaluation.

PREVIOUS YEAR'S RESULTS

S.No.	**Varieties**	**Yield (t/hac)**	**TSS (%)**
1	**MELON 1301**	**16.75**	**13**
2	**VRIM- X VRIM-10**	**15.69**	**13**
3	**T-96**	**15.63**	**12**
4	**GREEN FLESH**	**14.34**	**15**
5	**RAVI**	**12.70**	**14**
6	**WHITE HERO ACS**	**11.96**	**11**
7	**RANGI PIO RZ**	**11.18**	**10**

<table>
<tr><td></td><td><table><tr><td></td><td>LSD</td><td>4.78</td><td></td></tr></table></td></tr>
<tr><td>2. TITLE</td><td>ADAPTABILTY TRIALS OF MUSKMELON VARIETIES/ HYBRIDS UNDER LOW PLASTIC TUNNEL</td></tr>
<tr><td>OBJECTIVE</td><td>To evaluate muskmelon varieties / hybrids under low plastic tunnel</td></tr>
<tr><td>RESEARCH WORKERS</td><td>Kaiser Latif Cheema
Dr.Tasdiq Hussain Shahid
Muhammad Najeebullah</td></tr>
<tr><td>LOCATION</td><td>VRI, Faisalabad</td></tr>
<tr><td>DURATION /TREATMENTS</td><td>2017
Genotypes = 9 (37F1,42 F1, 48 F1, 64 F1,74 F1,81 F1, 85 F1 ,9F1 and T-96)</td></tr>
<tr><td>METHODOLOGY</td><td>The seedling of eight varieties / hybrid will be sown during last fortnight of December 2018 under low plastic tunnels. Sowing will be done on both sides of three meter wide raised beds with plant-to-plant distance of 45 cm. Layout of the experiment will be adopted according to the RCBD with three replications. The plot size will be kept as 7m x 3m. Data regarding Brix % and yield will be recorded.</td></tr>
<tr><td>PREVIOUS YEAR'S RESULTS</td><td>
<table>
<tr><td></td><td>VARIETIES</td><td>YIELD (T/H)</td><td>TSS(%)</td></tr>
<tr><td>1</td><td>M74F1</td><td>24.92</td><td>12</td></tr>
<tr><td>2</td><td>M-48 F1</td><td>23.11</td><td>13</td></tr>
<tr><td>3</td><td>M85 F1</td><td>22.35</td><td>12</td></tr>
<tr><td>4</td><td>M103 F1</td><td>21.28</td><td>12</td></tr>
<tr><td>5</td><td>M 42 F1</td><td>20.72</td><td>13</td></tr>
<tr><td>6</td><td>M 9 F1</td><td>20.69</td><td>12</td></tr>
<tr><td>7</td><td>M 81 F1</td><td>20.39</td><td>11</td></tr>
<tr><td>8</td><td>M 64 F1</td><td>19.40</td><td>13</td></tr>
<tr><td>9</td><td>M37 F1</td><td>18.76</td><td>12</td></tr>
<tr><td>10</td><td>T- 96</td><td>17.30</td><td>14</td></tr>
<tr><td></td><td>Lsd 0.05</td><td>4.43</td><td></td></tr>
</table>
</td></tr>
<tr><td>3. TITLE</td><td>ADAPTABILITY OF MUSKMELON VARIETIES / HYBRIDS IN OPEN FIELD</td></tr>
</table>

OBJECTIVE	To evaluate adaptability of variety / hybrid in open field.
RESEARCH WORKERS	Kaiser Latif Cheema Dr.Tasdiq Hussain Shahid Muhammad Najeebullah
LOCATION	VRI, Faisalabad
DURATION /TREATMENTS	2019 Genotypes = 17 (2 sets):Sweat peridot,Sweaty F1,Vanila F1,Isabel f1, Target-j123, HSM-050b, HSM-052C, HSM -060B, HSM – 061C, AAMM-41, AAMM-42,Maxi, Panama, SM-01, SP-01, Sweaty Baby and T-96 and Ravi.
METHODOLOGY	The seed of 17 varieties / hybrid will be sown during 2nd fortnight of February 2019. The sowing will be done on raised beds with plant to plant and row to row spacing of 45 and 300 cm, respectively, on both sides of the beds. Layout will be done according to the RCBD with three replications. The plot size will be kept as 7m × 3m. At maturity, data regarding Brix % and yield will be recorded.
PREVIOUS YEAR'S RESULTS	

	VARIETIES	YIELD T/H	TSS(%)
1	T96	7.94	13
2	Nsc-1	6.25	13
3	Zumra F1	6.22	12
4	venus	6.19	11
5	AS22	5.41	10
6	COFIO	5.16	12
7	ZiTA F1	4.66	11
8	AJWA	4.66	10
9	MANKERA212	4.66	11
10	SPALSH4.65	4.65	10
11	NSC.5	4.61	12
12	NSC.2	4.53	11
13	RAVIAN	4.04	9
14	ASH-1	3.38	12

	Lsd 0.05	2.45	

4. TITLE	**PRE-BASIC SEED PRODUCTION OF MUSKMELON VARIETIES**
OBJECTIVE	To maintain the purity of varieties.
RESEARCH WORKERS	Kaiser Latif Cheema Dr.Tasdiq Hussain Shahid Muhammad Najeebullah
LOCATION	VRI, Faisalabad
DURATION /TREATMENTS	2019 Varieties = Two i.e. T-96 and Ravi
METHODOLOGY	Pre-basic seed of both varieties will be sown in isolation during 2nd fortnight of February 2019 on both sides of 300 cm wide beds keeping plant-to-plant distance of 45 cm. All off-type and diseased plants will be roughed before flowering and later stages of crop growth. At maturity, fruits will be harvested and seed of true to type fruits keeping in view of brix % will be collected and stored after drying.
PREVIOUS YEAR'S RESULTS	100 true to type fruits of each variety (T-96 & Ravi) were selected
5. TITLE	**MAINTENANCE OF OPEN POLLINATED MUSKMELON GENOTYPES**
OBJECTIVE	To maintain O.P. Genotypes
RESEARCH WORKERS	Kaiser Latif Cheema Dr.Tasdiq Hussain Shahid Muhammad Najeebullah
LOCATION	VRI, Faisalabad
DURATION /TREATMENTS	2019 Varieties = Four i.e. No.3., No.12., Green Flesh &T-96(Small)
METHODOLOGY	Four elite genotypes were sown in plot size of 7 × 3 m on both sides of 3 meter wide beds with plant to plant spacing of 45 cm in isolation on March 2019. Diseased and undesirable plants were rouged out and remaining plants in each genotype were allowed to random mate. At maturity desirable fruits were harvested and selection was made on the basis of quality traits. Seed of selected fruits was collected for further selection cycle. Characteristics of the selected fruits of four lines are mentioned below in table.
PREVIOUS YEAR'S RESULTS	

Line Name	Rind color	Fruit Shape	Stripes type	Flesh color	Flesh Texture	Weight Range (gm)	Brix % (TSS)
NO.3	**Yellow**	**oblate**	**No**	**White**	**Soft**	**400-500**	**12-16**

				stripes				
	NO.12	**Yellow**	**-do-**	**No stripes**	**White**	**Soft**	**700-800**	**11-13**
	Green Flesh	**Green**	**-do-**	**No stripes**	**Light green**	**Medium hard**	**600-800**	**12-17**
	ST-96	**Green with stripes**	**-do-**	**Stripes**	**Light orange**	**Medium hard**	**200-300**	**13-16**

2. CHILLIES (Capsicum annuum L.)

1. TITLE	**COLLECTION AND MAINTENANCE OF CHILIES GERMPLASM**
OBJECTIVE	To maintain the germplasm and to utilize the desirable genotypes in the breeding program
RESEARCH WORKER (S)	Muneeb Munawar Abdul Sattar Muhammad Najeebullah
LOCATION	Faisalabad
DURATION	Continuous
TREATMENTS/	Genotypes = 54
METHODOLOGY	Nursery sowing = 16.10.2018 Transplanting = 03.01.2019 (under Isolation chambers) Layout = Observational rows Plant Spacing = 60 × 75 cm Two to three true to type plants will be selected from each line and seed will be harvested separately for further use.
PREVIOUS YEAR'S RESULTS	54 genotypes based on plant structure and fruit shape were maintained under isolation chamber during 2017-18.

S. No.	**Character**	**Range**	
		Minimum	**Maximum**
1	Plant height (cm)	40	120
2	Fruit Length (cm)	2	15
3	Fruit diameter (mm)	5	30
5	Fruit position	Upward to downward	
6	Fruit color	Yellowish green to dark green	
7	Fruit bitterness	Less bitter to bitter	
8	Fruit behavior	Solitary to bunch	

2. TITLE	**FILIAL GENERATION STUDIES TO DEVELOP OPEN POLLINATED VARIETIES IN CHILLIES**
OBJECTIVE:	To select the desirable material for the evolution of open pollinated varieties
RESEARCH WORKER (S)	Muneeb Munawar Abdul Sattar Muhammad Najeebullah
LOCATION	Faisalabad
DURATION	Continuous
TREATMENTS/	$\mathbf{F_1}$ Generation = 05 Crosses $\mathbf{F_2}$ = 05 Populations

	F_3 = 03 single plant progenies of 03 crosses **F_4** = 06 single plant progenies of 05 crosses **F_5** = 05 single plant progenies of 03 crosses **F_6** = 07 single plant progenies of 04 crosses **F_7** = 04 single plant progenies of 03 crosses
METHODOLOGY	Nursery sowing = 01.11.2018 Transplanting = 2nd fortnight of February Layout = Observational rows Plant Spacing = 60 x 75 cm Single plants will be selected in each progeny on the basis of plant structure and fruit shape, size, and color. Selected plants will be selfed.
PREVIOUS YEAR'S RESULTS	**F_1** Generation = 10 Crosses **F_2** = 03 Populations **F_3** = 06 single plant progenies of 05 crosses **F_4** = 06 single plant progenies of 03 crosses **F_5** = 011 single plant progenies of 06 crosses **F_6** = 06 single plant progenies of 05 crosses
3. TITLE	**DEVELOPMENT OF MALE STERILE LINES IN CHILLIES**
OBJECTIVE:	To develop three line ABR system for commercial production of hybrids in chillies
RESEARCH WORKER (S)	Muneeb Munawar Abdul Sattar Muhammad Najeebullah
LOCATION	Faisalabad
DURATION	Continuous
TREATMENTS/	Male sterile plants crosses : 02
METHODOLOGY	Nursery sowing = 16.10.2018 Transplanting = 27.12.2018 (under Isolation chambers) Layout = Observational rows Male sterility will be maintained by crossing male sterile plants with male fertile plants of same line.
PREVIOUS YEAR'S RESULTS	Each male sterile cross produced male sterile and male fertile plants in 1:1 ratio. Male sterile plants were crossed with male fertile plants of same line for maintenance.
4. TITLE	**ADAPTABILITY TRIAL FOR HOT PEPPER UNDER PLASTIC TUNNEL**
OBJECTIVE	To check the adaptability of exotic varieties / hybrids received from various private companies
RESEARCH WORKER (S)	Muneeb Munawar Abdul Sattar Muhammad Najeebullah
LOCATION	Faisalabad
DURATION	2018-19
TREATMENTS/	Varieties/Hybrids = 7 viz; Royal Hot, RPO-911, 16HP108, THP-036, Wonder Hot, Golden Hot (Standard) and SV7864HM (standard)

METHODOLOGY	Nursery sowing = 16.10.2018 Transplanting = 19.12.2018 Layout = RCBD Plot size = 6 m x 1.5 m (tunnel) Replications = 03 Data will be recorded for fruit length, fruit width, fresh green fruit, yield and disease reaction.
PREVIOUS YEAR'S RESULTS	**Performance of Hot pepper varieties/hybrids under tunnel in Kharif 2017-18**

Rank	Entry	Company	Yield (t/ha)	Fruit Length (cm)	Fruit Width (mm)
1	Green Fire	Syngenta, Pakistan Ltd.	54.4	8.82	15.6
2	Golden Hot	Check (Downward fruiting)	52.9	6.18	22.3
3	THP-034	Tara Crop Sciences (Pvt.) Ltd.	48.2	18.56	24.1
4	SV7864HM	Check (Upward fruiting)	37.8	4.84	7.8
5	P-6	Check (Downward fruiting)	35.3	6.8	12.5
6	THP-036	Tara Crop Sciences (Pvt.) Ltd.	34.0	4.52	6.8
LSD (α = 5%)			**5.8**		

5. TITLE	**ADAPTABILITY TRIAL FOR HOT PEPPER IN OPEN FIELD**
OBJECTIVE	To check the adaptability of exotic varieties / hybrids
RESEARCH WORKER (S)	Muneeb Munawar Abdul Sattar Muhammad Najeebullah
LOCATION	Faisalabad
DURATION	2018-19
TREATMENTS/	**Varieties/Hybrids:** 28 viz; Sky Star, Red Sky, Sky Red, Priya, Bahar, Green Star, Simrun, Veerji, HHP-091A, HHP-092B, HHP-080C, HHP-081G, HHP-082B, HHP-083D, HHP-084E, HHP-085F, HP-1410, Sokiya F_1, Hanna F_1, Red Field F_1, Revival, SV9736HM, D-803, C-38, D-818, 16382, 1688, D-1, Golden Hot (Standard) & SV7864HM (Standard)
METHODOLOGY	Nursery sowing = 01.11.2018 Transplanting = 2nd fortnight of February Layout = RCBD Plot size = 4 m x 0.75 m Replications = 03 Data will be recorded for Fruit length, Fruit width, fresh green fruit, yield and disease reaction
PREVIOUS YEAR'S RESULTS	**Performance of hot pepper in open field (Set-I)**

Rank	Entry	Yield (t/ha)	Fruit Length (cm)	Fruit Width (mm)
1	**Golden Hot (C)**	36.7	7.04	19.6

2	BSS-410	35.1	7.16	17.5
3	SV7864HM	30.1	5.18	8.2
4	P-6	29.9	7.4	12.5
5	PH-274 F1	27.0	10.7	14.4
6	Advanta 512	26.8	4.8	8.5
7	Veerji	24.8	7.4	9.1
8	Advanta 5017	22.2	5.9	10.1
9	Green Gold	21.4	7.1	9.4
10	Divya	18.4	6.2	23.1
11	HP-1410	17.8	7.2	8.2
12	Green Star	17.3	6.7	21.8
13	Disney F1	12.6	6.48	7.1
14	Kent	10.7	6.78	6.4
LSD (0.05)			**5.9**	

Performance of hot pepper in open field (Set-II)

Rank	Yield (t/ha)	Fruit Length (cm)	Fruit Width (mm)
1	48.7	10.8	14.5
2	40.1	7.9	13.8
3	39.9	8.34	9.1
4	37.4	6.1	21.0
5	36.3	6.8	10.8
6	36.0	8.1	10.7
7	34.6	8.4	9.5
8	33.4	11.1	6.4
9	33.1	4.4	8.2
10	31.6	8.8	12.3
11	29.1	4.6	8.4
12	28.7	4.8	8.1
13	27.4	7.2	11.8
14	22.9	7.3	9.0
15	18.1	6.4	24.4
LSD (0.05) 6.3			

3. SWEET PEPPER (Capsicum annuum L.)

1. TITLE	**ADAPTABILITY TRIAL FOR SWEET PEPPER UNDER TUNNEL**
OBJECTIVE	To study the adaptability and performance of exotic varieties/ hybrids under tunnel
RESEARCH WORKER (S)	Muneeb Munawar Abdul Sattar Muhammad Najeebullah
LOCATION	Faisalabad

DURATION	2018-19
TREATMENTS/	8 varieties viz; Cinderella, Minerva, Jumbo, Nisha, HSP-181A, HSP-180B, Commander & Coral F_1 (Standard)
METHODOLOGY	Nursery sowing = 16.10.2018 Transplanting = 19.12.2018 Layout = RCBD Plot size = 6×1.5 m Replications = 03 Data will be recorded for fresh green fruit yield.
PREVIOUS YEAR'S RESULTS:	New Experiment
2. TITLE	**ADAPTABILITY TRIAL FOR SWEET PEPPER IN OPEN FIELD**
OBJECTIVE	To study the adaptability and performance of exotic varieties/ hybrids in open field
RESEARCH WORKER (S)	Muneeb Munawar Abdul Sattar Muhammad Najeebullah
LOCATION	Faisalabad
DURATION	2018-19
TREATMENTS/	10 viz; Roco F_1, 18-SP-0035, Manhattan, PS09979325, Choco, Scope F_1, Zartaj F_1, SW614 F_1, Rambo & Coral F_1 (Standard)
METHODOLOGY	Nursery sowing = 01.11.2018 Transplanting = 2nd fortnight of February Layout = RCBD Plot size = 4 x 1.5 m Replications = 03 Data will be recorded for fresh green fruit yield.
PREVIOUS YEAR'S RESULTS:	

Rank	Entry	Yield (t/ha)
1	MDS-9026	9.9
2	Coral F_1	9.2

4. CUCUMBER (Cucumis sativus L.)

1. TITLE	**MAINTENANCE OF CUCUMBER GERMPLASM**
OBJECTIVE	To maintain the genotypes of cucumber
RESEARCH WORKER (S)	Etlas Amin Dr. Muhammad Iqbal Dr. Saeed Ahmad Shah Chishti
LOCATION	VRI, Faisalabad
DURATION	Continuous
TREATMENTS	Entry = 05 (Kheera local + 4 parthenocarpic)

<table>
<tr><td>METHODOLOGY</td><td>Plant to plant distance = 30 cm on both sides of 2.5 m wide beds
The genotypes will be planted in a bed size of 5.0 × 2.5 m by keeping plant to plant distance of 30 cm. The genetic makeup of the open pollinated variety will be maintained through sib-mating.
Parthenocarpic genotypes will be planted in November maintained by artificially inducing male flowers.</td></tr>
<tr><td>PREVIOUS YEAR'S RESULTS</td><td>One genotype was maintained through sib mating.

<table><tr><th>Sr. No.</th><th>Traits</th><th>Range</th></tr><tr><td>1</td><td>Days to flowering</td><td>40-45</td></tr><tr><td>2</td><td>Flower color</td><td>yellow</td></tr><tr><td>3</td><td>Fruit skin color at vegetative stage</td><td>Light green with yellowish brown spots</td></tr><tr><td>4</td><td>Fruit length (cm)</td><td>13-18</td></tr><tr><td>5</td><td>Fruit shape</td><td>Long</td></tr><tr><td>6</td><td>Average 1000 seed weight (gm)</td><td>26- 30</td></tr></table></td></tr>
<tr><td>2. TITLE</td><td>DEVELOPMENT OF INBRED LINES IN PARTHENOCARPIC CUCUMBER UNDER HIGH TUNNEL</td></tr>
<tr><td>OBJECTIVE</td><td>To develop inbred lines for the synthesis of parthenocarpic hybrid in cucumber.</td></tr>
<tr><td>RESEARCH WORKER (S)</td><td>Etlas Amin
Dr. Muhammad Iqbal
Dr. Saeed Ahmad Shah Chishti</td></tr>
<tr><td>LOCATION</td><td>VRI, Faisalabad.</td></tr>
<tr><td>DURATION</td><td>Continuous</td></tr>
<tr><td>TREATMENTS</td><td>S_0 = 15
S_1 = 45
S_2 =07
S_3 =13</td></tr>
<tr><td>METHODOLOGY</td><td>Sowing time = 2nd fortnight of November, 2018
Plant to plant distance = 30 cm on both sides of 1m wide beds
Chemical will be sprayed at the apical meristem of the plants. Due to this, plants will change their flowering habit from gynoecious to monoecious. Then genotypes will be selfed to advance generation.</td></tr>
<tr><td>PREVIOUS YEAR'S RESULTS</td><td>S_0 = 50
S_1 = 10
S_2 =13</td></tr>
<tr><td>3. TITLE</td><td>ADAPTABILIT TRIAL OF EXOTIC CUCUMBER HYBRIDS/VARIETIES UNDER HIGH TUNNEL</td></tr>
<tr><td>OBJECTIVE</td><td>To check the adaptability of varieties/ hybrids received from different seed companies.</td></tr>
</table>

RESEARCH WORKER (S)	Etlas Amin Dr. Muhammad Iqbal Dr. Saeed Ahmad Shah Chishti
LOCATION	VRI, Faisalabad.
DURATION	Continuous
TREATMENTS	Varieties/ Hybrids = 20
METHODOLOGY	Sowing time = 2nd fortnight of November, 2018 Design = RCB Replications = 3 Plot size = 6 × 1 m Plant to plant distance = 30 cm on both sides of 1m wide beds Data regarding number of fruits per plant, fruit yield and disease reaction will be recorded
PREVIOUS YEAR'S RESULTS	**Performance of Cucumber hybrids in an adaptability trial at Vegetable Research Institute, Faisalabad during 2017-18**

Sr. No.	HYBRIDS	No. of Fruits /Plant	YIELD (t/ha)
1	SXQ-3776 **(Check)**	14	108.43
2	POYRAZ	13	99.13
3	JAVA	12	85.54
4	RAYYAN	10	72.06
5	TCB-701	10	65.60
6	15CU5277	10	58.89
7	TCB-702	10	58.43
8	KINGSTAR	10	56.91
9	CHELSEA	8	55.66
10	YIELDER	9	53.00
11	TCB-705	8	47.45

		12	TCB-703	7	47.39
		13	MULTISTAR	8	44.00
		14	15CU-5276		43.51
		LSD (0.05)			**9.71**

4. TITLE	**ADAPTABILITY TRIAL OF EXOTIC CUCUMBER HYBRIDS/VARIETIES IN OPEN FIELD**
OBJECTIVE	To check the adaptability of varieties/ hybrids received from different seed companies.
RESEARCH WORKER (S)	Etlas Amin Dr. Muhammad Iqbal Dr. Saeed Ahmad Shah Chishti
LOCATION	VRI, Faisalabad.
DURATION	Continuous
TREATMENTS	Varieties received from private seed companies
METHODOLOGY	Sowing time = 2nd fortnight of February, 2019 Design = RCB Replications = 3 Plot size = 5.0 × 2.5 m Plant to plant distance = 30 cm on both sides of 2.5 m wide beds Data regarding fruit color, number of fruits per plant and fruit yield will be recorded
PREVIOUS YEAR'S RESULTS	**Performance of cucumber varieties /Hybrids in Adaptability Trial during Kharif, 2018**

Rank	Varieties/Hybrids	No. of fruits/ plant	Fruit Yield (t/ha)
1	HCU-171C	5	30.75
2	Target kareena	4	21.55
3	MESSI-F1	4	21.23
4	NSC-CM_4 F_1	3	19.31
5	Akad	3	17.79
6	KL-086	3	17.52
7	NSC-CM_3 F_1	3	17.46

	8	Thamin II	3	16.86
	9	SV6346CD	3	15.55
	10	Kalaam F_1	3	14.60
	11	NSC-CM_1 F_1	3	14.57
	12	Debra	2	14.49
	13	Safaa	3	14.25
	14	Alpha prime	2	13.20
	15	SV6352CD	2	11.65
	16	Kheera local (Check)	2	7.86
	17	Early king	2	7.25
	18	NSC-CM_2 F_1	1	4.86
	LSD (0.05)			3.48

5. TITLE	**DEVELOPMENT OF OPEN POLLINATED VARIETY**
OBJECTIVE	To develop high yielding and heat tolerant open pollinated variety
RESEARCH WORKER (S)	Etlas Amin Dr. Muhammad Iqbal Dr. Saeed Ahmad Shah Chishti
LOCATION	VRI, Faisalabad.
DURATION	Continuous
TREATMENTS	Source population
METHODOLOGY	Sowing time = 2^{nd} fortnight of February, 2019 Plant to plant distance = 30 cm on both sides of 2.5 m wide beds Source population will be sown. Plants having desirable characters i.e heat tolerance, more female flowers will be selected and let them open pollinate. At maturity seed of individual plant will be harvested to grow progeny rows in next year.

<table>
<tr><td>PREVIOUS YEAR'S RESULTS</td><td>Source population was developed.</td></tr>
<tr><td colspan="2">5. BITTER GOURD (Momordica charantia L.)</td></tr>
<tr><td>1. TITLE</td><td>COLLECTION AND MAINTENANCE OF BITTER GOURD GERMPLASM</td></tr>
<tr><td>OBJECTIVE</td><td>To collect and maintain the germplasm in order to preserve the genetic purity of the germplasm</td></tr>
<tr><td>RESEARCH WORKERS</td><td>Mudassar Iqbal
Nusrat Parveen
Dr. Saeed Ahmad Shah Chishti
Muhammad Najeebullah</td></tr>
<tr><td>LOCATION</td><td>Faisalabad</td></tr>
<tr><td>DURATION</td><td>Continuous</td></tr>
<tr><td>TREATMENTS</td><td>Entries = 15</td></tr>
<tr><td>METHODOLOGY</td><td>Sowing Date = 2nd fortnight of February, 2019
Layout = 5.0 m × 2.5 m
Plant Spacing = 60 cm
The genetic makeup of the open pollinated varieties will be maintained through sibbing.</td></tr>
<tr><td>PREVIOUS YEAR'S RESULTS</td><td>Fifteen (15) open pollinated varieties were maintained through sibbing.
<table>
<tr><th>S. No</th><th>Traits</th><th>Range</th></tr>
<tr><td>1.</td><td>Fruit color</td><td>Light Green- Dark green</td></tr>
<tr><td>2.</td><td>No. of female Flowers/plant</td><td>10-25</td></tr>
<tr><td>3.</td><td>Avg. Fruit weight (g)</td><td>20-60</td></tr>
<tr><td>4.</td><td>Avg. Fruit length (cm)</td><td>12-23</td></tr>
</table></td></tr>
<tr><td>2. TITLE</td><td>DEVELOPMENT OF INBRED LINES IN BITTER GOURD</td></tr>
<tr><td>OBJECTIVE</td><td>To develop synthetic varieties in bitter gourd</td></tr>
<tr><td>RESEARCH WORKERS</td><td>Mudassar Iqbal
Dr. Saeed Ahmad Shah Chishti
Muhammad Najeebullah</td></tr>
<tr><td>LOCATION</td><td>Faisalabad</td></tr>
<tr><td>DURATION</td><td>Continuous</td></tr>
<tr><td>TREATMENTS</td><td>S_0 = 02
S_1 = 04
S_2 = 06
S_3 = 17
S_4 = 13
S_5 = 06
S_6 = 03
S_7 = 06</td></tr>
<tr><td>METHODOLOGY</td><td>Sowing Date = 2nd fortnight of February, 2019</td></tr>
</table>

	Layout = Non-replicated Bed Size = 6.0 × 2.5 m Plant Spacing = 60 cm All genotypes in S_1 to S_7 generations will be sown in the field during 2nd fortnight of February. Flowers of selected plants of these genotypes will be selfed to advance the generations. Selfed fruits will be collected, separately for future study.
PREVIOUS YEAR'S RESULTS	S_0 = 02 S_1 = 02 S_2 = 07 S_3 = 04 S_4 = 03 S_5 = 03 S_6 = 07
3. TITLE	**DEVELOPMENT OF SYNTHETIC VARIETY IN BITTER GOURD**
OBJECTIVE	To develop synthetic varieties in bitter gourd
RESEARCH WORKERS	Mudassar Iqbal Nusrat Parveen Dr. Saeed Ahmad Shah Chishti Muhammad Najeebullah
LOCATION	Faisalabad
DURATION	Continuous
TREATMENTS	Inbred lines: 10
METHODOLOGY	Sowing Date = 2nd fortnight of February, 2018 Layout = Non-replicated Bed Size = 5.0 × 2.5 m Plant Spacing = 60 cm All inbred lines will be sown in the field during 2nd fortnight of February along with an open pollinated tester variety. The inbred lines will be crossed with a common tester and the progenies will be evaluated in replicated trials for general combining ability of yield and yield contributing characters.
PREVIOUS YEAR'S RESULTS	New Experiment
4. TITLE	**GENERAL COMBINING ABILITY TESTING OF BITTER GOURD LINES**
OBJECTIVE	To find out the best general combiners for the development of synthetic variety.
RESEARCH WORKERS	Mudassar Iqbal Dr. Saeed Ahmad Shah Chishti Muhammad Najeebullah
LOCATION	Faisalabad

DURATION	Continuous
TREATMENTS	14
METHODOLOGY	Sowing Date = 2nd fortnight of February, 2019 Layout = RCBD Replications = 3 Bed Size = 2.0 × 2.5 m Plant Spacing = 45 cm Data regarding disease incidence, days to first picking and yield will be recorded.
PREVIOUS YEAR'S RESULTS	New experiment
5. TITLE	**DEVELOPMENT OF BITTER GOURD (MEDIUM SIZED) VARIETY FOR OFF SEASON CULTIVATION**
OBJECTIVE	To develop high yielding and disease tolerant, medium sized bitter gourd variety for prolonged availability from August to December
RESEARCH WORKERS	Mudassar Iqbal Dr. Saeed Ahmad Shah Chishti Muhammad Najeebullah
LOCATION	Faisalabad
DURATION	Continuous
TREATMENTS	Entries = Received from different sources Seed obtained from sib mating of varieties/Hybrids = 03
METHODOLOGY	Sowing Date = 2nd week of June, 2019 Bed Size = 5.0 × 2 m Plant Spacing = 60cm Seed obtained from different resources will be sown to check their adaptation in off season.
PREVIOUS YEAR'S RESULTS	Three lines was survived and maintained by sib mating to check its adaptation in next year.
6. TITLE	**ADAPTABILITY EVALUATION OF BITTER GOURD VARIETIES FOR FEBRUARY-MARCH SOWING SEASON**
OBJECTIVE	To find out high yielding, early fruiting and disease resistant/tolerant varieties
RESEARCH WORKERS	Mudassar Iqbal Dr. Saeed Ahmad Shah Chishti Muhammad Najeebullah
LOCATION	Faisalabad
DURATION	Continuous
TREATMENTS	Varieties/ hybrids = Received from seed companies
METHODOLOGY	Sowing Date = 2nd fortnight of February, 2019 Layout = RCBD Replications = 3 Bed Size = 5.0 × 2.5 m Plant Spacing = 45 cm Data regarding disease incidence, days to first picking, yield and

	disease reaction will be recorded.
PREVIOUS YEAR'S RESULTS	Performance of different Bitter Gourd Varieties/Hybrids in Adaptability Trials during kharif, 2018.

Set-I

R. No.	Variety/Hybrid	Fruit Yield (T/ha)
1	Kohsar F1	17.14
2	Panther F1	15.10
3	Tarzan F1	14.27
4	**Aswad (Check)**	**12.64**
5	Nelum F1	11.59
6	Zarar	10.44
13	Carlos	5.77
LSD (0.05)		**2.38**

Set-II

R. No.	**Variety/Hybrid**	**Fruit Yield (T/ha)**
1	7499 F1	12.02
2	Daizy	10.23
3	**Aswad (Check)**	**8.03**
4	Target Bg-555	7.89
10	4722	3.94
LSD (0.05)		**2.34**

6. OKRA (Abelmoschus esculentus L.)

1. TITLE	**COLLECTION AND MAINTENANCE OF OKRA GERMPLASM**
OBJECTIVE	To maintain the germplasm and to utilize the desirable genotypes in the breeding programme
RESEARCH WORKERS	Rashida Aslam Dr. Akhtar Saeed Muhammad Najeebullah
LOCATION	Faisalabad
DURATION	Continuous
TREATMENTS	Varieties / Lines = 45
METHODOLOGY	Sowing date = 2nd fortnight of February, 2019 Plot Size = 7.0 × 1.5 m Spacing = 75 × 30 cm Ten flowers of each genotype of selected true to type plants will be selfed to maintain the genotypes.
PREVIOUS YEAR'S RESULTS	Forty three lines were maintained and 02 new accessions were collected for future study. These lines will be used in the future breeding

	programme.
2. TITLE	**HYBRIDIZATION AND STUDY OF FILIAL GENERATIONS OF OKRA**
OBJECTIVE	To create genetic variability for the development of high yielding and disease resistant varieties
RESEARCH WORKERS	Rashida Aslam Dr. Akhtar Saeed Muhammad Najeebullah
LOCATION	Faisalabad
DURATION	Continuous
TREATMENTS	(i)-New Crosses between parents *viz*; **High yielding:** OK-1301, OK-1302, OK-940 **Disease tolerant:** OK-1401, OK-1313 and OK-1314 **(ii) F_1 = 12 Crosses** **(iii) F_2 = 15 Crosses** **(iv) F_3 = 10 Crosses** **(v) F_4 = 10 Crosses** **(vi) F_5 = 05 Crosses** **(vii) F_6 = 12 Crosses**
METHODOLOGY	**(i)** Above mentioned parents will be sown during last week of February in separate block to attempt crosses. 8-10 flowers will be crossed in each combination. At maturity, crossed seed of all the crosses will be collected separately for future study in F_1 generation. **(ii)** In F_2, F_3 and F_4 seed of selected plants will be collected and bulked. **(iii)** In F_5 and F_6 single plants will be selected keeping in view the economic characters and their seed will be collected for plant to row testing.
PREVIOUS YEAR'S RESULTS	The seed of 15 crosses in F_1, 10 crosses in F_2, 10 crosses in F_3, 05 crosses in F_4 and 12 crosses in F_5 were harvested in bulk.
3. TITLE	**ADAPTABILITY TRIAL IN OKRA**
OBJECTIVE	To check the adaptability of okra exotic varieties/hybrids
RESEARCH WORKERS	Rashida Aslam Dr. Akhtar Saeed Muhammad Najeebullah
LOCATION	Faisalabad
DURATION	Continuous
TREATMENTS	Entries = Received from different seed companies
METHODOLOGY	Sowing date = 2nd fortnight of February, 2019 Lay out = RCBD Replication = 3 Plot size = 7.0 ×1.5 m Row to Row = 75 cm Plant to Plant = 10 cm on both sides of 75 cm wide ridges. Entries will be sown along with one check variety Sabz Pari. Data

	regarding number of pickings, fresh fruit yield and disease will be recorded.
PREVIOUS YEAR'S RESULTS	Performance of Okra varieties /Hybrids in Adaptability Trial during 2017.
	SET-I

S. No.	Variety	Fresh fruit yield (t/ha)
1	Excel F_1	18.82
2	HO-042B	18.53
3	OH-940	18.17
4	MSC-5050	18.15
5	BS-782	18.10
6	No. 64	17.68
7	Resham	17.52
8	**Sabz Pari (Check)**	**17.33**
9	HO-041B	17.22
10	HS-15	17.20
11	MSC-2020	17.07
12	Noori-786	17.05
13	Silky-460	16.86
14	Malka	16.58
15	MSC-3030	16.55
16	Sydney F_1	16.30
17	MSC-2525	16.28
LSD (0.05)		**1.27**

7. **WATER MELON (Citrullus lanatus Mansf.)**	
1. TITLE	**DEVELOPMENT OF INBRED LINES IN WATERMELON**
OBJECTIVE	To develop inbred lines for the development of

	hybrids/composite varieties.
RESEARCH WORKERS	Nusrat Parveen Kaiser Latif Cheema Dr. Muhammad Hussain Shahid Muhammad Najeebullah
LOCATION	Faisalabad
DURATION /TREATMENTS	Continuous S_0=12 S_3 = Selfed seed of five lines S_8 = Selfed seed of four lines
METHODOLOGY	The seed of $S_{0,}$ S_3 and S_8 will be sown in fruit to row fashion during 3rd week of November 2018, on both sides of 3ft wide beds keeping plant to plant distance of 60 cm under high tunnel covered with plastic sheet. During first week of March, 2019 the tunnel will be covered with nylon net to make isolation chamber to avoid pollinators. 2-3 flowers on 3-4 selected plants in each bed will be selfed to get at least one mature fruit for generation advancement. At maturity, selfed seed of respective lines will be collected, separately along with characterization of the selected plants and fruits for next generation studies.
PREVIOUS YEAR'S RESULTS	Selfed seed of four S_7 and five S2 lines were obtained after selection.
2. TITLE	**DEVELOPMENT OF OPEN POLLINATED VARIETIES**
OBJECTIVE	To select high yielding and disease resistant plants/fruits to develop open pollinated varieties.
RESEARCH WORKERS	Nusrat Parveen Kaiser Latif Cheema Dr. Muhammad Hussain Shahid Muhammad Najeebullah
LOCATION	Faisalabad
DURATION	Continuous
TREATMENTS	Seed of two types of fruits (Green oblong and green round).
METHODOLOGY	From broad based population, two types of fruits were selected (Green oblong and green round). These will be sown at isolation distance during 2nd week of Feb, 2019, on both sides of 3 meter wide beds, keeping plant to plant distance of 60 cm. Plants

	having desirable fruits on the basis of rind color, shape and TSS %age will be selected.
PREVIOUS YEAR'S RESULTS	Seed of selected plants/fruits from both groups (Green oblong and green round) was collected.
3. TITLE	**DEVELOPMENT OF HYBRIDS IN WATER MELON.**
OBJECTIVE	Synthesis of different cross combinations in watermelon
RESEARCH WORKERS	Nusrat Parveen Kaiser Latif Cheema Dr. Muhammad Hussain Shahid Muhammad Najeebullah
LOCATION	Faisalabad
DURATION /TREATMENTS	2019 Six Combinations: VRIWM-1 x VRIWM-2, VRIWM-1 x VRIWM-4, VRIWM-1 x VRIWM-5, VRIWM-2 x VRIWM-4, VRIWM-2 x VRIWM-5, VRIWM-4 x VRIWM-5.
METHODOLOGY	Above selected in-bred lines were sown on 15-01-2019, keeping plant to plant and row to row distance of 60 cm and 3ft, respectively, under high tunnel. During March the tunnel will be covered with nylon net to make isolation chamber to avoid pollinators. Female flowers will be crossed with respective male parent, manually.
PREVIOUS YEAR'S RESULTS	NEW EXPERIMENT
4. TITLE	**ADAPTABILTY TRIALS OF WATERMELON VARIETIES/ HYBRIDS UNDER LOW PLASTIC TUNNEL**
OBJECTIVE	To evaluate watermelon varieties / hybrids under low plastic tunnel
RESEARCH WORKERS	Nusrat Parveen Kaiser Latif Cheema Dr. Muhammad Hussain Shahid Muhammad Najeebullah
LOCATION	VRI, Faisalabad
TREATMENTS	Varieties/Hybrids = Varieties/Hybrids received from seed companies
METHODOLOGY	The seed of varieties / hybrid was sown during 1st week of December, 2018 under low plastic tunnels. Sowing was done on both sides of three meter wide raised beds with plant-to-plant distance of 50 cm. Layout of the experiment was adopted according to the RCBD with

	three replications. The plot size was kept as 4m x 3m. Data regarding Brix % and yield will be recorded.
PREVIOUS YEAR'S RESULTS	New Experiment
5. TITLE	**ADAPTABILITY TRIAL OF WATERMELON VARIETIES/ HYBRIDS IN OPEN FIELD**
OBJECTIVE	To evaluate exotic varieties/hybrids of watermelon
RESEARCH WORKERS	Nusrat Parveen Kaiser Latif Cheema Dr. Muhammad Hussain Shahid Muhammad Najeebullah
LOCATION	Faisalabad
DURATION	Continuous
TREATMENTS	Varieties/Hybrids = Varieties/Hybrids received from seed companies
METHODOLOGY	Sowing time = 2nd fortnight of February, 2019 Plot Size = 4 m x 3 m Design = RCBD Replications = 3 Plant to plant distance = 50 cm Sowing Method / = On both sides of 3 meter wide beds. Data regarding disease incidence, TSS% and fruit yield will be recorded.
PREVIOUS YEAR'S RESULTS	Yield performance of various varieties/hybrids of watermelon during 2018

Rank	Variety/Hybrid	TSS%	Yield (T/ha)
1	Commandor F_1	9.17	10.97
2	WMH-4715	8.66	10.95
3	SVWC-6988	7.00	8.13
4	NSC WM2 F_1	10.00	7.78
5	WMT 4807	8.33	7.06
6	SVWC 4183	7.66	6.6

7	Launcher	6.66	5.70
8	**Sugar Baby (Check)**	9.00	4.84
9	Advanta1401	7.16	4.83
10	MDS-770	7.00	4.4
11	NSC WM1 F_1	7.33	4.13
12	Nautilus	8.00	2.11
13	Turi-F_1	7.00	2.13
14	MDS 101	7.00	1.83
LSD (0.05)		**1.18**	**2.17**

Set-II

Rank	**Variety/Hybrid**	**TSS%**	**Yield (T/ha)**
1	525 F_1	7.30	10.53
2	WM 4163	7.00	8.14
3	Prince	8.00	6.52
4	MDS 452	7.70	6.37
5	NSC WM3	7.30	5.84
6	WS93	7.70	5.32
7	WMT 4809	6.70	5.21
8	TWM 1610	8.00	4.75
9	Global	7.00	4.08
10	Vigo	7.30	3.95
11	Jackie	7.00	3.52
12	SVI 770WC	7.00	3.50
13	**Sugar Baby (Check)**	8.80	2.85

	14	MDS 2159	8.00	1.94	
	LSD (0.05)		**NS**	**2.8**	

8. BOTTLE GOURD (Lagenaria siceraria L.)

1. TITLE	**MAINTENANCE OF BOTTLE GOURD GERMPLAM**
OBJECTIVE	Maintenance of lines having desirable characteristics for future use in the breeding program.
RESEARCH WORKERS	Dr. Muhammad Iqbal Mudassar Iqbal Muhammad Najeebullah
LOCATION	Faisalabad
DURATION	Continuous
TREATMENTS	Number of entries = 04 *viz*; Faisalabad Round, 4545 Lattu, NBGH-107 and VRIBG-2
METHODOLOGY	Sowing time = 2nd fortnight of February, 2018 Plot Size = 7 × 4 m Spacing = 45 cm At the time of flowering, pollen of each line will be collected, bulked and flowers of respective line will be pollinated. Seed will be extracted from fruits, resulting from manual pollination.
PREVIOUS YEAR'S RESULTS	Two lines were maintained.

Sr. No.	Variety Name	Character	Range
1	**FSD ROUND**	**Fruit Weight (gm)**	150-500
		Fruit Color	Light green-Green
		Fruit Shape	Round-Pear shape
2	**VRIBG 2**	**Fruit Weight (gm)**	100-400
		Fruit Color	Light green-Green
		Fruit Length (cm)	12-20
		Fruit Shape	Cylindrical

2. TITLE	**DEVELOPMENT OF SOURCE POPULATION IN BOTTLE GOURD**
OBJECTIVE	To create genetic variability in bottle gourd
RESEARCH WORKERS	Dr. Muhammad Iqbal Mudassar Iqbal Muhammad Najeebullah
LOCATION	Faisalabad

DURATION	Continuous
TREATMENTS	Number of entries = 06 varieties
METHODOLOGY	Sowing time = 2nd fortnight of February, 2018 Plot Size = 7 × 4 m Spacing = 45 cm. At the time of flowering, pollen of different lines will collected and bulked and 10 flowers of each line will be pollinated.
PREVIOUS YEAR'S RESULTS	Seed was extracted from crossed fruits for sowing it in 2nd cycle.
3. TITLE	**ADAPTABILITY TRIAL ON EXOTIC BOTTLE GOURD VARIETIES/ HYBRIDS**
OBJECTIVE	To test the imported varieties/hybrids for their performance evaluation
RESEARCH WORKERS	Dr. Muhammad Iqbal Kashif Nadeem Muhammad Najeebullah
LOCATION	Faisalabad
DURATION	Continuous
TREATMENTS	Entries = varieties provided by different seed companies along with check varieties Faisalabad Round and VRIBG-2 (Long) in two sets respectively based on their fruit shape.
METHODOLOGY	Sowing time = 2nd fortnight of February, 2019 Plot Size = 7 × 4 m Design = RCBD Replications = 3 Spacing = 45 cm. (on both sides) Data will be recorded regarding fruit shape, number of fruits per plant disease reaction and fruit yield.
PREVIOUS YEAR'S RESULTS	**Set-I (Round Shaped)**

Rank	Varieties/ Hybrid	Fruit Yield (T/ha)
1	BOT- 404	41.0
2	Asian Pride	37.1
3	BOT- 403	32.3
4	**Faisalabad Round (Check)**	**31.3**
9	Waleed F_1	23.1
LSD (0.05)		**9.2**

Set-II (Long Shaped)

Rank	Varieties/ Hybrid	Fruit Yield (T/ha)
1	Spacer F_1	29.9
2	HBO 382 A	26.6
3	**VRIBG-02 (Check)**	**21.2**
LSD (0.05)		**7.5**

9. BRINJAL (Solanum melongena L.)

1. TITLE	**COLLECTION AND MAINTENANCE OF BRINJAL GERMPLASM**
OBJECTIVE	Collection and maintenance of germplasm for future use in breeding program.
RESEARCH WORKERS	Amir Latif Dr. Saeed Ahmad Shah Chishti Muhammad Najeebullah
LOCATION	Faisalabad
DURATION	Continuous
TREATMENTS	Accessions = 08
METHODOLOGY	Nursery sowing date = 2nd fortnight of February, 2019 Nursery Transplanting date = 2nd fortnight of March 2019 Plot size = 5 m × 1.25 m. Plant to plant distance = 50 cm Selfing will be done in selected plants of each accession

<table>
<tr><td>PREVIOUS YEAR'S RESULTS</td><td>07 accessions were maintained.
The range of characteristics recorded is as under:</td></tr>
<tr><td></td><td>
<table>
<tr><th>Sr. No.</th><th>Character</th><th>Range</th></tr>
<tr><td>1</td><td>Plant height (cm)</td><td>50-110</td></tr>
<tr><td>2</td><td>No. of Fruits/plant</td><td>7-18</td></tr>
<tr><td>3</td><td>Fruit weight (gm)</td><td>40-150</td></tr>
<tr><td>4</td><td>Growth habit</td><td>Erect, Semi erect & Spreading</td></tr>
<tr><td>5</td><td>Leaf Shape</td><td>Long, Narrow & Broad</td></tr>
<tr><td>6</td><td>Fruit Color</td><td>White, Purple & Black</td></tr>
<tr><td>7</td><td>Fruit Shape</td><td>Round, Long & Oblong</td></tr>
</table>
</td></tr>
<tr><td>2. TITLE</td><td>STUDY OF FILLIAL GENERATIONS IN BRINJAL</td></tr>
<tr><td>OBJECTIVE</td><td>To develop high yielding, insect pest and disease resistant, good quality brinjal pure lines.</td></tr>
<tr><td>RESEARCH WORKERS</td><td>Amir Latif
Dr. Saeed Ahmad Shah Chishti
Muhammad Najeebullah</td></tr>
<tr><td>LOCATION</td><td>Faisalabad</td></tr>
<tr><td>DURATION</td><td>Continuous</td></tr>
<tr><td>TREATMENTS</td><td>i) F_1 = 5 crosses
ii) F_2 = 6 populations
iii) F_4 = 20 single plant progenies of 10 crosses</td></tr>
<tr><td></td><td>Date of sowing (Nursery) = 2nd fortnight February, 2019
Transplanting = 2nd fortnight of March, 2019
Spacing = 125 cm × 50 cm
The generations will be advanced by using Pedigree method. Desirable plant progenies will be selected for further studies.</td></tr>
<tr><td>PREVIOUS YEAR'S RESULTS</td><td>i) F_1 = 16 crosses
ii) F_3 = 40 single plant progenies of 20 crosses</td></tr>
<tr><td>3. TITLE</td><td>SYNTHESIS OF BRINJAL HYBRIDS</td></tr>
<tr><td>OBJECTIVE</td><td>To develop high yielding brinjal hybrids suitable for general cultivation.</td></tr>
<tr><td>RESEARCH WORKERS</td><td>Amir Latif
Dr. Saeed Ahmad Shah Chishti
Muhammad Najeebullah</td></tr>
<tr><td>LOCATION</td><td>Faisalabad</td></tr>
<tr><td>DURATION</td><td>Continuous</td></tr>
</table>

TREATMENTS	Parents = 3
METHODOLOGY	Nursery sowing date = 2nd fortnight of February, 2019 Nursery Transplanting date = 2nd fortnight of March, 2019 Plot size = 05 m × 1.25 m Plant to plant distance = 50 cm The crosses among desirable parents will be made to develop 3 F1 hybrids.
PREVIOUS YEAR'S RESULTS	Six hybrids were developed
4. TITLE	**ADAPTABILITY TRIAL OF BRINJAL GENOTYPES**
OBJECTIVE	To test the adaptability of imported/localvarieties/hybrids
RESEARCH WORKERS	Amir Latif Dr. Saeed Ahmad Shah Chishti Muhammad Najeebullah
LOCATION	Faisalabad
DURATION	Continuous
TREATMENTS	LBH-001, LBH-002, LBH-005, LBH-006, LBH-020, LBH-021, Jhansi F1 (Check), Kokila F1(Check), Dilnasheen(Check) and Bemissal (Check).
METHODOLOGY	Nursery sowing date = 2nd fortnight of February, 2019 Nursery Transplanting date = 2nd fortnight of March, 2019 Plot size = 05 m × 1.25 m Plant to plant distance = 50 cm Data regarding fruit yield, average fruit weight and fruit shape will be recorded.
PREVIOUS YEAR'S RESULTS	New experiment
5. TITLE	**ADAPTABILITY TRIAL OF BRINJAL GENOTYPES**
OBJECTIVE	To test the adaptability of imported varieties/hybrids
RESEARCH WORKERS	Amir Latif Dr. Saeed Ahmad Shah Chishti Muhammad Najeebullah
LOCATION	Faisalabad
DURATION	Continuous
TREATMENTS	Varieties/Hybrids = 8 viz; MAHY-106, MAHY-112, No. 295, No. 3715, Black Round, Balikesir, Pala-49, Dilnasheen (Check)

METHODOLOGY	Nursery sowing = 2nd fortnight of February, 2019 Transplanting = 2nd fortnight of March, 2019 Replications = 03 Design = RCBD Plot size = 5 m × 1.25 m Spacing = 125 cm × 50 cm on raised beds. Data on fruit yield, average fruit weight and fruit shape will be recorded.
PREVIOUS YEAR'S RESULTS	**Performance of Brinjal Entries during Kharif-2018**

Sr. No.	**Genotypes**	**Yield (T/ha)**
1	WEL	21.3
2	VRIB-2013	10.6
3	Kokila-F_1	9.8
4	KHBR-202B	9.6
5	**Dilnasheen (Check)**	**9.5**
6	VRIB-2016	7.0
7	EP-900	6.2
8	KHBR-205E	4.5
9	Pala-49	0.0
	LSD	6.9

10. SPONGE GOURD (Luffa cylindrica L.)

1. TITLE	**COLLECTION AND MAINTENANCE OF SPONGE GOURD GERMPLASM**
OBJECTIVE	Maintenance of lines having desirable characteristics for further use in the breeding program.
RESEARCH WORKERS	Nusrat Parveen Kaiser Latif Cheema Dr. Muhammad Hussain Shahid Muhammad Najeebullah
LOCATION	Faisalabad
DURATION	Continuous

<table>
<tr><td>TREATMENTS</td><td>Entries = 10</td></tr>
<tr><td>METHODOLOGY</td><td>Sowing date = 1st week of March, 2019
Plot Size = 5 x 3.0 m
Plant spacing = 50 cm (on both sides of 3 meter wide beds)
The available material will be sown and data will be recorded on av. fruit weight, av. fruit length, fruit color, disease resistance and No. of female flowers per plant. Selected lines will be maintained through sib mating.</td></tr>
<tr><td>PREVIOUS YEAR'S RESULTS</td><td>Open pollinated varieties were maintained through sibbing
<table>
<tr><th>S. No</th><th>Traits</th><th>Minimum</th><th>Maximum</th></tr>
<tr><td>1.</td><td>Fruit color</td><td>Pale green</td><td>Dark green</td></tr>
<tr><td>2</td><td>No. of female flowers/plant</td><td>10</td><td>20</td></tr>
<tr><td>3</td><td>Avg. Fruit weight (g)</td><td>30.0 g</td><td>90.0 g</td></tr>
<tr><td>4.</td><td>Avg. Fruit length(cm)</td><td>12.0 cm</td><td>23.0 cm</td></tr>
</table></td></tr>
<tr><td>2. TITLE</td><td>DEVELOPMENT OF HIGH YIELDING AND DISEASE RESISTANT OPVs.</td></tr>
<tr><td>OBJECTIVE</td><td>To develop the high yielding and disease resistant open pollinated variety.</td></tr>
<tr><td>RESEARCH WORKER (S)</td><td>Nusrat Parveen
Kaiser Latif Cheema
Dr. Muhammad Hussain Shahid
Muhammad Najeebullah</td></tr>
<tr><td>LOCATION</td><td>VRI, Faisalabad.</td></tr>
<tr><td>DURATION</td><td>Continuous</td></tr>
<tr><td>TREATMENTS</td><td>Individual plant progenies</td></tr>
<tr><td>METHODOLOGY</td><td>Sowing time = 1st t week of March, 2019
Plant to plant distance = 50 cm on both sides of 3 meter wide beds
Individual plant progenies will be planted. Plant progenies will be selected on the basis of days to first female flowering, fruit color, disease resistance and No. of female flowers per plant. All possible intercrosses will be made and seeds will be composited</td></tr>
<tr><td>PREVIOUS YEAR'S RESULTS</td><td>Desirable plants were selfed from source population</td></tr>
<tr><td>3. TITLE</td><td>DEVELOPMENT OF INBRED LINES IN SPONGE GOURD.</td></tr>
<tr><td>OBJECTIVE</td><td>To develop inbred lines for the development of hybrids/composite/Synthetic varieties.</td></tr>
<tr><td>RESEARCH WORKERS</td><td>Nusrat Parveen
Kaiser Latif Cheema
Dr. Muhammad Hussain Shahid</td></tr>
</table>

	Muhammad Najeebullah
LOCATION	Faisalabad
DURATION /TREATMENTS	Continuous S_0=8 S_1= Selfed seed of 1 lines S_2= Selfed seed of 3 lines S_3= Selfed seed of 3 line S_4= Selfed seed of 3 lines S_6= Selfed seed of 10 lines
METHODOLOGY	Sowing date = 2nd week of November, 2019 Plant spacing = 50 cm The seed of S_0, S_1, S_2, S_4 and S_6 was sown in walk in tunnel covered with plastic sheet and 10 flowers on 3-4 selected plants in each entry will be selfed to get at least one mature fruit for generation advancement. Selection will be made on the basis of days to first female flowering, No. of female flowers/vine, fruit color, disease resistance and fruit yield. At maturity, selfed seed will be collected separately for further studies.
PREVIOUS YEAR'S RESULTS	Selfed seed of 19 lines was collected.
4. TITLE	**ADAPTABILITY TRIAL OF SPONGE / RIDGE GOURD VARIETIES / HYBRIDS**
OBJECTIVE	To check the adaptability of sponge gourd hybrids / varieties received from seed companies
RESEARCH WORKERS	Nusrat Parveen Kaiser Latif Cheema Dr. Muhammad Hussain Shahid Muhammad Najeebullah
LOCATION	Faisalabad
DURATION	Continuous
TREATMENTS	Varieties / hybrids will be supplied by the seed companies and locally adapted cultivar will be used as standard check.
METHODOLOGY	Sowing date = 1st fortnight of March, 2019 Design = RCBD Replication = 03 Plot size = 3.0 × 4.0 m Spacing = 50 cm (on both sides of 3 meter wide beds) Data will be recorded regarding days to first fruit picking, fruit color, disease resistance and fruit yield.

PREVIOUS YEAR'S RESULTS	Performance of Sponge Gourd Varieties/Hybrids in Adaptability Trial during Kharif, 2018.

Rank	Variety/ Hybrid	Virus attack	Fruit color	Fruit yield (t/ha)
1	Reshmi	MR	Light green	17.18
2	No. 3942 F_1	MR	Dark green	16.44
3	Kiran F_1	MS	Light green	15.72
4	ASSP-65-90 F_1	MS	Dark green	15.59
5	Monika F_1	MR	Light green	15.46
6	SBS-14 F_1	MS	Light green	14.92
7	White Seeded F_1	S	Dark green	13.26
8	Kareena F_1	S	Light green	12.28
9	NSCSG-1-F_1	HS	Dark green	11.68
10	Local (Check)	S	Pale Green	10.81
11	USTAV F_1	HS	Dark green	10.024
12	Sareena F_1	S	Dark green	9.51
	LSD (0.05)			**1.35**

MR=Moderately resistant MS=Moderately susceptible S= Susceptible HS= Highly susceptible

Performance of Ridge Gourd Varieties/Hybrids in Adaptability Trial during Kharif, 2018.

Rank	Variety/ Hybrid	Fruit color	Virus attack	Fruit Yield (t/ha)
1	NSCRG-2 F_1	Light green	MS	8.92
2	Local **(Check)**	Pale green	MR	7.20
3	RG-4161	Light green	HS	6.81
4	MSC-8155	Light green	MS	6.58
5	NSCRG-1 F_1	Dark green	HS	4.66
6	**LSD (0.05)**	1.11		

MR=Moderately resistant MS=Moderately susceptible S= Susceptible HS= Highly susceptible

11. TINDA GOURD (Praecitrullus fistulosus L.)

1. TITLE	**COLLECTION AND MAINTENANCE OF TINDA GOURD GERMPLAM**
OBJECTIVE	To collect and maintain the germplasm for future use in breeding program.
RESEARCH WORKERS	Ghazanfar Hammad Raja Javed Ur Rehman Muhammad Tasdeeq Hussain Shahid Muhammad Najeebullah
LOCATION	Faisalabad
DURATION	Continuous
TREATMENTS/ METHODOLOGY	New collections = Suitable material from seed companies Variety maintained = Dilpasand Sowing time = 1st week of March, 2019 Bed Size = 7.0 × 2.50 m P × P = 40 cm The genetic makeup of the open pollinated varieties will be maintained through sib-mating.
PREVIOUS YEAR'S RESULTS	Variety Dilpasand was maintained in isolation.
2. TITLE	**EVALUATION OF TINDA GOURD ACCESSION FOR FUTURE HYBRIDIZATION PROGRAMME.**

OBJECTIVES	To evaluate the promising accessions for future inbred lines development and production of high yielding varieties of tinda gourd.
RESEARCH WORKER (S)	Ghazanfar Hammad Raja Javed Ur Rehman Dr. Muhammad Tasdeeq Hussain Shahid Muhammad Najeebullah
LOCATION	Faisalabad
DURATION	Continuous
TREATMENTS/ METHODOLOGY	New Collection = Promising lines from adaptability source along with Dilpasand (Check) Sowing time = 1st week of March, 2019 Plot Size = 7.0 × 2.50 m Plant spacing = 40 cm The seed of promising accession of the tinda gourd will be obtained for future hybridization programme. The promising plants will be selected and plant to row progenies will be made for future selection of superior plants.
PREVIOUS YEAR'S RESULTS	26 accessions were evaluated and superior plant selection had been selected.
3. TITLE	**ADAPTABILITY TRIAL OF TINDA GOURD**
OBJECTIVE	To test the adaptability of exotic genotypes / hybrids of vegetable marrow.
RESEARCH WORKERS	Ghazanfar Hammad Raja Javed Ur Rehman Dr. Muhammad Tasdeeq Hussain Shahid Muhammad Najeebullah
LOCATION	Faisalabad
DURATION	Continuous
TREATMENTS	Entries = Material from seed companies
METHODOLOGY	Date of sowing = 1st week of March, 2019 Design = RCBD Repeats = 03 Plot Size = 5.50 × 1.25 m Plant spacing = 40 cm Data regarding fruit yield were calculated to carry out statistical

	analysis.
PREVIOUS YEAR'S RESULTS	

Rank	Entry	Avg. No. of Fruits	Fruit Yield (T/Ha)
1	Chaman	163	9.03
2	Dilpasand 4040	172	8.11
3	Local Check	76	3.45
LSD (0.05%)		**3.2**	**0.8**

12. **VEGETABLE MARROW (Cucurbita pepo L.)**	
1. TITLE	**COLLECTION AND MAINTENANCE OF VEGETABLE MARROW GERMPLASM**
OBJECTIVE	To evaluate the vegetable marrow germplasm and select the desirable lines for future use in breeding program.
RESEARCH WORKERS	Ghazanfar Hammad Raja Javed Ur Rehman Dr. Muhammad Tasdeeq Hussain Shahid Muhammad Najeebullah
LOCATION	Faisalabad
DURATION	Continuous
TREATMENTS	New collections = Suitable material from adaptability trial
METHODOLOGY	Date of sowing = 2nd fortnight of February, 2018 Design =Non-replicated Bed size =5.50 × 1.25 m Plant spacing =40 cm The genetic purity of the germplasm will be maintained through sib mating. Off-type and viral disease infected plants will be rouged out.
PREVIOUS YEAR'S RESULTS	Two genotypes maintained through sib mating during Kharif 2018
2. TITLE	**INBREDLINE DEVELOPMENT IN VEGETABLE MARROW**
OBJECTIVE	Synthesis of high yielding round and pear shaped hybrids of vegetable marrow.
RESEARCH WORKERS	Ghazanfar Hammad Raja Javed Ur Rehman

	Dr. Muhammad Tasdeeq Hussain Shahid Muhammad Najeebullah
LOCATION	Faisalabad
DURATION	Continuous
TREATMENTS	S_0 seed = Suitable material from adaptability trial S_1 seed = 08 S_2 seed = 03 S_3 seed = 02
METHODOLOGY	Date of sowing = 2nd fortnight of February, 2019 Design = Non-replicated Bed size = 6.0 × 1.25 m Plant spacing = 45 cm The seed of these selfed generations will be planted for future selfing to enhance homozygosity
3. TITLE	**ADAPTABILITY TRIAL OF VEGETABLE MARROW**
OBJECTIVE	To test the adaptability of exotic genotypes / hybrids of vegetable marrow.
RESEARCH WORKERS	Ghazanfar Hammad Raja Javed Ur Rehman Dr. Muhammad Tasdeeq Hussain Shahid Muhammad Najeebullah
LOCATION	Faisalabad
DURATION	Continuous
TREATMENTS	Entries= Suitable material from seed companies
METHODOLOGY	Date of sowing = 2nd fortnight of February, 2019. Design = RCBD Repeats = 03 Plot Size = 5.50 × 1.25 m Plant spacing = 40 cm Data regarding fruit yield were calculated to carry out statistical analysis.
PREVIOUS YEAR'S RESULTS	Performance of varieties/hybrids in adaptability trial Kharif 2018 **Set-I**

S. No.	Genotypes	Fruit type	Avg. No. of Fruits	Yield (T/Ha)
1	**Squash Long (1702) F1**	**Long**	**136.0**	**25.17**
2	Cavili	Long	145.8	24.08
3	Falak	Long	121.1	22.33
4	Squash Malika F1	Round	162.7	22.08
5	Squash Green Star F1	Round	149.7	21.59

6	Frozen F1	Long	122.7	21.32
7	**VRI-Check II**	**Round**	**133.0**	**20.60**
8	Squash Oval Star	Round/Ablong	139.4	19.93
9	Kamla	Long	112.8	19.51
10	Oskar	Round	109.0	19.28
11	Mishal F1	Round	90.00	17.4
12	**VRI-Check I**	**Pear**	**97.9**	**16.44**
13	Zennat F1	Round	90.9	15.79
14	YOUMNA	Round	62	11.05
15	Beauty 222	Round	65.12	10.99
16	Asian Ball	Round	52.00	10.20
17	Green boy ACS	Round	63.6	10.11
LSD (0.05)			**8.8**	**1.48**

Set-II

S. No.	Genotypes	Fruit type	Avg. No. of Fruits	Yield (T/Ha)
1	**HSQ-2**	**Long**	**159.24**	**29.87**
2	TSQ-229	Long	139.81	23.89
3	TSQ-227	Round	134.86	22.35
4	Clarita	Long	120.38	21.95
5	Polka F1	Long	96.00	21.27
6	Anita	Long	117.71	20.92
7	Scarla	Long	113.52	20.87
8	TSQ-225	Round	129.14	20.69
9	**VRI-Check II**	**Round**	**64.76**	**20.29**
10	Tiger Ball	Round	144.76	20.29
11	**VRI-Check I**	**Pear**	**97.90**	**16.20**
12	Sama	Long	84.57	16.17
13	SV-2987YL	Long	85.33	15.58
14	Eskanderany	Long	86.86	14.52
15	King ball F1	Round	53.71	10.13
16	SV-3923YL	Long	52.95	9.89
LSD (0.05)			**6.85**	**1.94**

13. KITCHEN GARDENING	
2. TITLE	**POPULARIZATION OF KITCHEN GARDENING**
OBJECTIVES	To promote the Kitchen Gardening in the Urban and Peri-Urban areas of Punjab
RESEARCH WORKER (S)	Muhammad Sarwar Dr. Akhtar Saeed Muhammad Najeebullah
LOCATION	Seed kits preparation at VRI., Faisalabad Distribution throughout Punjab
DURATION	Continuous
TREATMENTS	Seed Kits of Summer vegetables = 60,000 Vegetables = 8 (Bitter gourd, Bottle gourd, Sponge gourd, Long melon, Cucumber, Okra, Vegetable marrow)
METHODOLOGY	Seed kits of summer vegetables will be prepared and will be distributed in the Punjab province through AARI Network, Extension Wing of Agriculture Department and other Government Departments & NGO's.
PREVIOUS YEAR'S RESULTS	Last year 60,000 Summer vegetables kits were prepared and sold among the Kitchen Gardeners through AARI Network, Extension Wing of Agriculture Department and other Government Departments & NGO's.