

## INTRODUCTION OF THE INSTITUTE

The Institute is located at a distance of 11 kilometers from Sahiwal city towards east on Lahore-Multan Highway. It is situated at latitude of 30° 41 N and longitude of 73° 12 E and the elevation of 175 meters. The land of Yusafwala, District Sahiwal was converted in to Government Seed Farm in the year 1925 and was handed over to the Agriculture Department (Extension Wing) for multiplication of quality seed of wheat, Maize and cotton etc.

Research work on maize was started in the 1940's which was abandoned in its infancy with the partition of Sub-continent. A regular research work on maize was restarted after partition in the year 1953-54 at Faisalabad. The seed farm Yusafwala was transferred to research wing of Agriculture Department in the year 1958-59 and converted into a Hybrid Maize Seed Farm for conducting research and seed production of hybrid maize on large scale. 30

In 1968-69 the status of this farm was raised to a Research Institute, named as Maize & Millets Research Institute, Yusafwala. Research work on Sorghum and Pearl Millet was also initiated in addition to maize with the establishment of the Institute.

The objectives of Institute are

- To evolve high yielding varieties/hybrids of maize, sorghum and pearl millet.
- Breeding for biotic and a-biotic stresses.
- To develop improved package of production technology.
- To demonstrate improved production technology.
- Transfer of technology through print and electronic media.
- To produce BNS, pre-basic, basic and certified seed.

**Three maize hybrids YH-1898, FH-949 and FH-1046, one maize variety Malka-2016, one sorghum dual purpose variety YS-16 and one pearl millet variety YBS-98 were approved by the Seed Council during 2015-16 for general cultivation.**

The Institute has evolved 12 varieties & 5 hybrids of maize, 3 varieties of sorghum and two varieties of pearl millet since its establishment.

Two single cross maize hybrids FH-1036 and FH-1046 were included in NUYT-Kh.2015 and ranked 1<sup>st</sup> and 14<sup>th</sup>, respectively. Two hybrids FH-922 and FH-1046 were included in NUYT-Sp.2016 while a maize hybrid FH-1231, a sorghum hybrid YSH-95 and a pearl millet variety YBS-95 in NUYT-Kh.2016.

Five hybrids YH-5397 (14473 kg/ha), YH-5421 (14440 kg/ha), FH-1269 (13920 kg/ha), FH-1258 (12800 kg/ha) & FH-1256 (12667 kg/ha) were found promising in different trials.

Annual Program of Research Work for 2016-17 is given in subsequent pages:-

# HYBRID MAIZE

## GERMPLASM MAINTENANCE

<b>01. TITLE</b>	<b>MAINTENANCE OF INBRED LINES.</b>	
<b>OBJECTIVE</b>	To maintain the inbred lines for use in breeding program.	
<b>RESEARCH WORKER(S)</b>	Yusafwala	Mr. Khadim Hussain Mr. Shahid Hussain Mr. Amir Ghani Dr. Muhammad Arshad
	Faisalabad	Saira Saleem Muhammad Altaf Ahsan Raza Mallhi Muhammad Rafique
<b>PROJECT DURATION</b>	Kharif 2016 & Spring 2017 (Continuous)	
<b>LOCATIONS</b>	1. Maize & Millets Research Institute, Yusafwala-Sahiwal. 2. Maize Research Station, Faisalabad.	
<b>TREATMENTS</b>	Yusafwala	Kharif 2016 = Inbred lines = 285 Spring 2017 = Inbred lines = 300 (Tentative)
	Faisalabad	Inbred lines = 182
<b>METHODOLOGY</b>	Layout	= Ear to row
	Replications	= Non-replicated
	Plot Size	= 4m x 0.75m
	Plant to plant	= 20 cm
	Row to row	= 75 cm
	Fertilizer	= 297-148-124 NPK, Kg/ha.
	Date of sowing	= February & 2 <sup>nd</sup> fortnight of July
	All the lines will be maintained through self-pollination to assure homozygosity. Data regarding following traits will be collected in each inbred lines for two years along with display of pictorial features to prepare germplasm directory. Each year data of freshly included inbred lines will also be recorded in similar fashion.	
	<b>Seed/Seedling.</b>	
	1. Days to seedling emergence	2. Seedling emergence % age
	3. Seedling vigor	4. Anthocyanin pigment.
	<b>Leaf</b>	
	5. No. of Leaves per plant	6. Leaf size (length / width)
	7. Leaf angle (drooping / semi-drooping / erect)	
<b>Stem</b>		
8. Root anchor	9. Stem at 1/2 meter growth stage (purple / Green)	
10. Stem at maturity	11. Stem thickness	

	12. Stem height (dwarf/medium/tall)		
	<b>Reproductive Traits</b>		
	13. Days to tasseling	14. Days to silk emergence	
	15. Pollen shedding Period	16. Number of tassel branches	
	17. Type of tassel (spreading/erect)	18. Tassel	
	19. Days to maturity		
	<b>Ear / Cob traits</b>		
	20. Husk color	21. Husk hairiness	
	23. Ear diameter	24. Ear length	
	25. Ear height	26. Ear aspect (opening tip score (1-5))	
	27. Ear rot	28. Pith color	
	29. Kernel pith ratio	30. Prolificacy (% age)	
	<b>Seed</b>		
	31. Seed	32. Seed size	
	33. Seed shape (Dent, semi dent / semi flint / flint)	34. No. of kernel rows per ear	
	35. 100 grain weight		
	<b>Lodging</b>		
	42. Root lodging %age	43. Stalk lodging %age	
	<b>Disease</b>		
	44. Stalk rot %age	45. Root rot %age	
	46. Helminthosporium maydis (1-5)	47. Helminthosporium turcicum (1-5)	
	48. Any other		
	<b>Seedling</b>	Days to seedling emergence	Seedling emergence %
		3-5 days	60-100 %
			Anthocyanine pigment (D/M/A)
			3/22/4
	<b>Leaf</b>	Leaf color (L-light/G-green /D-Dark green)	Leaf Size (B-broad/ M-medium/ N-Narrow)
		5/5/19	5/17/7
			Leaf Angle (drooping / Semi drooping/erect)
			4/15/10
	<b>Stem</b>	Root anchor (week/medium/st rong)	Stem at 1/2m growth stage. (purple/Green)
		5/18/6	9/20
			Stem color at maturity (green/dry)
			21/8
		Stem thickness	Stem height (dwarf/medium/ tall)
		1.2-2.5 cm	2/23/4 (75-150 cm)
	<b>Reproduc tive traits</b>	Days to tassel emergence	Days to silk emergence
			Period of pollen shedding

		42-60 days	45-65 days	5-8 days
		Number of tassel branches	Type of tassel (Spreading/Semi erect/Erect)	Tassel color (Green/Purple)
		6-19	5/15/9	43/60
		Days to maturity		
		100-115 days		
	<b>Ear/Cob Traits</b>	Husk Color (Green/ purple)	Ear length	Ear height
		24/5	10-18 cm	40-80 cm
		Ear diameter	Husk hairiness (Hairy/ Absent)	Pith color (White/pink)
		2.7-4.4 cm	12/17	20/9
		Ear aspect (1-5)	Ear rot (Score 1-5)	Kernel pith ratio
		1-2	1	78-92 %
		Prolificacy Present/ Absent		
		23/6		
	<b>Seed</b>	Seed Color (White/yellow/ dark yellow)	Seed size (Small/ medium / bold)	No. of kernel rows per ear
		2/24/3	5/18/6	12-18
		100-grain weight	Seed shape (Dent/flint)	
		19-26 g	16/13	
	<b>Lodging</b>	Root lodging %	Stalk lodging %	
		0	0	
	<b>Disease</b>	Stalk rot	Root rot	<i>H. maydis</i>
		1-2	0	1-2
		<i>H. turcicum</i>		
		1-2		
PREVIOUS YEAR'S RESULTS:	<p><b>Yusafwala</b></p> <p>One hundred and sixty five (165) inbred lines were maintained by hand pollination in Kh.2015 while 285 during Spring 2016.</p> <p><b>Faisalabad</b></p> <p>One hundred seventy four (174) inbred lines were maintained by hand pollination. Four (4) were discarded due to undesirable characters. Twelve (12) new lines were added.</p>			

## GERMPLASM DEVELOPMENT

02. TITLE	DERIVATION OF INBRED LINES THROUGH INBREEDING.
OBJECTIVE	To develop new inbred lines with desirable characteristics for constitution of new hybrids.

RESEARCH WORKER(S)	Yusafwala	Mr. Shahid Hussain Mr. Amir Ghani Mr. Rahil Shahzad Mr. Muhammad Irfan Yousaf
	Faisalabad	Saira Saleem Muhammad Altaf Ahsan Raza Mallhi Muhammad Rafique
PROJECT DURATION	Kharif 2016 & Spring 2017 (Continuous)	
LOCATIONS	1. Maize & Millets Research Institute, Yusafwala-Sahiwal. 2. Maize Research Station, Faisalabad	
TREATMENTS	Yusafwala	Kharif 2016 = 284 families ( $S_0 = 25, S_1 = 51, S_2 = 27, S_3 = 16, S_4 = 18, S_5 = 14, S_6 = 37$ & $S_7 = 96$ ) Spring 2017 = 300 families (Tentative)
	Faisalabad	212 families ( $S_0 = 30, S_1 = 30, S_2 = 16, S_3 = 16, S_4 = 33, S_5 = 37, S_6 = 31$ & $S_7 = 19$ )
METHODOLOGY	Layout	= Ear to row
	Replications	= Non-replicated
	Plot Size	= 4 m x 0.75 m
	Plant to plant	= 20 cm
	Row to row	= 75 cm
	Fertilizer	= 297-148-124 NPK, Kg/ha.
	Date of sowing	= Month of February & Mid of July
	The desirable/selected plants from each family will be selfed by hand pollination. Data of all traits will be collected in $S_7$ generation along with display of pictorial features to prepare germplasm directory.	
PREVIOUS YEAR'S RESULT'S	<p><b>Yusafwala.</b> Two hundred and seventy two (272) derivative families were sown ear to row during Kharif 2015 for inbreeding through hand pollination. Plants selected on the basis of desirable traits like erect to semi erect leaves, medium to heavy tassel, cob length, low cob placement, strong root anchor and disease tolerance were self-pollinated in all the families. At harvesting two hundred and sixty (260) derivatives were selected for next cycle of inbreeding. While during Spring 2016, two hundred and eighty four derivative families were planted and self-pollinated by hand for further inbreeding and selection.</p> <p><b>Faisalabad</b> One hundred ninety five (195) families i.e. <math>S_0 = 30, S_1 = 16, S_2 = 16, S_3 = 33, S_4 = 37, S_5 = 31, S_6 = 19</math> &amp; <math>S_7 = 13</math> were selected from different generations and 12 advanced derivative families / inbred lines were selected from <math>S_7</math> for inclusion in gene pool.</p>	

<b>03. TITLE</b>	<b>DERIVATION OF INBRED LINES OF WHITE MAIZE.</b>
OBJECTIVE	To develop new inbred lines with desirable characteristics for constitution of new hybrids.
RESEARCH	Mr. Aamir Hussain

WORKER(S)	Mr. Ghulam Murtaza Mr. Waseem Akbar Dr. Muhammad Arshad	
PROJECT DURATION	Kharif 2016 & Spring 2017	
LOCATIONS	Maize & Millets Research Institute, Yusafwala-Sahiwal.	
TREATMENTS	Kharif 2016 = 125 Families ( $S_0 = 6, S_1 = 17, S_2 = 19, S_3 = 12, S_4 = 6, S_5 = 15, S_6 = 24$ & $S_7 = 26$ ) Spring 2017 = 150 families (Tentative)	
METHODOLOGY	Layout	= Ear to row
	Reps.	= Non-replicated
	Plot Size	= 4m x 0.75m
	Plant to plant	= 20 cm
	Row to row	= 75 cm
	Fertilizer	= 297-148-124 NPK Kg/ha.
	Date of sowing	= Month of July & February
	Desirable / selected plants in each family will be selfed by hand pollination to increase homozygosity. Data of all traits will be collected in $S_7$ generation along with display of pictorial features to prepare germplasm directory.	
PREVIOUS YEAR'S RESULTS:	<p><b>Kharif 2015:</b> During kharif 2015, 92 derivative lines (<math>S_0 = 21, S_1 = 05, S_2 = 09, S_3 = 04, S_4 = 07, S_5 = 23, S_6 = 12</math> and <math>S_7 = 11</math>) were sown for derivation of inbred lines. At harvesting, 128 inbreeding families were selected from different generations on phenotypic superiority basis for future program.</p> <p><b>Spring 2016:</b> During spring 2016, 128 families of different generations i.e. <math>S_0 = 32, S_1 = 20, S_2 = 8, S_3 = 6, S_4 = 10, S_5 = 19, S_6 = 15, S_7 = 14</math> &amp; <math>S_8 = 4</math> were sown for derivation of inbred lines. At maturity selfed plants were harvested separately in each family and seed of 125 families was collected for further inbreeding programme.</p>	

## GERMPLASM ENHANCEMENT

<b>04. TITLE</b>	<b>SCREENING AND DEVELOPMENT OF GERMPLASM AGAINST STALK ROT (<i>Fusarium moniliforme</i>) TOLERANCE THROUGH INOCULATION.</b>
OBJECTIVE	To develop germplasm tolerant to stalk rot.
RESEARCH WORKER(S)	Mr. Amir Ghani Mr. Rahil Shahzad Mr. Muhammad Irfan Yousaf Dr. Muhammad Arshad
PROJECT DURATION	Kharif 2016 & Spring 2017 (Continuous)

LOCATION	Maize & Millets Research Institute, Yusafwala-Sahiwal.	
TREATMENTS	<ol style="list-style-type: none"> <li>1. Two hundred and eighty five (285) inbred lines.</li> <li>2. Two hundred and eighty four (284) derivative families.</li> </ol>	
METHODOLOGY	Layout	= Ear to row
	Replications	= Non-replicated
	Plot Size	= 5m x 0.75m
	Plant to plant	= 20 cm
	Row to row	= 75 cm
	Fertilizer	= 297-148-124 NPK, Kg/ha.
	Date of sowing	= Month of July & February
	<p>All the selfed plants will be inoculated with the pathogen carrier toothpicks in second internode from soil surface. At maturity, all selfed &amp; inoculated plants will be torn apart with the help of scalpel and disease reaction will be recorded according to Hooker's scale (1-10). Resistant inbred lines will be marked for breeding program.</p>	
PREVIOUS YEAR'S RESULTS:	<p>During Kharif, One hundred and sixty five (165) inbred lines were planted for screening against stalk rot &amp; two hundred and seventy two (272) segregating lines/families were sown ear to row for development of inbred lines tolerant to stalk rot. On the basis of disease reaction recorded, all the inbred lines and derivative families were selected for next cycle of selection and screening.</p>	

## HYBRID CONSTITUTION

<b>05. TITLE</b>	<b>EARLY GENERATION GENERAL COMBINING ABILITY TESTING OF INBRED FAMILIES.</b>	
OBJECTIVE	Evaluation of new derivatives at early generations.	
RESEARCH WORKER(S)	Mr. Khadim Hussain Mr. Shahid Hussain Mr. Amir Ghani Dr. Muhammad Arshad	
PROJECT DURATION	Kharif 2016 & Spring 2017 (Continuous)	
LOCATION	Maize & Millets Research Institute, Yusafwala-Sahiwal.	
TREATMENTS	Eighty (80) derivatives lines ( $S_4$ & $S_5$ ) with one male.	
METHODOLOGY	Lay out	= strip planting
	Replications	= Non-replicated
	Plot Size	= 4m x 0.75m
	Plant to plant	= 20 cm
	Row to row	= 75 cm
	Fertilizer	= 297-148-124 NPK, Kg/ha.
	Date of sowing	= Month of July & February

	Eighty derivative lines will be planted in isolation with single male line to develop eighty (80) single crosses during Kharif 2016. These crosses will be evaluated in preliminary yield trials in next crop season (Spring 2017). Reconstitution of best performing single crosses will be done.	
PREVIOUS YEAR'S RESULTS:	Seventy (70) inbred lines were sown during Kharif 2015 with one male in isolation for developing new single crosses on an area of one Kanal. At harvesting twenty four inbred lines set seed. These single crosses were evaluated in Spring 2016 in Preliminary Yield trials. While sixty six (66) single crosses were developed during Spring 2016 with one male in isolation block. These crosses will be evaluated in Kharif 2016 in replicated yield trials.	
<b>06. TITLE</b>	<b>CONSTITUTION OF NEW HYBRIDS IN ISOLATION AND THROUGH HAND POLLINATION.</b>	
OBJECTIVE	To constitute new single crosses for selection of best single crosses.	
RESEARCH WORKER(S)	Yusafwala	Mr. Khadim Hussain Mr. Shahid Hussain Mr. Amir Ghani Mr. Rahil Shahzad Mr. Muhammad Irfan Yousaf Dr. Muhammad Arshad
	Faisalabad	Saira Saleem Muhammad Altaf Ahsan Raza Mallhi Muhammad Rafique
PROJECT DURATION	Kharif 2016 & Spring 2017 (Continuous)	
LOCATION	1. Maize & Millets Research Institute, Yusafwala-Sahiwal. 2. Maize Research Station, Faisalabad.	
TREATMENTS	Yusafwala	A. (Isolation) = 40 inbred lines (female) x one tester. B. (By hand) = 20 inbred lines (female) x 3 testers.
	Faisalabad	A. (Isolation-1) = 50 inbred lines (female) x one tester (Isolation-2) = 30 inbred lines (female) x one tester B. (By Hand) = 10 inbred lines (female) x 2 testers
METHODOLOGY	<p><b>Yusafwala.</b></p> <p>A. Forty (40) inbred lines will be crossed with one good combiner / male line for the constitution of new hybrids in isolated block in Kharif 2016.</p> <p>B. While in hand pollination block, three pollinators will be used with 20 female lines.</p> <p><b>Faisalabad</b></p> <p>A. Indigenous 50 &amp; 30 new inbred lines will be crossed in two isolations with male parent F165 and F-308, respectively in Kharif, 2016 for the development of new hybrids.</p> <p>B. Ten Indigenous inbred lines will be crossed by hand pollination with two male lines to find out best crosses as well as good male combiner.</p>	

PREVIOUS YEAR'S RESULTS:	<p><b>Yusafwala.</b></p> <p><b>Kharif, 2015</b></p> <p>Twenty four (24) single crosses were constituted in an isolation block using 70 inbred lines as female and 1 as pollinator.</p> <p><b>Spring, 2016</b></p> <p>Twenty eight (28) crosses were constituted which will be planted in preliminary yield trials during Kharif 2016.</p> <p><b>Faisalabad:</b></p> <p>Seventy five (75) single crosses were constituted by hand pollination / isolation block using 60 inbred lines as female and 3 as pollinators.</p>	
<b>07. TITLE</b>	<b>SCREENING OF HEAT RESILIENT MAIZE INBRED LINES UNDER NATURAL CONDITIONS</b>	
OBJECTIVE	To develop inbred lines tolerant to high temperature.	
RESEARCH WORKER(S)	Yusafwala	Mr. Khadim Hussain Mr. Shahid Hussain Mr. Amir Ghani Mr. Rahil Shahzad Mr. Muhammad Irfan Yousaf Dr. Muhammad Arshad
	Faisalabad	Saira Saleem Muhammad Altaf Ahsan Raza Mallhi Muhammad Rafique
PROJECT DURATION	Spring 2017	
LOCATION	1. Maize & Millets Research Institute, Yusafwala-Sahiwal. 2. Maize Research Station, Faisalabad.	
TREATMENTS	Yusafwala	Sixty (60) inbred lines
	Faisalabad	Sixty four (64) inbred lines
METHODOLOGY	Lay out	= strip planting
	Replications	= Non-replicated
	Plot Size	= 5m x 0.75-3m
	Plant to plant	= 20 cm
	Row to row	= 75 cm
	Fertilizer	= 297-148-124 NPK, Kg/ha.
	Date of sowing	= 2 <sup>nd</sup> fortnight of March
	All the lines will be sown late after mid of March to provide high temperature + 40 °C at flowering stage. The lines will be maintained through self-pollination by hand and data will be recorded on characteristics selected to heat tolerance i.e. <b>leaf firing, tassel blast and grain filling</b> . The lines setting seed under high temperature will be selected as heat resilient lines.	

PREVIOUS YEAR'S RESULTS:	Yusafwala	Fifty (50) inbred lines were sown for screening against high temperature during spring 2016. At flowering the temperature remained above 40°C. At harvesting thirty nine (39) lines set seed which will be planted for next cycle of selection under high temperature.
	Faisalabad	One hundred and eight (108) inbred lines were sown for screening against high temperature during spring 2016. At flowering the temperature remained above 40°C. At harvesting sixty four (64) local inbred lines of maize were found heat stress tolerant which will be planted for next cycle of selection under high temperature.

## HYBRID EVALUATION

### STATION TRIALS

08. TITLE	PRELIMINARY MAIZE HYBRID YIELD TRIALS.	
OBJECTIVE	To evaluate high yielding new hybrids with desirable characteristics and diseases tolerance.	
RESEARCH WORKER(S)	Yusafwala	Mr. Khadim Hussain Mr. Shahid Hussain Dr. Muhammad Arshad
	Faisalabad	Saira Saleem Muhammad Altaf Ahsan Raza Mallhi Muhammad Rafique
PROJECT DURATION	Kharif, 2016 & Spring, 2017 (Continuous)	
LOCATION	1. Maize & Millets Research Institute, Yusafwala-Sahiwal. 2. Maize Research Station, Faisalabad.	
TREATMENTS	Yusafwala	A trial with forty six single crosses including four hybrids (Three commercial & one local) as check.
	Faisalabad	Trial 1-3: Twenty eight single crosses including three hybrids (Two commercial & one local) as check.
METHODOLOGY	Design	RCB
	Replications	Two
	Plot Size	4m x.0.75m
	Plant to plant	20 cm
	Row to row	75 cm
	Fertilizer	297-148-124 NPK Kg/ha.
	Date of sowing Kharif	= 10 <sup>th</sup> July to 10 <sup>th</sup> August
	Spring	= 10 <sup>th</sup> January to 20 <sup>th</sup> February
	Data will be recorded for different agronomic/ morphological traits and high yielding combinations will be selected.	

PREVIOUS YEAR'S RESULTS:	<b>Yusafwala.</b>						
	<b>Trial No. 1: Kharif-2015:</b>						
	This trial comprising of thirty two single crosses including three commercial hybrids as check was conducted. The results of top ranking entries are given below: -						
	<b>S. No.</b>	<b>Entries</b>	<b>Plant Stand</b>	<b>Grain yield (kg/ha)</b>	<b>Days to 50% silk.</b>	<b>Plant ht. (Cm)</b>	<b>Cob ht. (Cm)</b>
	1	6654 (C)	22	10667 a	57	188	95
	2	YH-5389	21	10440 ab	55	160	81
	3	YH-5371	19	10147 abc	52	158	75
	4	YH-5370	14	9973 abc	54	148	70
	5	YH-5362	15	9733 a-d	50	158	70
	6	YH-5387	13	3813 J	54	153	63
	Range	10-17	3813-10667	51-58	135-190	62-95	
	C.V.%	24.9	18.47	3.12	5.41	14.1	
	LSD at 5%	7.09	2752	3.45	17.5	20.8	
<b>Trial No. 2: Kharif-2015:</b>							
This trial comprising of fifty four single crosses including three commercial hybrids as check was conducted. The results of top ranking entries are given below: -							
<b>S. No.</b>	<b>Entries</b>	<b>Plant Stand</b>	<b>Grain yield (kg/ha)</b>	<b>Days to 50% silk.</b>	<b>Plant ht. (Cm)</b>	<b>Cob ht. (Cm)</b>	
1	6654 (C)	43	10993 a	57	193	95	
2	YH-5427	40	9507 ab	54	170	90	
3	YH-5403	42	9393 abc	53	183	95	
4	YH-5406	43	9340 abc	51	185	94	
5	YH-5393	39	9207 a-d	54	195	93	
6	YH-5405	39	3727 n	54	158	80	
	Range	14-39	3727-10993	50-57	213-146	65-107	
	CV%	11.5	15.78	1.82	4.86	14.24	
	LSD at 5%	8.1	2291.0	1.93	16.4	NS	
<b>Spring: 2016:</b>							
This trial comprising of sixteen crosses including three commercial hybrids as check was conducted. The results of top ranking entries are given below:							
<b>S. No.</b>	<b>Entries</b>	<b>Plant Stand</b>	<b>Grain yield (kg/ha)</b>	<b>Days to 50% silk.</b>	<b>Plant ht. (Cm)</b>	<b>Cob ht. (Cm)</b>	
1	YH-5440	29	12427 a	80	215	163	
2	YH-5474	26	11960 ab	81	183	103	
3	YH-5473	26	11880 ab	82	189	98	
4	YH-5213	28	11827abc	82	168	83	
5	P1543 (C)	30	11493abc	81	210	123	
6	YH-5477	27	8773 f	83	163	92	

	Range	26-31	8773-12427	80-84	170-215	83-163
	CV%	7.41	8.75	1.5	12.1	21.9
	LSD at 5%	4.5	1992.1	2.5	48.7	48.6
<b>Faisalabad</b>						
<b>Trial-1: Kharif: 2015:</b>						
This trial comprised of twenty seven single crosses including two commercial hybrids as check was conducted. The results of top ranking entries are given below: -						
S. No.	Entries	Plant Stand	Grain yield (kg/ha)	Days to 50% silk.	Plant ht. (Cm)	Cob ht. (Cm)
1	FH-1258	28	12800 a	80	184	62
2	FH-1256	32	12667 a	82	178	85
3	FH-1246	26	11947 ab	81	189	93
4	FH-1266	28	11493 abc	76	199	85
5	FH-1243	29	11353 bcd	78	193	82
12	NT-6654(C)	27	8987 de	77	195	75
27	FH-1267	20	5333 g	77	185	76
	Range	20-32	5333-12800	76-84	153-213	60-106
	CV%	5.61	6.15	2.35	3.56	3.27
	LSD at 5%	4.34	933	3.71	5.17	4.87
<b>Trial-2: Kharif: 2015</b>						
This trial comprised of twenty seven single crosses including two commercial hybrids as check was conducted. The results of top ranking entries are given below: -						
S. No.	Entries	Plant Stand	Grain yield (kg/ha)	Days to 50% silk.	Plant ht. (Cm)	Cob ht. (Cm)
1	FH-1269	29	13920 a	79	172	77
2	FH-810	30	12347 a	79	180	93
3	FH-1276	31	12186 a	78	196	96
4	FH-1274	30	11387 ab	79	200	105
5	FH-1279	30	11173 ab	78	194	103
19	NT-6654(C)	23	7947 cd	77	198	109
27	FH-1291	12	2344 g	77	187	81
	Range	12-31	2344-13920	76-83	120-216	58-113
	CV%	2.83	8.56	2.54	3.12	3.21
	LSD at 5%	2.37	1267	3.02	3.87	2.94
<b>Trial-1: Spring: 2016:</b>						
This trial comprised of twenty eight single crosses including three commercial hybrids as check was conducted. The results of top ranking entries are given below: -						

S. No.	Entries	Plant Stand	Grain yield (kg/ha)	Days to 50% silk.	Plant ht. (Cm)	Cob ht. (Cm)
1	FH-949 (C)	31	10394 a	80	209	102
2	FH-1313	30	10164 a	79	195	89
3	FH-1315	18	9609 ab	80	198	88
4	FH-1306	30	9585 ab	73	199	89
5	FH-1310	29	9257 bc	80	216	110
6	FH-1314	27	9196 d	80	208	105
27	31P41 (C)	30	9042 e	78	212	104
28	Maxima	24	4404 h	79	211	107
	Range	18-31	4404-10394	73-81	176-216	77-110
	CV%	5.14	10.06	0.94	4.23	3.07
	LSD at 5%	4.17	1123	1.83	5.26	2.61
<b>Trial-2: Spring: 2016:</b>						
This trial comprised of twenty eight single crosses including three commercial hybrids as check was conducted. The results of top ranking entries are given below: -						
S. No.	Entries	Plant Stand	Grain yield (kg/ha)	Days to 50% silk.	Plant ht. (Cm)	Cob ht. (Cm)
1	FH-1323	28	9372 a	78	220	107
2	FH-1329	27	9363 a	82	199	89
3	FH-1333	26	9350 a	81	216	110
4	FH-1332	26	9318 a	82	208	105
5	FH-1330	28	9151 ab	76	188	85
6	FH-949 (C)	25	8780 c	79	207	107
18	NK-8711(C)	26	6952 ef	78	180	78
28	MV-531(C)	22	4066 g	75	199	89
	Range	14-29	4066-9372	75-85	180-220	78-110
	CV%	5.07	8.21	2.13	3.15	4.54
	LSD at 5%	3.97	897	1.85	6.26	7.12
<b>Trial-3: Spring: 2016:</b>						
This trial comprised of twenty eight single crosses including three commercial hybrids as check was conducted. The results of top ranking entries are given below: -						
S. No.	Entries	Plant Stand	Grain yield (kg/ha)	Days to 50% silk.	Plant ht. (Cm)	Cob ht. (Cm)
1	FH-1348	30	9419 a	83	214	110
2	FH-1347	26	9360 ab	80	203	102
3	FH-1367	21	8629 c	82	188	85
4	NK-8711(C)	26	8411 cd	77	216	104
5	FH-1344	25	8363 de	78	207	107
6	FH-1368	23	8238 de	88	180	78

	15	31P41(C)	20	7433 e	79	199	89
	28	FH-1349	10	788 h	73	160	73
		Range	10-30	788-9419	73-88	160-216	73-112
		CV%	1.83	14.61	4.02	3.26	5.71
		LSD at 5%	2.15	1708	5.10	6.21	3.45
<b>09. TITLE</b>							
<b>MICRO HYBRID MAIZE YIELD TRIALS.</b>							
<b>OBJECTIVE</b>							
To selected high yielding single crosses having desirable characteristics.							
<b>RESEARCH WORKER (S)</b>							
	Yusafwala		Mr. Khadim Hussain Mr. Shahid Hussain Mr. Amir Ghani				
	Faisalabad		Saira Saleem Muhammad Altaf Ahsan Raza Mallhi Muhammad Rafique				
<b>PROJECT DURATION</b>							
Kharif 2016 & Spring 2017							
<b>LOCATION</b>							
1. Maize & Millets Research Institute, Yusafwala-Sahiwal. 2. Maize Research Station, Faisalabad.							
<b>TREATMENTS</b>							
	Yusafwala		A trial with twenty single crosses including three hybrids (Two commercial & one local) as check.				
	Faisalabad		Trial 1-3: Sixteen single crosses including two commercial hybrids as checks.				
<b>METHODOLOGY</b>							
	Design		= R.C.B.				
	Reps		= 2				
	Plot size		= 4m x 1.5 m				
	Row to row		= 75 cm				
	Plant to plant		= 20 cm				
	Fertilizer		= 297:148:124 NPK Kg/ha				
	Date of Sowing		Kharif = 10 <sup>th</sup> July to 10 <sup>th</sup> August Spring = 10 <sup>th</sup> January to 20 <sup>th</sup> February				
Data will be recorded for the following morphological traits: stand count, days to 50% tasseling, days to 50% silking, plant height, cob height, No. of plants/plot (at harvest), No. of cobs/plot (at harvest), fresh cob wt. moisture percentage, lodging %age, stalk rot %age and grain yield.							
<b>PREVIOUS YEAR'S RESULTS:</b>							
<b>Yusafwala Spring 2016:</b>							
This trial comprising of fifty four entries including two commercial hybrids as check was conducted. The results of top ranking entries are given below: -							
	<b>R. No.</b>	<b>Entries</b>	<b>Plant Stand</b>	<b>Grain Yield</b>	<b>Days to 50 %</b>	<b>Plant ht.</b>	<b>Cob ht.</b>

				(Kg/ha)	silk	(cm)	(cm)
1	YH-5421	30.0	14440 a	81.5	175	95	
2	P1543 (C)	30.0	13040 ab	81.5	207	97	
3	YH-5423	30.0	12906 abc	83.5	207	105	
4	YH-5416	28.0	12320 abc	87.5	182	89	
5	YH-5404	28.5	12306 abc	86.0	182	104	
6	YH-5436	27.0	4360 n	84.5	185	102	
	Range	19-30	4360-14440	76-87	150-210	72-112	
	CV%	12.3	15.85	1.16	4.7	15.9	
	LSD at 5%	6.3	3118.6	1.9	17.2	19.1	
<b>Faisalabad</b>							
<b>Trial 1: Kharif: 2015:</b>							
This trial comprising of eighteen single crosses including two commercial hybrids as check was conducted. The results of top ranking entries are given below: -							
<b>R. No.</b>	<b>Entries</b>	<b>Plant Stand</b>	<b>Grain Yield (Kg/ha)</b>	<b>Days to 50 % silk</b>	<b>Plant ht. (cm)</b>	<b>Cob ht. (cm)</b>	
1	FH-1127	47	9840 a	47	172	96	
2	FH-1143	46	9640 a	48	173	101	
3	FH-1117	45	9573 a	53	181	110	
4	FH-1166	48	9520 a	57	176	106	
5	FH-1167	43	9360 a	49	177	108	
16	HI-339 (C)	39	7627 bc	52	165	96	
18	NT-6654 (C)	37	7053 c	55	168	117	
	Range	37-48	7053-9840	47-57	141-213	82-125	
	CV%	2.53	6.37	1.26	4.35	3.18	
	LSD at 5%	1.87	789	1.91	3.80	5.37	
<b>Trial 2: Kharif 2015</b>							
This trial comprising of eighteen single crosses including two commercial hybrids as check was conducted. The results of top ranking entries are given below: -							
<b>R. No.</b>	<b>Entries</b>	<b>Plant Stand</b>	<b>Grain Yield (Kg/ha)</b>	<b>Days to 50 % silk</b>	<b>Plant ht. (cm)</b>	<b>Cob ht. (cm)</b>	
1	FH-1205	48	11333 a	52	186	91	
2	FH-1184	48	10707 a	52	168	99	
3	FH-1178	47	10560 a	53	179	107	
4	FH-1206	48	10547 a	53	177	96	
5	FH-1203	47	9907 ab	54	173	94	
9	NT- 6654(C)	44	9400 bc	54	178	74	
15	HI-339 (C)	35	7613 cd	55	167	79	
18	FH-1202	23	4973 e	53	163	88	
	Range	23-48	4973-11333	50-55	163-202	74-110	
	CV%	4.02	10.37	0.78	3.84	3.27	
	LSD at 5%	3.29	1371	1.59	6.27	4.89	

<b>Trial 3: Kharif 2015</b>						
This trial comprising of eighteen single crosses including two commercial hybrids as check was conducted. The results of top ranking entries are given below: -						
R. No.	Entries	Plant Stand	Grain Yield (Kg/ha)	Days to 50 % silk	Plant ht. (cm)	Cob ht. (cm)
1	FH-1218	50	11727 a	55	189	99
2	FH-1219	47	11227 a	55	186	100
9	30Y87 (C)	50	11207 a	56	174	85
10	NT-6654 (C)	46	11187 a	53	166	79
14	FH-1229	49	9447 bc	53	174	104
18	FH-1231	51	8853 e	53	183	96
	Range	43-51	8853-11727	50-56	166-192	88-117
	CV%	2.71	7.83	1.23	2.54	2.01
	LSD at 5%	1.37	1021	2.72	3.57	2.89
<b>Trial 1: Spring: 2016:</b>						
R. No.	Entries	Plant Stand	Grain Yield (Kg/ha)	Days to 50 % silk	Plant ht. (cm)	Cob ht. (cm)
1	FH-1166	53	9761 a	80	203	102
2	FH-1163	49	9048 ab	82	188	85
3	FH-1214	41	8882 bc	77	216	104
4	FH-1172	48	8757 bc	78	207	107
5	FH-1125	51	8752 bc	88	180	78
14	31P41 (C)	43	7690 cd	79	199	89
18	FH-1212	38	5618 d	73	160	73
	Range	38-53	5618-9761	70-88	160-210	71-107
	CV%	2.47	9.67	3.67	4.31	3.90
	LSD 5%	3.81	853	5.27	6.06	3.17
<b>Trial 2: Spring: 2016:</b>						
R. No.	Entries	Plant Stand	Grain Yield (Kg/ha)	Days to 50 % silk	Plant ht. (cm)	Cob ht. (cm)
1	FH-1255	52	9765 a	83	187	83
2	FH-1243	49	9280 a	78	220	104
3	FH-1252	54	9239 a	80	206	102
4	FH-1233	50	9016 a	82	188	85
5	FH-1257	50	8761 bc	77	216	104
7	NK-8711 (C)	44	8564 bc	78	207	107
17	Maxima	45	5477 de	88	180	78
18	FH-1249	42	5048 e	79	199	89
	Range	42-54	5048-9765	77-88	177-220	78-107
	CV%	3.25	12.21	4.09	5.21	4.10
	LSD 5%	2.78	1028	2.79	3.94	3.54

<b>Trial 3: Spring: 2016:</b>						
<b>R. No.</b>	<b>Entries</b>	<b>Plant Stand</b>	<b>Grain Yield (Kg/ha)</b>	<b>Days to 50 % silk</b>	<b>Plant ht. (cm)</b>	<b>Cob ht. (cm)</b>
1	FH-1269	51	10696 a	74	162	106
2	FH-1284	50	9970 a	74	162	85
3	FH-1275	48	9966 a	74	172	90
4	FH-1270	47	9513 ab	75	185	106
5	FH-1287	50	9387 ab	73	183	93
7	NK-8711	46	9094 bc	70	163	69
17	MV-531	47	5364 e	68	173	75
	Range	47-51	5364-10696	68-83	155-187	61-106
	CV%	1.08	11.43	2.35	3.07	3.73
	LSD at 5%	1.87	1209	3.28	4.94	5.09
<b>10. TITLE</b>	<b>MACRO HYBRID MAIZE YIELD TRIALS.</b>					
<b>OBJECTIVE</b>	To select high yielding hybrids.					
<b>RESEARCH WORKER(S)</b>	Saira Saleem Muhammad Altaf Ahsan Raza Mallhi Muhammad Rafique					
<b>PROJECT DURATION</b>	Kharif 2016 & Spring 2017					
<b>LOCATION</b>	Maize Research Station, Faisalabad.					
<b>TREATMENTS</b>	Trial 1: Nine single crosses including two commercial hybrids as check. Trial 2: Twelve single crosses including two commercial hybrids as check.					
<b>METHODOLOGY</b>	Design	= RCB				
	Replications	= Two				
	Plot Size	= 5m x 3m				
	Plant to plant	= 20 cm				
	Row to row	= 75 cm				
	Fertilizer	= 297-148-124 NPK Kg/ha.				
	Date of sowing	= Month of July & February.				
	Data will be recorded for different agronomic/ morphological traits and high yielding combinations will be selected.					
<b>PREVIOUS YEAR'S RESULTS:</b>	<b>Trial-1: Kharif: 2015:</b>  This trial comprising of nine single crosses including two commercial hybrids as check was conducted. The results of top ranking entries are given below: -					

R. No.	Entries	Plant Stand	Grain Yield (Kg/ha)	Days to 50 % silk	Plant ht. (cm)	Cob ht. (cm)
1	FH-1036	86	9687 a	54	168	99
2	FH-810 (C)	93	9493 a	53	179	107
3	FH-793	82	8793 ab	55	177	96
4	NT-6654(C)	88	8720 ab	52	173	94
8	30Y87 (C)	90	7993 bc	54	178	74
9	FH-985	82	7920 c	53	167	79
	Range	82-93	7920-9687	52-55	167-197	73-107
	CV%	3.71	7.26	0.97	3.21	4.23
	LSD at 5%	2.57	931	3.16	2.99	3.37
<p><b>Trial -2: Kharif: 2015:</b>  This trial comprising of twelve single crosses including two commercial hybrids as check was conducted. The results of top ranking entries are given below: -</p>						
R. No.	Entries	Plant Stand	Grain Yield (Kg/ha)	Days to 50 % silk	Plant ht. (cm)	Cob ht. (cm)
1	FH-976	71	10604 a	54	186	96
2	FH-929	66	10560 a	55	182	95
3	FH-928	65	10391 a	56	174	85
4	FH-932	70	10178 a	53	166	79
5	FH-1137	68	10169 a	54	178	94
10	NT-6654 (C)	58	7929 cd	52	183	96
12	Hi-339 (C)	57	7698 e	51	180	94
	Range	57-71	7698-10604	51-56	166-186	78-96
	CV%	4.05	10.21	1.13	4.41	3.07
	LSD 5%	4.89	912	2.34	3.47	3.61

<b>11. TITLE</b>	<b>EVALUATION AND SCREENING OF SINGLE CROSSES OF MAIZE UNDER HIGH TEMPERATURE</b>	
<b>OBJECTIVE</b>	To develop single crosses tolerant to high temperature.	
<b>RESEARCH WORKER(S)</b>	Yusafwala	Mr. Khadim Hussain Mr. Shahid Hussain Mr. Amir Ghani Mr. Rahil Shahzad Mr. Muhammad Irfan Yousaf Dr. Muhammad Arshad
	Faisalabad	Saira Saleem Muhammad Altaf Ahsan Raza Mallhi Muhammad Rafique
<b>PROJECT DURATION</b>	Spring 2017	

LOCATION	1. Maize & Millets Research Institute, Yusafwala-Sahiwal. 2. Maize Research Station, Faisalabad.					
TREATMENTS	Yusafwala	Sixty (60) single crosses				
	Faisalabad	Fifty (50) single crosses				
METHODOLOGY	Lay out	= strip planting				
	Replications	= Non-replicated				
	Plot Size	= 5m x 3m				
	Plant to plant	= 20 cm				
	Row to row	= 75 cm				
	Fertilizer	= 297-148-124 NPK, Kg/ha.				
	Date of sowing	2 <sup>nd</sup> fortnight of March				
	All the single crosses will be sown late after mid of March to provide high temperature at flowering stage. The single crosses giving high yields under high temperature will be selected as heat resilient single crosses.					
PREVIOUS YEAR'S RESULTS:	<b>Yusafwala</b>					
	<b>Trial = 1 Spring 2016</b>					
Twenty eight (28) single crosses were evaluated in replicated yield trial for screening under high temperature. At flowering the temperature remained above 40°C. The results of top ranking entries are given below.						
<b>R. No.</b>	<b>Entries</b>	<b>Plant Stand</b>	<b>Grain Yield (Kg/ha)</b>	<b>Days to 50 % silk</b>	<b>Plant ht. (cm)</b>	<b>Cob ht. (cm)</b>
1	YH-5397	17	14473 a	62	193	108
2	YH-5410	17	12452 b	63	193	108
3	FH-949 (C)	20	12398 b	63	195	83
4	YH-5395	18	12235 bc	64	193	113
5	YH-1898 (C)	18	11317 cd	68	178	105
6	YH-5305	10	2530 o	68	190	103
	Range	10-20	2530-14473	61-68	170-205	83-123
	CV%	12.7	4.96	1.4	2.42	2.55
	LSD at 5%	21.2	942.47	1.9	9.59	5.45
<b>Trial = 2 Spring 2016</b>						
Twenty eight (28) single crosses were evaluated in replicated yield trial for screening under high temperature. At flowering the temperature remained above 40°C. The results of top ranking entries are given below.						
<b>R. No.</b>	<b>Entries</b>	<b>Plant Stand</b>	<b>Grain Yield (Kg/ha)</b>	<b>Days to 50 % silk</b>	<b>Plant ht. (cm)</b>	<b>Cob ht. (cm)</b>
1	YH-1898 (C)	14	13877 a	67	205	113
2	YH-5415	15	12487 b	67	185	108
3	YH-5439	17	12405 b	65	210	118
4	YH-5421	17	12297 bc	66	183	88
5	YH-5427	17	11567 bcd	68	180	83
6	YH-5436	16	2863 m	67	193	100
	Range	10-20	2863-13877	64-68	173-210	78-118

	CV%	16.5	7.05	1.1	3.36	5.27
	LSD at 5%	4.83	1074.3	12.9	10.8	12.9
<b>Faisalabad</b>						
<b>Trial: 1: Spring 2016:</b>						
This trial comprised of nine single crosses including one commercial hybrid as check was conducted for screening under high temperature. At flowering the temperature remained above 40°C. The results of top ranking entries are given below.						
R. No.	Entries	Plant Stand	Grain Yield (Kg/ha)	Days to 50 % silk	Plant ht. (cm)	Cob ht. (cm)
1	FH-1046	102	11943 a	77	193	109
2	FH-949	96	11297 a	78	171	83
3	FH-1012	99	11056 a	79	182	104
4	FH-793	100	11019 a	79	182	101
5	FH-810	95	10809 ab	80	194	102
9	31P41(C)	92	8721 d	73	205	93
	Range	92-102	8721-11943	73-83	171-217	83-112
	CV%	4.12	11.37	3.78	4.26	5.23
	LSD 5%	5.07	1235	2.57	4.87	4.03
<b>Trial = 2 Spring 2016</b>						
This trial comprised of twelve single crosses including two commercial hybrids as check was conducted for screening under high temperature. At flowering the temperature remained above 40°C. The results of top ranking entries are given below.						
R. No.	Entries	Plant Stand	Grain Yield (Kg/ha)	Days to 50 % silk	Plant ht. (cm)	Cob ht. (cm)
1	FH-929	71	10505 a	79	203	108
2	FH-1042	73	9975 ab	80	192	114
3	FH-928	68	9292 bc	79	189	107
4	FH-1231	62	9277 bc	81	201	122
5	FH-1117	69	8849 de	80	190	109
8	NK-8711(C)	64	8734 de	75	184	80
9	31P41 (C)	73	8708 de	74	207	82
12	FH-1124	69	8129 f	76	161	80
	Range	62-73	8129-10505	72-81	161-207	80-122
	CV%	3.67	10.14	3.27	6.32	4.59
	LSD 5%	4.07	1212	4.23	5.21	5.57

<b>12. TITLE</b>	<b>DEMONSTRATION OF LOCAL MAIZE HYBRIDS IN COMPARISON TO COMMERCIAL HYBRIDS UNDER HIGH TEMPERATURE</b>
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OBJECTIVE	To develop single crosses tolerant to high temperature.	
RESEARCH WORKER(S)	Mr. Khadim Hussain Mr. Shahid Hussain Mr. Amir Ghani Mr. Rahil Shahzad Mr. Muhammad Irfan Yousaf Dr. Muhammad Arshad	
PROJECT DURATION	Spring, 2017	
LOCATION	Maize & Millets Research Institute, Yusafwala-Sahiwal.	
TREATMENTS	Eighteen single crosses	
METHODOLOGY	Lay out	= strip planting
	Replications	= Non-replicated
	Plot Size	= 5m x 6m
	Plant to plant	= 20 cm
	Row to row	= 75 cm
	Fertilizer	= 297-148-124 NPK, Kg/ha.
	Date of sowing	= Mid of March
	All the single crosses will be sown late after mid of March to provide high temperature at flowering stage. The single crosses giving high yields under high temperature will be selected as heat resilient single crosses.	
PREVIOUS YEAR'S RESULTS:	During spring 2016 sixteen (16) single crosses were sown for screening under high temperature. The trial was sown in strip keeping plot size 246.91 m <sup>2</sup> At flowering the temperatures remained above 40°C. Following hybrids showed best performance under high temperature. The yield of outstanding hybrids are as under:	
	<b>S. No.</b>	<b>Name of Hybrid</b>
	1	FH-988
	2	DK-9108
	3	YH-1898
	4	YH-5213
	5	JPL-2066
		<b>Grain Yield (kg/ha)</b>
		10829
		10172
		9975
		9881
		9866

<b>13. TITLE</b>	<b>EVALUATION OF PROMISING MAIZE HYBRIDS AGAINST COMMERCIAL HYBRIDS.</b>
OBJECTIVE	To evaluate local maize hybrids versus multinational hybrids
RESEARCH WORKER(S)	Mr. Khadim Hussain Mr. Shahid Hussain Mr. Amir Ghani Mr. Rahil Shahzad Mr. Muhammad Irfan Yousaf Dr. Muhammad Arshad

PROJECT DURATION	Kharif 2016 & Spring 2017																																																																																																																																										
LOCATION	Maize & Millets Research Institute, Yusafwala-Sahiwal.																																																																																																																																										
TREATMENTS	Entries =10 (YH-1898, Yusafwala hybrid, FH-949, FH-963, FH-793, FH-1231, FH-1012, FH-922, YH-1898 & 31P41)																																																																																																																																										
METHODOLOGY	<p>Lay out = RCBD  Replications = 03  Plot Size = 25m x 6m  Plant to plant = 20 cm  Row to row = 75 cm  Fertilizer = 297-148-124 NPK, Kg/ha.  Date of sowing Kharif = 10<sup>th</sup> July to 10<sup>th</sup> August  Spring = 10<sup>th</sup> January to 20<sup>th</sup> February</p> <p>Data regarding stand count, days to 50% silking, plant height, lodging % age, plants harvest/plot, fresh cob weight, moisture percentage and shelling % age will be collected and grain yield will be calculated.</p>																																																																																																																																										
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			164	12369		237	
		CV%	3.75	5.33	0.59	1.31	1.89
		LSD at 5%	12.5	1195	0.97	5.95	4.38

#### NATIONAL UNIFORM YIELD TRIALS

<b>14. TITLE</b>	<b>NATIONAL UNIFORM/ADAPTABILITY MAIZE HYBRID YIELD TRIALS (YELLOW). 2 Sets: One Normal And Second For Screening Against Insect Pests.</b>		
OBJECTIVE	To evaluate exotic/local hybrids at various locations throughout the country.		
RESEARCH WORKER(S)	Yusafwala	Sadia Kanwal Malik Riaz Hussain Muhammad Shakeel Ahmad Dr. Muhammad Arshad	
	Faisalabad	Muhammad Altaf Muhammad Rafique	
PROJECT DURATION	Kharif 2016 & Spring 2017		
LOCATION	1. Maize & Millets Research Institute, Yusafwala-Sahiwal. 2. Maize Research Station, AARI, Faisalabad.		
TREATMENTS:	As provided by National Coordinator (Cereal System) PARC, Islamabad.		
METHODOLOGY:	As per instructions of National Coordinator (Cereal System) PARC, Islamabad.		
PREVIOUS YEAR'S RESULTS:	<b>MAIZE HYBRID ADAPTABILITY TRIAL Entries: 26, Year: Kharif - 2015, Locations: 10</b>		
	<b>R. No.</b>	<b>Hybrid Name</b>	<b>Grain Yield (Kg/Ha.) (Average)</b>
	1	FH-1036	10427
	2	PN-9208-S	10186
	3	ST-6293	10020
	4	6619	9823
	5	1616	9703
	<b>Source: NARC, Islamabad.</b>		
	<b>MAIZE HYBRID ADAPTABILITY TRIAL , SPRING 2016</b>		
	The results are under compilation at NARC, Islamabad.		
<b>15. TITLE</b>	<b>NATIONAL UNIFORM/ADAPTABILITY MAIZE HYBRID YIELD TRIALS (WHITE). 2 Sets: One Normal And Second For Screening Against Insect Pests.</b>		
OBJECTIVE	1. To evaluate exotic/local hybrids at various locations throughout the country. 2. Screening of local hybrids against insect pests.		

RESEARCH WORKER(S)	Yusafwala	Mr. Ghulam Murtaza Mr. Aamir Hussain Muhammad Shakeel Ahmad Dr. Muhammad Arshad
	Faisalabad	Muhammad Altaf Muhammad Rafique
PROJECT DURATION	Kharif 2016 & Spring 2017	
LOCATION	1. Maize & Millets Research Institute, Yusafwala-Sahiwal. 2. Maize Research Station, AARI, Faisalabad.	
TREATMENTS:	As provided by National Coordinator (Cereal System) PARC, Islamabad.	
METHODOLOGY:	As per instructions of National Coordinator (Cereal System) PARC, Islamabad.	
PREVIOUS YEAR'S RESULTS:	New experiment.	

## SEED PRODUCTION

16. TITLE	SEED MULTIPLICATION.	
OBJECTIVE	To multiply seed of single cross hybrids and their parental inbred lines for experimental and commercial purposes.	
RESEARCH WORKER(S)	Yusafwala	Sadia Kanwal Malik Riaz Hussain Dr. Muhammad Arshad
	Faisalabad	Muhammad Altaf Amer Hussain Muhammad Rafique
PROJECT DURATION	Kharif 2016 & Spring 2017	
LOCATION	1. Maize & Millets Research Institute, Yusafwala-Sahiwal. 2. Maize Research Station, AARI, Faisalabad.	
TREATMENTS	Yusafwala	A. Inbred lines = 03 i.e. Y-14, Y-22, Y-27 B. Single crosses = 02 i.e. Yusafwala Hybrid, YH-1898 & FH-1046
	Faisalabad	A. Inbred lines = 06 i.e. F-107, F-165, F-182, F-271, F-299, F308 B. Single crosses = 07 i.e. FH-810, FH-949, FH-963, FH-985, FH-988, FH- 1036, FH-1046
METHODOLOGY	Lay out	Isolation
	Plot size	1-10 Kanals for inbred lines 1-8 Acres for single crosses
	Row to row	75 cm
	Plant to plant	20 cm
	Fertilizer	297:148:124 NPK, Kg/ha
	Date of	= 10 <sup>th</sup> July to 10 <sup>th</sup> August
	Kh.	

	Sowing	Sp.	= 10 <sup>th</sup> January to 20 <sup>th</sup> February	
PREVIOUS YEAR'S RESULTS	The following quantity of inbred lines seed was produced:			
		<b>Yusafwala</b>	<b>Faisalabad</b>	<b>Quantity (kg)</b>
	<b>Inbred lines</b>	Y-22	-	378
		Y-27		313
		-	F-107	02
		-	F-308	40
		-	F-165	105
		-	F-182	03
		-	F-271	100
	<b>Single Crosses</b>	YH-1898	-	3642
			FH-793	05
			FH-922	05
			FH- 949	90
			FH-985	05
		FH-988	05	
		FH-1012	10	
	FH-1046	30		
	<b>Double Cross</b>	-	DTC-1	1000

<b>17. TITLE</b>	<b>MAINTENANCE OF PARENTAL INBRED LINES OF APPROVED HYBRIDS.</b>	
OBJECTIVE	To achieve uniformity regarding flowering, maturity, number of rows, cob placement and better root anchor.	
RESEARCH WORKER(S)	Yusafwala	Sadia Kanwal Malik Riaz Hussain Dr. Muhammad Arshad
PROJECT DURATION	Kharif 2016 & Spring 2017	
LOCATION	1. Maize & Millets Research Institute, Yusafwala-Sahiwal.	
TREATMENTS	Y-14, Y-22, Y-27	
METHODOLOGY	Lay out	Strip
	Plot size	1-2 Kanals for each inbred line,
	Row to row	75 cm
	Plant to plant	20 cm
	Fertilizer	297:148:124 NPK Kg/ha
	Date of Sowing	Month of January, February, July & August
PREVIOUS YEAR'S RESULTS	<b>Kharif 2015:</b> 100 plants were selected from each of the three lines and selfed by hand pollination.	
<b>18. TITLE:</b>	<b>ON-FARM TESTING OF PROMISING HYBRIDS.</b>	
OBJECTIVE:	To evaluate maize hybrids on farmer's field.	

RESEARCH WORKER (S):	Yusafwala	Mr. Aamir Ghani Dr. Muhammad Arshad					
	Faisalabad	Muhammad Rafique Muhammad Altaf					
PROJECT DURATION:	Kharif 2016 & Spring 2017						
LOCATION:	12 (Six in Faisalabad & six in Sahiwal division).						
TREATMENTS:	Hybrids = 08 i.e., (FH 963, FH 949, FH 985, FH 1036, FH-1046, YH-1898, Yusafwala Hybrid & one commercial hybrid)						
METHODOLOGY:	Layout	= Strips					
	Reps	= Non replicated					
	Plot size	= 45 m <sup>2</sup>					
	Row to row	= 67.5 cm					
	Plant to plant	= 20 cm					
	Fertilizer	= Farmer's Practice.					
	Date of sowing Kharif	= 10 <sup>th</sup> July to 10 <sup>th</sup> August					
	Spring	= 10 <sup>th</sup> January to 20 <sup>th</sup> February					
PREVIOUS YEAR'S RESULTS:	<b>Spring 2016 (Conducted by MMRI, Yusafwala)</b>						
	<b>Entry No.</b>	<b>60-5L Sahiwal 05-02-16</b>	<b>82-6R Sahiwal 24-02-16</b>	<b>267 (G.B (T.T.Singh) 26-02-16</b>	<b>Kamalia (T.T.Singh) 27-02-16</b>	<b>Mian Channu 01-03-16</b>	<b>Av. Yield (kg/ha)</b>
	FH-1046	10103	9974	10345	11145	10656	10445
	YH-1898	9346	11042	8030	9045	10120	9513
	FH-949 (C)	7748	8800	9120	10378	9460	9101
	NK-8711 (C)	10819	9519	7900	9190	7921	9070
	FH-988	7841	8876	9864	8900	9691	9034
	FH-922	7740	10140	8010	9065	9650	8921
	Y. Hybrid (C)	7678	9783	7990	8890	8690	8606
	P-1543 (C)	8273	10071	7220	9865	6829	8452
	<b>Kharif 2015 (Conducted by MRS, Faisalabad)</b>						
	<b>Entry</b>	<b>Saeedabad Jhang 23-07-2015</b>	<b>362JB 27-07-2015</b>	<b>Chiniot 04-08-2015</b>	<b>Khiddar wala 10-08-2015</b>	<b>Avg.</b>	
	30Y87	10616	10370	11066	10563	10654	
	FH-793	11030	10543	11283	9748	10651	
	FH-810	9792	11082	11264	10237	10594	
	NT-6654	9613	10235	10450	9219	9879	
	YH-1898	8088	10658	10833	9184	9691	
	FH-963	8525	9613	10457	8717	9328	
	Y. Hybrid	8676	9223	9540	8019	8865	

<b>Faisalabad</b>							
<b>Spring 2016:</b>							
<b>Entry</b>	<b>437/G.B Noorpur</b>	<b>385/G.B Samundri</b>	<b>452/G.B Tandlian -wala</b>	<b>473/G.B Samundri</b>	<b>1/G.B Mureed-Wala</b>	<b>615/G.B Tandlian -wala</b>	<b>Av. (Kg/ha)</b>
<b>FH-1046</b>	<b>10731</b>	<b>11471</b>	<b>10037</b>	<b>10388</b>	<b>11014</b>	<b>9979</b>	<b>10603</b>

	FH-949	10933	10848	9440	9621	10508	10191	10257
	FH-922	9282	10267	9680	8491	9317	8835	9312
	YH-1898	9970	9104	9664	8737	9234	9082	9299
	FH-988	9744	9331	9827	8926	8277	9283	9231
	Y. Hybrid	9305	8876	8703	8071	8321	8143	8570
	P1543	9447	9017	8651	7896	8166	8219	8566

## MAIZE OPV'S

<b>1. TITLE:</b>	<b>MAINTENANCE AND IMPROVEMENT OF POOL - 50.</b>	
<b>OBJECTIVE:</b>	To improve base population of pool 50 required for OPVs derivations.	
<b>RESEARCH WORKER(S):</b>	Hafiz Mutther Javed Rana Abdul Hameed Khan Dr. Muhammad Arshad	
<b>PROJECT DURATION:</b>	Continuous	
<b>LOCATION:</b>	Maize & Millets Research Institute, Yusafwala-Sahiwal.	
<b>TREATMENTS:</b>	Base population of Yusafwala Pool-50.	
<b>METHODOLOGY:</b>	Lay out Plot size Plant to plant distance Row to row distance Fertilizer Date of sowing, Kharif Spring	= Strip = 31.5m x 48.5m = 20cm = 75cm = 227-114-62 NPK, Kg/ha = 10 <sup>th</sup> July to 10 <sup>th</sup> August = 10 <sup>th</sup> January to 20 <sup>th</sup> February
	Presently available base population of pool-50 will be sown in isolation for their maintenance. Undesirable plants will be roughed out before pollination and open pollination will be allowed to broaden the genetic base. At maturity, crop will be harvested as a whole. Random representative samples will be kept for further maintenance.	
<b>PREVIOUS YEAR'S RESULTS:</b>	The seed of selected cob's was bulked and planted during kharif 2015 and open pollination was allowed. Best plants were selected on the basis of plant height, stem girth, cob placement, cob length and resistance against lodging. Cobs selected against above mentioned criteria were bulked and planted during Spring 2016. Same selection procedure was performed after open pollination.	

<b>02. TITLE:</b>	<b>MICRO PLOT MAIZE YIELD TRIAL (OPV)</b>
<b>OBJECTIVE:</b>	To evaluate the promising maize experimental varieties for high yield potential.
<b>RESEARCH WORKER (S):</b>	Mr. Ghulam Murtaza Mr. Aamir Hussain Dr. Muhammad Arshad
<b>PROJECT DURATION:</b>	Kharif 2016 & Spring 2017

LOCATIONS:	Maize & Millets Research Institute, Yusafwala-Sahawal.						
TREATMENTS:	9 = YY-15, YW-786, YW-787, CZP-132001, Pak-I, Pak-II, MMRI Yellow, Pearl & Agaiti-2002.						
METHODOLOGY:	Design	= RCB					
	Reps	= 3					
	Plot size	= 5m x 3m					
	Row to row	= 75 cm					
	Plant to plant	= 20 cm					
	Fertilizer	= 227:114:62 NPK Kg/ha					
	Date of Sowing	= Month of July & February.					
	Data will be recorded for stand count, days to 50% tasseling, days to 50% silking, plant height, cob height, fresh cob weight/plot and grain yield.						
PREVIOUS YEAR'S RESULTS:	<b>Kharif 2015:</b>						
	The trial comprising seven entries was conducted. The results are given below.						
	<b>Sr. No.</b>	<b>Entries</b>	<b>Plant Stand</b>	<b>Grain Yield (Kg/ha)</b>	<b>Days to 50 % silk</b>	<b>Plant ht. (cm)</b>	<b>Cob ht. (cm)</b>
	1	AH-15	95	8400 a	56	213	93
	2	Pak-I	95	7626 b	50	187	87
	3	Pak-II	90	7415 b	50	198	93
	4	EV-6486	96	7240 bc	54	177	101
	5	MMRI Yellow	96	6902 cd	54	218	112
	6	Pearl	93	6771 d	53	206	105
	7	EV-6487	91	5860 e	53	196	96
		CV %	3.35	3.18	1.79	4.45	9.26
		LSD at 5%	NS	405	1.68	15.76	NS
	<b>Spring 2015:</b>						
	The trial comprising eight entries was conducted. The results are given below.						
	<b>Sr. No.</b>	<b>Entries</b>	<b>Plant Stand</b>	<b>Grain Yield (Kg/ha)</b>	<b>Days to 50 % silk</b>	<b>Plant ht. (cm)</b>	<b>Cob ht. (cm)</b>
	1	YY-15	74	9766 a	67	259	115
	2	MMRI Yellow	73	9200 ab	67	243	121
	3	Malka 2016	74	8764 bc	68	246	120
	4	YW-787	74	8359 cd	68	265	138
	5	YW-786	72	8104 cd	46	252	127
	6	Pearl	73	7739 de	66	250	121
	7	Pak-1	73	6954 ef	61	213	88
	8	CZP-132001	74	6726 f	65	233	107
		CV %	.41	5.64	19.58	4.26	7.47
		LSD at 5%	NS	809.8	NS	18.29	15.3

03. TITLE:

MICRO PLOT MAIZE YIELD TRIAL (POP & SWEET CORN)

OBJECTIVE:	To evaluate the promising pop corn maize experimental varieties for high yield potential.						
RESEARCH WORKER (S):	Mr. Ghulam Murtaza Mr. Aamir Hussain Dr. Muhammad Arshad						
PROJECT DURATION:	Kharif 2016 & Spring 2017						
LOCATIONS:	Maize & Millets Research Institute, Yusafwala-Sahiwal.						
TREATMENTS:	5 = YPC-14, YSC-15, YPC-16, Pop Corn (swat) & Sweet Corn (Swat).						
METHODOLOGY:	Design	= RCB					
	Reps	= 3					
	Plot size	= 4m x 3m					
	Row to row	= 75 cm					
	Plant to plant	= 20 cm					
	Fertilizer	= 227:114:62 NPK Kg/ha					
	Date of Sowing	= Month of July & February.					
	Data will be recorded for stand count, days to 50% tasseling, days to 50% silking, plant height, cob height, fresh cob weight/plot and grain yield.						
PREVIOUS YEAR'S RESULTS:	<b>Spring 2016:</b>						
	The trial comprising five entries was conducted. The results are given below.						
	<b>Sr. No.</b>	<b>Entries</b>	<b>Plant Stand</b>	<b>Grain Yield (Kg/ha)</b>	<b>Days to 50 % silk</b>	<b>Plant ht. (cm)</b>	<b>Cob ht. (cm)</b>
	1	YPC-14	74	6584 a	81	234	125
	2	White Popcorn	75	6158 a	74	206	107
	3	YSC-15	74	5929 a	82	226	125
	4	Sweet Corn (Swat)	74	5059 b	78	218	117
	5	Popcorn (Swat)	71	3172 c	77	211	112
		CV %	2.03	8.78	1.14	5.43	8.05
		LSD at 5%	2.30	727.76	1.37	18.30	NS
<b>04. TITLE:</b>	<b>NATIONAL UNIFORM MAIZE VARIETAL YIELD TRIAL. 2 Sets: One Normal And Second For Screening Against Insect Pests.</b>						
OBJECTIVE:	1. To evaluate maize varieties at various locations throughout the country. 2. Screening of candidate maize varieties against insect pests.						

RESEARCH WORKER (S):	Yusafwala	Hafiz Mutther Javed Rana Abdul Hameed Khan Muhammad Shakeel Ahmad Dr. Muhammad Arshad																		
	Faisalabad	Mr. Muhammad Altaf Mr. Muhammad Rafique																		
	Rawalpindi	Mr. Muhammad Siddique Dr. Muhammad Irshad-ul-Haq																		
PROJECT DURATION:	Kharif 2016 & Spring 2017																			
LOCATIONS:	1-Maize & Millets Research Institute, Yusafwala-Sahiwal. 2-Maize Research Station, Faisalabad.																			
TREATMENTS:	As per instructions of the National Coordinator (Cereal System) PARC, Islamabad																			
METHODOLOGY:	As per instructions of the National Coordinator (Cereal System) PARC, Islamabad																			
PREVIOUS YEAR'S RESULTS:	<p><b>NATIONAL UNIFORM MAIZE VARIETAL YIELD TRIAL.</b> <b>Entries: 24, Year: Kharif- 2015, Locations: 6</b></p> <table border="1"> <thead> <tr> <th>R. No.</th> <th>Variety Name</th> <th>Grain Yield (Kg/ha) (Average)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>WVAR-13</td> <td>7027</td> </tr> <tr> <td>2</td> <td>WVAR-4</td> <td>6504</td> </tr> <tr> <td>3</td> <td>WVAR-3</td> <td>6492</td> </tr> <tr> <td>4</td> <td>WVAR-7</td> <td>6486</td> </tr> <tr> <td>5</td> <td>WVAR-8</td> <td>6462</td> </tr> </tbody> </table> <p style="text-align: center;"><b>Source: NARC, Islamabad.</b></p> <p><b>NATIONAL UNIFORM MAIZE VARIETAL YIELD TRIAL.</b> <b>SPRING- 2016</b></p> <p>The results are under compilation at NARC, Islamabad.</p>		R. No.	Variety Name	Grain Yield (Kg/ha) (Average)	1	WVAR-13	7027	2	WVAR-4	6504	3	WVAR-3	6492	4	WVAR-7	6486	5	WVAR-8	6462
R. No.	Variety Name	Grain Yield (Kg/ha) (Average)																		
1	WVAR-13	7027																		
2	WVAR-4	6504																		
3	WVAR-3	6492																		
4	WVAR-7	6486																		
5	WVAR-8	6462																		

<b>05. TITLE:</b>	<b>SEED PRODUCTION OF YELLOW MAIZE VARIETIES</b>
OBJECTIVE:	To produce breeder, pre-basic, basic and certified seed of yellow maize varieties.
RESEARCH WORKER (S):	Hafiz Mutther Javed Rana Abdul Hameed Khan Mr. Tanweer Mukhtar Mr. Asrar Mahboob
PROJECT DURATION:	Kharif 2016 & Spring 2017
LOCATION:	Maize & Millets Research Institute, Yusafwala-Sahiwal.
TREATMENTS:	<b>Breeder Seed:</b> 12 varieties (11 Approved and one promising)

	<b>Pre-Basic, Basic and Certified Seed: MMRI, Yellow &amp; Pearl.</b>					
METHODOLOGY:	Lay out	= Strip				
	Plot size, Breeder	= 5m x 7.5m				
	Pre-basic	= 1 Kanal- 2 Kanals				
	Basic	= 2-3 Acres				
	Certified	= 4-6 Acres				
	Plant to plant distance	= 20cm				
	Row to row distance	= 75cm				
	Fertilizer	= 227-114-62 NPK, Kg/ha				
	Date of sowing	Kharif	10 <sup>th</sup> July to 10 <sup>th</sup> August			
		Spring	10 <sup>th</sup> January to 20 <sup>th</sup> February			
	Breeder seed will be produced through sib pollination while pre-basic and basic seed by half bib procedure.					
PREVIOUS YEAR'S RESULTS:	The following varieties seed was produced during kharif 2015 and spring 2016:					
	<b>S. No.</b>	<b>Variety</b>	<b>Seed (Kgs)</b>			
			<b>Breeder</b>	<b>Pre-basic</b>	<b>Basic</b>	<b>Certified</b>
	1	MMRI Yellow	-	-	3720	6050
	2	Pearl	6.5	140	5850	8615

## SORGHUM

<b>01. TITLE</b>	<b>MAINTENANCE OF GENE POOL.</b>				
OBJECTIVE	To maintain the germplasm for breeding program.				
RESEARCH WORKER (S)	Yusafwala	Mr. Aamir Mumtaz Mr. Muhammad Saeed Mr. Dilbar Hussain Dr. Muhammad Arshad			
	D.G.Khan	Mr. Ihsanullah Mrs.Zaib-un-Nisa			
PROJECT DURATION	Kharif 2016.				
LOCATION	1. Maize & Millets Research Institute, Yusafwala-Sahiwal. 2. Sorghum Research Sub-station, D. G. Khan.				
TREATMENTS	80 entries each at MMRI, Yusafwala and SRSS, D. G. Khan.				
	<b>Seed/Seedling.</b>				
	1. Seedling growth habit		2. Coleoptile's Anthcyanin		
	3. Seedling length (cm)		4. First leaf color		
	5. First leaf tip				
	<b>Leaf</b>				
	6. No, of Leaf per plant		7. Leaf size (length / width)		
	8. Leaf attitude (drooping / semi-drooping / erect)		9. Mid rib color		
	<b>Stem</b>				
	10. Stem length		11. Stem type (Juicy/dry)		
	12. Stem thickness		13. Lodging		
	14. Internode length				

	<b>Reproductive Traits</b>	
	15. Days to panicle emergence	16. Peduncle length
	17. Panicle shape	18. Panicle attitude
	19. Rachis length/width	20. Stigma color
	21. Anther fertility	
	<b>Seed</b>	
	22. Seed covering	23. Seed size
	24. Seed shape (Narrow elliptic, elliptic and spherical)	25. 100 grain weight (gm)
	26. Seed weight/panicle (gm)	
	<b>Disease</b>	
	27. Red leaf spot	28. Stalk rot %age
	29. Any other	
<b>METHODOLOGY</b>	Lay out = Strip Reps = Non replicated Plot size = 5m x 1.5m Plant to plant = 20 cm Row to row = 75 cm Fertilizer = 170-84-62 NPK (Kg/ha) at Y. Wala & D.G.K. = 79-57-62 NPK (Kg/ha) at Rawalpindi. Date of sowing = 25 <sup>th</sup> June – 15 <sup>th</sup> July	Five true to type plants will be selected in each line and will be covered with Kraft paper bags to avoid contamination. At maturity, Selected panicles will be harvested and seed will be collected for maintenance. The data on different agronomic characteristics like days to 50% anthesis, plant height, brix percentage, leaf color, leaf attitude, tillering, lodging, panicle attitude etc. will be recorded.
<b>PREVIOUS YEAR'S RESULTS:</b>	Eighty entries were planted and maintained at MMRI, Yusafwala-Sahiwal and SRSS, D. G. Khan.	
<b>02. TITLE</b>	<b>MAINTENANCE OF CYTOPLASMIC MALE STERILE (A) LINES.</b>	
<b>OBJECTIVE</b>	To maintain the female parent lines for hybrid program.	
<b>RESEARCH WORKER(S)</b>	Mr. Aamir Mumtaz Mr. Muhammad Saeed Mr. Dilbar Hussain	
<b>PROJECT DURATION</b>	Kharif 2016.	
<b>LOCATION</b>	Maize & Millets Research Institute, Yusafwala-Sahiwal.	
<b>TREATMENTS</b>	Fourteen A & B lines.	

METHODOLOGY	Lay out	=	Strip
	Reps	=	Non replicated
	Plot size	=	5m x 3.75m
	Plant to plant	=	20 cm
	Row to row	=	75 cm
	Fertilizer	=	170-84-62 NPK, (Kg/ha)
	Date of sowing	=	25 <sup>th</sup> June – 15 <sup>th</sup> July
	These lines will be sown in 3:2 (female: male). Ten vigorous plants/ heads of male and female lines will be selected in each line & covered with Kraft paper bags before flowering and pollination will done by hand for maintenance of CMS lines. At maturity, seed will be collected for maintenance.		
PREVIOUS YEAR'S RESULTS:	Eighteen CM (A) and their counterpart (B) lines were planted and fourteen lines were maintained while two lines were rejected due to disease susceptibility, one line was out crossed during previous year and one is just repetition.		
<b>03. TITLE</b>	<b>MAINTENANCE OF FERTILITY RESTORER (R) LINES.</b>		
OBJECTIVE	To maintain the male parent lines for hybrid program.		
RESEARCH WORKER(S)	Mr. Aamir Mumtaz Mr. Muhammad Saeed Mr. Dilbar Hussain		
PROJECT DURATION	Kharif 2016.		
LOCATION	Maize & Millets Research Institute, Yusafwala-Sahiwal.		
TREATMENTS	Twenty six fertility restorer (R) lines.		
METHODOLOGY	Lay out	=	Strip
	Reps	=	Non replicated
	Plot size	=	5m x 3m
	Plant to plant	=	20 cm
	Row to row	=	75 cm
	Fertilizer	=	170-84-62 NPK (Kg/ha)
	Date of sowing	=	25 <sup>th</sup> June – 15 <sup>th</sup> July
	Five true to type plants will be selected from each line. The panicles of selected plants will be covered with craft paper bags before flowering for their maintenance. The data on different traits like days to 50% anthesis, plant height, brix percentage, leaf color, leaf attitude, tillering, lodging, panicle attitude etc. will be recorded.		
PREVIOUS YEAR'S RESULTS:	Twenty six restorer lines were planted and maintained.		
<b>04. TITLE</b>	<b>DEVELOPMENT OF DUAL PURPOSE SWEET SORGHUM VARIETY.</b>		
OBJECTIVE	To develop sweet sorghum variety with high grain yield and sugar		

	content.	
RESEARCH WORKER (S)	Mr. Aamir Mumtaz Mr. Muhammad Saeed Mr. Dilbar Hussain Dr. Muhammad Arshad	
PROJECT DURATION	Kharif 2016.	
LOCATION	Maize & Millets Research Institute, Yusafwala-Sahiwal.	
TREATMENTS	08 F <sub>2</sub> populations. 06 F <sub>4</sub> populations	
METHODOLOGY	Replications	03
	Plot size	5m x 31.5m
	Plant to Plant	20 cm
	Row to Row	75 cm
	Fertilizer (Kg/ha)	79-57-62 NPK.
	Date of sowing	25 <sup>th</sup> June – 15 <sup>th</sup> July
	Eight F <sub>2</sub> and Six F <sub>4</sub> populations will be planted according to standard practice. Desirable segregates will be selected, keeping in view; brix %age, medium tall in height, semi drooping green leaves, panicle size, panicle shape and their panicles will be covered with craft paper bags to ensure selfing. At maturity, plants exhibiting cream color grains will be finally selected for next generation studies.	
PREVIOUS YEAR'S RESULTS:	Eight F <sub>3</sub> families were planted and phenotypically superior plants from four families were selected and harvested for raising their next filial generation.	
<b>05. TITLE</b>	<b>MUTATION BREEDING IN GRAIN SORGHUM</b>	
OBJECTIVE	To develop sorghum variety by creating variation through irradiation.	
RESEARCH WORKER(S)	Mr. Aamer Mumtaz Mr. Muhammad Saeed Mr. Dilbar Hussain	
PROJECT DURATION	Kharif-2016	
LOCATION	Maize & Millets Research Institute, Yusafwala-Sahiwal.	
TREATMENTS	12 Entries	
METHODOLOGY	Design	= Strip
	Reps	= Non-Replicated
	Plot size	= 5m x 3m
	Plant to plant	= 20 cm
	Row to row	= 75 cm
	Fertilizer	= 170-84-62 NPK (Kg/ha)
	Date of sowing	= Month of July
	Mutated sorghum lines will be planted along with their original non	

	mutated lines and select the mutated ones for raising their next filial generation.
Previous Results	New Experiment

## HYBRIDIZATION

<b>06. TITLE:</b>	<b>CONSTITUTION OF SORGHUM HYBRIDS.</b>	
OBJECTIVE:	To develop high yielding local hybrids as compare to multinational hybrids to curtail seed import.	
RESEARCH WORKERS:	Mr. Aamir Mumtaz Mr. Muhammad Saeed Mr. Dilbar Hussain	
PROJECT DURATION:	Kharif-2016.	
LOCATION:	Maize and Millets Research Institute, Yusafwala, Sahiwal.	
TREATMENTS:	CMS lines = 14 Restorer lines = 02	
METHODOLOGY	Layout	= Strip
	Replications	= Non-replicated
	Plot size	= 5 m x 1.5 m
	Plant to plant	= 20 cm
	Row to row	= 75 cm
	Fertilizer	= 170:84:62 NPK, (Kg/ha.)
	Date of sowing	= 25 <sup>th</sup> June – 15 <sup>th</sup> July
	The CMS lines will be sown side by side with restorer line in ratio 1:2 (male: female) in isolations. At maturity, the panicles of each entry will be harvested separately. The performance of harvested hybrids will be tested in the next season.	
PREVIOUS YEARS RESULTS:	Fifteen “CMS x R” crosses were constituted, eight in isolation and seven by hand pollination.	

## EVALUATION

<b>07. TITLE</b>	<b>VARIETAL YIELD TRIAL.</b>	
OBJECTIVE	To evaluate the promising varieties/strains for grain yield.	
RESEARCH WORKERS	Yusafwala	Mr. Aamir Mumtaz Mr. Muhammad Saeed Mr. Dilbar Hussain
	D.G.Khan	Mr. Ihsan Ullah Mrs.Zaib-un-Nisa
PROJECT DURATION	Continuous	

LOCATION	1. Maize & Millets Research Institute, Yusafwala-Sahiwal. 2. Sorghum Research Sub-station, D. G. Khan.						
TREATMENTS	Eight varieties i.e. YSS-19, YSS-31, YSS-18, YSS-10, YSS-25 YSS-23, and standards YSS-98 & YS-16.						
METHODOLOGY	Design	=	RCB				
	Reps	=	4				
	Plot size	=	5m x 3m				
	Plant to plant	=	20 cm				
	Row to row	=	75 cm				
	Fertilizer	=	170-84-62 NPK (Kg/ha)				
	Date of sowing	=	Month of July				
	Data regarding stand count, disease score, days to 50% anthesis, plant height, lodging %age, head weight, grain & stalk yield will be recorded.						
PREVIOUS YEAR'S RESULTS:	Varietal trial comprised of eight entries including two checks was conducted during kharif 2015.						
	<b>R. No.</b>	<b>Entry</b>	<b>Plant Stand</b>	<b>Grain Yield (Kg/ha)</b>	<b>Stalk Yield (Kg/ha)</b>	<b>Days to 50% Anth.</b>	<b>Plant ht. (cm.)</b>
	1	YSS-10	36	3822 a	28889	80	239
	2	YSS-18	38	3816 a	27556	78	239
	3	YSS-98 (C)	36	2918 b	25778	79	191
	4	YS-16 (C)	38	2647 bc	24000	80	227
	5	YSS-25	35	2474 bc	25333	82	218
	6	YSS-23	35	2167 c	18666	79	124
		Range	35-38	2167-3822	18666-28889	77-82	124-239
		C.V.%	5.71	11.76	15.69	3.73	9.46
		LSD at 5%	NS	584	NS	NS	37.74
	<b>Sorghum Research Sub-station, D. G. Khan.</b>						
	<b>R. No.</b>	<b>Entry</b>	<b>Plant Stand</b>	<b>Grain Yield (Kg/ha)</b>	<b>Stalk Yield (Kg/ha)</b>	<b>Days to 50% Anth.</b>	<b>Plant ht. (cm.)</b>
	1	YS-16 (C)	39	3733 a	38889	78	273
	2	YSS-18	39	3555 ab	28444	75	245
	3	YSS-25	38	3467 abc	22000	79	220
	4	YSS-19	39	3289 bc	22711	71	154
	7	YSS-98 (C)	40	3111 c	20000	71	196
		Range	38-40	2489-3733	20000-38889	71-79	154-378
		CV%	2.49	6.30	2.72	1.01	1.46
		LSD at 5%	NS	167.14	649	0.62	2.83

**08. TITLE**
**SORGHUM HYBRID YIELD TRIAL.**

OBJECTIVE	Selection of high yielding local hybrids to replace multinational hybrids.						
RESEARCH WORKER (S)	Yusafwala	Mr. Aamir Mumtaz Mr. Muhammad Saeed Mr. Dilbar Hussain Dr. Muhammad Arshad					
	D. G. Khan	Mrs. Zaib-un-Nisa Mr. Ihsanullah					
PROJECT DURATION	Kharif-2016.						
LOCATION	1. Maize & Millets Research Institute, Yusafwala-Sahiwal. 2. Sorghum Research Sub-station, D. G. Khan.						
TREATMENTS	Entries = 10 (9 hybrids & 1 check).						
METHODOLOGY	Design	=	RCB				
	Reps	=	3				
	Plot size	=	5m x 1.5m				
	Plant to plant	=	15 cm				
	Row to row	=	75 cm				
	Fertilizer	=	170-84-62 NPK (Kg/ha)				
	Date of sowing	=	25 <sup>th</sup> June – 15 <sup>th</sup> July				
	Data regarding no. of plants per plot, days to 50% anthesis, disease score, plant height, head length, head weight and grain yield will be recorded.						
PREVIOUS YEAR'S RESULTS:	Hybrid trial comprised of ten entries including one check was conducted during kharif 2015.						
	<b>MMRI, Yusafwala.</b>						
	<b>R. No.</b>	<b>Entry</b>	<b>Plant Stand</b>	<b>Grain Yield (Kg/ha)</b>	<b>Stalk Yield (Kg/ha)</b>	<b>Days to 50% Anth.</b>	<b>Plant ht. (cm.)</b>
	1	Lasani (C)	40	4140 a	31555	81	201
	2	YSS-98 (C)	34	2911 b	24444	80	192
	3	YSH-75	33	2776 bc	27778	83	216
	4	YSH-95	35	2667 bc	28889	83	227
	5	YSH-118	36	2609 bc	29778	81	237
	6	YSH-120	34	2589 bc	28000	83	221
	7	YSH-61	35	1184 d	16444	85	175
		Range	33-40	1184-4140	16444-31555	80-85	175-250
		C.V.%	7.30	12.28	13.78	2.03	6.73
		LSD at 5%	NS	528	6113	NS	24.64
	<b>Sorghum Research Sub-station, D. G. Khan.</b>						
	<b>R. No.</b>	<b>Entry</b>	<b>Plant Stand</b>	<b>Grain Yield (Kg/ha)</b>	<b>Stalk Yield (kg/ha)</b>	<b>Days to 50% Anth.</b>	<b>Plant ht. (cm)</b>

	1	Lasani (C)	38	4800 a	29222	74.00	195
	2	YSH-95	37	4267 b	43667	79.00	225
	3	YSH-120	36	4222 b	45889	76.00	210
	4	YS-15 (C)	38	3733 c	36667	77.00	270
	5	YSS-98 (C)	37	3111 e	18667	73.67	195
		Range	25-38	2311-4800	14000-45889	73.33-80.00	175-270
		CV%	1.15	5.69	1.07	0.95	1.65
		LSD at 5%	NS	159	283	0.594	2.869

<b>09. TITLE</b>	<b>NATIONAL UNIFORM/ADAPTABILITY SORGHUM YIELD TRIAL.</b>	
<b>OBJECTIVE</b>	To test the adaptability and performance of the national varieties/material under local conditions.	
<b>RESEARCH WORKERS</b>	Yusafwala	Mr. Aamir Mumtaz Mr. Muhammad Saeed Mr. Dilbar Hussain Dr. Muhammad Arshad
	Rawalpindi	Miss. Saeeda Khanum Mr. Irshad Ul Haq
	D.G.Khan	Mrs.Zaib-un-Nisa Mr. Ihsanullah
<b>PROJECT DURATION</b>	Kharif-2016.	
<b>LOCATION(S)</b>	1. Maize & Millets Research Institute, Yusafwala-Sahiwal. 2. Millets Research Station, Rawalpindi. 3. Sorghum Research Sub-station, D. G. Khan.	
<b>TREATMENTS</b>	As provided by the National Coordinator (Cereal System) PARC, Islamabad.	
<b>METHODOLOGY</b>	As per instructions of National Coordinator (Cereal System) PARC, Islamabad.	
<b>PREVIOUS YEAR'S RESULTS:</b>	Last year no trial was received from NARC, Islamabad.	

<b>10. TITLE</b>	<b>SEED MULTIPLICATION.</b>
<b>OBJECTIVE</b>	To produce breeder, pre-basic & basic seed of approved varieties.
<b>RESEARCH WORKER(S)</b>	Mr. Aamir Mumtaz Mr. Muhammad Saeed Mr. Dilbar Hussain
<b>PROJECT DURATION</b>	Continuous
<b>LOCATION</b>	Maize & Millets Research Institute, Yusafwala-Sahiwal.

TREATMENTS	Varieties 1= YS-16 2= YSS-98		
METHODOLOGY	Lay out	=	Blocks
	Reps	=	Non replicated
	Plot size	=	Breeder = 10 m x 31.5 m Pre-basic = 20 m x 31.5 m Basic = (1- 4 Acres)
	Plant to plant	=	20 cm
	Row to row	=	75 cm
	Fertilizer	=	170-84-62 NPK (Kg/ha)
	Date of sowing	=	25 <sup>th</sup> June – 15 <sup>th</sup> July
PREVIOUS YEAR'S RESULTS:	The following quantity of seed was produced.		
	<b>Variety</b>	<b>Quantity (Kg)</b>	
		<b>Breeder</b>	<b>Pre-basic</b>
	YS-16	12	-
	YSS-98	08	-

## PEARL MILLET:

<b>01. TITLE:</b>	<b>MAINTANACE OF GERMPLASM</b>		
OBJECTIVE:	To maintain the germplasm for breeding program.		
RESEARCH WORKERS:	Mr. Abdul Razaq Muhammad Hussain Chaudhary Dr. Muhammad Arshad		
PROJECT DURATION:	Kharif-2016		
LOCATION:	Maize and Millets Research Institute, Yusafwala, Sahiwal.		
TREATMENTS:	17 lines		
METHODOLOGY:	Layout	=	Strips
	Reps	=	Non replicated
	Plot size	=	5m x 1.5m
	Plant to plant distance	=	25 cm
	Row to row distance	=	75 cm
	Fertilizer	=	114:75:62 NPK (kg.ha <sup>-1</sup> )
	Date of sowing	=	15 <sup>th</sup> June to 5 <sup>th</sup> July
	All the lines will be maintained through self-pollination to assure homozygosity. Data regarding following traits will be collected in each line for two years along with display of pictorial features to prepare germplasm directory. Each year data of freshly included lines will also be recorded.		
	<b>Seed/Seedling.</b>		
	1. Seedling growth habit	2. Coleoptile's Anthcyanin	
	3. Seedling length (cm)	4. First leaf color	
	5. First leaf tip		

	<b>Leaf</b>		
	6. No. of Leaf per plant		7. Leaf size (length / width)
	8. Leaf attitude (drooping / semi-drooping / erect)		9. Mid rib color
	<b>Stem</b>		
	10. Stem length		11. Stem type (Juicy/dry)
	12. Stem thickness		13. Lodging
	14. Internode length		
	<b>Reproductive Traits</b>		
	15. Days to panicle emergence		16. Peduncle length
	17. Panicle shape		18. Panicle attitude
	19. Rachis length/width		20. Stigma color
	21. Anther fertility		
	<b>Seed</b>		
	22. Seed covering		23. Seed size
	24. Seed shape (Narrow elliptic, elliptic and spherical)		25. 100 grain weight (gm)
	26. Seed weight/panicle (gm)		
	<b>Disease</b>		
	27. Red leaf spot		28. Stalk rot % age
	29. Any other		
REVIOUS YEAR'S RESULTS:	Seventeen lines were sown and maintained by hand pollination.		
<b>02. TITLE:</b>	<b>MAINTANACE OF CYTO PLASMIC MALE STERILE LINES</b>		
OBJECTIVE:	To maintain and increase seed of cytoplasmic male sterile lines along with their counter part B lines for constitution of pearl millet hybrids.		
RESEARCH WORKERS:	Mr. Abdul Razaq Muhammad Hussain Chaudhary		
PROJECT DURATION:	Kharif-2016		
LOCATION:	Maize and Millets Research Institute, Yusafwala, Sahiwal.		
TREATMENTS:	19 lines		
METHODOLOGY:	Layout	=	Strips
	Reps	=	Non replicated
	Plot size	=	5m x 1.5m for both A & B lines
	Plant to plant distance	=	25 cm
	Row to row distance	=	75 cm
	Fertilizer	=	114:75:62 NPK (kg.ha <sup>-1</sup> )
	Date of sowing	=	15 <sup>th</sup> June to 5 <sup>th</sup> July
	The CMS (A) lines will be planted side by side along with their counterpart male fertile (B) line. The heads of CMS and their		

	counterpart 'B' lines will be covered with butter paper bags before the emergence of the stigmas. Five heads of each line will be maintained by their counterpart 'B' lines. Data will be recorded for seedling emergence %age, number of leaves per main tiller, leaf size, plant height, stem thickness, days to 50% anthesis, disease score, number of tillers per plant, panicle length, panicle thickness, panicle weight, grain and stalk weight per plant.		
PREVIOUS YEAR'S RESULTS:	Nineteen lines were sown and maintained by hand pollination.		
<b>03. TITLE:</b>	<b>MAINTANACE OF FERTILITY RESTORER 'R' LINES</b>		
OBJECTIVE:	To maintain and increase seed of fertility restorer lines for constitution of pearl millet hybrids.		
RESEARCH WORKERS:	Mr. Abdul Razzaq Muhammad Hussain Chaudhary		
PROJECT DURATION:	Kharif-2016		
LOCATION:	Maize and Millets Research Institute, Yusafwala, Sahiwal.		
TREATMENTS:	31 lines		
METHODOLOGY:	Layout	=	Strips
	Reps	=	Non replicated
	Plot size	=	5m x 1.5m
	Plant to plant distance	=	25 cm
	Row to row distance	=	75 cm
	Fertilizer	=	114:75:62 NPK (kg.ha <sup>-1</sup> )
	Date of sowing	=	15 <sup>th</sup> June to 5 <sup>th</sup> July
	All the lines will be maintained through self-pollination to assure homozygosity. Five true to type plants will be selected and 1-2 heads will covered be covered from each selected plant with butter paper bags before the emergence of the stigmas. Data will be recorded for seedling emergence %age, number of leaves per main tiller, leaf size, leaf angle, plant height, stem thickness, days to 50% anthesis, disease score, lodging %age, number of tillers per plant, panicle length, panicle thickness, panicle weight, grain and stalk weight per plant.		
PREVIOUS YEAR'S RESULTS:	Thirty one lines were sown and maintained by hand pollination.		
<b>04. TITLE:</b>	<b>DERIVATION OF FERTILITY RESTORER 'R' LINES</b>		
OBJECTIVE:	To derive new fertility restorer lines for hybrid programme.		
RESEARCH WORKERS:	Mr. Abdul Razaq Muhammad Hussain Chaudhary Dr. Muhammad Arshad		
PROJECT DURATION:	Kharif-2016		

LOCATION:	Maize and Millets Research Institute, Yusafwala, Sahiwal.		
TREATMENTS:	S <sub>10</sub> families = 5 S <sub>4</sub> families = 5 S <sub>3</sub> families = 8		
METHODOLOGY:	Layout	=	Strips
	Reps	=	Non replicated
	Plot size	=	5m x 1.5m
	Plant to plant distance	=	25 cm
	Row to row distance	=	75 cm
	Fertilizer	=	114:75:62 NPK (kg.ha <sup>-1</sup> )
	Date of sowing	=	15 <sup>th</sup> June to 5 <sup>th</sup> July
	Three to five best plants will be selected from each family. To self the selected plants one - two heads will be covered with butter paper bags before the emergence of the stigmas and heads of each plant/family will be harvested separately.		
PREVIOUS YEAR'S RESULTS:	Eight S <sub>2</sub> , five S <sub>3</sub> and five S <sub>9</sub> families were sown. Five plants were selected from each family on the basis of phenotypic performance and self-pollinated. Selfed heads of each line were harvested, sun dried and threshed separately.		

<b>05. TITLE</b>	<b>CROSSING BLOCK OF PEARL MILLET ( Rawalpindi)</b>		
OBJECTIVES	i. To maintain selected pearl millet germplasm lines through hand pollination. ii. Crossing of Pearl millet lines for development of dual purpose varieties.		
RESEARCH WORKER (S)	Mr. Muhammad Siddique Miss Saeeda Khanum & Dr. Muhammad Irshad-ul-Haq		
PROJECT DURATION	Kharif-2016		
LOCATION	Millets Research Station, Rawalpindi.		
TREATMENTS	45 lines.		
METHODOLOGY	Layout	Strips	
	Replications	Non replicated	
	Plot size	5m x 1.5m	
	Plant to Plant	20 cm	
	Row to Row	75 cm	
	Fertilizer (Kg/ha)	79:57:62 NPK.	
	Date of sowing	End of June / Ist week of July.	
	All the lines will be maintained by hand pollination and possible crosses will be constituted.		

PREVIOUS YEAR'S RESULTS :	<ul style="list-style-type: none"> <li>i. All lines were maintained through bulk pollination method</li> <li>ii. Twenty fresh crosses were attempted and seed was harvested and retained to raise F<sub>1</sub> population during kharif 2016.</li> </ul>
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<b>06. TITLE</b>	<b>DEVELOPMENT OF DUAL PURPOSE PEARL MILLET VARIETY.</b>		
OBJECTIVE	To develop high yielding dual purpose variety for rain fed condition.		
RESEARCH WORKER (S)	Miss Saeeda Khanum, Mr. Muhammad Siddique & Dr. Muhammad Irshad-ul-Haq		
PROJECT DURATION	Kharif-2016		
LOCATION	Millets Research Station, Rawalpindi		
TREATMENTS	20 F <sub>1</sub> crosses, 20 F <sub>2</sub> , 20 F <sub>3</sub> , 16 F <sub>4</sub> and 15 F <sub>5</sub> Populations		
METHODOLOGY	Layout	=	Strips
	Replications	=	Non replicated
	Plot size	=	5m x 1.5 m
	Plant to Plant	=	25 cm
	Row to Row	=	75 cm
	Fertilizer (Kg/ha)	=	79:57:62 NPK.
	Date of sowing	=	End of June / I <sup>st</sup> week of July.
	F <sub>2</sub> population will be developed from F <sub>1</sub> crosses through selfing. From F <sub>2</sub> , F <sub>3</sub> and F <sub>4</sub> Populations individual plants will be selected on phenotypic basis for the parameters like vigorous growth, head compactness, uniformity, stalk and grain yield. Uniform lines having desirable characters like mentioned above will be selected from F <sub>3</sub> , F <sub>4</sub> and F <sub>5</sub> populations during kharif 2016 for further evaluation.		
PREVIOUS YEAR'S RESULTS :	<ul style="list-style-type: none"> <li>i. Twenty fresh crosses were attempted during kharif 2015.</li> <li>ii. Twenty F<sub>1</sub> crosses were planted during kharif 2015 and maintained through selfing.</li> <li>iii. Twenty single plants from F<sub>2</sub> populations were selected to develop F<sub>3</sub> population.</li> <li>iv. Sixteen and fifteen superior single plants from F<sub>3</sub> and F<sub>4</sub> populations were selected respectively.</li> <li>v. Eight superior lines were selected from F<sub>3</sub> and F<sub>4</sub> populations for evaluation in the micro yield trials during kharif 2016.</li> </ul>		

<b>07. TITLE:</b>	<b>CONSTITUTION OF PEARL MILLET HYBRIDS.</b>		
OBJECTIVE:	To estimate the general combining ability of the cytoplasmic male sterile lines.		
RESEARCH WORKERS:	Mr. Abdul Razaq Muhammad Hussain Chaudhary		
PROJECT DURATION:	Kharif-2016		

LOCATION:	Maize and Millets Research Institute, Yusufwala, Sahiwal.					
TREATMENTS:	CMS lines = 10 Restorer lines = 02					
METHODOLOGY:	Layout	=	Strips			
	Reps	=	Non replicated			
	Plot size	=	5m x 1.5m			
	Plant to plant distance	=	25 cm			
	Row to row distance	=	75 cm			
	Fertilizer	=	114:75:62 NPK (kg.ha <sup>-1</sup> )			
	Date of sowing	=	15 <sup>th</sup> June to 5 <sup>th</sup> July			
	The hybrids will be constituted in isolations. Off type plants will be rouged out before flowering.					
PREVIOUS YEAR'S RESULTS:	16 crosses were constituted in isolation.					
<b>08. TITLE</b>	<b>PEARL MILLET MICRO YIELD TRIAL -I</b>					
OBJECTIVE	To evaluate the performance of pearl millet genotypes for grain and dry stalk yield under barani conditions.					
RESEARCH WORKER (S)	Mr. Muhammad Siddique Miss. Saeeda Khanum & Dr. Muhammad Irshad-ul-Haq					
PROJECT DURATION	Kharif-2016					
LOCATION	Millets Research Station, Rawalpindi.					
TREATMENTS	08 Entries = 07 lines developed at MRS. Rwp. + 01 check variety.					
METHODOLOGY	Design	R.C.B.				
	Plot size	5 m x 2.4 m				
	Plant to Plant	20 cm				
	Row to Row	60 cm				
	Fertilizer (Kg/ha)	N = 79, P= 57, K=62.				
	Date of sowing	End of June / Ist week of July.				
PREVIOUS YEAR'S RESULTS :	This trial was comprised of eight entries.					
	<b>S. No.</b>	<b>Varieties</b>	<b>Plant Stand</b>	<b>Grain Yield (kg/ha)</b>	<b>Days to 50% Anthesis</b>	<b>Plant ht. (cm)</b>
	1	13RBS-11	85	2970 a	49	229
	2	14RBS05	88	2595 ab	54	242
	3	14RBS03	85	2491 abc	50	245
	4	14RBS01	86	2355 bcd	49	248
	5	YBS-98 (check)	80	2016 cd	52	226
		Range	80-90	1460-2970	49-54	226-281
		CV%	3.52	9.29	1.87	2.64
		LSD at 5%	7.34	487.97	2.33	15.92

<b>09. TITLE</b>	<b>PEARL MILLET MICRO YIELD TRIAL -II</b>																					
<b>OBJECTIVES</b>	To evaluate the performance of Pearl millet genotypes for grain and dry stalk yield under barani conditions.																					
<b>RESEARCH WORKER (S)</b>	Mr. Muhammad Siddique , Miss Saeeda Khanum & Dr. Muhammad Irshad-ul-Haq																					
<b>PROJECT DURATION</b>	Kharif-2016																					
<b>LOCATION</b>	Millets Research Station, Rawalpindi.																					
<b>TREATMENTS</b>	09 Entries (08 lines developed at MRS. Rwp + 01 check variety)																					
<b>METHODOLOGY</b>	<table border="1"> <tr> <td>Layout</td> <td>RCBD</td> </tr> <tr> <td>Plot size</td> <td>5m x 3m</td> </tr> <tr> <td>Plant to Plant</td> <td>20 cm</td> </tr> <tr> <td>Row to Row</td> <td>75cm</td> </tr> <tr> <td>Fertilizer (Kg/ha)</td> <td>N = 79, P= 57, K=62.</td> </tr> <tr> <td>Date of sowing</td> <td>End of June / 1st week of July.</td> </tr> </table>	Layout	RCBD	Plot size	5m x 3m	Plant to Plant	20 cm	Row to Row	75cm	Fertilizer (Kg/ha)	N = 79, P= 57, K=62.	Date of sowing	End of June / 1st week of July.									
Layout	RCBD																					
Plot size	5m x 3m																					
Plant to Plant	20 cm																					
Row to Row	75cm																					
Fertilizer (Kg/ha)	N = 79, P= 57, K=62.																					
Date of sowing	End of June / 1st week of July.																					
<b>PREVIOUS YEAR'S RESULTS :</b>	New experiment.																					
<b>10. TITLE:</b>	<b>PEARL MILLET VARIETAL YIELD TRIAL.</b>																					
<b>OBJECTIVE:</b>	To evaluate the performance of promising material.																					
<b>RESEARCH WORKERS:</b>	<table border="1"> <tr> <td>Yousafwala</td> <td>Mr. Abdul Razaq Muhammad Hussain Chaudhary</td> </tr> <tr> <td>Rawalpindi</td> <td>Miss Saeeda Khanum Dr. Muhammad Irshad-ul-Haq</td> </tr> <tr> <td>D.G.Khan</td> <td>Ihsanullah Mrs. Zaib Un Nisa</td> </tr> </table>	Yousafwala	Mr. Abdul Razaq Muhammad Hussain Chaudhary	Rawalpindi	Miss Saeeda Khanum Dr. Muhammad Irshad-ul-Haq	D.G.Khan	Ihsanullah Mrs. Zaib Un Nisa															
Yousafwala	Mr. Abdul Razaq Muhammad Hussain Chaudhary																					
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D.G.Khan	Ihsanullah Mrs. Zaib Un Nisa																					
<b>PROJECT DURATION:</b>	Kharif-2016																					
<b>LOCATION:</b>	1. Maize and Millets Research Institute, Yusafwala, Sahiwal. 2. Millets Research Station, Rawalpindi. 3. Sorghum Research Sub Station, D. G. Khan.																					
<b>TREATMENTS:</b>	10 varieties including check.																					
<b>METHODOLOGY</b>	<table border="1"> <tr> <td>Layout</td> <td>=</td> <td>RCBD</td> </tr> <tr> <td>Reps</td> <td>=</td> <td>3</td> </tr> <tr> <td>Plot size</td> <td>=</td> <td>5m x 3m</td> </tr> <tr> <td>Plant to plant distance</td> <td>=</td> <td>20 cm</td> </tr> <tr> <td>Row to row distance</td> <td>=</td> <td>75 cm</td> </tr> <tr> <td>Fertilizer</td> <td>=</td> <td>114:75:62 NPK (kg.ha<sup>-1</sup>)</td> </tr> <tr> <td>Date of sowing</td> <td>=</td> <td>15<sup>th</sup> June to 5<sup>th</sup> July</td> </tr> </table>	Layout	=	RCBD	Reps	=	3	Plot size	=	5m x 3m	Plant to plant distance	=	20 cm	Row to row distance	=	75 cm	Fertilizer	=	114:75:62 NPK (kg.ha <sup>-1</sup> )	Date of sowing	=	15 <sup>th</sup> June to 5 <sup>th</sup> July
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Date of sowing	=	15 <sup>th</sup> June to 5 <sup>th</sup> July																				

	Data will be recorded for seedling emergence, number of plants per plot, plant height, stem girth, number of tillers per plant, number of leaves per main tiller, days to 50% anthesis, disease score, lodging %age, head length, head girth, heads harvested per plot, head weight per plot, stalk yield and grain yield.						
PREVIOUS YEAR'S RESULTS:	<b>Yusafwala:</b> This trial was comprised of ten entries.						
	<b>S. No.</b>	<b>Varieties</b>	<b>Plant Stand</b>	<b>Grain Yield (kg/ha)</b>	<b>Stalk yield (kg/ha)</b>	<b>Days to 50% anthesis</b>	<b>Plant ht. (cm)</b>
	1	YBS-98	29	2747	35556	62	270
	2	YBS-89	32	2102	39111	62	290
	3	YBS-94	28	2082	35556	62	265
	4	18 BY(C)	29	2053	42222	65	337
	5	YBS-93	28	1938	36889	65	315
	10	YBR-5	31	1220	28444	60	283
		Range	28-34	1220-2747	28444-45333	60-65	263-340
		CV%	9.13	18.98	11.29	2.29	6.32
		LSD at 5%	NS	293.4	3358	1.17	10.64
	<b>Rawalpindi</b>						
	<b>R. No.</b>	<b>Varieties</b>	<b>Plant Stand</b>	<b>Grain yield (Kg/ha)</b>	<b>Days to 50% anthesis</b>	<b>Plant ht. (cm)</b>	
	1	YBS-98	92	2261a	52	226	
	2	YBS-95	91	1963 b	53	247	
	3	YBS-92	85	1550 c	50	244	
	4	YBS-94	92	1530 c	54	253	
	5	YBR-5	87	1358 cd	48	254	
	6	YBS-70	92	1263 d	55	282	
	7	18-BY (check)	89	1262 d	56	275	
		Range	85-92	1148-2261	48-56	226-282	
		CV %	2.18	7.52	1.63	1.23	
		LSD at 5%	4.62	260.86	2.03	7.34	
	<b>D.G.Khan</b>						
	<b>R. No.</b>	<b>Varieties</b>	<b>Plant Stand</b>	<b>Grain Yield (kg/ha)</b>	<b>Stalk yield (kg/ha)</b>	<b>Days to 50% anthesis</b>	<b>Plant ht. (cm)</b>
	1	YBS-94	43	1625 a	11667	62	263
	2	YBS-89	41	1602 a	12778	62	284
	3	YBS-98	42	1402 b	8722	62	258
	4	YBS-95	42	1335 b	10667	62	275
	5	YBS-93	41	1269 b	10944	65	286
	8	18-BY (C)	43	1046 c	13667	70	331
		Range	40-43	913-1625	8167-13667	60-70	254-331
		CV%	2.14	7.38	4.24	2.15	1.10
		LSD at 5%	NS	76	386	1.114	2.489

11. TITLE:

NATIONAL UNIFORM PEARL MILLET HYBRID YIELD TRIAL.

OBJECTIVE:	To test the adaptability and performance of the national varieties /material under local conditions.	
RESEARCH WORKERS	Yusafwala	Mr. Abdul Razaq Muhammad Hussain Chaudhary
	Rawalpindi	Miss Saeeda Khanum Dr. Muhammad Irshad-ul-Haq
	D.G. Khan	Muhammad Ihsanullah Zaib Un Nisa
PROJECT DURATION:	Kharif-2016	
LOCATION:	1. Maize and Millets Research Institute, Yusafwala, Sahiwal. 2. Millet Research Station, Rawalpindi 3. Sorghum Research Sub Station, D.G. Khan	
TREATMENTS:	Treatments will be provided by National Coordinator (Cereal System) PARC, Islamabad	
METHODOLOGY	The trial will be conducted according to the instructions received with the seed.	
PREVIOUS YEARS RESULTS:	This trial comprised of 06 entries was conducted during kharif 2015. The results are under compilation at NARC, Islamabad.	

<b>12. TITLE:</b>	<b>SEED MULTIPLICATION</b>		
OBJECTIVE:	To increase the seed of promising varieties /lines.		
RESEARCH WORKERS:	Mr. Abdul Razaq Muhammad Hussain Chaudhary Mr. Tanweer Mukhtar Mr. Asrar Mahboob		
PROJECT DURATION:	Kharif-2016		
LOCATION:	Maize and Millets Research Institute, Yusafwala, Sahiwal.		
TREATMENTS:	Varieties/lines = 06		
METHODOLOGY:	Layout	=	strip
	Reps	=	Non replicated
	Plot size	=	Breeder = 10m x 31.5m Pre-basic = 20m x 31.5m Basic = (1/2 hectare)
	Plant to plant distance	=	20 cm
	Row to row distance	=	75 cm
	Fertilizer	=	114:75:62 NPK (kg.ha <sup>-1</sup> )
	Date of sowing	=	15 <sup>th</sup> June to 5 <sup>th</sup> July
	Seed of all the lines/varieties will be produced in isolations. Off type plants will be rouged out before flowering.		

PREVIOUS YEAR'S RESULTS:	<b>S. No.</b>	<b>Varieties</b>	<b>Quantity(kg)</b>
	1	18-BY (Basic)	200
	2	YBS-98 (Basic)	620
	3	YBS-89	59
	4	YBS-92	17
	5	YBS-93	27
	6	YBS-94	20
	7	YBS-95	18

<b>13. TITLE:</b>	<b>ON-FARM PEARL MILLET YIELD TRIAL</b>	
OBJECTIVE:	Evaluation of promising varieties at farmer field.	
RESEARCH WORKER (S):	Rawalpindi	Dr. Muhammad Irshad-ul-Haq Mr. Muhammad Siddique
	D. G Khan	Mr. Muhammad Ihsanullah Mrs. Zaib Un Nisa
PROJECT DURATION:	Kharif-2016	
LOCATIONS:	Rawalpindi Division (four locations) Dera Ghazi Khan Division (five locations)	
TREATMENTS:	3 = YBS-89, YBS-95 and YBS-98 (Check)	
METHODOLOGY:	Layout	Strips
	Reps	Non replicated
	Plot size	One Kanal (506 m <sup>2</sup> )
	Plant to Plant	20 cm
	Row to Row	60 cm
	Fertilizer (Kg/ha)	79: 57: 62 NPK
	Date of sowing	End of June / 1 <sup>st</sup> week of July.

PREVIOUS YEAR,S RESULTS:	<b>Rawalpindi Division</b>		
	<b>S. No.</b>	<b>Location</b>	<b>Grain Yield (kg/ha)</b>
			<b>YBS-98</b>
	1	Chakri ,Rawalpindi	1720
	2	Sohawa, Jhelum	1880
	3	Dina, Jhelum	2250
		<b>Average</b>	<b>1950</b>
	<b>Dera Ghazi Khan Division</b>		
	<b>S. No.</b>	<b>Location</b>	<b>Grain Yield (kg/ha)</b>
			<b>YBS-98</b>
	1	Muhammad Rafiq S/O Taaj Muhammad R/O Mauza Mangrotha Tehsil Taunsa, D.G.Khan	1423

	2	Sadiq Hussain S/O Manzoor Hussain R/O Chak Buzdar Tehsil kot Chutta, D.G.khan	1581
	3	Muhammad Afzal R/O Mauza Bakhar Wah, D.G.Khan	1383
	4	Malik Mumtaz R/O Chak Gaamaan Tehsil Kot Chutta, D.G.Khan	1304
		<b>Average</b>	<b>1423</b>

## AGRONOMY

<b>01. TITLE:</b>	<b>DETERMINATION OF OPTIMUM PLANT POPULATION LEVELS FOR MAIZE VARIETY YY-15.</b>		
OBJECTIVE:	To find out the optimum plant population for obtaining maximum grain yield of promising maize variety YY-15.		
RESEARCH WORKER (S):	Mr. Tanweer Mukhtar Mr. Asrar Mahboob Dr. Javed Iqbal Mian Munir Ahmad		
PROJECT DURATION:	Kharif 2016 & Spring 2017		
LOCATION:	Maize & Millets Research Institute, Yusafwala-Sahiwal.		
TREATMENTS:	<b>Variety = YY-15</b>		
	<b>A.</b>	<b>Plant Population/ha</b>	<b>Planting Geometry</b>
	1	106666	R-R = 75cm & P-P =12.5cm
	2	88888	R-R = 75 cm & P-P =15cm
	3	76190	R-R = 75 cm & P-P =17.5cm
	4	66666	R-R = 75 cm & P-P =20 cm
	5	59276	R-R = 75 cm & P-P =22.5 cm
METHODOLOGY:	Design	= RCB	
	Replications.	= 4	
	Plot size	= 5mx 3m	
	Fertilizers	= 300-150-125 NPK (Kg/ha)	
	Date of sowing	= Month of July & January	
	Data regarding plant stand, days to 50% tasseling & silking, plant height, cob height and grain yield will be recorded and analyzed statistically.		
PREVIOUS YEAR'S RESULTS:	New project		

<b>02. TITLE:</b>	<b>DETERMINATION OF OPTIMUM PLANT POPULATION FOR POP AND SWEET CORN</b>		
OBJECTIVE:	To find out the optimum planting geometry for obtaining maximum grain yield of promising pop and sweet corn		
RESEARCH WORKER (S):	Mr. Tanweer Mukhtar Mr. Asrar Mahboob Dr. Javed Iqbal Mian Munir Ahmad		
PROJECT DURATION:	Kharif 2016 & Spring 2017		
LOCATION:	Maize & Millets Research Institute, Yusafwala-Sahiwal.		
TREATMENTS:	<b>Varieties = YPC-14 &amp; YSC-15</b>		
	<b>A.</b>	<b>Plant Population/ha</b>	<b>Planting Geometry</b>
	1	106666	R-R = 75cm & P-P =12.5cm
	2	88888	R-R = 75 cm & P-P =15cm
	3	76190	R-R = 75 cm & P-P =17.5cm
	4	66666	R-R = 75 cm & P-P =20 cm
	5	59276	R-R = 75 cm & P-P =22.5 cm
METHODOLOGY:	Design	= Split	
	Replications.	= 3	
	Plot size	= 5mx 3m	
	Fertilizers	= 300-150-125 NPK (Kg/ha)	
	Date of sowing	= Month of July & January	
	Data regarding plant stand, days to 50% Tasseling & silking, plant height, cob height and grain yield will be recorded and analyzed statistically.		
PREVIOUS YEAR'S RESULTS:	New project		
<b>03. TITLE:</b>	<b>EFFECT OF DIFFERENT PLANTING METHODS ON GRAIN YIELD OF MAIZE VARIETY YW-786</b>		
OBJECTIVE:	To search out the most suitable planting method for obtaining maximum grain yield of maize variety yw-786.		
RESEARCH WORKER (S):	Mr. Tanweer Mukhtar Mr. Asrar Mahboob Dr. Javed Iqbal Mian Munir Ahmad		
PROJECT DURATION:	Kharif-2016 & Spring-2017		
LOCATION:	Maize & Millets Research Institute, Yusafwala-Sahiwal.		
TREATMENTS:	<b>VARIETY = YW-786</b>		
	<b>S. No.</b>	<b>Planting method</b>	<b>Planting Geometry</b>

	1	Ridge Sowing	R-R=75cm & P-P =20cm sowing on one side
	2	Bed Sowing	B-B=90cm & P-P=33.5cm sowing on both side
	3	Bed Sowing	B-B = 105 cm & P-P=28.75 cm sowing on both side
	4	Bed Sowing	B-B = 120 cm & P-P=22.5 cm sowing on both side
METHODOLOGY:	Design		RCB
	Replications.		4
	Plot size		5m x 5.25m
	Fertilizers		300-150-125(NPK, Kg/ha)
	Sowing date		Month of January & July
	Data regarding stand count, days to 50% Tasseling & silking, plant height, cob height and grain yield will be recorded and analyzed statistically.		
PREVIOUS YEAR'S RESULTS:	New project.		

<b>04. TITLE:</b>	<b>EFFECT OF DIFFERENT PLANTING RATIO OF PARENTAL INBRED LINES ON MAIZE HYBRID SEED PRODUCTION</b>		
OBJECTIVE:	To standardize planting ratio of male and female inbred lines for economical seed production of Maize Hybrid YH-1898.		
RESEARCH WORKER (S):	Dr. Javed Iqbal Tanweer Mukhtar Asrar Mahboob Mian Munir Ahmed		
PROJECT DURATION:	Kharif-2016 & Spring-2017		
LOCATION:	Maize & Millets Research Institute, Yusafwala-Sahiwal.		
TREATMENTS:	Treatments	Male lines	Female lines
	1	1	3
	2	1	4
	3	1	5
	4	1	6
	5	1	7
	6	1	8
METHODOLOGY:	Design		= RCB
	Replications.		= 6
	Plot size		= 10 m x 1.5 m
	Fertilizers		= 300-150-125 NPK (Kg/ha)
	Date of sowing		= 10 <sup>th</sup> January - 20 <sup>th</sup> February
	Data regarding yield and yield components will be recorded		

	and analyzed statistically.		
PREVIOUS YEAR'S RESULTS:	<b>Spring 2016:</b>		
	<b>Sr. No.</b>	<b>Treatment Male : Female</b>	<b>Grain Yield (Kg/ha)</b>
	1	1 : 3	3048
	2	1 : 4	3162
	3	1 : 5	3194
	4	1 : 6	2648
	5	1 : 7	2972
	6	1 : 8	2678
		CV %	21.10
		LSD at 5%	NS
<b>05. TITLE:</b>	<b>DETERMINATION OF OPTIMUM PLANT SPACINGS FOR SEED PRODUCTION OF MAIZE HYBRIDS</b>		
OBJECTIVE:	To find out the optimum planting geometry for obtaining maximum seed of maize hybrid YH-1898.		
RESEARCH WORKER (S):	Dr. Javed Iqbal Tanweer Mukhtar Asrar Mahboob Mian Munir Ahmed		
PROJECT DURATION:	Kharif-2016 & Spring-2017		
LOCATION:	Maize & Millets Research Institute, Yusafwala-Sahiwal.		
TREATMENTS:	<b>A.</b>	<b>Parental Lines of YH-1898</b>	
	<b>B.</b>	<b>Planting Geometry</b>	<b>Plant Population / ha.</b>
	1	R-R = 75 cm & P-P = 12.5cm	106666
	2	R-R = 75 cm & P-P = 15cm	88888
	3	R-R = 75 cm & P-P = 17.5cm	76190
	4	R-R = 75 cm & P-P = 20 cm	66666
METHODOLOGY:	Design	= RCB	
	Replications.	= 6	
	Plot size	= 5 m x 1.5 m	
	Fertilizers	= 300-150-125 NPK (Kg/ha)	
	Date of sowing	= 10 <sup>th</sup> January - 20 <sup>th</sup> February	
	Data regarding yield and yield components will be recorded. Spacing will be varied among female lines.		
PREVIOUS YEAR'S RESULTS:	<b>Spring 2016:</b>		
	<b>Sr. No.</b>	<b>Planting Geometry</b>	<b>Grain Yield (Kg/ha)</b>
	<b>1</b>	<b>R-R = 75 cm &amp; P-P = 12.5cm</b>	<b>4115 a</b>
	2	R-R = 75 cm & P-P = 15cm	3553 ab

	3	R-R = 75 cm & P-P = 17.5cm	3028 b
	4	R-R = 75 cm & P-P = 20 cm	3071 b
		CV %	14.01
		LSD at 5%	589

<b>06. TITLE:</b>	<b>EFFECT OF OPTIMUM PLANT POPULATION ON GRAIN YIELD OF NEW PEARL MILLET VARIETY</b>		
OBJECTIVE:	To search out the optimum plant density for obtaining maximum grain yield of pearl millet.		
RESEARCH WORKER (S):	Mr. Tanweer Mukhtar Mr. Asrar Mahboob Dr. Javed Iqbal Mian Munir Ahmad		
PROJECT DURATION:	Kharif-2016		
LOCATION:	Maize & Millets Research Institute, Yusafwala-Sahiwal.		
TREATMENTS:	<b>Variety : YBS-95</b>		
	<b>A.</b>	<b>Plant density/ha.</b>	<b>Planting spacing</b>
	1	66666	R-R = 75cm & P-P =20 cm
	2	59276	R-R = 75cm & P-P =22.5cm
	3	53333	R-R = 75 cm & P-P =25cm
	4	48496	R-R = 75 cm & P-P =27.5cm
	5	44444	R-R = 75 cm & P-P =30cm
METHODOLOGY:	Design	RCB	
	Replications.	4	
	Plot size	5mx 3m	
	Fertilizers	114-75-62 NPK (Kg/ha)	
	Date of sowing	15 <sup>th</sup> June to 5 <sup>th</sup> July	
	Data regarding stand count, No of tillers per plant, days to 50% anthesis, plant height & grain yield will be recorded and analyzed statistically.		
PREVIOUS YEAR'S RESULTS:	<b>Khaif-2015</b>		
	<b>Sr.No.</b>	<b>Plant density/ha.</b>	<b>Grain Yield (Kg/ha)</b>
	1	66666	2767
	2	59276	2933
	3	53333	3100
	4	48496	2800
	5	44444	2600
	CV %		8.47
	LSD at 5%		NS

<b>07. TITLE:</b>	<b>DETERMINATION OF OPTIMUM PLANT POPULATION FOR SORGHUM HYBRID</b>
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OBJECTIVE:	To find out the optimum plant population for obtaining maximum grain yield of promising sorghum hybrid YSH-95.		
RESEARCH WORKER (S):	Mr. Tanweer Mukhtar Mr. Asrar Mahboob Dr. Javed Iqbal Mian Munir Ahmad		
PROJECT DURATION:	Kharif-2016		
LOCATION:	Maize & Millets Research Institute, Yusafwala-Sahiwal.		
TREATMENTS:	<b>Hybrid : YSH-95</b>		
	<b>S. No.</b>	<b>Plant Population/ha</b>	<b>Planting Geometry</b>
	1	106666	R-R = 75cm & P-P =12.5cm
	2	88888	R-R = 75 cm & P-P =15cm
	3	76190	R-R = 75 cm & P-P =17.5cm
	4	66666	R-R = 75 cm & P-P =20 cm
	5	59276	R-R = 75 cm & P-P =22.5 cm
METHODOLOGY:	Design	= RCB	
	Replications.	= 4	
	Plot size	= 5mx 3m	
	Fertilizers	= 170-84-62 NPK (Kg/ha)	
	Date of sowing	= Month of July	
	Data regarding plants per plot, days to 50% anthesis, plant height, and grain yield will be recorded.		
PREVIOUS YEAR'S RESULTS:	<b>Khaif-2015</b>		
	<b>Sr. No.</b>	<b>Plant Population/ha</b>	<b>Grain Yield (Kg/ha)</b>
	1	88888	3757 a
	2	76190	3437 b
	3	66666	3270 b
	4	59276	3257 b
	CV %		4.74
LSD at 5%		260	

## SOIL CHEMISTRY

<b>01. TITLE</b>	<b>EFFECT OF FERTILIZER DOSES ON GRAIN YIELD OF NEW MAIZE OPV.</b>
OBJECTIVE	To find out the optimum dose of NP for maximum grain yield of new Maize OPV.
RESEARCH WORKER(S)	Mr. Muhammad Jamil Mian Muhammad Shafique
PROJECT DURATION	Kharif-2016 & Spring 2017
LOCATION	Maize & Millets Research Institute, Yusafwala-Sahiwal.

TREATMENTS	<b>A. Variety = YY-15</b>			
	<b>B.</b>	<b>Fertilizer levels.</b>		
	<b>Treatments</b>	<b>N</b>	<b>P</b>	<b>K</b>
		<b>(Kg/ha)</b>	<b>(Kg/ha)</b>	<b>(Kg/ha)</b>
	1	0	0	0
	2	150	75	100
	3	200	100	100
	4	250	125	100
METHODOLOGY:	Design	= RCB		
	Replications	= 3		
	Plot size	= 5m x 4.5m		
	Fertilizer	= As per treatment		
	Date of sowing	= Month of January & July.		
	<p>The variety will be kept in main plots and fertilizer doses in sub-plots. All P, K and 1/8 N will be applied at sowing time, 1/5 N at 4 leaf stage, 1/3 N at grand growth stage, while last 1/3 N just before flowering stage. The data regarding stand count, days to 50% silking, plant height, cob height and grain yield will be recorded and analyzed statistically.</p>			
PREVIOUS YEAR'S RESULTS:	New Experiment.			

<b>02. TITLE</b>	<b>IMPACT OF DIFFERENT FERTILIZER LEVELS ON GRAIN YIELD OF MAIZE HYBRID (YH-1898) SEED PRODUCTION.</b>			
OBJECTIVE	To find out the optimum dose of NP for maximum grain yield of Maize Hybrid seed production.			
RESEARCH WORKER(S)	Mr. Muhammad Jamil Dr. Muhammad Arshad			
PROJECT DURATION	Kharif-2016 & Spring 2017			
LOCATION	Maize & Millets Research Institute, Yusafwala-Sahiwal.			
TREATMENTS	<b>A. Y-22 x Y-27 (YH-1898)</b>			
	<b>B.</b>	<b>Fertilizer levels. (Kg/ha)</b>		
	<b>Treatments</b>	<b>N</b>	<b>P</b>	<b>K</b>
	1	0	0	0
	2	225	112	100
	3	250	125	100
	4	275	137	100
	5	300	150	100
	6	325	162	100
METHODOLOGY:	Design	= RCB		
	Replications	= 3		
	Plot size	= 5m x 3.75m		
	Fertilizer	= As per treatment		

	Date of sowing	= 10 <sup>th</sup> January - 20 <sup>th</sup> February				
	Hybrids will be kept in main plots and fertilizer doses in sub-plots. All P, K and 1/8 N will be applied at sowing time, 1/5 N at 4 leaf stage, 1/3 N at grand growth stage, while last 1/3 N just before flowering stage. The data regarding stand count, days to 50% silking, plant height, cob height and grain yield will be recorded and analyzed statistically.					
PREVIOUS YEAR'S RESULTS:	<b>Spring – 2016</b>					
	<b>Sr. No.</b>	<b>Fertilizer levels (Kg/ha)</b>			<b>Maize Hybrid= YH-1898</b>	
		<b>N</b>	<b>P</b>	<b>K</b>	<b>Plant Stand</b>	<b>Grain Yield (Kg/ha)</b>
	1	0	0	0	115	2300 b
	2	225	112	100	116	2600 b
	3	250	125	100	116	2693 b
	4	275	137	100	114	2826 b
	5	300	150	100	116	3384 a
	<b>6</b>	<b>325</b>	<b>162</b>	<b>100</b>	<b>114</b>	<b>3440 a</b>
		CV% age			1.34	10.28
	LSD at 5%			NS	537	

## PLANT PATHOLOGY

<b>01.TITLE</b>	<b>TESTING OF STALK ROT INTENSITY IN MAIZE VARIETIES BY ARTIFICIAL INOCULATION.</b>			
<b>OBJECTIVE</b>	To study the response of maize varieties against stalk rot.			
<b>RESEARCH WORKER(S)</b>	Mr. Muhammad Shakeel Ahmad Dr. Muhammad Arshad			
<b>PROJECT DURATION</b>	Kharif, 2016 & Spring, 2017			
<b>LOCATION</b>	Maize & Millets Research Institute, Yusafwala-Sahiwal.			
<b>TREATMENTS</b>	Maize Varieties = YY-15, YW-786, YPC-14, YSC-15, CZP-132001.			
<b>METHODOLOGY:</b>	Lay Out	RCBD		
	Replications	04		
	Plot Size	5m x 2.25m		
	Plant to plant distance	20cm		
	Row to row distance	75cm		
	Fertilizer	300-150-125 NPK(Kg/ha)		
	Date of sowing	Month of July & January		
		At silking stage, all the varieties will be inoculated with stalk rot pathogen by toothpicks method at second internodes of the plants from soil level. Four weeks after inoculation, disease intensity will be noted with the help of Hooker <sup>s</sup> disease rating scale (1-10)		
PREVIOUS YEAR'S RESULTS	<b>Spring 2016</b>			
	<b>Name of maize hybrids</b>	<b>Infestation</b>	<b>Scale</b>	<b>Reaction</b>

		<b>%age of inoculated internode</b>		
	-	1-25	1	Highly resistant
	FH-988, FH-1012	26-50	2	Resistant
	FH-922, FH-1036, FH-1046	51-75	3	Moderately Resistant
	-	76-100	4	Moderately susceptible
	Among five maize hybrids tested, two maize hybrids showed resistant reaction against the disease and three maize hybrids showed moderately resistant reaction against the disease.			
<b>02.TITLE</b>	<b>TESTING OF SEED DRESSING FUNGICIDES AGAINST SEEDLING BLIGHT.</b>			
<b>OBJECTIVE</b>	To evaluate the performance of different seed dressing fungicides against seedling blight.			
<b>RESEARCH WORKER(S)</b>	Mr. Muhammad Shakeel Ahmad Dr. Muhammad Arshad			
<b>PROJECT DURATION</b>	Spring, 2017			
<b>LOCATION</b>	Maize & Millets Research Institute, Yusafwala-Sahiwal.			
<b>TREATMENTS</b>	<b>Fungicides</b> = 1. Topsin –M 70WP @ 2gm/ Kg seed 2. Protocol 50% WP @ 2gm/ Kg seed. 3. Nanok 25 % SC @ 4 gm / Kg/seed 4. Polyram DF 70 % @ 4gm / Kg seed 5. Control. <b>Hybrid</b> = YH-1898			
<b>METHODOLOGY:</b>	Lay Out	RCBD		
	Replications	04		
	Plot Size	5mx2.25m		
	Plant to plant distance	20cm		
	Row to row distance	75cm		
	Fertilizer	300-150-125 NPK(Kg/ha)		
	Date of sowing	Month of January		
	Seed dressing of the maize Hybrid YH-1898 will be done with Fungicides at above mentioned doses before sowing of the crop. Data regarding seedling mortality % age will be recorded after 10 days of germination.			
<b>PREVIOUS YEAR'S RESULTS:</b>	<b>Kharif 2015</b>			
	<b>Sr. No</b>	<b>Treatments</b>	<b>Plant Stand</b>	<b>Seedling Blight attack %age</b>
	1	Argyl Super 62.5% WS	50	3.01
	2	Hombre 186.25% FS	49	3.10
	3	Topsin –M 70WP	49	3.11
	4	Protocol 50% WP	49	6.12
	5	Control	51	15.34
		CV% age	2.99	17.32
		LSD at 5%	2.26	1.637
				366

<b>Spring 2016</b>				
<b>Sr. No.</b>	<b>Treatments</b>	<b>Plant Stand</b>	<b>Seedling Blight attack %age</b>	<b>Grain yield (Kg/ha)</b>
<b>1</b>	<b>Argyl Super 62.5% WS</b>	<b>90</b>	<b>1.39</b>	<b>15129 a</b>
2	Topsin –M 70WP	89	1.69	13664 b
3	Hombre 186.25% FS	89	1.68	13333 b
4	Protocol 50%WP	90	3.33	12900 b
5	Control	88	6.69	11244 c
	CV% age	0.92	30.15	3.81
	LSD at 5%	NS	1.37	778

## ENTOMOLOGY

<b>01.TITLE</b>	<b>TESTING OF SEED DRESSING INSECTICIDES AGAINST SHOOT FLY &amp; MAIZE BORER.</b>		
OBJECTIVE	To find out the most effective seed dressing insecticides against shoot fly & maize borer.		
RESEARCHER WORKER(S)	Mr. Muhammad Shakeel Ahmad Dr. Muhammad Arshad		
PROJECT DURATION	Kharif, 2016 & Spring, 2017		
LOCATION	Maize & Millets Research Institute, Yusafwala-Sahiwal.		
TREATMENTS	<b>Insecticides:</b> 1. Poncho Plus 600 FS @ 20 ml/ kg seed 2. Confidor 70 WS @ 5gm/kg seed 3. Actara 70 WS @ 5gm/kg seed 4. Furadan 3G @ 8 Kg / Acre 5. Control <b>Hybrid = YH-1898</b>		
METHODOLOGY:	Layout	=	RCBD
	Replications	=	04
	Plot Size	=	5mx2.25m
	Plant to plant distance	=	20cm
	Row to row distance	=	75cm
	Fertilizer	=	300-150-125 NPK(kg/ha)
	Date of sowing	=	Month of July & January
	Seed dressing will be done with insecticides at recommended doses before sowing of the crop for the control of maize shoot fly and maize borer while Furadan will be applied with seed and second irrigation. Data regarding maize shoot fly infestation will be recorded after three weeks after germination. Data regarding maize borer infestation will be recorded at the initiation of maize borer infestation. At maturity, yield data will also be recorded.		
PREVIOUS YEAR 'S RESULTS	New Project		

