FODDER RESEARCH INSTITUTE, SARGODHA

INTRODUCTION

Economy of Pakistan is predominantly agriculture driven which not only contributing 19.8% GDP but also provides jobs. Livestock is vital sub-sector of Agriculture contributing 11.8% to GDP which is 58.55% of the Agriculture's share to GDP (Economic Survey of Pakistan, 2015-16). It provides milk, meat and other by-products of animal origin for human nutrition. Pakistan which is at 4th position in milk production in the world produces 54328 thousand tones of milk per year. The only value of milk is more than combined value of two major crops i-e wheat and cotton. Fodder is backbone of livestock as it can not survive without fodder. Fodder provides 2 to 3 times cheaper feed than concentrate to livestock.

Fodder crops have unique position in context of livestock in our country where more than 70% of our population is directly involved in livestock as a primary source of food and income. Animal population comprising of cattle, buffalo, goat, sheep and others is 176.5 million in Pakistan and 78.79 million in the Punjab (Economic Survey of Pakistan, 2015-16).

In Pakistan, fodder crops provide 2-3 times cheaper animal feed than concentrate, have unique position in context of livestock. Fodders occupied an area of 2.11 million hectares and produced 45.77 million tonnes of green fodder out of which Punjab province contributed 1.76 million hectares area and 38.00 million tonnes production of the country.

In Punjab, fodder crops occupying 19% of the total cropped area are at third place after wheat and cotton with average fodder yield of 21.6 t/ha. Major Kharif fodder crops are Sorghum, Maize and Pearl Millet.

There is fodder shortage, which gets severe during lean periods. There are two fodder scarcity periods i.e. May-June when the Rabi fodders come to end and November-December when the Kharif fodders are finished. Animals are generally underfed and under-nourished which results in their poor performance. There is a short fall of 24% Total Digestible Nutrients (TDN) and 38% Digestible Protein (DP). The major constraints in fodder production are non-availability of good quality seed and lack of awareness of seed production technology among the fodder growers.

There is big gap between demand and productivity of fodders and there is a dire need to fulfill the gap between the demand and supply of fodder and shortage of good seed and it is only possible through evolution of high yielding, multicut varieties / hybrids of different fodder crops, standardization of their fodders and seed production technology both in public and private sectors.

Multi-facet experiments on kharif fodder crops have been planned to find out proper and feasible answer to fodder production problems through development of high fodder yielding varieties having tolerance against major pests and diseases, good quality in terms of high out put of livestock production and also establishment of technology for seed production of approved varieties.

SALIENT ACHIEVEMENTS DURING 2015

SORGHUM

❖ Line F-04-16 produced highest green fodder yield of 86.08 t/ha in Preliminary green fodder yield trial, whereas check variety Sorghum.2011 produced 72 t/ha. with 19.55% increase over check.

❖ Indian-06 produced highest green fodder yield of 84.35 t/ha in Advanced green fodder yield trial, whereas check variety Sorghum.2011 produced 76.44 t/ha. with 10.34% increase over check.

❖ S-990 produced highest green fodder yield of 66.99 t/ha in Micro / Zonal Green Fodder Yield Trial, whereas check variety Sorghum.2011 (check) produced 61 t/ha. with 9.8% increase over check.

❖ Line F-2012-4 produced highest green fodder yield of 45 t/ha in NUFYT, whereas check variety Sorghum-2011 (check) produced 43 t/ha. with 5% increase over check.

PEARL MILLET

❖ Line Composite-1 produced highest green fodder yield of 80.65 t/ha in Zonal Green Fodder Yield Trial, whereas check variety Sgd. Bajra-2011 produced _____ t/ha. with 5% increase over check.

❖ Line Composite-II and BS-2000 respectively yielded 78.81 and 75.51 t/ha green fodder yield, whereas check variety Sgd. Bajra-2011 produced 73.6 t/ha.

MAIZE

❖ The promising line of maize No.1501 gave highest green fodder yield of 49.42 t/ha in NUFYT as compared to check variety Sgd. 2002 which produced 47.38 t/ha. with 4% increase over check.

GUAR

- A total of 20experiments (breeding, agronomic, pathological, entomological and adaptability) on guar, maize, sorghum and pearl millet were conducted successfully.
- The Expert Sub-Committee led by DGAR, AARI, Faisalabad visited this station on 23-09-2016for spot examination of new strain of guar S-5274 and appreciated its performance and recommended it for approval by the Expert Sub-Committee in its forth coming meeting.
- Developed some advanced guar lines which are in pipeline i.e.
  a) For grain purpose: S-5823, S-5885, S-6159, S-6161and S-6384.
  b) For fodder purpose: S-6165, S-6131.
  c) For dual purpose(Grain & Fodder):S-5789, S-5961, S-6023,S-6251and S-6260.
  d) Vegetable purpose: S-6036
- Seed Production:
  a) 64 Kg BNS and 600Kg Pre-basic seed of Guar variety (BR-99) was produced.
  b) 4320 Kg certified seed of Sorghum (variety Hegari) was produced.

ANNUAL RESEARCH PROGRAMME FOR KHARIF-2017

SORGHUM (*Sorghum bicolor* L.)

1. TITLE: COLLECTION AND MAINTENANCE OF SORGHUM GERMPLASM

OBJECTIVE: To maintain / evaluate the germplasm and to collect new lines from different sources to broaden the genetic base.

RESEARCH WORKERS: Ghulam Ahmad,Amir Abdullah and GhulamNabi

PROJECT DURATION: 2017 (Continuous nature)

LOCATION: Fodder Research Institute, Sargodha.

TREATMENT/ METHODOLOGY

Total entries	=	124(120+4)
Row distance	=	60cm
No. of rows	=	2 rows of 5m.
Sowing time	=	July
Fertilizer	=	99-57-62 NPK kg/ha.

Following data will be recorded for evaluation of lines:-

- Plant height
- No. of leaves/plant
- Leaf Area
- Days to maturity
- Lodging resistance
- Crude Protein
- Disease resistance
- Stem thickness
- Leaf color
- Days to heading
- TSS
- Midribcolour
- Seed yield

PREVIOUS YEAR'S RESULTS: The seed of selfed heads (10-15) from each entry was collected for further studies in the next year.

Data of different characteristics was recorded which ranged as under:-

-	Plant height	=	130 to 315cm
-	Stem thickness	=	1.4 to 3.0cm
-	No. of leaves/plant	=	12 to 18
-	Days to 50 % heading	=	80 to 90
-	Leaf colour	=	Light to dark green
-	Days to maturity	=	100 to 120
-	TSS range	=	12 to 18

2. TITLE: HYBRIDIZATION AND STUDY OF FILIAL GENERATIONS OF SORGHUM

OBJECTIVE: To create genetic variability in sorghum to get desirable recombinants possessing following traits

1. High fodder yield potential
2. Stay green
3. Leaf to stem ratio
4. Sweetness/Juiciness
5. Quality
6. Greenish
7. Grain yield
8. Insect and disease resistant.

RESEARCH WORKERS: Ghulam Ahmad, Amir Abdullah and SaleemAkhtar.

PROJECT DURATION: 2017(Continuous nature)

LOCATION: Fodder Research Institute, Sargodha.

TREATMENTS/ METHODOLOGY: NEW CROSSES TO BE ATTEMPTED

S.No.	CROSSES	S.No.	CROSSES
1.	No.1518 x PVK-801	16.	No.3448 x No.59901
2.	B-203 x No.65174-2	17.	FRI-04 x SGD-001-2
3.	B-203 x No.1572	18.	FM-147 x No.1620
4.	No.9802 x JS-2002	19.	Sukkar x SGD-2011
5.	No.65174-2 x K-94	20.	No.74702 x Hegari
6.	No.5017 x PVK-65130	21.	No.337 x JS-263
7.	No.6001 x No.1567	22.	S-2 x No.1620
8.	FRI-02 x JS-263	23.	No.403415 x No.80008
9.	YSS-89 x JS-2002	24.	No.74724 x FM-147
10.	PARCSS-1 x YSS-4	25.	No.59905 x BALLO
11.	PARCSS-II x Indian-45	26.	S-167 x FRI-07
12.	YSS-15 x YSS-89	27.	F-9917 x S-167
13.	JS-2009 x FRI-04	28.	TURBO x S-2
14.	No.1803 x No.1620	29.	Local Quetta x JS-263
15.	No.3449 x No.74724	30.	JS-2002 x No.1518

CROSSES PROGENIES TO BE STUDIED.

Generations	Crosses/Progenies

Generations	Crosses/Progenies
F1	15 crosses
F2	20 (recombinants)
F3	28 Progenies
F4	30 Progenies
F5	25 Progenies
F6	12 Progenies

All the above mentioned progenies will be studied in a pedigree selection method.

PREVIOS YEAR'S RESULTS.

FILIAL GENERATION	CROSSES/PROGENIES Studied	CROSSES/PROGENIES Selected	ADVANCE LINES Selected
F1	15	12	--
F2	20	18	--
F3	25	20	--
F4	35	30	2
F5	32	25	2
F6	18	11	2

3. TITLE — PRELIMINARY GREEN FODDER YIELD TRIAL ON SORGHUM

OBJECTIVE — To test the promising uniform lines for green fodder and grain yield.

RESEARCH WORKERS — Ghulam Ahmad,Amir AbdullahandSaleemAkhtarand GhulamNabi.

PROJECT DURATION — 2017

LOCATION(S) — Fodder Research Institute, Sargodha.

TREATMENTS/ METHODOLOGY

Varieties = 14

1. F-01-17
2. F-02-17
3. F-03-17
4. F-04-17
5. F-05-17
6 No.1518
7. Sgd-01-17
8. Sgd-02-17
9. Sgd-03-17
10 Yss-13
11 Iindian-4
12 S-145.
13. Js-2002
14 Sorghum 2011 (check)

Lay out = RCBD
Replications = 4
Plot size = 1.8x5m.
Row spacing = 30cm.
Sowing time = May -June
Fertilizer = 99-57-00 NPK kg/ha.

Following data will be recorded for evaluation of lines:-

- Plant height
- No. of leaves/plant
- Leaf Area
- TSS value
- Disease incidence
- Stem thickness
- Leaf color
- Days to 50% heading
- Green fodder yield
- Seed yield

PREVIOUS YEAR'S RESULTS

S. No.	Varieties	GREEN FODDER YIELD (t/ha.) FRI	Fsd	Avg
1.	F-01-16	66.61	67.22	66.91
2.	F-02-16	65.35	68.85	67.71
3.	F-03-16	72.84	72.15	72.69
4.	F-04-16	87.12	85.05	86.08
5.	PVK-801	72.09	77.88	74.98
6.	No.1567	60.31	70.83	65.57
7.	YSS-1	75.15	76.94	76.04
8.	YSS-4	71,54	72.77	72.15
9.	YSS-15	82.81	81.77	52.29
10.	F-04-14	79.74	77.22	78.48
11.	FRI-07	65.13	69.44	67.28
12.	6001	65.79	68.05	66.92
13.	JS-2002 (Chk)	75.84	76.66	76.5
14.	Sorghum-2011	69.56	74.44	72.00
	LSD 5%	5.27	4.22	

4. TITLE — ADVANCED GREEN FODDER YIELD TRIAL OF SORGHUM

OBJECTIVE — To evaluate green fodder and seed yield performance of promising lines which were selected on the basis of their morphological good traits from preliminary yield trials.

RESEARCH WORKERS — Ghulam Ahmad, Amir Abdullah and SaleemAkhtar.

PROJECT DURATION — 2017

LOCATION(S) — Fodder Research Institute, Sargodha.

TREATMENTS/ METHODOLOGY — Lines/Varieties = 8

1. F-01-16
2. F-02-16
3. F-03-16
4. F-04-16
5. PVK-801
6 S-145
7. JS-1
8. Sgd-2011

Lay out	=	RCBD
Replications	=	4
Plot size	=	1.8x5m.
Row spacing	=	30cm.
Sowing time	=	May -June
Fertilizer	=	99-57-00 NPK kg/ha.

Following data will be recorded for evaluation of lines:-

- No. of leaves/plant
- Leaf Area
- TSS value
- Leaf color
- Days to 50% heading
- Disease incidence
- Green fodder yield

PREVIOUS YEAR'S RESULTS

Sr No.	LINES/VARIETIES	GFY (t/ha.)		
1.	F-02-2015	65.86	74.24	70.05
2.	F-04-2015	65.86	64.72	62.29
3.	No.1572	66.98	72.77	69.87
4.	Sgd-013-1	69.56	69.72	69.64
5.	No.80010	58.83	69.44	64.13
6.	Indian-6	83.27	85.44	84.35
7.	YSS-13	74.39	70.44	72.41
8.	Sargodha-2011	70.44	82.44	76.44
	LSD 5%	3.24		

5. TITLE — ZONAL GREEN FODDER YIELD TRIAL ON SORGHUM

OBJECTIVE — To evaluate green fodder yield potential of different sorghum lines at various locations in the province.

RESEARCH WORKERS — Ghulam Ahmad, Amir Abdullah & Muhammad SaleemAkhtar

PROJECT DURATION — 2017

LOCATIONS

1. Fodder Research Institute, Sargodha.
2, ESPU, Farooqabad.
3 FRSS, AARI, Faisalabad.
5. Livestock Farm, RakhDeraChahal.
6. ARS, Bahawalpur
7. BARI, Chakwal

TREATMENTS / METHODOLOGY

Varieties / lines = 7

1.F-02-2015
2. F-04-2015
3. SGD-013-1
4. No.1572
5. No.80010
6. Indian-6
7. Sorghum-2011(Check)

Lay out	=	RCBD
Replications	=	4
Plot size	=	1.8x5m.
Row spacing	=	30cm.
Sowing time	=	May -June
Fertilizer	=	99-57-00 NPK kg/ha.

Following data will be recorded for evaluation of lines:-

- Plant height
- No. of leaves/plant
- Leaf Area
- TSS value
- Stem thickness
- Leaf color
- Days to 50% heading
- Green fodder yield

PREVIOUS YEAR'S RESULTS

Green fodder yield (t/ha.)

Sr. No.	Variety/ line	FRI. Sgd.	FRSS, F/Abad	ESPU Farooqabad	ARS. B/pur	Av.
1	F-01-13	78.12	84.20	43.61	35.90	60.45
3	F-02-13	65.79	82.20	41.38	48.41	59.44
4	K-94	72.16	70.27	44.44	31.60	54.61
2	Yss-04	79.79	85.77	48.88	40.4	63.71
5	PARC-SS-2)	82.52	88.05	50.00	36.30	64.21
6	Indian-5	72.12	86.77	51.66	33.30	60.96
7	S-9901	81.82	84.22	53.33	48.60	66.99
8	Sorghum-2011	65.64	88.44	50.27	41.30	61.41

6. TITLE — NATIONAL UNIFORM FODDER YIELD TRIAL ON SORGHUM

OBJECTIVE — To evaluate the promising lines / varieties of sorghum for their green fodder yield potential throughout the country.

RESEARCH WORKERS — Ghulam Ahmad, Amir Abdullah and Muhammad SaleemAkhtar

PROJECT DURATION — 2017

LOCATION(S) — Fodder Research Institute, Sargodha.

TREATMENTS/ METHODOLOGY — Experiment will be laid out according to the lay out plan and methodology supplied by the National Coordinator (Fodder), NARC, Islamabad.

PREVIOUS YEAR'S RESULTS

Code		Green Fodder Yield (t ha^{-1})						
			FRI Sargodha					
A			53.74					
B			48.14					
C			49.68					
D			48.76					
E			62.25					
F			57.34					
G			48.76					
H			50.72					
I			49.98					
J			50.60					

7. TITLE — MAINTENANCE AND EVALUATION OF SUDAN GRASS GERMPLASM

OBJECTIVE — To maintain various Sudan Grass lines and produce their seed for further utility in S.S hybrid seed production.

RESEARCH WORKERS — Abdul Basit and GhulamNabi

PROJECT DURATION — 2017

LOCATION — Fodder Research Institute, Sargodha

TREATMENTS / METHODOLOGY

Sudan Grass Lines = 19
Row spacing = 60 cm.
Sowing time = July
Fertilizer = 70-57-62 NPK kg/ha.

Following data will be recorded for evaluation of lines:-

- Plant height
- No. of leaves/Plant
- Leaf Area
- Leaf colour
- No. of tillers
- Mid Rib color
- TSS value
- Days to flowering

PREVIOUS YEAR'S RESULTS — 19 lines were maintained and selfed seed of 20-25 heads were collected from each entry for further utilization in S.S Hybrid development.

Data of different characteristics was recorded which ranged as under:-

- Plant height = 206 to 297cm
- No. of tillers = 1 to 3
- No. of leaves/plant = 8 to 12
- Leaf Area = 164 to 391 cm^2
- Mid Rib Colour = White
- Leaf colour = Light to dark green
- TSS range = 4 to 9.5

8. TITLE — MAINTENANCE AND EVALUATION OF VARIOUS A&B LINES OF SORGHUM

OBJECTIVE — To maintain various A&B lines of sorghum and produce their seed for further utility in S.S hybrid seed production.

RESEARCH WORKERS — Abdul Basit and GhulamNabi

PROJECT DURATION — 2017 (Continuous nature)

LOCATION — Fodder Research Institute, Sargodha.

TREATMENTS / METHODOLOGY

Cytoplasmic male sterile lines (A) = 15
Maintainer lines (B) = 15

1.	Red Lane	2.	ICS-84	3.	ICS-11
4.	ICS-101	5.	ICS-102	6.	SPL-13
7.	CS-8005	8.	AKS-5	9.	ICSA
10.	SP2	11.	AKS-6	12.	D2
13.	CS8005	14.	NARC-2	15.	YOUSUF-W

Row spacing = 60 cm.
Lines Ratio = Planted in the ratio of 1:2
Sowing time = July
Fertilizer = 70-57-62 NPK kg/ha.

Following data will be recorded for evaluation of lines:-

- Plant height
- Leaf Area
- No. of leaves/tiller
- Days to flower initiation
- TSS value
- Disease incidence
- Insect resistance
- Leaf color

PREVIOUS YEAR'S RESULTS — 15 A-lines (CMS) were maintained with their B-lines and seed were collected for further utilization in S.S Hybrid development.

Data of different characteristics was recorded which ranged as under:-

- Plant height = 85 to 160 cm
- No. of leaves/plant = 7 to 13
- Leaf Area = 314 to 634 cm^2
- Leaf colour = Light to dark green
- TSS range = 5.1 to 10.5

9. TITLE: DEVELOPMENT OF NEW S.S HYBRIDS BY USING SOME NEW A - LINES OF SORGHUM AND NEW SUDANGRASS

OBJECTIVE: To produce seed for muticut green fodder with improved characteristics.

RESEARCH WORKERS: Abdul Basit and GhulamNabi

PROJECT DURATION: 2017

LOCATION(S): Fodder Research Institute, Sargodha.

TREATMENTS/ METHODOLOGY:

A - lines of sorghum (CMS lines) = 2
Sudangrass lines (R) = 5

Lines ratio (A : R) = 4 : 2
Row spacing = 60 cm.
Sowing time = Month of July
Fertilizer = 70-57-62 NPK kg/ha.

PREVIOUS YEAR'S RESULTS: 70 S.S Hybrids combination were made.

PEARL MILLET (*Pennisetum americanum*)

10. TITLE — COLLECTION AND MAINTENANCE OF MILLET GERMPLASM

OBJECTIVE — To maintain / evaluate the germplasm and to collect new lines from different sources to broaden the genetic base.

RESEARCH WORKERS — Sikandar Hayat and Abdul Jabbar.

PROJECT DURATION — 2016 (Continuous nature.)

LOCATION — Fodder Research Institute, Sargodha.

TREATMENTS/ METHODOLOGY

Previous entries	=	61
New lines	=	02
Total	=	63
No. of rows	=	2
Row length	=	10m.
Row spacing	=	60cm.
Sowing time	=	July
Fertilizer	=	70-57-62 NPK kg/ha.

Following data will be recorded for evaluation of lines:-

- Plant height
- No. of leaves/plant
- Leaf Area
- Lodging
- Green fodder yield
- Grain yield
- Stem thickness
- Leaf color
- Days to 50% heading
- No. of tillers /plant
- spike length

PREVIOUS YEAR'S RESULTS — Seed of elite selected plants from each line/variety was collected.

Data of different characteristics were recorded which ranged as under:-

-	Plant height	=	250 to 275cm
-	Stem thickness	=	1.0 to 1.8cm
-	No. of leaves/plant	=	10 to 13
-	No. of tillers / plant	=	3-5

11. TITLE — HYBRIDIZATION AND STUDY OF FILIAL GENERATIONS OF PEARL MILLET

OBJECTIVE — To create genetic variability in pearl millet to get desirable recombinants with higher fodder yield and better quality.

RESEARCH WORKERS — Sikander Hayat, Abdul Jabbar and Ch. Ghulam Nabi.

PROJECT DURATION — 2016 (Continuous nature)

LOCATION — Fodder Research Institute, Sargodha.

TREATMENTS/ METHODOLOGY

NEW CROSSES TO BE ATTEMPTED

S.No.	CROSSES
1.	N6 x High group
2.	Y-84 x No.7703
3.	Composite-1 x No.8781
4.	C-47 x MB-87

PREVIOUS YEAR'S RESULTS

1. Tift 85 x MB-87
2. G. White x MB-87
3. Tift 383 x Sen Pop
4. BS-99 x H-72
5. Raj 171 x YBS-87

Above crosses were attempted and F_0 seed was collected

1. BS-2000 x N-6
2. G. White x Gahi
3. BS-99 x G.Bajra
4. SEN-POP x MB-87

F1 of above crosses was grown and seed was collected.

12. TITLE — PRELIMINARY GREEN FODDER TRIAL ON PEARL MILLET

OBJECTIVE — To evaluate the uniform promising lines for green fodder And grain yield.

RESEARCH WORKERS — Sikandar Hayat and Abdul Jabbar

PROJECT DURATION — 2016 (Continuous nature)

LOCATION — Fodder Research Institute, Sargodha.

TREATMENTS/ METHODOLOGY

Lines/ Varieties	=	14
Lay out	=	RCBD
Replications	=	3
Plot size	=	1.8x6m.
Row spacing	=	30cm.
Sowing time	=	May - June
Fertilizer	=	99-57-00 NPK kg/ha.

Following data will be recorded for evaluation of lines:-

- Plant height
- No. of leaves/plant
- Leaf Area
- Green fodder yield
- No. of tillers/unit area
- Stem thickness
- Leaf color
- Days to 50% heading
- Lodging

PREVIOUS YEAR RESULTS

S.No.	VARIETIES / LINES	GFY (t/ha.)
1	POP.98	98.75
2	G.Bajra	98.75
3	Gahi	96.91
4	Composite 2	94.15
5	POP.6	92.31
6	Sgd.Bajra.2011 (check)	90.77
7	D.P.Pak	88.93
8	Y.BS.98	88.62
9	C.ZK923	88.32
10	Y.84	86.48
11	RCBK948	79.43
12	BK.1	77.89
13	K.M.S	72.68
14	BK.2	66.85
	L.S.D. 5%	2.40

13. TITLE — ADVANCED GREEN FODDER AND GRAIN YIELD TRIAL ON PEARL MILLET.

OBJECTIVE — To evaluate the promising lines/ varieties for maximum green fodder yield.

RESEARCH WORKERS — Sikandar Hayat and Abdul Jabbar.

PROJECT DURATION — 2016 (Continuous nature)

LOCATION — Fodder Research Institute, Sargodha.

TREATMENTS/ METHODOLOGY

Line/Varieties	=	6
Lay out	=	RCBD
Replications	=	3
Row spacing	=	30cm.
Plot size	=	1.8x6 m.
Seed rate	=	15 kg/ha.
Sowing time	=	May - June
Fertilizer	=	99-57-00 NPK kg/ha.

Following data will be recorded for evaluation of lines:-

- Plant height
- No. of leaves/plant
- Leaf Area
- Green fodder yield
- Dry matter yield
- Stem thickness
- Leaf color
- Days to 50% heading
- No. of tillers/unit area

PREVIOUS YEAR'S RESULTS

S.No.	VARIETIES / LINES	GFY (t/ha)
1	Composite-1	87.09
2	BS.99	84.95
3	Q. Bajra	82.80
4	Sgd. Bajra 2011 (check)	82.73
5	Hi Group	81.57
6	N.5	74.21
	L.S.D 5%	1.90

14. TITLE — ZONAL GREEN FODDER YIELD TRIAL OF PEARL MILLET

OBJECTIVE — To ascertain green fodder yield potential of different elite line of pearl millet in Sargodha and at different agro ecological conditions in Punjab.

RESEARCH WORKERS — Sikandar Hayat and Abdul Jabbar.

PROJECT DURATION — 2016 (Continuous nature)

LOCATION

1. Fodder Research Institute, Sargodha.
2. ESPU., Farooqabad
3. FRS, Lahore.
4. ARS, Bahawalpur
5. FRSS, AARI, Faisalabad.
6. BARI, Chakwal.
7. AZRI, Bhakkar

TREATMENT / METHODOLOGY

Entries	=	6
Lay out	=	RCBD
Replications	=	3
Row spacing	=	30cm.
Plot size	=	1.8x6 m.
Seed rate	=	15 kg/ha.
Sowing time	=	May - June
Fertilizer	=	99-57-00 NPK kg/ha.

Following data will be recorded for evaluation of lines:-

- Plant height
- Stem thickness
- No. of leaves/plant
- Leaf color
- Leaf Area
- Days to 50% heading
- Green fodder yield
- No. of tillers/ unit area

PREVIOUS YEAR'S RESULTS

GREEN FODDER YIELD (t/ha.)

Sr. No	VARIETIES	FRI, Sgd.	FRSS, F/Abad	ARS, B/pur.	FRS, Lahore	ESPU, Farooqbd	AVG
1	FB.813	80.65	80.61	64.2	59.57	34.00	63.81
2	Sen POP	72.07	82.46	65.4	55.86	41.67	63.49
3	H.72	75.75	82.16	63.9	53.09	41.67	63.31
4	Synth.89	78.51	78.45	64.2	47.22	44.67	62.61
5	Composite-1	86.17	80.30	56.1	45.68	43.33	62.32
6	Sgd. Bajra 2011 (chk)	74.52	87.53	66.1	42.28	36.33	61.35
7	FB.796	77.89	78.14	55.8	57.40	37.33	61.31
8	FB.893	74.83	81.23	61.6	45.68	39.67	60.60
L.S.D. 5%		2.10	0.642	-	1.75	13.567	

15. TITLE — DEVELOPMENT OF COMPOSITE VARIETY OF PEARL MILLET

OBJECTIVE — To create variability and produce high fodder yielding and good quality variety of Pearl Millet.

RESEARCH WORKERS — Sikandar Hayat and Ghulam Nabi.

PROJECT DURATION — 2016

LOCATION — Fodder Research Institute, Sargodha.

TREATMENTS/ METHODOLOGY

Varieties./ lines	=	5
Area	=	500m^2
Row spacing	=	30cm
Sowing time	=	July
Fertilizer	=	70-57-62 NPK kg/ha.

Equal quantity of seed of phenotypically outstanding lines will be mixed and sown in isolated field. Random mating will be allowed for 4 – 5 generations through open pollination. In the subsequent generation of random mating, the undesirable types will be eliminated to achieve uniformity & homogeneity in various morphological characters. Such uniform population will be tested in replicated trials alongwith standard checks and high yielding stable type will be released as composite variety.

PREVIOUS YEAR'S RESULTS — 20kg seed was collected for next year sowing

16. TITLE — NATIONAL UNIFORM FODDER YIELD TRIAL ON PEARL MILLET

OBJECTIVE — To evaluate the promising lines under coded No. for fodder yield through out the country.

RESEARCH WORKERS — Sikandar Hayat And Ameer Abdullah.

PROJECT DURATION — 2016

LOCATION — Fodder Research Institute, Sargodha.

TREATMENT / METHODOLOGY — The packed seed/ sowing plan will be supplied by the National Coordinator (Fodder), NARC, Islamabad and the trial will be laid out accordingly. Data will be recorded as per instructions.

PREVIOUS YEAR'S RESULTS

Code	Entries	Green Fodder Yield (t ha^{-1})					
		AARI Faisalabad	FRI Sargodha	BARI Chakwal	AZRI Bahawalpur	NARC Islamabad	Average all sites
G	Sargodha Bajra-2011 (Check)	78.40	41.67	25.93	42.67	33.36	44.40
I	BS-2000	76.54	47.22	24.75	37.47	34.32	44.06
A	Millet Local Quetta	81.17	38.58	23.86	42.67	32.12	43.68
E	FB-801	76.54	39.20	28.80	42.13	29.80	43.29
F	No.8781	74.38	42.90	29.66	35.20	30.99	42.63
D	FB-822	73.77	45.99	27.72	37.80	26.05	42.26
C	FB-895	79.01	40.74	25.25	38.80	26.91	42.14
H	Composite-1	79.01	45.06	22.38	31.47	32.43	42.07
B	Millet Local Tarnab	78.09	38.89	24.17	33.60	21.60	39.27
LSD(0.05)		2.93	NS	1.28	NS	5.2	NS
CV (%)		2.2	5.5	2.9	23.2	10.1	4.1

MAIZE (*Zea mays* L) 2n = 20

17. TITLE: COLLECTION, MAINTENANCE AND EVALUATION OF MAIZE GERMPLASM

OBJECTIVE: To collect, maintain and evaluate the gene pool of various maize lines for their use in breeding programme.

RESEARCH WORKERS: Abdul Basit, Maqbool Hussain Anjum and Ghulam Nabi.

PROJECT DURATION: 2017 (continuous nature)

LOCATION: Fodder Research Institute, Sargodha.

TREATMENTS / METHODOLOGY:

Total Varieties / lines	=	50 (30+20)
No. of rows	=	4
Row length	=	5m
Row spacing	=	45cm
Sowing time	=	July
Fertilizer	=	80-90-62 NPK kg/ha.

Following data will be recorded for evaluation of lines:-

- Plant height
- No. of leaves/plant
- Leaf Area
- Green fodder yield
- Grain yield
- Stem thickness
- Leaf color
- Days to 50% heading
- Days to maturity

PREVIOUS YEAR'S RESULTS: Selfed seed of 20-30 cobs from each line was collected for further studies.

Data of different characteristics was recorded which ranged as under:-

-	Plant height	=	150 to 292 cm
-	Stem thickness	=	2.2 to 3.9 cm
-	No. of leaves/plant	=	11 to 16
-	Leaf Area	=	365 to 686 cm^2
-	Leaf colour	=	Light to dark green
-	Green Fodder Yield	=	28 to 80 t/ha

18. TITLE — EAR TO ROW SELECTION TRIAL OF MAIZE

OBJECTIVE — To develop improved variety/ line with high fodder and grain yield and resistant to insect pests & diseases.

RESEARCH WORKERS — Abdul Basit, Maqbool Hussain Anjum and Ghulam Nabi.

PROJECT DURATION — 2017

LOCATION — Fodder Research Institute, Sargodha.

TREATMENTS / METHODOLOGY

No. of plants to be selected	=	50 – 100
Check Variety	=	Sgd.2002
R – R Distance	=	45cm
P-P Distance	=	30cm

PREVIOUS YEAR'S RESULTS — 50 phenotypically superior plants having better fodder yielding characters with superior ears were selected from

19. TITLE — DEVELOPMENT OF COMPOSITE VARIETY OF MAIZE

OBJECTIVE — To create variability and produce high fodder and grain yielding variety with good quality.

RESEARCH WORKERS — Abdul Basit, Maqbool Hussain Anjum and Ghulam Nabi.

PROJECT DURATION — 2017 (continuous nature)

LOCATION — Fodder Research Institute, Sargodha.

TREATMENTS/ METHODOLOGY

No. of lines/ varieties	=	10
Row spacing	=	45cm
Sowing time	=	July
Fertilizer	=	80-90-62 kg/ha.

1. Equal quantity of seed of phenotypically outstanding lines will be mixed and sown in isolated field. Random mating will be allowed through open pollination.

2. In the subsequent 3-4 generations of random mating, the undesirable types will be eliminated to achieve uniformity & homogeneity in various morphological characters.

3. Such uniform population will be tested in replicated trials along with standard checks and high yielding stable type will be released as composite variety.

PREVIOUS YEAR'S RESULTS — 10 Kg seed were collected for next generation

20. TITLE PRELIMINARY FODDER YIELD TRIAL OF MAIZE

OBJECTIVES: To test the promising uniform lines for green fodder yield.

RESEARCH WORKER: Abdul Basit, Maqbool Hussain Anjum and Ghulam Nabi

PROJECT DURATION: 2017

TREATMENTS: Lines/ varieties = 8

METHODOLOGY:

1.	MS-01-2017	2.	MS-02-2017
3.	MS-03-2017	4.	MS-04-2017
5.	MS-05-2017	6.	Composite-15
7.	Composite-16	8.	Sgd.2002 (Check)

Layout = RCBD
Replications = 3
Plot Size = 1.8x5m
Row Spacing = 30 cm
Sowing time = July

The following observations will be recorded:-

1. Plant Height
2. Stem Thickness
3. Leaf area
4. No.of leaves per plant
5. Green Fodder Yield
6. Dry Matter Yield

PREVIOUS YEAR'S RESULTS

Sr. No.	**Varieties/ Lines**	**Green Fodder Yield (t/ha)**
1	MS-01-2016	65.12
2	MS-07-2016	63.58
3	MS-05-2016	61.73
4	MS-04-2016	60.19
5	MS-02-2016	59.88
6	Sgd.2002 (Check)	58.64
7	MS-03-2016	58.03
8	MS-08-2016	57.10
9	MS-06-2016	56.48
10	MS-09-2016	54.63
	LSD (5%)	1.44

21. TITLE ADVANCED FODDER YIELD TRIAL OF MAIZE

OBJECTIVES: To evaluate green fodder yield performance of promising lines which were selected from preliminary yield trial on basis of green fodder yielding characters.

RESEARCH WORKER: Abdul Basit, Maqbool Hussain Anjum and Ghulam Nabi

PROJECT DURATION: 2017

TREATMENTS: Lines/ varieties = 6

METHODOLOGY:

1.	MS-01-2016	2.	MS-02-2016
3.	MS-04-2016	4.	MS-05-2016
5.	MS-07-2016	6.	Sgd.2002 (Check)

Layout = RCBD
Replications = 3
Plot Size = 1.8x5m
Row Spacing = 30 cm
Sowing time = July

The following observations will be recorded:-

1. Plant Height
2. Stem Thickness
3. Leaf area
4. No.of leaves per plant
5. Green Fodder Yield
6. Dry Matter Yield

PREVIOUS YEAR'S RESULTS

Sr. No.	Varieties/ Lines	Green Fodder Yield (t/ha)
1	MS-03-2015	68.51
2	SGD.2002 (check)	64.19
3	MS-02-2015	58.95
4	MS-04-2015	53.70
5	MS-01-2015	53.08
6	MS-05-2015	49.69
	LSD (5%)	2.40

22. TITLE ADAPTABILITY TRIAL OF MAIZE

OBJECTIVES: To test the advance lines /varieties at different Locations of Punjab Province for their green Fodder yield and adaptability.

RESEARCH WORKER: Abdul Basit, Maqbool Hussain Anjum and Ghulam Nabi

PROJECT DURATION: 2017

LOCATION:

1. FRI Sargodha
2. ESPU Farooqabad
3. Fodder Research Sub Station AARI Faisalabad
4. ARS, Bahawalpur

TREATMENTS: Lines/ varieties = 7

METHODOLOGY:

1.	MS-03-2015	2.	No.1501
3.	MS.2015	4.	Fsd-Maize-2021
5.	MS.2010	6.	Fsd-Maize-2022
7.	Sgd.2002 (Check)		

Layout = RCBD
Replications = 3
Plot Size = 1.8x5m
Row Spacing = 30 cm
Sowing time = July

The following observations will be recorded:-

1. Plant Height
2. Stem Thickness
3. Leaf area
4. No.of leaves per plant
5. Green Fodder Yield

PREVIOUS YEAR'S RESULTS

GREEN FODDER YIELD

Sr. No	Lines / Varieties	FRI, Sargodha	FRSS, F/Abad	ARS, B/Pur	ESPU, Farooqabad	Av. (t/ha.)
1	No.1501	69.75	89.19	45.7	40.43	61.26
2	MS.2010	65.43	76.94	44.2	37.34	55.97
3	MS.2015	58.33	85.55	40.3	41.97	56.53
4	Fsd-Maize-2020	63.27	80.55	35.4	40.43	54.91
5	Fsd-Maize-2018	53.39	48.61	46.6	41.04	47.41
6	Sgd.2002 (check)	61.11	87.34	45.1	38.27	57.95
7	MMRI, Yellow	49.38	88.27	36.0	38.58	53.05
8	Pearl Maize	47.84	79.72	39.0	38.27	51.20
	LSD 5%	2.40	2.06	-	10.73	

23. TITLE — NATIONAL UNIFORM FODDER YIELD TRIAL ON MAIZE

OBJECTIVE — To evaluate the promising lines / varieties of Maize for their Green fodder yield potential through out the country.

RESEARCH WORKERS — Abdul Basit, Maqbool Hussain Anjum and Ghulam Nabi.

PROJECT DURATION — 2017

LOCATION(S) — Fodder Research Institute, Sargodha.

TREATMENTS/ METHODOLOGY — Seed will be provided to Coordinator Fodder, NARC, Islamabad. He will manage its testing at various sites throughout Pakistan.

PREVIOUS YEAR'S RESULTS

Sr.No.	Name of Hybrids	Fodder yield (Kg/ha)					
		NARC Islamabad	AARI Faisalabad	FRI Sargodha	Tarnab Peshawar	Sariab Quetta	Avg. (Kg/Ha)
1.	No. 1501	65158	64815	58580	40034	18519	49421
2.	Afgoee (Check)	62872	62346	55438	40809	15432	47379
3.	FSD-2020	60871	72531	48580	33046	18210	46648
4.	MS-2010	57585	63272	56867	26225	11728	43135
5.	Emkay Hybrid	53584	61728	44580	36948	15123	42393
6.	FSD-2018	57442	63272	37707	25287	19136	40569
LSD (0.05)		9178.6	717.22	1000.6	5704.5	3641.5	4048.48
CV (%)		18.87	1.36	2.44	20.72	27.26	14.13

COWPEAS (*Vigna ungiculata*)

24. TITLE — MAINTENANCE AND EVALUATION OF GERMPLASM OF COWPEAS

OBJECTIVE — To maintain and evaluate the germplasm.

RESEARCH WORKERS — Ahmad Hussain and M. Javed Yusuf.

PROJECT DURATION — 2017 (Continuous nature)

LOCATION — Fodder Research Institute, Sargodha.

TREATMENTS/ METHODOLOGY

Total entries	=	31
No. of rows	=	2
Row spacing	=	120 cm.
Sowing time	=	Mid May - Mid June
Fertilizer	=	23-58-0 NPK kg/ha.

The data will be recorded on the following parameters.

- Vine length
- No. of leaves/vine
- No. of branches/vine.
- Stem thickness
- Leaf area
- Green fodder yield
- Grain yield
- No. of days for pod formation.
- Days to maturity.

PREVIOUS YEAR'S RESULTS

Ranges of data recorded:-

- Vine length (183-262 cm)
- No. of leaves/vine(180-246)
- No. of branches/vine. (4-5)
- Stem thickness (0.5-0.9 cm)
- Green fodder yield (18 - 47.6 tha^{-1})

25. TITLE — SCREENING OF DIFFERENT LINES /VARIETIES OF COWPEAS FOR FODDER YIELD.

OBJECTIVE — To test the lines/ varieties for green fodder yield.

RESEARCH WORKERS — Ahmad Hussain and M. Javed Yusuf.

PROJECT DURATION — 2017

LOCATION — Fodder Research Institute, Sargodha.

TREATMENTS/ METHODOLOGY

Varieties/ lines	=	9
Lay out	=	RCBD
Replications	=	3
Plot size	=	3x6m.

Sowing time = March-April
Fertilizer = 23-58-0 NPK kg/ha.

The data will be recorded on the following parameters.

-Vine length
- No. of branches/vine.
- Leaf area
- No. of leaves/plant
- No. of leaves/vine
- Stem thickness
- Green fodder yield
- Disease & pest infestation

PREVIOUS YEAR'S RESULTS

S.No	VARIETIES/ LINES	GFY YIELD (t/ha.)
1.	CP-383	45.93
2.	CP-271	45.00
3.	CP-162	44.63
4.	CP-145	43.89
5.	IT-84-552	39.26
6.	CP-219	35.19
7.	Cowpeas-2003 (check)	33.70
8.	SS-92	32.41
9.	IT-82E-715	30.93
LSD 5%		3.95

26. TITLE BNS & PRE-BASIC SEED PRODUCTION

OBJECTIVE Production of BNS and Pre-basic Seed of Sorghum, Pearl millet and Maize

RESEARCH WORKERS: Ahmad Hussain and M. Javed Yusuf.

PROJECT DURATION: 2017 (Continuous nature)

LOCATIONS Fodder Research Institute, Sargodha

SOWING PLAN
Row distance = 60cm
No. of rows / block = 6
Row length = 5m
Sowing time = 25june -15July

SOWING METHOD

a. *Inspection of nucleus two rows plots (Head - Row) and removal of off type throughout the season of growth from the seedling stage until maturity*: The nucleus plots will be examined critically. Differences in the habit of early plant growth, leaf colour, date of growth, time of heading, height characteristic and disease reaction will be recorded. If a plot differs distinctly from the average in the pre-heading stage of the growth, it will be removed before heading.

b. *Harvesting and threshing of nucleus:* Each remaining plots will be harvested individually with a sickle and tied in a bundle and labelled and threshed individually.

c. Later seed will be cleaned by hand methods. The grain from each nucleus plot will be placed in piles on the seed table. All piles will be examined for approximate uniformity of seed appearance and any pile which appear to be off type, will be discarded. All the remaining piles of the seed will be treated with fungicide and insecticide and bagged, labeled and stored as breeder's stock seed for use in next year.

d. Breeder stock seed from the nucleus will be sown (Row-block) on the clean, fertile land, which did not grow a crop of the same kind in previous year.

e. The field will be not only properly space isolated but also by a border of at least three rows of the same variety on all around four sides.

f. The best farm practices will be used in the sowing and harvesting of breeder seed.

g. The sowing will be done in such a way to make the best use of the limited amount of seed available and to facilitate sowing. The sow spacing (2ft) will be sufficient to permit examination of plants in rows for possible removal of off types.

h. *Roguing*: All plants not typical of the variety will be pulled and removed. The rouging will be done before the flowering as was done for the nucleus/ breeder, stock seed.

i. *Harvesting the breeder's stocks*: In the breeder's stock harvesting and threshing, the equipments used will be clean and free from seeds of any other varieties. The cleanliness will be extended to cards and bags as well as threshing machine itself. The seed will be about 99% pure as to a variety and ready for increase of foundation seed

(Harrington 1952)

PREVIOUS YEAR'S RESULT

Crops	Varieties	Selected No. of Heads.	Selected No. of Head -Row.	Selected row to block.	BNS (kg.)	Pre-Basic (kg.)
Sorghum	Hegari	50	24 / 50	18 /15	29	102
	JS-263	50	15 / 40	11 / 18	26	69
	JS-2002	50	18 / 40	09 / 40	31	114
	Sorghum2011	50	12 / 35	10 / 16	27.5	62
Pearl Millet	MB-87	40	16 / 65	09 / 14	12	36
	Sgd. Bajra	30	09 / 20	05 / 12	07	58
Maize	Sgd. 2002	36	30 / 66	08 / 14	81	706

AGRICULTURAL RESEARCH STATION, BAHAWALPUR

1. GUAR (*Cyamopsistetragonoloba*L.)

27. TITLE — COLLECTION, MAINTENANCE AND EVALUATION OF GUAR GERMPLASM.

OBJECTIVE — To collect, maintain & evaluate desirable genotypes of guar possessing high yield potential, earliness and resistance to insect pests &diseases for their use in hybridization programme and to enhance genetic variability in existing genetic material.

RESEARCH WORKERS — Rashid Minhasand Dr. Lal Hussain Akhtar

PROJECT DURATION — Continuous

LOCATION — Agricultural Research Station, Bahawalpur

TREATMENTS/ METHODOLOGY

Entries = 400 (For fodder=200, for grain=170, for vegetable= 30)

Plot size = 0.9m x 7.2m

Layout = Alpha Lattice

Row Spacing = 45 cm

Data on following characters will be recorded:

1. Days to 50% flowering
2. Days to 90% maturity
3. Plant height
4. Branches plant^{-1}
5. Clusters plant^{-1}
6. Pods cluster^{-1}
7. Pods plant^{-1}
8. Pod length
9. GrainsPod^{-1}
10. 1000-Grain weight
11. Grain Yield
12. Fodder yield

PREVIOUS YEAR'S RESULTS

A. Seed of all the lines/varieties was harvested on maturity and was preserved for further studies. The consolidated data of various traits are given as under:

	Characters	Range
1.	Days to 50% flowering	40-60 days
2.	Days to 90% maturity	115-140 days
3.	Plant height	50-225 cm
4	Branchesplant^{-1}	0-15
5.	Clustersplant^{-1}	8-35
6.	Podsplant^{-1}	50-400
7.	Pods cluster^{-1}	3-14
8.	Pod length	3-6cm
9.	Grainspod^{-1}	5-11
10.	1000-Grain weight	25-40gm
11.	Green fodder yield	12-36 t ha^{-1}
12.	Grain Yield	160-2400 Kg ha^{-1}

B.A total of 207 guar germplasm accessions/lines were collected from PGRI, NARC, Islamabad and farmer's field by conducting visits throughout the country under ALP Project of Guar.

27. TITLE	SINGLE PLANT SELECTIONSOF GUAR
OBJECTIVE	To collect single plants of guar keeping in view the desirable morphological traits and resistance to insect pests & diseases.
RESEARCH WORKERS	Rashid Minhas, Muhammad Shahjhan Bukhari, Muhammad Zubair and Dr. Lal Hussain Akhtar
PROJECT DURATION	2017
LOCATION	Agricultural Research Station, Bahawalpur and Farmer's fialds
TREATMENTS/ METHODOLOGY	PSS will be collected from available germplasm of guar at this station and from farmer's fields keeping in view the desirable morphological traits and resistance to insect pests & diseases.
PREVIOUS YEAR'S RESULTS	50 PSS were collected for evaluation in Plant to Progeny Rows Trial.
28. TITLE	PLANT TO PROGENY ROW TRIAL
OBJECTIVE	To evaluate the single plant selections of guar made during, 2016 in plant to progenyrowskeeping in view the yield of grains, vegetable and fodder and resistance to insect pests &diseases.
RESEARCH WORKERS	Rashid Minhasand Dr. Lal Hussain Akhtar
PROJECT DURATION	2017
LOCATION	Agricultural Research Station, Bahawalpur
TREATMENTS/ METHODOLOGY	No. of Plants selected= 50 Checks= 2/1, BR-90 & BR-99 Layout = Alpha Lattice Row Spacing = 45 cm Data on following characters will be recorded: 1. Days to 50% flowering 2. Days to 90% maturity 3. Plant height 4 Branches plant^{-1} 5. Clusters plant^{-1} 6. Podscluster^{-1} 7. Pods plant^{-1} 8. Grains pod^{-1} 9. 1000-Grain weight 10. Pod length 11. Grain Yield 12. Fodder yield
PREVIOUS YEAR'S RESULTS	51 single plants were evaluated in progeny row trial. 18progenies were selected for their evaluation in preliminary yield trials during 2017.

29. TITLE — HYBRIDIZATION AND STUDY OF FILIAL GENERATIONS

OBJECTIVE — To create genetic variability by crossing local and exotic lines possessing desirable traits like yield, earliness and resistance to insect pests &diseases.

RESEARCH WORKERS — Rashid Minhas, Muhammad Shahjhan Bukhari, Muhammad Zubairand Dr. Lal Hussain Akhtar

PROJECT DURATION — Continuous

LOCATION — Agricultural Research Station, Bahawalpur

TREATMENTS/ METHODOLOGY — Hybridization

3 new crosses will be attempted using available germplasm keeping in view the breeding objectives.
1. S-5274 X S-5789 (For Grain purpose)
S-5274: Hairy,high grain yielder and early maturing strain.
S-5789: Non-hairy, branched and high grain yielder
2. BR-90 X S-5789(For Fodder purpose)
BR-90: Hairy, branched, good fodder yielder
S-5789: Non-hairy, branched and good fodder yielder
3. BR-99 X S-6036 (For grain & vegetable purpose)
BR-99: Non-branched, good grain and fodder yielder variety S-6036: Non Hairy, Branched line with long & broader pods.

Filial Generations

Following generations will beraised during the year 2017.

Generation	Parental Crosses/ progenies	Procedure
F_1	4	Non replicated

PREVIOUS YEAR'S RESULTS

3 crosses were attempted detailed as under during 2016.

Cross #	Cross	No. of pod Set
1.	S-5274 X S-5823	2
2.	BR-90 X S-5770	1
3.	BR-99 X S-5778	1
	Total	4

Filial generations are not available because heavy and abrupt rains during 2015-16 severely damage the guar crop at this station.

30. TITLE	IRRADITION OF GUAR SEED TO CREATE GENETIC VARIABILITY.
OBJECTIVE	To create genetic variability among existing old and new genotypes of guar through irradiation.
RESEARCH WORKERS	Muhammad Zubairand Dr. Lal Hussain Akhtar
PROJECT DURATION	2017
LOCATION	Agricultural Research Station, Bahawalpur
TREATMENTS/ METHODOLOGY	The seed of following guar varieties will be treated with irradiations at three dozes i.e. 30K, 45K and 60K in collaboration with NIAB, Faisalabad. Varieties = 7 (BR-90, BR-99, S-5274, S-5789, S-5885, S-5823, S-6036) After irradiation process seed of above varieties will be sown toraise M_1Generation. Checks = 02 (BR-99, BR-90) Plot size = 2.7m x 7.2m Row Spacing = 45 cm Data on following characters will be recorded: 1. Days to 50% flowering 7. Pods plant^{-1} 2. Days to 90% maturity 8. Grains pod^{-1} 3. Plant height 9. 1000-Grain weight 4 Branches plant^{-1} 10. Pod length 5. Clusters plant^{-1} 11. Grain Yield 6. Pods cluster^{-1} 12. Fodder yield
PREVIOUS YEAR'S RESULTS	New experiment
31. TITLE	PRELIMINARY YIELD TRIALS OF GUAR (A-TRIALS).
OBJECTIVE	To evaluate the promising genotypes of guar for grain, fodder & vegetable purpose keeping in view the yield and resistance to insect pests &diseases.
RESEARCH WORKERS	Muhammad Zubairand Dr. Lal Hussain Akhtar
PROJECT DURATION	2017
LOCATION	Agricultural Research Station, Bahawalpur
TREATMENTS/ METHODOLOGY	No. of Trials = 02 Varieties = 18+3checks (2/1, BR-90 &BR-99) PRELIMINARY YIELD TRIALS-I(A-I) (Grain Purpose) Varieties (12): S-6538, S-6539, S-6543, S-6547, S-6549, S-6554, S-6555, S-6558, S-6560, S-6565, S-6581, BR-99. PRELIMINARY YIELD TRIALS-II(A-II) (Fodder Purpose) Varieties (9): S-6536, S-6541, S-6548, S-6552, S-6553, S-6566, S-6577, 2/1, BR-90.

Layout = RCBD
Replications = 3
Plot size = 2.7m x 7.2m
Row Spacing = 45 cm

Data on following characters will be recorded:

1. Days to 50% flowering
2. Days to 90% maturity
3. Plant height
4 Branches plant^{-1}
5. Clusters plant^{-1}
6. Pods cluster^{-1}
7. Pods plant^{-1}
8. Grains pod^{-1}
9. 1000-Grain weight
10. Pod length
11. Grain Yield
12. Fodder yield

PREVIOUS YEAR'S RESULTS

Out of 18 lines tested in 2 trials, 10 were selected. These lines will be tested in B-Trials during 2017. Their performance is given as under:

A-I Trial

Varieties	Grain Yield (Kg ha^{-1})
S-6384	2658
S-6159	2521
S-6161	2246
S-6322	2058
S-6146	1783
S-6000	1629
S-6189	1595
BR-99 (Check)	1543
S-6103	1440
S-6236	1235
S-6266	1080
2\1 (Check)	943
S-5989	806
S-6128	514
LSD (0.05)	205

A-II Trial

Varieties	Grain Yield (Kg ha^{-1})	Fodder Yield (t ha^{-1})
S-6251	2341	34.6
S-6260	2238	31.3
S-6165	2032	38.7
S-6131	1755	37.5
BR-90 (Check)	1543	28.0
S-6153	1260	26.2
2\1 (Check)	1055	24.3
S-6145	682	20.7
LSD (0.05)	244	1.25

32. TITLE

OBJECTIVE

RESEARCH WORKERS: Muhammad Shahjhan Bukhari and Dr. Lal Hussain Akhtar

PROJECT DURATION: 2017

LOCATION: Agricultural Research Station, Bahawalpur

TREATMENTS/ METHODOLOGY:
No. of Trials = 01
Varieties = 11+2checks (BR-90 &BR-99)
Varieties (13):S-6000, S-6103, S-6131, S-6146, S-6159, S-6161, S-6165, S-6189, S-6384, S-6251, S-6260, S-5274, BR-99, BR-90.
Layout = RCBD
Replications = 3
Plot size = 2.7m x 7.2m
Row Spacing = 45 cm

Data on following characters will be recorded:

1. Days to 50% flowering
2. Days to 90% maturity
3. Plant height
4. Branches plant^{-1}
5. Clusters plant^{-1}
6. Pods cluster^{-1}
7. Pods plant^{-1}
8. Grains pod^{-1}
9. 1000-Grain weight
10. Pod length
11. Grain Yield
12. Fodder yield

PREVIOUS YEAR'S RESULTS: Out of 12 lines tested in B-Trial, 6 were selected on the basis of their better performance. These lines will be tested in C-Trial during 2017. The results are given as under:

B-Trial

Varieties	Grain Yield (Kg ha^{-1})	Fodder Yield (t ha^{-1})
S-5789	2700	36.2
S-6036	2546	30.5
S-5752	2152	31.5
S-5827	2117	33.5
S-5744	1929	26.4
S-5778	1732	30.8
S-5765	1560	25.4
BR-99 (Check)	1543	27.9
S-5961	1312	22.4
S-5766	1235	24.5
S-6023	1209	18.6
BR-90 (Check)	1046	27.5
S-6101	849	19.5
S-5919	677	15.4
LSD(0.05)	178	1.50

33. TITLE: ADVANCE GUAR YIELD TRIAL (C-TRIAL)

OBJECTIVE: To select high yielding and better adapted varieties/lines of guar.

RESEARCH WORKERS: Muhammad Shahjhan Bukhari and Dr. Lal Hussain Akhtar

PROJECT DURATION: 2017

LOCATION: Agricultural Research Station, Bahawalpur

TREATMENTS/ METHODOLOGY:
No. of Trials = 01
Varieties = 8+2checks (BR-90 &BR-99)
Varieties (8): S-5789, S-6036, S-5778, S-5827, S-5752, S-5274, BR-99, BR-90
Layout = RCBD
Replications = 3
Plot size = 2.7m x 7.2m
Row Spacing = 45 cm

Data on following characters will be recorded:

1. Days to 50% flowering
2. Days to 90% maturity
3. Plant height
4 Branches plant^{-1}
5. Clusters plant^{-1}
6. Pods cluster^{-1}
7. Pods plant^{-1}
8. Grains pod^{-1}
9. 1000-Grain weight
10. Pod length
11. Grain Yield
12. Fodder yield

PREVIOUS YEAR'S RESULTS

Out of 8 lines tested in C-Trial, 2 were selected on the basis of their better performance. These lines will be tested in Zonal & NUYT Trial during 2017. The results are given as under:

C-Trial

Varieties	Grain Yield (Kg ha^{-1})	Fodder Yield (t ha^{-1})
S-5885	2803	31.8
S-5823	2443	29.5
S-5825	2040	33.5
S-5743	1860	27.5
S-5747	1740	24.8
BR-99 (Check)	1740	28.1
S-5824	1509	20.5
BR-90 (Check)	1029	27.2
5733	866	18.4
5770	849	29.5

34. TITLE — ZONAL GUAR YIELD TRIAL

OBJECTIVE — To test the advance varieties/lines of guar in different ecological zones of the Punjab for their grain yield and fodder yield and adaptability.

RESEARCH WORKERS — Rashid Minhas and Dr. Lal Hussain Akhtar

PROJECT DURATION — 2017

LOCATIONS

1. Agronomic Research Station, Bahawalpur
2. Agronomic Research Station, Karor.
3. Agronomic Research Station, Khanewal
4. Adaptive Research Farm, D.G.Khan
5. Adaptive Research Farm, Vehari
6. Oil Seed Research Station, Khanpur.

TREATMENTS/ METHODOLOGY

Seed will be provided to above mentioned stations.
Varieties (5) =4+1 Checks(S-5789, S-5823, S-5885, S-6036 and BR-99)
Layout = RCBD
Replications = 3
Plot size = 3.6m x 7.2m
Row Spacing = 45 cm
Data on following characters will be recorded:

1. Plant height (cm)
2. Podsplant^{-1}
3. No. of Branches plant^{-1}
4. Grain Yield (kg ha^{-1})
5. Green Fodder Yield (t ha^{-1})

PREVIOUS YEAR'S RESULTS — First Year

35. TITLE	NATIONAL UNIFORM GUAR YIELD TRIAL
OBJECTIVE	To test the most promising strains of guar in different ecological zones of Pakistan.
RESEARCH WORKERS	Rashid Minhas and Dr. Lal Hussain Akhtar
PROJECT DURATION	2017
LOCATION	1. Arid Zone Research Institute, Bahawalpur 2. Barani Agricultural Research Institute, Chakwal 3. Arid Zone Research Institute, Bhakkar 4. Arid Zone Research Institute, UmerKot (Sindh) 5. ARZC, D.I.Khan 6. Grain Research Station, Ahmad WalaKarak (KPK) 7. BaraniAgriculture Research Station, Kohat (KPK)
TREATMENTS/ METHODOLOGY	Seed will be provided to Coordinator Fodder, NARC, Islamabad. He will manage its testing at various sites throughout Pakistan. Varieties (3) =2+1 Checks(S-5823, S-5885,BR-99) Layout = RCBD Plot size = 3.6m x 7.2m Row Spacing = 45cm Repeats=3 Data on following characters will be recorded: 1. Plant height (cm) 2. Podsplant^{-1} 3. No. of Branches plant^{-1} 4. Grain Yield (kg ha^{-1}) 5. Green Fodder Yield (t ha^{-1})
PREVIOUS YEAR'S RESULTS	First Year

36. TITLE	EVALUATION OF ADVANCED LINES OF GUAR UNDER DROUGHT STRESS CONDITIONS.
OBJECTIVE	To evaluate high yielding and better adapted varieties/lines of guar under drought stress conditions for areas experiencing water shortage.
RESEARCH WORKERS	Muhammad Zubair and Dr. Lal Hussain Akhtar
PROJECT DURATION	2017
LOCATION	Agricultural Research Station, Bahawalpur
TREATMENTS/ METHODOLOGY	Varieties (5) =4+1 Checks(S-5789, S-5823, S-5885, S-6036 and BR-99) Layout = RCBD Replications = 3 Plot size = 2.7m x 7.2m Row Spacing = 45 cm Irrigations = No irrigations after sowing till harvesting. Data on following characters will be recorded: 1. Days to 50% flowering 7.Pods plant^{-1} 2. Days to 90% maturity 8.Grains pod^{-1} 3. Plant height 9.1000-Grain weight 4 Branches plant^{-1} 10. Pod length 5. Clusters plant^{-1} 11. Grain Yield 6. Pods cluster^{-1}

PREVIOUS YEAR'S RESULTS The results are given as under:

Varieties	Grain Yield (Kg ha^{-1})	
	No irrigation	3 irrigations
S-5744	1089	1877
S-5823	1544	2387
BR-99	1063	1627
S-5785	858	1521
BR-90	487	984

37. TITLE SCREENING OF NEW GUAR STRAINS AGAINST DISEASES

OBJECTIVE To select guar genotypes resistant/tolerant to various pathological diseases.

RESEARCH WORKERS Saeed Ahmad and Dr. Lal Hussain Akhtar

PROJECT DURATION 2017

LOCATION 1. Plant Pathological Research Institute, Faisalabad.
2. Regional Agricultural Research Institute, Bahawalpur.

TREATMENTS/ METHODOLOGY Varieties (5) =4+1 Checks(S-5789, S-5823, S-5885, S-6036 and BR-99)
Layout = RCBD
Replication = 3
Plot size = 2.7m x 7.2m
Row Spacing = 45cm
Data on various diseases will be recorded.

PREVIOUS YEAR'S RESULTS

Name of lines	RARI, Bahawalpur Only bacterial blight was observed and plant reaction is as under
S-5742	Moderately Resistant
S-5782	Moderately Susceptible
S-5822	Moderately Resistant
BR-99 (Check)	Moderately Resistant
BR-90 (Check)	Moderately Susceptible

38. TITLE SCREENING OF NEW GUAR GENOTYPES AGAINST INSECT PESTS

OBJECTIVE To select genotypes of guar resistant/tolerant to insect pests.

RESEARCH WORKERS Rana Muhammad Younis and Dr. Lal Hussain Akhtar

PROJECT DURATION 2017

LOCATION 1. Entomological Research Institute, Faisalabad
2. Regional Agricultural Research Institute, Bahawalpur

TREATMENTS/ METHODOLOGY Varieties (5) =4+1 Checks(S-5789, S-5823, S-5885, S-6036 and BR-99)
Layout = RCBD
Replication = 3
Plot size = 2.7m x 7.2m
Row Spacing = 45 cm
Data on the infestation of jassid& whitefly will be recorded at an interval of 2 weeks.

PREVIOUS YEAR'S RESULTS The Entomologist, Regional Agricultural Research Institute, Bahawalpur reported the following results

Varieties	Av. Jassid/Leaf	Av. W.F/ Leaf
S-5742	2.40	8.60
S-5782	2.66	9.40
S-5822	2.22	6.70
BR-99 (Check)	3.00	10.10
BR-90 (Check)	2.93	12.00
LSD 5%	0.22	1.20

39. TITLE RESPONSE OF GUAR STRAINS TO N.P FERTILIZER FOR GRAIN YIELD

OBJECTIVE To find out the optimum dose of N.P for optimum grain yield of guar strains.

RESEARCH WORKERS Dr. Hafiz Muhammad Nasrullah, Muhammad Shahjhan Bukhari and Dr. Lal Hussain Akhtar

PROJECT DURATION 2017

LOCATION Agricultural Research Station, Bahawalpur

TREATMENTS/ METHODOLOGY

Varieties = S-5885, S-5823, BR-99.
Replications = 3
Plot size = 1.8m x 7.2m
Row Spacing = 30cm
Layout = Split plot design
Soil analysis will be conducted before and after sowing.
Data on following characters will be recorded:

1. Days to 50% flowering
2. Days to 90% maturity
3. Plant Height
4 Branches/Plant
5. Clusters/plant
6. Pods/cluster
7. Pods/Plant
8. Grains/Pod
9. 1000-Grain weight
10. Pod length
11. Grain Yield

Treatments	N (Kg ha^{-1})	P (Kg ha^{-1})
T1	0	0
T 2	0	30
T 3	0	60
T 4	0	90
T 5	15	0
T 6	15	30
T 7	15	60
T 8	15	90
T9	30	0
T10	30	30
T11	30	60
T12	30	90
T13	45	0
T14	45	30
T15	45	60
T16	45	90

The results are summarized as under:

PREVIOUS YEAR'S RESULTS

Grain Yield Kg ha^{-1}

Treatments	N (Kg ha^{-1})	P (Kg ha^{-1})	Variety	
			BR-99	S-5789
T1	0	0	900	1235
T 2	0	30	1029	1466
T 3	0	60	1466	1826
T 4	0	90	1376	1775
T 5	15	0	1003	1247
T 6	15	30	1183	1492
T 7	15	60	1273	2431
T 8	15	90	1453	2456
T9	30	0	1055	1312
T10	30	30	1517	2649
T11	30	60	1723	2778
T12	30	90	1710	2752
T13	45	0	1119	1466
T14	45	30	1247	2070
T15	45	60	1698	2160
T16	45	90	1543	1980
LSD (0.05)		V=74.83	T=105.83	VxT=211

40. TITLE

RESPONSE OF GUAR STRAINS TO K. FERTILIZER FOR GRAIN YIELD.

OBJECTIVE

To find out the optimum dose of K. for grain yield of guar

RESEARCH WORKERS

Dr. Hafiz Muhammad Nasrullah, Muhammad Shahjhan Bukhari and Dr. Lal Hussain Akhtar

PROJECT DURATION

2017

LOCATION

Agricultural Research Station, Bahawalpur

TREATMENTS/ METHODOLOGY

Varieties =S-5885, S-5823, BR-99
Replications = 3
Plot size = 1.8m x 7.2m
Row Spacing = 45cm
Layout = Split plot design
Soil analysis will be conducted before and after sowing.
Data on following characters will be recorded:

1. Days to 50% flowering
2. Days to 90% maturity
3. Plant Height
4 Branches/Plant
5. Clusters/plant
6. Pods/cluster
7. Pods/Plant
8. Grains/Pod
9. 1000-Grain weight
10. Pod length
11. Grain Yield

Treatments	(Kg ha^{-1})		
	N	P	K
T1	30	60	0
T2	30	60	30
T3	30	60	60
T4	30	60	90

PREVIOUS YEAR'S RESULTS — The results are summarized as under:

Grain Yield Kg ha^{-1}

Treatments	(Kg ha^{-1})			variety	
	N	P	K	BR-99	S-5789
T1	30	60	0	1672	2302
T2	30	60	30	1698	2366
T3	30	60	60	1813	2520
T4	30	60	90	1801	2469
LSD (0.05)	V=138.12			T=105.83	

41. TITLE — EFFECT OF DIFFERENT ROW SPACING ON THE GRAIN YIELD OF NEW GUAR STRAINS.

OBJECTIVE — To find out the optimum row spacing for new guar strains.

RESEARCH WORKERS — Dr. Hafiz Muhammad Nasrullah, Dr. Lal Hussain Akhtar and Muhammad Zubair

PROJECT DURATION — 2017

LOCATION — Agricultural Research Station, Bahawalpur

TREATMENTS/ METHODOLOGY

Varieties = S-5885, S-5823, BR-99
Row Spacing =30cm, 45cm, 60cm
Replications = 4
Plot size = 2.7m x 7.2m
Layout = Split plot design
Data on following characters will be recorded:

1. Days to 50% flowering
2. Days to 90% maturity
3. Plant Height
4 Branches/Plant
5. Clusters/plant
6. Pods/cluster
7. Pods/Plant
8. Grains/Pod
9. 1000-Grain weight
10. Pod length
11. Grain Yield

PREVIOUS YEAR'S RESULTS — The results are summarized as under:

Grain Yield Kg ha^{-1}

Treatments	Row Spacing (cm)	variety	
		BR-99	S-5789
T1	30	1331	1788
T2	45	1685	2186
T3	60	1067	1492
LSD (0.05)	V=99.43	T=121.78	

42. TITLE — PRODUCTION OF BNS, PRE-BASIC AND CERTIFIED SEEDOF GUAR VARIETIES/STRAINS

OBJECTIVE — To produce sufficient seed of guar varieties/strains for distribution to the seed companies and growers for seed multiplication.

RESEARCH WORKERS — Muhammad Shahjhan Bukhari and Dr. Lal Hussain Akhtar

PROJECT DURATION — 2017

LOCATION — Agricultural Research Station, Bahawalpur

TREATMENTS/ — Name of variety= BR-99

METHODOLOGY

PREVIOUS YEAR'S RESULTS

1. 200plants of BR-99 wereselected for plant to row planting.
2. Out of 120plant to rows planted,80 rows were selected for planting in blocks.
3. Out of 40 blocks planted, 25 blocks were selected, harvested and bulked which64 Kg BNS seed of BR-99.
4. From last year BNS seed planted, 600 Kgpre-basic seed of BR-99was produced.

43. TITLE — DEMONSTRATION PLOTS OF S-5274

OBJECTIVE — To introduce the newly developed variety of guar among the guar growers.

RESEARCH WORKERS — Rashid Minhas, Muhammad Shahjhan Bukhari, Muhammad Zubair and Dr. Lal Hussain Akhtar

PROJECT DURATION — 2017

LOCATION — Farmer's Fields in Divisions of Bahawalpur, Multan and Thal Area. (3 locations)

TREATMENTS/ METHODOLOGY — Name of variety= S-5274
Row Spacing = 45cm
Plot size = 40m x 20m
Data on grain yield kgha^{-1} will be recorded.

PREVIOUS YEAR'S RESULTS — First Year

2. PEARL MILLET (*Pennisetum americanum*)

44. TITLE — ADAPTABILITY TRIAL OF PEARL MILLET

OBJECTIVE — To test the advanced varieties/lines of pearl millet in different ecological zones of the Punjab for their green fodder yield and adaptability.

RESEARCH WORKERS — Muhammad Zubairand Dr. Lal Hussain Akhtar

PROJECT DURATION — 2017

LOCATION — Agricultural Research Station, Bahawalpur

TREATMENTS/ METHODOLOGY — The seed and the sowing plan will be provided by the Director, Fodder Research Institute, Sargodha.

PREVIOUS YEAR'S RESULTS — The results were sent to Director, Fodder Research Institute, Sargodha and are summarized as under:

Varieties	Plant height (cm)	Leaves Plant^{-1}	Tillers m^{-2}	GFY (t ha^{-1})
A	193.2	9	119	45.5
B	193.5	11	128	50.5
C	182.1	10	143	55.0
D	187.3	11	137	49.6
E	190.9	10	99	56.8
F	201.6	10	104	46.3
G	200.6	11	95	40.4
H	171.7	12	87	56.5
I	186.9	8	82	58.3

3. SORGHUM (*Sorghum bicolor*)

45. TITLE — ADAPTABILITY TRIAL OF SORGHUM

OBJECTIVE — To test the advanced varieties/lines of Sorghum in different ecological zones of the Punjab for their green fodder yield and adaptability.

RESEARCH WORKERS — Muhammad Shahjhan Bukhariand Dr. Lal Hussain Akhtar

PROJECT DURATION — 2017

LOCATION — Agricultural Research Station, Bahawalpur

TREATMENTS/ METHODOLOGY — The seed and the sowing plan will be provided by the Director, Fodder Research Institute, Sargodha.

PREVIOUS YEAR'S RESULTS — The results were sent to Director, Fodder Research Institute, Sargodha and are summarized as under:

Varieties	Plant height (cm)	Leaves Plant^{-1}	Plants m^{-2}	GFY (t ha^{-1})
V1 (F-01-2013)	126.3	25	29	35.9
V2 (F-02-2013)	141.0	31	30	48.4
V3 (K-94)	149.3	29	33	31.6
V4 (YSS-04)	183.0	33	42	40.4
V5 (PARC-SS-2)	143.5	31	28	36.3
V6 (INDIAN-5)	170.5	30	36	33.3
V7 (S-9901)	191.3	40	26	48.6
V8 (Sorghum-2011)(ck)	181.8	33	28	41.3

4. MAIZE (*Zea mays* L.)

46. TITLE — ADAPTABILITY GREEN FODDER YIELD TRIAL OF MAIZE

OBJECTIVE — To test the advanced varieties/lines of Maize in different ecological zones of the Punjab for their green fodder yield and adaptability.

RESEARCH WORKERS — Rashid Minhasand Dr. Lal Hussain Akhtar

PROJECT DURATION — 2017

LOCATION — Agricultural Research Station, Bahawalpur

TREATMENTS/ METHODOLOGY — The seed and the sowing plan will be provided by the Director, Fodder Research Institute, Sargodha.

PREVIOUS YEAR'S RESULTS — The results were sent to Director, Fodder Research Institute, Sargodha and are summarized as under:

Varieties	Plant height (cm)	Leaves Plant^{-1}	GFY (t ha^{-1})
A	196.6	13	45.7
B	194.9	15	44.2
C	226.1	14	40.3
D	188.0	13	35.4
E	206.5	14	46.6
F	188.9	13	45.1
G	217.9	14	36.0
H	194.9	14	39.0

FODDER RESEARCH SUB-STATION AARI, FAISALABAD

1. SORGHUM

48. TITLE: COLLECTION AND MAINTANCE OF SORGHUM GERMPLASM

OBJECTIVE: To maintain the purity of breeding genepool of sorghum lines possessing desirable recombinants for direct introduction. Also use the material for hybridization purpose.

RESEARCH WORKER(S): Dr.M.Shahid Munir Chohan, Dr. Qamar Shakil and Mr.Ahmed Hassan Khan

PROJECT DURATION: Continues Nature.

LOCATION: Fodder Research Sub-Station, AARI Faisalabad.

TREATMENT:

Germplasm lines/varieties	= 140
Exotic lines	= 05
New Collection of lines	= 35

METHODOLOGY:

Method of Sowing	line sowing
Row length	3m
Row to Row distance	60 cm
No of rows	2
Sowing Time	15 July

Following data of newly collected lines will be recorded.

1. Crop Stand (Above 90%)
2. Plant height at 50% flowering (100-330 cm)
3. Leaf Area (180-450 cm^2)
4. No of plants/one meter (15-40)
5. No of leaves/plant (12-20)
6. Leaf to stem ratio (0.10-0.55)
7. Stem thickness (1.0-3.0 cm)
8. Days to 50% flowering (75-90)
9. Days to maturity (100-130)
10. leaf colour (light to dark green)
11. TSS (07 to 17)
12. Early maturing (80-90)
13. Late maturing (Above 125 days)

PREVIOS YEAR'S RESULTS. The seed of five selfed bagged plants was collected to avoid out crossing and kept reserved for further studies in the next year.

49. TITLE: HYBRIDIZATION OF SORGHUM AND STUDY OF FILIAL GENERATIONS (F1-F6).

OBJECTIVE: To create sufficient genetic variability in order to select distinct recombinants possessing desirable traits i.e. High fodder yield potential

1 Stay green
1. Leaf to stem ratio
2. Juiciness
3. Quality
4. Greenish
5. Grain yield
6. Insect and disease resistant.

RESEARCH WORKER(S): Mr.Ahmed Hassan Khan, Dr.M.Shahid Munir Chohan and Dr.Qamar Shakil

PROJECT DURATION: 2017

LOCATION: Fodder Research Sub-Station, AARI Faisalabad.

TREATMENT/ METHODOLOY.: CROSSES OF SORGHUM TO BE ATTEMPTED

1. BJ-1914 X JS-2002
2. Aus No.403415 X JS-7
3. PAK-47 X A.ASIL
4. KA-113 X L-18
5. INDIAN - III X HEGARI
6. SOROKARTHAHOO X SUGRORIB
7. SUGRORIB X LOCAL QUETTA
8. CHINA X SL-18
9 SORGHUM-2011 X A-3449
10. S-9902 X JS-2002
11. F-2007 X HOK
12. SL-146 X China Small

F_1 will be planted in single row along with parents.
F_2 will be planted in four rows each.
F_3-F_6 will be planted in three rows each.

Row Spacing	60 cm
Row length	03 m
Sowing time	15 July

CROSSES PROGENIES TO BE STUDIED.

Generations	Crosses/Progenies

Generations	Crosses/Progenies
F1	12 crosses
F2	18 (recombinants)
F3	30 Progenies
F4	32 Progenies
F5	25 Progenies
F6	14 Progenies

All the above mentioned progenies will be studied in a pedigree selection method.

PREVIOS YEAR'S RESULTS.

FILIAL GENERATION	CROSSES/PROGENIES		ADVANCE LINES
	Studied	Selected	Selected
F1	20	12	--
F2	24	18	--
F3	26	30	--
F4	36	32	2
F5	30	25	2
F6	16	11	1

50. TITLE — PRELIMINARY GREEN FODDER YIELD TRIAL ON SORGHUM.

OBJECTIVE — To study yield performance of elite advance lines selected from F5, F6 and F7on the basis of phenotypic superiority, uniformity and resistant to disease and insect.

RESEARCH WORKER(S) — Dr.Qamar Shakil, Mr.Ahmed Hassan Khan and M.Shahid Munir Chohan

PROJECT DURATION — 2017.

LOCATION — Fodder Research Sub-Station, AARI Faisalabad.

TREATMENT/ METHODOLOY — The packed seed will be received along with sowing methodology from Director, Fodder Research Institute Sargodha. Fodder Research Sub-Station AARI, Faisalabad will contribute the following elite lines.

Sr.No	Varieties/Lines
1.	F-01-17
2.	F-02-17
3.	F-03-17
4.	F-04-17
5.	F-05-17

Check varieties	JS-2002 and Sorghum-2011.
Lay out	R.C.B.D
Replication	3
Sowing Method	line sowing
Row spacing	30cm
Sowing Time	Mid March

PREVIOS YEAR'S RESULTS.

Sr.No	Varieties	Green Fodder Yield (t/hac)
1.	PVK-801	83.05
2.	YSS-15	81.77
3.	Sukkar	77.22
4.	JS-I	76.94
5.	JS.2002 (Check)	76.66
6.	Sorghum-2011 (Check)	74.44
7.	F-04-16	73.88
8.	YSS-4	72.77
9.	F-03-16	72.55
10.	S-145	70.83
11.	FRI-07	69.44
12.	F-02-16	68.85
13.	No.3448	68.05
14.	F-01-16	67.22
Cd 1		1.88

51. TITLE — ADVANCE GREEN FODDER YIELD TRIAL ON SORGHUM.

OBJECTIVE — To evaluate the green fodder yield potential of the most promising lines, which are selected on the basis of their morphological traits from preliminary yield trial.

RESEARCH WORKER(S) — Dr.M.Shahid Munir Chohan, Mr.Ahmed Hassan Khan and Dr.Qamar Shakil

PROJECT DURATION — 2017.

LOCATION — Fodder Research Sub-Station, AARI Faisalabad.

TREATMENT METHODOLOY — The packed seed will be received along with sowing methodology from Director, Fodder Research Institute Sargodha. Fodder Research Sub-Station AARI, Faisalabad will contribute the following elite lines.

Sr.No	Varieties/Lines
1.	F-04-16
2.	F-03-16

PREVIOS YEAR'S RESULTS.

Sr. No	Varieties	Green Fodder Yield (t/hac)
1.	Indian-6	85.44
2.	Sorghum-2011 (Check)	82.44
3.	No.1572	72.77
4.	Sweet sorghum	70.44
5.	F-02-15	70.24
6.	Sgd-013-1	69.72
7.	No.80010	69.44
8.	F-04-15	64.72
Cd 1		2.20

52. TITLE ZONAL GREEN FODDER YIELD TRIAL ON SORGHUM.

OBJECTIVE To evaluate promising/Candidate lines of sorghum for their green fodder yield in various agro ecological zones in Punjab province.

RESEARCH WORKER(S) Dr.Qamar Shakil, Dr.M.Shahid Munir Chohan and Mr.Ahmed Hassan Khan

PROJECT DURATION 2017.

LOCATION Fodder Research Sub-Station, AARI Faisalabad.

TREATMENT/ METHODOLOY The packed seed along with methodology will be received from Director, Fodder Res institute Sargodha. This station will contribute in the trial with the following elite lines.

1. F-02-2015
2. F-04-2015

PREVIOS YEAR'S RESULTS.

Sr.No	Coded Varieties	Green Fodder Yield (t/hac)
1.	Sorghum-2011 (Check)	88.44
2.	PARC-SS-2	88.05
3.	Indian-5	86.77
4.	YSS-04	85.77
5.	S-9901	84.22
6.	F-01-2013	84.16
7.	F-02-2013	82.20
8.	K-94	70.27
Cd 1		2.27

53. TITLE — NATIONAL UNIFORM GREEN FODDER YIELD TRIAL ON SORGHUM.

OBJECTIVE — To test the green fodder yield performance of coded promising/candidate liens on a wide range of agro ecological conditions through out the country.

RESEARCH WORKER(S) — Dr.M.Shahid Munir Chohan, Dr.Qamar Shakil and Mr.Ahmed Hassan Khan

PROJECT DURATION — 2017.

LOCATION — Fodder Research Sub-Station, AARI Faisalabad.

TREATMENT METHODOLOY — The packed seed/sowing plan will be supplied by the Coordinator NARC, Islamabad and the trial will be laid out accordingly. Data will be recorded as per instruction. This station will contribute in the trial with the following elite lines.
1. F-01-2013
2. F-02-2013

PREVIOS YEAR'S RESULTS.

Sr.No	Coded Varieties	Green Fodder Yield (t/hac)
1.	V 6	80.00
2.	V 7	79.25
3.	V 5	75.14
4.	V1	74.75
5.	V 2	73.38
6.	V10	70.30
7.	V 4	69.14
8.	V 8	68.69
9.	V9	65.37
10.	V 3	65.35
Cd 1		2.11

54. TITLE — PRE-BASIC SEED PRODUCTION OF KHARIF FODDERS UNDER PROJECT ENTITLED "IMPROVEMENT IN BREEDING AND SEED PRODUCTION SYSTEM OF FODDER CROPS"

OBJECTIVE — Pre-basic seed production of approved varieties of fodder crops to ensure availability of certified seed

RESEARCH WORKER(S) — Dr.Qamar Shakil
Dr.M.Shahid Munir Chohan
Mr.Ahmed Hassan Khan

PROJECT DURATION — 2017.

LOCATION — Fodder Research Sub-Station, AARI Faisalabad.

TREATMENT METHODOLOY — The packed seed plan will be supplied by Director, Fodder Res institute Sargodha and the trial will be laid out accordingly. This station will produce pre-basic seed of approved cultivar of sorghum-2011 and maize S-2002

PREVIOS YEAR'S RESULTS. — New experiment

55. TITLE — NATIONAL UNIFORM GREEN FODDER YIELD TRIAL ON S.S HYBRID.

OBJECTIVE — To determinate green fodder yield of promising multicut fodders (exotic as well local)

RESEARCH WORKER(S) — Dr.Qamar Shakil, Mr.Ahmed Hassan Khan and Dr. M.Shahid Munir Chohan

PROJECT DURATION — 2017.

LOCATION — Fodder Research Sub-Station, AARI Faisalabad.

TREATMENT/ METHODOLOY — The packed seed/sowing plan will be supplied by Coordinator (Fodder NARC, Islamabad and the trial will be laid out accordingly. Data will be recorded as per instruction. This station will contribute in the trial with the following elite lines.

1. FSD-2017
2. Golden Sorghum

PREVIOUS YEAR'S RESULTS.

Sr. No	Coded varieties	Green Fodder Yield (t/hac)
1.	H	271.1
2.	J	268.43
3.	C	254.65
4.	I	254.64
5.	M	253.76
6.	N	252.88
7.	O	252.42
8.	D	251.98
9.	G	242.65
10.	E	241.17
11.	A	236.43
12.	K	236.43
13.	L	235.54
14.	F	234.66
15.	P	231.99
16.	B	124.02
Cd 1		24.50

56. TITLE ZONAL GREEN FODDER YIELD TRIAL ON MAIZE.

OBJECTIVE To evaluate green fodder yield potential of different varieties of Maize in various agro ecological in Punjab.

RESEARCH WORKER(S) Dr.M.Shahid Munir Chohan, Mr.Ahmed Hassan Khan
Dr.Qamar Shakil

PROJECT DURATION 2017.

LOCATION Fodder Research Sub-Station, AARI Faisalabad.

TREATMENT/ METHODOLOY The packed seed will be received from Director, Fodder Research Institute Sargodha along with sowing plan and methodology.

1. FSD MAIZE 2021
2. FSD MAIZE 2022

PREVIOS YEAR'S RESULTS.

Sr.No	Varieties	Green Fodder Yield (t/hac)
1.	V1	89.19
2.	V 7	88.27
3.	V 6	87.34
	V 3	85.55
5.	V 4	80.55
6.	V 8	79.72
7.	V 2	76.94
8.	V 5	48.61
Cd 1		2.06

57. TITLE NATIONAL UNIFORM GREEN FODDER YIELD TRIAL ON MAIZE.

OBJECTIVE To evaluate green fodder yield potential of different varieties of Maize in various agro ecological in Punjab.

RESEARCH WORKER(S) Mr.Ahmed Hassan Khan, Dr.M.Shahid Munir Chohan
Dr.Qamar Shakil

PROJECT DURATION 2017

LOCATION Fodder Research Sub-Station, AARI Faisalabad.

TREATMENT METHODOLOY The packed seed sowing plan will be supplied by Coordinator (Fodder) NARC, Islamabad and the trial will be laid out accordingly. Data will be recorded as per instruction. This station will contribute in the trial with the following elite lines.

1. FSD Maize -2020
2. FSD Maize -2018

PREVIOS YEAR'S RESULTS.

Sr.No	Coded Varieties	Green Fodder Yield (t/hac)
1.	V 2	83.02
2.	V 5	80.55
3.	V1	79.93
4.	V 6	79.01
5.	V7	78.08
6.	V8	77.16
7.	V 4	76.23
8.	V 3	75.00
Cd 1		1.58

PEARL MILLET:

58. TITLE — ZONAL GREEN FODDER YIELD TRIAL ON PEARL MILLET.

OBJECTIVE — To evaluate green fodder yield potential of different varieties of millet in various agro ecological in Punjab.

RESEARCH WORKER(S) — Mr.Ahmed Hassan Khan, Dr.M.Shahid Munir Chohan Dr.Qamar Shakil

PROJECT DURATION — 2017.

LOCATION — Fodder Research Sub-Station, AARI Faisalabad.

TREATMENT/ METHODOLOY — The packed seed will be received from Director, Fodder Research Institute Sargodha along with sowing plan and methodology. This station will contribute in the trial with the following elite lines.

1. FB-798
2. FB-806
3. FB-803

PREVIOS YEAR'S RESULTS.

Sr.No	Coded Varieties	Green Fodder Yield (t/hac)
1.	V 2	85.59
2.	V 6	85.18
3.	V9	84.25
4.	V1	82.90
5.	V 8	81.17
6.	V 3	78.77
7.	V 7	78.08
8.	V 5	75.61
9.	V 4	71.91
Cd 1		1.44

59. TITLE NATIONAL UNIFORM GREEN FODDER YIEDL TRIALS ON MILLET

OBJECTIVE To evaluate promising fodder yield varieties of millet.

RESEARCH WORKER(S) Dr.M.Shahid Munir Chohan, Mr.Ahmed Hassan Khan
Dr.Qamar Shakil

PROJECT DURATION 2017.

LOCATION Fodder Research Sub-Station, AARI Faisalabad.

TREATMENT METHODOLOY The packed seed sowing plan will be supplied by Coordinator (Fodder) NARC, Islamabad and the trial will be laid out accordingly. Data will be recorded as per instruction. This station will contribute in the trial with the following elite lines.

1. FB-813
2. FB-796
3. FB-893

PREVIOS YEAR'S RESULTS.

Sr.No	Coded Varieties	Green Fodder Yield (t/hac)
1.	V9	89.50
2.	V12	89.23
3.	V 2	85.49
4.	V 6	85.18
5.	V 4	82.77
6	V1	81.17
7.	V13	80.66
8.	V 3	80.61
9.	V 10	80.55
10	V 5	80.00
11.	V 7	78.70
12.	V11	78.70
13	V 8	77.16
Cd 1		2.47

AGRONOMIST (FORAGE PRODUCTION), AARI, FAISALABAD

60. TITLE: EFFECT OF PLANTING METHODS ON GREEN FODDER YIELD OF MAIZE

OBJECTIVE: To determine the best sowing method for maximum green fodder yield of newly evolved maize variety Malka.

RESEARCH WORKERS: Muhammad Arshad and Arbab Jahangeer,

DURATION: 2017-2019

LOCATION: Agronomy (Forage Production) Section AARI, Faisalabad

TREATMENTS: Planting Methods

T_1 Broadcast
T_2 Broadcast with augmented furrows in dry condition
T_3 Broadcast with augmented furrows in watar condition
T_4 Line sowing (30 cm apart rows)

METHODOLOGY: The experiment will be sown according to the treatments as mentioned with recommended fertilizer dose (NPK 90-60-30 kg ha^{-1}) having plot size 6m × 10m in RCBD with 4replications. All Agronomic practices will be kept uniform. Data regarding plant height, number of leaves per plant, number of plants/$m^2$and green fodder yield will be recorded.

PREVIOUS YEAR'S Results: New Experiment

61. TITLE: EFFECT OF PLANTING METHODS ON GREEN FODDER YIELD OF SORGHUM

OBJECTIVE: To determine the best sowing method for maximum green fodder yield sorghum 2011.

RESEARCH WORKERS: Arbab Jahangeer and Muhammad Arshad,

DURATION: 2017-2019

LOCATION: Agronomy (Forage Production) Section AARI, Faisalabad

TREATMENTS: Planting Methods

T_1 Broadcast
T_2 Broadcast with augmented furrows in dry condition
T_3 Broadcast with augmented furrows in watar condition
T_4 Line sowing (30 cm apart rows)

METHODOLOGY: The experiment will be sown in 30 cm apart rows during first week of March with recommended fertilizer dose (NPK 60-60-30 kg ha^{-1}) having plot size 6m × 10m in RCBD with 4 replications. All Agronomic practices will be kept uniform. Data regarding plant height, number of leaves per plant, number of plants/m^2 and green fodder yield etc will be recorded.

PREVIOUS YEAR'S RESULTS: New Experiment

62.TITLE: FODDER YIELD AND QUALITATIVE RESPONSE OF PEARL MILLET PLANTED ALONE AND IN MIXTURE WITH GUAR AND COWPEA

OBJECTIVE: To determine the best combination of blended seeds of leguminous and non-leguminous fodders for best quality fodder and maximum green fodder yield.

RESEARCH WORKERS: Muhammad Arshad and Arbab Jahangeer.

DURATION: 2017-2019

LOCATION: Agronomy (Forage Production) Section AARI, Faisalabad

TREATMENTS: Planting Methods

T_1 Pearl Millet alone

T_2 Guar alone

T_3 Cowpea alone

T_4 Pearl millet (50%) + Guar (50%)

T_5 Pearl millet (50%) + cowpea (50%)

T_6 Pearl millet (50%) + Guar (25%) + Cowpea (25%)

T_7 Guar (50%) + Cowpea (50%)

METHODOLOGY: The experiment will be sown by broadcast method with recommended fertilizer dose (NPK 90-60-0kg ha^{-1}) having plot size 6m × 10m in RCBD with 4 replications. All Agronomic practices will be kept uniform. Data regarding plant height, number of plants/m^2, green fodder yield, Crude Protein, crude fiber and ash% will be recorded.

PREVIOUS YEAR'S RESULTS: New Experiment

63. TITLE: EFFECT OF IRRIGATION FREQUENCIES AND ITS TIME OF APPLICATION ON HCN LEVEL IN SORGHUM (Sorghum-2011)

Objective: To determine the effective irrigation and time of its application to minimize the HCN level in sorghum.

RESEARCH WORKERS: Arbab Jahangeer, Naveed Akhtar and Arfanul Haq (ARO Bio-Chemistry)

DURATION: 2015-2017

LOCATION: Agronomy (Forage Production) Section AARI, Faisalabad

TREATMENTS:

No. of Irrigation	Stage of application
I_1	1 irrigation at 20 DAS
I_2	1 irrigation at 30 DAS
I_3	1 irrigation at 40 DAS
I_4	1 irrigation at 20 DAS + 1 irrigation at 30 DAS
I_5	1 irrigation at 20 DAS + 1 irrigation at 40 DAS
I_6	1 irrigation at 30 DAS + 1 irrigation at 40 DAS
I_7	1 irrigation at 20 DAS + 1 irrigation at 30 DAS + 1irrigation at 40 DAS (Recommended)

METHODOLOGY: The experiment will be sown in 30 cm apart rows during first week of March with recommended fertilizer dose (NPK 23-58-0 Kg ha^{-1}) having plot size 6m × 10 m in RCBD with 3 replications. All Agronomic practices will be kept uniform. Data regarding HCN level and green fodder yield will be recorded at flowering stage.

PREVIOUS YEAR'S RESULTS

Plant analysis

Treatment		Crude Protein	Dry Matter	HCN
I_1	(1irrigation at 20 DAS)	6.9733 bc	25.017 ab	64.167
I_2	(1 irrigation at 30 DAS)	6.9433 bc	26.477 a	65.000
I_3	(1 irrigation at 40 DAS)	6.8833 c	24.380 ab	65.000
I_4	(1 irrigation at 20 DAS + 1 irrigation at 30 DAS)	7.2367 ab	24.280 ab	54.167
I_5	(1 irrigation at 20 DAS + 1 irrigation at 40 DAS)	7.4100 a	23.753 b	54.167
I_6	(1 irrigation at 30 DAS + 1 irrigation at 40 DAS)	7.3233 a	24.930 ab	54.167
I_7	(1irrigation at 20 DAS+1 irrigation at 30 DAS+1irrigation at 40DAS) (Recommended)	7.3833 a	25.490 ab	54.167

LSD for C.P= 0.3007 D.M= 2.7047 HCN= N.S

Green Fodder yield of sorghum (t/ha)

Treatments		Green Fodder Yield (t/ha)
I_1	(1irrigation at 20 DAS)	30.333 e
I_2	(1 irrigation at 30 DAS)	42.333 d
I_3	(1 irrigation at 40 DAS)	48.000 bc
I_4	(1 irrigation at 20 DAS + 1 irrigation at 30 DAS)	51.333 b
I_5	(1 irrigation at 20 DAS + 1 irrigation at 40 DAS)	46.000 cd
I_6	(1 irrigation at 30 DAS + 1 irrigation at 40 DAS)	56.000 a
I_7	(1irrigation at 20 DAS+1 irrigation at 30 DAS+1irrigation at 40DAS) (Recommended)	57.667 a

LSD =3.8215

64. TITLE: EFFECT OF DIFFERENT RATIONS ON MILK PRODUCTION IN BUFFALOES.

OBJECTIVE: To determine the effect of deferent rations on milk production in buffaloes.

RESEARCH WORKERS: Dr. Abdul Majid

DURATION: 2017-2019

LOCATION: Dairy farm Agronomy (Forage Production) Section AARI, Faisalabad.

TREATMENTS: Composition of rations

Ingredient	Rations No.1	Rations No.2	Rations No.3
Maize	46%	46%	46%
Wheat	20%	-	-
Wheat bran	-	20%	20%
Rice polishing	-	-	20%
Cotton seed cake	20%	-	-
Saroon seed cake	-	20%	-
Sun flower cake	-	-	20%
molasses	10%	10%	10%
Sodium chloride	1%	1%	1%
Di calcium prostate	2%	2%	2%
Sodium bi carbonate	1%	1%	1%
Total	100	100	100

METHODOLOGY: Nine lactating buffalos having similar lactation period and production will be randomly selected from the dairy herd of this formation and each ration will be fed to three buffalos in each treatment.

OBSERVATIONS The data regarding milk production and composition will be recorded

PREVIOUS YEAR RESULTS New experiment

AGRONOMY

65.TITLE	EFFECT OF PLANTING DENSITY AND ROW SPACING ON GRAIN AND FODDER YIELD OF MAIZE LINE 1501
OBJECTIVE	To find out plant population and row spacing for maximum seed and fodder production of maize.
RESEARCH WORKERS	Muhammad Riaz Gondal and Anees-ul-Hussain
PROJECT DURATION	2017
LOCATION	Fodder Research Institute, Sargodha.
TREATMENTS/ METHODOLOGY	A- Row spacing (main plot) 1. 30cm apart line 3. 45 -do- 4. 60 -do- 5. 75 -do- B- Plant population 1. 110000 to 220000 2. 75000 to 150000 3. 57000 to 114000 4. 45000 to 90000 Layout = Split plot Plot size = 3x 6m Replication = 4 Sowing time = 2nd fortnight of February Variety = MS-1501 Following observations will be recorded:- - No.of Grains Per cob - Plant height - 1000 grain weight - Stem Thickness - No of Cobs / plant - Green fodder yield / ha. - No. of leaves/ plant - Grain yield / ha.
PREVIOUSYEAR'S RESULTS	New experiment.
66. TITLE	EFFECT OF SEED RATE ON GREEN FODDER YIELD OF SADABAHAR
OBJECTIVE	To find optimum seed rate to get maximum Green Fodder Yield of Sadabahar.
RESEARCH WORKERS	Muhammad Riaz Gondal and Anees-ul-Hussain

PROJECT DURATION 2017

LOCATION Fodder Research Institute, Sargodha.

TREATMENTS/ METHODOLOGY

A-Seed rates (kg/ha)

1. 20
2. 25
3. 30
4. 35
5. 40

Layout = R.C. B.D
Plot size = 3x 6m
Replication = 4
Sowing time = 1st fortnight of March
Variety = Pak Sudax

Following observations will be recorded:-

- Plant Height
- No. of tillers/ Plant
- Leaf area
- No. of leaves / tillers
- No.of Plants/ m^2
- Stem Thickness
- Green fodder yield / ha.

PREVIOUSYEAR'S RESULTS New experiment.

67. TITLE:- EFFECT OF DIFFERENT SEED RATE & FERTILIZER DOSES (P&K) ON SEED PRODUCTION OF SORGHUM

OBJECTIVE: To find out the best combination of seed rate & fertilizer doses to get maximum seed production of sorghum JS-2002.

RESEARCH WORKERS Muhammad Riaz Gondal

PROJECT DURATION 2017

LOCATION Fodder Research Institute, Sargodha.

TREATMENT/ METHODOLOGY

Seed rate	=	(In Sub plot) [05, 7.5, 10, 12.5, 15 kg/ha.]
Fertilizer doses	=	N - P- K kg/ha. 57-20-20 57-40-40 57-60-60
Plot size	=	3 x 6m
Replications	=	4
Row spacing	=	45 cm
Lay out	=	Split plot
Sowing time	=	1st fortnight of July.

Following observation will be recorded:-

- No. of plants / m2
- Plant height
- No. of grains/head
- 1000 grain weight
- Grain weight/ha.
- Stem thickness

PREVIOUS YEAR'S RESULTS

Result awaited

68.TITLE:-

EFFECT OF SEED RATE AND ROW SPACING ON SEED PRODUCTION OF SORGHUM

OBJECTIVE

To find out optimum seed rate for maximum seed production.

RESEARCH WORKERS

Riaz Gondal and Anees-ul-Husnain.

PROJECT DURATION

2017

LOCATION

Fodder Research Institute, Sargodha
ESPU, Farooqabad

TREATMENT/ METHODOLOGY

A) Seed rate = (In Sub plot)
[05, 7.5, 10, 12.5, 15 kg/ha.]

B) Row spacing
30cm
45 "
60 "

Layout = Split plot
Plot size = 5 x 2.7m
Replication = 4
Fertilizer = 57-57-57 NPK kg/ha

Following observation will be recorded:-

- No of plants/m^2
- No. of head / plant
- No. of grain / head
- 1000 Grain weight
- Grain yield (kg/ha.)
- Plant height
- Stem thickness

Data of temperature and humidity during seed setting were also be recorded.

PREVIOUSYEAR'S RESULTS

Result awaited.

69. TITLE:-	EFFECT OF DIFFERENT SEED RATE & FERTILIZER DOSES (P&K) ON SEED PRODUCTION OF PEARL MILLET
OBJECTIVE	To find out the best combination of seed rate & fertilizer doses to get maximum seed production of Pearl Millet..
RESEARCH WORKERS	Muhammad Riaz Gondal
PROJECT DURATION	2017
LOCATION	Fodder Research Institute, Sargodha.
TREATMENT/ METHODOLOGY	Seed rate = (In Sub plot) [2.5, 3.75, 5, 6.25, 7.5 kg/ha.]
	Fertilizer doses = N-P-K kg/ha. 57-20-20 57-40-40 57-60-60
	Plot size = 2.7m x 6m Replications = 4 Row spacing = 45 cm Lay out = Split plot Sowing time = 2nd fortnight of July.
	Following observation will be recorded:- - No. of plants / m2 - Plant height - No. of grains/head - 1000 grain weight - Grain weight/ha. - Stem thickness
PREVIOUS YEAR'S RESULTS	Result awaited.

SOIL SCIENCE

70. TITLE	MONITORING OF NUTRITIOUS QUALITY OF KHARIF FODDERS
OBJECTIVE	To find out the nutritious quality of kharif fodders new lines
RESEARCH WORKERS	Abdul Razzaq, M. Shoaib Farooq and Asim Pervez
PROJECT DURATION	2017-19
LOCATION	Fodder Research Institute, Sargodha.
TREATMENTS/ METHODOLOGY	Initially the new kharif fodder lines of different crops will be selected for study. Plant sample will be collected at different growth stages i.e early bloom, full bloom and milking stage and will be analyzed for their quality.
PREVIOUSYEAR'S RESULTS;	New experiment
71. TITLE	TO FIND OUT OPTIMUM DOSES OF N & P FERTILIZER FOR MAXIMUM GREEN FODDER YIELD OF MAIZE'S LINE ''
OBJECTIVE	To find out the best combination of N & P fertilizers for obtaining maximum green fodder yield of maize's line ''.
RESEARCH WORKERS	Abdul Razzaq, M. Shoaib Farooq and Asim Pervez
PROJECT DURATION	2017-19
LOCATION	Fodder Research Institute, Sargodha.
TREATMENTS/ METHODOLOGY	Soil will be analyzed before sowing and after harvesting the crop.

Treatments

T_1 = Control
T_2 = 60-50 NP kg ha^{-1}
T_3 = 60-100 NP kg ha^{-1}
T_4= 60-150 NP kg ha^{-1}
T_5 = 90-50 NP kg ha^{-1}
T_6 = 90-100 NP kg ha^{-1}
T_7 = 90-150 NP kg ha^{-1}
T_8 = 120-50 NP kg ha^{-1}
T_9 = 120-100 NP kg ha^{-1}
T_{10} = 120-150 NP kg ha^{-1}

Lay out =RCBD
Replications = 4
Plot Size =18 m^2
Row spacing = 30 cm.

The following observations will be recorded.

1. Plant height
2. Stem thickness
3. Leaf area
4. Green fodder yield
5. Soil analysis

PREVIOUSYEAR'S RESULTS; New experiment

72. TITLE TO FIND OUT OPTIMUM DOSES OF N & P FERTILIZER FOR MAXIMUM GREEN FODDER YIELD OF SORGHUM LINE ''

OBJECTIVE To find out the best combination of N & P fertilizers for obtaining maximum green fodder yield of sorghum line ''.

RESEARCH WORKERS Abdul Razzaq, M. Shoaib Farooq and Asim Pervez

PROJECT DURATION 2017-19

LOCATION Fodder Research Institute, Sargodha.

TREATMENTS/ METHODOLOGY Soil will be analyzed before sowing and after harvesting the crop.

Treatments
T_1 = Control
T_2 = 60-25 NP kg ha^{-1}
T_3 = 60-50 NP kg ha^{-1}
T_4= 60-75 NP kg ha^{-1}
T_5 = 80-25 NP kg ha^{-1}
T_6 = 80-50 NP kg ha^{-1}
T_7 = 80-75 NP kg ha^{-1}
T_8 = 100-25 NP kg ha^{-1}
T_9 = 100-50 NP kg ha^{-1}
T_{10} = 100-75 NP kg ha^{-1}

Lay out =RCBD
Replications = 4
Plot Size =18 m^2
Row spacing = 30 cm.

The following observations will be recorded.

1. Plant height
2. Stem thickness
3. Leaf area
4. Green fodder yield
5. Soil analysis

PREVIOUSYEAR'S RESULTS; New experiment

73. TITLE TO FIND OUT OPTIMUM DOSES OF N & P FERTILIZER FOR MAXIMUM GREEN FODDER YIELD OF PEARLMILLET LINE

OBJECTIVE To find out the best combination of N & P fertilizers for obtaining maximum green fodder yield of pearlmillet line ''.

RESEARCH WORKERS Abdul Razzaq, M. Shoaib Farooq and Asim Pervez

PROJECT DURATION 2017-19

LOCATION Fodder Research Institute, Sargodha.

TREATMENTS/ METHODOLOGY Soil will be analyzed before sowing and after harvesting the crop.

Treatments
T_1 = Control
T_2 = 50-30 NP kg ha^{-1}
T_3 = 50-60 NP kg ha^{-1}
T_4= 50-90 NP kg ha^{-1}
T_5 = 70-30 NP kg ha^{-1}
T_6 = 70-60 NP kg ha^{-1}
T_7 = 70-90 NP kg ha^{-1}
T_8 = 90-30 NP kg ha^{-1}
T_9 = 90-60 NP kg ha^{-1}
T_{10} = 90-90 NP kg ha^{-1}

Lay out =RCBD
Replications = 4
Plot Size =18 m^2
Row spacing = 30 cm.
Data Recording

The following observations will be recorded.

1. Plant height
2. Stem thickness
3. Leaf area
4. Green fodder yield
5. Soil analysis

PREVIOUSYEAR'S RESULTS; New experiment

74. TITLE — EFFECT OF POTASH FERTILIZER ON SEED YIELD OF PEARL MILLET'S 'LINE BS-2000'

OBJECTIVE — To find out the best dose of potassium fertilizer for obtaining potential grain yield of pearl millet.

RESEARCH WORKERS — Abdul Razzaq, M. Shoaib Farooq and Asim Pervez.

PROJECT DURATION — 2016-17

LOCATION — Fodder Research Institute, Sargodha.

TREATMENTS/ METHODOLOGY — Soil will be analyzed before sowing and after harvesting of the crop.

Treatments

T_1 = 70-60-0 NPK kg ha^{-1}.
T_2 = 70-60-30 NPK kg ha^{-1}.
T_3 = 70-60-60 NPK kg ha^{-1}
T_4 = 70-60-90 NPK kg ha^{-1}

Lay out =RCBD
Replications = 4
Plot Size =18 m^2
Row spacing = 30 cm.

Data Recording

Following observations will be recorded.

1. Plant height
2. Grain yield
3. 1000 grain weight
4. Soil analysis

PREVIOUSYEAR'S RESULTS

treatments	1000 grain weight (g)	Grain yield tha^{-1}	MRR
T1 70-60-00	8.5	1.38	--
T2 70-60-30	9.1	1.49	1.11
T3 70-60-60	10.2	1.67	1.46
T4 70-60-90	9.6	1.51	0.43

SOIL ANALYSIS BEFORE SOWING

Soil Texture	Ece $mScm^{-1}$	pH	OM %	P_2O_5 mg kg^{-1}	K_2O mg kg^{-1}
Clay loam	0.71	7.7	0.66	6.5	130

SOIL ANALYSIS AFTER HARVESTING

Treatments	Ece $mScm^{-1}$	pH	OM%	P_2O_5 mg kg^{-1}	K_2O mg kg^{-1}
T_1	0.73	7.9	0.67	5.3	121
T_2	0.74	8.0	0.65	4.0	117
T_3	0.74	8.1	0.66	4.9	111
T_4	0.74	7.9	0.65	4.5	113
LSD (0.05)	NS	NS	NS	0.12	1.37

75. TITLE — TO FIND OUT OPTIMUM DOSES OF N & P FERTILIZER FOR SEED PRODUCTION OF MAIZE'S LINE 'MS-2010'

OBJECTIVE — To find out the best doses of N & P fertilizers for seed production of maize's line 'MS-2010'.

RESEARCH WORKERS — Abdul Razzaq, M. Shoaib Farooq and Asim Pervez

PROJECT DURATION — 2016-17

LOCATION — Fodder Research Institute, Sargodha.

TREATMENTS/ METHODOLOGY — Soil will be analyzed before sowing and after harvesting the crop.

Treatments

T_1 = Control
T_2 = 120-50-62 NPK kg ha^{-1}
T_3 = 120-100-62 NPK kg ha^{-1}
T_4 = 120-150-62 NPK kg ha^{-1}
T_5 = 90-50-62 NPK kg ha^{-1}
T_6 = 90-100-62 NPK kg ha^{-1}
T_7 = 90-150-62 NPK kg ha^{-1}
T_8 = 60-50-62 NPK kg ha^{-1}
T_9 = 60-100-62NPK kg ha^{-1}
T_{10}= 60-150-62NPK kg ha^{-1}

Lay out =RCBD
Replications = 4
Plot Size =18 m^2
Row spacing = 30 cm.

Data Recording

The following observations will be recorded.

1. Plant height
2. No. of grains per cob
3. 100 grain weight
4. Grain yield
5. Soil analysis

PREVIOUSYEAR'S RESULTS

Treatments NPK kg ha^{-1}	100 grain weight (g)	Grain yield tha^{-1}	MRR
T_1 Control	19.9	2.6	--
T_2 120-50-62	20.5	2.9	1.07
T_3 120-100-62	30.9	3.3	2.07
T_4 120-150-62	38.3	3.9	3.24
T_5 90-50-62	29.8	3.1	1.96
T_6 90-100-62	34.2	3.3	2.22
T_7 90-150-62	36.0	3.3	1.85
T_8 60-50-62	26.4	2.8	0.86
T_9 60-100-62	27.1	2.9	1.02
T_{10} 60-150-62	26.1	2.8	0.56

SOIL ANALYSIS BEFORE SOWING

Soil Texture	Ece $mScm^{-1}$	pH	OM %	P_2O_5 $mg\ kg^{-1}$	K_2O $mg\ kg^{-1}$
Clay loam	0.71	8.0	0.67	6.9	142

SOIL ANALYSIS AFTER HARVESTING

Treatments	Ece $mScm^{-1}$	pH	OM%	P_2O_5 ($mg\ kg^{-1}$)	K_2O ($mg\ kg^{-1}$)
T_1 Control	0.74	8.0	0.67	5.3	113
T_2 120-50-62	0.77	8.1	0.65	4.0	107
T_3 120-100-62	0.74	8.0	0.68	4.9	110
T_4 120-150-62	0.76	7.9	0.69	4.5	109
T_5 90-50-62	0.72	7.8	0.70	4.1	110
T_6 90-100-62	0.76	7.5	0.69	4.3	110
T_7 90-150-62	0.77	7.6	0.70	4.0	109
T_8 60-50-62	0.79	7.6	0.71	3.8	107
T_9 60-100-62	0.79	0.75	0.69	3.9	109
T_{10} 60-150-62	0.77	0.75	0.70	4.1	111
LSD (0.05)	NS	NS	NS	0.12	1.37

PLANT PROTECTION

76. TITLE:	SCREENING OF SORGHUM GERMPLASM AGAINST RED LEAF SPOT		
OBJECTIVE	To find out the source of resistance in available sorghum germplasm.		
RESEARCH WORKERS	Muhammad SaleemJaved, Aftab Ahmad Khan and Dr. SaleemIlYasin		
PROJECT DURATION	2016-2017		
LOCATION	Fodder Research Institute, Sargodha.		
TREATMENTS/ METHODOLOGY	Varieties/ lines	=	116
	Design	=	Augmented
	Blocks	=	5
	Varieties / block	=	23+1 checks
	Line (Length x spacing)	=	5m x 60cm
	Check varieties	=	JS-2002
	The seeds of different varieties/lines of sorghum will be grown in field each in two lines of 5m length and 60cm apart. The experiment will be sown in augmented design using above mentioned check variety in each of 5 blocks having 23 cultivars in each block. The crop will be raised adopting standard agronomic practices. Incidence of diseases will be recorded on appearance of symptoms.		
PREVIOUS YEAR'S	Out of 116 cultivars/lines,23 showed resistant , 39 moderately susceptilble and 54 reacted susceptible against disease.		
77. TITLE	SCREENING OF PEARL MILLET GERMPLASM AGAINST DOWNY MILDEW DISEASE		
OBJECTIVE	To find out the genetic resistance in Pearl millet germplasm against the disease.		
RESEARCH WORKERS	Muhammad SaleemJaved, Aftab Ahmad Khan and Dr. SaleemIlYasin		
PROJECT DURATION	2016-2017		
LOCATION	Fodder Research Institute, Sargodha.		
TREATMENTS/ METHODOLOGY	Varieties/ lines	=	64
	Design	=	Augmented
	Line (Length x spacing)	=	5m x 60cm
	Spreader	=	3
	i) N-5 ii) PARC-II iii) N-6		

The seeds of different varieties/lines of Pearl millet will be grown in field each in two lines of 5m length and 60cm apart. The experiment will be sown in augmented design using above mentioned three spreader varieties. The crop will be raised adopting standard agronomic practices. Disease Incidence will be recorded on appearance of symptoms.

PREVIOUS YEAR'S RESULTS: Out of 64 varieties / cultivars,16 varieties showed resistant reation, 28 showed moderately resistant,16 moderately susceptible and 10 observed to be susceptible against disease.

78. TITLE: EVALUATION OF MAIZE GENOTYPES FOR RESISTANCE AGAINST DIFFERENT LEAF SPOT DISEASES.

OBJECTIVE: To identify the resistant in maize genotypes against leaf spot disease caused by (*Alternariaalternata, Curvularia* sp., *Drechslera maydis*).

RESEARCH WORKERS: Muhammad SaleemJaved and Aftab Ahmad Khan

PROJECT DURATION: 2016-2017

LOCATION: Fodder Research Institute, Sargodha.

TREATMENT / METHODOLOGY: Maize genotypes = 7

1. Pearl Maize
2. Sgd-2002
3. No-2010
4. Pearl-50
5. Neelam
6. MMRI Yellow
7. No-2020

Method of planting line sowing

Row spacing = 30 cm
No .of Row = 2

The seeds of different varieties/lines of maize will be grown in field each in two lines of 5m length and 30cm apart. The experiment will be sown in RCBD design. The crop will be raised adopting standard agronomic practices. Diseases Incidence will be recorded on appearance of symptoms.

PREVIOUS YEAR'S: Pearl maize showed resistantreaction ,Sgd-2002,No-2010,Pearl-50,No-2020 and Neelam showed moderately resistance and MMRI yellow observedto be moderatelysusceptible against disease.

79.TITLE: EVALUATION OF MAIZE GENOTYPES FOR RESISTANCE AGAINST BACTERIAL DISEASE.

OBJECTIVE To identify the resistance in maize genotypes against the bacterial disease caused by (*Erwinacarotovoraf.sp. Zea*).

RESEARCH WORKERS Muhammad Saleem Javed and Aftab Ahmad Khan

PROJECT DURATION 2016-17

LOCATION Fodder Research Institute, Sargodha.

TREATMENT / Maize genotypes = 7

1. Pearl Maize
2. Sgd-2002
3. No-2010
4. Pearl-50
5. Neelam
6. MMRI Yellow
7. No-2020

METHODOLOGY

Method of planting = Line sowing
Row spacing = 30 cm
No .of Row = 2

The seeds of different varieties/lines of maize will be grown in field each in two lines of 5m length and 30cm apart. The experiment will be sown in RCBD design. The crop will be raised adopting standard agronomic practices. Disease Incidence will be recorded on appearance of symptoms.

PREVIOUS YEAR'S Pearl maize remained moderately resistant,sgd-2002 and No. 2010 were observed moderately susceptible,pearl-50 and Neelam were observed susceptible while MMRI yellow and no.2020 highly susceptible against disease.

80. TITLE: SCREENING OF ADVANCE SORGHUM LINES AGAINST SHOOT FLY *ATHERIGONA SOCCATA* (ROND.) (DIPTERA: MUSCIDAE)

OBJECTIVE: To screen out sorghum shoot fly tolerant lines.

RESEARCH WORKER Abdul khaliq and Ghulam Ahmad

LOCATION Fodder Research Institute, Sargodha

DURATION (Continuous nature)

TREATMENTS

T1 = F-1-13
T2 = F-02-13
T3 = YSS-1
T4 = Indian-4
T5 = Indian-7
T6 = YSS-4
T7 = Indian-6
T8 = SGD-2011 (Check)

METHODOLOGY

Sorghum advance lines sown by the breeders will be regularly visited and data on shoot fly infestation will bereccorded at 10 days interval starting from germination by observing all plants of central row.

PREVIOUS YEAR'S RESULTS

Treatments	% Shoot fly Infestation
F-1-13	3.76
F-02-13	4.70
YSS-1	2.80
Indian-4	6.75
Indian-7	6.61
YSS-4	4.79
Indian-6	5.74
SGD-2011 (Check)	8.70
LSD (0.05) =	2.21

81 TITLE:

SCREENING OF ADVANCE SORGHUM LINES AGAINST SHOOT FLY *ATHERIGONA SOCCATA* (ROND.) (DIPTERA: MUSCIDAE)

OBJECTIVE:

To screen out comparative shoot fly tolerant lines

RESEARCH WORKER

Abdul Khaliq and DrHaiderKarar

LOCATION

Fodder Research Institute, Sargodha

DURATION

(Continuous nature)

TREATMENTS

T1 = F-02-2015
T2 = F-04-2015
T3 = No.1572
T4 = Sgd-013-1
T5 = No.80010
T6 = Indian-6
T7 = YSS-13
T8 = SGD-2011 (Standard)

METHODOLOGY

Sorghum advance lines will be sown by the breeders of FRI-Sargodha will be kept under observation. There will be three replications under RCBD. The data regarding infestation of shoot fly will be recorded from 15 plants selected at random per plot at 10 days interval starting from germination. The data will be compiled and analyzed statistically.

PREVIOUS YEAR'S RESULTS

Treatments	% Shoot fly Infestation
T1 = F-02-2015	8.23
T2 = F-04-2015	7.44
T3 = No.1572	7.28
T4 = Sgd-013-1	6.80
T5 = No.80010	10.63
T6 = Indian-6	8.95
T7 = YSS-13	7.38
T8 = SGD-2011 (Standard)	12.83
LSD (0.05) = 2.57	

82. TITLE — SCREENING OF SORGHUM GERMPLASM AGAINST SHOOT FLY AND STEM BORER

OBJECTIVES — To find out comparative resistant/tolerant sorghum germplasm against shoot fly and stem borer

RESEARCH WORKER(S): — Abdul Khaliq and DrHaiderKarar

DURATION: — 2017-2019

LOCATION: — FRI, Sargodha

TREATMENTS/ METHODOLOGY: — Sorghum i.e., 114germplasm having two lines will be sown by the breeders of FRI-Sargodha will be kept under observation. The data regarding infestation of shoot fly and stem borer will be recorded from 15 plants selected at random per plot at 10 days interval starting from germination. The data will be compiled and analyzed statistically.

PREVIOUS YEAR'S RESULTS — First Year

83. TITLE — SCREENING OF MAIZE GERMPLASM AGAINST STEM BORER AND SHOOT FLY

OBJECTIVES — To find out comparative resistant/tolerant maize germplasm against stem borer and shoot fly

RESEARCH WORKER(S): — Abdul Khaliq and DrHaiderKarar

DURATION: — 2017-2019

LOCATION: — FRI, Sargodha

TREATMENTS/ METHODOLOGY: Thirty maize germplasm having four lines will be sown by the breeders of FRI-Sargodha will be kept under observation. The data regarding infestation of shoot fly and stem borer will be recorded from 15 plants selected at random per plot at 10 days interval starting from germination. The data will be compiled and analyzed statistically.

PREVIOUS YEAR'S RESULTS First Year

List of germplasm

S/No	Name of germplasm	S/No	Name of germplasm	S/No	Name of germplasm	S/No	Name of germplasm	S/No	Name of germplasm
1	JS 263	26	PARC-SS-I	51	SUKKAR	76	YSS-98	101	PACRC-09
2	PVK 801	27	PARC-SS-2	52	SWEETSORGHUM	77	80230	102	AK-113
3	B 203	28	PARC-SS-3	53	INDIAN	78	74702	103	F-01-10
4	No. 9802	29	PARC-SS-4	54	SANDAL BAR	79	337	104	F-02-10
5	SIBI	30	INDIAN -3	55	NILI BAR	80	S-2	105	F-03-10
6	F 9917	31	INDIAN -4	56	FR-48	81	S-9902	106	F-04-10
7	65174-2	32	INDIAN -5	57	FM-147	82	80010	107	F-05-10
8	S 145	33	INDIAN -6	58	FRI-04	83	1828	108	F-06-10
9	NO.517	34	INDIAN -7	59	FRI-06	84	403415	109	NOOR
10	No.6001	35	INDIAN -8	60	NO.7	85	74724	110	F-901
11	No.1563	36	F-905	61	F-9806	86	S-9905	111	JS-2002
12	No.1572	37	INDIAN -13	62	9701	87	F-906	112	F-902
13	No.6197	38	INDIAN -15	63	A-3448	88	80022	113	F-903
14	JS-2002	39	INDIAN -I	64	3448	89	39501	114	F-904
15	FRI-02	40	YSS-I	65	1723	90	S-167		
16	PVK-65130	41	YSS-13	66	1623	91	80027		
17	JS-1	42	YSS-15	67	8008	92	S-2016		
18	YSS -89	43	YSS-15	68	BALLO	93	3651		
19	BM- 726	44	JS-2009	69	62449	94	TURBO		
20	K -94	45	NO.1716	70	FRI-07	95	NO.9706		
21	YS -15	46	NO.1744	71	NO.18603	96	S-9901		
22	JABLE	47	NO.1749	72	NO.1863	97	PMRCSS-I		
23	NO.1518	48	NO.1620	73	LOCAL PINDI	98	SGD-011-1		
24	No.1542	49	LOCQUETTA	74	SGD-011-2	99	IND-10-11		
25	NO.1567	50	F-708	75	F-2007	100	F-2008		

DAIRY TECHNOLOGY

84. TITLE — EFFECT OF PALATABILITY ON VOLUNTARY FEED INTAKE OF PROMISING LINES/VARIETIES OF SORGHUM

OBJECTIVE — To evaluate the palatability and voluntary feed intake of promising lines/varieties of sorghum.

RESEARCH WORKER(S) — Muhammad Abdullah and Ch.Ghulam Nabi

DURATION — 2017

LOCATION — Fodder Research Institute, Sargodha.

TREATMENTS:

T_1 Sukkar

T_2 No.6001

T_3 FRI-07

T_4 Sorghum-2011(Check)

METHODOLOGY — Chaffed & weighed quantity of each Sorghum line/variety was offered to twelve buffaloes according to NARC schedule in nutrition stalls following Cafeteria method. Experimental animals were provided 20% additional fodder than their actual requirements. Daily consumption was recorded to evaluate palatability and voluntary feed intake.

PREVIOUS YEAR'S RESULTS	Parameters	Sukkar	No.6001	FRI-07	Sorghum-2011
	Quantity fed (kg)	75.00	75.00	75.00	75.00
	Voluntary feed intake (kg)	60.10^{B}	54.20^{C}	62.83^{A}	58.33^{B}
				LSD 0.05	1.86
	Palatability (%)	80.13^{B}	72.26^{C}	83.77^{A}	77.77^{B}
				LSD 0.05	2.48
	TSS (%)	11.70^{A}	8.10^{B}	12.40^{A}	11.20^{A}
				LSD 0.05	1.50
	Protein (%)	6.21^{B}	6.91^{A}	6.01^{D}	6.10^{C}
				LSD 0.05	0.03

85. TITLE — EFFECT OF PALATABILITY ON VOLUNTARY FEED INTAKE OF PROMISING LINES/VARIETIES OF PEARL MILLET

OBJECTIVE — To evaluate the palatability and voluntary feed intake of promising lines/varieties of pearl millet

RESEARCH WORKER — Muhammad Abdullah and Ch.Ghulam Nabi.

DURATION — 2017

LOCATION — Fodder Research Institute, Sargodha.

TREATMENTS:

T_1 Composite I

T_2 BS-2000

T_3 Composite II

T_3 Sargodha Bajra-2011(Check)

METHODOLOGY — Each pearl millet line/variety was chaffed and offered to three buffaloes after weighing. Cafeteria method will be followed according to NARC schedule. 20% additional fodder was given to these animals than their actual requirements. Consumption of these fodders was noted to determine the palatability and voluntary feed intake.

PREVIOUS YEAR RESULTS	Parameter	CompositeI	BS-2000	CompositeII	Sargodha Bajra- 2011
	Quantity fed (kg)	75.00	75.00	75.00	75.00
	Voluntary feed intake (kg)	48.00^{B}	43.00^{C}	50.00^{AB}	52.40^{A}
				LSD 0.05	3.92
	Palatability (%)	64.00^{B}	57.33^{C}	66.66^{AB}	69.86^{A}
				LSD 0.05	5.23
	TSS (%)	4.91	4.92	4.99	5.1
				LSD 0.05	0.30
	Protein (%)	4.80^{C}	5.01^{B}	4.89^{A}	5.03^{A}
				LSD 0.05	0.08

86. TITLE EFFECT OF FEEDING SILAGE ON MILK QUANTITY AND QUALITY IN MILCH ANIMALS

OBJECTIVE To determine the effect of silage consumption in milch animals

RESEARCH WORKERS: Muhammad Abdullah and Ch.Ghulam Nabi

DURATION 2017

LOCATION Fodder Research Institute, Sargodha.

TREATMENTS: T_1 Silage (Maize)
T_2 Green fodder plus Wheat straw

METHODOLOGY Silage was prepared from maize according to standard method and fed to buffaloes to see the effect of silage and green fodder plus wheat straw on milk production and quality. Green fodder plus wheat straw treatment was used as standard. Dry matter was estimated for daily requirement of animals. Six buffaloes of almost similar stage and lactation number were selected and fed silage & green fodder plus wheat straw. Treatments were repeated thrice. Daily feed intake and milk yield was recorded. Data recorded was analyzed statistically.

PREVIOUS YEAR RESULTS

Diet	Fed (Kg)	Intake (Kg)	Milk production (Liters)	
			Before trial	After trial
Silage	30	25.25	9.00	10.50
Green fodder + Wheat straw	55	49.90	9.00	9.10
LSD 0.05		0.44	0.53	0.22

Diet	Fodder and Silage Quality Characteristics					
	Fat (%)	NDF (%)	Ash (%)	Protein (%)	NFC	pH
Silage	3.5	46.10	5.71	9.18	35.51	4.07
Green fodder + Wheat straw	2.5	43.43	4.27	7.23	42.57	5.42
LSD	0.32	1.28	0.10	0.34	1.27	0.09

Diet	Milk Quality Characteristics					
	Fat (%)	SNF (%)	T. Solids (%)	Protein (%)	Acidity	pH
Silage	7.34	7.90	15.24	4.92	0.22	7.07
Green fodder + Wheat straw	7.28	7.25	14.53	4.23	0.14	6.74
LSD	0.04	0.57	0.19	0.05	0.03	0.10

EXPERIMENTAL SEED PRODUCTION UNIT, FAROOQABAD

87.TITLE — ADAPTABILITY GREEN FODDER YIELD TRIAL OF SORGHUM

OBJECTIVE: — To evaluate green fodder yield potential of different sorghum lines at various locations.

RESEARCH WORKERS: — SHAMSA KANWAL and NADEEM REHMAN

DURATION: — 2017

LOCATION: — Experimental seed production unit, Farooqabad.

TREATMENTS: — Varieties/lines as provided by DFRI, Sargodha.

METHODOLOGY:

Design	RCBD
Row spacing	30 cm
Replications	3
Plot size	1.8 X 5 m
Sowing time	Mid July
Fertilizer NPK kg/ha	99-57-62

Following data were recorded for evaluation of lines:-

-Plant height	-Stem thickness
-No. of leaves/plant	-Leaf colour
-Days to maturity	-Days to 50% flowering
-Leaf Area	-Green fodder yield

PREVIOUS YEAR'S RESULTS

Fodder yield (t/ha) of eight promising lines of Sorghum.

Sr. No.	Varieties /Lines	Green Fodder Yield t/ha	Ranking
1	V1	43.61	VII
2	V2	41.38	VIII
3	V3	44.44	VI
4	V4	48.88	V
5	V5	50	IV
6	V6	51.66	II
7	V7	53.33	I
8	V8	50.27	III

LSD 5% 7.90

88. TITLE: ADAPTABILITY TRIAL ON PEARL MILLET FOR GREEN FODDER YIELD, KHARIF 2016.

OBJECTIVE: To evaluate green fodder yield potential of different Pearl millet lines at various locations.

RESEARCH WORKERS: SHAMSA KANWAL
SYED SULTAN ALI

DURATION: 2016

LOCATION: Experimental seed production unit, Farooqabad.

TREATMENTS: Varieties/lines as provided by DFRI, Sargodha.

METHODOLOGY:

Design	RCBD
Row spacing	30 cm
Replications	3
Plot size	1.8 X 6 m
Sowing time	Mid July
Fertilizer NPK kg/ha	99-57-62

Following data were recorded for evaluation of lines:-

-Plant height	-Stem thickness
-No. of leaves/plant	-Leaf colour
-Days to maturity	-Days to 50% flowering
-Leaf Area	-Green fodder yield
-TSS Value	-No. of tillers/unit area

PREVIOUS YEAR'S RESULTS

Fodder yield (t/ha) of Eight promising lines of Pearl Millet.

Sr. No.	Varieties /Lines	Green Fodder Yield t/ha	Ranking
1	A	58.33	IX
2	B	61.42	VIII
3	C	64.19	VI
4	D	62.34	VII
5	E	67.90	I
6	F	66.66	III
7	G	65.12	IV
8	H	67.28	II
9	I	64.50	V

LSD 5% 8.12

89. TITLE: ADAPTABILITY GREEN FODDER YIELD TRIAL OF MAIZE

OBJECTIVE: To evaluate green fodder yield potential of different maize lines at various locations.

RESEARCH WORKERS: SHAMSA KANWAL
SYED SULTAN ALI

DURATION: 2016

LOCATION: Experimental seed production unit, Farooqabad.

TREATMENTS/ METHODOLOGY: Varieties/lines as provided by DFRI, Sargodha.

Design	RCBD
Row spacing	30 cm
Replications	3
Plot size	1.8 X 5 m
Sowing time	Mid July
Fertilizer NPK kg/ha	99-57-62

Following data will be recorded for evaluation of lines:-

-Plant height	-Stem thickness
-No. of leaves/plant	-Leaf colour
-Days to maturity	-Days to 50% flowering
-Leaf Area	-Green fodder yield

PREVIOUS YEAR'S RESULTS

Table: Fodder yield (t/ha) of nine lines of Maize

Sr. No.	Varieties /Lines	Green Fodder Yield t/ha	Ranking
1	A	40.43	III
2	B	37.34	VIII
3	C	41.97	I
4	D	40.43	IV
5	E	41.04	II
6	F	38.27	VI
7	G	38.58	V
8	H	38.27	VII

LSD 5 % 10.73

HILL GRASSES RESEARCH SUB-STATION, CHARRAPANI, MURREE

90.TITLE	MAINTENANCE OF GRASSES GERMPLASM.
OBJECTIVES	To maintain the germplasm and record the various characters for Green Fodder yield of different grasses.
RESEARCH WORKERS	Maqbool Hussain and M. Saqlain.
PROJECT DURATION	
LOCATION	HGRSS, Charra Pani Murree
TREATMENTS/ METHODOLOGY	No. of collections = 18 Plot size = 2.4 x 6 m. Fertilizer = 114-0-0 (split doses)NPK kg/ha Following data will be recorded. 1. Plant Height 2. Days to Ist flower 3. Green fodder yield
PREVIOUS YEAR'S RESULTS	New experiment
91.TITLE	MAINTENANCE OF GRASSES GERMPLASM.
OBJECTIVES	To maintain the germplasm and record the various characters for Green Fodder yield of different grasses for plain areas of Punjab.
RESEARCH WORKERS	Maqbool Hussain Anjum and Muhammad Shehzad.
PROJECT DURATION	
LOCATION	Fodder Research Institute, Sargodha.
TREATMENTS	No. of collections = 10 Plot size = 2.4 x 6 m. Fertilizer = 114-0-0 (split doses)NPK kg/ha Following data will be recorded. 1. Plant Height 2. Days to Ist flower 3. Green fodder yield
PREVIOUS YEAR'S RESULTS	New experiment