FODDER RESEARCH INSTITUTE, SARGODHA

INTRODUCTION

Economy of Pakistan is predominantly agriculture driven which not only contributing 19.5% GDP but also provides jobs. Livestock is vital sub-sector of Agriculture contributing 11.4% to GDP which is 58.33% of the Agriculture's share to GDP (Economic Survey of Pakistan, 2016-17). It provides milk, meat and other by-products of animal origin for human nutrition. Pakistan being at 4th position in milk production in the world produces 56,080 thousand tons of milk per year. The value of milk alone is more than the combined value of two major crops i.e wheat and cotton. Fodder is backbone of livestock and 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 191.3 million in Pakistan (Economic Survey of Pakistan, 2016-17).

Fodders occupied an area of 2.11 million hectares and produced 45.77 million tonnes of green fodder out of which Punjab province contributed 1.81 million hectares area and 39.20 million tonnes production of the country. In Punjab, fodder crops occupying third place after wheat and cotton with average fodder yield of 21.6 t/ha. Major Kharif fodder crops are maize, pearl millet and sorghum.

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 not available. Animals are generally underfed and under-nourished which results in their poor performance. 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. It is only possible through evolution of high yielding, multicut varieties / hybrids of different fodder crops and standardization of their fodders and seed production technology. Different 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 output of livestock production and also establishment of technology for seed production of approved varieties.

SALIENT ACHIEVEMENTS DURING 2017

SORGHUM

- **Line Sgd-01-17 produced highest green fodder yield of 81.00 t/ha in Preliminary green fodder yield trial with 27.16% increase over check variety Sorghum.2011 (59 t/ha.).**

- **PVK-801 produced highest green fodder yield of 79.35 t/ha in Advanced green fodder yield trial, whereas check variety Sorghum.2011 produced 62.00t/ha. with 21.51% increase over check.**

- **No. 1572 produced highest green fodder yield of 60.00 t/ha in Zonal Green Fodder Yield Trial, whereas check variety Sorghum.2011 (check) produced 58.00 t/ha. with 3.3% increase over check.**

PEARL MILLET

- **Line Composite-II yielded 93.00 t/ha green fodder yield in Zonal Green Fodder Yield Trial, whereas check variety Sgd. Bajra-2011 produced 88.00 t/ha with 5.37% increase over check.**

MAIZE

- **The promising line of maize No. 1501 gave highest green fodder yield of 64.21 t/ha in Zonal Green Fodder Yield Trial, as compared to check variety Sgd. 2002 which produced 54.01 t/ha. with 15.62% increase over check.**

GUAR

- **An early maturing, short duration and drought tolerant variety of guar BR-2017 (S-5274) has been approved for rain-fed and irrigated areas.**
- **Advanced guar lines are in pipeline i.e.**

  - **For grain purpose: S-6547, S-6543, S-6558, S-6565and S-6560.**
  - **For fodder purpose: S-6553, S-6552 and S-6566.**

ANNUAL RESEARCH PROGRAMME FOR KHARIF-2018

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, Ghulam Nabi and Muhammad Saleem Akhter

PROJECT DURATION: 2018 (Continuous nature)

LOCATION: Fodder Research Institute, Sargodha.

TREATMENT/ METHODOLOGY:

Total entries = 280
No. of rows = 2 rows of 5m
Row distance = 60cm

Following data will be recorded for evaluation of lines:

- Plant height
- Stem thickness
- No. of leaves/plant
- Leaf colour
- Leaf Area
- Days to heading
- Lodging resistance-
- Disease resistance
- Crude Protein
- TSS

REVIOUS 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 = 115 to 320cm
- Stem thickness = 1.3 to 3 cm
- No. of leaves/plant = 11 to 18
- Days to 50 % heading = 65 to 85
- Leaf colour = Light to dark green
- TSS range = 05 to 12 percent

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. Leaf to stem ratio
3. Sweetness/Juiciness
4. Quality
5. Grain yield
6. Insect and disease resistant.

RESEARCH WORKERS: Ghulam Ahmad,Amir Abdullah & Muhammad SaleemAkhtar.

PROJECT DURATION: 2018(Continuous nature)

LOCATION: Fodder Research Institute, Sargodha.

TREATMENTS/ METHODOLOGY: NEW CROSSES TO BE ATTEMPTED

S. No.	Crosses	Purpose
1	No.1567 x K-94	Height, TSS
2	Pvk-801 x No.65174-2	Sweetness, Juiciness
3	B-203 x No.1567	Height, Sweetness
4	No.9802 x JS-263	Number of leaves, Height
5	No.65174-2 x K-94	Height, TSS
6	No.1567xPVK-65130	Grain yield, Height
7	No.6001 x No.1567	Disease resistance, Protein percentage
8	FRI-02 x JS-263	Number of leaves, Height
9	YSS-89 x JS-2002	Quality, Sweetness
10	PARCSS-1 x YSS-4	Height, Sweetness
11	PARCSS-II x I-45	Sweetness, Number of leaves
12	YSS-16 x YSS-89	Grain yield, Disease resistance
13	JS-2009 x FRI-07	Insect resistance, Number of leaves
14	No.1803 x No.1620	TSS, Grain yield
15	No.3449 xNo.74724	Height, Sweetness
16	No.3448 x No.59901	Grain yield, Height
17	FRI-04 x SGD-01-2	Number of leaves, Sweetness
18	FM-147 x No.1620	Disease resistance, Grain yield
19	Hegari x SGD-2011	Protein percentage, Sweetness
20	No.74702 x Sukkar	Sweetness, Grain yield
21	No.337 x JS-263	Height, TSS
22	S-2 x No.1620	Number of leaves, Height

23	No.403415 x No.80008	Protein, Disease resistance
24	No.74724 x FM-147	Grain yield, Sweetness
25	No.59905 x BALLO	Insect resistance, Greenness
26	S-167 x FRI-07	Juiciness, more sweetness
27	F-9917 x S-167	Lodging resistance, dry matter %age.
28	TURBO x S-2	More protein, more TSS
29	Local Quetta x JS-263	Sweetness, grain yield
30	JS-2002 x No.1518	Disease resistance, sweetness
31	FRI-07 x No.74724	Grain yield, more protein
32	No. 80008 x F-9917	Protein, high fodder yield.
33	S-2 x JS-2002	Tallness, insect resistant
34	F-9917 x Ballo	Insect resistance, fodder yield
35	S-167 x Turbo	More TSS, Sweetness

TREATMENTS/ METHODOLOGY

Crosses to be studied

S. No.	Generation's	crosses/ plant progenies
1.	F1	25 crosses
2.	F2	15 crosses
3.	F3	90 plant progenies
4.	F4	60 plant progenies
5.	F5	45 plant progenies
6.	F6	30 plant progenies

PREVIOUS YEAR'S RESULTS

Fillial Generations	Entries Studied	Selected Progenies/Plants	Uniform Lines Selected
F1	15 crosses	15	-
F2	20 crosses	90 plants of 16 crosses	-
F3	85 plant progenies of 15 crosses	60 plants of 12 crosses	-
F4	50 plant progenies of 10 crosses	45 plants of 10 crosses	-
F5	40 plant progenies of 8 crosses	30 plants of 6 crosses	
F6	25 plants progenies of 5 crosses	-	5

3. TITLE — PRELIMINARY GREEN FODDER YIELD TRIAL OF SORGHUM

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

RESEARCH WORKERS — Ghulam Ahmad, Muhammad Saleem Akhtar and Ghulam Nabi.

PROJECT DURATION — 2018

LOCATION(S) — Fodder Research Institute, Sargodha.

TREATMENTS/ METHODOLOGY

Lines /Varieties	=	14
Lay out	=	RCBD
Replications	=	3
Plot size	=	1.8m x5m.
Row spacing	=	30cm.
Sowing time	=	May-July

Following data will be recorded for evaluation of lines:-

- Plant height
- No. of leaves/plant
- Leaf Area
- TSS value
- Disease incidence
- Dry matter yield
- Stem thickness
- Leaf colour
- Days to 50% heading
- Green fodder yield
- Crude protein

PREVIOUS YEAR'S RESULTS

S. No.	Lines/Varieties	GFY (t/ha)
1.	SGD-01-17	81.00
2.	SGD-02-17	77.97
3.	SGD-03-17	75.21
4.	S-5017	72.45
5.	No. 1863	65.58
6.	F-02-17	64.63
7.	YSS-13-4	62.56
8.	F-01-17	60.26
9.	F-04-17	60.26
10.	F-03-17	59.34
11.	JS-2002 (Check)	58.65
12.	SORGHUM-2011	58.42
13.	No. 1518	56.81
14.	I-4	56.81
	LSD 5%	4.37

4. TITLE — ADVANCED GREEN FODDER YIELD TRIAL OF SORGHUM

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

RESEARCH WORKERS — Ghulam Ahmad, Amir Abdullah & Muhammad Saleem Akhtar.

PROJECT DURATION — 2018

LOCATION(S) — Fodder Research Institute, Sargodha.

TREATMENTS/ METHODOLOGY

Lines/Varieties	=	8
Lay out	=	RCBD
Replications	=	3
Plot size	=	1.8m x 5m.
Row spacing	=	30cm.
Sowing time	=	May-July

Following data will be recorded for evaluation of lines:-

- Plant height
- No. of leaves/plant
- Leaf Area
- TSS value
- Green fodder yield
- Dry matter yield
- Stem thickness
- Leaf colour
- Days to 50% heading
- Disease incidence
- Crude protein

PREVIOUS YEAR'S RESULTS

Sr No.	Lines/Varieties	GFY (t/ha)
1	PVK-801	79.35
2	FRI-07	71.00
3	S-145	70.84
4	JS-2002 (check)	67.39
5	JS-1	63.25
6	F-02-16	61.87
7	Sorghum-2011 (check)	61.64
8	F-O4-16	59.34
9	No.1567	44.55
	LSD 5%	5.44

5. TITLE — ZONAL GREEN FODDER YIELD TRIAL OF 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 — 2018

LOCATIONS
1. Fodder Research Institute, Sargodha.
2, ESPU, Farooqabad.
3 FRSS, AARI, Faisalabad.
4. ARS, Bahawalpur

TREATMENTS / METHODOLOGY

Lines/varieties	=	8
Lay out	=	RCBD
Replications	=	3
Plot size	=	1.8m x 5m
Row spacing	=	30cm.
Sowing time	=	June-July

Following data will be recorded for evaluation of lines:

- Plant height
- No. of leaves/plant
- Leaf Area
- TSS value
- Crude protein
- Stem thickness
- Leaf colour
- Days to 50% heading
- Green fodder yield
- Dry matter yield

PREVIOUS YEAR'S RESULTS

Green fodder yield (t/ha.)

Sr. No.	Variety/ line	FRI. Sgd.	FRSS, F/Abad	ESPU Farooqabad	ARS. B/pur	Average (t/ha)
1.	No. 1572	76.59	66.96	40.74	54.9	59.80
2.	No. 80010	74.98	55.56	41.46	65.3	59.33
3.	Sorghum-2011 (Check)	54.80	57.42	44.44	76.5	58.29
4.	JS-2002 (Check)	61.18	60.21	44.43	62.3	57.03
5.	F-01-2015	61.64	58..35	36.34	61.64	53.21
6.	SGD-013-1	70.00	45.57	37.03	59.4	53.00
7.	I-6	60.72	6138	43.05	42.26	51.85
8.	F-02-2015	58.42	52.77	34.49	49.1	48.70
	LSD 5%	3.11		7.90		

6. TITLE — NATIONAL UNIFORM FODDER YIELD TRIAL OF SORGHUM

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

RESEARCH WORKERS — Ghulam Ahmad, Ghulam Nabi & Muhammad Saleem Akhtar

PROJECT DURATION — 2018

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

Green Fodder yield (t ha^{-1}) of National Uniform Fodder Yield Trials (NYFYT) on Sorghum for Kharif-2017

Code	Entry	Green Fodder Yield (t ha^{-1})					
		NARC Islamabad	FRI Sargodha	D.I. KHAN	AARI Faisalabad	ARI Sariab Quetta	Overall av.
A	Healthy Cow (F1)	32.72	59.00	49.50	45.37	18.33	40.98
B	YS-98	22.84	57.00	46.73	44.44	17.27	37.66
C	SGD-013-1	22.22	53.33	52.30	45.99	17.88	38.34
D	SGD-013-2	23.77	48.33	51.33	37.65	16.65	35.55
E	Sorghum 2011 (Check)	21.91	47.33	54.13	32.10	17.26	34.55
F	F-9706	23.77	38.33	47.60	33.64	17.27	32.12
LSD (0.05%)		7.74	4.562	12.01	2.64	4.622	3.056
CV (%)		17.3	5	13.1	3.6	14.6	4.6

PEARL MILLET (*Pennisetum americanum*)

7. 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 — Sikander Hayat and Dr Imtiaz Akram

PROJECT DURATION — 2018 (Continuous nature.)

LOCATION — Fodder Research Institute, Sargodha.

TREATMENTS/ METHODOLOGY

Entries = 100
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
- No. of tillers /plant
- Crude protein
- Stem thickness
- Leaf Area
- Spike length
- Dry matter yield

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
- Leaf area = 316.8 to 508.8 cm
- Spike length = 25- 55 cm

8. TITLE — HYBRIDIZATION & SELECTION 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 and Dr Imtiaz Akram

PROJECT DURATION — 2018 (Continuous nature)

LOCATION — Fodder Research Institute, Sargodha.

TREATMENTS/ METHODOLOGY

CROSSES TO BE ATTEMPTED

Purpose	Number of crosses
Multicut	4
Green Fodder yield	4
Dual Purpose (Grain/Fodder)	4
Total	12

PREVIOUS YEAR'S RESULTS — 24 crosses were attempted and Fo seed was collected.

9. TITLE — PRELIMINARY GREEN FODDER TRIAL OF PEARL MILLET

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

RESEARCH WORKERS — Sikander Hayat and Dr Imtiaz Akram Ch. Ghulam Nabi

PROJECT DURATION — 2018 (Continuous nature)

LOCATION — Fodder Research Institute, Sargodha.

TREATMENTS/ METHODOLOGY

- Lines/ Varieties = 16
- Lay out = RCBD
- Replications = 3
- Plot size = 1.8 x 6m.
- Row spacing = 30cm.
- Sowing time = May - July

Following data will be recorded for evaluation of lines:

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

PREVIOUS YEAR RESULTS

S.No.	Varieties / Lines	Green Fodder Yield (t/ha.)
1	Tift-85D	78.23
2	Composite III	77.54
3	C.47	76.84
4	Sen. POP	75.22
5	H.72	74.76
5	DP.PAK	73.84
7	TifT-383	72.91
8	DP.POP	71.29
9	MS.3	70.59
10	Raj171	68.74
11	DBR III	68.74
12	N.5	68.51
13	L.Bajra	65.05
14	Sgd Bajra 2011 (Check)	66.89
15	96/041 SRCI	66.43
16	FB.786	65.50
	LSD	4.19

10. TITLE — ADVANCED GREEN FODDER YIELD TRIAL ON PEARL MILLET

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

RESEARCH WORKERS — Sikander Hayat and Ch. Ghulam Nabi

PROJECT DURATION — 2018 (Continuous nature)

LOCATION — Fodder Research Institute, Sargodha.

TREATMENTS/ METHODOLOGY

Line/Varieties	=	8
Lay out	=	RCBD
Replications	=	3
Row spacing	=	30cm.
Plot size	=	1.8m x 6 m.
Seed rate	=	10 kg/ha.
Sowing time	=	May - July

Following data will be recorded for evaluation of lines:-

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

PREVIOUS YEAR'S RESULTS

S.No.	VARIETIES / LINES	GREEN FODDER YIELD (t/ha)
1	G.White	77.08
2	No.7703	74.53
3	C.Z.K 923	73.84
4	Y-84	73.14
5	W.Raj	71.06
6	Sgd Bajra (check)	67.82
	LSD	4.63

11. 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 — Sikander Hayat and Ch. Ghulam Nabi

PROJECT DURATION — 2018 (Continuos nature)

LOCATION
1. Fodder Research Institute, Sargodha.
2. ESPU., Farooqabad
3. ARS, Bahawalpur
4. FRSS, AARI, Faisalabad.
5. BARI, Chakwal.

TREATMENT / METHODOLOGY

Promising lines/varieties	=	4
Lay out	=	RCBD
Replications	=	3
Row spacing	=	30cm.
Plot size	=	1.8m x 6 m
Seed rate	=	10 kg/ha.
Sowing time	=	May - June

Following data will be recorded for evaluation of lines:

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

PREVIOUS YEAR'S RESULTS GREEN FODDER YIELD (t/ha.)

Sr. No	LINES/VARIETIES	FRI, Sgd.	FRSS, F/Abad	ARS, B/pur.	ESPU, Farooqbd	Average (t/ha.)
1	Composite II	76.36	84.87	86.38	124.07	92.92
2	BS.2000	77.28	81.65	80.13	116.20	88.81
3	Composite-I	78.66	73.14	81.42	121.53	88.68
4	Sgd Bajra 2011(check)	65.55	80.04	93.93	112.45	87.99
5	FB-895	70.84	80.96	76.39	116.90	86.27
6	G.Bajra	73.37	80.73	78.66	110.19	85.73
7	FB.792	67.39	82.34	75.80	110.42	83.98
8	RCBK-948	70.38	78.29	67.28	116.20	83.03
9	FB.889	68.54	80.04	90.34	88.43	81.83
	LSD	5.47	N.S	4.36	8.12	

12. TITLE DEVELOPMENT OF HIGH FODDER YIELD COMPOSITE VARIETY OF PEARL MILLET THROUGH MASS SELECTION

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

RESEARCH WORKERS Sikandar Hayat and Dr Imtiaz akram

PROJECT DURATION 2018

LOCATION Fodder Research Institute, Sargodha.

TREATMENTS/ METHODOLOGY 5^{th} year of composite variety development

Area = 20m x 25m
Row spacing = 30cm
Sowing time = July

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 undersirable types will be eliminated to achieve uniformity & homogeneity in various morphological characters. 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 20 kg seed was collected from 4^{th} year for sowing of 5^{th} year.

13. TITLE — NATIONAL UNIFORM FODDER YIELD TRIAL OF PEARL MILLET

OBJECTIVE — To evaluate the promising lines under coded No. for fodder Yield throughout the country.

RESEARCH WORKERS — Sikander Hayat ,Dr Imtiaz Akram and Ch. Ghulam Nabi

PROJECT DURATION — 2018

LOCATION — Fodder Research Institute, Sargodha.

TREATMENT / METHODOLOGY — The seed and sowing plan as supplied by the National Coordinator (Cereal System), NARC, Islamabad will be followed.

PREVIOUS YEAR'S RESULTS

Green Fodder Yield (t ha^{-1}) of National Uniform Fodder Yield Trials (NYFYT) on Millet for Kharif-2017

Code	Entry	Green Fodder Yield (t ha^{-1})				
		NARC Islamabad	FRI Sargodha	DI Khan	ARI Sariab Quetta	Overall av.
A	No.8781	27.16	55.81	30.97	21.89	33.96
B	BS-2000	28.86	51.83	32.80	21.27	33.69
C	Composite-1	25.93	53.36	38.59	23.12	35.25
D	Sargodha Bajra-2011 (Check)	22.84	54.59	32.77	23.12	33.33
LSD (0.05%)		5.607	8.42	10.68	0.925	4.403
CV (%)		10.7	7.8	15.8	2.1	6.5

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

14. TITLE — MAINTENANCE OF MAIZE GERMPLASM

OBJECTIVE — To maintain and study the gene pool for utilization in maize breeding programme

RESEARCH WORKERS — Abdul Basit and GhulamNabi.

PROJECT DURATION — 2018 (continuous nature)

LOCATION — Fodder Research Institute, Sargodha.

TREATMENTS — Entries = 56

METHODOLOGY — Sowing time = End July to Mid-August

Following data will be recorded for confirmation of results of last year:

- Plant height
- No. of leaves/plant
- Leaf Area
- Number of cobs/plant
- Crude Protein
- Stem thickness
- Leaf colour
- Days to 50% heading
- 1000 grain weight
- Dry Matter (%)

	PREVIOUS YEAR'S RESULTS	Selfed seed of 10-15 cobs from each line was collected for further studies. Data of different characteristics was recorded which ranged as under: - Plant height = 140 to 280 cm - Stem thickness = 1.3 to 3.2 cm - No. of leaves/plant = 10 to 16 - Leaf Area = 396.5 to 969.6 cm^2 - Leaf colour = Light to dark green - Days to 50% heading = 40 to 67 days - No. of cobs/plant = 01 to 02 - Crude Protein (%) = 4.23 to 14.00 - Dry Matter (%) = 16.10 to 26.85
15.	TITLE	FODDER AND GRAIN YIELD IMPROVEMENT IN MAIZE THRUOGH EAR TO ROW SELECTION
	OBJECTIVE	To develop improved variety/ line with high fodder and grain yield and resistant to insect pests & diseases.
	RESEARCH WORKERS	Abdul Basit and GhulamNabi.
	PROJECT DURATION	2018
	LOCATION	Fodder Research Institute, Sargodha.
	TREATMENTS METHODOLOGY	No. of plants to be selected = 50 – 100 Single ears from selected plants will be raised in progeny rows along with standard check variety. The superior progenies will be identified and selected. 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.
16.	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 and GhulamNabi.
	PROJECT DURATION	2018 (continuous nature)
	LOCATION	Fodder Research Institute, Sargodha.

TREATMENTS/ METHODOLOGY

No. of lines/ varieties = 10
Row spacing = 45cm
Sowing time = End July to Mid-August

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.

PREVIOUS YEAR'S RESULTS

Seed of $C_1$and C2 and C3 generations were collected for further study and selection process

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17. TITLE

PRELIMINARY FODDER YIELD TRIAL OF MAIZE

OBJECTIVES:

To test the promising uniform lines for green fodder yield.

RESEARCH WORKER:

Abdul Basit and GhulamNabi

PROJECT DURATION:

2018

TREATMENTS:

Total Entries = 10(Including Check)

METHODOLOGY:

1.	MS-01-2018	2.	MS-02-2018
3.	MS-03-2018	4.	MS-04-2018
5.	MS-05-2018	6.	MS-06-2018
7.	MS-07-2018	8.	Composite-01-18
9.	Composite-02-18	10.	Sgd.2002 (Check)

Layout = RCBD
Replications = 3
Plot Size = 1.8m x 5m
Row Spacing = 30 cm
Sowing time = August

The following observations will be recorded:-

- Plant Height
- Leaf area
- Green Fodder Yield
- Crude protein
-. Stem Thickness
-. No.of leaves per plant
-. Dry Matter percentage

PREVIOUS YEAR'S RESULTS

Sr. No.	Varieties/ Lines	Green Fodder Yield (t/ha)
1	MS-01-2017	65.43
2	Composite-16	52.46
3	Composite-15	52.15
4	MS-03-2017	50.92
5	MS-05-2017	50.00
6	MS-04-2017	44.44
7	Sgd.2002 (Check)	40.74
8	MS-02-2017	35.18
	LSD (5%)	9.72

18. 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 and GhulamNabi

PROJECT DURATION: 2018

TREATMENTS: Total Entries = 7 (Including check)

METHODOLOGY:

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

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

The following observations will be recorded:-

- Plant Height
- Stem Thickness
- Leaf area
- No.of leaves per plant
- Green Fodder Yield
- Dry Matter percentage

PREVIOUS YEAR'S RESULTS

Sr. No.	Varieties/ Lines	Green Fodder Yield (t/ha)
1	MS-04-2016	56.25
2	MS-05-2016	54.86
3	MS-07-2016	52.31
4	MS-01-2016	50.23
5	SGD.2002 (check)	47.68
6	MS-02-2016	46.76
	LSD (5%)	5.17

19. 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 and GhulamNabi

PROJECT DURATION: 2018

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

TREATMENTS: Total Entries = 7 (Including checks)

METHODOLOGY:

1.	MS-04-2016	2.	MS-05-2016
3.	MS-07-2016	4.	MS-01-2016
5.	MS-03-2015	6.	Sgd.2002 (Check)
7.	MMRI Yellow (Check)		

Layout = RCBD
Replications = 3
Plot Size = 1.8m x 5m
Row Spacing = 30 cm
Sowing time = August

The following observations will be recorded:

- Plant Height
- Stem Thickness
- Leaf area
- No.of leaves per plant
- Green Fodder Yield

PREVIOUS YEAR'S RESULTS

GREEN FODDER YIELD (t/ha)

Sr. No	Lines / Varieties	FRI, Sargodha	FRSS, F/Abad	ARS, B/Pur	ESPU, Farooqabad	Average (t/ha.)
1	No.1501	65.12	70.98	73.50	47.22	64.21
2	Fsd. Maize.2022	55.86	75.30	66.80	45.37	60.83
3	MS-03-2015	49.38	66.04	52.66	54.01	55.52
4	MS-2015	52.47	65.12	51.70	52.47	55.44
5	MS.2010	54.93	65.74	51.10	49.69	55.37
6	Sgd.2002 (Check)	53.39	70.67	43.53	48.45	54.01
7	Fsd. Maize.2021	48.76	71.29	47.50	48.14	53.92
	LSD 5%	6.69	NS	6.22	10.73	

20. TITLE — NATIONAL UNIFORM FODDER YIELD TRIAL OF MAIZE

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

RESEARCH WORKERS — Abdul Basit and GhulamNabi.

PROJECT DURATION — 2018

LOCATION(S) — Fodder Research Institute, Sargodha.

TREATMENTS/ METHODOLOGY — Seed along with the plan of sowing will be provided by the National Coordinator (Cereal system), NARC Islamabad.The trial will be conducted according to the instruction given in the plan.

PREVIOUS YEAR'S RESULTS

Green Fodder Yield (t ha^{-1}) of National Uniform Fodder Yield Trials (NYFYT) on Maize for Kharif-2017

Code	Entry	Green Fodder Yield (t ha^{-1})				
		NARC Islamabad	FRI Sargodha	AARI Faisalabad	ARI Sariab Quetta	Overall av.
A	Neelum-FG (Check)	26.54	48.47	42.28	25.90	35.80
B	MKH-804 (Silver King)	26.23	53.40	36.11	27.75	35.87
C	MS-2010	32.25	54.60	33.64	25.59	36.52
D	NO. 1501	29.01	60.80	36.73	27.75	38.57
E	MS-2015	28.86	53.70	33.95	26.51	35.76
LSD (0.05%)		**6.23**	**7.99**	**2.87**	**3.30**	**3.00**
CV (%)		**11.60**	**7.80**	**4.20**	**6.60**	**4.40**

S.S. HYBRID

21. TITLE — MAINTENANCE OF SUDAN GRASS GERMPLASM

OBJECTIVE — To maintain different Sudan Grass lines and produce their seed for S.S hybrid seed development.

RESEARCH WORKERS — Abdul Basit and Ghulam Nabi

PROJECT DURATION — 2018(Continuous nature)

LOCATION — Fodder Research Institute, Sargodha

TREATMENTS / METHODOLOGY

Total Entries = 19
Row spacing = 60 cm.
Sowing time = July

Sudan grass lines will be maintained through selfing.

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

22.	TITLE	MAINTENANCE OF A&B LINES OF SORGHUM
	OBJECTIVE	To maintain different A (CMS) lines of sorghum and produce their seed for S.S hybrid development.
	RESEARCH WORKERS	Abdul Basit and Ghulam Nabi
	PROJECT DURATION	2018 (Continuous nature)
	LOCATION	Fodder Research Institute, Sargodha.
	TREATMENTS / METHODOLOGY	Cytoplasmic male sterile lines (A) = 11 Maintainer lines (B) = 11 Row spacing = 60 cm. Lines Ratio (A:B) = Planted in the ratio of 1:2 Sowing time = July
	PREVIOUS YEAR'S RESULTS	11 A-lines (CMS) were maintained with their B-lines and seed were collected for further utilization in S.S Hybrid development.
23.	TITLE	DEVELOPMENT OF NEW S.S HYBRID COMBINATIONS
	OBJECTIVE	To find out new S.S hybrid combinations with more tillering capacity and high green fodder yield.
	RESEARCH WORKERS	Abdul Basit and Ghulam Nabi
	PROJECT DURATION	2018
	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
	PREVIOUS YEAR'S RESULTS	10 Hybrid combinations were made

24. TITLE: EVALUATION OF S.S HYBRIDS FOR GREEN FODDER YIELD

OBJECTIVE: To evaluate s.s hybrids on basis of green fodder yield

RESEARCH WORKERS: Abdul Basit and GhulamNabi

PROJECT DURATION: 2018

LOCATION(S): Fodder Research Institute, Sargodha.

TREATMENTS/ METHODOLOGY:

Total Entries	=	08 (including check)
Layout	=	RCBD
Replications	=	3
Plot Size	=	1.5x5m
Row Spacing	=	30 cm
Sowing time	=	March

Green fodder yield data will be recorded.

PREVIOUS YEAR'S RESULTS: 1st Year Study

COWPEAS (*Vignaungiculata*)

25. TITLE: MAINTENANCE AND EVALUATION OF GERMPLASM OF COWPEAS

OBJECTIVE: To maintain and evaluate the germplasm.

RESEARCH WORKERS: Ahmad Hussain

PROJECT DURATION: 2018 (Continuous nature)

LOCATION: Fodder Research Institute, Sargodha.

TREATMENTS/ METHODOLOGY:

Total entries	=	32
No. of rows	=	2
Row spacing	=	120 cm.
Sowing time	=	June –July

The data will be recorded on the following parameters.

- Vine length
- No. of leaves/vine
- No. of branches/vine
- Leaf area
- No. of days to initiation of pods
- Days to maturity
- Crude protein

PREVIOUS YEAR'S RESULTS

Ranges of data recorded:
- Vine length (250-335 cm) - No. of leaves/vine (120-280)
- No. of branches/vine. (12-17) - Stem thickness (0.7-1.2 cm)
- Green fodder yield (18-47.6 t/ha)

26. TITLE PRELIMINARY FODDER YIELD TRIAL OF COWPEAS

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

RESEARCH WORKER: Ahmad Hussain

PROJECT DURATION: 2018

TREATMENTS: Lines/ varieties = 10

METHODOLOGY:

Layout = RCBD
Replications = 4
Plot Size = 3m x 6m
Row Spacing = 45 cm
Sowing time = June- July

The following observations will be recorded:
-Vine length - No. of leaves/vine
- No. of branches/vine - Leaf area
- Green fodder yield - Crude protein

PREVIOUS YEAR'S RESULTS

S. No	Lines/varieties	Green fodder yield (t/ha)
1	CP-95	43.06
2	CP-035	42.30
3	CP-96	41.93
4	CP-101	41.83
5	CP-219	40.40
6	Elite	36.92
7	Rawan -2003 (Check)	36.75
8	SS-92	36.68
9	SS-92-2	35.56
10	IT-82E-715	34.93
	LSD	0.53

27. TITLE ADVANCE GREEN FODDER YIELD TRIAL OF COWPEAS

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

RESEARCH WORKERS Ahmad Hussain

PROJECT DURATION 2018

LOCATION Fodder Research Institute, Sargodha.

TREATMENTS/ METHODOLOGY

Varieties/ lines	=	9
Lay out	=	RCBD
Replications	=	4
Plot size	=	3m x 6m
Sowing time	=	June-July

The data will be recorded on the following parameters.

-Vine length - No. of leaves/vine
- No. of branches/vine. - Leaf area
- Green fodder yield - Crude protein

PREVIOUS YEAR'SRESULTS

S.No	LINES/VARIETIES	Green Fodder Yield (t/ha)
1.	CP-383	43.28
2.	CP-271	42.69
3.	CP-145	42.80
4.	CP-162	42.10
5.	CP-219	40.80
6.	IT-84-552	39.55
7.	IT-82E-715	38.47
8.	Rawan-2003 (check)	37.75
9.	SS-92	37.64
LSD 5%		0.47

28. TITLE ADAPTABILITY TRIAL OF COWPEAS

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

RESEARCH WORKER: Ahmad Hussain

PROJECT DURATION: 2018

LOCATION:
1. FRI Sargodha
2. ESPU Farooqabad
3. Fodder Research Sub Station AARI Faisalabad
4. BARI, Chakwal

TREATMENTS: Lines/ varieties = 7

METHODOLOGY:

Lay out = RCBD
Replications = 4
Plot size = 3m x 6m
Sowing time = June- July

The data will be recorded on the following parameters.

-Vine length
- No. of branches/vine.
- Green fodder yield
- No. of leaves/vine
- Leaf area
- Crude protein

PREVIOUS YEAR'S RESULT:

Sr. No	Lines / Varieties	FRI, Sargodha	Agronomy (F.P),AARI, F/Abad.	BARI, Chakwal	ESPU, Farooqabad	Average (t/ha.)
1	CP-383	34.72	40.0	18.10	44.70	34.38
2	CP-145	34.24	35.06	17.60	43.40	32.57
3	CP-271	33.98	35.00	15.80	43.80	32.14
4	IT84-D-552	32.73	31.70	19.70	41.50	31.40
5	CP-162	33.77	31.10	17.60	42.60	31.26
6	CP-219	31.31	30.60	16.40	41.60	29.97
7	Rawan-2003 (check)	30.49	24.20	18.40	39.60	28.17
LSD 5%		0.50	-	-	-	

29. 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 Ameer Abdullah.

PROJECT DURATION: 2018 (Continuous nature)

LOCATIONS Fodder Research Institute, Sargodha

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

PREVIOUS YEAR'S RESULT

Crops	Varieties	Selected No. of Heads.	Selected No. of Head -Row.	Selected row to block	BNS (kg.)	Pre basic
Sorghum	Hegari	50	32 / 50	20/24	46	1650
	JS-263	50	30/50	9/15	20	120
	JS-2002	50	28 / 50	12 / 18	28	300
	Sorghum2011	50	24 / 50	10 / 12	22	1150
Pearl Millet	MB-87	30	20 / 40	08 / 16	12	90
	Sgd. Bajra	30	12 / 30	06 / 9	08	93
Maize	Sgd. 2002	50	28 / 36	18 / 30	188	2970

AGRICULTURAL RESEARCH STATION, BAHAWALPUR

1. GUAR (*Cyamopsis tetragonoloba* L.)

30. 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.

RESEARCH WORKERS — Rashid Minhas and Dr. Lal Hussain Akhtar

PROJECT DURATION — Continuous

LOCATION — Agricultural Research Station, Bahawalpur

TREATMENTS/ METHODOLOGY

Entries = 260 (For fodder=140, for grain=100, for vegetable= 20)
Plot size = 0.9m x 7.2m
Layout = Augmented design
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 230 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	45-70 days
2.	Days to 90% maturity	110-149 days
3.	Plant height	55-210 cm
4	Branchesplant^{-1}	0-17
5.	Clustersplant^{-1}	12-41
6.	Podsplant^{-1}	35-440
7.	Pods cluster^{-1}	3-11
8.	Pod length	2-8cm
9.	Grainspod^{-1}	3-12
10.	1000-Grain weight	22-36gm

B. A total of 30new guar germplasm/accessions/lines were collected during Kharif, 2017

31. 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 Zubair, Rahmat Ullahand Dr. Lal Hussain Akhtar

PROJECT DURATION Continuous

LOCATION Agricultural Research Station, Bahawalpur

TREATMENTS/ METHODOLOGY Hybridization: 8 new crosses will be attempted using available germplasm keeping in view the breeding objectives i.e. grain, fodder and vegetable purposes.

Filial Generations: Following generations will beraised during the year 2018.

Generation	Parental Crosses/ progenies	Procedure
F_1	6	Non-replicated

PREVIOUS YEAR'S RESULTS

Following 6 crosses were attempted successfully during Kharif, 2017.

Cross #	Cross attempted	No. of pods harvested
1.	BR-99 X S-6036	2
2.	BR-2017 X S-6036	1
3.	BR-2017 X S-5789	1
4.	BR-90 X S-5789	1
5.	S-5885X BR-2017	2
6.	S-5885 X BR-99	1

Filial generations (F_1& F_2) are not available because heavy and abrupt rains after sowing damaged the trial.

32. TITLE IDENTIFICATION OF PROMISING PROGENIES OF GUAR

OBJECTIVE Identification of promising progenies of guar keeping in view the grain, fodder and vegetable traits and resistance to insect pests &diseases for their evaluation in yield trials during subsequent years.

RESEARCH WORKERS Rashid Minhas and Dr. Lal Hussain Akhtar

PROJECT DURATION 2018

LOCATION Agricultural Research Station, Bahawalpur

TREATMENTS/ METHODOLOGY

No. of Entries = 60
Checks = BR-90 & BR-2017
Layout = Alpha Lattice
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.	Podscluster^{-1}	12.	Fodder yield

PREVIOUS YEAR'S RESULTS

50progenies were evaluated during kharif, 2017.
20progenies were selected for their evaluation in preliminary yield trials during 2018.

33. 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 Zubair and Dr. Lal Hussain Akhtar

PROJECT DURATION

2018

LOCATION

Agricultural Research Station, Bahawalpur

TREATMENTS/ METHODOLOGY

The seed of following guar varieties will be treated with irradiations at 10 dozes i.e. 10Kr, 20Kr, 30Kr, 40Kr, 50Kr, 60, 70Kr, 80Kr, 90Kr and 100Kr in collaboration with NIAB, Faisalabad.

Varieties = 2 (BR-99, BR-2017)
After irradiation process, seed of above varieties will be sown to raise M_1Generation.

Checks = BR-99, BR-2017 (Non-treated)
Plot size = 2.7m x 7.2m
Row Spacing = 45 cm

PREVIOUS YEAR'S RESULTS

New experiment

34. 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 Zubair and Dr. Lal Hussain Akhtar

PROJECT DURATION

2018

LOCATION

Agricultural Research Station, Bahawalpur

No. of Trials = 02
No. of Entries = 20

TREATMENTS/ METHODOLOGY

PRELIMINARY YIELD TRIALS-I(A-I) (Grain Purpose)
No. of Entries = 11
Check= BR-2017
PRELIMINARY YIELD TRIALS-II(A-II) (Fodder Purpose)
No. of Entries = 9
Checks =BR-90
Layout = RCBD
Replications = 4
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, 09 were selected. These lines will be tested in B-Trials during 2018. Their performance is given as under:

A-I Trial

Varieties	Grain Yield (Kg ha^{-1})
S-6547	2732
S-6543	2463
S-6558	2361
S-6565	2349
S-6560	2236
BR-2017 (Check)	2221
S-6538	1943
S-6539	1644
S-6549	1441
S-6555	1082
S-6581	873
S-6554	658
LSD (0.05)	152.5

A-II Trial

Varieties	Grain Yield (Kg ha^{-1})	Fodder Yield (t ha^{-1})
S-6553	2307	32.6
S-6552	1962	37.8
S-6566	1810	24.3
S-6536	1755	29.8
BR-90 (Check)	1738	28.3
S-6541	1315	22.3
S-6548	973	31.9
2/1 (Check)	777	25.9
S-6577	473	15.3
LSD (0.05)	235.72	2.81

35. TITLE REGULAR YIELD TRIAL OF GUAR (B-TRIAL)

OBJECTIVE To evaluate the yield performance of promising lines of guar to select better performing lines.

RESEARCH WORKERS Muhammad Shahjhan Bukhari and Dr. Lal Hussain Akhtar

PROJECT DURATION 2018

LOCATION Agricultural Research Station, Bahawalpur

TREATMENTS/ METHODOLOGY

No. of Entries = 09
Checks = BR-2017, BR-90
Layout = RCBD
Replications = 4
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 11 lines tested in B-Trial, 7 were selected on the basis of their better performance. These lines will be tested in C-Trial during 2018. The results are given as under:

B-Trial

Varieties	Grain Yield (Kg ha^{-1})	Fodder Yield (t ha^{-1})
S-6384	2929	35.0
S-6161	2766	33.7
S-6000	2704	30.7
S-6165	2570	24.5
S-6260	2427	37.0
S-6251	2353	32.5
S-6159	2317	27.4
BR-2017 (Check)	2300	32.3
S-6103	1980	17.5
BR-90 (Check)	1509	21.8
S-6189	1030	16.3
S-6131	794	17.9
S-6146	614	18291
LSD(0.05)	231.14	2.72

36. TITLE ADVANCE GUAR YIELD TRIAL (C-TRIAL)

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

RESEARCH WORKERS Rahmat Ullah and Dr. Lal Hussain Akhtar

PROJECT DURATION 2018

LOCATION Agricultural Research Station, Bahawalpur

TREATMENTS/ METHODOLOGY

No. of Entries = 07
Checks = BR-2017, BR-90
Layout = RCBD
Replications = 4
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 YEA'S RESULTS Out of 5 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 2018. The results are given as under:

Varieties	Grain Yield (Kg ha^{-1})	Fodder Yield (t ha^{-1})
S-5778	2580	32.8
S-5827	2444	31.7
BR-2017 (Check)	2307	32.8
S-5752	1769	27.9
S-5789	1423	33.7
BR-90 (Check)	1222	25.1
S-6036	916	28.8
LSD(0.05)	297.43	3.43

37. 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 Muhammad Zubair and Dr. Lal Hussain Akhtar

PROJECT DURATION 2018

LOCATIONS

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

TREATMENTS/ METHODOLOGY
Seed will be provided to above mentioned stations.
No. of Entries = 05 Check = BR-2018
Layout = RCBD Replications = 4
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
Results Awaited

38. 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
2018

LOCATIONS
7

TREATMENTS/ METHODOLOGY
No. of Entries = 03 Check = BR-2017
Trial will be conducted by the Coordinator Fodder, NARC, Islamabad.

PREVIOUS YEAR'S RESULTS

Grain Yield (Kg ha^{-1})

Name	BARS FatehJang	BAFFA Mansehra	AZRI BWP	AZRI Bhakkar	NARC ISD	Rice Station BNG	Av. All Sites
S-5885	1741	2037	1550	1624	1214	2348	1752
S-5823	1885	1997	1100	1428	1109	1852	1562
BR-2017 (Check)	1549	2209	1263	1373	1256	1958	1601
LSD (0.05)	170.00	570.79	262.70	395.10	429.90	462.10	139.60

39. 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
Rahmat Ullah and Dr. Lal Hussain Akhtar

PROJECT DURATION
2018

LOCATION
Agricultural Research Station, Bahawalpur

TREATMENTS/ METHODOLOGY
No. of Entries = 05 Check = BR-2017
Layout = RCBD Replications = 4
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} 12. Root shoot ratio

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

Varieties	Grain Yield (Kg ha^{-1})	
	No irrigation	3 irrigations
S-5823	1476	2262
BR-2017 (Check)	1350	2387
S-5885	1309	2609
S-5789	795	1674
S-6036	586	1741
LSD(0.05)	191.57	386.32

40. 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 2018

LOCATION Regional Agricultural Research Institute, Bahawalpur.

TREATMENTS/ METHODOLOGY

No. of Entries = 05
Check = BR-2017
Layout = RCBD
Replication = 4
Plot size = 2.7m x 7.2m
Row Spacing = 45cm
Data on various diseases will be recorded.

PREVIOUS YEAR'S RESULTS

Entries	Bacterial blight and Alternaria blight were observed and plant reaction was as under	
	Bacterial blight	Alternaria blight
S-5885	Moderately Susceptible	Moderately Resistant
S-5789	Susceptible	Moderately Resistant
S-6036	Susceptible	Moderately Resistant
S-5823	Moderately Susceptible	Resistant
BR-2017 (Check)	Moderately Susceptible	Moderately Resistant

41. TITLE SCREENING OF NEW GUAR GENOTYPES AGAINST INSECT PESTS

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

RESEARCH WORKERS Muhammad Imran and Dr. Lal Hussain Akhtar

PROJECT DURATION 2018

LOCATION Regional Agricultural Research Institute, Bahawalpur

TREATMENTS/ METHODOLOGY

No. of Entries = 05
Check = BR-2017
Layout = RCBD
Replication = 4
Plot size = 2.7m x 7.2m
Row Spacing = 45 cm
Data on the infestation of jassid, aphid & 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

Entries	Average Jassid /Leaf	Average W.F./Leaf	Average Aphid/Leaf
S-5885	0.93	4.05	-
S-5789	0.70	3.21	-
S-6036	1.5	6.23	-
S-5823	0.83	4.13	-
BR-2017 (Check)	1.06	4.90	-
LSD 5%	0.22	1.20	-

41. 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 Muhammad Imran Akram and Dr. Lal Hussain Akhtar

PROJECT DURATION 2018

LOCATION Agricultural Research Station, Bahawalpur

TREATMENTS/ METHODOLOGY

No. of Entries = 01
Check = BR-2017
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 BranchesPlant^{-1}
5. Clustersplant^{-1}
6. Podscluster^{-1}
7. PodsPlant^{-1}
8. GrainsPod^{-1}
9. 1000-Grain weight
10. Pod length
11. Grain Yield

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

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

Grain Yield Kg ha^{-1}

Treatments	N (Kg ha^{-1})	P (Kg ha^{-1})	Variety	
			BR-2017	S-5885
T1	0	0	1374	1501
T 2	15	30	1773	1916
T 3	15	60	2036	2329
T 4	15	90	1899	2159
T 5	30	30	2125	2438
T 6	30	60	2433	2663
T 7	30	90	2355	2575
T 8	45	30	1549	1762
T9	45	60	1655	1843
T10	45	90	1484	1620
LSD (0.05)		V=65.10	NP=167.56	

42. 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 Muhammad Imran Akram and Dr. Lal Hussain Akhtar

PROJECT DURATION 2018

LOCATION Agricultural Research Station, Bahawalpur

TREATMENTS/ METHODOLOGY

No. of Entries = 02
Check = BR-2017
Replications = 4
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 $Plant^{-1}$
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

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-2017	S-5885
T1	30	60	0	2131	2365
T2	30	60	30	2391	2601
T3	30	60	60	2398	2783
T4	30	60	90	2315	2732
LSD (0.05)	K=159.85			V= 131.40	

43. 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 Muhammad Imran Akram and Dr. Lal Hussain Akhtar

PROJECT DURATION 2018

LOCATION Agricultural Research Station, Bahawalpur

TREATMENTS/ METHODOLOGY

No. of Entries = 01
Check = BR-2017
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^{-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

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

Grain Yield Kg ha^{-1}

Treatments	Row Spacing (cm)	variety	
		BR-2017	S-5885
T1	30	2167	2398
T2	45	2323	2711
T3	60	1775	2038
LSD (0.05)	V=73.71	RS=131.92	

44. TITLE — EFFECT OF DIFFERENT SOWING DATES ON THE GRAIN YIELD OF NEW GUAR STRAINS.

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

RESEARCH WORKERS — Muhammad Imran and Dr. Lal Hussain Akhtar

PROJECT DURATION — 2018

LOCATION — Agricultural Research Station, Bahawalpur

TREATMENTS/ METHODOLOGY

No. of Entries = 01
Check = BR-2017
Sowing Dates = 01/05, 15/05, 01/06, 15/06, 01/07, 15/07
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 — New Experiment

45. TITLE — PRODUCTION OF BNS AND PRE-BASIC SEEDOF GUAR VARIETIES

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

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

PROJECT DURATION — 2018

LOCATION — Agricultural Research Station, Bahawalpur

TREATMENTS/ METHODOLOGY — Name of varieties= BR-2017, BR-99

PREVIOUS YEAR'S RESULTS — The BNS & Pre-basic seed produced during Kharif, 2017 is as follows;

Results	BR-2017	BR-99
No. of plants selected for plant to row planting	100	80
No. of plant to rows selected for planting in Blocks	45	30
No. of Blocks selected	8	5
BNS seed Produced(Kg)	70	60
Pre-basic seed Produced (Kg)	480	1200

47. TITLE — PRODUCTION OF PRE-BASIC SEED OF SORGHUM

OBJECTIVE — To produce sufficient seed of sorghum variety for distribution to the seed companies and growers for seed multiplication.

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

PROJECT DURATION — 2018

LOCATION — Agricultural Research Station, Bahawalpur

TREATMENTS/ METHODOLOGY — Name of varieties= SJ-263, Sorghum-2011
The BNS of varieties will be provided by the Director, FRI, Sargodha

PREVIOUS YEAR'S RESULTS — Pre-basic seed produced during Kharif, 2017 is as follows:

Variety	Pre-basic seed produced (Kg)
Sorghum-2011	1600
SJ-263	600

2. PEARL MILLET (*Pennisetum americanum*)

48. 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 — Rahmat Ullah and Dr. Lal Hussain Akhtar

PROJECT DURATION — 2018

LOCATION — Agricultural Research Station, Bahawalpur

TREATMENTS/ METHODOLOGY — The seed and methodology of the trial will be received from the Director, FRI, Sargodha.

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

Entry	Plant height (cm)	Leaves Plant^{-1}	Stem Thickness (cm)	Leaf Area (Lxw) (cm^2)	GFY (t ha^{-1})
RCBK-948	248.2	12	3.6	300.3	85.1
Composite-II	239.9	13	3.7	272.6	93.9
G. Bajra	226.3	13	4.5	313.3	85.5
FB-792	243.8	13	4.2	291.4	82.4
Sgd. Bajra 2011 (check)	252.9	12	4.0	327.1	102.1
Composite-I	225.0	13	3.5	261.8	88.5
FB-889	232.5	13	3.8	276.4	98.2
BS-2000	235.8	13	4.3	328.2	87.1
FB-895	218.8	13	6.4	257.3	83.0

3. SORGHUM (*Sorghum bicolor*)

49. 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 Zubair and Dr. Lal Hussain Akhtar

PROJECT DURATION 2018

LOCATION Agricultural Research Station, Bahawalpur

TREATMENTS/ METHODOLOGY The seed and methodology of the trial will be received from the Director, FRI, Sargodha.

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

Entry	Plant height (cm)	Leaves Plant^{-1}	Stem Thickness (cm)	Leaf Area (Lxw) (cm^2)	GFY (t ha^{-1})
F-01-2015	179.0	11	5.3	476.0	61.4
F-02-2015	172.3	10	5.2	444.1	49.1
Sgd-013-1	181.1	11	5.7	467.8	59.4
No. 1572	175.7	10	5.4	299.1	54.9
No. 80010	175.7	11	5.9	483.5	65.3
I-6	122.0	10	6.8	620.6	42.6
JS-2002 (check)	185.2	10	6.2	491.7	76.5
Sorghum 2011(check)	208.0	11	6.3	429.4	62.3

MAIZE (*Zea mays* L.)

50. 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 Muhammad Shahjhan Bukhari and Dr. Lal Hussain Akhtar

PROJECT DURATION 2018

LOCATION Agricultural Research Station, Bahawalpur

TREATMENTS/ METHODOLOGY The seed and methodology of the trial will be received from the Director, FRI, Sargodha.

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

S.No.	Entry Name	GFY (t ha^{-1})
1	MS-03-2015	39.5
2	MS-2015	38.8
3	MS-2010	38.3
4	No.1501	55.1
5	Sgd-2002 (Check)	32.7
6	FSD-Maize-2021	35.6
7	FSD-Maize-2022	50.1

FODDER RESEARCH SUB-STATION AARI, FAISALABAD

1. SORGHUM

50. TITLE COLLECTION AND MAINTENANCE 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.Qamar Shakil, Ahmed Hassan Khan, Suleman Raza

PROJECT DURATION Continues Nature.

LOCATION Fodder Research Sub-Station, AARI Faisalabad.

TREATMENT
Germplasm lines/varieties = 105
Exotic lines = 05

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)

PREVIOUS 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.

51. 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.
1. High fodder yield potential 2. Stay green 3. Leaf to stem ratio
4. Juiciness 5. Quality 6. Greenish 7. Grain yield
7. Insect and disease resistant.

RESEARCH WORKER(S) — Dr.Qamar Shakil, Ahmed Hassan Khan, Suleman Raza

PROJECT DURATION — 2018

LOCATION — Fodder Research Sub-Station, AARI Faisalabad.

TREATMENT/ METHODOLOY.

CROSSES OF SORGHUM TO BE ATTEMPTED

1. SL15 X JS-263
2. A-ASIL X LS-15
3. FS26 II X CHINA
4. AK-113 X JS-04
5. SANDAL BAR X JS-2002
6. Sildmarhar X JS-3911
7. JS-2002 X INDIAN
8. MSM-03 X SL-18
9 S-2011 X AUS-07
10. NARC-1620 X KALASH

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
F1	10crosses
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.

PREVIOUS 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

52. 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, Ahmed Hassan Khan, Suleman Raza

PROJECT DURATION — 2018.

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-01-18
2.	F-02-18
3.	F-03-18

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

PREVIOUS YEAR'S RESULTS.

Sr.No	Varieties	GFY (t/ha)
1.	Sorghum 2011 (check)	77.55
2.	F-01-17	73.84
3.	Sgd-01-17	68.98
4.	JS-2002 (check)	68.98
5.	I-4	66.40
6.	F-03-17	63.65
7.	No. 5017	62.96
8.	Sgd-03-17	62.70
9.	No. 1518	62.50
10.	F-02-17	61.34
11.	Sgd-02-17	59.95
12.	F-04-17	56.48
13.	No.1863	49.30
14.	YSS-13	45.13

53. 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. Qamar Shakil, Ahmed Hassan Khan, Suleman Raza

PROJECT DURATION — 2018.

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

PREVIOUS YEAR'S RESULTS.

Sr. No	Varieties	GFY (t/ha)
1.	S-145	65.50
2.	JS-2002 (check)	62.30
3.	PVK-801	61.34
4.	F-04-16	60.65
5.	Sorghum 2011 (check)	59.00
6.	F-02-16	58.83
7.	JS-1	57.64
8.	FRI-07	56.71
9.	No. 1567	46.99

55. 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, Ahmed Hassan Khan, Suleman Raza

PROJECT DURATION — 2018.

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-01-2016
2. F-02-2016

PREVIOUS YEAR'S RESULTS.

Sr.No	Varieties	Green Fodder Yield (t/ha)
1.	No. 1572	67.13
2.	I-6	61.11
3.	Sorghum 2011 (check)	59.95
4.	F-01-2015	58.10
5.	JS-2002 (check)	57.18
6.	No. 80010	55.32
7.	F-02-2015	52.55
8.	Sgd-013-1	45.37

56. 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 throughout the country.

RESEARCH WORKER(S) — Dr. Qamar Shakil, Ahmed Hassan Khan, Suleman Raza

PROJECT DURATION — 2018.

LOCATION — Fodder Research Sub-Station, AARI Faisalabad.

TREATMENT/ METHODOLOY — The packed seed/sowing plan will be supplied by the 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. F-01-2014
2. F-02-2014

PREVIOUS YEAR'S RESULTS.

Green Fodder yield (t ha^{-1}) of National Uniform Fodder Yield Trials (NYFYT) on Sorghum for Kharif-2017

Code	Entry	Green Fodder Yield (t ha^{-1})					
		NARC Islamabad	FRI Sargodha	D.I. KHAN	AARI Faisalabad	ARI Sariab Quetta	Overall av.
A	Healthy Cow (F1)	32.72	59.00	49.50	45.37	18.33	40.98
B	YS-98	22.84	57.00	46.73	44.44	17.27	37.66
C	SGD-013-1	22.22	53.33	52.30	45.99	17.88	38.34
D	SGD-013-2	23.77	48.33	51.33	37.65	16.65	35.55
E	Sorghum 2011 (Check)	21.91	47.33	54.13	32.10	17.26	34.55
F	F-9706	23.77	38.33	47.60	33.64	17.27	32.12
LSD (0.05%)		7.74	4.562	12.01	2.64	4.622	3.056
CV (%)		17.3	5	13.1	3.6	14.6	4.6

57. 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, Ahmed Hassan Khan, Suleman Raza

PROJECT DURATION — 2018.

LOCATION — Fodder Research Sub-Station, AARI Faisalabad.

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

PREVIOUS YEAR'S RESULTS. — New experiment

58. 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, Ahmed Hassan Khan, Suleman Raza

PROJECT DURATION — 2018.

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-2018
2. Golden Sorghum

PREVIOUS YEAR'S RESULTS. (Average per cut Yield)

Sr. No	Coded varieties	Green Fodder Yield (t/ha.)
1.	D	79.17
2.	Y	75.93
3.	V	75.62
4.	Q	74.69
5.	B	74.38
6.	C	73.46
7.	T	73.30
8.	A	72.99
9.	W	72.84
10.	N	72.69
11.	M	72.38
12.	I	71.60
13.	G	70.37
14.	H	69.13
15.	L	68.83
16.	X	68.83
17.	K	68.67
18	E	68.52
19	P	67.28
20	F	66.98
21	J	66.97
22	R	66.05
23	U	62.81
24	O	62.04
25	S	55.87

59. TITLE — ZONAL GREEN FODDER YIELD TRIAL ON MAIZE.

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

RESEARCH WORKER(S) — Dr. Qamar Shakil, Ahmed Hassan Khan, Suleman Raza

PROJECT DURATION — 2018.

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. FSD MAIZE 2020
2. FSD MAIZE 2019

PREVIOUS YEAR'S RESULTS.

Sr.No	Variety	GFY (t/ha)
1.	Fsd. Maize 2021	71.29
2.	No. 1501	70.98
3.	Sgd 2002 (check)	70.67
4.	Fsd. Maize 2022	69.13
5.	MS-03-2015	66.00
6.	MS-2010	65.74
7.	MS-2015	65.12

60. TITLE — NATIONAL UNIFORM GREEN FODDER YIELD TRIAL ON MAIZE

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

RESEARCH WORKER(S) — Dr. Qamar Shakil, Ahmed Hassan Khan, Suleman Raza

PROJECT DURATION — 2018.

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 line.

1. FSD Maize -2021

PREVIOUS YEAR'S RESULTS

Green Fodder Yield (t ha^{-1}) of National Uniform Fodder Yield Trials (NYFYT) on Maize for Kharif-2017

Code	Entry	Green Fodder Yield (t ha^{-1})				
		NARC Islamabad	FRI Sargodha	AARI Faisalabad	ARI Sariab Quetta	Overall av.
A	Neelum-FG (Check)	26.54	48.47	42.28	25.90	35.80
B	MKH-804 (Silver King)	26.23	53.40	36.11	27.75	35.87
C	MS-2010	32.25	54.60	33.64	25.59	36.52
D	NO. 1501	29.01	60.80	36.73	27.75	38.57
E	MS-2015	28.86	53.70	33.95	26.51	35.76
LSD (0.05%)		**6.23**	**7.99**	**2.87**	**3.30**	**3.00**
CV (%)		**11.60**	**7.80**	**4.20**	**6.60**	**4.40**

PEARL MILLET:

61. 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)	Dr.Qamar Shakil, Ahmed Hassan Khan, Suleman Raza
PROJECT DURATION	2018.
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-791 2. FB-797 3. FB-809

PREVIOUS YEAR'S RESULTS

Sr.No	Varieties	GFY (t/ha)
1.	Composite II	85.41
2.	FB.792	82.87
3.	BS.2000	82.17
4.	FB-895	81.48
5.	G.Bajra	80.55
6.	Sgd Bajra 2011(check)	80.55
7.	FB.889	80.55
8.	RCBK-948	77.08
9.	Composite-I	73.61

62. TITLE NATIONAL UNIFORM GREEN FODDER YIEDL TRIALS ON MILLET.

OBJECTIVE To evaluate promising fodder yield varieties of millet.

RESEARCH WORKER(S) Dr. Qamar Shakil, Mr. Ahmed Hassan Khan, Mr. Suleman Raza

PROJECT DURATION 2018.

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-803
2. FB-806

PREVIOUS YEAR'S RESULTS

Green Fodder Yield (t ha^{-1}) of National Uniform Fodder Yield Trials (NYFYT) on Millet for Kharif-2017

Code	Entry	Green Fodder Yield (t ha^{-1})				
		NARC Islamabad	FRI Sargodha	DI Khan	ARI Sariab Quetta	Overall av.
A	No.8781	27.16	55.81	30.97	21.89	33.96
B	BS-2000	28.86	51.83	32.80	21.27	33.69
C	Composite-1	25.93	53.36	38.59	23.12	35.25
D	Sargodha Bajra-2011 (Check)	22.84	54.59	32.77	23.12	33.33
LSD (0.05%)		5.607	8.42	10.68	0.925	4.403
CV (%)		10.7	7.8	15.8	2.1	6.5

AGRONOMIST (FORAGE PRODUCTION), AARI, FAISALABAD

63. TITLE	EFFECT OF PLANTING METHODS ON GREEN FODDER YIELD OF DIFFERENT MAIZE VARIETIES
Objective:	To determine the best sowing method and variety for maximum green fodder yield of maize.
RESEARCH WORKERS:	Muhammad Arshad, Sohail Rashid, Arbab Jahangeer and Dr. Tariq Mahmood
DURATION:	2017-2019
LOCATION:	Agronomy (Forage Production) Section AARI, Faisalabad
TREATMENTS:	Varieties/Lines (Main Plot) V_1= S-2002 V_2= FSD Maize 2020 Planting Methods (Sub Plot) T_1 Broadcast T_2 Broadcast with augmented furrows T_3 Line sowing (30 cm apart rows)
METHODOLOGY:	The experiment will be sown according to the treatments as mentioned with recommended seed rate 40 Kg/ha and fertilizer dose (NPK 90-60-30 kg ha^{-1}) having plot size 6m × 10m in split plot design with 3 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 will be recorded.

PREVIOUS YEAR'S RESULTS:

Variety / Sowing Method	Green Fodder Yield (t/ha)		Stem Diameter (cm)		Plant Height (cm)		Leaves/plant		Number of plants/m^2	
	S-2002	Fsd-2020	S-2002	Fsd-2020	S-2002	Fsd-2020	S-2002	Fsd-2020	S-2002	Fsd-2020
Broadcast	51.030 d	59.520 b	2.6200 c	2.6700 c	220.00 d	232.00 c	13.353 e	13.700 c	20.717 c	20.603 c
Augmented with Furrows	59.133 b	59.520 b	2.7833 b	2.8833 a	234.33 bc	245.00 a	13.680 c	13.927 a	21.207 bc	22.903 a
Line sowing	54.087 c	60.250 b	2.6533 c	2.7600 b	231.00 c	237.00 b	13.500 d	13.807 b	19.387 d	21.890 b
Means for Varity	54.750 b	60.971 a	2.6856 b	2.7711 a	228.44 b	238.00 a	13.511 b	13.811 a	20.437 b	21.799 a
LSD for Variety	1.1288		0.0787		3.734		0.0414		0.9343	
LSD for Interaction	2.8234		0.0386		4.6966		0.0621		0.5716	

64. TITLE: EFFECT OF PLANTING METHODS ON GREEN FODDER YIELD OF DIFFERENT SORGHUM VARIETIES

Objective: To determine the best sowing method for maximum green fodder yield among different sorghum varieties.

RESEARCH WORKERS: Muhammad Arshad, Sohail Rashid, Arbab Jahangeer and Dr. Tariq Mahmood

DURATION: 2017-2019

LOCATION: Agronomy (Forage Production) Section AARI, Faisalabad

TREATMENTS: Varieties/Lines (Main Plot)

V_1= Sorghum 2011

V_2= Kalash

V_3= Sandal bar

Planting Methods (Sub Plot)

T_1 Broadcast

T_2 Broadcast with augmented furrows

T_3 Line sowing (30 cm apart rows)

METHODOLOGY: The experiment will be sown according to treatments with recommended seed rate @ 40Kg/ha and fertilizer dose (NPK 60-60-30 kg ha^{-1}) having plot size 6m × 10m in RCBD with 3 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:

Variety Sowing Method	Green Fodder Yield (t/ha)			Stem Diameter (cm)			Plant Height (cm)			Leaves/plant			Number of plants/m^2		
	Sorghum-2011	Kalash	Sandal Bar	Sorghum-2011	Kalash	Sandal Bar	Sorghum-2011	Kalash	Sandal Bar	Sorghum-2011	Kalash	Sandal Bar	Sorghum-2011	Kalash	Sandal Bar
Broadcast	48.5 f	48.8 f	52.5 cd	1.95 de	2.54 b	1.88 e	265.1 c	211.3 e	255.2 d	11.75	13.50	12.75	46.0 a	44.7 a	46 a
Augmented with Furrows	54.7 b	52.2 cde	57.5 a	2.24 c	2.71 a	2.32 c	280.2 a	220.2 e	270.1 bc	12.5	14.25	12.5	39.5 b	37.25 b	39 b
Line sowing	52. de	50.7 e	53.8 bc	2.03 d	2.63 ab	2.02 d	278.3 ab	217.1 e	272.2 abc	12.25	14.50	12.5	32.7 c	33.25 c	30.25 c
Means	51.77 b	50.6 c	54.6 a	2.073 b	2.633 a	2.073 b	274.33 a	215.25 c	265.6 b	12.25 cd	14.08 a	12.58 b	39.417	38.417	38.417
LSD Interaction	1.8257			0.1169			9.1002			N.S			3.1836		
Variety	0.6867			0.0658			4.4417			1.0397			N.S		

65. 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 leguminous and non-leguminous fodders for best quality fodder and maximum green fodder yield.

RESEARCH WORKERS: Muhammad Arshad, Arbab Jahangeer, Sohail Rashid and Dr. Tariq Mahmood.

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 3 replications. All Agronomic practices will be kept uniform. Data regarding plant height, number of plants/m^2, green fodder yield, TDN, Crude Protein, crude fiber and ash% etc. will be recorded.

PREVIOUS YEAR'SRESULTS:

Treatments	Plants/m^2	Plant Height (cm)	Stem Diameter (cm)	Green Fodder Yield (t/ha)
T1 = Pearl Millet alone	78.67 a	227.33 b	1.05 a	73.90 a
T2 =Guar alone	50.67 d	131.00 e	0.79 b	31.49 e
T3= Cowpea alone	18.33 f	65.17 g	0.29 c	17.45 g
T4 = Pearl millet (50%) + Guar (50%)	67.33 b	239.17 a	0.85 b	67.03 c
T5= Pearl millet (50%) + cowpea (50%)	52.00 cd	199.08 d	0.82 b	49.25 d
T6 = Pearl millet (50%) + Guar (25%) + Cowpea (25%)	54.33 c	205.65 c	1.06 a	69.44 b
T7 = Guar (50%) + Cowpea (50%)	45.67 e	122.10 f	0.80 b	25.93 f

LSD value for, Plants/m^2= 2.5009 Plant Height= 3.8010, Stem diameter= 0.0606, GFY= 0.0927

66. TITLE: EFFECT OF CLIMATE CHANGE ON PLANTING TIME OF MAIZE VARIETY S-2002 FOR MAXIMUM GREEN FODDER YIELD POTENTIAL

Objective: To determine the best planting /sowing date for maximum green fodder yield potential of maize variety S-2002.

RESEARCH WORKERS: Arbab Jahangeer, Muhammad Arshad, Sohail Rashid and Dr. Tariq Mahmood..

DURATION: 2017-2019

LOCATION: Agronomy (Forage Production) Section AARI, Faisalabad

TREATMENTS:

Planting dates
T_1 1st July
T_2 15th July
T_3 30th July
T_4 15th August

METHODOLOGY: The experiment will be sown according to the treatments as mentioned with recommended seed rate 40 Kg/ha and fertilizer dose (NPK 90-60-30 kg ha^{-1}) having plot size 6m × 10m in RCBD with 3 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 will be recorded.

PREVIOUS YEAR'S RESULTS

Treatments	Plants/m^2	Plant Height (cm)	Number of leaves/plant	Stem Diameter (cm)	Green Fodder Yield (t/ha)
T_1= 1st July	24.7	44.70 b	11.00 bc	2.75 b	44.70 c
T_2= 15th July	24.2	50.07 b	10.25 c	2.79 ab	50.07 b
T_3= 30th July	24.7	54.90 a	13.25 a	2.86 a	54.90 a
T_4= 15th August	24.0	50.40 ab	12.00 ab	2.82 a	50.40 b

LSD Value for plants/m^2= N.S Stem diameter=0.0689 GFY=3.5443, Plant Height= 10.924 Leaves/plant=1.33

67. TITLE EFFECT OF CLIMATE CHANGE ON PLANTING TIME OF SORGHUM FOR MAXIMUM GREEN FODDER YIELD POTENTIAL

Objective: To determine the best planting /sowing date for maximum green fodder yield potential of sorghum-2011.

RESEARCH WORKERS: Muhammad Arshad, Arbab Jahangeer, Sohail Rashid and Dr. Tariq Mahmood.

DURATION: 2017-2019

LOCATION: Agronomy (Forage Production) Section AARI, Faisalabad

TREATMENTS: Planting dates

T_1 15th June
T_2 30 June
T_3 15th July
T_4 30th July

METHODOLOGY: The experiment will be sown according to treatments with recommended seed rate @ 40Kg/ha and fertilizer dose (NPK 60-60-30 kg ha^{-1}) having plot size 6m × 10m in RCBD with 3 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'SRESULTS:

Treatments	Plants/m^2	Plant Height (cm)	Number of leaves/plant	Stem Diameter (cm)	Green Fodder Yield (t/ha)
T_1= 15th June	57.67 a	245.83 b	15.67 ab	1.070 b	50.75 b
T_2= 30 June	46.33 b	258.43 a	16.67 a	1.120 a	62.33 a
T_3= 15th July	55.33 a	241.57 c	14.00 b	1.140 a	59.33 a
T_4= 30th July	47.67 b	219.42 d	14.00 b	1.052 b	48.98 b

LSD Value for plants/m^2= 4.0096 stem diameter=0.0320 GFY=4.9592, Plant Height= 3.3906, Leaves/plant=2.1835

68. TITLE EFFECT OF TIME OF SOWING ON GREEN FODDER YIELD OF MORINGA

Objective: To determine the best planting /sowing date for maximum green fodder yield of moringa.

RESEARCH WORKERS: Sohail Rashid, Dr. Abdul Majid, Arbab Jahangeer and Dr. Tariq Mahmood

DURATION: 2018-2019

LOCATION: Agronomy (Forage Production) Section AARI, Faisalabad

TREATMENTS: Planting dates

T_1 1st March
T_2 15th March
T_3 30th March
T_4 15th April
T_5 30thApril

METHODOLOGY: The experiment will be sown according to the treatments as mentioned above having plot size 3m × 6m in RCBD with 4 replications. All Agronomic practices will be kept uniform. Data regarding date of first cut, plant height, number of plants/m^2, green fodder yield, biomass/plant and number of cuttings will be recorded.

PREVIOUS YEAR'S. RESULTS: New Experiment

69. TITLE: EFFECT OF PLANT SPACING ON GREEN FODDER YIELD OF MORINGA

Objective: To determine the best plant spacing for maximum green fodder yield of Moringa.

RESEARCH WORKERS: Sohail Rashid, Dr. Abdul Majid, Arbab Jahangeer and Dr Tariq Mahmood.

DURATION: 2018-2019

LOCATION: Agronomy (Forage Production) Section AARI, Faisalabad

TREATMENTS: Plant Spacing

T_1 30 cm
T_2 35 cm
T_3 40 cm
T_4 45 cm
T_5 50 cm
T_6 55 cm
T_7 60 cm

METHODOLOGY: The experiment will be sown according to the treatments as mentioned above having plot size 3m × 6m in RCBD with 3 replications. All Agronomic practices will be kept uniform. Data regarding date of first cut, plant height, number of plants/m^2, green fodder yield, biomass/plant and number of cuttings will be recorded..

PREVIOUS YEAR'S RESULTS: New Experiment

70. TITLE EFFECT OF DIFFERENT RATIONS ON MILK PRODUCTION IN BUFFALOES.

Objective: To determine the effect of different 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%	-
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 Phosphate	2%	2%	2%
Sodium bi carbonate	1%	1%	1%
Total	100	100	100

METHODOLOGY: Nine lactating buffaloes 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 buffaloes in each treatment.

Observations:- The data regarding milk production and composition will be recorded

PREVIOUS YEAR'S RESULTS:

Chemical Analysis of Rations

Ingredient	Rations No.1	Rations No.2	Rations No.3
Crude Protein %	15.1	15.65	16.3
Crude Fiber %	5.06	5.15	4.68
Calcium %	2.14	2.12	2.85
Phosphorus %	1.74	1.66	1.78

Average Daily Milk Production (Liters) of Buffaloes on Different Rations

Group of Buffaloes	Rations No.1	Rations No.2	Rations No.3
1st Raheela	5.50	5.74	6.24
Tarana	6.00	6.37	6.88
Badal	4.59	4.99	5.41
2nd Zaiba	4.50	4.81	5.33
Noor	4.31	4.58	5.08
Reema	3.97	4.27	4.87
3rd Zarqa	3.96	4.31	4.89
Chanda	3.86	4.23	4.77
Bulbul	3.78	4.02	4.83
Average Yield /animal/day	4.50	4.81	5.37

Rations Prices (Rs. / kg)

Rations	Rations No.1	Rations No.2	Rations No.3
Prices	24.10	21.97	21.35

AGRONOMY

71. TITLE **EFFECT OF PLANTING GEOMETRY ON FODDER YIELD OF MAIZE LINE 1501**

OBJECTIVE To study the optimum planting geometry for maximum fodder production of maize.

RESEARCHWORKERS Muhammad Riaz Gondal and Anees-ul-Husnain

PROJECT DURATION 2018-19

LOCATION Fodder Research Institute, Sargodha.

TREATMENTS/ METHODOLOGY

A- Row spacing (main plot)
1. 30cm apart line
2. 45 cm apart line
3. 60 cm apart line

B- Plant to plant distance = 15cm, 22.5cm, 30cm
Layout = Split plot
Plot size = 3.6m x6m
Replications = 4
Sowing time = July – August

Following observations will be recorded:

1- Leaf area(L × W) 2- Plant height
3-Number of leaves/plant 4- Stem Thickness
5- No of plants/ m^2 6-Green fodder tha^{-1}

PREVIOUSYEAR'SRESULTS

Green Fodder Yield (t/ha)				
Row Spacing (cm)	Plant to Plant Distance (cm)			
	15(cm)	22.5(cm)	30(cm)	Average
30(cm)	80.717 A	73.775 B	73.195 BC	75.896
45(cm)	69.435 DE	72.908 BC	70.593 CD	70.979
60(cm)	67.122 E	69.438 DE	68.278 DE	68.279
Average	72.425	72.040	70.688	

LSD (5%) = 2.66

72. TITLE **EFFECT OF SEED RATE ON GREEN FODDER YIELD OF ADVANCE LINE OF S.S HYBRID.**

OBJECTIVE To find optimum seed rate to get maximum Green Fodder yield of S.S hybrid.

RESEARCH WORKERS Muhammad Riaz Gondal and Anees-ul-Husnain

PROJECT DURATION 2018

LOCATION Fodder Research Institute, Sargodha.

TREATMENTS/ METHODOLOGY

Seed rates (kg/ha)

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

Layout = RCBD
Plot size = 2.7 m x 6m
Replication = 4
Sowing time = March

Following observations will be recorded:

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

PREVIOUSYEAR'S RESULTS

Treatments	Green Fodder Yield (t/ha)
T1 (20 kg/ha)	87.00
T2 (25 kg/ha)	90.46
T3 (30 kg/ha)	91.71
T4 (35 kg/ha)	92.13
T5 (40 kg/ha)	97.12
LSD (5%)	NS

73. TITLE: **EFFECT OF DIFFERENT SEED RATE ON GREEN FODDER YIELD OF ADVANCE LINE OF SORGHUM NO. 1572**

OBJECTIVE To study optimum seed rate for maximum fodder production of Sorghum line.

RESEARCH WORKERS Muhammad Riaz Gondal and Anees-ul-Husnain.

PROJECT DURATION 2018

LOCATION Fodder Research Institute, Sargodha

TREATMENT/ METHODOLOGY Seed rate = 60, 70, 80, 90, 100 kg/ha

Layout	=	RBCD
R-R Spacing	=	30cm
Plot size	=	2.7 x 6m
Replication	=	4

Following observation will be recorded:

- No of plants/m^2- Leaf Area
- Plant height
- Stem thickness
- Leaves/ plant
- Fodder yield (t/ha)

PREVIOUSYEAR'S RESULTS New Experiment

74. TITLE: **EFFICACY OF DIFFERENT WEEDICIDES ON S.S HYBRID.**

OBJECTIVE To study most effective dose weedicide for maximum control of weeds in S.S hybrid.

RESEARCH WORKERS Muhammad Riaz Gondal and Anees-ul-Husnain.

PROJECT DURATION 2018-19

LOCATION Fodder Research Institute, Sargodha

TREATMENT/ METHODOLOGY

Layout	=	RCBD
Replication	=	3
Plot Size	=	2.7 x 6m
Variety	=	Pak-Sudax

Weedicides	Doses
Clodinafop(propergyl	T1 = 01 g/ litre water just after 1st cut.
	T2 = 1.5 g / litre water just after 1ST cut.
Paraquat	T3 = 6 ml/ litre water just after 1st cut
	T4 = 8 ml/ litre water just after 1st cut
Round up	T5 = 6ml/ litre water just after 1st cut
	T6 = 8ml/ litre water just after 1st cut
Poma super	T7 = 4ml/ liter water just after 1st cut
	T8 = 6 ml/ liter water just after 1st cut.
Control	----------

OBSERVATIONS TO BE RECORDED.

1 Weed count/ unit area before spray
2 Weed count/ unit area 30 days after spray
3 Plant height
4 Stem thickness
5 Leaf area
6 No.of leaves/ tillers
7 Green fodder yield.
8 Weed count/ unit area after 2nd and 3rd cut.

PREVIOUSYEAR'S RESULTS: New Experiment

75. TITLE: STUDY OF DIFFERENT AGRONOMIC PRACTICES ON MORINGA.

OBJECTIVE: To find out most suitable agronomic practices for the maximum green fodder yield of moringa.

METHODOLOGY: Practices to be studied.
1- Time of transplanting
2- Cutting stages
3- Optimum irrigation.

OBSERVATIONS:
1 Plant height 2 Green fodder yield
3 No. of branches 4 Height of cutting
5 Stem thickness 6 Irrigation interval

PREVIOUSYEAR'S RESULTS: New Experiment

76. **TITLE:** **STUDY OF DIFFERENT AGRONOMIC PRACTICES ON AUSTRALIAN KEEKER**

OBJECTIVE: To find out most suitable agronomic practices for the maximum green fodder yield of Australian keeker .

METHODOLOGY: **Practices to be studied.**
1- Time of transplanting
2- Cutting stages
3- Optimum irrigation**.**

OBSERVATIONS:
1 Plant height 2 No. of branches
3 Stem thickness 4 Green fodder yield
5 Height of cutting 6 Irrigation interval

PREVIOUSYEAR'S RESULTS: New Experiment

SOIL SCIENCE

76. TITLE — NUTRITIONAL QUALITY ASSESSMENT AT DIFFERENT GROWTH STAGES OF KHARIF FODDERS

OBJECTIVE — To find out the nutritional quality of new lines of kharif fodders.

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

PROJECT DURATION — 2018 (continuous nature)

LOCATION — Fodder Research Institute, Sargodha.

TREATMENTS/ METHODOLOGY — Initially the lines of main kharif fodder crops will be selected for study. Plant sample will be collected and will be analyzed for their quality. Sampling stages finalized with consultancy of concerned experts.

Name of crop	Lines to be studied
Pearl millet	5
Sorghum	5
Maize	5

Stages to be studied

1.	Pearl millet	Early bloom	50% Bloom	Full bloom
2.	Sorghum	Early bloom	50% Bloom	Full bloom
3.	Maize	Early bloom	Milking stage	Hard dough stage

The following observations will be recorded.

1. Dry matter percentage
2. Crude fiber
3. Crude fat
4. Crude protein
5. Ash (%)
6. NFE (%)

PREVIOUSYEAR'S RESULTS;

PEARL MILLET

Varieties / Lines	Early bloom	50% Bloom	Full bloom	**Mean**
Gahi-I	18.40	19.25	18.60	18.75
RCBK 948	18.25	20.45	19.10	19.27
TIFT 383	21.80	18.45	17.50	19.25
G. White	17.30	18.75	18.00	18.02
DP Pak	17.10	20.15	19.05	18.77
Higroup	19.30	19.60	18.60	19.17
Sargodha Bajra 2011	18.45	18.85	19.05	18.78
BS-2000	18.80	18.90	17.95	18.55
Composite-I	18.10	18.50	18.05	18.22
Composite-II	17.70	19.15	18.75	18.53

Dry Matter (%)

Ash (%)

Varieties / Lines	Early bloom	50% Bloom	Full bloom	Mean
Gahi-I	10.72	11.30	11.23	11.08
RCBK 948	10.08	9.85	10.88	10.27
TIFT 383	10.07	10.13	10.17	10.12
G. White	9.83	9.31	9.15	9.43
DP Pak	10.22	9.32	9.20	9.58
Higroup	11.20	11.16	10.97	11.11
Sargodha Bajra 2011	10.36	10.65	10.41	10.47
BS-2000	11.47	10.02	9.90	10.46
Composite-I	10.23	9.28	10.51	10.01
Composite-II	10.38	9.88	9.33	9.86

Crude Fat (%)

Varieties / Lines	Early bloom	50% Bloom	Full bloom	Mean
Gahi-I	3.49	3.87	3.53	3.63
RCBK 948	3.74	4.16	4.12	4.01
TIFT 383	3.80	3.44	3.73	3.66
G. White	3.70	3.65	3.70	3.68
DP Pak	3.73	3.66	3.79	3.73
Higroup	3.85	3.79	3.80	3.81
Sargodha Bajra 2011	3.92	3.67	3.64	3.74
BS-2000	3.72	3.69	3.59	3.67
Composite-I	3.73	3.70	3.72	3.72
Composite-II	3.36	3.62	3.56	3.51

Crude Fiber (%)

Varieties / Lines	Early bloom	50% Bloom	Full bloom	Mean
Gahi-I	19.10	22.80	21.10	21.00
RCBK 948	22.20	23.10	21.10	22.13
TIFT 383	21.30	19.40	20.20	20.30
G. White	19.30	20.50	21.90	20.57
DP Pak	19.90	19.20	20.20	19.77
Higroup	21.00	25.80	34.40	27.07
Sargodha Bajra 2011	23.20	28.50	21.20	24.30
BS-2000	22.90	27.60	20.20	23.57
Composite-I	22.30	27.60	24.40	24.77
Composite-II	18.90	22.10	29.20	23.40

Crude Protein (%)

Varieties / Lines	Early bloom	50% Bloom	Full bloom	**Mean**
Gahi-I	8.75	9.63	9.63	9.33
RCBK 948	10.50	9.63	8.75	9.63
TIFT 383	11.38	9.63	9.63	10.21
G. White	10.50	11.38	10.50	10.79
DP Pak	10.50	11.38	9.63	10.50
Higroup	11.38	10.50	11.38	11.08
Sargodha Bajra 2011	7.88	10.50	11.38	9.92
BS-2000	10.50	8.75	8.75	9.33
Composite-I	7.88	9.63	9.63	9.04
Composite-II	8.75	9.63	7.88	8.75

NFE (%)

Varieties / Lines	Early bloom	50% Bloom	Full bloom	**Mean**
Gahi-I	57.94	52.41	54.51	54.95
RCBK 948	53.48	53.26	55.15	53.97
TIFT 383	53.46	57.41	56.28	55.71
G. White	56.66	55.16	54.75	55.53
DP Pak	55.65	56.44	57.18	56.42
Higroup	52.58	48.76	39.46	46.93
Sargodha Bajra 2011	54.64	46.68	53.38	51.57
BS-2000	51.42	49.95	57.56	52.98
Composite-I	55.86	49.80	51.74	52.47
Composite-II	58.61	54.78	50.04	54.48

MAIZE

Dry Matter (%)

Varieties / Lines	Early bloom	Milking stage	Hard dough stage	**Mean**
MMRI Yellow	17.96	17.06	17.20	17.41
Pearl Maize	17.58	17.15	16.82	17.19
MS-2015	18.20	17.82	17.49	17.84
MS-2010	18.30	17.68	17.34	17.77
FSD-2017	19.07	18.71	17.94	18.57
Composite-I	17.53	16.63	16.44	16.87
Composite-II	17.82	17.11	16.25	17.06
Sultan	19.15	18.11	18.34	18.53
SGD-2002	18.63	17.68	17.44	17.92
No. 1501	17.92	18.11	17.87	17.96

Ash (%)

Varieties / Lines	Early bloom	Milking stage	Hard dough stage	Mean
MMRI Yellow	9.65	8.46	7.65	8.59
Pearl Maize	8.81	8.55	8.26	8.54
MS-2015	8.86	8.32	8.10	8.43
MS-2010	8.50	9.40	8.74	8.88
FSD-2017	8.68	8.88	8.65	8.74
Composite-I	9.83	6.81	6.86	7.83
Composite-II	7.26	7.05	6.96	7.09
Sultan	7.51	7.15	6.47	7.04
SGD-2002	8.29	8.41	8.11	8.27
No. 1501	8.00	8.25	6.98	7.74

Crude Fat (%)

Varieties / Lines	Early bloom	Milking stage	Hard dough stage	Mean
MMRI Yellow	3.02	3.14	2.96	3.04
Pearl Maize	1.98	2.07	2.03	2.03
MS-2015	2.06	2.20	2.03	2.09
MS-2010	2.16	2.06	2.24	2.15
FSD-2017	2.15	2.20	2.19	2.18
Composite-I	2.23	2.15	2.24	2.21
Composite-II	2.23	2.39	2.11	2.24
Sultan	2.41	2.58	2.44	2.47
SGD-2002	2.58	2.69	2.79	2.68
No. 1501	2.79	2.58	2.87	2.75

Crude Fiber (%)

Varieties / Lines	Early bloom	Milking stage	Hard dough stage	Mean
MMRI Yellow	31.07	27.71	31.27	30.02
Pearl Maize	30.04	28.51	29.99	29.51
MS-2015	26.32	31.65	26.76	28.24
MS-2010	26.51	29.12	26.65	27.43
FSD-2017	29.77	26.64	28.53	28.31
Composite-I	29.67	26.54	28.43	28.21
Composite-II	26.41	29.02	26.55	27.33
Sultan	29.94	28.41	29.89	29.41
SGD-2002	26.22	31.55	26.66	28.14
No. 1501	30.97	27.61	31.17	29.92

Crude protein (%)

Varieties / Lines	Early bloom	Milking stage	Hard dough stage	Mean
MMRI Yellow	14.00	13.13	12.25	13.13
Pearl Maize	11.38	10.50	12.25	11.38
MS-2015	12.25	12.25	13.13	12.54
MS-2010	13.13	11.38	14.00	12.83
FSD-2017	10.50	9.63	11.38	10.50
Composite-I	12.25	12.25	13.13	12.54
Composite-II	13.13	11.38	12.25	12.25
Sultan	10.50	12.25	10.50	11.08
SGD-2002	13.13	11.38	11.38	11.96
No. 1501	12.25	13.13	14.88	13.42

NFE (%)

Varieties / Lines	Early bloom	Milking stage	Hard dough stage	Mean
MMRI Yellow	42.27	47.56	45.88	45.23
Pearl Maize	47.80	50.37	47.47	48.55
MS-2015	50.51	45.58	49.99	48.69
MS-2010	49.71	48.04	48.37	48.71
FSD-2017	48.90	52.65	49.26	50.27
Composite-I	46.02	52.25	49.34	49.20
Composite-II	50.97	50.16	52.14	51.09
Sultan	49.64	49.62	50.70	49.99
JC-708	49.79	45.97	51.07	48.94
No. 1501	46.00	48.44	44.10	46.18

SORGHUM

Dry Matter (%)

Varieties / Lines	Early bloom	50% Bloom	Full bloom	Mean
SS-9901	20.76	18.30	19.44	19.50
SGD 013-II	21.54	20.52	20.40	20.82
YS-98	20.10	20.10	18.54	19.58
YS-89	22.74	21.36	21.00	21.70
I-4	20.64	19.98	18.96	19.86
I-6	22.38	20.88	23.88	22.38
JS-2002	26.73	20.36	20.57	22.55
Hegari	20.30	19.44	18.47	19.40
SWT Sorghum	21.76	20.57	20.84	21.06
S-145	21.17	20.09	19.82	20.36

Ash (%)

Varieties / Lines	Early bloom	50% Bloom	Full bloom	Mean
SS-9901	9.34	9.19	9.25	9.26
SGD 013-II	8.45	8.73	9.27	8.82
YS-98	9.18	8.97	8.62	8.92
YS-89	8.53	9.04	9.53	9.03
I-4	9.34	8.92	9.55	9.27
I-6	9.17	8.52	8.70	8.79
JS-2002	8.53	9.53	8.49	8.85
Hegari	8.75	8.78	8.16	8.56
SWT Sorghum	8.34	7.77	8.71	8.27
S-145	9.02	8.07	8.62	8.57

Crude Fat (%)

Varieties / Lines	Early bloom	50% Bloom	Full bloom	Mean
SS-9901	3.16	3.41	2.89	3.15
SGD 013-II	2.90	3.09	2.88	2.96
YS-98	3.24	3.18	3.29	3.24
YS-89	2.98	3.24	3.04	3.09
I-4	3.29	3.23	3.12	3.22
I-6	3.02	3.09	3.18	3.09
JS-2002	3.28	3.37	3.30	3.32
Hegari	3.04	3.19	3.20	3.14
SWT Sorghum	3.56	3.33	3.24	3.38
S-145	3.17	3.32	3.59	3.36

Crude Fiber (%)

Varieties / Lines	Early bloom	50% Bloom	Full bloom	Mean
SS-9901	25.38	29.11	25.77	26.75
SGD 013-II	24.95	28.82	28.88	27.55
YS-98	28.73	30.86	29.07	29.55
YS-89	17.80	23.40	27.93	23.04
I-4	30.83	31.10	26.51	29.48
I-6	25.53	26.94	27.88	26.79
JS-2002	22.36	25.40	24.48	24.08
Hegari	29.08	25.55	29.42	28.02
SWT Sorghum	24.50	23.89	26.92	25.10
S-145	22.67	26.96	27.08	25.57

Crude protein (%)

Varieties / Lines	Early bloom	50% Bloom	Full bloom	Mean
SS-9901	9.63	8.75	8.75	9.04
SGD 013-II	8.75	7.88	9.63	8.75
YS-98	7.00	7.00	8.75	7.58
YS-89	7.88	9.63	7.88	8.46
I-4	9.63	7.88	7.00	8.17
I-6	7.00	6.13	7.88	7.00
JS-2002	8.75	7.88	7.00	7.88
Hegari	5.25	7.00	7.88	6.71
SWT Sorghum	7.00	7.88	7.88	7.58
S-145	6.13	7.00	8.75	7.29

NFE (%)

Varieties / Lines	Early bloom	50% Bloom	Full bloom	Mean
SS-9901	52.49	49.55	53.34	51.79
SGD 013-II	54.96	51.48	49.35	51.93
YS-98	51.86	49.99	50.27	50.71
YS-89	62.81	54.70	51.63	56.38
I-4	46.91	48.87	53.81	49.86
I-6	55.28	55.33	52.37	54.33
JS-2002	57.08	53.82	56.73	55.88
Hegari	53.87	55.49	51.35	53.57
SWT Sorghum	56.60	57.14	53.26	55.66
S-145	59.02	54.65	51.95	55.21

77. TITLE — STANDERDIZATION OF N & P FERTILIZERS FOR MAXIMUM GREEN FODDER YIELD OF MAIZE LINE 1501

OBJECTIVE — To find out the best combination of N & P fertilizers for obtaining maximum green fodder yield of maize.

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

PROJECT DURATION — 2018

LOCATION — Fodder Research Institute, Sargodha.

TREATMENTS/ METHODOLOGY — Soil will be analyzed before sowing of crop.

Treatments

T_1	=	00-00-25 NPK Kg/ha
T_2	=	75-65-25 NPK Kg/ha
T_3	=	75-80-25 NPK Kg/ha
T_4	=	75-95-25 NPK Kg/ha
T_5	=	90-65-25 NPK Kg/ha
T_6	=	90-80-25 NPK Kg/ha
T_7	=	90-95-25 NPK Kg/ha
T_8	=	105-65-25 NPK Kg/ha
T_9	=	105-80-25 NPK Kg/ha
T_{10}	=	105-95-25 NPK Kg/ha

Lay out	=	RCBD
Réplications	=	3
Plot Size	=	3mx6m
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;

Treatments NPK kg /ha	Green Fodder Yield t/ha	Dry Matter %	MRR
T_1 00-00-25	60.18	18.10	--
T_2 75-65-25	60.37	18.27	0.058
T_3 75-80-25	61.11	18.43	0.251
T_4 75-95-25	61.85	18.47	0.403
T_5 90-65-25	63.33	19.50	0.886
T_6 90-80-25	**65.19**	**19.73**	**1.507**
$T_7$90-95-25	63.88	18.70	0.837
$T_8$105-65-25	64.44	18.40	1.110
T_9 105-80-25	64.81	18.27	1.084
T_{10} 105-95-25	64.62	18.60	0.944

78. TITLE — STANDERDIZATION OF N & P FERTILIZERS FOR MAXIMUM GREEN FODDER YIELD OF SORGHUM LINE SS-9901

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

RESEARCH WORKERS — Asim Pervez, Abdul Razzaqand M. Shoaib Farooq

PROJECT DURATION — 2018

LOCATION — Fodder Research Institute, Sargodha.

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

Treatments

T_1 = 00-00-25 NPK Kg/ha
T_2 = 60-25-25 NPK Kg/ha
T_3 = 60-50-25 NPK Kg/ha
T_4 = 60-75-25 NPK Kg/ha
T_5 = 80-25-25 NPK Kg/ha
T_6 = 80-50-25 NPK Kg/ha
T_7 = 80-75-25 NPK Kg/ha
T_8 = 100-25-25 NPK Kg/ha
T_9 = 100-50-25 NPK Kg/ha
T_{10} = 100-75-25 NPK Kg/ha

Lay out = RCBD
Replications = 3
Plot Size = 3mx6m
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

Soil Texture	Ece $mScm^{-1}$	pH	OM %	P mg/kg	K mg/kg
Clay loam	0.77	7.5	0.69	6.3	135

PREVIOUSYEAR'S RESULTS;

Treatments NPK kg /ha	Green Fodder Yield t/ha	Dry Matter %	MRR
T_1 Control	51.17	16.9	--
T_2 60-25-25	51.78	16.9	0.33
T_3 60-50-25	52.22	16.9	0.41
T_4 60-75-25	52.61	17.3	0.44
T_5 80-25-25	55.00	17.7	1.73
T_6 80-50-25	**56.50**	**18.1**	**1.82**
$T_7$80-75-25	55.00	18	1.05
$T_8$100-25-25	54.67	17.9	1.35
T_9 100-50-25	54.61	17.7	1.04
T_{10} 100-75-25	54.50	17.5	0.83

79. TITLE — STANDERDIZATION OF N & P FERTILIZERS FOR MAXIMUM GREEN FODDER YIELD OF PEARL MILLET LINE (COMPOSITE-II)

OBJECTIVE — To find out the best combination of N & P fertilizers for obtaining maximum green fodder yield of pearl millet.

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

PROJECT DURATION — 2018

LOCATION — Fodder Research Institute, Sargodha.

TREATMENTS/ METHODOLOGY — Soil will be analyzed before sowing of crop.

Treatments

T_1 = 00-00-25 NPK Kg/ha
T_2 = 50-30-25 NPK Kg/ha
T_3 = 50-60-25 NPK Kg/ha
T_4= 50-90-25 NPK Kg/ha
T_5 = 70-30-25 NPK Kg/ha
T_6 = 70-60-25 NPK Kg/ha
T_7 = 70-90-25 NPK Kg/ha
T_8 = 90-30-25 NPK Kg/ha
T_9 = 90-60-25 NPK Kg/ha
T_{10} = 90-90-25 NPK Kg/ha

Lay out =RCBD
Replications = 3
Plot Size =3mx6m
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;

Treatments NPK kg /ha	Green Fodder Yield t/ha-1	Dry Matter %	MRR
T_1 Control	51.10	16.80	--
T_2 50-30-25	51.47	17.03	0.25
T_3 50-60-25	51.67	17.13	0.26
T_4 50-90-25	53.14	17.33	0.64
T_5 70-30-25	53.21	17.47	1.19
T_6 70-60-25	55.24	17.84	1.68
$T_7$70-90-25	54.49	17.47	1.07
$T_8$90-30-25	54.24	17.61	1.52
T_9 90-60-25	54.10	17.72	1.08
T_{10} 90-90-25	53.45	17.70	0.68

80. TITLE: PERFORMANCE EVALUATION OF PEARLMILLET GERMPLASM ON SALT AFFECTED SOIL

OBJECTIVE: To screen out the most salt tolerant lines/verities of pearl millet.

RESEARCH WORKERS: Abdul Razzaq,Aamir Iqbal Saqib, M. ShoaibFarooq and Asim Pervez

PROJECT DURATION: 2018 (continuous nature)

LOCATION: Soil Salinity Research Institute, Pindi Bhattian

TREATMENTS/ METHODOLOGY: Following lines/ varieties of pearl millet will be tested on salt affected soil. Soil will be analyzed before sowing.

1.Composit-I	2. Composit-II	3.Composit-IV
4.Wt-Bajra	5. Gj-Bajra	6. RCBK-948
7.Y-84	8. CZK-923	9.Q-Bajra
10.BS-2000	11.Sgd Bajra 2011	12. MB-87

Lay out =RCBD
Replications = 5
Plot Size =1.8mx5m
Row spacing = 30 cm.
Seed rate = 7.5 kg ha^{-1}
Fertilizer dose = 84-57-00 NPK $kgha^{-1}$
Sowing time = July- August
The following observations will be recorded.

1. Germination percentage 2. Mortality
3. Green fodder yield (tha^{-1})

PREVIOUSYEAR'S RESULTS; New experiment

81 TITLE: PERFORMANCE EVALUATION OF SORGHUM GERMPLASM ON SALT AFFECTED SOIL

OBJECTIVE: To screen out the most salt tolerant lines/verities of sorghum.

RESEARCH WORKERS: Abdul Razzaq, Aamir Iqbal Saqib, M. Shoaib Farooq and Asim Pervez

PROJECT DURATION: 2018 (continuous nature)

LOCATION: Soil Salinity Research Institute, Pindi Bhattian

TREATMENTS/ METHODOLOGY

Following lines/ varieties of sorghum will be tested on salt effected soil. Soil will be analyzed before sowing.

1.YS-98	2. Sgd- 013-1	3.Sgd-013-2
4.Sorghum-2011	5. Hegari	6. JS-2002
7. No.1572	8. No.80010	9. I-6
10. PVK-801	11.FRI-07	12.S-145

Lay out =RCBD
Replications = 5
Plot Size =1.8mx5m
Row spacing = 30 cm.
Seed rate = 72 kg ha^{-1}
Fertilizer dose = 80-57-00 NPK $kgha^{-1}$
Sowing time = July- August
The following observations will be recorded.

1. Germination percentage 2. Mortality
3. Green fodder yield (tha-1)

PREVIOUSYEAR'S RESULTS;

New experiment

82 TITLE

SCREENING OF PEARL MILLET GERMPLASM AGAINST SALINITY LEVELS

OBJECTIVE

To screen out the salt tolerant lines/verities of pearl millet.

RESEARCH WORKERS

M. Shoaib Farooq,Abdul Razzaq, and Asim Pervez

PROJECT DURATION

2018

LOCATION

Fodder Research Institute, Sargodha

TREATMENTS/ METHODOLOGY

Ten lines of pearl millet will be subjected to different salinity levels (4, 6, 8 and 10dS m^{-1}). Each pot (30×35 cm) will be filled with 20 kg of soil. The seeds will be sown at uniform depth (2 cm) and after completion of emergence, thinning will be done and seven plants will be maintained in each pot. Recommended dose of commercial fertilizer at the rate of 84-57-00 NPK kg ha^{-1}will be applied to each pot. The amount of fertilizer required for each pot will be calculated by the following formula Fertilizer required = Nutrient haX weight of soil in pot/Soil weight ha^{-1} (20, 00,000 kg).

Lay out = CRD
Replications = 3

The following observations will be recorded.

1. Germination percentage 2. Mortality

PREVIOUSYEAR'S RESULTS; New experiment

83 TITLE EFFECT OF POTASH FERTILIZER ON SEED YIELD OF PEARL MILLET LINE COMPOSITE-II

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

RESEARCH WORKERS Abdul Razzaq,M. ShoaibFarooq and Asim Pervez.

PROJECT DURATION 2017-18

LOCATION Fodder Research Institute, Sargodha.

TREATMENTS/ METHODOLOGY Soil will be analyzed before sowing of crop.

Treatments

T_1 = 70-60-00 NPK Kg/ha
T_2 = 70-60-30 NPK Kg/ha
T_3 = 70-60-60 NPK Kg/ha
T_4 = 70-60-90 NPK Kg/ha
T_5= 70-60-120 NPK Kg/ha
Lay out =RCBD
Replications = 3
Plot Size =3mx6m
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 kg/ha	MRR
T1 70-60-00	9.37	939	--
T2 70-60-30	9.64	964	0.25
T3 70-60-60	9.64	1260	1.58
T4 70-60-90	9.79	1194	0.84
T570-60-120	9.74	1086	0.36

SOIL ANALYSIS BEFORE SOWING

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

84 TITLE STANDERDIZATION OF N & P FERTILIZERS FOR MAXIMUM GRAIN YIELD OF MAIZELINE'MS-2010'

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

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

PROJECT DURATION 2017-18

LOCATION Fodder Research Institute, Sargodha.

TREATMENTS/ METHODOLOGY Soil will be analyzed before sowing of crop.

Treatments

T_1 = 00-00-62 NPK Kg/ha
T_2 = 120-50-62 NPK Kg/ha
T_3 = 120-100-62 NPK Kg/ha
T_4 = 120-150-62 NPK Kg/ha
T_5 = 90-50-62 NPK Kg/ha
T_6 = 90-100-62 NPK Kg/ha
T_7 = 90-150-62 NPK Kg/ha
T_8 = 60-50-62 NPK Kg/ha
T_9 = 60-100-62 NPK Kg/ha
T_{10}= 60-150-62 NPK Kg/ha

Lay out =RCBD
Replications = 3
Plot Size =3mx6m
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	100 grain weight (g)	Grain yield kg/ha	MRR
T_1 00-00-62	21.67	1680	
T_2 120-50-62	22.00	2010	2.203
T_3 120-100-62	22.00	2170	2.353
T_4 120-150-62	22.67	2260	2.174
T_5 90-50-62	22.33	2190	4.017
T_6 90-100-62	23.67	2470	4.260
$T_7$90-150-62	22.67	2420	3.034
$T_8$60-50-62	23.33	2090	3.938
T_9 60-100-62	22.33	2130	2.767
T_{10} 60-150-62	23.00	2180	2.261

SOIL ANALYSIS BEFORE SOWING

Soil Texture	Ece $mScm^{-1}$	pH	OM %	P $mg\ kg^{-1}$	K $mg\ kg^{-1}$
Clay loam	0.73	8.01	0.69	6.7	146

PLANT PROTECTION

85 TITLE: SCREENING OF PEARL MILLET GERMPLASM AGAINST DOWNY MILDEW

OBJECTIVE: To evaluate pearl millet germplasm against Downy Mildew

RESEARCH WORKER: Mr. Aftab Ahmad Khan and Dr. Saleem Il Yasin

PROJECT DURATION: 2018

LOCATION: Fodder Research Institute, Sargodha

TREATMENTS/ METHODOLOGY:

Entries	Pearl Millet germplasm
Design	Augmented
Sowing method	Line sowing

PLAN OF WORK: The seed of pearl millet germplasm entries will be sown in two lines of 3 meter length. The crop will be raised adopting standard agronomic practices. Disease incidence data will be recorded on appearance of the disease.

PREVIOUS YEAR'S RESULTS:

S. No.	Reaction	No. of Varieties/lines
1	Resistant (R)	3
2	Moderately Resistant (MR)	41
3	Moderately Susceptible (MS)	17
4	Susceptible (S)	3
5	Highly Susceptible (HS)	0
	Total	64

86 TITLE: SCREENING OF SORGHUM GERMPLASM AGAINST RED LEAF SPOT

OBJECTIVE: To evaluate sorghum germplasm against Red Leaf Spot

RESEARCH WORKER: Mr. Aftab Ahmad Khan and Dr. Saleem Il Yasin

PROJECT DURATION: 2018

LOCATION: Fodder Research Institute, Sargodha

TREATMENTS/ METHODOLOGY:

Entries	Sorghum germplasm
Design	Augmented
Sowing method	Line sowing

PLAN OF WORK: The seed of Sorghum germplasm entries will be sown in two lines of 3 meter length. The crop will be raised adopting standard agronomic practices. Disease incidence data will be recorded on appearance of the disease.

PREVIOUS YEAR'S RESULTS:

S. No.	Reaction	No. of Varieties/lines
1	Resistant (R)	0
2	Moderately Resistant (MR)	19
3	Moderately Susceptible (MS)	46
4	Susceptible (S)	50
5	Highly Susceptible (HS)	0
	Total	115

88 TITLE: SCREENING OF MAIZE GERMPLASM/LINES AGAINST FUNGAL LEAF SPOT DISEASE

OBJECTIVE: To evaluate maize germplasm against fungal leaf spot disease

RESEARCH WORKER: Mr. Aftab Ahmad Khan and Dr. Saleem Il Yasin

PROJECT DURATION: 2018

LOCATION: Fodder Research Institute, Sargodha

TREATMENTS/ METHODOLOGY:

Entries	Maize germplasm/lines
Design	Augmented
Sowing method	Line sowing

PLAN OF WORK: The seed of maize germplasm entries will be sown in two lines of 3 meter length. The crop will be raised adopting standard agronomic practices. Disease incidence data will be recorded on appearance of the disease.

PREVIOUS YEAR'S RESULTS:

S. No.	Reaction	No. of Varieties/lines
1	Resistant (R)	0
2	Moderately Resistant (MR)	33
3	Moderately Susceptible (MS)	14
4	Susceptible (S)	3
5	Highly Susceptible (HS)	0
	Total	50

89. TITLE: SCREENING OF ADVANCED SORGHUM LINES AGAINST SHOOT FLY AND STEM BORER

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

RESEARCH WORKER: Abdul Khaliq and Ghulam Ahmed

LOCATION: Fodder Research Institute, Sargodha

DURATION: (Continuous nature)

TREATMENTS:

1. PVK-801
2. F-04-16
3. No.1518
4. S-145
5. FRI-07
6. K-94
7. F-02-16
8. Sgd-2011
9. YS-16
10. JS-1

Design = RCBD
Replication = 3
R x R Distance = 45 cm
No.of Rows/plot = 6
Row length = 6m
Plot size = 16.2 m^2

METHODOLOGY

Sorghum advance lines will be kept under observation. The data regarding infestation of shoot fly and stem 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	% Borer Infestation
PVK-801	9.29 a	1.22 d
F-04-16	9.01 a	2.96 b
No.1518	8.63 a	4.44 a
S-145	8.44 a	2.74 b
FRI-07	6.53 b	2.89 b
K-94	4.81 bc	1.65 cd
F-02-16	4.61 c	0.00 e
Sgd-2011	4.53 c	2.56 b
YS-16	4.31 c	2.98 b
JS-1	3.39 c	2.39 bc
LSD (0.05) = 1.77		0.78

90. 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 Dr Haider Karar

DURATION:

(Continuous nature)

LOCATION:

FRI, Sargodha

TREATMENTS/ METHODOLOGY:

Maize genotypes = 5

1. Neelam
2. 1501
3. MMRI
4. Pearl Maize
5. MS-2010

Design = RCBD
Replication = 3
R x R Distance = 45 cm
No.of Rows/plot = 6
Row length = 6m
Plot size = 16.2 m^2

Advanced maize lines provided by the breeders 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

Treatments	% Shoot fly Infestation	% Borer Infestation
Neelam	1.09 A	5.27 A
1501	0.95 A	2.70 C
MMRI	0.50 B	1.74 D
Pearl Maize	0.49 B	4.03 B
MS-2010	0.33 B	1.76 D
LSD (0.05) =	0.18	0.41

91. TITLE — IMPACT OF SOWING DATES ON PREVALENCE OF SHOOT FLY AND THEIR IMPACT ON SEED YIELD OF SORGHUM

OBJECTIVE — To evaluate best sowing dates for maximum seed production of sorghum and less infestation of shoot fly.

RESEARCH WORKERS — Abdul Khaliq, M. Riaz Gondal and Anees ul Husnain

PROJECT DURATION — 2018-19

LOCATION — Fodder Research Institute, Sargodha.

TREATMENTS/ METHODOLOGY

Treatments/Sowing dates
T1=01.06.2018
T2=16.06.2018
T3=01.07.2018
T4=16.07.2018 (Standard)
T5=01.08.2018
T6=16.08.2018
T7=01.09.2018

Design	=	RCBD
Replication	=	3
R x R Distance	=	45 cm
No.of Rows/plot	=	10
Row length	=	6
Plot size	=	27 m^2

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 — New Experiment

92. TITLE: EFFICACY OF DIFFERENT INSECTICIDES FOR THE CONTROL OF SORGHUM SHOOT FLY *ATHERIGONA SOCCATA* (ROND.) (DIPTERA: MUSCIDAE) IN SORGHUM SEED CROP

OBJECTIVE: To evaluate the most effective insecticide for the control of Sorghum Shoot Fly.

RESEARCH WORKER Abdul khaliq Dr. Saleem Il Yasin

LOCATION FRI, Sargodha

DURATION 2018-19

TREATMENTS
T1= Control
T2= Chlopyrifos @ 500 ml/Acre
T3= Acephate 75SP @ 400 ml/Acre
T4= Dimethoate 40EC@ 400 ml/Acre
T5= Bifenthrin 10 EC @ 300 ml/Acre
T6= Lambdacyhalothrin 2.5 EC @ 300 ml/Acre
T7= Deltamethrin 2.3 EC @ 400 ml/Acre
T8= Acetamiprid 20SP @ 125 ml/Acre
T9= Imidacloprid 20SL @ 250 ml/Acre
T10= Carbosulfan 20EC @ 500 ml/Acre

Variety = Hegari
Design = RCBD
Replications = 3
Row spacing = 45cm
Row length = 5m
Plot size = 2.7 m × 5 m
Sowing time = July

METHODOLOGY Before sowing seed will treated with confidor. Shoot fly infestation data will be recorded before and then 3, 5, and 7 days after treatment from each plot.

DAIRY TECHNOLOGY

93. 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 Shakeel Hanif and Ch. Ghulam Nabi

DURATION 2018-19

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 will be offered to twelve buffaloes according to NARC schedule in nutrition stalls following Cafeteria method. Experimental animals will be provided 20% additional fodder than their actual requirements. Daily consumption will be recorded to evaluate palatability and voluntary feed intake.

PREVIOUS YEAR'S RESULTS

Parameters	T1 Sukkar	T2 No.6001	T3 FRI-07	T4 Sorghum-2011
Quantity fed (kg)	75	75	75	75
Voluntary feed intake (kg)	60.200A	43.667C	54.667AB	51.333 B
	LSD0 .05			7.331
Palatability (%)	80.263A	71.287B	72.887AB	68.443 B
	LSD0 .05			8.821
TSS (%)	11.533AB	8.133C	12.467A	11.100B
	LSD0 .05			1.3323
Protein (%)	6.220 B	6.880A	6.086 C	6.120C
	LSD0 .05			0.0986

94. 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 Shakeel Hanif and Ch. Ghulam Nabi.

DURATION — 2018-19

LOCATION — Fodder Research Institute, Sargodha.

TREATMENTS:

T_1 Composite IV
T_2 Q-Bajra
T_3 G-Bajra
T_4 Sargodha Bajra-2011(Check)

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

PREVIOUS YEAR RESULTS

Parameter	Composite-I	BS-2000	Composite-II	Sargodha Bajra- 2011
Quantity fed (kg)	70	70	70	70
Voluntary feed intake (kg)	48.000AB	43.667B	51.000A	51.000 A
	LSD 0.05			5.317
Palatability (%)	68.093 AB	62.043B	72.853 A	72.853 A
	LSD 0.05			7.955
TSS (%)	4.7833A	4.9667A	4.8333 A	5.0333 A
	LSD 0.05			0.447
Protein (%)	9.0467 A	9.333 A	8.7533 A	9.9200 A
	LSD 0.05			2.653

95. 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 Shakeel Hanif and Ch. Ghulam Nabi

DURATION 2018-19

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 will be used as standard. Dry matter will be estimated for daily requirement of animals. Six buffaloes of almost similar stage and lactation number will be selected and fed silage & green fodder plus wheat straw. Treatments will be repeated thrice. Daily feed intake and milk yield will be recorded. Data recorded will be analyzed statistically.

PREVIOUS YEAR RESULTS

Diet	Fed (Kg)	Intake (Kg)	Milk production (Liters)
Silage	30	25.000 B	9.4333 A
Green fodder + Wheat straw	55	50.100 A	8.0667 B
LSD 0.05		0.43	0.28

Diet	Fodder and Silage Quality Characteristics					
	Fat (%)	NDF (%)	Ash (%)	Protein (%)	NFE	pH
Silage	3.7±0.10	46.4±0.03	5.69±0.07	9.28±0.06	34.93±0.65	4.17±0.06
Green fodder	2.70±0.10	43.51±0.66	4.17±0.11	7.29±0.08	42.33±0.33	5.49±0.05

Diet	Milk Quality Characteristics					
	Fat (%)	SNF (%)	T. Solids (%)	Protein (%)	Acidity	pH
Silage	7.340A	7.900A	15.240A	4.920A	0.196 A	6.123A
Green fodder + Wheat straw	7.280B	7.250A	14.530B	4.230 B	0.180 A	6.106A
LSD 0.05	0.024	0.878	0.259	0.113	0.0287	0.094

96.	TITLE:	Incorporation of dry Leaf powder of MORINGA (Moringa Oleifera) on Milk production and milk composition in dairy Buffaloes
	OBJECTIVE	To evaluate the effect of Moringa dry leaf powder incorporation on milk production and milk composition.
	RESEARCH WORKERS:	Muhammad Shakeel Hanif and Ch. GhulamNabi
	DURATION	2018-19
	LOCATION	Fodder Research Institute, Sargodha.
	TREATMENTS:	T1 Wanda + 0 of %Moringa Leaf Powder T2 Wanda + 2.5 % Moringa Leaf Powder T3 Wanda + 5.0 % Moringa Leaf Powder
	METHODOLOGY	The harvested leaves of Moringa will be air dried in shade under a shed until they will be crispy to touch, while retaining their greenish coloration. The dried leaves will be then milled to produce Moringa oleifera leaf powder for incorporation. Nine buffaloes of almost similar stage and lactation number will be selected and fed according to treatment plan. Treatments will be repeated thrice. Daily milk yield and milk composition analysis will be carried out. Data recorded will be analyzed statistically.
	PREVIOUS YEAR RESULTS	New Experiment.

EXPERIMENTAL SEED PRODUCTION UNIT, FAROOQABAD

97. TITLE **ZONAL GREEN FODDER YIELD TRIAL OF SORGHUM**

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

RESEARCH WORKERS: Nadeem Rehman

DURATION: 2017-18

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 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

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

Sr. No.	Varieties /Lines	Green Fodder Yield t/ha
1.	JS-2002 (Check)	**44.44**
2.	Sorghum-2011 (Check)	44.43
3.	I-6	43.05
4.	No. 80010	41.66
5.	No. 1572	40.74
6.	SGD-013-1	37.03
7.	F-01-2015	36.34
8.	F-02-2015	34.49

LSD 5% 7.90

98. TITLE: **ZONAL GREEN FODDER YIELD TRIAL OF PEARL MILLET**

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

RESEARCH WORKERS: Nadeem Rehman

DURATION: 2017-18

LOCATION: Experimental seed production unit, Farooqabad.

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

METHODOLOGY:

Design	RCBD
Row spacing	30 cm
Replications	4
Plot size	1.8 X 6 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
-TSS Value	-No. of tillers/unit area

PREVIOUS YEAR RESULTS:

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

Sr. No.	Varieties /Lines	Green Fodder Yield t/ha	Ranking
1	RCBK-948	116.20	VI
2	Composite II	124.07	I
3	G.Bajra	110.19	VIII
4	FB.792	110.42	VII
5	Sgd Bajra 2011(check)	**122.45**	II
6	Composite-I	121.53	III
7	FB.889	88.43	IX
8	BS.2000	116.20	V
9	FB-895	116.90	IV

LSD 5% 8.12

99. TITLE: **ZONAL GREEN FODDER YIELD TRIAL OF MAIZE**

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

RESEARCH WORKERS: Nadeem Rehman

DURATION: 2016-17

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	MS-03-2015	54.01	I
2	MS-2015	52.47	II
3	MS-2010	**49.69**	**III**
4	No. 1501	47.22	VI
5	Sgd 2002 (check)	48.45	IV
6	Fsd. Maize 2021	48.14	V
7	Fsd. Maize 2022	45.37	VII

LSD 5 % 10.73

100 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) Nadeem Rehman

PROJECT DURATION 2018

LOCATION Experimental Seed Production Unit, Farooqabad

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

PREVIOUS YEAR'S RESULTS New experiment

Sr. No	Variety/Crop	Seed produced-pre-basic (kg)
1	**Afgohi**	**5500**
2	**Sorghum 2002**	**2650**
3	**Sorghum Hegari**	**300**
4	**Sorghum 2011**	**1200**

101. TITLE **COLLECTION AND MAINTANCE OF SORGHUM GERMPLASM**

OBJECTIVE To maintain the purity of breeding genepool of sorghum lines possessing desirable recombinants for direct introduction.

RESEARCH WORKER(S) Nadeem Rehman

LOCATION Experimental Seed Production Unit, Farooqabad

TREATMENT Germplasm lines/varieties collected from National and International Resources

METHODOLOGY

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

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. Early maturing (80-90)
12. Late maturing (Above 125 days)

PREVIOS YEAR'S RESULTS **Last Year 30 lines were selected and data collected**

102. TITLE **COLLECTION AND MAINTANCE OF MAIZE GERMPLASM**

OBJECTIVE Estimation of genetic variability in breeding material for yield related trait. Development of selection criteria on the basis of interrelationship among traits

RESEARCH WORKER(S) Nadeem Rehman

LOCATION Experimental Seed Production Unit, Farooqabad

DURATION: 2018

LOCATION: Experimental seed production unit, Farooqabad.

TREATMENTS/ Germplasm collected from National and international resources.

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 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 **20 lines were selected and data collected.**