FODDER RESEARCH INSTITUTE, SARGODHA

INTRODUCTION

Economy of Pakistan is predominantly agriculture driven which not only contributing 18.9% GDP but also provides jobs. Livestock is vital sub-sector of Agriculture contributing 11.1% to GDP which is 58.92% of the Agriculture's share to GDP (Economic Survey of Pakistan, 2017-18). 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 57,890 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 196.5 million in Pakistan (Economic Survey of Pakistan, 2017-18).

Fodders occupied an area of 2.11 million hectares and produced 45.77 million tonnes of green fodder out of which Punjab province contributed 1.83 million hectares area and 39.74 million tonnes production of the country. In Punjab, fodder crops occupying third place after wheat and cotton with average fodder yield of 21.7 t/ha. Major Rabi fodder crops are berseem, oats and alfalfa.

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 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. Multi-facet experiments on Rabi 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 2017-18

BERSEEM

1. **01 berseem candidate variety "Punajb Berseem is in approval process. Spot examination has been completed.**

2. **In the adaptability trials conducted at four different locations, the promising lines FB-3-15 and FB-1-15 produced highest green fodder yield 112.11 and 109.61 t/ha as compared to the check varieties Agaiti and Anmol producing 98.89 and 95.61 t/ha green fodder respectively.**

3. **In advance green fodder yield trial tested at 2 locations, the promising lines FB-1-16 and FB-2-16 gave maximum green fodder yield 137.78 and 135.33 t/ha as compared to check varieties Agaiti and Anmol producing 117.11 t/ha and 118.56 t/ha green fodder respectively.**

4. **Line SB-3-17 and FB-3-17 produced highest green fodder yield 122.11 and 120.44 t/ha in preliminary green fodder yield experiment at two locations, while check varieties Agaiti and Anmol produced 101.33 and 114.22 t/ha respectively.**

Oats

1. **In adaptability green fodder yield trials, the promising lines FRI-03 and SGD-1 gave high fodder yield (77.29 and 75.52 t/ha) as compared to check variety Sgd.oats.2011 (73.13 t/ha)**

2. **In advance green fodder yield trial, the promising lines SGD-46 and No.677 produced maximum green fodder yield 97.98 and 94.76 t/ha whereas check variety Sgd.oats.2011 produced 81.65 t/ha.**

3. **The promising line FRI.301 gave higher green fodder yield (94.30 t/ha) than check variety Sdg.oats.2011 (89.93) in preliminary fodder yield trial.**

LUCERNE

1. **In advance green fodder trial, the lines Silverado, CUF-101 and SGS-82 produced 157.94, 145.65 and 142.98 t/ha green fodder yield respectively while check variety Sgd. Lucerne produced 138.98 t/ha green fodder yield.**

2. **In the adaptability trials, the promising lines GR-722, No.1103 and hunter river gave overall best performance yielding 86.94, 86.82 and 86.30 t/ha green fodder as compared to check variety Sgd. Lucerne (84.42 t/ha).**

ANNUAL RESEARCH PROGRAMME FOR RABI 2018-19

FODDER RESEARCH INSTITUTE, SARGODHA

BERSEEM *(Trifolium alexandrinum. L)* 2n = 16

1. TITLE — **COLLECTION, MAINTENANCE AND EVALUATION OF BERSEEM GERMPLASM**

OBJECTIVE — **To maintain and evaluate the germplasm and record characters for use in breeding program.**

RESEARCH WORKER — **Amir Abdullah, Shoaib Anwar Kohli and GhulamNabi.**

PROJECT DURATION — **2018-19**

LOCATION — **Fodder Research Institute, Sargodha**

TREATMENTS/ METHODOLOGY

No. of lines = 57
Sowing time = First fortnight of October

The following characters will be recorded:

1. **No. of days to flower**
2. **No. of days to maturity**
3. **Disease incidence**
4. **Green fodder yield**
5. **Plant height**
6. **Dry matter %**
7. **Crude protein %**

PREVIOUS YEAR'S RESULTS — **Seed of 54 lines was collected, and seed was preserved.**

S. No.	Parameters	Range
1	No. of days to flower	160-180 days
2	No. of days to maturity	190-210 days
3	Plant height	60-74 cm
4	Green fodder yield	55-80 t/ha.
5	Dry matter %	11.6 – 16%
6	Crude protein %	15.8 – 20.4%

2.	**TITLE**	**IMPROVEMENT OF FODDER AND GRAIN YIELD THROUGH MASS SELECTION IN BERSEEM**
	OBJECTIVE	**To develop high yielding population from open pollinated material through selection in Berseem**
	RESEARCH WORKER	**Amir Abdullah, Shoaib Anwar Kohli and Muhammad Saleem Akhtar**
	LOCATION	**Fodder Research Institute, Sargodha**
	PROJECT DURATION	**2018-19 (Continuous nature)**
	TREATMENT	**Heterogeneous base population (Random-mated population of 05 varieties/ lines)**
	METHODOLOGY	**Five hundred desirable capsules/ plants will be selected on the basis of phenotypic characters from the heterogeneous base population. The seed of selected capsules/ plants will be bulked and random mating will be allowed among them to rise the next generation. Further selection cycle will be repeated for 2 – 3 years in random-mated population to achieve uniform population for testing in the preliminary fodder yield trial.**
	PREVIOUS YEAR'S RESULTS	**Five hundred typical capsules from random-mated population were selected, threshed and bulked**
3	**TITLE**	**PRELIMINARY GREEN FODDER YIELD TRIAL OF BERSEEM**
	OBJECTIVE	**To evaluate the green fodder yield potential of different Promising lines of Berseem.**
	RESEARCH WORKERS	**Amir Abdullah and Shoaib Anwar Kohli**
	PROJECT DURATION	**2018-19**
	LOCATION	**Fodder Research Institute, Sargodha.**

TREATMENTS/ METHODOLOGY

Lines / varieties = 10

Sr. No.	Lines / varieties	Sr. No.	Lines / varieties
1	SB-1-18	6	SB-3-18
2	FB-1-18	7	SB-4-18
3	SB-2-18	8	SB-5-18
4	Agaiti (check)	9	ANMOL (check)
5	FB-2-18	10	SB-6-18

Lay out = RCBD
Replications = 3
Plot size = 3x5 m.
Sowing method = Broadcast
Sowing time = Ist fortnight of October

The following observations will be recorded.

1. **Plant height (cm)**
2. **Disease incidence**
3. **Green fodder yield (t/ha)**
4. **Dry matter (t/ha)**

PREVIOUS YEAR'S RESULTS

GREEN FODDER YIELD (t/ha.)

S. No.	Lines/ Varieties	FRI, Sargodha	FRSS, F/Abad	Avg.
1.	SB-3-17	132.22	112.00	122.11
2.	FB-3-17	128.22	112.67	120.44
3.	FB-2-17	130.67	109.33	120.00
4.	Anmol(check)	114.44	114.00	114.22
5.	SB-2-17	125.56	101.33	116.78
6.	SB-4-17	118.89	100.67	109.78
7.	SB-1-17	122.67	95.33	109.00
8.	Gold-17	102.44	107.33	104.89
9.	Agaiti(check)	108.67	94.00	101.33
10.	FB-1-17	104.00	93.33	98.67
	LSD (5%)	10.60		

4 TITLE: ADVANCED GREEN FODDER YIELD TRIAL OF BERSEEM

OBJECTIVE To test lines selected from preliminary trials of Berseem for green fodder yield potential and other desirable characters.

RESEARCH WORKERS Amir Abdullah and Shoaib Anwar Kohli

PROJECT DURATION 2018-19

LOCATION Fodder Research Institute, Sargodha

TREATMENTS/ METHODOLOGY Lines/ varieties = 08

Sr. No.	Lines / varieties	Sr. No.	Lines / varieties
1	SB-3-17	5	FB-1-17
2	FB-2-17	6	ANMOL (Check)
3	SB-2-17	7	SB-4-17
4	Agaiti (Check)	8	SB-1-17

Lay out = RCBD
Replications = 3
Plot size = 3x5 m.
Sowing method = Broadcast
Sowing time = Ist fortnight of October
The following observations will be recorded.

1. **Plant height**
2. **Dry matter %**
3. **Disease incidence**
4. **Green fodder yield**

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

Sr.No.	Lines/ varieties	FRI, Sgd.	FRSS, F/Abad.	Average
1.	FB-1-16	131.11	144.44	137.78
2.	FB-2-16	129.33	141.33	135.33
3.	SB-3-16	126.89	118.67	122.78
4.	SB-2-16	126.00	118.67	122.33
5.	Anmol (check)	118.89	118.22	118.56
6.	Agaiti (check)	118.67	115.56	117.11
7.	SB-5-16	118.22	107.56	112.89
8.	SB-4-16	116.89	104.89	110.89
	LSD 5%	10.8	13.57	

5. TITLE **ADAPTABILITY FODDER YIELD TRIAL OF BERSEEM**

OBJECTIVE **To assess green fodder yield potential of advanced lines against standard varieties under different agro-climatic conditions.**

RESEARCH WORKERS **Amir Abdullah, Shoaib Anwar Kohli and Ghulam Nabi**

PROJECT DURATION **2018-19**

LOCATION (S)

i.) FRI, Sargodha.
ii) ARS, Bahawalpur.
iii) FRSS, AARI, Faisalabad.
iv) ESPU, Farooqabad.

TREATMENTS/ METHODOLOGY

Lines/ Varieties = 7

Sr. No.	Lines / varieties	Sr. No.	Lines / varieties
1	SB-3-16	5	FB-2-16
2	SB-2-16	6	ANMOL (check)
3	FB-1-16	7	SB-5-16
4	Agaiti (Check)		

Lay out = RCBD
Replications = 3
Plot size = 3 x 5m
Sowing method = Broadcast
Sowing time = Ist fortnight of October

The following observations will be recorded.

1. **Plant height**
2. **Disease incidence**
4. **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	Avg.
1.	FB-3-15	131.78	116.67	84.23	115.78	112.11
2.	FB-1-15	132.67	112.67	76.01	117.11	109.61
3.	SB-1-15	133.33	102.44	71.57	89.33	99.17
4.	Agaiti (check)	110.00	105.33	80.90	99.33	98.89
5.	SB-3-15	121.11	105.56	76.68	82.89	96.56
6.	Anmol(check)	112.00	96.22	74.23	100.00	95.61
7.	SB-2-15	109.11	86.22	71.56	85.78	88.17
	LSD	9.0	13.4	16.8	5.84	

6. TITLE **NATIONAL UNIFORM GREEN FODDER YIELD TRIAL OF BERSEEM**

OBJECTIVE **To evaluate the promising lines of berseem for green fodder yield potential under different agro-ecological zones of Pakistan.**

RESEARCH WORKERS **Amir Abdullah, Shoaib Anwar Kohli and Ghulam Nabi**

PROJECT DURATION **2018-19**

LOCATION **Fodder Research Institute, Sargodha.**

TREATMENTS/ METHODOLOGY **The seed along with plan and methodology will be supplied by the coordinator (Fodder) NARC, Islamabad.**

PREVIOUS YEAR'S RESULTS

Green Fodder Yields (t ha^{-1}) of National Uniform Fodder Yield Trials (NUFYTs) of Berseem 2017-18

Code	Entry	Green Fodder Yield (t ha^{-1})					
		AARI Faisalabad (3 cut)	Tarnab KPK (3 cut)	NARC Islamabad (4 cut)	AZARI Bahawalpur (3 cut)	FRI, Sargodha (4 cut)	Av. of 5 sites
BS17011	Anmol-Q	61.56	50.67	79.11	30.73	133.00	71.01
BS17001	Sandal Berseem	64.44	58.11	89.11	34.50	122.67	73.77
BS17050	Samarqand Berseem	67.56	56.56	85.00	29.03	122.00	72.03
BS17041	Anmol (Check)	62.22	53.11	74.44	31.40	130.33	70.30
BS17039	Berseem Agaiti (Check)	68.22	60.00	74.22	34.47	130.00	73.38
BS17020	SB-3-14	73.33	60.33	87.11	31.40	129.67	76.37
BS17009	SB-2-15	62.89	66.00	85.56	32.53	132.00	75.80
LSD (0.05)		9.29	11.80	12.57	5.29	5.74	3.40
CV (%)		7.90	11.50	8.60	9.30	2.50	2.60

OATS (*Avena sativa*) 2n = 42

7. TITLE — **COLLECTION, EVALUATION, AND MAINTENANCE OF GERMPLASM OF OATS**

OBJECTIVE — **To collect, evaluate and maintain the germplasm of oats for utilization in the breeding programs.**

RESEARCH WORKERS — **Dr. Imtiaz Akram Niazi, Muhammad Saleem Akhtar and Sikandar Hayat**

PROJECT DURATION — **2018-19 (Continuous nature)**

LOCATION — **Fodder Research Institute, Sargodha**

TREATMENTS/ METHODOLOGY

Germplasm lines /varieties

Total = 130
No. of rows = 2
Row length = 6 m
Row spacing = 45 cm.
Date of sowing = Mid Oct to Mid November

PREVIOUS YEAR'S RESULTS — **Seeds of 130 lines were collected and preserved for next year sowing.**

S. No.	Parameters	Range
1.	Lodging	20-40%
2.	Days to heading	70-130
3.	Plant height	60-170 cm
4.	No. of tillers/plant	6-15
5.	Days to maturity	99-142
6.	Stem thickness	0.34cm – 0.62cm

8. TITLE — **HYBRIDIZATION PROGRAMME OF OATS**

OBJECTIVE — **To create genetic variability and selection of desirable recombinants from different generations of oats.**

RESEARCH WORKERS — **Dr. Imtiaz Akram Niazi, Muhammad Saleem Akhtar and Sikandar Hayat**

LOCATION — **Fodder Research Institute, Sargodha**

TREATMENTS/ METHODOLOGY — **30 crosses will be attempted**

Characteristics	No. Of Crosses
High Fodder Yield	12
Disease Resistance	10
Stay Green	8

No. of Rows = 2 (each)
Row length = 6 m
Row spacing = 45 cm
Date of sowing = Mid Oct to Mid November

PREVIOUS YEAR'S RESULTS **36 crosses were attempted out of which 10 crosses were successful**

Successful crosses

For Yield	**=**	**5**
Disease Resistance	**=**	**2**
Stay Green	**=**	**3**

9. TITLE: **STUDY OF FILIAL GENERATIONS (F_1-F_6) OF OATS**

OBJECTIVE:- **To observe the genetic variability and select the desirable recombinants from different generations of oats.**

RESEARCH WORKERS **Dr. Imtiaz Akram Niazi, Muhammad Saleem Akhtar and Sikandar Hayat**

PROJECT DURATION **2018-19**

LOCATION **Fodder Research Institute, Sargodha**

TREATMENTS/ METHODOLOGY

CROSSES TO BE STUDIED

S. No.	Generations	Crosses/ plant progenies
1.	F1	10 crosses
2.	F2	05 populations
3.	F3	60 plant progenies
4.	F4	40 plant progenies
5.	F5	24 plant progenies
6.	F6	12 plant progenies

Row length	**=**	**6m**
Row spacing	**=**	**60cm**
Sowing time	**=**	**Mid Oct to Mid November**
F1	**=**	**Flanked with parents**
F3-F6	**=**	**3 rows of each single plant Progeny**

PREVIOUS YEAR'S RESULTS

Filial Generations	Entries Studied	Selected Progenies/Plants	Uniform Lines Selected
F1	5 crosses	5 populations	-
F2	6 crosses	60 plants of 5 crosses	-
F3	50 plant progenies of 5 crosses	40 plants of 4 crosses	-
F4	32 plant progenies of 4 crosses	24 plants of 3 crosses	-
F5	18 plant progenies of 3 crosses	12 plants of 2 crosses	
F6	10 plants progenies of 2 crosses	-	2

10. TITLE **PRELIMINARY FODDER YIELD TRIAL OF OATS**

OBJECTIVES **To assess green fodder yield and others quality characteristics of newly selected lines of oats.**

RESEARCH WORKERS **Dr. Imtiaz Akram A Niazi and Sikandar Hayat**

PROJECT DURATION **2018-19**

LOCATION

i) Fodder Research Institute, Sargodha.
ii) Fodder Research Sub-station, AARI, Faisalabad.

TREATMENTS/ METHODOLOGY

No. of Entries = 12

i)	**No. 97081**	**ii)**	**No . 663**
iii)	**F-146**	**iv)**	**FRI -152**
v)	**FRI-683**	**vi)**	**S-2000(Check)**
vii)	**No. 615**	**viii)**	**No. 2088 x 524**
ix)	**FRI.2008**	**x)**	**SGD Oats-2011(check)**
xi)	**F0-1-18**	**xii)**	**F0-2-18**

Layout = RCBD
Replications = 3
Plot Size = 2.4x6m
Row spacing = 30cm
Sowing Date = Mid October – Mid Nov.

The following data will be recorded.

1. Plant height (cm)	**2. No. of tillers/ plant**
3. Lodging %	**4. Disease incidence**
5. Green fodder yield (t/ha)	**6. Crude protein**
7. Dry matter %	**8. Crude fiber**

PREVIOUS YEAR RESULT

S. No.	Line / Variety	Green Fodder Yield (t/ha)
1	FRI.301	94.30
2	SGD Oats 2011(check)	89.93
3	No.669	89.24
4	FRI.60015	87.40
5	FSD.2.2015	86.71
6	No.668	86.46
7	FRI.153	85.10
8	No.85.125	84.87
9	F.443	83.26
10	FRI.034	82.34
11	FRINo.152	79.81
12	F.440	76.36
13	S.2000 (check)	74.75
14	F.146	74.52
LSD 5%		5.40

11. TITLE: **ADVANCED GREEN FODDER YIELD TRIAL OF OATS**

OBJECTIVE: **To test lines selected from preliminary yield trials for green fodder and other desirable characters.**

RESEARCH WORKER **Dr. Imtiaz Akram Niazi, Sikandar Hayat and Ghulam Nabi**

PROJECT DURATION **2018-19**

LOCATION
i) **Fodder Research Institute, Sargodha**
ii) **Fodder Research Sub-station, AARI, Faisalabad.**
iii) **Experimental Seed Production Unit, Farooqabad.**

TREATMENTS/ METHODOLOGY

Varieties/lines = 12

i) **No. 301** **ii)** **SGD Oats 2011(check)**
iii) **No. 669** **iv)** **FRI - 6001/15**
v) **No. 668** **vi)** **S-2000 (check)**
vii) **FRI-153** **viii)** **No. 85-125**
ix) **FRI-152** **x)** **FRI .034**
xi) **F-401** **xii)** **F-406**

Layout = RCBD
Replications = 3
Plot Size = 2.4 x 6m
Row Spacing = 30 cm.
Sowing Date = Mid October to Mid Nov.

The following data will be recorded.

1. **Plant height (cm)**
2. **Lodging %**
3. **No. of tillers/plant**
4. **Disease incidence**
5. **Green fodder yield (t/ha)**
6. **Crude protein**
7. **Dry matter %**
8. **Crude fiber**

PREVIOUS YEAR'S RESULTS

S.N0.	Name of Line	Green Fodder Yield(t/ha)
1	SGD-46	97.98
2	NO.677	94.76
3	FSD-01-2015	91.60
4	FSB-022016	88.78
5	ERK	86.48
6	FBO-01-2016	85.47
7	S-2000(C)	84.44
8	NO.632	84.41
9	FSD-02-2013	83.95
10	SGD-4	83.36
11	NO.75524	82.83
12	SGD-OATS2011(Check)	81.65
LSD5%		5.76

12. TITLE: **ADAPTABILITY YIELD TRIAL OF OATS**

OBJECTIVES **To evaluate the promising lines for their green fodder yield in different agro. Ecological zones of the province.**

RESEARCH WORKERS **Dr. Imtiaz Akram Niazi, Sikandar Hayat and Ghulam Nabi**

PROJECT DURATION **2018-19**

LOCATION (S)

i.) FRI, Sargodha
ii) ARS, Bahawalpur
iii) ESPU, Farooqabad.
iv) FRSS, AARI, Faisalabad

TREATMENTS/ METHODOLOGY

Varieties/lines = 12

i)	**No.677**	**ii)**	**FRI-03**
iii)	**SGD-1**	**iv)**	**FRI - 01**
v)	**SGD-46**	**vi)**	**ERK**
vii)	**No.CK-1**	**viii)**	**FRI-02**
ix)	**Sgd. Oats 2011(check)**	**x)**	**S-2000 (check)**
xi)	**F-415**	**xii)**	**No. 632**

Layout = RCBD

Replications = 3

Plot Size = 1.8x6m

Row spacing = 30cm

Sowing Time = Mid October- Mid Nov.

The following data will be recorded.

1.	**Plant height (cm)**	**2.**	**Lodging %**
3.	**No. of tillers/plant**	**4.**	**Disease incidence**
5.	**Green fodder yield (t/ha)**	**6.**	**Crude protein %**
7.	**Dry matter %**	**8.**	**Crude fiber %**

PREVIOUS YEAR'S RESULT Green Fodder Yield (t/ha)

Lines	F.R.I.SGD t/ha	Faislabad T/ha	Farooq-abad t/ha	Bahawapur T/ha	Average (t/ha)
FRI - 03	90.32	57.72	67.25	93.88	77.29
SGD-1	89.26	56.48	65.18	91.19	75.52
DOMOUNT	87.85	55.86	59.25	90.88	73.46
FRI-01	87.09	55.86	63.88	86.41	73.31
Sgd Oats 2011 (Check)	86.48	56.17	60.18	89.70	73.13
F-415	80.32	50.00	46.29	90.39	72.99
NO.75525	87.33	52.78	60.18	89.99	72.57
CK-1	83.10	53.70	61.11	85.21	70.78
S-2000 (check)	83.41	54.94	63.88	84.31	70.09
F-4381	82.53	54.94	61.29	80.72	69.87
FRI-02	82.49	51.23	48.14	87.61	67.36
FSD-2013	81.26	50.31	51.85	81.92	66.33
LSD	4.75				

13. TITLE **NATIONAL UNIFORM GREEN FODDER YIELD TRIAL OF OATS**

OBJECTIVES: **To evaluate the elite lines of oats for their green fodder yield potential at national level of oats under different Agro-climatic conditions of the country.**

RESEARCH WORKER **Dr. Imtiaz Niazi and Sikandar Hayat.**

LOCATION **FRI, Sargodha and others**

TREATMENTS/ METHODOLOGY **Seed and sowing plan will be supplied by the Coordinator (Fodder), NARC, Islamabad and the experiment will be laid out accordingly. Data will be recorded as per instructions. Fodder Research Institute, Sargodha will contribute following lines:**

1. **SGD-1**
2. **FRI-03**
3. **CK-1**
4. **FRI-01**

PREVIOUS YEAR'S RESULT

Green Fodder yield (t ha^{-1}) of National Uniform Fodder Yield Trials on Oats for Rabi 2017-18

Code	Entry	Green Fodder Yield (t ha^{-1})						
		AARI Faisalabad	Tarnab KPK	NARC Islamabad	FRI Sargodha	AZRI Bahawalpur	ARI, Quetta	Av. of 6 sites
OT 17079	PD $_2$-LV$_{65}$	63.89	26.23	51.51	61.11	28.87	23.42	42.51
OT17081	F-408	54.32	29.32	43.49	63.89	25.87	19.80	39.45
OT17074	F-417	62.65	26.54	47.65	66.05	28.53	19.20	41.77
OT17020	Oats Sel-1	62.96	24.07	50.59	63.27	24.40	22.20	41.25
OT17088	No. 11 x S-81	66.36	26.54	58.77	56.79	32.77	19.80	43.50
OT17015	Forkdeer	57.72	31.48	44.88	66.05	27.83	21.00	41.49
OT17009	Wintroo	58.95	26.54	46.11	62.35	28.33	24.82	41.18
OT17090	Ck-1	50.93	28.40	36.70	60.49	26.17	22.20	37.48
OT17029	Sgd-1	62.04	26.23	45.19	66.98	29.43	23.20	42.18
OT17067	Sgd Oats 2011 (Check)	56.17	26.54	41.48	65.43	30.53	23.00	40.53
OT17030	FRI-03	53.70	33.64	53.36	75.00	28.87	22.40	44.50
OT17085	FRI-1	57.72	26.85	56.30	73.77	31.50	26.47	45.43
LSD (0.05)		4.32	5.89	9.49	7.36	5.43	3.15	6.85
CV (%)		7.44	12.80	11.70	6.70	11.20	8.80	6.90

14. TITLE:- COLLECTION AND EVALUATION OF BARLEY GERMPLASM FOR FODDER

OBJECTIVE To collect, evaluate and maintain the germplasm of Barley for fodder

RESEARCH WORKERS Dr. Imtiaz Akram Niazi , Ghulam Nabi and Sikandar Hayat

PROJECT DURATION 2018-19 (Continuous nature)

LOCATION Fodder Research Institute, Sargodha

TREATMENTS/ Germplasm lines /varieties

METHODOLOGY

Previous entries = 4
New collections = 9
Total = 13
No. of rows = 3
Row length = 6 m
Row spacing = 45 cm.
Date of sowing = Mid Oct to Mid November

PREVIOUS YEAR'S RESULT Seeds of four lines were collected for the next year crop sowing.

LUCERNE (*Medicago sativa* L.) 2n = 32

15. TITLE **MAINTENANCE AND EVALUATION OF GERMPLASM OF LUCERNE**

OBJECTIVE **To collect, evaluate and maintain the germplasm for further utilization in Breeding Programme.**

RESEARCH WORKERS **Abdul Jabbar and Abdul Basit**

PROJECT DURATION **2018-19 (Continuous nature)**

LOCATION **Fodder Research Institute, Sargodha**

TREATMENTS/ METHODOLOGY

Total entries = 74
Row Spacing = 60cm.
Row Length = 5m.
Sowing time = First fortnight of October

The following data will be recorded.

1. Plant height **2. Culm thickness**
3. No. of tillers/meter row **4. No. of tillers/plant**
5. No. of leaves / tiller **6. No. of leaves/ plant**
7. Dry matter % **8. Leaf area**
9. Crude Protein % **10. Fat %**
11.Ash % **12.Crude Fiber %**

PREVIOUS YEAR'S RESULTS

CHARACTERIZATION

Sr. No.	Parameters	Range
1.	Plant height	68-84 cm
2.	Culm thickness	0.39-0.87 cm
3.	No. of tillers/plant	9.01-13.47
4.	No. of tillers/meter row	84-107
5.	No. of leaves / tiller	101-159
6.	Leaf area	5.62-8.57 cm^2

16. TITLE **PRELIMINARY GREEN FODDER YIELD TRIAL OF LUCERNE**

OBJECTIVES **To evaluate promising lines for higher green fodder yield.**

RESEARCH WORKERS **Abdul Jabbar and Abdul Basit**

PROJECT DURATION **2018-19**

LOCATION **Fodder Research Institute, Sargodha**

TREATMENTS
METHODOLOGY

Total lines	**=**	**11**
Lay out	**=**	**RCBD**
Replications	**=**	**3**
Plot size	**=**	**1.8 x 5m**
Row spacing	**=**	**45cm**
Sowing time	**=**	**First fortnight of October**

The following data will be recorded.

1. Plant height	**2. Culm thickness**
3. No. of tillers/meter row	**4. No. of tillers/plant**
5. No. of leaves / tiller	**6. No. of leaves/ plant**
7. Dry matter %	**8. Leaf area**
9. Crude Protein %	**10. Fat %**
11.Ash %	**12.Crude Fiber %**

REVIOUS YEAR'S RESULTS

S.No	Lines / Varieties	GFY (t/ha.)
1.	Viger-02	123.93
2.	Bover	122.44
3.	Viger-05	121.71
4.	KQS-02	119.12
5.	Sgd. Lucerne 2002 (check)	116.05
6.	No.1107	115.05
7.	No.1103	114.30
8.	Viger-01	113.19
9.	GR-800	112.84
10.	China	110.23
11.	565-82	109.50
LSD 5%		9.59

17. TITLE **ADVANCED GREEN FODDER YIELD TRIAL OF LUCERNE**

OBJECTIVES **To test different lines selected from the preliminary yield trials of Lucerne for green fodder yield and other desirable traits.**

RESEARCH WORKERS **Abdul Jabbar and Abdul Basit**

PROJECT DURATION **2018-19**

LOCATION **Fodder Research Institute, Sargodha**

TREATMENTS
METHODOLOGY

Total lines	**=**	**12**
Lay out	**=**	**RCBD**
Replications	**=**	**3**
Plot size	**=**	**1.8x5m**
Row spacing	**=**	**45cm**
Sowing time	**=**	**First fortnight of October**

The following data will be recorded:-

1. Plant height	**2. Culm thickness**
3. No. of tillers/meter row	**4. No. of tillers/plant**
5. No. of leaves / tiller	**6. No. of leaves/ plant**
7. Dry matter %	**8. Leaf area**
9. Crude Protein %	**10. Fat %**
11.Ash %	**12.Crude Fiber %**

REVIOUS YEAR'S RESULTS

GREEN FODDER YIELD (t/ha.)

Sr.No	Lines / Varieties	GFY (t/ha.)
1.	Silverado	157.94
2.	CUF-101	145.65
3.	SGS-82	142.98
4.	No.7613	140.97
5.	FRI001	139.99
6.	SARD-10	139.64
7.	Sgd. Lucerne (check)	138.98
8.	Oman	131.97
9.	Sunder	130.98
10.	5-IN-59	128.68
11.	No. 53	128.05
12.	ICON-13	119.32
LSD 5%		11.63

18. TITLE **ADAPTABILITY YIELD TRIAL OF LUCERNE**

OBJECTIVE **To evaluate the promising lines of Lucerne for their green fodder yield in different ecological zones of Punjab.**

RESEARCH WORKERS **Abdul Jabbar and Abdul Basit**

PROJECT DURATION **2018-19**

LOCATION (S)
i.) FRI, Sargodha
ii) ARS, Bahawalpur
iii) FRSS, AARI, Faisalabad
iv) ESPU, Farooqabad

TREATMENTS
METHODOLOGY

Total lines	**=**	**07**
Lay out	**=**	**RCBD**
Replications	**=**	**3**
Plot size	**=**	**1.8x5m**
Row spacing	**=**	**45cm**
Sowing time	**=**	**First fortnight of October**

The following data will be recorded:-

1. Plant height	**2. Culm thickness**
3. No. of tillers/meter row	**4. No. of tillers/plant.**
5. No. of leaves / tiller	**6. No. of leaves/ plant.**
7. Dry matter %	**8. Leaf area**

PREVIOUS YEAR'S RESULT

S.No	Line /Verity	FRI Sgd	FRSS F/Abad	ARS B/Pur	ESPU Farooqabad	Average (t/ha)
1	GR-722	96.31	123.70	76.65	51.09	86.94
2	No.1103	93.64	114.82	89.40	49.42	86.82
3	Hunter River	88.33	122.18	85.80	48.87	86.30
4	Sgd. Lucerne 2002 (Check)	92.76	127.03	72.90	44.97	84.42
5	GR-745	93.64	108.89	77.82	51.09	82.86
6	C-312	74.74	114.08	70.35	46.09	76.32

19. TITLE **NATIONAL UNIFORM GREEN FODDER YIELD TRIAL OF LUCERNE**

OBJECTIVES: **To evaluate the elite lines of lucerne for their green fodder yield potential at national level under different Agro-climatic conditions of the country.**

RESEARCH WORKER **Abdul Jabbar and Abdul Basit**

PROJECT DURATION **2018-19**

TREATMENTS/ METHODOLOGY **Lay out plan will be provided by NARC, Islamabad. Sowing will be done accordingly. Data will be recorded as per given instructions.**

PREVIOUS YEAR'S RESULTS

S.No	Line /Verity	FRSS F/Abad (6 cut)	NARC, I/Abad. (3 cut)	ARS B/Pur (3 cut)	FRI Sgd (3 cut)	Average (t/ha)
1	GR-722	88.00	41.34	49.33	46.93	56.40
2	Lucerne Max.	87.11	33.44	51.56	51.87	55.99
3	Quetta Selection	77.55	39.78	51.78	52.83	55.49
4	GR-745	78.44	39.00	52.00	51.10	55.14
5	Sgd. Lucerne 2002 (Check)	76.45	40.22	45.33	48.60	52.65
LSD 5%		6.94	6.10	3.54	4.78	2.13
C.V. %		4.50	8.40	3.58	5.10	2.10

20. TITLE **BNS AND PRE-BASIC SEED PRODUCTION**

OBJECTIVE **Production of BNS and pre-basic seed of berseem, Lucerne and Oats**

RESEAERCH WORKERS **Ahmad Hussain and Amir Abdullah**

PROJECT DURATION **2018-19**

METHODOLGY

- **Individual plants of each variety from pre-basic blocks will be selected for next year sowing of Plant-to-Row**
- **True to type rows will be selected for next year sowing of Row-to-Block**
- **True to type Blocks will be selected, threshed and finally bulked for Breeder Nucleus Seed(BNS) to be used for next year sowing of pre-basic blocks**

PREVIOUS YEAR'S RESULTS

Crop	Variety	Selected No. of Plants	Selected No. of Plant Rows	Selected No. of Row Blocks	BNS (Kgs)	Pre-basic (Kgs)
Berseem	Agaiti	100	46/50	36/45	165	2889
	Pachaiti	100	40/50	30/36	146	2896
	Anmol	100	22/30	16/20	74	795
Oats	S-2000	100	40/50	32/40	178	3343
	Sgd-2011	100	48/50	38/45	220	2410
Lucerne	Sgd-2002	50	36/50	30/40	24	380

AGRONOMY:

21. TITLE: **EFFECT OF SEED RATE ON SEED PRODUCTION OF BERSEEM LINE SB-11**

OBJECTIVE: **To find optimum seed rate for maximum seed production of berseem**

RESEARCH WORKER **Anees-ul-Hussnain Shah & M. Riaz Gondal**

PROJECT DURATION **2018-19**

LOCATION **Fodder Research Institute, Sargodha.**

TREATMENTS/ METHODOLOGY **SEED RATE (kg/ha)**

10.0
12.5
15.0
17.5
20.0
22.5
25.0

PLAN OF WORK

Layout = RCBD
Plot size = 3m x 6m
Replication = 4
Sowing time = 2nd week of October
Variety/Line = Line SB-11

The following observations will be recorded

1. Plant height (cm) 2. No. of grains
3. 1000 grain weight (g) 4. Grain yield (t/ha.)
5. Green Fodder Yield (t/ha)

PREVIOUS YEAR'S RESULTS

SEED RATE (kg/ha)	SEED YIELD (t/ha.)
10.0	0.70 C
12.5	0.76 C
15.0	0.79 C
17.5	0.93 AB
20.0	0.95 A
22.5	0.81 BC
25.0	0.76 C
L.S.D 0.05 0.1384	

22. TITLE **EFFECT OF SEED RATE ON SEED PRODUCTION OF ALFALFA NEW LINE "GR-722 & GR-745"**

OBJECTIVE **To find optimum seed rate for maximum seed production of alfalfa**

RESEARCH WORKER **Anees-ul-Hussnain Shah & M. Riaz Gondal**

PROJECT DURATION **2018-19**

LOCATION **FRI, Sargodha**

TREATMENTS/ METHODOLOGY

SEED RATE (kg/ha)

5

6.25

7.50

8.7

10.0

PLAN OF WORK

Layout = RCBD
Plot size = 6m x 2.7m
Replication = 4
Sowing time = 2nd week of October
Row spacing = 45cm
Variety/Lines = GR-722 & GR-745"

The following observations will be recorded

1. Plant height (cm) **2. No. of grains per pod**
3. 1000 grain weight (g) **4. Grain yield (kg/ha.)**
5. Fodder yield(t/ha)

PREVIOUS YEAR'S RESULTS **New experiment**

23 TITLE **EFFECT OF PRE-EMERGENCE WEEDICIDES ON EARLY SOWN BERSEEM WEEDS (ITSIT & TANDLA)**

OBJECTIVE **To find out a suitable weedicide and time of application to control weeds (Itsit,Tandla) in early sowing of berseem**

RESEARCH WORKER **M. Riaz Gondal &Anees-ul-Hussnain Shah**

PROJECT DURATION **2018-19**

LOCATION **FRI, Sargodha**

TREATMENTS/ METHODOLOGY

A-WEEDICIDES

1-Atrazine
2-Pendimethaline
3-Primextra
4-Dual gold
5- Control

B-TIME OF APPLICATION

1- 4 Days before sowing and incorporated in soil
2- 2 Days before sowing and incorporated in soil
3- Just before sowing and incorporated in soil
4- Just after sowing when there is no standing water

PLAN OF WORK

Variety	**Super Late Berseem**
Layout	**RCBD (for each weedicide and pooled analysis)**
Plot size	**4m x 6m**
Sowing time	**Last week of September**

The following observations will be recorded

1. Berseem plant population/m2
2. No. of weeds/m2 (20 days after germination)
3. Green fodder Yield /t/ha

PREVIOUS YEAR'S RESULTS

Treatment	Plant Population/m^2	No. of weeds/m^2	Yield (t/ha.)
Control	387.67B	82.66B	74.88C
T1-Atrazine	94.00F	12.33CDE	30.1EF
T2-Pendimethline 4-days before sowing.	431.33A	08.00CDE	106.68A
T3-Dual Gold 4-days before sowing.	128.67E	84.33B	37.52E
T4-Premextra 4-days before sowing.	228.67D	70.66B	48.1D
T5-Atrazine 2-days before sowing.	10.00H	14.33CD	1.35G
T6-Pendimethline 2-days before sowing.	346.00C	12.00CDE	103.47A
T7- Dual Gold 2-days before sowing.	146.33E	127.00A	39.3E
T8-Pendimethline 2-days before sowing.	139.33E	73.66B	38.1E
T9-Atrazine Just before sowing.	0.00H	19.66C	0.0G
T10-Pendimethline Just before sowing.	330.0C	10.00CDE	90.67B
T11- Dual Gold Just before sowing.	100.00F	129.33A	31.30EF
T12-Premextra Just before sowing.	58.33G	71.00B	28.2F
T13-Atrazine Just after sowing.	00.00H	05.00DE	00.00G
T14-Pendimethline Just after sowing.	00.00H	00.00E	00.00G
T15- Dual Gold Just after sowing.	00.00H	00.00E	00.00G
T16-Premextra Just after sowing.	00.00H	00.00E	00.00
LSD	32.079	14.140	7.217

24 TITLE **EFFECT OF DIFFERENT SEED RATES AND NPK DOSES ON SEED PRODUCTION OF BERSEEM**

OBJECTIVE **To Find Out The Optimum Seed Rate And NPK Doses To Get Maximum Seed of Berseem**

RESEARCH WORKER **M. Riaz Gondal & Anees-ul-Hussnain Shah**

PROJECT DURATION **2018-19**

LOCATION **FRI, Sargodha**

TREATMENTS/ METHODOLOGY

A -Seed Rates (Sub Plot)

1-12.5 KG /ha
2-15 kg/ha
3-17.5 kg/ha
4-20 kg/ha
5-22.5 kg/ha

B-FERTILIZER DOSES (Kg/ha) (MAIN PLOT)

N	P	K
23	0	0
23	30	30
23	60	60
23	90	90

PLAN OF WORK

Layout **Split Plot Design**
Plot size **3m x 6m**
Replication **4**
Sowing time **2nd week of October**
Variety **Super Late Berseem**

The following observations will be recorded

1. Plant height (cm) **2. No. of grains per capsule**
3.1000 grain weight (g) **4. No. of tiller per m^2**
5. Grain yield (t/ha.) **6. Fodder yield(t/ha)**

PREVIOUS YEAR'S RESULTS

Treatment (fertilizer) N- P - K	12.5 kg/ha.	15 kg/ha.	17.5 kg/ha.	20 kg/ha.	22.5 kg/ha.
23 - 00 – 00	92.50 I	100.50HI	107.00H	124.50G	102.25HI
23 - 30 – 30	102.75HI	108.25H	142.50F	183.00C	167.50B
23 - 60 – 60	143.25F	149.25EF	159.50DE	225.00A	213.50A
23 - 90 – 90	146.50EF	146.50EF	166.75D	215.25A	198.75B
LSD	12.846				

25 TITLE **EFFECT OF SEED RATE AND ROW SPACING ON GREEN FODDER YIELD OF OATS LINE "SGD-1"**

OBJECTIVE **To find out optimum seed rate and row spacing for maximum green fodder yield.**

RESEARCH WORKER **M. Riaz Gondal & Anees-ul-Hussnain Shah**

PROJECT DURATION **2018-19**

LOCATION **FRI, Sargodha**

TREATMENTS/ METHODOLOGY

A) ROW SPACING
1. 15cm
2. 30cm
3. 45cm

B) SEED RATE
1. 67.5 kg/ha.
2. 80.0 kg/ha.
3. 92.5 kg/ha.

PLAN OF WORK

Layout	**Split plot design**
Plot size	**3.6m x 6m**
Replication	**4**
Sowing time	**2nd week of October**

The following observations will be recorded

1.Plant height **2.No. of tillers/plant**
3.No. of leaves /tiller **4.Leaf Area (cm^2)**
5.Stem thickness (mm) **6. Fodder Yield (t/ha)**

PREVIOUS YEAR'S RESULTS

Seed Rate (kg/ha.)	Seed Yield (kg/ha.)
67.50	157.83
80.00	176.17
92.50	168.92
LSD	23.609

Row spacing	Seed Yield (kg/ha.)
15	166.75
30	173.75
45	162.42

Row spacing	Seed Rate (Kg/ha)		
	67.5	80	92.5
15cm	150.50B	167.75AB	182.00A
30cm	163.25AB	186.25A	171.75AB
45cm	159.75AB	174.50AB	153.00B
LSD	20.257		

26. TITLE **EFFECT OF SEED RATE AND ROW SPACING ON GREEN FODDER YIELD OF OATS LINE "FRI-03"**

OBJECTIVE **To find out optimum seed rate and row spacing for maximum green fodder yield.**

RESEARCH WORKER **M. Riaz Gondal & Anees-ul-Hussnain Shah**

PROJECT DURATION **2018-19**

LOCATION **FRI, Sargodha**

TREATMENTS/ METHODOLOGY

A) ROW SPACING
1. 15cm
2. 30cm
3. 45cm

B) SEED RATE
1. 67.5 kg/ha.
2. 80.0 kg/ha.
3. 92.5 kg/ha.

PLAN OF WORK

Layout	Split plot design
Plot size	3.6m x 6m
Replication	4
Sowing time	2nd week of October
Fertilizer	32-23-00
Observations to be recorded	Plant height No. of tillers/plant No. of leaves /tiller Leaf Area (cm^2) Stem thickness (mm) Fodder Yield (t/ha)

PREVIOUS YEAR'S RESULTS:

Seed Rate (kg/ha.)	Seed Yield (kg/ha.)
67.50	167.50B
80.00	210.92A
92.50	182.17B
LSD	17.816

Row spacing (cm)	Seed Yield (kg/ha.)
15	178.67
30	191.92
45	190.00

Seed Rate (Kg/ha)			
Row spacing	67.5	80	92.5
15cm	155.25D	195.25BC	185.50BC
30cm	170.25CD	226.50A	179.00CD
45cm	177.00CD	211.00AB	182.00BCD
LSD	29.97		

27 TITLE: **CHEMICAL CONTROL OF CUSCUTA IN ESTABLISHED CROP OF ALFALFA**

OBJECTIVE: **To study the efficacy of various weedicides for the control of cuscuta in established alfalfa.**

RESEARCH WORKERS: **Muhammad Riaz Gondal**

DURATRION: **2018-19**

LOCATION: **Fodder Research Institute, Sargodha.**

TREATMENTS/ METHODOLGY

T1= Pendimethaline @ 2.5 lit/ha. (Feb & Oct)
T2= Paraquat @ 2.5 lit/ha.
T3= Paraquat @1. 25 lit/ha
T4= Paraquat @ 2.5 lit/ha + Pendimethaline @ 2.5 lit/ha.
T5= Paraquat @ 1.25 lit/ha + Pendimethaline @ 2.5 lit/ha.
T6= Glyphosate @ 50 gm a.i./ha.
T7= Glyphosate @ 100 gm a.i./ha.
T8= Glyphosate @ 150 gm a.i./ha.
T9= Control (check)

Design = RCBD
Replication = 4
Plot size = 3 x 5 m
Fertilizer = 22-114-00 NPK kg/ha
Sowing Time = November
Sowing Method = 45 cm apart rows.

Following observations will be recorded

1. Germination 2.Plant Height
3. Weed Infestation 4. Tillers/Plant
5. Green fodder yield (t/ha)

PREVIOUS YEAR'S RESULTS **First Year**

SOIL SCIENCE

28. TITLE **NUTRITIONAL/ QUALITY ASSESSMENT OF RABI FODDERS (Collaboration Trial with Biochemistry Section AARI, Faisalabad.)**

OBJECTIVE **To find out the nutritional quality of new lines of Rabi fodders.**

RESEARCH WORKERS **Asim Pervez and Abdul Razzaq**

PROJECT DURATION **2018-19 (Continuous Nature)**

LOCATION **Fodder Research Institute, Sargodha.**

TREATMENTS/ METHODOLOGY **Promising lines/varieties of different Rabi fodder crops will be studied. Plant sample will be collected at 50% flowering stage and analyzed for their quality.**

Name of crop	Lines to be studied
Oats	10
Berseem	10
Lucerne	10

The following observations will be recorded:

1. **Dry matter percentage**
2. **Crude fiber %**
3. **Crude fat %**
4. **Crude protein %**
5. **Ash %**

PREVIOUSYEAR'S RESULTS **ANALYSIS RESULTS ARE AS UNDER**

Variety/line	Dry matter %	Ash %	Crude fat %	Crude fiber %	Crude protein %
OATS					
SGD-1	25.6	10.99	2.75	32.9	10.1
FRI-03	17.5	11.41	2.39	29.3	10.2
FSD-2013	21.2	9.62	2.51	31.7	12.1
FRI-01	21.7	11.2	2.29	30.2	9.6
DOMOUNT	19.6	10.83	2.24	29.4	9.2
Sgd Oats 2011 (Check)	22.5	11.46	2.61	32.1	10.3
FRI-03	21.25	10.83	2.49	30.8	9.2
CK-1	24.7	11.3	2.45	31.6	9.6
S-2000 check	19.3	10.46	2.41	32.2	9.3
FRI02	20.4	9.41	2.76	30.2	9.6
SGD-1	22.1	10.52	2.79	30.7	9.3
No.75525	23.6	10.94	2.73	29.3	11.2
F-415	23.3	11.72	2.93	28.5	9.8
F-4381		11.51	2.69	27.3	10.6
LUCERNE					
SUNDER	23.3	13.45	2.20	26.3	17.9
SILVIRADER	22.3	13.65	2.12	23.7	16.8
FRI-001	24	13.88	1.90	23.3	16.8
GR-722	23.3	14.15	2.03	22.6	18.1
GR-745	25.0	14.59	1.98	22.7	19.6
I-ICON-B	24.0	14.86	2.22	21.5	20.1
SARD-10	24.3	13.68	2.20	22.3	18.8
CUF-101	23.0	14.42	1.62	21.4	19.3
G-03	23.3	14.67	2.30	24.2	14.4
OMEN	25.3	14.09	1.81	25.3	17.9
BERSEEM					
SB-3-14	21.2	10.7	2.09	24.7	11.8
FB-3-14	21.3	10.8	1.98	22.8	10.8
SB-1-13	21.1	10.6	2.31	24.0	17.9
SB-1-14	22.2	11.5	2.19	21.8	19.8
SB-2-15	21.1	9.66	2.24	23.0	18.4
SB-11	21.3	10.5	2.20	23.9	19.7

29. TITLE **STANDARDIZATION OF FERTILIZER DOSE FOR OATS LINE (FRI-03) TO OBTAIN MAXIMUM GREEN FODDER YIELD**

OBJECTIVE **To find out the best combination of NPK to obtain maximum green fodder yield of oats FRI-03**

RESEARCH WORKERS **Abdul Razzaq and Asim Pervez**

PROJECT DURATION **2018-19**

LOCATION **Fodder Research Institute, Sargodha.**

TREATMENTS/ METHODOLOGY

T1 = 00-00-00 (NPK kg/ha.)
T2 = 102-76-56
T3 = 108-80-59
T4 = 114-84-62 (Std.)
T5 = 120-88-65
T6 = 126-92-68
Lay out = RCBD
Replications = 3
Plot size = 3mx6m
Row spacing = 30 cm.
Line/variety = FRI-03

Phosphorus and potash will be applied at sowing time, while nitrogen will be applied in two split doses half at sowing time and the other half with 1st irrigation.

Following observations will be recorded:

1. **Plant height**
2. **Leaf area**
3. **No. of leaves/tiller**
4. **Stem thickness**
5. **Green fodder yield (t/ha)**
6. **Soil analysis before sowing**

PREVIOUS YEAR'S RESULTS

TREATMENTS (NPK Kg ha^{-1})	GFY(tha^{-1})	MRR
T_1 00-00-00	61.667	
T_2 102-76-56	81.852	2.34
T_3 108-80-59	83.333	2.46
T_4 114-84-62 (Std.)	85.741	2.51
T_5 120-88-65	85.726	2.39
T_6 126-92-68	85.719	2.28

SOIL ANALYSIS (before sowing)

Soil Texture	ECe ($mScm^{-1}$)	pH	Organic Matter %	Available phosphorous (mg kg^{-1})	Available potassium (mg kg^{-1})
Silty Loam	0.74	8.0	0.60	6.2	120

30. TITLE **STANDARDIZATION OF FERTILIZER DOSE FOR OATS LINE (SGD-01) TO OBTAIN MAXIMUM GREEN FODDER YIELD**

OBJECTIVE **To find out the best combination of NPK to obtain maximum green fodder yield of oats line SGD-01.**

RESEARCH WORKERS **Abdul Razzaq and M. Shoaib Farooq**

PROJECT DURATION **2018-19**

LOCATION **Fodder Research Institute, Sargodha.**

TREATMENTS/ METHODOLOGY

T1 = 00-00-00 (NPK kg/ha.)
T2 = 100-74-54
T3 = 107-79-58
T4 = 114-84-62 (Std.)
T5 = 121-89-66
T6 = 128-94-70

Lay out = RCBD
Replications = 3
Plot size = 3mx6m
Row spacing = 30 cm.
Line/variety = SGD-01

All P & K will be applied at sowing time, while nitrogen will be applied in two split doses, half at sowing time and half with 1st irrigation.

The following observations will be recorded:

1. **Plant height**
2. **Leaf area**
3. **No. of leaves/tiller**
4. **Stem thickness**
5. **Green fodder yield (t/ha)**
6. **Soil analysis before sowing**

PREVIOUS YEAR'S RESULTS

TREATMENTS (NPK Kg ha^{-1})	GFY(tha^{-1})	MRR
T_1 00-00-00	57.59	
T_2 100-74-54	68.70	1.28
T_3 107-79-58	71.11	1.45
T_4 114-84-62 (Std.)	79.87	2.26
T_5 121-89-66	68.51	1.04
T_6 128-94-70	68.70	1.00

SOIL ANALYSIS (before sowing)

Soil Texture	ECe ($mScm^{-1}$)	pH	Organic Matter %	Available phosphorous ($mg\ kg^{-1}$)	Available potassium ($mg\ kg^{-1}$)
Silty Loam	0.74	8.1	0.64	6.5	114

31. TITLE **STANDARDIZATION OF FERTILIZER DOSE FOR LUCERNE LINE (GR-722) TO OBTAIN MAXIMUM GREEN FODDER YIELD**

OBJECTIVE **To find out the best combination of NPK to obtain maximum green fodder yield of Lucerne line GR-722.**

RESEARCH WORKERS **Asim Pervez and M. Shoaib Farooq**

PROJECT DURATION **2018-19**

LOCATION **Fodder Research Institute, Sargodha.**

TREATMENTS/ METHODOLOGY

T1 00-00-00 NPK kg ha^{-1}
T2 21-72-54
T3 22-76-57
T4 23-80-60 (Std.)
T5 24-84-63
T6 25-88-66

Lay out = RCBD
Replications = 3
Plot size = 3mx6m
Row spacing = 30 cm.
Line/variety = GR-722

The following observations will be recorded:
1. Plant height **2. No. of tillers/plant**
3. Stem thickness **4. Green fodder yield (t/ha)**
5. Soil analysis

PREVIOUS YEAR'S RESULTS

TREATMENTS (Kg ha^{-1})	GFY(tha^{-1}) OF 3 CUTS	MRR
T_1 00-00-00	34.81	
T_2 21-72-54	39.96	1.03
T_3 22-76-57	40.85	1.15
T_4 23-80-60 (Std.)	40.38	1.01
T_5 24-84-63	40.14	0.92
T_6 25-88-66	40.01	0.86

SOIL ANALYSIS (before sowing)

Soil Texture	ECe ($mScm^{-1}$)	pH	Organic Matter %	Available phosphorous ($mg\ kg^{-1}$)	Available potassium ($mg\ kg^{-1}$)
Silty Loam	0.72	7.9	0.64	6.6	121

32. TITLE **STANDARDIZATION OF FERTILIZER DOSES FOR LUCERNE LINE (GR-745) TO OBTAIN MAXIMUM GREEN FODDER YIELD**

OBJECTIVE **To find out the best combination of NPK to obtain maximum green fodder yield of Lucerne line GR-745.**

RESEARCH WORKERS **Asim Pervez and Abdul Razzaq**

PROJECT DURATION **2018-19**

LOCATION **Fodder Research Institute, Sargodha.**

TREATMENTS/ METHODOLOGY

T1 00-00-00 NPK kg ha^{-1}
T2 21-70-52
T3 22-75-56
T4 23-80-60 (Std.)
T5 24-85-64
T6 25-90-68

Lay out = RCBD
Replications = 3
Plot size = 3mx6m
Row spacing = 30 cm.
Line/variety = GR-745

The following observations will be recorded.

1. **Plant height**
2. **No. of tillers/plant**
3. **Stem thickness**
4. **Green fodder yield (t/ha)**
5. **Soil analysis before sowing**

PREVIOUS YEAR'S RESULTS

TREATMENTS (NPK Kg ha^{-1})	GFY(tha^{-1}) OF 3 CUTS	MRR
T_1 00-00-00	30.87	
T_2 21-70-52	35.79	1.02
T_3 22-75-56	36.25	1.04
T_4 23-80-60 (Std.)	36.9	1.09
T_5 24-85-64	37.09	1.06
T_6 25-90-68	36.62	0.92

SOIL ANALYSIS (before sowing)

Soil Texture	ECe ($mScm^{-1}$)	pH	Organic Matter %	Available phosphorous ($mg\ kg^{-1}$)	Available potassium ($mg\ kg^{-1}$)
Silty Loam	0.74	8.2	0.62	6.8	121

33. TITLE **RESPONSE OF BERSEEM TO DIFFERENT CONCENTRATIONS OF NPK AS FOLIAR SPRAY**

OBJECTIVE **To find out the best economical dose of NPK as foliar spray with basal dose to obtain maximum green fodder yield of Berseem line SB- II.**

RESEARCH WORKERS **M. Shoaib Farooq and Abdul Razzaq**

PROJECT DURATION **2018-19**

LOCATION **Fodder Research Institute, Sargodha.**

TREATMENTS/ METHODOLOGY

T1 = 23-80-50 (NPK kg ha^{-1}basal dose)
T2 = NPK basal dose + 2gLit^{-1} NPK foliar spray
T3 = NPK basal dose + 4 g Lit^{-1} NPK foliar spray
T4 = NPK basal dose + 6 g Lit^{-1} NPK foliar spray
T5 = NPK basal dose + 8 g Lit^{-1}NPK foliar spray

Lay out = RCBD
Replications = 3
Plot size = 3m x6 m
Line/variety = SB-11
Sowing method = Broadcast

Phosphorous and potash will be applied at the time of sowing while nitrogen will be applied after the 1st cut. Foliar applications will be done after twelve days of each cut.

The following observations will be recorded:-

1. **Plant height**
2. **Stem thickness**
3. **Green fodder yield (tha^{-1})**
4. **No. of tillers/plant**
5. **Soil analysis before sowing**
6. **Dry matter %**

PREVIOUS YEAR'S RESULTS

TREATMENTS	GFY(tha^{-1}) OF 2 CUTS	MRR
T_1 23-80-50 (NPK kg ha^{-1}basal dose)	32.81	
T_2 NPK basal dose+ 2g Lit^{-1} NPK as foliar spray	34.96	7.09
T_3 NPK basal dose+ 4 g Lit $^{-1}$ NPK as foliar spray	35.85	9.5
T_4 NPK basal dose+ 6 g Lit $^{-1}$ NPK as foliar spray	36.38	10.58
T_5 NPK basal dose+ 8g Lit $^{-1}$ NPK as foliar spray	36.14	9.39

SOIL ANALYSIS (before sowing)

Soil Texture	ECe (mScm^{-1})	pH	Organic Matter %	Available phosphorous (mg kg^{-1})	Available potassium (mg kg^{-1})
SiltyLoam	0.64	7.7	0.69	6.7	123

34. TITLE — **RESPONSE OF LUCERNE TO DIFFERENT CONCENTRATIONS OF NPK AS FOLIAR SPRAY**

OBJECTIVE — **To find out the best economical dose of NPK as foliar spray with basal dose to obtain maximum green fodder yield of Lucerne**

RESEARCH WORKERS — **Asim Pervez and M. Shoaib Farooq**

PROJECT DURATION — **2018-19**

LOCATION — **Fodder Research Institute, Sargodha.**

TREATMENTS/ METHODOLOGY

T1 = 23-80-60 (NPK kg ha^{-1}basal dose)
T2 = NPK basal dose + 2gLit^{-1} NPK foliar spray
T3 = NPK basal dose + 4 g Lit $^{-1}$ NPK foliar spray
T4 = NPK basal dose + 6 g Lit $^{-1}$ NPK foliar spray
T5 = NPK basal dose + 8 g Lit $^{-1}$ NPK foliar spray

Lay out = RCBD
Replications = 3
Plot size = 3m x6 m
Sowing method = Broadcast
Line/variety = Sgd-Lucerne

Phosphorous and potash will be applied at the time of sowing while nitrogen will be applied after 1st cut. Foliar applications will be done after ten days of each cut.

The following observations will be recorded.

1. **Plant height**
2. **Stem thickness**
3. **Green fodder yield (tha^{-1})**
4. **No. of tillers/plant**
5. **Soil analysis before sowing**
6. **Dry matter %**

PREVIOUS YEAR'RESULTS

TREATMENTS	GFY(tha^{-1}) OF 5 CUTS	MRR
T1 23-80-60 (NPK kg ha-1basal dose)	86.83	
T2 NPK basal dose+ 2g Lit-1 NPK as foliar spray	87.94	1.45
T3 NPK basal dose+ 4 g Lit -1 NPK as foliar spray	88.55	1.85
T4 NPK basal dose+ 6 g Lit -1 NPK as foliar spray	91.31	3.70
T5 NPK basal dose+ 8g Lit -1 NPK as foliar spray	90.05	2.81

SOIL ANALYSIS (before sowing)

Soil Texture	ECe (mScm^{-1})	pH	Organic Matter %	Available phosphorous (mg kg^{-1})	Available potassium (mg kg^{-1})
Silty Loam	0.62	7.9	0.69	6.9	125

35. TITLE **SCREENING OF LUCERNE GERMPLASM AGAINST DIFFERENT SALINITY**

OBJECTIVE **To screen out the Comparatively most salt tolerant lines/varieties of lucerne.**

RESEARCH WORKERS **M. Shoaib Farooq and Abdul Razzaq**

PROJECT DURATION **2018-19**

LOCATION **Fodder Research Institute, Sargodha**

TREATMENTS/ METHODOLOGY

Different lines of Lucerne will be subjected to different salinity levels. Each pot will be filled with 10 kg of soil/sand. Seeds of lucerne will be sown at uniform depth and after completion of emergence, thinning will be done and equal No. of plants will be maintained in each pot. Recommended dose of commercial fertilizer at the rate of 23-80-00 NPK kg ha^{-1}will be applied to each pot.

Lay out = RCBD Factorial
Replications = 3

The following observations will be recorded:

1. Germination percentage 2. Mortality percentage

PREVIOUS YEAR'S RESULTS **New experiment**

36.	**TITLE**	**PERFORMANCE EVALUATION OF LUCERNE GERMPLASM ON SALT AFFECTED SOIL (Collaboration Trial with SSRI, Pindi Bhattian)**
	OBJECTIVE	**To evaluate the comparatively most salt tolerant lines/varieties of Lucerne.**
	RESEARCH WORKERS	**M. Shoaib Farooq, Abdul Razzaq, Muhammad Ilyas, Abdul Rasool Naseem and Amir Iqbal Saqib**
	PROJECT DURATION	**2018-19 (continuous nature)**
	LOCATION	**Soil Salinity Research Institute, Pindi Bhattian**
	TREATMENTS/ METHODOLOGY	**1. GR-745 2. Fsd Lucerne 3. C-312** **4. GR-722 5.H –River 6. No.1103** **7. Sgd Lucerne** **Soil will be analyzed before sowing and after harvesting.** **Lay out = RCBD** **Replications = 3** **Plot Size = 1.8mx5m** **Row spacing = 30 cm.** **Seed rate = 6 kg ha^{-1}** **Fertilizer dose= 23-80-60 NPK $kgha^{-1}$** **The following observations will be recorded:** **1. Germination percentage 2. Mortality** **3. Green fodder yield (tha^{-1}) 4. Quality Analysis**
	PREVIOUSYEAR'S RESULTS;	**New experiment**

37. TITLE **PERFORMANCE EVALUATION OF OATS GERMPLASM ON SALT AFFECTED SOIL (Collaboration Trial with SSRI Pindi Bhattian)**

OBJECTIVE **To evaluate the comparatively most salt tolerant lines/varieties of Oats.**

RESEARCH WORKERS **M. Shoaib Farooq, Abdul Razzaq, Muhammad Ilyas, Abdul Rasool Naseem and Amir Iqbal Saqib**

PROJECT DURATION **2018-19 (continuous nature)**

LOCATION **Soil Salinity Research Institute, Pindi Bhattian**

`

TREATMENTS/ METHODOLOGY

1. Sgd-1	**2.FRI-03**	**3.No.301**
4. No.669	**5. FRI-6001/15**	**6.Sgd oats 2011**
7. No.668	**8.S-2000**	**9.FRI-153**
10. No.85-125	**11.FRI-152**	**12.FRI-034**

Soil will be analyzed before sowing and after harvesting.

Lay out =RCBD
Replications = 3
Plot Size =1.8mx5m
Row spacing = 30 cm.
Seed rate = 80 kg ha^{-1}
Fertilizer dose= 114-84-00 NPK $kgha^{-1}$

The following observations will be recorded.

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

PREVIOUSYEAR'S RESULTS **New experiment**

38. TITLE **STANDARDIZATION OF FERTILIZER DOSE FOR BERSEEM LINE (SB-3-14) TO OBTAIN MAXIMUM GREEN FODDER YIELD**

OBJECTIVE **To find out the best combination of NPK to obtain maximum green fodder yield of berseem line SB-3-14.**

RESEARCH WORKERS **M. Shoaib Farooq and Asim Pervez**

PROJECT DURATION **2018-19**

LOCATION **Fodder Research Institute, Sargodha.**

TREATMENTS/ METHODOLOGY

T1 00-00-00 NPK kg ha^{-1}
T2 21-70-40
T3 22-75-45
T4 23-80-50 (Std.)
T5 24-85-55
T6 25-90-60

Lay out = RCBD
Replications = 3
Plot size = 3mx6m
Row spacing = 30 cm.
Line/variety = SB-3-14

The following observations will be recorded:-

1. Plant height **2. No. of tillers/plant**

3. Stem thickness **4. Green fodder yield (t/ha)**

5. Soil analysis

PREVIOUS YEAR'S RESULTS **New experiment**

39. TITLE **STANDARDIZATION OF FERTILIZER DOSE FOR BERSEEM LINE (SB-2-15) TO OBTAIN MAXIMUM GREEN FODDER YIELD**

OBJECTIVE **To find out the best combination of NPK to obtain maximum green fodder yield of berseem line SB-2-15.**

RESEARCH WORKERS **M. Shoaib Farooq and Asim Pervez**

PROJECT DURATION **2018-19**

LOCATION **Fodder Research Institute, Sargodha.**

TREATMENTS/ METHODOLOGY

T1 00-00-00 NPK kg ha^{-1}
T2 21-70-41
T3 22-76-46
T4 23-80-50 (Std.)
T5 24-84-54
T6 25-88-58

Lay out = RCBD
Replications = 3
Plot size = 3mx6m
Row spacing = 30 cm.
Line/variety = SB-2-15

The following observations will be recorded:-

1. Plant height **2. No. of tillers/plant**
3. Stem thickness **4. Green fodder yield (t/ha)**
5. Soil analysis

PREVIOUS YEAR'S RESULTS **New experiment**

PLANT PATHOLOGY

40 TITLE **SCREENING OF BERSEEM GERMPLASM AGAINST ROOT ROT DISEASE**

OBJECTIVE **To evaluate berseem germplasm against Root Rot disease (*Fusarium moniliforme)***

RESEARCH WORKER **Aftab Ahmad Khan and Dr. Saleem Il Yasin**

PROJECT DURATION **2018-2019**

LOCATION **Fodder Research Institute, Sargodha**

TREATMENTS/ METHODOLOGY

Varieties/lines **Berseem germplasm**

Design **RCBD**

Replications **3**

Sowing method **Broadcast**

PLAN OF WORK

Berseem germplasm entries will be sown and the crop will be raised adopting the standard cultural and agronomic practices. The germplasm entries will be inoculated *Fusarium moniliforme*. Disease incidence data will be recorded at maturity stage.

PREVIOUS YEAR'S RESULTS

S. No.	Lines/varieties	Disease incidence (%)
1	SB-11	3.33
2	SB-12	3.67
3	B. Agaiti (check)	5.00
4	SB-8	5.00
5	B-1-2012	5.33
6	B. Pachaiti (check)	5.33
7	SG-07-I	5.67
8	SB-10	6.00
9	SG-07-II	6.00
10	SB-III	7.00

41.

TITLE **CHEMICAL CONTROL OF BERSEEM WHITE MOLD (*Sclerotinia sclerotiorum)* DISEASE**

OBJECTIVE **To find a suitable fungicides for the control of white mold of Berseem.**

RESEARCH WORKER **Aftab Ahmad Khan and Dr. Saleem Il Yasin**

PROJECT DURATION **2018-2020**

LOCATION **Fodder Research Institute, Sargodha**

TREATMENTS/ METHODOLOGY

Treatments (Fungicides)	Dose
Derosal (Carbendazim)	500 g/acre
Topsin-M 70 WP (Thiophanate methyl)	600 g/acre
Copper oxychloride	500 g/acre
Benlate 50WP (Benomyl)	300 g/acre
Dithane M-45 80 WP (Mancozeb)	800 g/acre
Trifort 25 WP (Triadimefon)	200 g/acre
Treaty 6 ME (Tebuconazole)	750 ml/acre
Ridomil Gold 68 WG (Mancozeb + Metalaxyl)	250 g/acre
Kumulus-DS 80 WG (sulphur)	800 g/acre
Control	Untreated
Test variety	Berseem Agaiti
Design	RCBD
Replications	3
Plot size	3 m x 5 m

PLAN OF WORK **The berseem variety Berseem Agaiti will be sown in the 3rd to 4th week of November. Standard cultural and agronomic practices will be adopted to raise the crop. The crop will be treated with the fungicides through soil drenching. Observations on the disease incidence will be recorded at maturity stage.**

PREVIOUS YEAR'S RESULTS **New experiment.**

42. **TITLE** **EVALUATION OF ALFALFA GERMPLASM AGAINST ANTHRACNOSE (*Colletotrichum trifolii*)**

OBJECTIVE **To evaluate alfalfa varieties/lines against *Colletotrichum trifolii.***

RESEARCH WORKER **Aftab Ahmad Khan and Dr. Saleem Il Yasin**

PROJECT DURATION **2018-2019**

LOCATION **Fodder Research Institute, Sargodha**

TREATMENTS/ METHODOLOGY

Varieties/lines	**61 Alfalfa Germplasm entries**
Sowing method	**Broadcast**
Design	**RCBD**
Plot size	**5 m x 3 m**
Replications	**3**

PLAN OF WORK

The germplasm entries will be grown adopting standard agronomic practices. The germplasm entries will be inoculated with *Colletotrichum trifolii*. Anthracnose disease incidence data will be recorded at appearance of the disease.

PREVIOUS YEAR'S RESULTS

Reaction	Number of Lines/varieties	Resistant Lines
Resistant	25	Viger-5, Laghka, African pop, Pumpa, Sgd Lucerne-2002, Oman, Cheronia, No.1103, Lucernal, Con-B, Sard-10, R-739, No.53, No.64 (USA), Turkish pop, Persian, KQS-Alfalfa-02, Flenish pop, GR-745, NARC-2, NARC-3, Rajanpur-1, Rajanpur-2, China, Boover
Moderately Resistant	31	
Moderately Susceptible	5	
Susceptible	0	
Total	61	

43	**TITLE**	**EVALUATION OF OATS GERMPLASM AGAINST RUST DISEASE (*Puccinia coronata* f. sp. *avenae*)**	
	OBJECTIVE	**To find out the resistant material in oats germplasm entries against Rust disease.**	
	RESEARCH WORKER	**Aftab Ahmad Khan and Dr. Saleem Il Yasin**	
	PROJECT DURATION	**2018-2020**	
	LOCATION	**Fodder Research Institute, Sargodha**	
	TREATMENTS/ METHODOLOGY	**Varieties/lines**	**130 Oats germplasm entries**
		Design	**Augmented**
		Line spacing	**30 cm**
		Check variety	**S-2000**
	PLAN OF WORK	**<u>Methodology</u>** **The seeds of all the germplasm entries will be sown in field with two rows per entry. SGD Oats 2011 will be sown as check variety after every 30 entries. The crop will be raised adopting standard agronomic practices. Disease incidence data will be recorded on the appearance of disease.**	
	PREVIOUS YEAR'S RESULTS	**New experiment**	

44. **TITLE** **CHEMICAL CONTROL OF RUST (*Puccinia coronata* f. sp. *avenae*) OF OATS (*Avena sativa*)**

OBJECTIVE **To find a suitable fungicides for the control of rust disease of oats.**

RESEARCH WORKER **Aftab Ahmad Khan and Dr. Saleem Il Yasin**

PROJECT DURATION **2018-2019**

LOCATION **Fodder Research Institute, Sargodha**

TREATMENTS/ METHODOLOGY

Treatments (Fungicides)	Dose
Trifort 25 WP (Triadimefon)	200 g/acre (2 g/litre)
Rally 40 WSP (Myclobutanil)	20 g/acre (0.2 g/litre)
Treaty 6 ME (Tebuconazole)	750 ml/acre (7.5 ml/litre)
Tilt 250 EC (Propiconazole)	200 ml/acre (2.0 ml/litre)
Success 72 WP (Chlorothalonil 64%; Metalaxyl 8%)	250 g/acre (2.5 g/litre)
Dithane M-45 80 WP (Mancozeb)	800 g/acre (8 g/litre)
Topsin-M 70 WP (Thiophanate methyl)	600 g/acre (6 g/litre)
Score 250 EC (Difenconazole)	250 ml/acre (2.5 ml/litre)
Control	Untreated
Test variety	SGD-2011
Design	RCBD
Replications	4
Line spacing	50 cm
Plot size	3 m x 3 m

PLAN OF WORK **Oats variety Sargodha 2011 will be sown in the 3rd to 4th week of November. Standard cultural and agronomic practices will be adopted to raise the crop. The crop will be sprayed at two weeks interval starting from 15th February. Observations on the disease incidence will be recorded at flowering stage. The data on grain yield will also be recorded.**

PREVIOUS YEAR'S RESULTS **New experiment.**

ENTOMOLOGY

45 TITLE **COMPARATIVE EFFICACY OF COMMONLY USED INSECTICDES ON *HELICOVERPA ARMIGERA* ON SEED CROP OF BERSEEM**

OBJECTIVE **To evaluate best insecticides against Heliothis**

RESEARCH WORKER **Abdul Khaliq**

PROJECT DURATION **2018-2019**

LOCATION **Fodder Research Institute, Sargodha**

TREATMENTS/ METHODOLOGY

Treatment	Insecticides	Dose/acre
T1	Spintor 480SC (spinosad)	40 ml
T2	Coragen 20SC (chlorantraniliprole)	25 ml
T3	Marshal 5EC (lufenuron)	200 ml
T4	Runner 280SC (methoxyfenozide)	100 ml
T5	Emamectin 1.9 EC (emamectin benzoate)	200 ml
T6	Belt 48SC (flubendiamide)	50 ml
T7	Steward (indoxacarb) 150SC	175 ml
T8	Volium flexy (chlorantraniliprole+thiamethoxam 300EC)	80ml
T9	Fipronil (fipronil) 25EC	480 ml
T10	Pirate (chlorfenpyr) 360 SC	320 ml
T12	Delegate (spintoram) 25 WG	60 gm
T13	Control	

PLAN OF WORK

Lay out = RCBD

Replications = 3

Plot size = 3mx5m

Sowing method = Broadcast

Sowing time = Oct

After the last cutting, the crop will be regularly observed to measure the larval abundance of *H. armigera* . The data regarding larval population will be recorded from one square meter before and then 3, 6 and 9 days after treatment from each plot. Spray will be done with a manually operated hand knapsack sprayer. Percent mortality will be calculated by using the below mentioned formula:

%M=100 × (Nbs – Nas) ÷ Nbs

where,

%M - Percent mortality; Nbs - Insect abundance before spray;

Nas – Insect abundance after spray

PREVIOUS YEAR'S RESULTS

Insecticides		Mean abundance (mortality %)/ m^2			
S.No	Trade Name	Pre-T.	Post. T (3 days)	Post T. (6 days)	Post T(9 days)
T1	Spintor	4.66	0.67 (85.71)	0.60 (87.14)	1.33 (71.43)
T2	Coragen	5.00	0.50 (90.00)	0.33 (93.33)	0.93 (81.33)
T3	Marshal	3.70	0.83 (77.27)	0.66 (81.82)	1.23 (66.36)
T4	Runner	4.00	1.03 (74.17)	0.50 (87.50)	1.16 (70.83)
T5	Emamectin	4.33	0.33 (92.31)	0.43 (90.00)	0.66 (84.62)
T6	Belt	5.00	0.16 (96.67)	0.33 (93.33)	0.85 (82.93)
T7	Steward	4.00	0.76 (80.83)	0.90 (77.50)	1.23 (69.17)
T8	V. flexy	3.33	0.51 (84.50)	0.36 (89.00)	0.83 (75.00)
T9	Fipronil	4.66	1.46 (68.57)	1.13 (75.71)	1.76 (62.14)
T10	Pirate	3.67	0.60 (83.64)	1.06 (70.91)	1.63 (55.45)
T11	Delegate	5.33	1.00 (81.25)	1.10 (79.38)	1.70 (68.13)
T12	Control	4.33	5.33	7.66	8.66
LSD		2.34	0.91	1.43	0.96

46. TITLE: **SCREENING OF SOME ORGANOPHOSPHATES PYRETHROIDS, NEONICOTINIDES AND CARBAMATES INSECTICDES AGAINST LYGUS/STINK BUG ON SEED CROP OF LUCERNE**

OBJECTIVE **To evaluate best insecticides against Lygus/stink bug**

RESEARCH WORKERS **Abdul Khaliq**

PROJECT DURATION **2018-19**

LOCATION **Fodder Research Institute, Sargodha**

TREATMENTS/ METHODOLOGY

Treatments	Dose per acre (ml)
T1= Malathion 57 EC	500
T2= Chlopyrifos 40 EC	500
T3= Acephate 75SP	300
T4= Dimethoate 40EC	400
T5= Bifenthrin 10 EC	300
T6= Lambdacyhalothrin 2.5 EC	300
T7= Deltamethrin 2.3 EC	400
T8= Acetamiprid 20SP	125
T9= Imidacloprid 20SL	250
T10= Carbosulfan 20EC	500
T11= Control	

Variety = SGD-Lucerne 2002
Lay out = RCBD
Replications = 3

After the last cutting, at flowering stage the crop will be observed regularly to measure the abundance of stink bug. When the attack of stink bug will be observed in the field, the population will be counted by 5 net sweeps from each plot before and then after three, five and seven days of treatment. Spray will be done with a manually operated hand knapsack sprayer.
The data will be subjected to analysis
Percent mortality will be calculated by using the below mentioned formula:
%M=100 × (Nbs – Nas) ÷ Nbs
where, %M - Percent mortality; Nbs - Insect abundance before spray; Nas – Insect abundance after spray.

PREVIOUS YEAR'S RESULTS **New experiment**

47. TITLE: **COMPARATIVE EFFICACY OF BAIT VS GRANULAR INSECTICDES AGAINST SNAILS ON LUCERNE CROP**

OBJECTIVE **To evaluate best treatment against snails**

RESEARCH WORKERS **Abdul Khaliq**

PROJECT DURATION **2018-2020**

LOCATION **Fodder Research Institute, Sargodha**

TREATMENTS/ METHODOLOGY

Treatments	Insecticides	Dose / acre
T1	Control	No insecticide application
T2	Fertera (chlortraniliprole) 0.4% G	4 kg
T3	5% Nacl	
T4	Chlorguard (Chlopyrifos) 10% G	6 kg
T5	Task (Metaldehyde) 6% G	1.5 kg
T6	Task (Metaldehyde) 6% G	3 kg
T7	Task (Metaldehyde) 6% G + Urea	3 kg

Variety = Sargodha-Lucerne 2002

Lay out = RCBD

Replications = 3

Plot size = 3mx5m

On the appearance of snails the baits as well as granules chemicals will be spread in the lucerne crop. The population will be counted by five randomly selected tillers from each plot before and then after three, five and ten days after treatment.

PREVIOUS YEAR'S RESULTS

Chemicals		Mean abundance (mortality %)/Tiller			
Sr #	Trade Name	Pre-T.	Post. T (3 days)	Post T. (5 days)	Post T (7 days)
T1	Control	5.67	8.00	9.67	10.47
T2	Fertera	5.33	4.67	6.00	6.67
T3	5% Nacl	4.33	2.67	2.83	4.10
T4	Chlorguard	5.00	4.33	5.33	6.00
T5	Task 1.5 kg	4.33	2.17	2.33	2.33
T6	Task 3 kg	5.67	2.27	2.07	2.27
T7	Task 3 kg + Urea	6.33	2.10	2.37	2.60
LSD		2.62	1.60	3.07	3.25

48. TITLE: **SCREENING OF SOME ORGANOPHOSPHATES, PRYTHROIDS, NEONICOTINIDES AND CARBAMATES INSECTICDES AGAINST CHALCID WASP ON SEED CROP OF LUCERNE**

OBJECTIVE **To evaluate best insecticides against Chalcid wasp**

RESEARCH WORKERS **Abdul Khaliq**

PROJECT DURATION **2018-19**

LOCATION **Fodder Research Institute, Sargodha**

TREATMENTS/ METHODOLOGY

Treatments	Dose per acre (ml
T1= Malathion 57 EC	200
T2= Chlopyrifos 40 EC	200
T3= Acephate 75SP	200
T4= Dimethoate 40EC	200
T5= Bifenthrin 10 EC	150
T6= Lambdacyhalothrin 2.5 EC	200
T7= Deltamethrin 2.3 EC	200
T8= Acetamiprid 20SP	100
T9= Imidacloprid 20SL	150
T10= Carbosulfan 20EC	200
T11= Control	

Variety = SGD-Lucerne 2002
Lay out = RCBD
Replications = 3

After the last cutting, on flowering, the crop will be observed regularly to measure the abundance of Chalcid wasp. When the attack of chalcid will be occured in the field, the population will be counted by 5 net sweeps from each plot before and then after three, five and seven days after treatment. Spray will be done with a manually operated hand knapsack sprayer.

The data will be subjected to analysis
Percent mortality will be calculated by using the below mentioned formula:-

$$\%M = 100 \times (Nbs - Nas) \div Nbs$$

where,
%M - Percent mortality; Nbs - Insect abundance before spray; Nas – Insect abundance after spray

PREVIOUS YEAR'S RESULTS

New Experiment

DAIRY TECHNOLOGY

49. TITLE: **EFFECT OF BERSEEM AND ALFALFA HAY ON MILK PRODUCTION AND COMPOSITION OF DAIRY BUFFALOES**

OBJECTIVE: **To evaluate nutritive value of Berseem and Alfalfa hay**

RESEARCH WORKERS **Muhammad Shakeel Hanif**

PROJECT DURATION **2018-19**

LOCATION **Fodder Research Institute, Sargodha**

TREATMENTS **T1. Hay of Berseem (SB-2-15)**
T2. Hay of Alfalfa (GR-745)

METHODOLOGY: **The hay of Berseem and Alfalfa will be prepared by standard method and analyzed for proximate composition. The hay will be fed to buffaloes to determine its effect on milk production and Milk composition (Milk fat, SNF, Total Solids, Protein, pH, Acidity). Six dairy buffaloes of almost similar stage and lactation number will be selected and fed on different types of hay at ad-libitum. Daily feed intake and milk yield will be recorded. The data will be analyzed statistically.**

PREVIOUS YEAR'S RESULTS

Proximate Composition of Berseem and Alfalfa Hay

Sr. #	Parameters	Berseem Hay	Alfalfa Hay
1	Ash (%)	10.967 ± 0.182	10.92±0.826
2	Crude Protein (%)	15.897 ± 0.506	17.58± 0.923
3	Crude Fat (%)	3.513 ± 0.346	4.66± 0.712
4	Crude Fiber (%)	38.643 ± 0.946	28.60± 2.645
5	NFE (%)	21.630 ± 1.107	22.84± 1.392
6	ADF %	27.843 ± 0.823	36.94± 1.415
7	NDF %	48.793 ± 1.460	45.85± 1.713

EFFECT OF BERSEEM AND LUCERNE HAY ON FEED INTAKE, MILK PRODUCTION AND COMPOSITION		
Parameter	**T1 (Berseem Hay)**	**T2 (Lucerne Hay)**
Feed Intake (Kg)	**10.500A**	**7.500B**
Milk Production(L)	**7.500A**	**6.500B**
Fat (%)	**6.403A**	**5.560A**
SNF (%)	**8.573A**	**9.306A**
Density	**30.070A**	**30.027A**
Lactose (%)	**3.700A**	**4.0660A**
Salts (%)	**0.613A**	**0.556A**
Protein (%)	**3.466A**	**3.530A**
pH	**6.893A**	**6.896A**
Acidity (%)	**0.100A**	**0.103A**
Freezing Point	**-0.449A**	**-0.415A**

50 TITLE: **FEEDING EVALUATION OF DIFFERENT OATS LINES IN LACTATING BUFFALOES**

OBJECTIVE **To study the effect of feeding promising lines of Oats on milch animals.**

RESEARCH WORKERS **Muhammad Shakeel Hanif**

PROJECT DURATION **2018-19**

LOCATION **Fodder Research Institute, Sargodha**

TREATMENTS **T_1 FRI-03 T_2 SGD-1**

METHODOLOGY **Two different promising lines of Oats will be planted at Farm Area of FRI, Sargodha and fed to buffaloes to evaluate the effect on milk production and quality. The chopped green fodder will be analyzed for proximate composition. The milk will be analyzed for (Fat, SNF, Total Solids, Protein, pH, Acidity). Six buffaloes of similar stage and lactation number will be selected and 2 promising lines of oats will be fed at ad-libitum. Daily feed intake and milk yield will be recorded. Data will be analyzed statistically.**

PREVIOUS YEAR'S RESULTS:

Sr. #	Parameters	T1 (FRI- 03)	T2 (SGD-1)
1	Ash (%)	14.485 ±2.02	10.930 ±0.570
2	Crude Protein (%)	8.345 ± 1.79	7.745±1.185
3	Crude Fat (%)	2.510±0.12	2.935±0.115
4	Crude Fiber (%)	37.662±6.47	35.295±3.845
5	NFE (%)	28.705±4.23	31.310±2.973
6	ADF %	26.000±2.00	27.000±2.000
7	NDF %	52.067±2.00	48.667± 2.082

Diet	Milk Production (Liters)	
	Before Trial	After Trial
T1 (FRI- 03)	9.70	9.96
T2 (SGD-1)	10.20	10.30

Milk Composition		
Parameters	T1 (FRI- 03)	T2 (SGD-1)
Fat (%)	7.2800 A	7.6500 A
SNF (%)	7.3667 A	8.1933 A
Density	25.467 A	29.873 A
Lactose (%)	3.3200 A	3.6433 A
Salts (%)	0.5233 A	0.5733 A
Protein (%)	3.7333 A	3.3333 A
pH	6.8933 A	6.9000
Acidity (%)	0.1067 A	0.1000 A
Freezing Point	-0.4153 A	-0.4490 A

FODDER RESEARCH SUB-STATION, AARI, FAISALABAD

BERSEEM (*Trifoliumalexandrium L.)*

51 TITLE — **MAINTENANCE OF BERSEEM GERMPLASM**

OBJECTIVE — **To maintainberseem germplasm and record data on various morpho-physioligical traits.**

RESEARCH WORKERS — **Dr. QamarShakil , Mr. Ahmed Hassan Khan, Mr. SulemanRaza**

DURATION — **2018-19 (Continuous Nature)**

LOCATION — **FodderResearchSub-Station, AARI, Faisalabad.**

TREATMENTS/ METHODOLOGY

No. of entries = 50
Area = 1 Row of each entry
Rowlength = 15 feet
Sowing Time = MidOctober

PREVIOUSYEAR'S RESULTS

Morphological data of 60 berseem accessions
Plant height: 30-75cm
Tillers per plant: 4-12
Leaves per tiller: 9-16
Stem thickness : 1.5-4mm
Leaf length: 3-5cm
Leaf width : 1.2-2.2cm

52 TITLE — **PRELIMINARY GREEN FODDER YIELD TRIAL OF BERSEEM**

OBJECTIVE — **To assess green fodderyield of elitelines of berseemselected on the basis of their traits.**

RESEARCH WORKERS — **Dr.QamarShakil , Ahmed Hassan Khan and SulemanRaza**

DURATION — **2018-19**

LOCATION — **FodderResearchSub-Station, AARI, Faisalabad.**

TREATMENTS/ METHODOLOGY

Seed of the berseemlineswillbereceivedfromDirector, FodderResearch Institute Sargodha. Plan provided by the Institute willbefollowed for methodology.

The following new advancelineswillbeincorporated fromFodderResearchSub-Station, AARI, Faisalabad.

1) **FB-01-18**
2) **FB-02-18**

PREVIOUSYEAR'S RESULTS

Sr. No.	Lines /Varieties	Green Fodderyield (t/ha 4 cuts)
1	FB-1-17	81.33
2	FB-2-17	78.67
3	FB-3-17	77.56
4	SB-3-17	71.56
5	ANMOL(check)	71.11
6	SB-1-17	69.33
7	AGAITI (check)	69.33
8	SB-4-17	67.78
9	SB-2-17	67.56
10	GOLD-17	66.67
LSD 0.05		7.1

53 TITLE **ADVANCED GREEN FODDER YIELD TRIAL OF BERSEEM.**

OBJECTIVE **The aim of the trial is to evaluate the following parameters:**

1. **Fast establishment**
2. **High green fodder yield potential**
3. **Long duration (heat tolerance)**
4. **Multi cut in nature**

RESEARCH WORKERS **Dr. QamarShakil, Ahmed Hassan Khan and SulemanRaza**

DURATION **2018-19**

LOCATION **FodderResearchSub-Station, AARI, Faisalabad.**

TREATMENTS/ METHODOLOGY **The packedseedalongwithsowing plan willbeprovided by the Director, FodderResearch Institute Sargodha.**

The following new advancelineswillbeincorporatedfromFodderResearchSub-Station, AARI, Faisalabad.

1) FB-01-2017
2) FB-02-2017

PREVIOUS YEAR'S RESULTS

Sr. No.	Lines / varieties	Green Fodderyield (t/ha) 4 cuts
1	FB-2-16	106.22
2	FB-1-16	100.89
3	ANMOL (check)	88.89
4	AGAITI (check)	88.44
5	SB-3-16	87.78
6	SB-2-16	85.33
7	SB-4-16	79.11
8	SB-5-16	76.00
LSD 0.05		7.95

54 TITLE **ADAPTABILITY GREEN FODDER YIELD TRIAL ON BERSEEM.**

OBJECTIVE **To evaluate green fodder yield potential of advance lines against commercial varieties under different agro climatic conditions in central Punjab.**

RESEARCH WORKERS **Dr. QamarShakil, Ahmed Hassan Khan and SulemanRaza**

DURATION **2018-19**

LOCATION **FodderResearchSub-Station, AARI Faisalabad.**

TREATMENTS/ METHODOLOGY **The packed seed along with sowing plan will be provided by the Director, Fodder Research Institute Sargodha. The following promising advance lines will be added.**

i) FB-01-2016
ii) FB-02-2016

PREVIOUS YEAR'S RESULTS

Sr. No.	Lines / varieties	Green Fodder yield (t/ha)
1	FB-3-15	116.67
2	FB-1-15	110.67
3	SB-3-15	105.56
4	AGAITI	105.33
5	SB-1-15	102.44
6	ANMOL	96.22
7	SB-2-15	93.33
LSD 0.05		7.4216

55 TITLE **NATIONAL UNIFORM GREEN FODDER YIELD TRIAL OF BERSEEM**

OBJECTIVE **To test elite varieties of berseem developed by breeders of the country under cooperating units of coordinated programme on fodder Islamabad.**

RESEARCH WORKERS **Dr. QamarShakil, Ahmed Hassan Khan and SulemanRaza**

DURATION **2018-19**

LOCATION **Fodder Research Sub-Station, AARI, Faisalabad.**

TREATMENTS/ METHODOLOGY **The seed along with sowing plan will be provided by the NARC, Islamabad. The following promising advance lines will be added.**

- **Sandal Berseem 02**
- **Samarqand Berseem**

PREVIOUS YEAR'S RESULTS

Sr. No.	Lines / varieties	Green Fodder yield (t/ha) 3cuts
1	BS17020	73.33
2	BS17039	68.22
3	BS17050	67.56
4	BS17001	64.44
5	BS17009	62.89
6	BS17041	62.22
7	BS17011	61.56
LSD 0.05		9.3

ALFALFA

56 TITLE — **CHARECTERIZATION AND MAINTENANCE OF ALFALFA GERMPLASM**

OBJECTIVE — **To maintain alfalfa germplasm and record data on various morpho-physiological traits.**

RESEARCH WORKERS — **Dr.QamarShakil, Ahmed Hassan Khan and SulemanRaza**

DURATION — **2018-19 (Continue Nature)**

LOCATION — **Fodder Research Sub-Station, AARI, Faisalabad.**

TREATMENTS/ METHODOLOGY

No. of entries = 50
No. of rows/entry = 1
R x R distance = 60cm
Row length = 15 feet each
Planting Time = October
Design = Augmented

PREVIOUSYEAR'S RESULTS — **The cluster analysis grouped the studied 144 accessions in 5 clusters. The 4th cluster was earmarked in all the traits.**

Variable	Cluster 1	Cluster 2	Cluster 3	Cluster 4	Cluster 5	Mean
Nodes/Tiller	8.25	8.81	9.11	9.67	8.34	8.66
Plant height (cm)	47.58	47.56	52.61	57.00	44.14	47.40
Leaves/tiller	24.61	26.20	27.24	28.65	24.99	25.85
Leaf width (cm)	1.49	1.53	1.55	1.58	1.46	1.5
Leaf length (cm)	2.86	2.91	2.93	2.99	2.92	2.92
Leaf area (cm^2)	3.21	3.39	3.43	3.56	3.22	3.32
GFY (g)	1068.33	789.24	1400.37	1845.76	479.69	832.02

57 TITLE **ZONAL GREEN FODDER YIELD TRIAL ON ALFALFA**

OBJECTIVE **To evaluate green fodder yield potential of advance lines against the commercial varieties under different agro climatic conditions in central Punjab.**

RESEARCH Workers **Dr. QamarShakil, Ahmed Hassan Khan and SulemanRaza**

DURATION **2018-19**

LOCATION **Fodder Research Sub-Station, AARI, Faisalabad**

TREATMENTS/ METHODOLOGY **The packed seed along with sowing plan will be provided by the Director, Fodder Research Institute Sargodha. The advance line 'Faisalabad Lucerne' will be added in the trial.**

PREVIOUSYEAR'S RESULTS

Sr. No.	Lines / varieties	Green Fodder yield (t/ha) 6 cuts
1	GR-745	87.41
2	HUNTER RIVER	83.70
3	NO-1103	81.85
4	GR-722	80.00
5	SGD- LUCERNE	68.89
6	C-312	58.89
LSD 0.05		4.864

58 TITLE **NATIONAL GREEN FODDER YIELD TRIAL ON ALFALFA**

OBJECTIVE **To test elite lines of lucerne developed by breeders of the country under cooperating units of coordinated programme on fodder, Islamabad.**

RESEARCH WORKERS **Dr. QamarShakil, Ahmed Hassan Khan and SulemanRaza**

DURATION **2018-19**

LOCATION **Fodder Research Sub-Station, AARI, Faisalabad**

TREATMENTS/ METHODOLOGY **The seed along with sowing plan and methodology will be received from NARC, Islamabad.**

PREVIOUS YEAR'S RESULTS

S.No	Line /Verity	FRSS F/Abad (6 cut)	NARC, I/Abad. (3 cut)	ARS B/Pur (3 cut)	FRI Sgd (3 cut)	Average (t/ha)
1	GR-722	88.00	41.34	49.33	46.93	56.40
2	Lucerne Max.	87.11	33.44	51.56	51.87	55.99
3	Quetta Selection	77.55	39.78	51.78	52.83	55.49
4	GR-745	78.44	39.00	52.00	51.10	55.14
5	Sgd. Lucerne 2002 (Check)	76.45	40.22	45.33	48.60	52.65
LSD 5%		6.94	6.10	3.54	4.78	2.13
C.V. %		4.50	8.40	3.58	5.10	2.10

OATS (*Avena sativa*)

59 TITLE — **COLLECTION AND MAINTENANCE OF OATS GERMPLASM**

OBJECTIVE — **To select the exotic as well as local lines for direct introduction in order to get disease free, more leafy, stay green with maximum fodder yield potential.**

RESEARCH WORKERS — **Dr. QamarShakil, Ahmed Hassan Khan and SulemanRaza**

DURATION — **Continue Nature**

LOCATION — **Fodder Research Sub-Station, AARI, Faisalabad.**

TREATMENTS/ METHODOLOGY — **50 elite lines of oats will be maintained by selfing.**

No. of rows	**=**	**2**
R x R distance	**=**	**60cm**
Row length	**=**	**5m each**
Planting Time	**=**	**October**
Design	**=**	**Augmented**

PREVIOUSYEAR'S RESULTS — **Seed of the selfed plants were stored in paper bags for the next year study.**

60 TITLE **PRELIMINARY GREEN FODDER YIELD TRIAL OF OATS**

OBJECTIVE **To evaluate the green fodder yield performance of newly selected lines/varieties of oats on the basis of their desirable traits.**

RESEARCH WORKERS **Dr.Qamar Shakil, Ahmed Hassan Khan and Suleman Raza**

DURATION **2018-19**

LOCATION **Fodder Research Sub-Station, AARI, Faisalabad.**

TREATMENTS/ METHODOLOGY **The packed seed along with sowing plan will be provided by the Director, Fodder Research Institute Sargodha. The following promising lines of oats will be added:**

- **FO-01-18**
- **FO-02-18**

PREVIOUS YEAR'S RESULTS

Sr. No.	Coded varieties	Green fodder yield (t/ha)
1.	FSD-02-2015	51.62
2.	F-443	51.62
3.	SGD-2011	50.93
4.	NO.668	50.93
5.	NO.689	50.93
6.	NO.85-125	49.07
7.	F-440	48.61
8.	F-446	48.38
9.	FRI-301	48.38
10.	FRI-152	47.92
11.	FRI-153	47.45
12.	FRI-6000/15	46.06
13.	FRI-034	46.06
14.	SGD-2000	43.98
LSD 0.05		7.4697

61 TITLE **ADVANCED GREEN FODDER YIELD TRIAL OF OATS.**

OBJECTIVE **To evaluate green fodder yield performance of newly selected lines/varieties of oats on the basis of their desirable traits.**

RESEARCH WORKERS **Dr. QamarShakil, Ahmed Hassan Khan and SulemanRaza**

DURATION **2018-19**

LOCATION **Fodder Research Sub-Station, AARI, Faisalabad.**

TREATMENTS/ METHODOLOGY **The packed seed along with sowing plan will be provided by the Director, Fodder Research Institute Sargodha. The following promising lines of oats will be added:**

F-401
F-403
F-406

PREVIOUS YEAR'S RESULTS

Sr . No.	Lines / Varieties	Green fodder yield (t/ha.)
1.	NO-632	48.38
2.	SGD-04	46.99
3.	NO-75524	46.99
4.	FBO-01-2016	46.76
5.	S-2000	46.76
6.	FBO-02-2016	46.06
7.	SGD-46	45.83
8.	Sgd-2011	45.37
9.	FSD-02-2013	44.68
10.	No.667	43.52
11.	ERK	43.52
12.	FSD-01-2013	42.82
LSD 0.05		4.5637

62 TITLE **ADAPTABILITY GREEN FODDER YIELD TRIAL OF OATS**

OBJECTIVE **To evaluate the promising/Candidates lines of oats for their green fodder yield in different agro-ecological zones of the provinces.**

RESEARCH WORKERS **Dr. QamarShakil, Ahmed Hassan and SulemanRaza**

DURATION **2018-19**

LOCATION **Fodder Research Sub-Station, AARI, Faisalabad.**

TREATMENTS/ METHODOLOGY **The packed seed along with sowing plan will be provided by the Director, Fodder Research Institute Sargodha. The oats line 'F-415' will be added by this section.**

PREVIOUSYEAR' RESULTS

Sr. No.	Lines/ Varieties	Green fodder yield (t/ha.)
1.	F-415	57.72
2.	NO.75525	56.48
3.	FRI-03	56.17
4.	FRI-01	56.17
5.	S-2000	55.86
6.	SGD-2011	54.94
7.	CK-1	54.94
8.	FSD-2013	53.70
9.	SGD-1	52.78
10.	DOMOUNT	51.23
11.	FRI-02	50.31
12.	F-4381	50.00
LSD 0.05		4.993

63 TITLE **NATIONAL UNIFORM GREEN FODDER YIELD TRIAL OF OATS**

OBJECTIVE **To test the elite lines of oats developed by the breeders of the country.**

RESEARCH WORKERS **Dr. QamarShakil , Ahmed Hassan Khan and SulemanRaza**

DURATION **2018-19**

LOCATION **Fodder Research Sub-Station, AARI, Faisalabad.**

TREATMENTS/ METHODOLOGY

The packed seed along with sowing plan will be provided by the Coordinator NARC, Islamabad. Oats lines F-408, F-411 and F-417 will be added by this section.

PREVIOUSYEAR'S RESULTS

Sr#	Coded Varieties	Green fodder yield (t/h.)
1.	OT17088	66.36
2.	OT 17079	63.89
3.	OT17020	62.96
4.	OT17074	62.65
5.	OT17029	62.04
6.	OT17009	58.95
7.	OT17015	57.72
8.	OT17085	57.72
9.	OT17067	56.17
10.	OT17081	54.32
11.	OT17030	53.70
12.	OT17090	50.93
LSD 0.05		6.8546

AGRONOMY (FORAGE PRODUCTION), AARI, FAISALABAD

64. TITLE **EFFECT OF SOWING TIME OF DIFFERENT VARIETIES/ LINES OF BERSEEM FOR MAXIMUM GREEN FODDER YIELD**

OBJECTIVE **To determine the best planting /sowing date for maximum green fodder yield potential of different Berseem varieties/lines in Faisalabad.**

RESEARCH WORKERS **Arbab Jahangeer , Muhammad Arshad & Sohail Rashid.**

DURATION **2018-2020.**

LOCATION **Agronomy (Forage Production) Section AARI, Faisalabad.**

TREATMENTS

A) Varieties (Main Plots)

i) Line-1(SB- 3-14)

ii) Line-2 (SB- 2-15)

B) Sowing Dates (Sub plots)

i) 10th October

ii) 20th October

iii) 30th October

iv) 10th November

METHODOLOGY

Layout = Split Plot Design

Replications =3

Plot size = 3m×6m

Sowing method = Broad cast in standing water.

Seed Rate = 20 kg ha $^{-1}$

Fertilizer = 30-60 NP kg /ha^{-1}

OBSERVATIONS

1. Plant Height, 2. No. of Leaves/ Tiller
3. No. of Tillers m^{-2}, 4. Green Fodder Yield
5. Dry Matter % 6. Crude Protein % age.

PREVIOUS YEAR'S RESULTS **New experiment.**

65.	**TITLE**	**MILK YIELD RESPONSE TO DIFFERENT BERSEEM VARIETIES/LINES**
	OBJECTIVE	**To determine the response of different berseem lines/ varieties on milk yield and composition.**
	RESEARCH WORKERS	**Dr. Abdul Majid and Sohail Rashid.**
	DURATION	**2018-2020.**
	LOCATION	**Dairy Section at Agronomy (Forage Production), AARI, Faisalabad.**
	TREATMENTS	**T_1= Anmol Berseem** **T_2= Line-1(SB- 3-14)** **T_3= Line-2S (SB- 2-15)**
	METHODOLOGY	**12 buffaloes will be selected from dairy herd and fed green fodder of berseem @ 80 Kg/animal/day as per treatment in 3 replications in RCBD for 2 week. The following data will be recorded and analyzed statistically.** **1. Daily milk yield.** **2. Milk composition.**
	PREVIOUS YEAR'S RESULTS	**New experiment**
66.	**TITLE**	**COMPARATIVE STUDY ON FORAGE YIELD OF DIFFERENT OATS ELITE LINES UNDER AGRO-ECOLOGICAL CONDITIONS OF FAISALABAD**
	OBJECTIVE:	**To determine maximum green fodder yield of elite Oats lines under Faisalabad agro-ecological conditions.**
	RESEARCH WORKERS	**Muhammad Arshad, Arbab Jahangeer and Sohail Rashid.**
	DURATION	**2017-2019.**
	LOCATION	**Agronomy (Forage Production) Section AARI, Faisalabad.**
	TREATMENTS	**T_1= FRI-3664/15** **T_2= FRI-3007** **T_3= FRI-034** **T_4= Line No -75525** **T_5= Line No-707** **T_6= Horcon** **T_7= Line No 75527** **T_8= Check (Sargodha oat 2011).**

METHODOLOGY **Layout= RCBD**
Replications=3
Plot size= 3m x6m
Sowing method= Broadcast
Seed Rate = 80 kg ha $^{-1}$

OBSERVATIONS **1.Number of Plants m^{-2}, 2. Plant Height, 3.Number of Leaves per 4. Plant, Green Fodder Yield, 5.Crude Protein% age 6. Dry Matter % age.**

PREVIOUS YEAR'S RESULTS

Treatment	Green Fodder Yield (t/ha)
Line-75525	104.00 a
FRI-3664/15	88.67 b
FRI-034	85.50 bc
Sargodha Oats-2011	82.50 cd
Line-75527	82.17 cd
Horcon	80.67 cd
FRI-3007	80.17 cd
Line-707	78.00 d
LSD	6.0667

67. TITLE **MILK YIELD RESPONSE TO DIFFERENT OATS ELITE LINES**

OBJECTIVE **To determine the response of different oats lines/varieties on milk yield and composition.**

RESEARCH WORKERS **Dr. Abdul Majid, Arbab Jahangeer and Sohail Rashid.**

DURATION **2018-2020.**

LOCATION **Dairy Section at Agronomy (Forage Production) Section AARI, Faisalabad.**

TREATMENTS **T_1 = Sargodha oat 2011**
T_2 = Line No. 75525
T_3 = FRI-034
T_4 = Line No. 75527

METHODOLOGY **16 buffaloes will be selected for dairy herd and fed green fodder of 4 high yielding oats lines @ 70 Kg/animal/day as per treatment in 3 replications in RCBD for a week. The following data will be recorded and analyzed statistically.**

1) Daily milk yield
2) Milk composition

PREVIOUS YEAR'S RESULTS **New experiment**

68. TITLE **CUTTING FREQUENCIES RESPONSE ON SEED YIELD POTENTIAL OF BERSEEM**

OBJECTIVE **To determine the response of cutting frequencies on seed yield potential of Super Late Berseem.**

RESEARCH WORKERS **Muhammad Arshad, Arbab Jahangeer and Sohail Rashid.**

DURATION **2017-2019.**

LOCATION **Agronomy (Forage Production) Section AARI, Faisalabad.**

TREATMENTS

T_1= No cut
T_2= One cut
T_3= Two cuts
T_4= Three cuts
T_5= Four cuts

METHODOLOGY

Layout = RCBD
Replications =3
Plot size = 3m×6m
Sowing method = Broad cast in standing water
Sowing Date = Second to third week of October
Seed Rate = 20 kg ha $^{-1}$
Fertilizer = 30-60 NP kg /ha^{-1}
Date of first cut = 60 DAS

OBSERVATIONS

1. Green Fodder Yield t/ha, 2. Number of Plants m 2,
3. Number of Seeds /panicle 4.1000 Seed/grain Weight
5.Seed Yield t/ha^{-1} 6. Dry Matter % age
7.Protein % age

.

PREVIOUS YEAR'S RESULT

Treatment	Seed yield (t/ha)
No Cut	0.9860 a
One Cut	0.9030 b
Three Cuts	0.8610 bc
Two Cuts	0.8563 bc
Four Cuts	0.8193 c
LSD Value	0.0568

69. TITLE **COMPARISON OF THE PRODUCTIVITY OF PURE AND MIXED RABI FODDERS**

OBJECTIVE **To determine the best combination of fodders for maximum biomass.**

RESEARCH WORKERS **Arbab Jahangeer, Muhammad Arshad and Sohail Rashid**

DURATION **2018-2020**

LOCATION **Agronomy (Forage Production) Section, AARI, Faisalabad**

TREATMENTS

T_1: Berseem 100%
T_2: Berseem 75% + Sarsoon 25%
T_3: Berseem 75% + Oats 25%
T_4: Berseem 75% + Barley 25%
T_5: Berseem 75% + Haloon 25%
T_6: Berseem 75% + Rye grass 25%
T7: Berseem 50% + Rye grass 10%+Haloon 10 % + Barley10 % + Oats 10 % + Sarsoon 10 %

METHODOLOGY

Layout	**= RCBD**
Replication	**=3**
Plot size	**= 3m x6m**
Sowing method	**= Broadcast in standing water.**
Fertilizer	**= 30-60 kg NP ha^{-1}**

OBSERVATIONS **Number of Plants m^{-2}, Number of Tillers/Plant, Plant Height at Harvest, Number of Leaves per tiller and Green Fodder Yield t/ha, Dry Matter %age and Crude Protein %age.**

PREVIOUS YEAR'S RESULT **New experiment**

70. TITLE **EFFECT OF SOWING TIME OF DIFFERENT VARIETIES/LINES OF LUCERNE ON GREEN FODDER YIELD**

OBJECTIVE **To determine the best planting /sowing time for maximum green fodder yield potential of different lucerne varieties/lines in Faisalabad.**

RESEARCH WORKERS **Sohail Rashid, Muhammad Arshad and Arbab Jahangeer.**

DURATION **2018-2020.**

LOCATION **Agronomy (Forage Production) Section AARI, Faisalabad.**

TREATMENTS **Lines=2= GR 722 and GR745**

Date of sowing= 4=10 Oct. 20 Oct, 30 Oct, 10 Nov.

METHODOLOGY

Layout	**= RCBD**
Replications	**=3**
Plot size	**= 3m x6m**
Sowing method	**= Broadcast**
Seed Rate	**= 20 kg ha $^{-1}$**

OBSERVATIONS **Number of Plants m^{-2}, Plant Height,Number of Leaves per Plant, Green Fodder Yield, Dry Matter % age and Crude Protein % age.**

PREVIOUS YEAR'S RESULTS **New Experiment.**

71. 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 and, Sohail Rashid.**

DURATION **2018-2020.**

LOCATION **Agronomy (Forage Production)Section, AARI, Faisalabad.**

TREATMENTS

Ingredient	Ration-1	Ration-2	Ration-3	Ration-4
Maize	46%	UAF Wanda	Anmol Wanda	Maize 20%
Rice Polishing	20%			Wheat 20%
Sun Flower Cake	20%			Gram 20%
Molasses	10%			Soya bean 20%
Sodium Chloride	1%			Alsee 20%
Di Calcium Phosphate	2%			
Sodium bi Carbonate	1%			
Total	100%			

METHODOLOGY

Layout	**= RCBD**
Total Number of Buffaloes	**= 9**
Buffaloes on each ration	**= 3**

OBSERVATIONS **Daily milk yield and milk composition.**

PREVIOUS YEAR'S RESULTS **New Experiment.**

AGRICULTURAL RESEARCH STATION, BAHAWALPUR

LUCERNE (*Medicago sativa* L.)

72. TITLE: **NATIONAL UNIFORMFODDER YIELD TRIAL OF LUCERNE**

OBJECTIVE **To evaluate different lines/varieties of Lucerne for green fodder yield at different locations in Pakistan.**

RESEARCH WORKERS **Dr. Lal Hussain Akhtar and Rashid Minhas**

PROJECT DURATION **2018-19**

LOCATION **Agricultural Research Station, Bahawalpur**

TREATMENTS/ METHODOLOGY **Seed and methodology of the Trial will be provided by the Coordinator (Fodder), National Agricultural Research Centre, Islamabad.**
Data on fodder yield will be recorded.

PREVIOUS YEARS ESULTS

S.No	Line /Verity	FRSS F/Abad (6 cut)	NARC, I/Abad. (3 cut)	ARS B/Pur (3 cut)	FRI Sgd (3 cut)	Average (t/ha)
1	GR-722	88.00	41.34	49.33	46.93	56.40
2	Lucerne Max.	87.11	33.44	51.56	51.87	55.99
3	Quetta Selection	77.55	39.78	51.78	52.83	55.49
4	GR-745	78.44	39.00	52.00	51.10	55.14
5	Sgd. Lucerne 2002 (Check)	76.45	40.22	45.33	48.60	52.65
LSD 5%		6.94	6.10	3.54	4.78	2.13
C.V. %		4.50	8.40	3.58	5.10	2.10

73.TITLE **ADAPTABILITY TRIAL ON LUCERNE**

OBJECTIVE **To evaluate different lines/varieties of Lucerne for green fodder yield at different locations in Punjab.**

RESEARCH WORKERS **Dr. Lal Hussain Akhtar and M.Shajahan Bukhari**

PROJECT DURATION **2018-19**

LOCATION **Agricultural Research Station, Bahawalpur**

TREATMENTS/ METHODOLOGY **Seed and methodology of the trial will be provided by the Director, FRI, Sargodha.**

Data on fodder yield will be recorded.

PREVIOUS YEARS RESULTS

Green fodder yield (3-cuttings)

Varieties	Fodder Yield (t ha^{-1})
GR-722	51.1
C-312	46.9
Sgd. Lucerne 2002	48.6
GR-745	51.9
Hunter River	57.2
No. 1103	59.6

The coded data were sent to the Director, FRI, Sargodha. The decoded data is still awaited.

BERSEEM (*Trifolium elexandrinum*)

74. TITLE **ADAPTABILITY FODDER YIELD TRIAL OF BERSEEM**

OBJECTIVE **To assess green fodder yield potential of advanced lines against standard varieties under different agro climatic conditions.**

RESEARCH WORKERS **Dr. Lal Hussain Akhtar and Rahmat Ullah**

PROJECT DURATION **2018-19**

LOCATION **Agricultural Research Station, Bahawalpur**

TREATMENTS/ METHODOLOGY

Seed and methodology of the trial will be provided by the Director, FRI, Sargodha.
Data on fodder yield will be recorded

PREVIOUS YEAR'S RESULTS

Green fodder yield (3-cuttings)

Varieties	Green Fodder Yield (t ha^{-1})
SB-3-15	76.68
SB-1-15	73.56
FB-3-15	84.23
Agaiti(check)	80.90
FB-1-15	76.01
Anmol (check)	74.23
SB-2-15	71.56

75. TITLE **PHOSPHOROUS REQUIREMENT OF BERSEEM FOR SEED PRODUCTION**

OBJECTIVE **To find out optimum dose of phosphorous for higher seed production of berseem under climatic conditions of Bahawalpur.**

RESEARCH WORKERS **Dr. Lal Hussain Akhtar and Muhammad Imran Akram**

PROJECT DURATION **2018-19**

LOCATION **Agricultural Research Station, Bahawalpur**

TREATMENTS/ METHODOLOGY

No. of Entries = 01
Variety = Berseem Agaitti
Replications = 3
Plot size = 3m x 6m
Sowing method = Broadcast
Layout = RCBD

Periodical soil analysis will be conducted before sowing and during the crop growing season (every 30 days). Data on following characters will be recorded:

1. **Plant height (cm)**
2. **CGR (g $m^{-2}day^{-1}$)**
3. **NAR (g $m^{-2}day^{-1}$)**
4. **LAI**
5. **RUE (g MJ^{-1})**
6. **No. of grains $capsule^{-1}$**
7. **1000-grain wt (g)**
8. **Root shoot ratio**
9. **Green fodder yield (t ha^{-1})**
10. **Seed yield(kg ha^{-1})**

Treatments	Phosphorus (Kg ha^{-1})	Potassium (Kg ha^{-1})
T1	0	0
T 2	20	0
T 3	40	0
T 4	60	0
T 5	0	15
T6	20	15
T7	40	15
T8	60	15
T9	0	30
T10	20	30
T11	40	30
T12	60	30
T13	0	45
T14	20	45
T15	40	45
T16	60	45

PREVIOUS YEAR' RESULTS

New Experiment

76. TITLE **EFFECT OF LAST CUTTING DATE ON SEED PRODUCTION OF BERSEEM UNDER CLIMATIC CONDITIONS OF BAHAWALPUR**

OBJECTIVE **To find out the optimum time for last cutting date to obtain higher seed production of berseem under climatic conditions of Bahawalpur.**

RESEARCH WORKERS **Dr. Lal Hussain Akhtar and Muhammad Imran Akram**

PROJECT DURATION **2018-19**

LOCATION **Agricultural Research Station, Bahawalpur**

TREATMENTS/ METHODOLOGY

No. of Entries = 01
Variety = Berseem Agaitti
Replications = 3
Plot size = 3m x 6m
Sowing method = Broadcast
Layout = RCBD

The following observations will be recorded

1. **Plant height (cm)**
2. **No. of plants m^{-2}**
3. **No. of capsules $plant^{-1}$**
4. **No. of grains $capsule^{-1}$**
5. **1000-grain wt (g)**
6. **Green fodder yield (t ha^{-1})**
7. **Seed yield (kg ha^{-1})**

Treatments	Last cut date
T1	No cutting
T2	01/02
T 3	15/02
T 4	01/03
T 5	15/03
T 6	01/04

PREVIOUS YEAR'S RESULTS **New Experiment**

OATS (*Avena sativa* L.)

77. TITLE **ADAPTABILITY GREEN FODDER YIELD TRIAL OF OATS**

OBJECTIVE **To evaluate the promising lines of oats for green fodder yield.**

RESEARCH WORKERS **Dr. Lal Hussain Akhtar and Muhammad Zubair**

PROJECT DURATION **2018-19**

LOCATION **Agricultural Research Station, Bahawalpur.**

TREATMENTS/ METHODOLOGY **Seed and methodology of the trial will be provided by the Director, FRI, Sargodha. Green fodder yield will be recorded.**

PREVIOUS YEAR'S RESULTS

Data recorded on green fodder yield of adaptation yield trial of oats are given as under:

Varieties	Green Fodder Yield (t ha^{-1})
FRI - 03	93.88
SGD-1	91.19
Sgd Oats 2011(Check)	89.70
DOMOUNT	90.88
FRI-01	86.41
S-2000 (check)	84.31
F-4381	80.72
CK-1	85.21
NO.75525	89.99
FRI-02	87.61
FSD-2013	81.92
F-415	90.39
LSD (0.05)	

The data recorded were sent to the Director, Fodder Research Institute, Sargodha.

78. TITLE **SEED PRODUCTION OF LUCERNE, BERSEEM AND OATS CROPS**

OBJECTIVE **To produce pre-basic seed of approved varieties of Lucerne, Berseem &Oats crops to meet the requirement of seed companies/growers/farmers of the southern Punjab.**

RESEARCH WORKERS **Dr. Lal Hussain Akhtar, Rashid Minhas, Muhammad Shahjahan Bukhari and Muhammad Zubair**

PROJECT DURATION **2018-19**

LOCATION **Agricultural Research Station, Bahawalpur**

TREATMENTS/ METHODOLOGY

LUCERNE
Variety =Sargodha Lucerne
Area = 6 Acres
Sowing method = Line Sowing
Row to Row distance= 60cm
BERSEEM
Variety =Berseem Agaiti
Area = 10Acres
Sowing method = Broadcast
OATS
Name of variety = SGD-Oats-2011, Sgd. Oats-2000
Area = 5Acres
Sowing method = Line Sowing
RxR = 30cm

PREVIOUS YEAR'S RESULTS

Results	Lucerne	Berseem	Oats
No. of Capsules selected for capsule to row planting	120	140	-
No. of capsule to rows selected for planting in Blocks	120	130	-
No. of Blocks selected	30	35	-
BNS Kg	50	45	-
Pre-basic (Kg)	750	1155	4000

EXPERIMENTAL SEED PRODUCTION UNIT, FAROOQABAD

79. **TITLE** **ADAPTABILITY YIELD TRIAL OF BERSEEM**

OBJECTIVE **To evaluate promising lines/varieties of berseem for green fodder yield**

RESEARCH WORKER **Nadeem Rehman**

PROJECT DURATION **2018-19**

LOCATION **Experimental Seed Production Unit (ESPU), Farooqabad**

TREATMENTS/ METHODOLOGY

Line/varieties	**As provided by the Director, FRI, Sgd.**
Design	**RCBD**
Replications	**3**
Plot size	**3m x 5m**
Sowing method	**Broadcast**

PLAN OF WORK **The lines/varieties will be sown using Randomized Complete Block Design (RCBD) with 3 replications. The crop will be raised adopting standard agronomic practices. Data on green fodder yield of each cutting will be recorded. Six cuts of the crop will be received and data will be analyzed statistically.**

PREVIOUS YEAR'S RESULTS

S. No.	Code of lines/varieties	Green Fodder Yield (t/ha)
1.	SB-3-15	117.33
2.	SB-1-15	116.00
3.	Anmol (check)	100.00
4.	Agaiti(check)	99.33
5.	FB-1-15	88.66
6.	SB-2-15	86.66
7.	FB-3-15	85.33
LSD		5.84

80.	**TITLE**	**EVALUATION OF DIFERENT BERSEEM VARITIES AVAILABLE IN LOCAL MARKET AGAINST THE APPROVED VARITIES FOR GREEN FODDER YIELD**	
	OBJECTIVE	**To evaluate green fodder yield of different local and promising verities.**	
	RESEARCH WORKER	**Nadeem Rehman**	
	PROJECT DURATION	**2018-19**	
	LOCATION	**Experimental Seed Production Unit (ESPU), Farooqabad**	
	TREATMENTS/ METHODOLOGY	**Line/varieties**	**8 (4 locally available & 4 promising verities).**
		Design	**RCBD**
		Replications	**3**
		Plot size	**3m x 5m**
		Sowing method	**Broadcast**
	PLAN OF WORK	**The varieties will be sown using Randomized Complete Block Design (RCBD) with 3 replications. The crop will be raised adopting standard agronomic practices. Data on green fodder yield of each cutting will be recorded. Six cuts of the crop will be received and data will be analyzed statistically.**	
	PREVIOUS YEAR'S RESULTS	**New experiment.**	
81.	**TITLE**	**PRE-BASIC SEED PRODUCTION OF APPROVED VATITIES OF BERSEEM/LINES**	
	OBJECTIVE	**To produce large quantity of pre-basic seed of approved varieties.**	
	RESEARCH WORKER	**Nadeem Rehman**	
	PROJECT DURATION	**2018-19 (Continuous nature)**	
	LOCATION	**Experimental Seed Production Unit (ESPU), Farooqabad**	
	TREATMENTS/ METHODOLOGY	**Line/varieties**	**4 verities.**
		Block size	**2 acres**
		Sowing method	**Broadcast**
	PLAN OF WORK	**2 acres of each variety will be sown to increase the seed. The crop will be raised adopting standard agronomic practices. The green fodder will be obtained till 31 March after that crop will be left over for seed setting.**	

PREVIOUS YEAR'S RESULTS

S.#	Variety	Seed produced	Area sown
1.	Pachaiti Berseem	639 kg	2 acre
2.	Supper late	418 kg	2 acres
3.	S.B-11	214 kg	6.5 kanals

While cleaning the seed it is noted that the line SB-11 has not produce even single kg of B grade seed.

82. TITLE **ADAPTABILITY YIELD TRIAL OF LUCERNE**

OBJECTIVE **To evaluate promising lines/varieties of Lucerne for green fodder yield**

RESEARCH WORKER **Nadeem Rehman**

PROJECT DURATION **2018-19**

LOCATION **Experimental Seed Production Unit (ESPU), Farooqabad**

TREATMENTS/ METHODOLOGY

Line/varieties	**As provided by the Director, FRI, Sgd.**
Design	**RCBD**
Replications	**3**
Plot size	**1.8 m x 5m**
Sowing method	**Broadcast**
Row spacing	**45cm**

PLAN OF WORK **The lines/varieties will be sown using Randomized Complete Block Design (RCBD) with 3 replications. The crop will be raised adopting standard agronomic practices. Data on green fodder yield of each cutting will be recorded. Six cuts of the crop will be received and data will be analyzed statistically.**

PREVIOUS YEAR'S RESULTS

Sr. No.	Lines/varieties	Green Fodder Yield (t/ha)
1.	GR-722	34.06
2.	C-312	30.73
3.	Sgd. Lucerne 2002	29.98
4.	GR-745	34.06
5.	Hunter River	32.58
6.	No. 1103	32.95
LSD		2.13

83. TITLE **PRE-BASIC SEED PRODUCTION OF LUCERNE**

OBJECTIVE **To produce large quantity of pre-basic seed of Lucerne**

RESEARCH WORKER **Nadeem Rehman**

PROJECT DURATION **2017-19**

LOCATION **Experimental Seed Production Unit (ESPU), Farooqabad.**

TREATMENTS/ METHODOLOGY

Variety	**SG-11.**
Block size	**2 acres**
Sowing method	**Line sowing**
RxR	**45 cm**

PLAN OF WORK **Two acres of Lucerne variety SG-11 will be sown to increase the seed. The crop will be raised adopting standard agronomic practices. The green fodder will be obtained till 31st March and then the crop will be left for seed setting.**

PREVIOUS YEAR'S RESULTS

S.#	Variety	Seed produced
1.	SG-11	158 kg

84. TITLE **ADAPTABILITY YIELD TRIAL OF OATS**

OBJECTIVE **To evaluate promising lines/varieties of oats for green fodder yield**

RESEARCH WORKER **Nadeem Rehman**

PROJECT DURATION **2018-19**

LOCATION **Experimental Seed Production Unit (ESPU), Farooqabad**

TREATMENTS/ METHODOLOGY

Line/varieties	**<u>As provided by the Director, FRI, Sgd.</u>**
Design	**RCBD**
Replications	**3**
Plot size	**1.8 m X 6 m**
Sowing method	**Line sowing**

PLAN OF WORK **The lines/varieties will be sown using Randomized Complete Block Design (RCBD) with 3 replications. The crop will be raised adopting standard agronomic practices. Data will be recorded and analyzed statistically.**

PREVIOUS YEAR'SRESULTS

S.No.	Code of lines/varieties	Green Fodder Yield (t/ha)
1.	FRI - 03	67.25
2.	SGD-1	65.18
3.	DOMOUNT	59.25
4.	FRI-01	63.88
5.	Sgd Oats 2011(Check)	60.18
6.	F-415	46.29
7.	NO.75525	60.18
8.	CK-1	61.11
9.	S-2000 (check)	63.88
10.	F-4381	61.29
11.	FRI-02	48.14
12.	FSD-2013	51.85
LSD		

85. TITLE **PRE-BASIC SEED PRODUCTION OF OATS**

OBJECTIVE **To produce large quantity of pre-basic seed of oats.**

RESEARCH WORKER **Nadeem Rehman**

PROJECT DURATION **2018-19 (Continuous nature)**

LOCATION **Experimental Seed Production Unit (ESPU), Farooqabad**

TREATMENTS/ METHODOLOGY

Variety	**SG-Oats 2011**
Area to be sown	**15 acres**
Sowing method	**Line sowing**
R x R	**30 cm**

PLAN OF WORK **Fifteen acres of oats variety SGD-Oats 2011 will be sown to increase the seed. The crop will be raised adopting standard agronomic practices.**

PREVIOUS YEAR'S RESULTS

S.#	Variety	Seed produced
1.	SGD-Oats 2011	9600 kg