

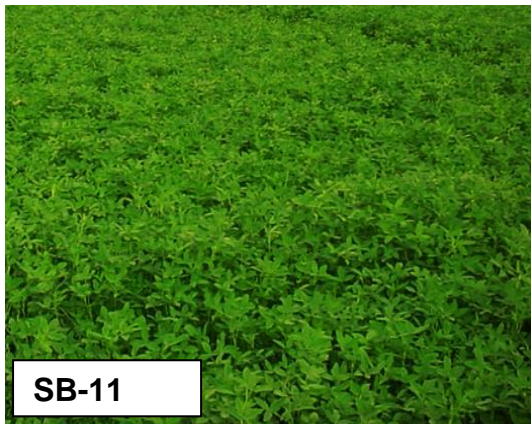


Overview

The economy of Pakistan is predominantly agriculture oriented and it contributes 19.5% of GDP. Livestock is an important sector of agriculture in Pakistan, which accounts for 11.4 % of overall GDP and 58.33% of agriculture (*Economic survey of Pakistan 2016-17*). The role of livestock in rural economy may be realized from the fact that 70% of our population living in rural areas is engaged in livestock as a primary source of food as well as income. It provides milk, meat and other by-products of animal origin for human nutrition. The population of Pakistan is expected to reach 218 million by 2020. Fodder crops have pivotal position in context of livestock development and promotion. In Punjab, fodder crops occupy 19% of total cropped area. During 2016-17, fodder crops occupied about 1.81 million hectares and produced about 39.20 million tones green fodder. In order to narrow the gap between the demand and supply, there is a dire need for development of high yielding, highly nutritive, multicut varieties / hybrids of different fodder crops, standardization of their production and protection technology along with seed production of fodder varieties / hybrids. Fodder Research Institute Sargodha has recently released one variety of Berseem (Lyallpur late) and one of Guar (BR-2017). Promising lines of oats (FRI-03), Berseem (SB-11), Lucerne (GR-745) and maize (No.1501) are at final stage of testing.

BERSEEM

(Trifolium alexandrinum)



a) Preliminary Green Fodder Yield Trial of Berseem

Preliminary green fodder yield trial consisting of 10 entries along with two checks was laid out in RCBD with three replications having plot size 3x5m. The line FB-2-17 gave significantly high green fodder yield (105.11 t/ha) followed by FB-3-17 (103.97 t/ha) as compared to check variety "Agaiti" (98.38 t/ha)

b) Advance Green Fodder Yield Trial of Berseem

Eight promising lines along with 2 checks were tested for their fodder yield at two locations. The experiment was laid out in RCBD with 3 replications having plot size 3x5m. On an average, the entries FB-2-16 and FB-1-16 produced significantly high green fodder yield 103.63 t/ha and 103.83 t/ha respectively as compared

to check variety "Agaiti Berseem" (95.9 t/ha).

c) Adaptability Green Fodder Yield Trial of Berseem

The trial was conducted at 3 different locations to evaluate 7 berseem lines along with 2 checks for green fodder yield. The trial was laid out in RCBD with 3 replications keeping plot size 3x5m. The line FB-3-15 and FB-1-15 showed best performance by producing 99.70 t/ha and 96.33 t/ha green fodder yield as compared to check variety "Agaiti Berseem" (93.32 t/ha).

OATS

(Avena sativa L.)



a) Preliminary Green Fodder Yield Trial of Oats

Fourteen entries were tested in preliminary green fodder yield trial with 2 check. The trial was laid out in RCBD with 3 replications having plot size 6x2.4m with row spacing 30cm apart. Observation pertaining to

germination %age, plant height, No. of tillers, plant / m², No. of leaves / plant and green fodder yield were recorded at 50% heading. The line FRI-301 produced maximum green fodder yield (94.3 t/ha) as compared to check varieties S-2000 (74.75 t/ha.) and Sgd-Oats-2011 (89.87t/ha)

b) Advance Green Fodder Yield Trial of Oats

In Advance green fodder yield trial 10 entries with 2 checks were tested for their green fodder yield. The trial was laid out in RCBD with 3 replications having plot size 6x2.4m with row spacing 30cm apart. The line SGD-46 produced maximum green fodder (97.98 t/ha.) as compared to check varieties Sgd-Oats-2011 (81.65 t/ha) and S-2000 (84.44 t/ha.).

c) Adaptability Green Fodder Yield Trial of Oats

Adaptability trial was conducted at 4 locations for testing of 10 entries along with 2 checks for green fodder yield. The experiment was laid out in RCBD with 3 replications having plot size 6x1.8m, with row spacing 30cm apart. The observation pertaining to germination %age, plant height, No, of tillers, No. of plants / m², No. of leaves / plant and green fodder yield were recorded at 50% heading. The line SGD-1 and FRI-03 produced high

green fodder yield 74.96 and 74.62 t/ha respectively as compared to check S-2000 (72.99 t/ha.) and Sgd-Oats-2011 (73.30 t/ha)

LUCERNE

(Medicago sativa L.)



a) Preliminary Green Fodder Yield Trial of Lucerne

11 promising lines of Lucerne were tested for their green fodder yield potential. The experiment was laid out in RCBD with 3 replications having plot size 1.8x6m. The entries GR-800, No.1103 and Viger-01 out yielded the check by producing 70.5 t/ha, 68.59 t/ha and 67 t/ha respectively green fodder yield while check variety Sgd Lucerne produced 59.75 t/ha.

b) Advance Green Fodder Yield Trial of Lucerne

Advance green fodder yield trial consisting of 6 varieties/ lines was laid out in RCBD with 3 replications having plot size of 1.8x6m. Lines Oman, CUF-

101 and I-CON-B gave higher green fodder yield of 75.00 t/ha, 72.50 t/ha and 69.75 t/ha respectively then check variety Sgd Lucerne which produce 65.25 t/ha.

c) Adaptability Green Fodder Yield Trial of Lucerne

Adaptability green fodder yield trial consisting of 6 varieties/ lines was laid out in RCBD with 3 replications having plot size of 1.8x6m. Lines No-1103, Hunter River, GR-745 and GR-722 gave higher green fodder yield of 69.6 t/ha, 67.2 t/ha, 61.9 t/ha and 61.00 t/ha respectively then check variety Sgd Lucerne which produce 56.46 t/ha.

d) Collection and Maintenance of Lucerne Germplasm

Germplasm consisting of total 74 lines of Lucerne were maintained for the characters plant height, No of leaves per plant, No of tillers per plant, stem thickness, grain & green fodder yield.

SORGHUM

(Sorghum bicolor L. Moench)



a) Collection and Maintenance of sorghum Germplasm

Germplasm consisting of total 240 lines of Sorghum, lines were maintained for the characters plant height, No of leaves per plant, No of tillers per plant, stem-thickness, leaf area, days to heading, days to maturity and TSS.

b) Preliminary Green Fodder Yield Trial of Sorghum

The trial was conducted to evaluate 14 promising lines of sorghum on basis of green fodder yield. The trial was laid out in RCBD with 4 replications having plot size 1.8x5m. The green fodder yield data were recorded at 50% heading. The results revealed that line SGD-01-17 gave significantly high green fodder yield (81.0 t/ha.) as compared to check variety SORGHUM-2011 (58.42 t/ha).

c) Advance Green Fodder Yield Trial of Sorghum

Trial comprising 09 promising lines of sorghum was conducted in RCBD with

3 replications having plot size of 1.8x5m with 30cm apart rows. Line pvk-801 out yielded by giving maximum green fodder yield (79.35 t/ha.) while check variety Sargodha-2011 produced 61.64 t/ha.

d) Adaptability Green Fodder Yield Trial of Sorghum

The experiment was conducted at 4 different locations to evaluate 8 different lines/ varieties for green fodder yield. The trial was laid out in RCBD with 3 replications having a plot size of 1.8x5m. The line N0.1572 out yielded by giving 59.80 t/ha green fodder yield while check gave 57.03 t/ha green fodder yield.

e) National Uniform Fodder Yield Trial of Sorghum

The National Uniform Green Fodder Yield trial consisting of 6 sorghum lines/ varieties was laid out in RCBD with 3 replications having plot size of 1.8x6m. Line Healthy cow F1 out yielded by giving maximum green fodder yield (40.98 t/ha.) followed by SGD-013-1 (38.34) while the check Sargodha 2011 gave 34.55 t/ha green fodder yield. The results were statistically significant.

PEARL MILLET

(Pennisetum americanum)



a) Collection and Maintenance of Germplasm of Pearl millet

Germplasm consisting of total 100 lines of pearl millet, was maintained.

b) Preliminary Green Fodder Yield Trial of Pearl millet

To test 16 varieties/ lines of pearl millet for their green fodder yield, the trial was conducted in RCBD with 3 replications having plot size of 1.8x6m with 30cm apart rows. The line tift-85d out yielded by giving 78.23 t/ha green fodder yield while check variety Sgd.Bajra.2011 produced 66.89 t/ha.

c) Advance Green Fodder Yield Trial of Pearl millet

Trial comprising 06 promising lines of pearl millet was laid out in RCBD with 3 replications to check the green fodder yield potential. The results indicated that G-white showed best performance by producing maximum

green fodder yield of 77.08 t/ha as compared to check variety Sgd. Bajra 2011 (67.82 t/ha).

d) Adaptability Green Fodder Yield Trial of Pearl millet

The experiment was conducted at 4 locations to evaluate 9 lines / varieties of pearl millet for green fodder yield. The trial was laid out in RCBD with 3 replications having plot size of 1.8x6m. On an average, composite-II out yielded by giving 92.92 t/ha green fodder yield while check variety Sgd. Bajra 2011 gave 87.99 t/ha.

MAIZE

Zea mays L.



a) Collection and Maintenance of Maize Germplasm

Maize germplasm comprising of 56 lines/varieties were maintained and characterized for plant height, stem thickness, No. of leaves per plant, leaf area and leaf color.

b) Preliminary Green Fodder Yield Trial of Maize

Preliminary trial of maize was conducted to evaluate 08 entries including one check for green fodder yield. The Trial was laid out in RCBD with three replications keeping plot size 1.8m x 5m. The line MS-01-2017 gave maximum green fodder yield (65.43 t/ha) followed by composite-16 (52.46 t/ha) as compared to check variety Sgd.2002 (40.74 t/ha).

C) Advance Green Fodder Yield Trial of Maize

The trial comprising 06 entries of maize including one check was laid out in RCBD with three replications keeping plot size of 1.8m x 5m to find out best entries for green fodder yield. Results showed that the line MS-04-2016 produced significantly high green fodder yield (56.25 t/ha) as compared to check variety Sgd.2002 (47.68 t/ha).

d) Adaptability Trial of Maize

The trial was conducted at 4 locations to evaluate 7 lines / varieties of maize for green fodder yield. The trial was laid out in RCBD with 3 replications having a plot size of 1.8x6m. On an average the line No. 1501 gave higher green fodder yield (64.21 t/ha) followed by check variety Sgd.2002 (54.01 t/ha).

f) National Uniform Fodder yield Trial of Maize

Trial was laid out to evaluate 05 different lines/ varieties for green fodder yield as purposed by NARC, Islamabad. On an average, the line NO.1501 gave high green fodder yield (38.57 t/ha) followed by MS. 2010 (36.52 t/ha).

COWPEAS

(Vigna unguiculata)



a) Evaluation of Different Varieties of Cowpea for Fodder Production

The green fodder yield trial on 10 promising lines was conducted in RCBD with 4 replications having plot size of 3x6m. The crop was harvested at 50% flowering stage for green fodder. The results revealed that line IT-84-D-709 gave the maximum green fodder yield of 48.20 t/ha followed by line No.1 (47.30 t/ha.) as compared to check variety Cowpeas-2003 (35.10 t/ha).

GUAR

(Cyamopsis tetragonoloba L.)



a) Maintenance of Germplasm

About 230 collections were maintained under close observation. A wide range of values for various characteristics was observed in all the genotypes like 50% flowering (45-70 days), 90% maturity (110-149 days), Plant Height (50-225cm), Branches/ Plant (0-17), Clusters/plant (12-41), Pods/Plant (34-440), Pods/Cluster (3-11), Pod Length (2-8cm) Grains/Pod (3-12), 1000-Grain weight (22-36 gm), Green fodder yield (12-36 tons ha⁻¹) and Grain Yield (250-2500 Kg ha⁻¹). Seed of all the lines/varieties was harvested on maturity and was preserved for further studies.

b. Preliminary Guar Yield Trial

A-I trial consisting of 12 strains including one check was sown on 26.05.2017. The experiment was laid

out according to RCBD having 3 repeats and plot size of 2.7 x 7.2 m.

The experiment was harvested during November, 2017 and yield data were recorded. The line S-6547 gave maximum grain yield (2732 kg/ha) followed by S-6543 (2463 kg/ha) as compared to check BR-2017 (2221 kg/ha). Highly significant differences were found among the mean values of the genotypes.

A-II trial consisting of 9 strains including one check was sown on 26.05.2017. The experiment was laid out according to RCBD having 3 repeats and plot size of 2.7 x 7.2 m.

The experiment was harvested during November, 2017 and yield data were recorded. The line S-6553 gave maximum grain yield (2307 kg/ha) followed by S-6552 (1962 kg/ha) as compared to check BR-90 (1738 kg/ha). Highly significant differences were found among the mean values of the genotypes.

c. Advance Guar Yield Trial

An experiment consisting of 7 strains was sown on 27.5.2017. Experiment was laid out according to RCBD having 3 replications and plot size of 2.7m x 7.2m. The strain S-

5778 produced maximum grain yield of 2580 kg/ha which higher than check BR-2017. Statistical analysis revealed highly significant differences among mean values.

d. Zonal Yield Trial of Guar

An experiment consisting of 5 strains was sown at 3 locations. Experiment was laid out according to RCBD having 4 replications and plot size of 2.7m x 7.2m. The strain S-5885 produced maximum grain yield of 1766kg/ha followed by S5823 which gave 1655 kg/ha as compared to check BR-2017 (1457 kg/ha). Statistical analysis revealed highly significant differences among mean values

d. National Uniform Yield Trial of Guar

The trial comprising of 02 strains and one check was conducted by NARC, Islamabad. The strain S-5885 out yielded all the varieties by producing yield of 1752 kg/ha on the basis of average 6 locations as compared to check variety which produced 1601 kg/ha.

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METEOROLOGICAL DATA DURING RABI SEASON

SARGODHA

Month	2017-18		Rainfall Total (mm)
	Min. Temp °C	Maxi temp. °C	
July, 17	26.31	36.68	57.92
August, 17	24.76	33.42	154.3
September, 17	24.76	33.35	28.7
October, 17	20.5	34.3	-
November, 17	12.4	23.9	2.3
December, 17	7.4	23.1	3
January, 18	8.09	24.51	-
February, 18	9.9	25.6	4.9
March, 18	16.12	30.71	-
April, 18	19.74	34.29	60.20
May, 18			
June, 18			