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Agricultural Experiment Station

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AGRICULTURAL AND MECHANICAL COLLEGE,
AUBURN, : : ALABAMA.

VARIETIES OF WHEAT AND GRASSES.

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 The Bulletins of this Station will be sent free to any citizen of the State on application to the Commissioner of Agriculture, Montgomery, Alabama, or Agricultural Experiment Station, Auburn, Alabama.

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EXPERIMENTS IN WHEAT AND GRASSES.

BY JAMES CLAYTON, ASSISTANT IN HORTICULTURE.

These experiments in varieties of wheat were begun in 1890, the results of which were published in bulletins 32 and 39, but as further investigation was necessary before definite conclusions could be drawn, the experiments were continued in 1892.

The land used had been planted in vegetables for a succession of years, had been highly fertilized and was in a good state of cultivation.

On the 16th November, 1892, the ground was broken flush, plots each 1-100 of an acre were measured, rows laid off with a scooter and a mixture of 600 lbs. cotton seed meal and acid phosphate, equal parts of each, applied at the rate of 400 lbs. of mixture per acre broad-cast, and 200 lbs. in the drill. A scooter was run in the open furrow after the fertilizers were distributed, to mix them with the soil, and wheat at the rate of $1\frac{1}{4}$ bushels per acre was planted in the drill and covered with a harrow.

The following is the analysis of the acid phosphate and cotton seed meal, as furnished by Dr. N. T. Lupton, State Chemist, Jan. 21, 1893,

ANALYSIS.

Edisto Acid Phosphate: Water Soluble 9.73, Citrate Soluble 4.83, Acid Soluble 1.41. Total 15.74. Cotton seed meal, Acid soluble 2.73, Nitrogen 6.58, Potash 1.43.

The names of the varieties sown with results, and a brief description, are given below. The Large Red and Large White Wheat were furnished by the U. S. Department of Agriculture, and were first sown on the station in 1890.

The Purple Straw was obtained in the neighborhood of Auburn, and the twelve other varieties were presented by James Carter & Co., High Holborn, London, England.

1. *Large White*, ripe June 6. Four feet high, some rust; heads from four to seven inches long—not bearded; one to two grains to the mesh; white, plump grains; yield 21 bushels per acre; quality very good.

2. *Stand up*. Ripe June 12. Three and a half feet high, rusted very badly; heads smooth two to four inches long; from none to two grains to the mesh; amber color. yield 7 3-10 bushels per acre; grains imperfect; quality very poor.

3. *Bird Proof*. Ripe June 12. $4\frac{1}{2}$ feet high; rusted badly; heads smooth, two to three inches long, one to two grains to mesh; color, white; yield 8.16 bushels per acre; grains imperfect; quality very poor.

4. *Anglo Canadian*. Ripe June 8. $4\frac{1}{2}$ feet high; some rust; heads bearded, three to six inches long; one to three grains to the mesh; color, amber; yield 29 bushels per acre; grains medium in size and perfect; quality best.

5. *Holborn's Wonder*. Ripe June 15. 3 feet high; rusted very badly; heads smooth; 3 to 4 inches long; from none to two grains to mesh; color red, grain very small and imperfect. Yield 5.33 bushels per acre; quality poor.

6. *Earliest of All*. Ripe June 6. 4 ft. high; rusted badly; heads smooth 5 to 8 inches long; one to two grains to mesh; color white; grains large, but imperfect; yield 23 bushels per acre; quality very good.

7. *Large Red*. Ripe June 6. $3\frac{1}{2}$ feet high, rusted badly, heads bearded, 3 to 6 inches long, one to two grains to mesh; color red; grains medium size and not perfect; yield 19.3 bushels per acre; quality good.

8. *Pride of the Market*. Ripe June 10. 3 feet high; Rusted very badly; heads smooth; from none to two grains to mesh; color red; grains small and imperfect; yield 7.33 bushels per acre; quality poor.

9. *Queen*. Ripe June 10. $3\frac{1}{2}$ feet high; rusted badly; heads smooth, 2 to 3 inches long; one to two grains to mesh; color white; grains small and imperfect; quality poor.

10. *Purple Straw*. An old standard. Ripe May 23. $3\frac{1}{4}$ feet high. Almost free from rust; heads smooth. $2\frac{1}{4}$

to $3\frac{1}{2}$ inches long; two to three grains to mesh; color red; grains small and plump; yield 30.5 bushels per acre; quality best.

11. *Flour Ball*. Ripe June 15. $3\frac{1}{2}$ feet high; badly affected with rust; heads two to three inches long, one to two grains to mesh; color white; grains small and imperfect; yield 7.83 bushels per acre, quality poor.

12. *Prince of Wales*. Ripe June 12; 3 feet high; rusted very badly; heads smooth, 3 to 5 inches long; from none to two grains to mesh; color red; grains very small and imperfect; yield 6.16 bushels per acre; quality very poor.

13. *Hundred Day*. Ripe June 10. 4 feet high; rusted badly. Heads smooth, 2 to 3 inches long; from none to two grains to mesh; color white; grains small and imperfect; yield 10.66 bushels per acre, quality poor.

14. *Miller's Delight*. Ripe June 10. 4 feet high; rusted badly; heads smooth and from 2 to 3 inches long; from none to two grains to mesh; color white; grains small and imperfect; yield 11.66 bushels per acre; quality poor.

15. *White Chaff*. Ripe June 5. 4 feet high; some rust; heads beardless; 3 to 5 inches long; one to two grains to mesh; color white; grains medium size, plump; yield 30 bushels per acre; quality best.

Only six of the above fifteen varieties can be recommended to the farmers of this State for cultivation, which are given below in the order of their excellence. The other varieties are quite worthless here.

1. Purple straw.
2. White Chaff.
3. Anglo Canadian.
4. Large White.
5. Large Red.
6. Earliest of All.

SPURRY.

This plant was grown here for the first time in 1886, but as no record was kept of the results obtained, it was thought advisable to try it again this year. It is a new plant in

Alabama, and not generally known in the United States, but in some parts of Europe it is highly esteemed as a forage plant for hay and pasturage, and for renovating the soil. It is a vine like, jointed plant, branching out near the ground, and at some of the joints, and at the top; and forming from 25 to 250 seed vessels, according to vigor of plant, each seed vessel containing from 6 to 26 small seeds resembling those of an onion. The average growth of the plant here on our thin sandy land, is from 8 to 12 inches in height.

Further trial is necessary before positive conclusions can be drawn, but from one year's experiment the indications are that it is inferior to either Bermuda or Crab grass, for hay and pasturage, and its meager growth will keep it from competing in the South with clay peas as a renovator of poor soils.

ANALYSIS OF SPURRY, (AIR DRIED.)

Furnished by Dr. James T. Anderson in charge of Chemical Department (August 24th, 1893) of the State Agricultural and Mechanical College :

Moisture.....	11.05
Ether Extract.....	6.31
Crude Fiber.....	16.58
Ash.....	7.59
Crude Protein.....	10.28
N. free Extract.....	48.19
	100 00
Phosphoric Acid.....	0.90
Potash.....	1.88
Nitrogen.....	1.64

The above sample was gathered on June 28th, 1893, sixty days from time of planting.

While this plant does not ripen like wheat, the seed maturing all at the same time, yet at the time of gathering it was sufficiently matured and in a suitable condition for analysis.

The following is a list of Grasses planted on Experiment Station March 20th, 1893 :

BOTANICAL NAME.	COMMON NAME.	SEEDS FROM WHERE.
1 Cynodon Dactylon ..	Bermuda	U. S. Dept. Agr'l
2	English Rye	"
3 Lolium Italicum	Italian Rye	"
4 Poa Pratensis	Kentucky Blue Grass	"
5	Lawn Mixture	"
6 Dactylis Glomerata ..	Orchard Grass	"
7 Agrostis Vulgaris ..	Red Top	"
8 Poa Arachnifera	Texas Blue Grass	"
9 Arundo Festucoides ..	.....	Miss. Expt. Station.
10 Bromus Adoensis .....	.....	"
11 Bromus Mollis	Soft Brome	"
12 Bromus Unioloides ..	Rescue Grass	Ala. "
13 Festuca Heterophylla ..	Fescue	Miss. "
14	Festuca No. 1	Jas. B. Olcott, Manchester, Conn.
15 Festuca Sylvatica	Forest Fescue	Miss. Expt. Station.
16 Poa Compressa	Wire Grass	"
17 Poa Trivialis	Rough-Stalked Meadow	"
18 Paspalum Platycaule ..	Rough Meadow	"
19 Phalaris Coerulencens ..	Blue Canary	"
20 Desmodium Molle .....	.....	"
21 Sainfoin .....	.....	"
22 Trisetum Pubescens ..	Downy Oat Grass	"
23 Aira Flexuosa	Wood Hair Grass	"
24 Eragrostis Oxylepis ..	.....	"
25 Stipa Tenacissima	Tough Feather Grass	"
26 Halens Mollis	Creeping Soft Grass	"
27 Tetrapoyon Tetras- tachys .....	.....	"
28 Panicum Teneriffe ..	.....	"
29 Diplachne Imbricata ..	.....	"
30 Chloris Virgata .....	.....	"
31 Glyceria Fluitans	Floating Meadow Grass	"
32 Eragrostis Pilosa	Slender Meadow	"
33 Melica Altissima .....	.....	"
34 Melica Ciliata .....	.....	"
35 Calamagrostis .....	.....	"
..... Avenaria .....	.....	"
36 Elymus Canadensis ..	Wild Rye	"
37 Cynosurus Cristatus ..	Crested Dog-tail	"
38 Millium Effusum	Millet Grass	"
39 Cenchrus Montannus ..	.....	"
40 Phemea Membrenacea ..	.....	"
41 Aira Coespitosa	Tufted Hair Grass	"
42 Phalaris Paradoxo	Bristled Spiked Canary	"
43 Holcus Lanatus	Velvet Grass	"
44 Elymus Arenarius	Upright Sea Lyme Grass	"
45 Avena Sterilis .....	.....	"
46 Panicum Frumen- taceum	Panic Grass	"
47 Vicia Villosa	Vetch or Tare	"
48 Medicago Sativa	Alfalfa or Lucerne	"
49 Trifolium Hybridum ..	Alsike or Sweetish Clover	"
50 Trifolium Incarnatum ..	Crimson Clover	"
51 Lathyrus Silvestris ..	Flat Pea	"

Bromus unioloides (Rescue Grass) related to chess or cheat, seed furnished by U. S. Department of Agriculture, and planted on the Experiment Station, 1889.

This grass is said to have been named Rescue Grass by Gen. Iverson of Columbus, Ga., who first brought it to the attention of the planters in 1853. It has been extensively advertised in our State, under the name of "Arctic Grass," seeds of which were procured by the director of this station in 1891, and when compared with the Rescue Grass, were found to be one and the same. In the winter of 1889, a plot of ground was planted in Rescue Grass, which ripened in May. All the seed that could be saved were gathered by hand, although many were shattered-out and thought to be lost. Immediately after harvesting the seed the plot of ground was sown in peas and the same plowed under, and in September following a perfect stand of grass came up.

From the time of the first planting of the seed until now, a perfect stand appears annually in September, which is secured by sowing the ground in peas, and thereby turning under the seeds that fall, as was done in the first instance.

While it has been used only as a soiling crop, yielding two good cuttings in late winter and early Spring, it is also said to be fine for grazing.

Poa arachni (Texas Blue Grass) can be grown from sets or seeds. A plot of land was planted on this station in February, 1889 with sets, 18 by 18 inches apart, requiring careful cultivation the first year. A perfect sod was secured in about two years. It is now growing vigorously and is a valuable winter grass, the greatest objection to it being the amount of cultivation required before the sod is obtained.

Festuca No. 1. Mr. James B. Olcott of New Manchester, Conn., presented this station with some sod of the above named grass in 1890. It is a beautiful and attractive winter grass for yards and lawns, but sun-scalds and dies-out badly during the summer months on our sandy soils.

Some of the grasses mentioned in the foregoing list are promising, viz : *Chloris virgata*, *Panicum teneriffe* and *Lathyrus silvestris* and others, but further trial will be necessary before conclusions can be drawn. Our experience to date is that nothing better has been found for our soil and climate, than rye for winter and Bermuda for summer.