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Agricultural Experiment Station

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AGRICULTURAL AND MECHANICAL COLLEGE,

AUBURN.

Experiments on Foreign Seeds.

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EXPERIMENTS ON FOREIGN SEEDS.

During the season of 1894 the foreign plants described in this bulletin were tested on the grounds of the Botanical Garden, and have been found sufficiently valuable to warrant their introduction into Alabama.

There has been much published in recent years in regard to certain field crops and vegetables highly prized by the inhabitants of India, Japan, China, Egypt and the South American countries. In some of the Northern States experiments have been conducted on a somewhat elaborate scale to determine which ones of these foreign plants are best adapted to that climate and will repay cultivation. Comparatively little, however, has been done on this subject in the Southern States. This is to be regretted, since some of these plants are of great value as food for stock and man and can be successfully grown only in a southern climate. The season in the South is so mild and the cool weather is of such short duration, many of the field crops, vegetables and fruits which are so valuable abroad can be as successfully grown here as in their native countries; and we have a means here of greatly increasing the lists of our food producing plants. It is the intention of the Botanical Department to continue the experiments on these foreign plants from year to year until much that is valuable to the Alabama farmer is secured and published for his benefit.

RAGI MILLET. (*Eleusine corocana*.)

This grass was imported from the Madras Presidency, India, and a small area was planted in 1894. The growth was quite rapid and luxuriant; and within a few weeks after the seeds were sown the fine growth of culms and leaves were admired by every passer-by. The stalks reached a height of three or four feet and then threw up thick flower heads, and soon began ripening their seeds; other flower

stalks came forth in succession until three crops of seeds were gathered. During the first two periods in which the seeds were being matured, the stems and leaves remained green and succulent and in excellent condition for green feeding. The grass matures remarkably well for hay and supplies a great abundance of forage. It will stand several mowings before the time of blooming and will, no doubt, make excellent pasturage for cows and other stock.

The following is a chemical analysis of this grass, made under the direction of Professor B. B. Ross, in charge of the Chemical Department :

Water.....	16.09
Ash	6.02
Ether extract.....	3.00
Crude fiber.....	20.65
Crude protein	2.40
Nitrogen free extract.....	51.84

KODO MILLET. (*Paspalum scrobiculatum*.)

This plant was imported at the same time and from the same country as the last. It also yielded good results and produced foliage almost as tall and luxuriant as was secured from the Ragi. Its valuable properties are unmistakable, and I recommend it to the farmers of Alabama for a good hay producing plant. The growth was not quite as rapid as the last, but it is vigorous and makes ample foliage before the season closes.

The following analysis was made by the Chemical Department :

Water.....	14.75
Ash	3.95
Ether extract.....	2.10
Crude fiber.....	30.57
Crude protein	1.92
Nitrogen free extract.....	46.71

NEW JAPANESE BUCKWHEAT.

The grains of this buckwheat are nearly twice the size of those produced by the ordinary American varieties. The yield is very large—one quart produced two bushels of seeds on the poor sandy soils of Auburn. The plant throws out numerous branches on all of which flowers are developed, and the stem is stout and tall. Planted early in the season the crop will mature rapidly, and may be harvested in time to permit the use of the land in the same season for another crop of a different nature. The flour from the kernels is fine flavored and is equal in all respects to that obtained from the best grades of American buckwheats.

Buckwheats are not often seen as far South as Alabama, and I have many times thought experiments should be made to determine whether the crop could be profitably cultivated in the lower belt of the Southern States. The results of the past season's trials are so remarkable and satisfactory it is deemed best to call attention to them and advise the farmers of the State to add this grain to the important crops of Alabama.

FLAT-PEA, (*Lathyrus Sylvestris*.)

This plant may be truly termed a sub-soiler. The tap roots penetrate deep into the soil, and the droughts, unless very long continued, fail to produce any material effect on the plants. This pea is a perennial, and, on ordinary land will grow to a height of eight to ten inches the first year. Light frosts do not kill the tops and the roots remain alive in the soil throughout the winter months ready to throw forth a strong, vigorous growth in early spring, thus yielding a valuable forage and good grazing for cattle. Cows and horses greatly relish the cropping at any time but especially so before the other plants have put forth their foliage. Grown from the seed it requires some care to secure a stand, but after it takes good hold of the soil the growth becomes vigorous and rank. Experiments conducted on the Botanical grounds of the College indicate that the flat-pea is a

good soil renovater and is fully equal to the field pea in this respect. Its slow growth at first, however, is rather discouraging, and great care is required to prevent weeds from choking the young plants, but proper attention the first year will enable the roots to take good hold of the soil and thereafter it will far more than repay the farmer for all his painstaking. An excellent way to grow this plant is to sow the seeds in a small bed in the garden, properly enriched with phosphate fertilizer and calcareous matter, and then transplant to the field in the same manner adopted for growing potato slips. As soon as the weather becomes mild in early spring the seeds may be sown.

SUGAR BEETS.

During the season of 1894 some experiments were made on sugar beets to determine if the climate of Alabama would permit the development of sugar in sufficient quantities to warrant the culture of this plant in the State for the manufacture of sugar.

Three varieties of seeds were planted viz: Wohawk, Wanzleben and Vilmorin's Improved. The experiments, however, were greatly damaged by the attacks of Nematodes causing a rapid decay early in the season. The results secured before this decay was too far advanced are of such encouraging nature as to warrant the repeating of experiments another year under more favorable circumstances. The chemical analyses made under the direction of Prof. Ross give the following results:

Wohawk.....	8.5	per cent.	of sugar.
Wanzleben.....	11.4	" "	" "
Vilmorin's Improved.....	10.4	" "	" "

These results are much more encouraging than we would be led to hope for judging from the reports sent out from the Chemical Bureau of the United States Department of Agriculture in which it is stated that beets will not mature the standard per cent. of sugar when grown as far south as

Alabama and Georgia. Now when it is well known that beets producing 12 per cent. of sugar can be worked with profit the above results are at least encouraging in view of the extremely unfavorable conditions under which the plants were raised at Auburn.

BENGAL GRAM OR CHICK-PEA. (*Cicer Arietinum.*)

The name arietinum is given to this plant because of a fanciful resemblance of its seed to a ram's head. In India and Egypt the peas are parched and sold in the markets to the natives for the best food to carry on long journeys. An excellent use in this country for the seeds would be for stock food, although not quite so valuable as the ordinary cow-peas. It will also serve as good food for fowls.

GREEN GRAM OR SMALL FRUITED KIDNEY BEAN. (*Phaseolus Mungo.*)

The peas are deep green in color, quite small and are delicate in flavor. The plants come to maturity very early before the ordinary green peas of our gardens are ready to gather.

SESAME, GINGELLY, TIL SEED OR OILY-GRAIN. (*Sesamum orientale.*)

The seeds of this plant are used by the natives in India and Africa for expressing an oil not unlike or inferior to the oil of almonds. An attempt has also been made to manufacture salad oil ("olive") from the seeds but without much success. The Jews of Jamaica also use the seeds for making a cake much relished by them. The chief value of the plant, however, is in the oil extracted which has fine keeping qualities. Two varieties were grown in the Botanical Gardens at Auburn the past season, viz: White and Yellow Sesame.

SOJA OR SOYA OR SOY BEAN. (*Glycine hispida*.)

"The soja bean is much cultivated in tropical Asia on account of the seed, which are used for preparing a well known brown and slightly salt sauce called "Soy," and is used both in Asia and Europe for flavoring certain dishes, especially beef, and supposed to favor digestion. Of late it has been cultivated as an oil plant. It is an erect hairy herb with trifoliate leaves and axillary racemose flowers. The pod contains from two to five compressed seeds. The Japanese call this plant "Sooja," and the seed-like kidney beans in form though smaller are called "Miso." The manner of making the sauce called Sooja or Soy is said to be by boiling the beans with an equal quantity of barley or wheat, and leaving the mixture for three months to ferment, after which salt and water are added and the liquid strained. This sauce is used in many of the dishes and the beans are also used in soups."—(The Treasury of Botany.)

This plant is valuable for man and stock and the results of the experiments conducted at Auburn show that it can be easily grown in Alabama. The forage cured from it is excellent, and stock eat it with relish. Two varieties of the seeds have been tested and both have yielded favorable results.

The soja bean is not a new plant in the United States since it has been grown with marked success in some of the Middle and Western states for several years; it is however new to the South.

The Experiment Station has a small quantity of the following seeds of the plants mentioned in this bulletin for distribution among the farmers of Alabama. Efforts will be made to give the seeds as wide a distribution as possible:

Ragi millet. (*Eleusine corocano*.)

Kodo millet. (*Paspalum scrobiculatum*.)

New Japanese buckwheat.

Soja bean. (*Glycine hispida*.)

P. H. MELL,¹ Botanist.