

## Soybeans

**T**HE soybean is one of the most important forage crops grown in Alabama. Soybeans are valuable for hay, grazing, and soil improvement. It is the purpose of this leaflet to give some practical suggestions regarding varieties, uses, production, and harvesting of soybeans.

### VARIETIES

Yields of hay and seed obtained in variety tests in different sections of the State are given in Table 1.

**For Hay.**—Based on the results reported in Table 1, the following varieties are recommended for hay: Ootootan, Laredo, Mathews, and Easy Cook. Plants of these varieties have fine stems and make hay of excellent quality. Ootootan made one of the largest average yields of hay of all of the varieties tested. This is one of the most dependable varieties for hay production in all parts of the State, but the yield of seed was small except on Sand Mountain. The Laredo and Easy Cook have produced somewhat smaller yields of hay than has the Ootootan, but they have produced large yields of seed. On soil of better than average fertility the Easy Cook and Laredo are excellent varieties, but on poor soil the Ootootan is preferable. The Mathews has produced well in North and Central Alabama, but it has not yielded so well in South Alabama.

Other varieties such as Tokio, Tarheel Black, Biloxi, Tanloxi, Mamloxi, and Mammoth Yellow have made large yields, but they have coarse stems and produced hay of poor quality. These varieties also shatter the seed very easily and are thus difficult to harvest for seed. These varieties are inferior to the ones listed above for use in this State.

**For Human Food.**—The Easy Cook is an edible variety. The seed are light colored and may be substituted for beans or peas in the diet. This variety has been one of the leading varieties in seed production.

**For Grazing.**—Varieties of soybeans for grazing should be selected on the basis of forage rather than seed production. The value of soybeans for grazing is shown by the fact that 1 pound, dry weight, of leaves has almost as much feeding value as a pound of wheat bran. Because of the high feeding value of the leaves and stems, those varieties which produce large yields of hay are also suitable for grazing. The Ootootan is probably the

**AGRICULTURAL EXPERIMENT STATION  
OF THE  
ALABAMA POLYTECHNIC INSTITUTE  
M. J. FUNCHESS, Director  
AUBURN**

TABLE 1.—Yields of Hay and Seed and Size of Stems of Varieties of Soybeans Tested at Different Places in Alabama.

| Variety        | Three-year average yields 1933-1935 |               |                              |                |                                |                          |               |                              |                |                                | Size of stem |
|----------------|-------------------------------------|---------------|------------------------------|----------------|--------------------------------|--------------------------|---------------|------------------------------|----------------|--------------------------------|--------------|
|                | Hay (pounds per acre)               |               |                              |                |                                | Seed (bushels per acre)  |               |                              |                |                                |              |
|                | North Alabama                       |               | Middle Ala-bama <sup>2</sup> | South Ala-bama | Average all tests <sup>3</sup> | North Alabama            |               | Middle Ala-bama <sup>2</sup> | South Ala-bama | Average all tests <sup>3</sup> |              |
|                | Valley land <sup>1</sup>            | Sand Mountain |                              |                |                                | Valley land <sup>1</sup> | Sand Mountain |                              |                |                                |              |
| Tanloxi        | 4,463                               | 3,980         | 4,345                        | 4,886          | 4,404                          | 9.9                      | 19.4          | 10.3                         | 9.4            | 11.3                           | Coarse       |
| Biloxi         | 4,248                               | 3,949         | 4,076                        | 3,934          | 4,087                          | 9.5                      | 21.1          | 9.2                          | 5.3            | 10.2                           | Very coarse  |
| Otootan        | 4,245                               | 3,283         | 4,252                        | 3,263          | 3,970                          | 6.3                      | 11.8          | 6.2                          | 2.2            | 6.4                            | Fine         |
| Easy Cook      | 3,741                               | 2,879         | 4,164                        | 1,936          | 3,860                          | 12.0                     | 13.4          | 14.2                         | 8.3            | 12.6                           | Medium       |
| Tokio          | 3,814                               | 4,013         | 3,836                        | 1,990          | 3,591                          | 13.5                     | 26.4          | 15.2                         | 8.4            | 15.3                           | Very coarse  |
| Mamloxi        | 3,990                               | 3,366         | 3,287                        | 3,615          | 3,546                          | 12.4                     | 19.6          | 12.2                         | 10.2           | 13.0                           | Coarse       |
| Tarheel Black  | 3,642                               | 3,612         | 3,790                        | 2,187          | 3,493                          | 11.8                     | 23.8          | 13.7                         | 8.4            | 13.9                           | Coarse       |
| Mathews        | 3,196                               | 4,124         | 3,774                        | 2,530          | 3,481                          | 12.6                     | 24.0          | 13.7                         | 7.2            | 13.9                           | Fine         |
| Mammoth Yellow | 3,802                               | 2,981         | 3,572                        | 2,632          | 3,419                          | 11.1                     | 18.9          | 13.3                         | 8.9            | 12.8                           | Coarse       |
| Laredo         | 3,540                               | 2,813         | 3,647                        | 2,929          | 3,395                          | 13.0                     | 16.9          | 14.4                         | 9.9            | 13.7                           | Fine         |
| Chiquita       | 2,934                               | 2,967         | 3,468                        | 2,393          | 3,090                          | 9.8                      | 14.7          | 16.2                         | 8.9            | 13.1                           | Fine         |
| Dixie          | 1,795                               | 2,115         | 1,600                        | 841            | 1,621                          | 6.7                      | 11.2          | 8.2                          | 2.6            | 7.4                            | Coarse       |

<sup>1</sup>Average of tests at Alexandria and Belle Mina.<sup>2</sup>Average of tests at Auburn, Lafayette, and Prattville.<sup>3</sup>Average of tests at Crossville, Belle Mina, Alexandria, Auburn, Lafayette, Prattville, and Brewton.

best variety for grazing. The Laredo, Biloxi, Tokio, and Mammoth Yellow are also suitable for grazing.

**For Soil Improvement.**—Most of the soybeans grown for soil improvement are interplanted with corn. Ootootan, Laredo, and Biloxi are good varieties for this purpose. Ootootan and Biloxi make larger yields of material to be turned under than does the Laredo variety. Laredo usually makes larger yields of seed than either Ootootan or Biloxi.

**For Bird Feed.**—Laredo and Ootootan soybeans are well adapted for use as feed for doves and quail. Seeds of these varieties are small and remain sound in the field during the greater portion of the winter.

### CULTURE

**Land Preparation.**—Land should be broken and well pulverized for soybeans. On light sandy soils plowing is sufficient, but on heavy soils plowing and harrowing are necessary.

**Planting.**—Soybeans should be planted in rows about two and one-half feet apart so that they may be cultivated to control weeds and grass. This crop is not adapted to broadcast planting except on rich land.

**Rate and Time of Seeding.**—Soybeans which are to be cut for hay should be planted thick enough to produce fine stems. Small-seeded varieties like Ootootan and Laredo should be planted at the rate of 2 pecks per acre. Large-seeded varieties such as Biloxi and Mammoth Yellow should be seeded at the rate of 4 pecks per acre. Soybeans should be planted at about the same time as cotton. Results of time of planting experiments at Auburn show that the largest yields were obtained from plantings made in April and early May; soybeans planted after the middle of May usually made small yields.

**Inoculation.**—On most Alabama soils inoculation is not necessary. Where inoculation is needed the plants are usually yellow in color and lacking in vigor. When soybeans are planted on land which has not grown this crop before, it is a safe practice to inoculate the seed. Soybeans may be inoculated by drilling, with the seed, soil from a field which has grown one or more satisfactory crops of soybeans. If one of the various commercial cultures is used it is advisable to use inoculated soil also.

**Fertilization.**—Soybeans should be fertilized at planting with 300 to 600 pounds of basic slag or with 200 to 400 pounds of superphosphate per acre. Experimental results have shown that this crop responds well to both phosphate and lime. Basic slag contains both of these materials and has increased the yields of soybeans more than has superphosphate. The limited experimental results available indicate that there is little, if any, need for potash in soybean fertilizers on most Alabama soils.

**Cultivation.**—Soybeans should be given enough cultivation to control weeds and grass; usually two or three plowings are needed. If the crop is to be cut for hay, cultivation should be done in such a manner as to leave the land smooth.

#### HARVESTING

**For Hay.**—Soybeans should be cut for hay when the seed pods are from one third to one half filled and before the leaves begin to shed. If cut much earlier than this, the yield of hay will be reduced, and if cut much later, there will be a loss of leaves and an increase in the percentage of woody stems, resulting in a hay of poor quality. Soybean hay should be allowed to lie in the swath until wilted and should then be raked into windrows and left until it is dry enough to be stored in the barn. Where small amounts of hay are to be cured, it is sometimes stacked on racks soon after it is cut and allowed to remain until dry enough to store. If the hay is cured in the swath, a large percentage of the leaves will be lost.

**Grazing.**—Soybeans may be grazed at any stage of growth. The maximum amount of grazing will be obtained if animals are turned on when the crop is at the stage to cut for hay. In grazing experiments with hogs at the Wiregrass Substation at Headland, Otootan soybeans have furnished grazing from July 1 until peanuts were ready for grazing in September. In this test the soybeans were about knee high when grazing began.

**For Seed.**—Varieties of soybeans which shatter seed badly should be cut when the pods are turning. If they are left until the pods are brown a large percentage of the seed will shatter. After the vines are cut they should be dried in windrows or on hay racks until they are dry enough to thresh.

Soybeans may be threshed with a grain thresher if the speed of the cylinder is reduced, without reducing the speed of the fan, and if the concaves are removed to prevent splitting the seed. If no threshing machinery is available, or if only a small amount of seed is to be threshed, the seed may be beaten out with sticks. Varieties which do not shatter badly, such as Otootan, are sometimes left in the field until all of the leaves are shed and the seed is dry enough to thresh before being harvested. In Alabama a large percentage of the Otootan seed harvested is from soybeans interplanted with corn. The vines are either pulled up or cut with hoes after all leaves are shed and are beaten over the edge of a wagon bed to get out as much of the seed as possible, after which the plants are dropped on the land. This method requires no expensive machinery and leaves the vines in the field for the improvement of the soil. Threshed soybean seed should be dried thoroughly before being stored, otherwise the seed may heat and spoil.