

Bermuda Onion Culture in Missouri

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Fig. 1.—Proper planting and good care were used in producing this field of onions.

The growing of Bermuda onions in Missouri is a comparatively new industry. Although this crop has been grown on a small scale for a number of years, it is only within the last two years that it has assumed any commercial importance. For this reason very little accurate information concerning its culture in Missouri is available, and growers should be careful in regard to the acreage they undertake to plant. Onions of any type are a specialized crop and demand careful attention

and considerable labor. Growers setting Bermuda onions for the first time will do well to limit their plantings. For the average farmer, one acre should be the maximum, while five acres will be found to be considerable for the experienced grower, specializing in onions.

Like other crops the yields of Bermuda onions are affected by many factors. A grower may under average conditions expect from 75 to 250 bushels per acre. The cost of production will vary with the returns. Such items as cost of plants, fertilizers, preparation of the land and labor will make good yields and fair prices necessary, if Bermuda onion growing is to be a profitable undertaking.

As to the market outlook for the year 1926, we quote the following from "The Agricultural Situation"*. "Local reports, drifting in from time to time, indicate that Texas growers intend to plant at least the usual acreage of Bermuda onions and perhaps more than last year. The possibilities, together with the good crop in Spain and heavy imports of Spanish stock, make the spring market outlook a little precarious. Supplies of late domestic onions probably are adequate for normal requirements, and what the Bermuda crop in Texas and southern California will be depends greatly on future weather conditions."

The shape of the Bermuda onion is much flatter than any of the common onion types. The flavor is very mild, which accounts for its popularity over the common variety of onions. Another difference in the Bermuda from the common types, is that it is considered a poor keeper and cannot be held in common storage for winter use. For this reason, the crop is generally marketed soon after harvesting. The amount of labor required in growing Bermuda onions is much greater than that required for any other crop generally grown in Missouri. Furthermore the labor situation in this state is much different from that in the growing sections of Texas and California. The available labor will not only cost more, but it is often difficult to obtain help for this type of work.

SOILS AND FERTILIZERS

A very fertile sandy loam or a muck soil high in fertility seems to be the best soil for the production of onions. However, it is the opinion of a number of growers in the southern states that a heavier loam with a large amount of organic matter will produce a more uniform and better sized onion than the sandy loam soils. In any event the Bermuda onion is known to be a heavy feeder and should therefore be grown on the best land obtainable. Heavy applications of well rotted barnyard manure should be turned under during the fall preceding the crop. When manure is not available 400 to 500 pounds of such a complete fertilizer as 3-12-4

*The Agricultural Situation, Vol. III, No. 5, p. 22; Nov. 1, 1925.

or a 3-12-6 should give increased yields. The fertilizer should be applied in the row, care being taken to have it mixed with the soil, so that the young plants will not come in direct contact with the mixture. There are a number of one-row fertilizer drills on the market which will apply this fertilizer in a uniform manner.

VARIETIES

The three varieties of the Bermuda onion best known are the Crystal White Wax, the Yellow Bermuda (often called the White Bermuda), and the Red Bermuda. The Yellow Bermuda is the principal commercial crop in the southern states, and is also better adapted to Missouri conditions. The Crystal White Wax is grown to some extent commercially, but is found mostly in the small home garden. The Red Bermuda is also grown. Perhaps the Missouri crop could be divided as follows: 80 per cent Yellow Bermuda, 15 per cent Crystal White, and 5 per cent Red Bermuda.

The Missouri College of Agriculture in its field experiments at Columbia, has found the Yellow Bermuda to be better adapted to Missouri conditions than either the Crystal White Wax or the Red Bermuda. The Yellow Bermuda seems to be hardier, produces more pounds per acre of No. 1 onions, and the number of "splits" and "doubles" (See page 7 for definition of terms) were much less than in the Crystal White Wax variety. The Crystal White Wax was especially bad, having as high as 30 per cent "doubles". The Red Bermuda, although about the same as the Yellow in regard to "splits" and "doubles" is perhaps not quite as heavy a yielder and due to its color, not as much in demand by the buying public. The Yellow Bermuda will withstand much more unfavorable weather conditions than will the Crystal White Wax.

Nearly all of the commercial Bermuda onion acreage in Missouri is being grown from plants shipped in from the southern states. Texas furnishes most of these plants. The Bermuda plants are grown in the Southern States under conditions much more favorable than the hotbed method in Missouri would be. The price paid for Bermuda plants varies from \$1.50 per 100 in small quantities to 85c in larger quantities. The Crystal White Wax plants are usually quoted somewhat higher than either the Yellow or Red varieties.

SEED

Bermuda onion seed may be purchased from almost any of there-liable seed houses. The price will vary from three to four dollars per pound.

As stated above, the production of plants in Missouri is very little practiced and due to the great number of growers who are not familiar

with the management of a hotbed, the production of onion plants should be at first on a very small scale.

With average conditions, it requires approximately 80 days to produce young Bermuda onion plants about the size of a lead pencil and from 4 to 5 inches long after being trimmed. Figuring March 20 to April 1 as a possible date for setting in the field, the seed would have to be sown in the hotbed about the middle of January. The hotbed should

be prepared as for any other crop. The seed should be planted about $\frac{1}{4}$ of an inch deep, in rows from 3 to 6 inches apart, and given a thorough watering. If the seeds are healthy, they should show through the soil in from 6 to 8 days. From 2 to 2½ pounds of seed will furnish plants for an acre. An acre requires approximately 60,000 plants, depending on the spacing in the row and between rows.

PLANTS

Strong healthy plants are very essential if the crop is to be a success. The plant of best size (Fig. 2) is one about the size of a lead pencil, from 4 to 6 inches in length, and fairly straight. These plants are usually shipped in bunches (Fig. 3) of 100 plants each, and packed in paper cartons, baskets or crates, depending on the number ordered. Only healthy stock plants should be used; all weak plants should be discarded.

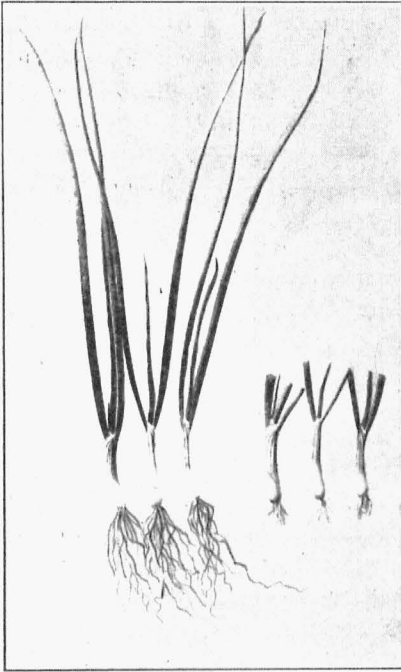


Fig. 2.—Onion plants of the proper size for planting, showing the method of pruning tops and roots.

TIME AND METHOD OF PLANTING

Weather conditions will to some extent regulate the date of planting. Onions are a cool season crop, and should be planted in the spring as soon as all danger of freezing weather is past. The Bermuda onion will withstand light freezes and frosts. For Central Missouri the plants should be set in the field about March 20 to April 1 while for Southern Missouri, it may be possible to plant from one to two weeks earlier.

The tops of the plants should be cut back about one half of their length and their fibrous roots cut back to about $\frac{1}{2}$ inch in length. When plants are purchased from plant growers the trimming of tops and roots is done at the time of bunching.

When setting in the field, plants are placed from four to six inches apart in the row, and the width of the rows will be determined by the type of cultivation to be used and the fertility of the soil. The rows may be spaced 18 inches or more apart for horse cultivation, and from 12 to 18 inches when hand cultivation is to be used.

The setting of the plants in the field is done by hand. Rows may be opened with a small one-shovel garden plow and plants set in the furrow or the plants may be set out by the use of a small pointed stick or "dibble". For commercial plantings many growers use home-made "markers" which mark out a number of rows at a time. The plants should be placed upright in the furrow and from $\frac{3}{4}$ to $1\frac{1}{2}$ inches in depth, depending on the length of the plants.

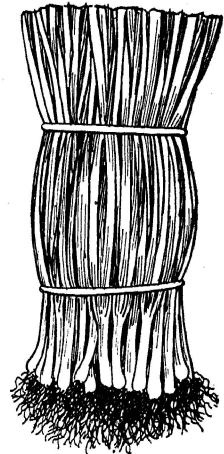


Fig. 3.—A bunch of 100 onions, showing method of tying used by commercial plant growers.

PLANTS REQUIRED PER ACRE

The number of plants required per acre for some different planting distances are as follows:

6	inches	in	the	row,	by	18	inches	between	rows—	58,080	plants
6	"	"	"	"	"	24	"	"	"	—43,560	"
6	"	"	"	"	"	30	"	"	"	—34,848	"
4	"	"	"	"	"	18	"	"	"	—87,120	"
4	"	"	"	"	"	24	"	"	"	—65,340	"
4	"	"	"	"	"	30	"	"	"	—52,272	"
4	"	"	"	"	"	36	"	"	"	—43,560	"

CULTIVATION

The Bermuda onion requires timely, thorough and frequent cultivation. Immediately after planting, the field should be gone over, so as to prevent the soil from becoming hard and packed. Frequent working of the soil will not only help in maintaining a dust mulch, but will help keep down the growth of weeds, which are capable of "taking" a crop of onions in a surprisingly short time. About the time the onion

starts forming the bulb, deep cultivation should be avoided, for at this period numerous roots are forming very near the surface of the soil. To destroy these roots would be very detrimental to the crop and would materially decrease the yield.

HARVESTING

Bermuda onions are harvested when about 60 per cent of the tops are fully ripened. Great care should be taken at all times, but especially is this true when removing the bulb from the soil, for the Bermuda onion will not withstand the rough handling that often is used harvesting the ordinary onion. After the bulbs have been removed from the soil, either by hand or by plowing out, they should be placed in windrows, each windrow consisting of the onions from 6 to 10 rows. After curing for from one to two days, depending on weather conditions, the tops and roots should be clipped. The tops are cut off about $\frac{1}{2}$ inch from the bulb and the roots should be cut as close to the bulb as possible.

GRADING AND PACKING

The trade prefers an onion from 2 to 4 inches in diameter. All sorting and grading should be done as the onions are placed in the crates. At this time all "splits", doubles", sunburned, and poorly shaped bulbs should be placed in separate containers. The type of container for Bermuda onions varies in different sections of the country. The slatted crate holding about one bushel seems to be the best container for Missouri. This type is not only easily handled and prevents bruising of the bulbs, but aids in the proper curing of the onions through its slatted construction.

Revised U. S. Grades for Bermuda Onions*

U. S. No. 1

U. S. No. 1 shall consist of Bermuda onions of one variety which are mature, well shaped, free from doubles, splits, bottle-necks, seed stems and noticeably pink onions, and from damage caused by dirt or other foreign matter, moisture, sunburn, sunscald, cuts, disease, insects or mechanical or other means. See Size Classification.

In order to allow for variations incident to proper grading and handling, not more than 10%, by weight, of any lot may be below the requirements of this grade, but not more than a total of one-fifth of this tolerance or 2% may be allowed for onions which are water-soaked or affected by decay or sunscald.

*Revised August 10, 1925.

U. S. No. 2

U. S. No. 2 shall consist of Bermuda onions of one variety which are free from bottle-necks, seed stems, and splits and from damage caused by moisture, sunscald, cuts, disease, insects or mechanical or other means. Yellow Bermuda onions may show not more than 15%, by weight of the lot noticeably pink.

In order to allow for variations incident to proper grading and handling, not more than 10%, by weight, of any lot may be below the requirements of this grade but not more than a total of one-fifth of this tolerance or 2% may be allowed for onions which are water-soaked or affected by decay or sunscald.

U. S. No. 3

U. S. No. 3 shall consist of onions which do not meet the requirements of the foregoing graders.

PINK CLASSIFICATION

Yellow Bermuda onions showing more than 15%, by weight, of the lot noticeably pink but otherwise conforming to one of the above grades shall be designated as PINK in addition to the statement of grade, as U. S. No. 1. PINK or U. S. No. 2. PINK.

SIZE CLASSIFICATION

Onions may be classified for size on the following basis but UNLESS OTHERWISE SPECIFIED SHALL MEET THE REQUIREMENTS OF MEDIUM.

Small (Boilers)	Medium	Large
1 to 2 inches	2 to 3½ inches	Over 10% above 3½ in.

In order to allow for variations in sizing, not more than 5%, by weight, may be below the minimum requirements of SMALL or MEDIUM and in addition not more than 10%, by weight, may be larger than the maximum size of the class.

DEFINITION OF TERMS

As used in these grades:

“One variety” means onions which have the same varietal characteristics which are all White or all Yellow and not a mixture.

“Mature” means having reached a stage of development at which the onions are firm, not becoming soft or spongy.

“Well shaped” means having the characteristic shape, not three, four or five-sided, thick necked or badly pinched by hard dry soil, but not necessarily of the flat Bermuda type.

“Doubles” means onions which have developed more than one distinct bulb joined only at the base.

“Splits” means onions which have developed more than one distinct bulb but covered by an outer scale.

“Bottlenecks” means onions which have thick necks usually with poorly developed bulbs.

“Seed stems” means any seedstems which are tough or woody, or which are more than 1/4 inch in diameter.

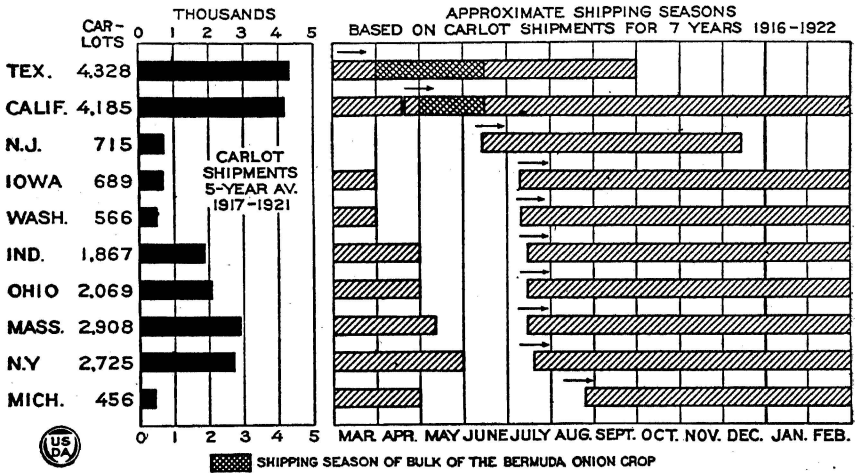


Fig. 4—“Relative importance and approximate shipping seasons (based on earliest and latest shipping dates). Onions are grown in large quantities in many states, but Texas and California together produce over one-third of all onions grown in the United States and shipped in carload quantities. Nearly all Bermuda onions are grown in the southern portions of these two States. The principal Bermuda onion movement (indicated by crosshatching) occurs during April, May, and June. As the season progresses new onions of other varieties gradually begin moving from more northern areas. Some of the late onions are placed in storage and continue to supply the market through the winter. California ships the year round.”—From United States Department of Agriculture, Department Bulletin No. 1283.

“Noticeably pink” means the pink color often found in the Yellow Bermuda onions which is so conspicuous as to be readily apparent upon casual examination of the lot.

“Free from damage” means that the onions shall not be injured to an extent readily apparent under proper methods of grading.

“Sunburn” means discoloration due to exposure to the sun where there is no injury to the tissue.

“Sunscauld” means softening of the tissue of the onion due to exposure to the sun.

“Diameter” means the greatest diameter at right angles to a straight line running from the stem to the root.