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FARMERS' BULLETIN No. 6.

TOBACCO:

INSTRUCTIONS FOR ITS CULTIVATION
AND CURING.

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FARMERS' BULLETINS.

The bulletins of this series may be obtained by applying to the Secretary of Agriculture, Washington, D. C. The following have been previously issued:

Farmers' Bulletin No. 1. The What and Why of Agricultural Experiment Stations. (A brief explanation of the object, origin, and development of the stations, their work in Europe and in the United States, and the operations of the Office of Experiment Stations of the Department of Agriculture.) Prepared by the Office of Experiment Stations; pp. 16. Issued June, 1889.

Farmers' Bulletin No. 2. The work of the Agricultural Experiment Stations. (Illustrations of station work in the following lines: Better cows for the dairy; fibrin in milk; bacteria in milk, cream, and butter; silos and silage; alfalfa; and field experiments with fertilizers.) Prepared by the Office of Experiment Stations; pp. 16. Issued June, 1889.

Farmers' Bulletin No. 3. The Culture of the Sugar Beet. (Treats of the climatic conditions, soil, fertilizers, and cultivation required by the sugar beet, cost of growing, time to harvest, and method of soiling; describes briefly the process of beet-sugar manufacture, and gives statistics of sugar production and consumption.) By H. W. Wiley, chemist of the Department of Agriculture; pp. 24. Issued March, 1891.

Farmers' Bulletin No. 4. Fungous Diseases of the Grape and their Treatment. (Describes downy mildew, powdery mildew; black rot, and anthracnose of grapes, and gives instructions for their treatment and estimated cost of remedies.) By B. T. Galloway, chief of the Division of Vegetable Pathology; pp. 12. Issued March, 1891.

Farmers' Bulletin No. 5. Treatment of Smuts of Oats and Wheat. (Describes the smuts of wheat, oats, and barley, the damage they cause, and the various methods of treatment which have been found useful for their prevention.) Prepared by the Division of Vegetable Pathology; pp. 8. Issued February, 1892.

TOBACCO: INSTRUCTIONS FOR ITS CULTIVATION AND CURING.

CULTIVATION OF THE TOBACCO PLANT.

The plant is first raised in seed beds till large enough to transplant, the same as cabbage and tomato plants. These beds should be properly located and carefully prepared.

SEED BED ON NEW LAND.

Select a sheltered spot sloping gently to the south and well exposed to the rays of the sun. Upon this plat burn brush or wood until the soil is made hot enough to kill the seeds of grass and weeds. With a hoe or spade stir the earth 2 or 3 inches deep, but do not disturb the subsoil. If, in preparing a seed bed on new land, an inch of the surface soil is removed or the subsoil is brought to the surface, plants will not grow. Rake and work the bed until the surface has been made mellow and fine; well-rotted manure spread over the surface and thoroughly raked in will promote the growth of the plants. Remove all roots and trash; run shallow trenches or hard-beaten paths at intervals of 4 or 5 feet through the bed, and dig a trench 4 or 5 inches deep on the upper side and at the ends; without this protection heavy rains will drift the seed and cover many of them too deeply.

One tablespoonful of seed will sow a bed 10 feet square, which will furnish plants enough to set an acre. Mix the seed with dry ashes and sow evenly. Brush or rake in the seed very lightly. Compact the earth by treading with the feet or by the use of a light roller, leaving the surface smooth and even. Cover with light brush thick enough to slightly shade the plants and protect them from frost or drying winds. The brush may be left upon the bed until the plants are half grown to the size for transplanting. Leaves or trash which accumulate upon the bed must be removed. Something heavier, like pine or cedar boughs or cornstalks, may be used as a covering for the bed, but these must be removed soon after the plants are up.

SEED BEDS ON OLD LAND.

The practice is to burn the surface until the soil is baked half an inch deep. This is done to effectually destroy foul seeds and because the plants grow best, as many believe, upon soil that has been thus baked.

As soon as the bed has cooled off the soil is stirred and worked to a depth of 3 inches, being reversed as little as possible. A liberal application of well-rotted manure or commercial fertilizer is made, and the bed is worked until it is put in fine condition.

If the seed is sprouted before being sown, and the beds are covered with canvas, plants large enough to transplant may be obtained in from thirty to forty days.

HOW TO SPROUT THE SEED.

Upon several layers of woolen cloth spread the seed about one-quarter of an inch thick. Cover well with woolen cloth, thoroughly soak the whole mass with warm water, and set in a warm place near the stove. Keep moist with warm water. In three or four days small white spots will indicate germination. Thoroughly mix the seed with dry ashes and sow.

HOW TO COVER WITH CANVAS.

The bed should be 5 feet 6 inches wide, with a southern exposure. Place boards 6 inches wide around the bed, and to keep these on edge fasten by driving small stakes on each side, or drive stakes and nail the boards to them. Across this frame, at intervals of 3 feet, fasten narrow strips to support the cloth. Bank up with earth. Two widths of light cotton cloth sewed together will form the cover. Upon the sides and ends of this cover sew small loops of cloth or heavy twine. Stretch the cover over the frame and fasten the loops to nails driven at proper distances in the outside of the frame. The cotton cloth used for covering the beds should be a medium between the common grade and what is known as cheese cloth. The cover should be removed a few days before the plants are set out.

HOW TO HASTEN THE GROWTH OF PLANTS.

Set up a leach of well-rotted manure. Manure from the chicken house is the best. To one part of the liquid from the leach add three parts of water and sprinkle upon the plants. Strong liquid manure will injure or kill the plants, but if used at proper strength it is the best fertilizer that can be applied.

Beginners are apt to make a mistake at the very outset in not raising plants enough.

PREPARATION OF THE SOIL FOR TRANSPLANTING.

Old land should be plowed to a depth of 8 inches early in the fall. In February apply stable manure or commercial fertilizer, or both, and plow under to a depth of 3 or 4 inches. The last of April or the first of May, or earlier, as the season permits in the Southern States, plow the land again to the same depth that it was plowed in

February, and with drag or harrow and roller pulverize it thoroughly. Sod land plowed late in the fall, or in the winter or spring, should not be replowed with the turn plow, but should be put in good condition with the double-shovel plow, cultivator, and drag.

With a marker made for the purpose, lay off the land in rows 3 feet 3 inches apart each way, and with a hoe make small hills at the intersection of the rows. Instead of hills, "lists" or ridges may be made by throwing two or four furrows together with a light-turn plough drawn by one horse. The "list" or ridge thus made should be trimmed and patted with the hoe at the proper place for hills.

In preparing land for a crop of tobacco the soil should be put in such perfect condition that no future cultivation should be required, except to kill the weeds and keep the surface mellow.

TRANSPLANTING TOBACCO.

About the 1st of May, or as soon as warm growing weather, according to climate and season, is assured, the plants should be set out. Showery or damp cloudy weather affords the best time for doing this. When the largest leaves are $2\frac{1}{2}$ inches wide the plant is large enough to set.

Saturate the plant beds by pouring water carefully upon them. This will loosen the soil so that the plants may be drawn with the least possible injury to the roots. Pull the plants carefully, one at a time, laying them straight and in a position to protect the leaves from mud and dirt. In setting out tobacco a hole is made in the hill with the fingers or a short sharpened stick. Into this opening the roots of the plant are inserted and the earth is pressed firmly about them. In transplanting tobacco it is important to obtain an even stand. When the plants grow evenly they may be cultivated easily and effectively, and they may all be topped and harvested at the same time. To obtain this even stand or growth, the soil must be put in good condition, the hills must be made of mellow earth and well firmed or patted with the hoe, the deadly cutworm must be hunted out and killed, and good plants must be set in place of those destroyed at the first opportunity.

CULTIVATION.

The best time to kill the weeds is just before they appear upon the surface. Stir the soil often and keep it loose and mellow. If the soil is heavy or has been beaten down with rain, the first cultivation should be deep. The roots of the tobacco plant grow rapidly, soon filling the earth completely between the rows. The tobacco field should, therefore, be well cultivated early in the season, and late cultivation, if necessary, should be shallow.

The hornworm generally puts in an early appearance, and it must be hunted diligently throughout the season and destroyed, or it will greatly injure or ruin the crop. The first week of its existence is occupied in

eating several small holes in the leaf near the spot where the egg was deposited by the parent moth, generally upon a lower leaf. These small holes indicate its hiding place during the first week of its life and will aid in its discovery.

PRUNING AND TOPPING.

Pruning consists in stripping off the lower leaves, leaving the stalk bare 6 or 8 inches above the surface of the hill. In topping, that is, removing the upper or flower stalk, from 8 to 12 leaves are left upon the plant, according to strength of soil, type of tobacco, etc. Good soil will mature a greater number of leaves than poor soil, and the bright varieties are topped higher than the dark or export varieties.

The leaves of the tobacco plant stand in eight perpendicular ranks. The ninth leaf stands over the first. This fact will assist the beginner in determining the number of leaves upon a plant without counting them. With practice the point at which a plant should be topped can be fixed at a glance.

Suckers should not be allowed to sap the plant. They should be broken off every week, care being taken not to injure the leaves.

CUTTING AND CURING.

About six weeks after the plant has been topped it will have fully attained its growth. The leaves will become thick and brittle, breaking easily, and they change in color from green to a pale yellowish green. These conditions indicate that the plant is ripe and ready for the harvest. With a thin butcher knife the stalk is split from the top to within a few inches of the bottom leaves; the stalk is then cut just below the lowest leaves. The plant is placed astride upon sticks, and these sticks are hung out of doors upon a scaffold, which consists of two poles standing on an incline as far apart as the sticks are long, so that the plants hanging from the sticks will not interfere; or else the plants are conveyed immediately to the curing barn.

SUN-CURED TOBACCO.

Sun-cured tobacco is hung first upon scaffolds for from five to ten days, according to the weather, and is then hung in the barn, where it is cured by air alone, no fire being used.

Properly constructed barns for curing tobacco by this process, or by what is known as the air-curing process, should be built practically air-tight, with adjustable ventilators. Rail pens or cheap and open sheds are, however, often used as a makeshift from lack of means or desire to erect better buildings.

CURING WITH OPEN FIRES.

The custom of curing tobacco with open fires is still practiced to some extent. The tobacco is placed upon scaffolds four or five days until it

is well yellowed, when it is hung in the barn and fires are kindled under it. The fires are made to burn with the least possible blaze, slowly at first, but the heat is gradually increased, and maintained continuously until the leaf, except the upper half of the stem, is entirely cured. This process is fast losing its old-time popularity, and will doubtless soon be superseded by better methods.

CURING BRIGHT TOBACCO WITH FLUES.

This is a somewhat difficult process, requiring practice to insure the best results. The curing-barn should be made nearly air-tight and provided with ample ventilation readily controlled. We give the Ragland method:

First. Yellowing process, 90 degrees, from twenty-four to thirty hours.

Second. Fixing color, 100 degrees, four hours; 100 to 110 degrees, increasing $2\frac{1}{2}$ degrees every two hours; 110 to 120 degrees, four to eight hours.

Third. Curing the leaf, 120 to 125 degrees, six to eight hours.

Fourth. Curing stalk and stem, 125 to 170 degrees, increasing 5 degrees an hour, and continue at 170 degrees until stalk and stem are thoroughly killed and dry, which usually requires from twelve to fifteen hours.

After the tobacco has been cured it must be stripped and sorted, *during damp weather*, and, if not sold loose, it must be bulked or rehung and packed. It should be handled only when in good order. The leaves are generally sorted as they are stripped from the stalk into five or six grades—three or four of leaf and two of lugs. The different grades are tied in small bands or bundles, and the crop is sold loose or placed on the sticks and hung up as soon as stripped, to be taken down and packed in spring or summer.

EFFECTS OF CLIMATE.

Success in the production of tobacco involves not only a knowledge of the best methods to be employed in its culture and curing, but also a knowledge of what types can be most successfully raised in different localities and upon different soils. And when it is known what class of tobacco may be produced in any locality, it is also necessary to know what varieties must be cultivated to produce the most perfect type of that class.

Climate determines the class of tobacco which may be produced within certain areas. Thus the fortieth parallel marks, quite abruptly, the boundary line between the cigar-leaf districts on the north and the regions which produce the manufacturing and export types south of that line.

Between the fortieth and thirty-fifth parallels of latitude lies the great tobacco belt of the United States, where tobacco has always been a

leading crop and where its cultivation is generally well understood. South of the thirty-fifth parallel, in the States of South Carolina, Georgia, Alabama, and Mississippi, tobacco has been grown to some extent, mainly for home consumption, in nearly every county since the date of the earliest settlements. Its cultivation in these States has never been followed as a regular industry. What varieties and types will succeed here best is not, therefore, definitely known. These facts can be ascertained only by careful experiment. We know, however, that for several years past South Carolina has produced an excellent type of bright tobacco, and that Florida has produced the highest grade of cigar leaf.

These facts indicate that bright tobacco may be successfully grown in the northern portions of Georgia and Alabama, and that cigar tobacco, of the Cuban type, may be profitably cultivated in the extreme southern portions of those States; while if we judge of the types of tobacco which may be raised in Mississippi from those which are produced in contiguous States, both the bright and the dark heavy varieties may be grown there, varying according to soil.