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TOBACCO.

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 The Bulletins of this Station will be sent free to any citizen of the State on application to the Agricultural Experiment Station, Auburn, Ala.

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# TOBACCO.

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## SELECTION OF SEED.

As a staple crop in the United States, good Tobacco pays well; and good seed is considered very essential as regards tobacco.

The seed affect and control the types, grades and prices generally. Soil, climate and the management of tobacco, determine the character of the product.

The variety must be adapted to the type desired to be raised, and the soil adapted to the type, or failure will certainly follow.

Bright, yellow tobacco will not succeed on dark, rich, loamy soil, nor can the rich, dark, English or Continental shipping varieties be profitably produced on poor, gray or white sandy soil.

## VARIETIES OF TOBACCO.

No certain guide can be given for the selection of varieties suited to the several types. The difference of soil and climate must be carefully considered in the selection of seed. The seed that may be suitable for some localities, may not be suitable for others, and experimenting must determine what is best for each locality. Experience in some of the large tobacco raising States, justifies a recommendation of the following varieties: For dark, heavy rich shipping, the James River White-stem, the James River Blue Pryor, and the Medley Pryor, and these are regarded as standard varieties.

For sweet fillers, the Sweet Oranoko and Flanagan.

For stemming into strips for the European market, the Hester, Tuckahoe and Big Oranoko.

For mahogany wrappers, the Flanagan, Primus and Long Leaf Gooch.

For Cutters, the Hyco, Yellow Oronoko, Granville Yellow, Yellow Pryor. For Yellow wrappers and fillers, the Sterling, Granville, White Stem, Yellow Oronoko and Yellow Pryor. White Burley, which is grown on the limestone soils of Kentucky and Ohio, is a favorite in those States, but can not be successfully raised on silicious soils, and has not been adopted in the large tobacco producing States other than these.

#### PLANT BEDS.

The first and most important object towards preparation for a crop of tobacco, is to prepare a sufficiency of good plant land, as it is impossible to make a good crop without plenty of good plants in time, when the season for planting has arrived. There are several modes for raising tobacco plants, some of which will be stated.

#### OPEN AIR BEDS.

Where wood is plentiful, the open air beds are the most desirable, as the plants will stand transplanting better, will have stronger roots and usually will grow-off better than plants raised in the hot bed. In the Gulf States, the beds can be burnt at any time from the first of December to the middle of February, and probably late as 15th of April. Select moist spots in the woods, with southern or south eastern exposure, neither too wet nor too dry, as rich naturally as can be found, and free from grass and weeds. Clean off the timber so as to have plenty of wood for burning the bed, and to let in plenty of sun. Measure off the size of the bed desired, lay down small poles parallel with each other, about two feet apart for skids to lay the wood on

so it can be moved easily. Place the wood in a pile across the bed, making the piles sufficiently large to make a strong fire, which should be allowed to remain burning from forty-five minutes to an hour, before it is moved; then with long wooden hooks, or iron hooks, fastened to a light pole, stand in front of the fire and draw the wood forward so as to burn the adjacent ground covering about four feet, and continue in this manner until all of the ground laid-off for the bed is burnt. The burning should be long enough to cook the ground half an inch deep—and be careful not to burn when the land is wet. As soon as the earth is sufficiently cool, take off the heavy coals that may be left from burning, allowing the ashes to remain, as they will aid in fertilizing the bed. Then take the farm implement known as the coulter, hitch one or two horses to it, so as to break all the roots, and plough the bed deep and close both ways, taking care not to bring the sub-soil to the surface; pick off all of the roots, and make the soil fine by repeated chopping with grub hoes and hand-rakes; then apply fine hog-pen manure, or any good manure that is certainly free from seeds, or some good fertilizer, chop it in and rake the bed over until it is smooth and level, when it will be ready to sow.

#### SOWING THE BEDS.

Mix the seed thoroughly with ashes or sand, which should first be run through a sifter, allowing a tablespoonful of seed for every hundred square yards. Sow once regularly over the bed, reserving seed enough to cross sow to insure regularity. About the time the seed begin to come up, it will be well to re-sow about one-half the quantity of seed, so as to have late plants for replanting, should such contingency exist. The seed can be gotten in by whipping over the bed with a light brush, or raking with a light rake. A small wooden roller, to be pulled by hand, is also sometimes used for this purpose.

Fine brush should be used as a covering after the bed is seeded, and this must be placed thickly over the bed to hold the moisture, and to protect the young plants, when they come up, from the frost. If the plants come up well, there will be a thousand or more for every square yard.

Dig a trench around the bed to keep off water in hard rains. Also run surface drains through the bed, with inclination sufficient for the water to flow off; these should be made with the grubbing hoe, about four inches wide and three or four inches deep.

#### CANVASS COVERING FOR PLANT BED.

As an effectual means of preventing the ravages of the flea bugs, a covering of thin cloth, cheese cloth is now much used on plant beds.

This also makes the bed warm, and acts as a cold frame, the canvass taking the place of glass, hastening the growth of the plants and protects them from freezing.

A cloth for plant beds is prepared by some of the water proofing fibre companies of New York.

#### FRAME FOR OPEN AIR BEDS.

Boards should be placed all around the bed close to prevent the small black beetle, or flea from creeping through.

The boards should be eighteen or twenty inches high on the upper side, sloping to ten, or twelve inches on the lower side.

Prepare small stakes, small round poles, from one and half, to two inches in diameter, will answer for this purpose, sawed into gradual lengths from two feet to eighteen inches long and sharpened at one end.

Drive the stakes six feet apart in rows, through the bed, for the laths, two inches wide and one inch thick to rest upon. The middle lath should be one inch thick and six inches wide. Drive strong nails all around the outside of

the boards from five to six inches from the top edge, next drive nails in the middle board, which should be placed in the middle of the bed, also nail the middle board to the stakes. Nail the laths on to the boards and where they rest on the stakes.

Make the canvass covering in two pieces, each the size of half of the bed, and sow on the outer edge, all around each cover, loops of cloth of strong domestic, say eighteen inches apart, to receive a cord, which must pass through loops all around and tie, and the cover is ready to be placed over the bed and fastened by pulling the twine or cord over the nails all around, letting the two covers meet in the middle over the six inch boards, or middle lath.

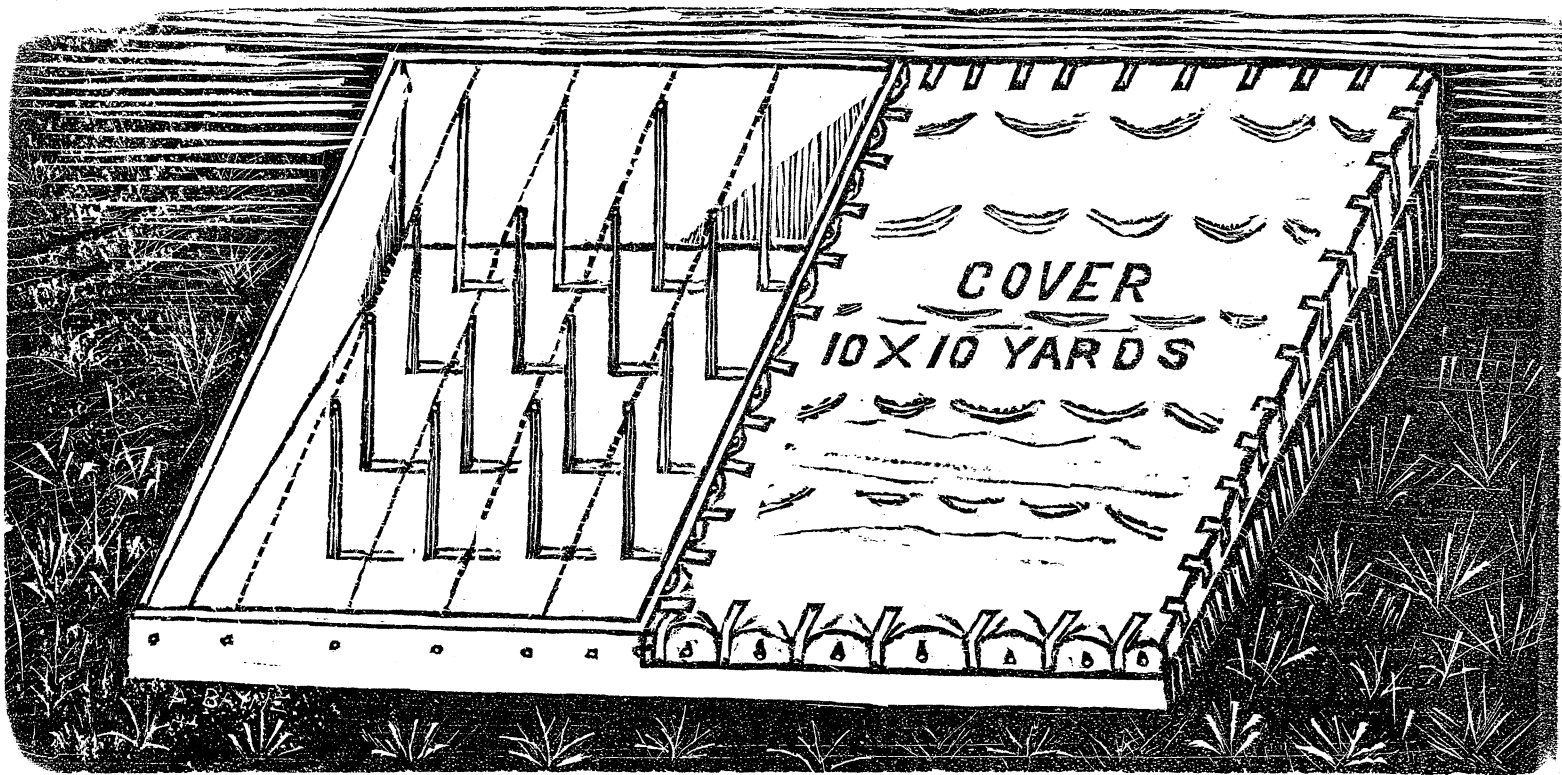
By this arrangement, the cover is made secure over the bed at the right distance above the plants; and can be readily removed from the bed, and replaced when it will be necessary to do so.

With a plant bed protected in this manner, it is probable that plant beds can be prepared in this State as late as the middle of April.

The cut on the following page represents a plant bed prepared for covering with canvass and the canvass covering for the same.

#### THE HOT BED.

Make a frame of sawed timber say, six feet by twelve, which is given as an example, and increase to any size desired, with a southern or south eastern exposure. Let the frame be eighteen inches or two feet high on the north side to about twelve or fifteen inches on the south, and place in unrotted manure that is free of all seeds, to the depth of about one foot; then cover the manure with soil (woods mould is best) five inches deep. Sow the seed on the bed at the rate of two teaspoonsful to a bed, say six by twelve feet. Cover the bed with thin muslin or cheese cloth, and tack it down.



COVER  
10 X 10 YARDS



## WHEN TO SOW TOBACCO BEDS.

In the old Tobacco raising States, there is difference of opinion on this point. Some contend that it is best to sow as soon as the bed is burnt, as it is in better condition, for receiving the seed at that time than it is likely to be afterwards; and, that the seed will remain sound in the ground and not germinate until the warm days of early Spring. If the bed is well mulched with rotten chaff or pine straw, to the depth of about half an inch, it may be safe to seed the beds at the time of burning, if burnt early.

In portions of Virginia adapted to the dark varieties of tobacco many of the best tobacco raisers contend, that from the 15th to the 20th of February is as early as the seed should be sown. In this State, as well as others, of about the same latitude, where vegetation is usually several weeks in advance of some of the tobacco raising states, it may be well to make the experiment of sowing part of the beds early, and the rest say, about the last of January or early in February, or even on until April.

## MANURING THE PLANTS.

As soon as the plants have attained the size of a silver quarter of a dollar, or in agricultural phrase, gotten "square," the brush or canvas should be taken off so as to toughen the plants, and the growth forced by frequent applications of fine stable manure, cow manure or some commercial fertilizer. This will have the effect of preventing the ravages of the pernicious insect called the fly, or flea, and insure such rapid growth of the plant, that, it will soon be out of reach of the flea. If these applications do not check the fly or flea, it is well to use insecticides and spray the plants.

Care should be taken not to apply the manure or fertilizers to the plants until all of the morning dew is off, or after rains, until the leaves are perfectly dry.

A good time to make the application is, just before a shower.

In many of the tobacco raising States, the fly will attack the young plants in swarms—principally during the cool days early in the spring, while they are quite small and tender; and if not checked in time, will destroy a plant bed in a few days.

#### TRANSPLANTING THE PLANTS.

In this State, the plants should be large enough to set-out by the first of May. Showery and cloudy weather is the best time for transplanting.

When the bed is wet or damp in the morning, draw the plants, lay them in straight rows, and protect the leaves from mud and dirt. In setting-out the plants, a sharpened stick is used for making a hole in the hill. Put in the plants and press the earth firmly about them, and this operation should be performed with care, if you want an even stand.

#### PREPARATION OF THE LAND.

The preparation of the land for setting-out the plants, depends on a variety of circumstances, whether the land is new or old, clean or covered with vegetation.

The two important essentials in preparation are to make the land rich, and to plough and harrow it until it is well pulverized. Then lay-off the rows three and a half feet wide, and drill in the rows some reliable fertilizer, using from one hundred and fifty, to three hundred pounds per acre, or more, according to the natural strength of the soil. Follow with a one horse turning plow, throwing three or four furrows on the fertilized trench, and then put up hills with the hoe about three feet apart. On light, sandy soils, the plants can be set without hilling.

More tobacco in weight, and a finer quality can be made at the distance indicated on rich land, than any other.

Increase the distance, and the tendency will be to increase the size and coarseness of the plant; vice versa,—reduce the distance to three feet or less, and the size of the tobacco will be diminished, and increased in silkiness and closeness of texture, with dimunition of the weight.

#### CULTIVATION OF THE CROP.

As this part of the operation is simple, it is unnecessary to treat it much in detail, and only a concise view of the most prominent points will be alluded to.

The first working should be commenced as soon as the plants have taken root sufficiently to bear cultivation with the hoe, which should be used to lighten the ground, and remove all grass or weeds from the plants, and give them a good chance to start off early with their growth.

It is generally unnecessary to plough the land at this working, as the earth should be loose from the recent preparation for planting. Should it prove to be hard, or baked, a condition which may exist on stiff soils, the surface should be well stirred with the hoes and ploughs, and care taken not to pull dirt from the plant.

For the first ploughing, no implement is better than the wing coulter; the next best, double shovel, with the small shovels or coulters, or a light cultivator.

The second ploughing may be done with the turning plow or cultivator.

The last ploughing is most effectually done with three furrows, with the turning plow to each row, or with the single shovel—a furrow on each side and then splitting the middle with the third and last furrow. Short single trees must be used after the plants are half grown, to prevent tearing and breaking the leaves.

The roots of the tobacco plant in rich and well prepared ground, grow rapidly, and the crop for this reason should be well cultivated early in the season; but, if cultivated late, it

is best for this to be done with hoes, so as not to disturb the roots of the plant.

#### CUT AND BORE WORMS.

In the early period of the plants growth, after transplanting, it is important to guard against the ravages of the cut and bore-worms, which feed upon the roots of the young plants about the time they are taking root, and if not destroyed, will give much trouble in getting the plants to take root and grow, and much replanting will have to be done, which, will prove the means of making the crop uneven and irregular in ripening.

#### TOPPING AND PRIMING.

On this point, there is a difference of opinion. Breaking off the small and inferior leaves, about four near the ground, is called priming or pruning, and this operation is done at the time of topping, if done at all.

All tobacco raisers resort to topping, that is, plucking out the seed or flower bud, which is done when the seed flower begins to form, and before it blossoms.

This operation should not be commenced too early, as the size of the plant will be diminished by premature topping. As a general rule, it is best that the plant be at least eighteen or twenty inches high before it is topped.

Some successful tobacco planters do not strip-off the lower leaves, called priming, believing, that they can make more tobacco in weight, and as of good quality, by simply topping to twelve or fourteen leaves, four leaves being the number usually taken off in priming, or as some call it, pruning; contending that the lower leaves serve to shade the hill and keep it moist, thereby promoting the growth of the plant, and that the taking of these lower leaves off in priming bleeds the plant and retards its growth. If this plan is followed, it is best to confine it to the silky or bright varieties of tobacco.

To obtain thick, heavy tobacco, it is best that the plant should be primed and topped.

The number of leaves left on the plant after topping, depends on many conditions, namely : the time the topping is done, early or late, the season, strength of the soil and the general appearance and vigor of the plant. On the average soils, in ordinary seasons, the first topping should be from ten to thirteen leaves for bright tobacco—for fillers, from nine to eleven, and for English and Continental shipping, from eight to nine. In this crop, quality, more than quantity, largely regulates the price that will be obtained.

#### THE HORN WORM.

About the time of topping, the tobacco plant is visited by a green worm, called the horn worm, which feeds on the tender leaves, and if not watched, and destroyed, will ruin a plant in a few days. It is well to look after the eggs of this worm, which are about the size of a pins head, and are deposited by the tobacco fly on the underside of the leaf, and when found, destroy them.

#### TOBACCO MOTH.

This is the moth that lays the egg, that hatches into the horn-worm. The moth usually makes its appearance in May. The eggs deposited by this first moth will hatch out in a few days. The worm commences to feed upon the plant as soon as it is hatched; will get its growth from twenty to thirty days and then gorges itself, and crawls and burrows in the ground, usually under the growing plant, and in a short time, not longer than twenty or thirty days, is transformed into the moth, and comes forth to lay more eggs on the plant.

This second moth will lay more eggs than the first. It has been computed that the first moth that appears, will lay about one hundred eggs, and the second moth, at least two hundred.

## REMEDY FOR THE MOTH.

Every moth should be destroyed as they appear. This can be done with a few drops of sweetened cobalt, by injecting it late in the evening into the flowers of the Jamestown weed, or honey-suckle, as they usually collect at these blossoms. Many other insecticides may be as useful for this purpose as the sweetened cobalt.

In some tobacco raising sections, the artificial flower of the Jamestown weed is used to attract the moth from the fact, that when the blossoms of the natural plant once receives the poison, it will soon decay.

## SUCKERS.

Soon after the plant is topped, it begins to put forth suckers, which, together with the worms, which will have hatched-out by this time, must be kept off, by going over the crop at least once in ten days, as negligence at this time is attended with serious injury to the crop by the growth of the suckers, and ravages of the horn-worm.

## CUTTING.

Usually in six weeks from the time the plants are topped, they will be ripe and ready for the knife. This can be determined by the condition of the plant. When it has attained its greatest perfection, the leaves will become thick and brittle, and the color changes from dark green to a pale yellowish green.

The process of cutting is simple. The cut consists, in placing the knife to be used (about the size of a butcher's) on top of the stalk in such a direction as to split the stalk about half way to the bottom, without cutting off the leaves.

The stalk is then cut off below the bottom leaf, and the plant is then set upon the ground, with the leaves resting on the ground, and the stalk turned up, so as to expose the stems of the leaves to the sun, that the plant may become wilted and limber to handle without breaking.

It is not advisable to cut early in the morning when the dew is on the plant, as it is liable to become dirty if set on the ground when wet.

As soon as the plant has become sufficiently limber to handle, without breaking, it is ready to be placed on the stick. Pine sticks riven three fourths of an inch, by one and a fourth inch, and four and a half feet long, drawn smooth are used for placing, or hanging the tobacco plants on.

If the weather is hot, the plant must be closely watched to prevent it from scalding, or sun-burning, and for this reason, under these conditions, it should be placed on the stick as soon as it can be well handled. Stick the stick obliquely into the hill under the roots of the stalk, so as to keep the plants off the ground, and place eight or ten plants on each stick.

By this method, the tobacco plants may remain sticking in the hill for a day without injury, if the weather is good and not hot enough to sun burn it on the stick, and then can be placed on plain scaffolds put up in the field, or removed to the tobacco barn as circumstances may admit. If the weather is fair and mild the day after cutting, it is best to scaffold, that the sun may commence the curing process, by yellowing the plants and reducing the sap, which will aid in the curing process, when fire is applied to the tobacco in the barn. Per contra—should the weather be rainy or windy about the time of cutting, it should be removed from the field to the barn, and hoisted up, leaving a space of eight to twelve inches between the sticks, throughout the house, according to the size of the tobacco.

#### TOBACCO BARNs.

In building the barns, it is best to build small houses, as the loss will be less, should it be burned in curing the tobacco. (On the whole it is better to have small houses.) Log barns, ranging from sixteen to twenty feet square, are

good sizes. Build the house twenty feet high in the body, and cover with shingles or boards. If the size is twenty feet, lay off for five rooms, four feet apart, and place tier poles across to form the lower tier. The first row of tier poles should be put in as soon as the house is built up, about five or six feet—this is usually called the ground or lower tier, and is not used generally for curing, but to place the sticks of tobacco on, until it is convenient to hoist it up—regulate, and place it on the tiers higher up in the house.

Next, build with logs three feet higher all around the house, and put in another course of tier poles directly over the first. Continue to build, using smaller logs, place three feet higher all around, putting in the tier poles as before stated, until five tiers are placed in the house; by this means five rooms and five tiers will be secured.

By this arrangement, the tiers are three feet apart vertically, and the body of the house as high as it is wide and deep. The roof is built to conform to the plan of the tiers below, and to have three tiers above the joist, varying in length.

A tobacco barn of this description will hold six or seven hundred sticks of tobacco, with six or eight plants on a stick.

For curing bright tobacco, it is important to have the house closely chinked and daubed throughout.

#### CURING.

This is one of the most difficult parts of the whole management of the tobacco crop, and requires intelligence and careful watching to carry it to successful completion.

There are many plans followed, as some soils are adapted to the dark tobaccos, and others to the bright, yellow tobaccos, and several modes of curing will be alluded to.

#### CURING ENGLISH SHIPPING.

For dark English shipping, the following plan is quite common and is considered a good and inexpensive one by many good tobacco planters.



When the tobacco barn has been filled with tobacco, and the wood prepared, and it is best to have a mixture of green and seasoned wood, start the fires, and commence with moderate fire, and increase gradually, and in three or four days the tobacco will be sufficiently cured as to require only occasional firing during damp days, or rainy days, or in the morning for a few hours.

When the fire is started, it should be kept up day, and night, until the process of curing is finished. Dark, heavy shipping tobacco is now much cured with flues, as with the flues you get the heat, without the smoke, and get rid of the objection raised against the smoke taste of the tobacco, and run less risk in curing than with the open fires.

#### BRIGHT, YELLOW TOBACCO.

In curing this class of tobacco, it is very important that the tobacco barn should be closely built; it should be made as near air tight as possible, and so constructed that ventilation can be easily and quickly controlled.

The curing of this kind of tobacco is done with flues built in the tobacco barn, and this is a difficult process, requiring the exercise of skill, attention and practice to insure the best results. The process is so variable, and dependent on so many conditions, that no certain plan can be followed at all times. Experience, and use of the head, will be the best way to learn this process.

The method that is followed by some of the producers of bright tobacco in Virginia and North Carolina, commonly called the Ragland Method, is as follows:

First—Yellowing process, ninety degrees, from twenty to thirty hours.

Second—Fixing color, one hundred degrees for four hours, increasing two and a half degrees every two hours, and twenty degrees from four to eight hours.

Third—Curing the leaf, from one hundred and twenty degrees to one hundred and twenty-five degrees, six to eight hours.

Fourth—Curing stalk and stem, from one hundred and twenty-five degrees, to one hundred and seventy-five degrees, increasing the heat five degrees an hour, and continue at one hundred and seventy degrees, until stalk and stem are thoroughly killed and dry, which usually requires from twelve to fifteen hours.

The above method of curing bright tobacco has recently been simplified and somewhat improved, and the method now given is followed to a considerable extent. As soon as possible after the tobacco is cut place it in the house, and after warming the barn two or three hours to a temperature of about ninety degrees, increase the heat rapidly up to one hundred and twenty-five degrees, or as high as it will bear without scalding the tobacco, letting the heat remain at one hundred and twenty-five degrees only a few minutes, and then by drawing the fires and turning the dampers, cut off the heat and let the temperature of the house descend to ninety degrees.

#### SUN-CURED TOBACCO.

If the crop is too thick and of coarse texture, and not strictly suitable for bright yellow, it will be wise to cure it sweet.

For this purpose erect scaffolds at or close by the barn and place the tobacco on it as soon as it is cut and hauled from the field. This is important from the fact that after the tobacco is cut, it should not be caught in the rain during the process of sun-curing. If rain is expected put it in the barn, letting it remain there until all danger of getting it wet is past, and then replace it on the scaffold until it is well cured by the sun, and then place it in the barn and regulate it on the tier poles. Tobacco cured by this method usually sells well if properly managed, and is highly valued by manufacturers for making a fine article of chewing tobacco.

## ORDERING.

After the tobacco is cured, it must be taken down out of the barn when the time has come to commence working on it, usually called by tobacco planters "stripping time." This work is usually done during the winter months.

The tobacco should be taken down out of the barn on the sticks, and this taking down process must be done when the leaf of the plant is sufficiently pliant so as not to break the stems of the leaf when packing, or bulking it down in the barn. And judgment must be used in taking it down, guarding against its being in too pliant a condition, or as tobacco raisers say, too high in order. If taken down in too high order, there is danger if the weather gets warm after it is bulked, of its getting sour and moulding in the bulk. This taking down, or commonly called by tobacco raisers "striking process," can be done to best advantage on warm damp days late in the fall, or after a warm rain.

## STRIPPING.

Tobacco leaves should be stripped from the stalks in pliable order, and the leaves on every plant should be carefully assorted, and the different grades tied up in separate bundles. Three grades are generally made in stripping, and occasionally as many as four grades are made. The lowest grade known as lugs, which consist of the ground leaves of the plant, after being assorted, are tied up in bundles with ten or twelve leaves to each bundle. The first and second grades, put from six to eight leaves in a bundle. As the tobacco is stripped, either place it on sticks and hoist it up in the house, putting from twenty to twenty-five bundles on a stick, or bulk it down in two layers with the head, or tied end of the bundles facing outward.

The method of replacing it in the house as fast as the stripping is done, is a good one if the crop is not to be sold until late in the winter, or early spring. If the crop is to be marketed soon after stripping, the latter method is a safe one to follow, if it is watched frequently to see that it does not heat in the bulk. If the bulk becomes warm, it must be broken up, aired and rebulked, or placed on sticks and hoisted up in the barn to be dried out, either with moderate

fire or windy weather. Tobacco is in safe keeping order for market when the leaf is pliable, and the stem will crack half way down the tie.

#### MARKETING.

If the tobacco is to be sold without packing in tierces or hogsheads, deliver it to market so the qualities will be uniform from undergoing inspection. Bright tobacco packed in hogsheads or tierces should not be pressed hard enough to bruise, and when packed should weigh about four hundred pounds net for a tierce and eight hundred for a hogshead. Pack each grade separately, uniform in color and length; but if it is necessary to put more than one grade in a tierce, place something between to mark the different grades.

If the crop is adapted to the export trade, that is, dark, thick, shipping, it can be packed in hogsheads to weigh from twelve to fourteen hundred pounds net.

The tobacco will bring a good price if it is of good quality, sound and nicely handled, although poor and nondescript kinds may at the time be selling for less than the cost of production.

The tariff of two dollars a pound, recently placed on foreign tobacco is having a favorable influence on this industry, and should induce land owners who find many other crops unprofitable, to give the tobacco crop a trial.

The tobacco crop has been a leading industry, and its cultivation well understood between the fortieth and thirty-fifth parallels of latitude.

In this State, South Carolina, Georgia and Mississippi, it has been grown to moderate extent for home consumption. Sufficient experiment has not been made to ascertain what varieties will succeed best in these States. It is known that South Carolina has produced some good bright tobacco, and Florida produces a good grade of cigar leaf. It is believed that both, good bright and dark tobacco, can be profitably raised in this State.

The appearance of the soils of many parts of this State is similar to those of the best tobacco districts of Virginia and North Carolina, and impresses one with the belief that fine manufacturing leaf can be grown here, if right methods are followed.

This Station will make experiments in tobacco, and results will be reported.