1895

**Tobacco**

Jordan G. Lee

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BULLETIN
OF THE
NORTH LOUISIANA EXPERIMENT STATION,
CALHOUN, LA.
WM. C. STUBBS, Ph. D., Director.

TOBACCO,
BY
J. G. LEE, ASSISTANT DIRECTOR.

ISSUED BY THE BUREAU OF AGRICULTURE.
A. V. CARTER, Commissioner.

BATON ROUGE, LA.
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BUREAU OF AGRICULTURE.

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The Bulletins and Reports will be sent free of charge to all farmers, by applying to Commissioner of Agriculture, Baton Rouge, La.
Hon. A. V. Carter, Commissioner of Agriculture, Baton Rouge, Louisiana.

DEAR SIR—Enclosed I hand you a report of the Experiments with Tobacco, so successfully conducted by Maj. J. G. Lee, Assistant Director of the North Louisiana Experiment Station, during the past year. Prefacing results is a minute description of methods to be followed from the "seed bed to the market." This preface is rendered necessary by the numerous inquiries coming from every quarter of the State relative to the proper raising and curing of tobacco.

The growing of "yellow leaf" for smoking and chewing purposes has been abundantly tested. The "cigar types" will next engage our attention. To this end an expert from Connecticut, a graduate of Storr's Agricultural College, Mr. Tetts, has been employed, and he will personally conduct experiments the present year upon the bluff and alluvial lands, with headquarters at Baton Rouge. I ask that this be published as Bulletin No. 33.

Respectfully submitted,

WM. C. STUBBS, Director.

NORTH LOUISIANA EXPERIMENT STATION No. 3, Calhoun, La., January, 1895.

To WM. C. Stubbs, Ph. D., Director:

MY DEAR SIR—I hand you herewith report of experiments in tobacco, conducted by the Station during the past year. Permit me to say that interest in tobacco growing is already very great and growing rapidly. Many letters are received daily, asking for seed and instructions. Seed sufficient to plant six hundred acres has already been supplied to nearly as many farmers by the Station, and there seems to be no doubt that tobacco is henceforth a staple crop of North Louisiana. Since instruction is sought daily, I again enter somewhat into the detail of tobacco growing from the "seed bed" to packing room.

Respectfully,

J. G. LEE, B. S.,
Assistant Director.
REPORT.

THE SEED BED.

The utmost care should be exercised in the selection and preparation of the seed bed. Therefore, make your selection in new land with a southeastern exposure to the morning sun, and a timber protection on north and west against cold. When the plat selected has been cleared of all vegetation and rubbish, upon it pile logs, poles and brush and burn continuously for several hours, until the entire surface is thoroughly baked to a depth of half an inch. The burning is necessary because it destroys all grass and weed seeds in the soil, which, otherwise, would prove disastrous to young tobacco plants. All coals and trash are raked off, the ashes remaining as a fertilizer, and the soil is then thoroughly mulched and pulverized to a depth of two to three inches, having care to remove all roots and not to invert or bring to the surface any subsoil, until it is brought to the finest garden tilth. In the meantime a light application of well rotted compost or a little cotton seed meal and acid phosphate should be incorporated with soil, to hasten the growth of plants. Seed beds may be sown from January till March, February sowing preferred in this climate. Mix thoroughly one heaping teaspoonful of seed with many times that quantity of ashes, to prevent too thick sowing, and sow uniformly over 10 feet square of bed—such a bed will supply plants sufficient to plant one acre of land. Tobacco seed are so small they need no "raking in," simply firming the soil by passing a light roller over, by trampling with the feet or placing a plank on and stamping on it, is sufficient. The beds should now be trenched around to carry off surplus water and protected by a cheap covering. This covering is found to be necessary because it protects the young plants from the attacks of the destructive little flea-beetle, it protects against heavy rains and frosts, it keeps the bed warmer, holds
moisture and thus hastens the growth of plants. Therefore, set up "edgewise" 8 or 12 inch plank around the bed, make fast, nail strips across, and on this frame work, tack securely cheese cloth, or something similar, and let it remain until a few days previous to transplanting, when it may be removed in order that plants may toughen and become accustomed to exposure. The same seed beds may be used for many years.

PREPARATION OF SOIL FOR TOBACCO.

The land should be deeply broken in January or February with two horse turning plow. In March or April it should be cross plowed, harrowed and rows marked off 3½ feet apart. In this furrow the fertilizer should be scattered. The fertilizer may be a liberal quantity of well rotted stable manure, compost, or acid phosphate and cotton seed meal—mixed well, in proportion of one part acid phosphate to three parts of meal, for old land, or equal parts for new land, and applied at rate of 400 to 500 pounds per acre. On this fertilizer throw two or four furrows with turning plow, making a flat bed. A light harrow, or long plank, reaching three rows, may now pass over the rows, smoothing them down, when they are ready to receive the plants.

TRANSPLANTING.

The rows having been previously prepared they are now ready to receive the plants, when a suitable shower occurs. It is well to sprinkle the bed with water, before drawing plants, so as to prevent breaking and bruising. Pull only strong vigorous plants, showing three or four leaves, and place them carefully in flat receiving baskets. They are carried to the field and dropped 2½ feet apart. A man, provided with a pointed peg, 6 or 7 inches long, follows, setting the plants. He pushes his planting peg 2 or 3 inches into the loose soil of the bed, removes it, inserts the plant and with a dextrous movement of the knuckles and peg, presses the dirt compactly about the plant, having care not to place the bud below the soil. In case of dry weather, watering the plants will be necessary. Young tobacco plants are very tender and brittle. Bruised and broken plants will not live, therefore to secure a maximum percentage of growing
plants in the field, exercise the utmost care in handling. Plants should be set late evenings or on cloudy days.

**CULTIVATION**

of the crop is simple, but must be early, fast and clean. Ten or twelve days after transplanting, break the crust about the plants, and mulch the soil completely with the hoe. A week or ten days later, cultivate with cultivator, shallow, or with scooters and heel scrapes, following with hoes, mulching the soil close about plants, taking out all grass, and slightly "hilling" the plants. Every eight or ten days thereafter similar cultivation is given, three such cultivations sufficing. Cultivation should cease when the leaves reach well out to the middles. Short "single trees" should be used to prevent injury to the leaf.

**TOPPING**

the tobacco must begin when many plants over the field show the seed button. No specific rule can be laid down as to how many leaves should remain on the stalk. Individual judgment must guide here. If a plant is strong, vigorous and large, from 14 to 25 leaves may be left, otherwise 9 to 14. Without counting the bottom leaf and the leaf that hangs over it in the third tier going up, make nine leaves, including both the top and bottom leaves. Fixing this in mind, the operator has only to add or deduct from this index leaf, marking nine, to leave any number of leaves the plant may justify.

**SUCKERING,**

or the putting out of new growth in the axils of the leaves will begin soon after topping. These suckers must be removed weekly, not permitted to grow over two or three inches long. For if permitted to grow they abstract much that would otherwise go to perfect rich, silky leaf. Early morning, or late evening are best times to sucker. Then the suckers are brittle and break off easily. Twice or thrice suckering will do for the crop.

**WORMS AND WORMING OF TOBACCO**

is the bane of the tobacco raiser. The tobacco fly, or hawk moths, as they are commonly known, usually appear in May,
deposit their eggs on the tobacco leaves, and in from five to seven days the larval or worms are hatched. They eat and grow on the tobacco from 20 to 30 days and burrow into the ground, where they pass into the pupa state. In about twenty days they emerge from the ground as moths to lay more eggs and hatch more worms. When it is considered that every moth is capable of laying at least 200 eggs, and that two broods are certain during the season, and that 40,000 worms are possible to every moth of May, it is no wonder that the second brood sometimes appears in such countless hordes as to defy all efforts at destruction before the crop is badly injured.

It is therefore most important to make a vigorous and persistent fight against the first crop of moths and worms. Two simple remedies are recommended for the moth: 1st. Burn cotton fly lamps in the field. 2d. By poisoning the flower of the Jamestown or "Jimson" weed with sweetened cobalt. Transplant a few of these weeds about in the tobacco. When they bloom take cobalt (gotten at any drug store). Mix it with molasses and pour a few drops into the tubular flower. The tobacco fly is very fond of the nectar of this flower and will seek it. Therefore if energy and persistence are used in keeping the flowers poisoned as they bloom and after every rain, their after evil work is reduced to a minimum and but little hand picking to destroy eggs and worms will be necessary. If, however, this has not been done, a few simple remedies are recommended for the worms: 1st. The surest and safest is to hand pick and destroy. 2d. A flock of turkeys will destroy the worms. 3d. Light applications of Paris green or arsenate of lead, one half pound mixed with ashes and "dusted" on an acre is a certain remedy against worms. No injury is liable to occur to man from these poisons. One could scarcely use enough tobacco to be injured; they are insoluble in water and cannot be taken up by the plant; dews and rains wash it from the leaves. However, paris green must be cautiously used, else injury to the leaf may occur. For this reason Prof. Morgan recommends the use of arsenate of lead, instead.
ON RIPENING

the tobacco leaves change from a deep green to a "pea green" color, and assume a yellow mottled appearance; the clammy mass of little hairs disappear from the surface and the leaf thickens, so that pressing the underside between the thumb and finger it cracks open.

CURING.

There are many ways of curing tobacco. It may be sun-cured, air-cured, charcoal cured or flue-cured. The station recommends flue-curing, supplemented by the leaf or wired stick process. In air-curing, the stalks are generally cut and split and hung on poles, thus requiring large barn space and a long time to cure, without temperature regulation to give the desired degrees of heat, required in curing bright types of tobacco. By the new process the leaves are stripped from the stalk as they ripen and cured upon "wired sticks" in three days and nights. The "wired stick" is a piece one inch square, holes bored through the centre, 6 inches apart, and pointed wires 9 inches long are passed through and doubled over at right angles to stick. These points are passed through the butt end of the leaf, each point holding from 5 to 7 leaves. The sticks are then placed on "tier polls" provided in the barn, and the tobacco cured. The barn may be a cheap log or rough lumber building, 20x20, with 20-foot wall, made air-tight, but provided with ventilators. Such a barn will accommodate from 12 to 15 acres of tobacco and may be built to cost from $50 to $300. The curing heat of the barn is secured by burning wood in two rock or brick furnaces or stoves built on each side of the barn. Connected with each furnace or stove is an 8-inch stove pipe or flue, which runs to the opposite end of barn where it connects with a larger pipe or drum running across the back and at right angles. Three feet inward from this piping is a set of return pipes connecting with main pipe or drum, which returns the smoke and passes it out at end of barn. This system of piping is built in the basement and conveys the heat uniformly through the barn. It is believed that ordinary stove piping, entering a very large drum in the rear of the barn, will supply sufficient heat. The
barn should be supplied with ventilation at top and bottom and
dides to be opened at will. A thermometer hung in the barn
will regulate the temperature to suit the will of the curer. No
fixed rule can be laid down for curing tobacco. The degree of
ripeness and the tobacco being heavy or light, will vary the
application of the temperature. Experience will soon guide
here. The first step in curing is the "yellowing process." This
is done by closing all ventilators and doors and raising the tem-
perature from 80 to 90 degrees and holding it there for 24 to 36
hours. The second step is to secure or make fast that yellow-
color, which is done by opening ventilators half way and raising
the temperature 10 or 12 degrees in thirty minutes; then open-
ing doors and lowering temperature 10 degrees in twenty min-
utes. The third step is to cure the leaf; done by opening ven-
tilators, closing doors and raising the temperature gradually, not
more than 2 degrees per hour, until 115 degrees are reached.
The fourth and last step is to cure the stem of the leaf and this
is done by first cooling off the barn and then raising the tem-
perature 2 degrees per hour, until 135 degrees are reached and
held there until the stems will snap like glass. The floor of the
barn is now sprinkled with water and left open over night so
that the tobacco may come "in order" when it is removed and
bulked down to remain in bulk until "hauled up."

GRADING

should be done in damp weather while the tobacco is pliable or
"in order" and means simply tying into hands all leaves of a
kind. For example the large bright leaves are tied into hands
of six or seven leaves and are graded as long bright wrappers.
The next shorter and bright are graded short wrappers. These
are used as wrappers for plugs and command best price. The
light primings or bottom leaves are graded ten to twelve leaves
to the hand and known as lugs or cutters and used for cigarette
and pipe smoking, while the top leaves are graded ten to twelve
leaves to the hand and are used as fillers for plug tobacco.
When the tobacco has thus been graded and tied into hands, and
while it is yet "in order," it should be packed into hogs-
heads or strong boxes for shipping. Tobacco may also be sold in bulk without grading.

A visit of inquiry to this Station will enable any farmer to build curing barns, and a few days spent with Mr. Clarke, the tobacconist, during the curing season, will enable one to cure good tobacco.

**EXPERIMENTS IN THE FIELD**

were of three kinds, viz: 1st. Land test. 2d. Variety test. 3d. Fertilizer test. Three plats of land, measuring one acre each, were selected for the experiments. Plat No. 1 was a bright mulatto sandy soil, with red sandy clay subsoil. Bright leaf types of tobacco were tested on this plat. Plat No. 2 was a distinctly red sandy soil, somewhat teneaceous and heavy, with red clay subsoil. Cigar varieties were tested here, with a bright type. Plat No. 3 was a light, grey sandy soil, with yellow clay sandy subsoil. Bright types were also planted here. All the plats embraced very old land, 80 years in cultivation. The seasons were good, except a bad wind in August ruined considerable tobacco. Plants were set from last of April to first of June. Curing began the latter part of July and closed the second week in September. The experiments were again in charge of Mr. W. F. Clarke, tobacconist of the Station. Following are the results:

**PLAT NO. 1—VARIETY TEST—FERTILIZED.**

<table>
<thead>
<tr>
<th>No. of Experiment</th>
<th>Name of Variety</th>
<th>Pounds green tobacco per acre</th>
<th>Pounds cured tobacco per acre</th>
<th>Percentage of loss in curing.</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Locks</td>
<td>6086</td>
<td>1020</td>
<td>53</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Conqueror</td>
<td>1040</td>
<td>900</td>
<td>82</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Ragland's Improved</td>
<td>3866</td>
<td>1110</td>
<td>72</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Bulpton</td>
<td>3980</td>
<td>810</td>
<td>72</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Hester</td>
<td>4140</td>
<td>1140</td>
<td>72</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Improved White Burley</td>
<td>5040</td>
<td>930</td>
<td>83</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Hyco</td>
<td>4440</td>
<td>840</td>
<td>83</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Sterling</td>
<td>4710</td>
<td>900</td>
<td>80</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Leaf Gooch</td>
<td>4500</td>
<td>990</td>
<td>79</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Yellow Pryor</td>
<td>4880</td>
<td>945</td>
<td>83</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Greenville Yellow</td>
<td>4320</td>
<td>780</td>
<td>83</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Sweet Orinoco</td>
<td>4920</td>
<td>810</td>
<td>83</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>White Stem Orinoco</td>
<td>5740</td>
<td>780</td>
<td>83</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Ragland's Improved Yellow Orinoco</td>
<td>5340</td>
<td>930</td>
<td>82</td>
<td></td>
</tr>
</tbody>
</table>
The above were fertilized with a mixture consisting of cotton seed meal, acid phosphate, nitrate soda, dried blood, sulphate ammonia and sulphate potash, at rate of 400 pounds per acre. The Hester variety leads, followed closely by Ragland's Improved, Locks, Long Leaf Gooch, Ragland's Improved Yellow Orinoco, White Burley and Conqueror. These all cured well and bright. The average of all is 913 pounds. In the following table the same varieties are tested without fertilizers.

**PLAT NO. 1—VARIETY TEST, WITHOUT FERTILIZER.**

<table>
<thead>
<tr>
<th>No. of Experiment</th>
<th>Name of Variety</th>
<th>Pounds green tobacco per acre</th>
<th>Pounds cured tobacco per acre</th>
<th>Percentage of loss in curing</th>
<th>Bright Leaf Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Locks</td>
<td>1560</td>
<td>360</td>
<td>76</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Conqueror</td>
<td>1320</td>
<td>280</td>
<td>78</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Ragland's Improved</td>
<td>1080</td>
<td>180</td>
<td>83</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Bullion</td>
<td>1290</td>
<td>210</td>
<td>83</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Hester</td>
<td>1350</td>
<td>280</td>
<td>79</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Improved White Burley</td>
<td>1360</td>
<td>300</td>
<td>80</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Hyco</td>
<td>1290</td>
<td>245</td>
<td>85</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Sterling</td>
<td>1620</td>
<td>340</td>
<td>85</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Long Leaf Gooch</td>
<td>12-60</td>
<td>450</td>
<td>75</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Yellow Pryor</td>
<td>1560</td>
<td>480</td>
<td>69</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Grouville Yellow</td>
<td>2190</td>
<td>360</td>
<td>83</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Sweet Orinoco</td>
<td>2340</td>
<td>540</td>
<td>76</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>White Stem Orinoco</td>
<td>2640</td>
<td>660</td>
<td>75</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Ragland's Improved Yellow Orinoco</td>
<td>2070</td>
<td>450</td>
<td>78</td>
<td></td>
</tr>
</tbody>
</table>

The land was very thin and the yields are correspondingly low. Note the increased production, due to fertilizers in the first table. White Stem Orinoco leads, followed by Sweet Orinoco, Yellow Pryor, Ragland's Improved Yellow Orinoco and Long Leaf Gooch. The average yield is 359 pounds.
### Kind of Fertilizer Used Per Acre

<table>
<thead>
<tr>
<th>No. of Experiment</th>
<th>Kind of Fertilizer Used</th>
<th>Pounds Green Tobacco Per Acre</th>
<th>Pounds Cured Tobacco Per Acre</th>
<th>Percentage of Loss in Curing</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>160 pounds Nitrate Soda</td>
<td>7428</td>
<td>980</td>
<td>88</td>
</tr>
<tr>
<td>2</td>
<td>160 pounds Nitrate Soda</td>
<td>5260</td>
<td>960</td>
<td>81</td>
</tr>
<tr>
<td>3</td>
<td>160 pounds Acid Phosphate</td>
<td>4830</td>
<td>1040</td>
<td>78</td>
</tr>
<tr>
<td>4</td>
<td>160 pounds Nitrate Soda</td>
<td>4960</td>
<td>960</td>
<td>80</td>
</tr>
<tr>
<td>5</td>
<td>160 pounds Nitrate Soda</td>
<td>4580</td>
<td>960</td>
<td>79</td>
</tr>
<tr>
<td>6</td>
<td>No mixture</td>
<td>2640</td>
<td>440</td>
<td>83</td>
</tr>
<tr>
<td>7</td>
<td>160 pounds Nitrate Soda</td>
<td>4240</td>
<td>920</td>
<td>78</td>
</tr>
<tr>
<td>8</td>
<td>160 pounds Acid Phosphate</td>
<td>4580</td>
<td>1000</td>
<td>78</td>
</tr>
<tr>
<td>9</td>
<td>160 pounds Acid Phosphate</td>
<td>4840</td>
<td>820</td>
<td>83</td>
</tr>
<tr>
<td>10</td>
<td>160 pounds Acid Phosphate</td>
<td>4900</td>
<td>980</td>
<td>89</td>
</tr>
</tbody>
</table>

Experiment No. 3 leads, followed closely by No 8, No. 2, Nos 4, 5 and 10. The average of all is 390 pounds. Experiment No. 1 is most economical, and while it shows more green tobacco the percentage of loss is greater, showing excessive sap. Even with tobacco potash does not show much gain. The excess of all potashes over Nos. 1 and 2 is only 38 pounds, while 2 over 1 is 100 pounds. Nitrogen is first needed, phosphate second in lesser quantity, and potash but little if any.

The remainder of this plat was planted in a general crop. The variety of tobacco planted was Ragland's Improved Yellow O'Inoco, fertilized with the same mixture as used above on varieties at rate of 450 pounds per acre. The yield of green tobacco
was 5652 pounds, of cured 1086 pounds per acre, showing a loss on curing of 80 per cent.

On plat No. 2, rather heavy and tenacious red sandy soil, cigar varieties were tested, this heavier soil presumably being better adapted to the growth of cigar tobacco than lighter, sandy soil. The crop was fertilized with the same mixture as used above on bright varieties, at rate of 400 pounds per acre, viz: cotton seed meal, acid phosphate, nitrate soda, sulphate ammonia, dried blood and sulphate potash. In order to grow a finer textured and silky leaf, the plants were crowded in the drill to 15 and 18 inches apart. The following tables give the yields of fertilized and unfertilized experiments:

PLAT NO. 2—FERILIZED—CIGAR EXPERIMENTS.

<table>
<thead>
<tr>
<th>No. of Experiment</th>
<th>Name of Variety</th>
<th>Pounds green tobacco per acre</th>
<th>Pounds cured tobacco per acre</th>
<th>Percentage of loss in curing</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Sumatra</td>
<td></td>
<td>4020</td>
<td>780</td>
<td>85</td>
<td></td>
</tr>
<tr>
<td>2 Brazilian American</td>
<td></td>
<td>6960</td>
<td>960</td>
<td>86</td>
<td></td>
</tr>
<tr>
<td>3 Zimmer Spanish</td>
<td></td>
<td>6720</td>
<td>810</td>
<td>87</td>
<td></td>
</tr>
<tr>
<td>4 Connecticut Seed Leaf</td>
<td></td>
<td>8160</td>
<td>1380</td>
<td>82</td>
<td></td>
</tr>
<tr>
<td>5 Harby</td>
<td></td>
<td>4980</td>
<td>1320</td>
<td>73</td>
<td></td>
</tr>
<tr>
<td>6 Pumptelly</td>
<td></td>
<td>7860</td>
<td>1290</td>
<td>82</td>
<td></td>
</tr>
<tr>
<td>7 Landreth</td>
<td></td>
<td>8880</td>
<td>1260</td>
<td>83</td>
<td></td>
</tr>
<tr>
<td>8 Imported Havana</td>
<td></td>
<td>3600</td>
<td>660</td>
<td>82</td>
<td></td>
</tr>
<tr>
<td>9 East Hartford</td>
<td></td>
<td>6000</td>
<td>900</td>
<td>85</td>
<td></td>
</tr>
<tr>
<td>10 Comstock Spanish</td>
<td></td>
<td>8280</td>
<td>1110</td>
<td>86</td>
<td></td>
</tr>
<tr>
<td>11 Little Dutch</td>
<td></td>
<td>9960</td>
<td>1380</td>
<td>86</td>
<td></td>
</tr>
<tr>
<td>12 Vuelta De Abajo</td>
<td></td>
<td>2400</td>
<td>600</td>
<td>75</td>
<td></td>
</tr>
</tbody>
</table>

Connecticut Seed Leaf and Little Dutch stand ahead, followed closely by Pumptelly, Landreth and Comstock Spanish. The average is 1076 pounds. The cigar tobaccos were "air-cured" wholly or in part, applying sufficient heat to keep down "pale burn" or mold, in damp weather. An excellent cigar color was secured, the texture was good. See "conclusions" for further remarks. In next table are the results with some varieties without fertilizers.
PLAT NO. 2—CIGAR EXPERIMENTS—WITHOUT FERTILIZER.

<table>
<thead>
<tr>
<th>No. of Experiment</th>
<th>Name of Variety</th>
<th>Pounds green tobacco per acre</th>
<th>Pounds cured tobacco per acre</th>
<th>Per cent. loss in curing</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Sumatra</td>
<td>1860</td>
<td>360</td>
<td>80</td>
</tr>
<tr>
<td>2</td>
<td>Brazilian American</td>
<td>5520</td>
<td>740</td>
<td>84</td>
</tr>
<tr>
<td>3</td>
<td>Zimmer Spanish</td>
<td>5190</td>
<td>960</td>
<td>81</td>
</tr>
<tr>
<td>4</td>
<td>Connecticut Seed Leaf</td>
<td>6480</td>
<td>1270</td>
<td>80</td>
</tr>
<tr>
<td>5</td>
<td>Harby</td>
<td>5880</td>
<td>930</td>
<td>84</td>
</tr>
<tr>
<td>6</td>
<td>Pumpelly</td>
<td>5440</td>
<td>750</td>
<td>87</td>
</tr>
<tr>
<td>7</td>
<td>Landreth</td>
<td>7000</td>
<td>840</td>
<td>86</td>
</tr>
<tr>
<td>8</td>
<td>Imported Havana</td>
<td>2160</td>
<td>420</td>
<td>80</td>
</tr>
<tr>
<td>9</td>
<td>East Hartford</td>
<td>5040</td>
<td>960</td>
<td>80</td>
</tr>
<tr>
<td>10</td>
<td>Comstock Spanish</td>
<td>6540</td>
<td>630</td>
<td>90</td>
</tr>
<tr>
<td>11</td>
<td>Little Dutch</td>
<td>7620</td>
<td>1020</td>
<td>86</td>
</tr>
</tbody>
</table>

Connecticut Seed Leaf and Little Dutch again lead, followed by Zimmer Spanish and East Hartford. The average is 816. Vuerta De Abajo was not tested. These also were "air cured" with good results.

The remainder of this plat was devoted to the White Burley and Imported Yellow Orinoco. The object was to test, 1st, the White Burley on our heavier red sandy land, and 2d, to the popular bright type, Orinoco, on same soil to ascertain if the tobacco would cure as brightly as on the lighter sandy soil.

The results were favorable and indicate that the Burley was even better adapted to this soil than on lighter soil and that no difference was discerned in the Orinoco curing just as brightly as on the lighter sandy soil. The yield of White Burley per acre in green tobacco was 5160 pounds; cured tobacco, 816 pounds; percentage loss 84. The yield of Orinoco green was 5160 pounds; cured tobacco, 785 pounds; percentage loss 84. Delayed curing and heavy winds injured the above yields.

In another field, embracing the typical light grey sandy soil of North Louisiana, with yellowish clay sandy subsoil land, very thin, one acre of land was devoted to the Hester variety of tobacco, bright type. The object of this plat was to determine the value of cotton seed meal (vegetable nitrogen) as compared
with nitrate soda and sulphate ammonia (mineral nitrogen),
dried blood and fish scrap (animal nitrogen). The per cent.
or amount of actual nitrogen per acre was the same, viz: 30 pounds.
There was also applied, common to both experiments, equal
amounts of acid phosphate and sulphate of potash. One half an
acre was devoted to each experiment. The mixture of fertilizer
was at the rate of 620 and 500 pounds respectively per acre. An
experiment without fertilizer was also made to get at the natural
capacity of the soil. The seasons were exceptionally good except
a heavy wind storm in August broke and ruined a goodly num-
ber of leaves. The following are the yields:

1. Acid Phosphate gave green tobacco per acre..........................5880 pounds
   Cotton Seed Meal gave cured tobacco per acre........................1320 pounds
   Sulphate Potash gave percentage loss on curing........................77

2. Acid Phosphate gave green tobacco per acre..........................5314 pounds
   Sulphate Ammonia gave cured tobacco per acre........................1192 pounds
   Dried Blood gave percentage loss on curing..............................76
   Fish Scrap gave.................................................................
   Sulphate Potash

Experiments without fertilizer gave:

3. Green tobacco, per acre.....................................................1189 pounds
   Cured tobacco per acre.....................................................205 pounds
   Percentage loss on curing..................................................82

CONCLUSIONS.

Experiment No. 1 gives 128 pounds cured tobacco more per
acre than experiment No. 2. This experiment, with other exper-
iments, indicates that cotton seed meal is our best and cheapest
source of nitrogen for tobacco. Judging the results of potash in
other experiments, it is also indicated that acid phosphate and
cotton seed meal is our best commercial mixture for tobacco, but
little if any potash seems to be required.

The excess of experiment No. 1 over No. 3, no manure, is
1115, and of No. 2 over no manure it is 887 pounds tobacco per
acre, showing the great value of fertilizers over no manure in
tobacco growing.

GENERAL CONCLUSIONS

are that not only will the light grey sandy soils of North Louis-
iana produce the bright leaf types of tobacco to perfection, but
also will the mulatto or red sandy soils. The older the land the
more readily will the tobacco cure brightly. That the White Burley grows better on our heavier red sandy soil. That cigar leaf grows better on this same type of soil than on lighter soils. That the color and texture of the leaf is good and pleasing and burns well to an amateur, that further expert judgment is required before cigar leaf can be recommended on the sandy soils of North Louisiana.

That liberal fertilizing increases the product largely and hastens maturity. That cotton seed meal and acid phosphate seems to be the most appropriate fertilizer, applied at the rate of 400 to 600 pounds per acre, and in the proportion of one part acid phosphate to three parts meal on old land, to be varied from one to two or equal parts, as the land approaches fresh land. That the Hester, Ragland's Improved, Yellow Orinoco, Conqueror and Long Leaf Gooch are the best varieties.

That the old pine fields of North Louisiana can be reclaimed in producing these bright leaf tobaccos and will yet afford wealth to the owners if they will but intelligently pursue tobacco growing on them.

That tobacco should henceforth be a staple crop of North Louisiana.

That skill, care and close attention are required by the crop. That any farmer of ordinary intelligence can become a successful raiser and curer.

That one week spent by him during curing season with Mr. Clarke will enable him to cure good tobacco. That the profit of a crop depends largely upon skillful curing.

Encouraged by the success obtained at this Station in growing and curing tobacco, the business men and farmers of Calhoun have organized a company for the manufacture of chewing and smoking tobacco. The factory is a three story structure. The tobacco machinery is now all in place, a manufacturer of experience, in the person of A. W. Marshall, of Hickory, N. C., is at his post and everything ready to begin manufacturing.

The capacity of the factory is 600 pounds each of chewing and smoking tobacco per day. There is secured to the farmers of North Louisiana a home market for their tobacco, giving them
the opportunity and advantage of another money crop to help cotton.

A word now to the farmers: The Station feels no hesitancy in recommending the farmers of North Louisiana to raise the bright leaf types of tobacco. Experiments at this Station for three years, have demonstrated beyond dispute that such types can be grown most profitably. The soil and climate are ours and they are most favorable. The skill and intelligence required for the success of the crop are yours. If you can supply these the way is clear for better and more prosperous times. The Station urges that you begin on a small scale—do not embark largely until you have studied and learned the business of tobacco growing and curing well. It is simple and the knowledge can be acquired easily. Anybody, on any soil, can grow tobacco, but keep it constantly in mind that only the best types and grades are profitable, and in order to secure this, skill and intelligence must be exercised. The right knowledge applied in curing may make a crop sell for 15 or 20 cents average, while without that knowledge the same crop may sell for 3 to 5 cents average. It is the well cured, bright tobacco that the markets want and that they will pay you well, for the poorly cured, dark grades they do not want hardly at any price. The Station is ready to give you any and all instructions you want. And again it invites you to come here and study and learn. A week spent with Mr. Clarke during curing season will be worth more to you than all you can read about tobacco curing—it will make, practically, a tobacco expert of you.

OTHER EXPERIMENTS.

Through the kindness of Hon. F. L. Maxwell, of Madison parish, and C. J. Foster, of Caddo, the Station was enabled to conduct experiments and to test, 1st, cigar tobacco, and 2d, incidentally, bright leaf types on the alluvial soils of the Mississippi and Red rivers. The soils were somewhat sandy and well drained. The varieties were fertilized at the rate of 400 pounds per acre, one to two parts of acid phosphate and cotton seed meal. The cigar leaf was air cured, the bright leaf flue-cured.
The following are the varieties tested and the results at C. J. Foster's, Red river:

Ragland's Improved, bright leaf, 1320 pounds per acre.
White Burley, bright leaf, 2280 pounds per acre.
Zimmer Spanish, cigar leaf, 646 pounds per acre.
Brazilian American, cigar leaf, 1520 pounds per acre.
Connecticut Seed Leaf, cigar leaf, 915 pounds per acre.

The following are the results of varieties tested at F. L. Maxwell's, Mississippi river:

Pennsylvania Seed Leaf, cured tobacco per acre, 1590 pounds.
Vuelta De Abajo, cured tobacco per acre, 1590 pounds.
Little Dutch, cured tobacco per acre, 795 pounds.
Sumatra, cured tobacco per acre, 335 pounds.
Zimmer Spanish, cured tobacco per acre, 384 pounds.
Brazilian American, cured tobacco per acre, 953 pounds.
Connecticut Seed Leaf, cured tobacco per acre, 954 pounds.
Glessimmer, cured tobacco per acre, 1060 pounds.
Landreth, cured tobacco per acre, 1166 pounds.
White Burley, bright leaf, cured tobacco per acre, 1570 pounds.

CONCLUSIONS

are that both these alluvial soils, particularly where sand is a component part, will grow cigar tobacco in paying quantities.

That the cigar color and texture are good, the leaf silky, a good wrapper. That for the quality and profitableness of crop, further expert judgment to test flavor and burning qualities of the leaf, now being sought, is required. Cigar experts now have samples and their report is expected to be appended. To the "unpracticed eye," the leaf seems most desirable stock.

That the bright types cure well and brightly and that the results of experiments on these types, indicate that these, too, may be grown on the lighter sandy alluvial soils with profit.

That the White Burley especially seems well adapted to these alluvial soils.

That further experiments are necessary before conclusive results are reached.
In transporting the green tobacco by freight, here to the Station, to be cured, considerable loss was experienced by the tobacco heating and blistering and burning.

The above yields are therefore only approximately correct, the yield being calculated on uninjured tobacco.

The Station thinks 1500 to 2000 pounds can be easily grown on the alluvial soils of the State.