1961 TOBACCO INFORMATION

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FLUE-CURED TOBACCO SUPPLY AND DEMAND OUTLOOK

Carry-over of flue-cured tobacco on July 1, 1961, beginning of the current marketing year, totaled 2,090 million pounds, farm sales weight basis. This was slightly lower than a year earlier and 17 percent below the peak level of July 1, 1957. The July 1, 1961 carry-over of 2,090 million pounds included 507 million held by the Flue-Cured Tobacco Cooperative Stabilization Corporation under the Government price support program. Loan holdings of old crop tobacco had been reduced to 365 million pounds by October 1, 1961.

The 1961 crop of flue-cured tobacco as of November 1, 1961 was estimated to be 1,253 million pounds. Thus, the total supply (i.e., carry-over plus estimated production) for the current marketing year is 3,343 million pounds, a decrease of 14 million from last year. This supply, somewhat less than in the previous years, continues to represent about 2.6 times expected disappearance. A desirable level of supply is generally considered to be about 2.5 times disappearance.

Domestic consumption of flue-cured tobacco during the marketing year ending June 30, 1961 increased to 792 million pounds, about 3.5 percent above the level of the preceding year. This high level of domestic usage, second largest on record, was due to the increase in cigarette production, principal outlet for flue-cured leaf. Cigarette output in the past fiscal year was approximately 5 percent above the average of the two preceding years. However, use of leaf tobacco in the past few years has not kept pace with increases in cigarette output. This is due largely to: (1) displacement of tobacco by filter plugs as filter tip cigarettes took over a much greater share of the market, and (2) more complete utilization of tobacco leaves in the form of sheet tobacco and processed stems (midribs of leaves). However, preliminary indications are that in 1961 use of unstemmed tobacco for cigarettes is increasing almost in line with increase in number of cigarettes turned out.

Exports of flue-cured tobacco during the marketing year ending June 30, 1961, totaled 475 million pounds, farm weight. This represents the largest flue-cured leaf exports in 5 years, an increase of 13 percent over the low level of the previous year. In the year ahead, exports of flue-cured tobacco are not likely to be as large as in the previous year but are expected to be fairly well maintained. Barter sales have contributed singificantly to increased exports of flue-cured tobacco in recent months.

QUALITY OUTLOOK

The success and future of the tobacco industry, at all levels, is dependent upon gaining active support of all groups who share the responsibility for one phase or another.

Simply talking about quality, production and marketing practices and the failure of the other man to make improvements will not get the job done. All concerned must do their part.

The agricultural, industrial and allied groups involved in tobacco must form an agri-business partnership. They must work together to bring about improvements needed in all areas of the tobacco program.

1. Tobacco prices paid by the companies need to realistically reflect dedirable and undesirable characteristics of tobacco presented at the market place. This is true for all buyers. Too frequently, market prices ignore mixed grades, pale, slick tobacco, thread, large hands, etc. Yet, these are things often criticized by buying interests.

2. The tobacco grading system needs to describe the quality characteristics of each basket of tobacco. The grade should identify desirable and undesirable characteristics that are important to the trade and consumer. Too frequently, mixture, thread, large hands, slick, toady, pale tobaccos may not be identified as such.

3. The price support program needs to reflect desirable and undesirable characteristics of tobacco. The support price has a great deal of influence at the market. It is just as important for the price supports to encourage desirable quality, good handling, etc., as it is for the buyers to do so.

4. The acreage control program needs to be as realistic and as accurate as possible in line with effective supply and demand in the domestic and foreign market. We must be aware of the effect on our own industry of quality, price and production costs of tobacco produced in foreign countries and of regulations, laws and tariffs in importing countries.

5. The tobacco warehousemen have very important roles and responsibilities in a cooperative effort to improve and build the tobacco program. Their support of a coordinated effort is important.

6. North Carolina State College needs to supply as much up-to-date information on tobacco as possible through its basic and applied research. This information needs to be passed on by the Extension and teaching program to the farmers, to all segments of the tobacco industry, and to the people in general.

7. Tobacco farmers need to utilize the proven production and marketing practices to produce the most desirable quality as efficiently and economically as possible. The grower needs to have pride in the quality and appearance of his tobacco. Satisfaction the consumer will get from the use of his tobacco also must be considered. This calls for selection of proven varieties, sound cultural practices, chemicals, and curing and marketing practices that will produce a product that will provide maximum satisfaction in the domestic and foreign trade. A sound, healthy growing industry cannot be built on "what we can get by with" at the farm, market or in the processing plant.

BULK CURING

Tobacco can now be cured by clamping the equivalent of 10 to 12 sticks of tobacco in a frame and holding tobacco in position by spikes rather than stringing it on sticks. Heated air is forced up around the leaves by fans rather than depending on the natural upward movement of heated air as in the conventional systems.

This system, referred to as bulk curing, shows promise as a means of saving labor, principally because the leaves are not strung on sticks. It may also improve quality of cured leaf of some types of tobacco.

About 40 bulk curing units were in operation in 1961. Experience of growers with these units ranged from very satisfactory to very poor. In general, most growers were satisfied with the quality of the cures from these units. It is generally felt that some growers will have better quality tobacco in the bulk curer than the conventional barn when curing first and possibly second and last primings. There will probably be little difference in the tobacco from other primings. One of the problems in bulk curing is getting all racks loaded uniformly.

Much additional information is needed on comparative quality of bulk and conventionally cured tobacco, cost of buying and operating bulk curers in relation to possible advantages of the system, most efficient system of filling frames, and storing and ordering the cured tobacco.

NEW VARIETIES

Coker 80 F - (developed from a cross of Coker 187-Hicks x (Coker 139 x Hicks) produced a medium yield of tobacco with fairly good texture. It was medium in height, with a high leaf count, and a low number of ground suckers and high number of leaf axil suckers. It had medium width leaves toward bottom of plant but narrow pointed leaves toward the top. The cured tobacco had medium body with orange color. The percent reducing sugar was medium, nicotine and total alkaloid high with a low nitrogen to nicotine ratio. Coker 80 F is rated as having high resistance to black shank, moderate resistance to Granville Wilt, and susceptible to Fusarium Wilt.

Reams 64 - (developed from a cross of Coker 187 x White Gold) produced a high yield of tobacco with thin, papery textured leaf at bottom of plant but fairly good texture in up-stalk tobacco. Plant was medium low, with broad, long, upright fairly blunt leaves at the tip. Leaves are close spaced, similar to Coker 139 in appearance. Cured tobacco had medium to thin body with dull lemon color at bottom of plant and fairly rich lemon to orange color in up-stalk tobacco. The percent reducing sugar was medium, nicotine and total alkaloid low with a fairly high nitrogen to nicotine ratio. Reams 64 is rated as having high resistance to black shank, susceptible to Granville Wilt and Fusarium Wilt.

RESULTS OFFICIAL TOBACCO VARIETY TEST - 1961

Whiteville, Rocky Mount, Clayton*, Oxford and Rural Hall

Variety	Yield Lbs/A	Value Index 1/ $/A	$/Cwt.	Qual. Index	Suckers per Plant Ground	Leaf Axil	No. of leaves per plant	Ht. of plant (in.)	Days to Flower	Red. Sugar %	Nic. %	Ratio N/Nic.	Resistance 2/ BS	GW	FW	RK
Hicks	1922	1210	62.98	56	1.9	20.7	16.9	44.2	51	18.71	2.57	.81	S	S	L	-
Coker 128	1983	1234	62.40	52	1.0	20.1	20.1	50.2	57	17.40	2.25	.93	H	S	S	-
McNair 121	1988	1129	57.28	33	2.4	19.1	18.1	46.0	58	15.86	2.32	.94	H	H	H	-
Coker 80 F	2049	1262	61.82	49	.5	19.6	20.3	48.2	57	17.74	2.74	.81	H	M	S	-
Vester 5	2060	1241	60.53	40	3.4	19.6	17.1	52.1	56	17.00	2.65	.85	M	S	S	-
Speight 31	2075	1290	62.52	44	4.6	21.7	19.4	49.8	56	18.78	2.12	.99	M	S	S	-
McNair 10	2108	1302	61.99	50	1.4	15.8	19.0	50.6	58	19.56	2.77	.80	H	L	S	-
McNair 12	2134	1383	64.90	56	.8	17.6	18.5	43.6	57	19.83	2.22	.98	H	H	S	-
Coker 187-H	2192	1277	58.75	34	4.2	20.2	19.6	48.8	59	18.33	2.17	.94	H	H	M	-
NC 95	2215	1376	62.56	57	1.9	18.1	19.9	46.4	57	17.89	2.43	.86	H	H	H	H
Coker 316	2239	1400	62.54	48	3.8	20.0	19.7	49.4	58	17.82	1.70	1.22	H	M	S	-
NC 75	2248	1341	60.27	48	1.0	15.0	17.9	48.9	56	17.72	2.08	1.12	H	L	M	-
Speight G 10	2260	1444	63.70	58	.4	17.9	20.2	45.2	56	18.94	1.89	1.14	H	S	S	-
Speight G 3	2277	1344	59.14	35	1.1	18.2	18.6	48.0	57	18.58	2.31	.88	M	S	S	-
Reams 51	2278	1397	61.66	44	2.0	16.7	20.1	51.5	60	17.80	1.99	1.05	H	L	L	-
Reams 64	2405	1539	64.12	48	.6	18.5	20.2	46.5	58	18.79	1.66	1.19	H	S	S	-

1/ Value based on 3 yr. ave. all belts 1959-60-61 auction price on govt. grade basis. 1961 prices through September 21

2/ Disease resistance - a relative rating based on 1961 data plus information from other disease tests. H = High resistance; M = Moderate; L = Low resistance; S - Susceptible (not resistant). BS = Black shank; GW = Granville Wilt; FW = Fusarium Wilt; RK = Root Knot.

* Cured leaf data not included at Clayton - field data only.

McNair 12 - (developed from a cross of McNair 121 x Coker 139) produced a medium high yield of tobacco with fair texture. The plant was low in height with a medium leaf count and a medium number of suckers. It had medium broad leaves of medium length. The cured tobacco was medium in body with relatively light color. The percent reducing sugar was medium high, nicotine and total alkaloid was medium with a medium nitrogen to nicotine ratio. McNair 12 is rated as having high resistance to black shank, high resistance to Granville Wilt, susceptible to Fusarium Wilt and a low loss from brown spot.

Speight G 10 - (developed from a cross of Ox. 1-181 x Speight 42) produced a high yield of tobacco with fairly good texture. Plant was medium low in height, with a high leaf number, a low number of ground suckers and a medium number of leaf axil suckers. It had medium broad and long leaves at bottom of plant, medium long and narrow pointed leaves toward the top. The cured tobacco had medium body and a fairly rich orange color. The percent reducing sugar, nicotine and total alkaloid was medium with a relatively high nitrogen to nicotine ratio. Speight G 10 is rated as having high resistance to black shank, susceptible to Granville and Fusarium Wilt.

Speight G 3 - (developed from a cross of Vesta 30 x Coker 187) produced a high yield of tobacco with fair texture. It was medium in height, with a medium number of leaves and a medium number of suckers. It had broad, fairly long leaves, fairly blunt at tip toward bottom of plant. The width carried well to the top of plant but the upper leaves tapered to a medium sharp point. The cured tobacco had medium body with orange color. The percent reducing sugar, nicotine, and total alkaloid was medium with a fairly low nitrogen to nicotine ratio. Speight G 3 is rated as having moderate resistance to black shank, susceptible to Granville and Fusarium Wilt.

SPACING & HEIGHT OF TOPPING TEST - OXFORD 1960-61
(120,000 leaves per acre)

Leaves per Plant	Plants per acre	3.5 ft. rows	4 ft. rows	4.5 ft. rows	Ave.
		Yield per acre			
12	10,000	2043	2079	1985	2036
15	8,000	2029	1993	1928	1983
18	6,667	2159	2086	1935	2060
21	5,714	2123	2056	1959	2046
Average		2089	2054	1952	
		Value per acre			
12	10,000	1331	1376	1318	1342
15	8,000	1298	1282	1235	1272
18	6,667	1376	1325	1221	1307
21	5,714	1341	1298	1228	1289
Average		1337	1320	1251	
		Price per pound			
12	10,000	64.94	65.96	66.20	65.70
15	8,000	63.71	64.11	63.89	63.90
18	6,667	64.07	63.40	63.04	63.50
21	5,714	62.96	62.92	62.35	62.74
Average		63.92	64.10	63.89	

These data indicate that height of topping, hill spacing and number of plants per acre (within reasonable ranges) had very little effect on yield, value and price per pound as long as the number of leaves per acre was kept constant. There was no apparent difference in yield, value or price between 3.5- and 4-foot rows, but there was reduction in yield and consequently, value in the 4.5-foot rows. Height of topping and, to a lesser degree, spacing, had some effect on size of leaves, which gave a reduction in price per pound for the higher topping. However as long as the leaf number per acre was constant, there was little effect on desirability of the tobacco based on company evaluation.

The chemical and physical measurements of tobacco from the 1960 test gave no consistent variation between treatments except for nicotine, which was lowered as height of topping was increased.

SOME COMPARATIVE EFFECTS OF CERTAIN TOPPING AND SUCKERING PRACTICES FOR SOME PHYSICAL AND CHEMICAL PROPERTIES OF FLUE-CURED TOBACCO OBTAINED FROM REPRESENTATIVE EXPERIMENTS

Treatments	Yield per Acre	Value per Acre	Price per lb.	Nic. %	Reducing Sugar %	Nitrogen %	N/Nic.	RS/Nic.	Sp. Vol cc/gr.	Moisture
Not topped	1744	1044	59.8	1.73	15.5	1.95	1.14	9.0	4.3	15.2
Topped early flower, hand suckered	2134	1350	63.3	.299	19.0	2.23	.76	6.4	4.1	15.9
Topped early flower, oil emulsions	2140	1365	63.8	2.46	20.3	2.12	.86	8.3	4.0	15.6
Topped early flower, MH when topped	2352	1548	65.8	2.52	25.2	1.93	.77	10.0	3.8	16.7
Topped early flower, MH 7 days later	2260	1495	66.2	2.68	22.2	1.95	.73	8.3	3.9	16.4
Topped full flower, MH when topped	2213	1418	64.0	2.34	21.2	2.00	.85	9.1	3.9	16.3

For best results, those using MH-30 should carefully consider the following principles:

A. Time or stage to treat:

1. Top in the full to late flower stage, clean out all suckers and treat.
2. Or - Treat in full flower stage, wait 2 to 4 days, remove all tops and suckers.
3. Or - Top in the early flower stage, wait 7 to 10 days, treat and clean out all suckers.
4. Treat during the early morning after excessive dew is gone.

B. Do not treat plants wilted from hot dry weather or from too much water.

C. Do not use more than 4 to 6 pints of MH-30 per acre. Mix in at least 20 to 50 gals. of water and apply in a fine spray, covering as much of the plants as possible. If the dosage is to be put on in two applications, split the above rate.

D. Allow leaves to become fully ripe before harvesting.

Work was expanded by the N. C. Agricultural Experiment Station regarding the testing of new materials for their effectiveness as potential sucker controlling agents during the 1961 growing season.

Ten of the sixteen materials tested did not control sucker growth to a satisfactory degree. Materials which gave satisfactory sucker control gave some degree of leaf damage or leaf drop as they were used in this testing program. Whether these materials are most effective when applied as a spray or as a contact is yet to be determined.

A number of materials applied directly to the young, tender suckers will give some control of subsequent sucker growth; however, this is not always accomplished without other effects, many of which are or can be detrimental.

Of all the materials tested by the Experiment Station none has definitely been shown superior to those now commercilly available.

SUMMARY FERTILIZER PLACEMENT DEMONSTRATIONS

8 Demonstrations - 1961

Treatment	Av. No. of replants per acre	Yield/A	Value/A	Price/lb.
One Band Deep	640	2043	1318	64.54
Two Bands	493	2026	1344	66.33
One Band Shallow	5,107	1889	1258	66.61
Broadcast	960	1971	1276	64.74

All plots in all demonstrations were fertilized at the time of transplanting and all were planted with a "Powell 42" transplanter, which is a combination fertilizer distributor and transplanter.

One big disadvantage of the shallow application is the fertilizer burn which causes an increase in replants needed.

Response to the different treatments varied considerably from one demonstration to another. This is probably associated with rainfall- available moisture and leaching rains. For example, some plots which had one band shallow had to be replanted because of fertilizer burn. Because of favorable weather for this late planting (replanting) some of the plots produced higher acre returns than some plots which had very little replanting.

Each treatment was better than the other three in at least one demonstration.

From these limited trials, the following principles seem to be working:

1. Fertilizer placement reasonably close to the roots seems to be advisable if the weather is wet during the first month after transplanting, but undesirable if it is medium to dry.

2. Deep placement (about 5 inches below the root crown of the transplants) was not as good as the more shallow placements if leaching rains fell within 2 or 3 weeks after application.

3. Fertilizer in 2 bands, if the plants are set between the 2 bands, continues to be one of the best methods of application.

4. Shallow applications of fertilizer, with the plant roots in or near the fertilizer, greatly increase the number of replants needed and generally can be expected to reduce returns.

SUMMARY OF NITROGEN RATE DEMONSTRATIONS
60 trials 1959-60

Treatments	Yield/A	Value/A	Price/lb.
10# less N than recommended	1694	1055	59.4
Rec. Rate of N based on soil test and depth of topsoil	1765	1091	61.8
10# more N than recommended	1840	1130	61.4
20# more than recommended	1817	1095	60.3

The recommended fertilizer rate was based on soil analysis and the depth of topsoil - from ground level to the clay. The deeper and coarser the topsoil, the more nitrogen is needed as compared to the more shallow soils. In 1961 the recommended rates of nitrogen varied from 36 to 65 pounds per acre with an average of 54 pounds per acre. Nitrogen was the only nutrient that was varied within a demonstration. Other materials were kept constant.

METHOD OF HANDLING FESCUE
5 Demonstrations - 1961

Treatment	Yield/A	Value/A	Price/lb.
Disced and turned before Oct. 31	2199	1431	65.06
Disced and turned after March 1	1961	1307	66.68
Disced and broken with spring-foot tiller	1948	1280	65.73

This represents only one year's trial at 5 locations; but these data indicate that turning the fescue in the fall is better than waiting until the spring. They also indicate that turning the fescue so that it is well mixed with the soil is better than breaking with a spring-foot tiller, which tends to leave most of the fescue on top of the soil.

LEAVING OUT TRUCK ROW DEMONSTRATIONS
3 Demonstrations 1960 & 5 Demonstrations 1961

Treatment	Yield/A	Value/A	Price/lb.
Planted Solid	1748	1093	62.5
5th Row Out	1824	1132	62.1
7th Row Out	1799	1119	62.2

Response to treatments varied considerably from one location to another, possibly due to difference in weather. These data would suggest that there is very little benefit to yield, value or price from leaving the truck row vacant.

TOBACCO DISEASE CONTROL PRACTICES FOR 1962

Prepared by Furney A. Todd, Extension Plant Pathologist -(Tobacco)

Tobacco disease losses decreased in 1961. According to estimates, tobacco diseases reduced the value of the 1961 crop by 3. 3 per cent as compared to 4. 1 per cent for 1960. This reduction was brought about mainly by a decrease in loss due to brown spot, black shank, mosaic and nematodes.

The fight against tobacco diseases is a continuous one. Many of the organisms which cause disease can live in the soil for years even in the absence of tobacco. Others can live in tobacco crop residues and still others can be blown by the wind for many miles. The best way to control tobacco diseases is to plan and follow a complete control program. If each grower would plan such a program, losses to diseases could be cut by more than 50 per cent in 1962. The following information may be of some help in planning a complete disease control program on your farm.

DISEASE CONTROL IN THE PLANT BED

Black shank and nematodes. The methyl bromide treatment (liquid or vaporized) gives excellent control of both nematodes and black shank. This is most important where susceptible varieties are used since black shank resistant varieties will control this disease in the plant bed. Cyanamid alone does not control either nematodes or black shank in the plant bed.

Plant bed treatments sold under the trade names of Vapam and VPM have given good nematode control when applied as a drench. However, plant injury sometimes occurs. Recent tests indicate that (1) if the rate is reduced (1 gal. per 100 sq. yds.), (2) if the amount of water used is reduced to about 50 gals. per 100 sq. yds. or just enough to wet the surface soil, and (3) if the bed is covered with a plastic cover for 24 hours after treatment, satisfactory results may be expected in terms of plant production and disease control. If this treatment is used, it should be tried only on a small part of the plant bed.

Blue mold, anthracnose and damping-off. These diseases remain a treat to plant production although losses were very light in 1961. All three diseases are prevented by the use of the same materials. Any of the fungicides containing ferbam, zineb or maneb applied as spray or dust give satisfactory control. Start treating when the plants are the size of a dime; put on two applications each week and continue through transplanting. Also, selection of a suitable site and good bed management make it easier to control these diseases. Remember, just because these diseases caused little damage in 1961 does not mean that they have disappeared. They are still with us. Plan to follow a complete fungicidal control program in 1962.

DISEASE CONTROL IN THE FIELD

Black shank. The use of disease resistant varieties plus crop rotation form the most effective program for control of black shank. All crops except tobacco are resistant to the fungus that causes black shank. Therefore, the rotation of tobacco with any crop grown on the farm will tend to reduce the level of this disease. Do not depend on rotation alone to take care of this disease problem.

Much thought should be given to selecting the black shank resistant variety. On farms where the level of black shank is high and no rotation is used, only varieties with high resistance should be planted. Moderately resistant varieties may be used on a farm where the disease level is not high or on farms where crop rotation is practiced.

Granville wilt. Losses from Granville wilt can be reduced by use of resistant varieties and crop rotation. Rotation of tobacco with other crops that are resistant to the Granville wilt bacterium can be expected to reduce the disease. Only a few crops are resistant; therefore, crops for use in tobacco rotations in fields where wilt is present must be selected with care. Avoid the use of peanuts, weeds--especially ragweed--and most vegetable crops. For best wilt control, allow two to three crops between crops of tobacco.

Corn, redtop grass and soybeans are considered excellent in reducing the severity of Granville wilt; crabgrass and Rowan lespedeza are good; and cotton, milo and sweet potatoes are fair.

Several Granville wilt resistant varieties are available. The level of resistance in these varieties ranges from low to high. If Granville wilt is a critical problem use only varieties with high resistance. Varieties with moderate to low resistance should perform well on farms where a long rotation is practiced.

Fusarium wilt. Fusarium wilt is controlled by use of resistant varieties and by practices that tend to reduce the root-knot nematode; therefore, in addition to use of resistant varieties, follow a rotation for nematode control plus the use of a soil fumigant in fields where nematodes are a problem.

On many farms, more than one of these diseases (black shank, Granville wilt and Fusarium wilt) occur in the same field. Therefore, the grower must consider the disease problem present in a field before selecting the variety to be used and the level of infestation of the disease that is to be controlled by a resistant variety. The level of resistance of varieties to all three diseases is summarized in the following table:

INFORMATION ON RESISTANT VARIETIES - 1961

Variety	Black Shank		Granville Wilt		Fusarium Wilt	
	Per Cent Diseased	Level of Resistance 1/	Wilt Index	Level of Resistance	Per Cent Diseased	Level of Resistance
Coker 80 F	02	High	56.7	Moderate	88	Susceptible
McNair 12	11	High	16.7	High	88	Susceptible
Reams 64	03	High	74.2	Susceptible	92	Susceptible
Speight G3	19	Moderate	92.5	Susceptible	100	Susceptible
Speight G10	06	High	80.8	Susceptible	96	Susceptible
Coker 187**	-	High	-	High	-	Low
Coker 187-Hicks	05	High	30.0	High	29	Moderate
McNair 121	11	High	36.7	High	0	High
NC 75	11	High	67.5	Low	46	Moderate
NC 95	06	High	35.8	High	04	High
Reams 51	09	High	65.0	Low	67	Low
Coker 316	14	High	40.8	Moderate	92	Susceptible
McNair 10	13	High	72.5	Low	100	Susceptible
Coker 128	06	High	81.7	Susceptible	58	Susceptible
Coker 156*	-	High	-	Susceptible	-	Susceptible
SC 58*	-	High	-	Susceptible	-	Susceptible
Bell 16	22	Moderate	75.8	Susceptible	33	Moderate
Oxford 1-181*	-	Moderate	-	Susceptible	-	Susceptible
Speight 31	15	Moderate	62.5	Susceptible	88	Susceptible
Vesta 5	21	Moderate	94.2	Susceptible	100	Susceptible
Bell 15*	-	Susceptible	-	Susceptible	-	Low
Hicks	83	Susceptible	89.2	Susceptible	66	Low
McNair H2	100	Susceptible	61.3	Susceptible	100	Low

* Level of resistance rating based on 1958 and 1959 data.

** Level of resistance rating based on 1960 data.

1/ A relative rating based on 1961 data plus information from other disease tests.

Nematodes. Diseases caused by nematodes still represent a production hazard in growing flue-cured tobacco. Control is complicated because three types of nematodes are important parasites of tobacco--root knot, meadow and stunt--consisting of 10 or 11 species. The most important is the root knot nematode. That is the one which causes galls or swellings on the roots. Second in importance is the meadow nematode.

A nematode control program should consist of two or three practices on every farm. Where the population is low, use of winter management practices and crop rotation should take care of the problem; where population is high, a soil fumigant should also be used. A complete nematode control program would involve use of crop rotation and certain winter management practices, also soil fumigation where the problem is critical.

1) Crop rotation. Rotation of tobacco with nematode-resistant crops long has been recognized as one of the best and most practical methods of control. Rotation can increase the value per acre by as much as $200.00 as compared with continuous tobacco culture. In planning a rotation, use only crops that are resistant to one or more of the three types of nematodes which attack tobacco. Select a crop that will reduce the particular nematode that is causing most damage at the present time. These alternate crops should be changed from time to time--rotate the rotation--to prevent the build-up of other types of nematodes. The following table contains information on the relative value of certain crops in reducing the three types of nematodes that attack tobacco:

Relative Value of Certain Crops in Reducing Root Knot, Meadow and Stunt Nematodes

Crops	Root Knot	Meadow	Stunt
Small grain-weeds	Good	Good	Good
Weeds	Good	Excellent	Excellent
Fescue	Excellent	Excellent	Good
Peanuts*	Excellent	Good	Good
Cotton	Fair	Fair	Good
Corn	Good	Poor	Poor
Mile	Good	Poor	Poor
Sudan grass	Good	Poor	Poor
Sweet potatoes	Poor	Excellent	Fair
Watermelons	Poor	Excellent	-
Rowan lespedeza	Excellent	Good	Fair

* Poor in peanut belt.

Length of rotation is important. Best results are obtained with a long rotation--two to three years between crops of tobacco. However, adequate control can be expected with a two-year rotation (one alternate crop between crops of tobacco). Control with a two-year rotation is slow, requiring as many as eight years or four complete cycles to reduce a high population to the point that fumigation would not be necessary.

2) Winter management practices. Certain winter management practices are highly effective in reducing nematode populations. For example, plowing out tobacco stubbles immediately after harvest may reduce nematode populations as much as 75 to 90 per cent. Use of this practice alone will not give adequate nematode control but supplements control obtained with crop rotation and soil fumigation.

3) Soil fumigation. The use of chemical soil fumigants gives immediate nematode control. For best results, do a thorough job of preparing the land. Apply fumigant deep--14 inches from top of bed or 8-10 inches from soil line. Provide a seal immediately following application with a high, wide bed for row treatment or dragging the field to firm the soil for broadcast treatment. Allow at least a two-week waiting period before transplanting. If heavy rains follow soon after application, open the bed for aeration.

The following table contains suggested rates and relative value of different fumigants for control of the three types of nematodes that attack tobacco:

Summary
Results of Soil Fumigation Tests, 1960

Fumigant	Gals. Per Acre		Control of:		
	Row	Broadcast	Root Knot	Meadow	Stunt
D-D, Vidden D & others (dichloropropene-dichloropropane)	10	20	Excellent	Good	Good
Telone (dichloropropene)	8	16	Excellent	Good	Good
EDB-85 (ethylene dibromide)	2 1/2	4 1/2	Excellent	Poor	Excellent
Dorlone & others (dichloropropene plus ethylene dibromide)	6	12	Good	Good	Good
Fieldfume, & others (dichloropropene-dichloropropane plus ethylene dibromide)	6	12	Good	Good	Good

Many growers have asked this question, "Should I fumigate if I plan to use the NC 95 variety?" Results of demonstration-tests conducted in 1961 indicate that if the root knot nematode is present in large numbers, it would pay to fumigate. However, it is believed that if a good rotation is followed and tobacco stubbles are destroyed immediately following harvest, no fumigation will be needed in most fields where the nematode resistant variety is used.

Brown spot. This disease was considered the Number One disease problem of flue-cured tobacco in terms of damage caused in 1959, 1960 and 1961. Brown spot is caused by a fungus that is generally regarded as a weak parasite. However, this weak parasite may severely damage leaves of plants that are low in vigor. Consequently, any factor that tends to weaken plants usually results in increased damage from the brown spot disease. The fungus that causes this disease produces enormous numbers of spores or microscopic seed-like bodies during periods of wet weather. These spores are spread by wind and water.

There is no known method of brown spot control. Here are a few practices that might help reduce loss to this disease:

1) Practice crop rotation.
2) Destroy tobacco crop refuse immediately following harvest.
3) Control other diseases, especially nematodes.
4) Use tolerant varieties if disease has been a major problem in years past. Varieties that have tolerance include NC 95, Oxford 1, Oxford 1-181, Speight 31, McNair 10, McNair 12, McNair 121, NC 75, Coker 128, Hicks, Vesta 5, Bell 15 and Coker 156.
5) Increase priming rate when brown spot appears. Much spread of brown spot occurs from lower leaves to upper leaves. The severity of attack in upper leaves may be reduced by priming lower leaves as soon as possible after the disease appears.
6) Proper fertilization. Loss caused by brown spot can be reduced by using proper amounts of a balanced fertilizer.
7) Spacing. Shaded leaves appear to be more severely damaged by brown spot than leaves receiving adequate sunlight. Therefore, proper spacing, 20-22 inches in drill and 3 1/2-4 ft. rows, should reduce losses.

During the past four years, field experiments have been conducted to see if brown spot could be controlled by spraying with fungicides. Two different chemicals have been used. Results indicate that spraying helps control the disease. The yield per acre is increased and there is less trashy tobacco. However, it is necessary that the sprayed tobacco be tested for off-flavor, aroma and residues. In addition, further large-scale demonstrations on a state-wide basis are needed before definite recommendations can be made.

Mosaic. Mosaic is one of our oldest known tobacco diseases. It is caused by a highly contagious virus that is spread by contact. Losses to this minor disease vary to some extent between seasons. However, extensive loss is caused every year on a few farms. Recent research indicates that use of milk in any form at transplanting time will greatly reduce losses. Use the following method: Spray plant bed within 24 hours before pulling plants with five gallons of whole or skim milk or five pounds dried skim milk mixed with five gallons water per 100 sq. yds. Also, have workers dip their hands in whole or skim milk or a mixture of one pound dried skim milk to one gallon water every 20-30 minutes while pulling plants and dropping plants in transplanter.

The following publications contain more detailed information on tobacco diseases and methods of control. They will be of help in planning a complete tobacco disease control program. All of these publications are available through your county agent's office.

1. Tobacco Blue Mold and Anthracnose Control. Ext. Cir. 397
2. Treatment Of Tobacco Plant Bed Soils With Methyl Bromide. Exp. Sta. Bul. 399.
3. Cropping Systems For Nematode Control And Tobacco Production. Ext. Cir. 409
4. Fall Cultural Practices For Nematode Control In Tobacco. Ext. Folder 154.
5. Soil Fumigation For Nematode Control in Tobacco. Ext. Cir. 402.
6. Mosaic Control In Tobacco. Ext. Folder 128.
7. Brown Spot Control In Tobacco. Ext. Folder 139.
8. Sore Shin And Southern Stem Rot Of Tobacco. Ext. Folder 140.
9. Control Tobacco Black Shank. Ext. Folder 161.
10. Planning A Nematode Control Program For Flue-Cured Tobacco. Plant Path. Inf. Note No. 64.
11. Kill Weeds And Nematodes In Tobacco Plant Beds - How To Treat With Cold Or Hot Methyl Bromide. Ext. Cir. 427.

1. Don't have sequence or outline of steps Of determining fert to plant weight
2. fumigating nc 95;
3. McNair 12 not like birds
4. Boards around bed in 1st slide
5. Treat 3 in AM#30 slide

(Ideal, downdraft, Stagnant —

~~Hestrate — of mites [illegible]~~

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November, 1961

On bulk curing stay away from the fans that this to is as good as conventional curing tob —