IDENTIFICATION

OF CERTAIN FLUE-CURED TOBACCO VARIETIES under the Price Support Program

U. S. DEPARTMENT OF AGRICULTURE
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INTRODUCTION

This manual has been developed to assist in the field identification of certain flue-cured tobacco varieties which have been discounted by the United States Department of Agriculture to a 50-percent price support rate. The discount varieties are: Coker 139, Coker 140, Coker 316, Reams 64 and Dixie Bright 244. Also included on the discount list is a breeding line Coker 187-Golden Wilt.

In addition to color pictures of individual plants, detailed descriptions of growth characteristics, disease information and certain chemical determinations are summarized and included as a part of this manual. For comparative purposes, data and color pictures are also presented on certain other flue-cured varieties.

The descriptive material presented in this manual was drawn from information made available by cooperating State and Federal agencies. The chemical analysis data was extracted from research reports published by the Agricultural Experiment Station, North Carolina State College, Raleigh, North Carolina.

DESCRIPTION OF CERTAIN FLUE-CURED TOBACCO VARIETIES

DISCOUNT VARIETIES

Coker 139

Coker 139 was developed from a multiple cross involving the following four parental varieties: Golden Cure, Dixie Bright 101, Golden Wilt and Oxford 1-181, and was released to growers for planting in 1955.

Plants of this variety are very stocky and compact, especially during the early stages of growth. Upon reaching the topping stage, plants of Coker 139, exhibit a characteristic compact spacing of leaves in the top. Plants become conical or pyramid in shape as they approach flowering. The seed head is very compact and the stalk distance between the "crowfoot" and the tip leaves is very short.

Leaves generally exhibit a lighter green color in the lower portion of the plant than in the upper part, giving a fairly yellow cast to the overall appearance. The stalks, midribs and veins are a light creamy white color.

Plants of this variety have a fairly yellow cast even when grown under moderately high fertility conditions. The yellow cast is more pronounced on light, sandy soils and under low fertility conditions. Under conditions of low nitrogen supply and when overripe, leaves become pale and bleached. Plants of this variety also appear to show more than the usual amount of nitrogen deficiency following heavy rains.

The plants are of medium height with wide, long leaves spaced very close on the stalk. The close leaf spacing gives a crowded appearance to the plant. The leaf width is carried well to the tip. Bottom leaves may appear blunt at the tip. The upper leaves may be round or taper to a fairly short point. A prominent characteristic of this variety is its high leaf number as compared to other varieties of similar height.

Leaves of this variety are not brittle. Young leaves are erect and grow from the stalk in an upright position or at an acute angle. The tip one-third to one-half of the leaf droops somewhat, leaving a hump near the center. This drooping is more pronounced toward the bottom of the plant as the leaves reach maturity. Leaves frequently have a twisted appearance, as if one side is heavier than the other. The older leaves appear to be nearly horizontal, especially toward the bottom of the plant and as they reach maturity. The lateral veins in the leaf of this variety more nearly approach a perpendicular position to the midrib than in old-line varieties like Hicks.

The leaves have a smooth appearance, are generally lacking in gum, and ripen uniformly. Unless topped before blossoms appear, this variety produces only a few suckers, most of which appear near the top of the plant late in the season.

Coker 139 blooms very late and does not flower prematurely under adverse growing conditions. One to three primings may be removed before the plant flowers.

This variety is highly resistant to black shank, moderately resistant to Granville wilt, and is very susceptible to fusarium wilt.

Leaves of this variety cure easily and often to a light color. Cured leaves are often pale, thin, papery, and lacking in oils, body, aroma, and elasticity, especially from the bottom portion of the plant.

Chemical analyses of the cured leaf indicate a lower nicotine and total nitrogen content than other varieties. However, the ratio of total nitrogen to nicotine is generally high.

Coker 187-Golden Wilt

Coker 187-Golden Wilt is a breeding line that was never released as a variety by its breeder.

Seed of this breeding line was obtained in 1959 by a few growers from experimental plots and planted during the 1960 growing season. Seed from these plantings were increased and distributed without the knowledge or consent of the seed company. This breeding line has growth and chemical characteristics similar to Coker 139.

Coker 282

Coker 282 is a breeding line that was never released as a variety by its breeder. However, seed of this breeding line was obtained and increased without the consent of its breeder. Coker 282 has growth and chemical characteristics similar to Coker 139.

Coker 140

Coker 140 is from the same cross as Coker 139, and was released for planting in 1955.

Plants are slightly conical in appearance at topping time, although under ideal growing conditions they may appear moderately cylindrical. The largest leaves occur on the lower two-thirds of the stalk, with smaller leaves near the top.

Plants grow with a light green color. Leaf stems and veins are a light creamy color, but not as light as Coker 139. Mature leaves near the bottom of the plant may be pale and bleached, especially if grown under conditions of low nitrogen supply, excess moisture, or if overripe. These characteristics are not as pronounced in Coker 140 as in Coker 139.

Plants of Coker 140 are comparatively tall—slightly taller than Coker 139. The leaves are spaced medium close, about the same as Hicks, but not as close as Coker 139. Coker 140 usually produces from 3 to 5 more leaves than Hicks, Leaves are medium sized, about twice as long as wide, and tapered to a fairly sharp point. The leaves are usually upright, smooth in appearance, deficient in grain and gum, and are not brittle. Midribs and veins are of medium size. Plants produce a low number of suckers compared to most other varieties. It is late flowering but not as late as Coker 139. Bottom leaves begin to mature about the same time as other varieties, from one to two weeks before topping time.

Coker 140 has moderate resistance to black shank, low resistance to Granville wilt, and is susceptible to fusarium wilt.

Leaves generally cure to a uniform lemon or light lemon color, and are often lacking in oil, grain, and desirable texture. The lower primings may show considerable paleness.

The chemical composition of the cured leaf is characterized by very low nicotine content as compared with most other varieties. The ratio of total nitrogen to nicotine is high.

Dixie Bright 244

Dixie Bright 244 resulted from a cross involving (Dixie Bright 101 x Dixie Bright 102) x Bottom Special, and was released for planting in 1955.

Plants of Dixie Bright 244 are tall and have tapering or conical silhouette. It has a characteristic flower head that is open and spreading. After topping, plants are less conical; and, under good growing conditions, may fill out at the top of the plant to create a cylindrical appearance.

This variety has a higher leaf number, with a wider spacing on the stalk, than Hicks. Leaves are light to medium green color, medium long and broad—but less than twice as long as wide. From bottom to top of plant, leaf length and width decrease in about the same proportion which gives the plant the appearance of having short and broad tip leaves. The leaves tend to stand above the horizontal and are more upright in the top of the plant. Margins and tips, particularly of the bottom leaves, have a characteristic drooping or flopped appearance. This drooping is very pronounced in hot, dry weather following a period of rapid growth. Under these conditions, the leaves are especially thin, smooth, and soft. Lateral veins form wide angles with the midrib and are wide apart, allowing the leaf blade to sag between the veins. There is usually considerable puckering of the lamina along the lateral veins, particularly near the top of the plant. The leaf tissue on the petiole is wide and grows well around the stalk.

Dixie Bright 244 is late in flowering—later than most other varieties except Coker 139. Sucker production of the variety is below the average for standard varieties, and the number of bottom suckers is conspicuously low.

The leaf normally cures to an orange color. Under conditions of high fertility, some difficulty may be experienced in curing. After the ripening process starts, the leaf has a tendency to break down rapidly and, if not harvested at the proper time, the cured leaf may be dull or chaffy.

Dixie Bright 244 has moderate to high resistance to black shank and high resistance to both Granville wilt and fusarium wilt.

The cured leaf of this variety is moderately low in nicotine content.

Coker 316

Coker 316 was developed from a cross involving Coker 187-Hicks and debneyi, a wild species. It was released for planting in 1960.

Plants of Coker 316 are medium in height. The leaves are closely spaced on the stalk and are medium broad, about twice as long as wide. This variety produces a medium number of suckers.

Coker 316 has a fairly low nicotine content with a high nitrogen to nicotine ratio.

This variety has high resistance to black shank, moderate resistance to Granville wilt and is susceptible to fusarium wilt.

Reams 64

Reams 64 was developed by crossing Coker 187 with White Gold. It was released for planting in 1961.

Reams 64 has the general field appearance of Coker 139 except that it has a greener cast. The leaves are upright, long, broad and fairly blunt at the tip. The leaves at the top of the plant are particularly closely spaced.

This variety when cured has medium to thin body, is a dull yellow color at the bottom of the plant, but fairly rich yellow or orange at the upper end of the stalk.

Chemical analysis show the nicotine and total alkaloid to be low. The ratio of total nitrogen to nicotine is high.

Reams 64 is highly resistant to black shank, but susceptible to Granville and fusarium wilt.

SOME FLUE-CURED TOBACCO VARIETIES

DISCOUNT VARIETIES

Coker 139

Coker 187-Golden Wilt

Coker 282

Coker 140

Coker 316

Reams 64

Dixie Bright 244

NON-DISCOUNT VARIETIES

Coker 187-Hicks

Coker 319

Reams 61

Reams 266

McNair 12

Speight G-5

Hicks

Coker 187-Hicks

Coker 187-Hicks is a high-yielding late blooming variety. It was released for planting in 1958.

This variey is medium in height and has medium close-spaced leaves. The leaves pucker along the veins and midribs causing a crinkled appearance, especially in the younger leaves. It produces a large number of suckers before and after topping. This variety normally grows with a green cast.

Coker 187-Hicks is highly resistant to black shank and Granville wilt, but only moderately resistant to fusarium wilt.

Coker 319

Coker 319 was developed from a cross of Coker 139 x Hicks. It was released for planting in 1962.

This variety has a field appearance similar to the old-line varieties. It grows with a green color. The plants are average in height, with long medium narrow leaves at the bottom and narrow pointed leaves at the top. The angle of the veins to the midrib is intermediate.

Plants of this variety produce an average number of leaves, a few ground suckers and a high number of leaf axil suckers. The time of flowering is intermediate.

The percent nicotine is medium with a medium high nitrogen to nicotine ratio.

Coker 319 is moderately resistant to black shank and Granville wilt and highly resistant to fusarium wilt.

Reams 61

Reams 61 is a selection from a field of tobacco where black shank was severe. It was released for planting in 1962.

Reams 61 is a fairly tall variety with a light green color. The leaves are medium broad and fairly blunt, especially toward the bottom of the plant. The leaves are shorter in the top of the plant.

This variety has a medium high leaf number, flowers fairly late and produces a high number of ground and leaf axil suckers. The angle of the veins to the midrib is fairly wide.

Reams 61 is a high-yielding variety with a medium low percent nicotine and a medium nitrogen to nicotine ratio. The cured leaf is lemon to pale lemon color with poor to fair texture. It is fairly thin and papery, especially toward the bottom of the plant.

It is moderately resistant to black shank and Granville wilt and carries a low level of resistance to fusarium wilt.

Reams 266

Reams 266 was developed from a cross of Coker 187 and White Gold. It was released for planting in 1962.

Reams 266 is a moderately tall variety. The leaves are fairly broad and widely spaced on the stalk. The leaves come out from the stalk almost perpendicularly.

Plants of Reams 266 are moderately green in color. This variety flowers medium late and produces a very high number of ground suckers and a moderate number of leaf axil suckers.

It produces a medium low yield of tobacco with an orange color and fair texture. The percent nicotine is medium with a medium high nitrogen to nicotine ratio.

Reams 266 is moderately resistant to black shank, highly resistant to Granville wilt and carries a low level of resistance to fusarium wilt.

McNair 12

McNair 12 was developed from a cross between McNair 121 and Coker 139. It was released for planting in 1961.

This variety has a slight ruffled leaf in the top. The leaf turns down about one-third of the distance from the top. It has some of the appearance of Coker 139 in its closely spaced, broad, fairly blunt leaves. But the leaf appears to be grainy and greener in color.

Plants of McNair 12 are low in height with a medium number of leaves and suckers.

McNair 12 is a medium high-yielding variety with a medium percent nitrogen to nicotine ratio. The cured leaf has medium body and light color.

This variety is highly resistant to black shank and Granville wilt and is susceptible to fusarium wilt.

Speight G-5

Speight G-5 resulted from a cross between Coker 139 and Hicks. It was released for planting in 1962.

This variety is similar to the old-line varieties. The leaves are long, fairly broad and pointed, and grow almost straight out from the

stalk. The leaf carries its width well to the tip. The angle of the veins to the midrib is wide.

Plants of Speight G-5 are medium in height with a medium number of leaves. This variety produces a low number of ground and leaf axil suckers. It flowers about four days later than Hicks.

Speight G-5 is a high-yielding variety. It produces a medium low percent nicotine and a medium high nitrogen to nicotine ratio.

The cured leaf is lemon to orange in color, somewhat thin in body, particularly in the bottom of the plant. The leaves have a fair texture.

Speight G-5 is moderately resistant to black shank and fusarium wilt and susceptible to Granville wilt.

Hicks

Hicks, a farmer selection, grows with a green color. A low-growing plant, the medium spaced leaves are long in relation to their width. The leaves taper to a long, sharp point. The midribs and veins are large, but the leaves are not brittle. As the leaves mature, they usually are grainy and quite gummy.

Hicks is an early variety and may button prematurely under unfavorable growing conditions. Generally, plants of this variety produce a high number of suckers. It is easy to handle and cures to a bright lemon or orange color.

Hicks is susceptible to black shank and Granville wilt and has low resistance to fusarium wilt.

PLANT CHARACTERISTICS ARE INFLUENCED BY ENVIRONMENT

Since most plant characteristics are affected by weather and other environmental factors, this information must be considered in relative terms. In most cases, a condition that will affect one variety will usually affect other varieties in a similar manner.

More specifically some of the environmental conditions and plant characteristics they influence are discussed briefly:

Plant Shape. The normal plant shape is attained only under optimum growth conditions. Shape can be modified during any of the plants' developmental stages. For example, a dry season following optimum weather conditions during the early stages of growth may result in a pyramid-shaped plant.

Plant Color. Excessive water may cause the plants to be more yellow, pale or bleached than normal. An oversupply of nitrogen will increase the green color and delay ripening, and too little nitrogen will increase yellowness. Lack of phosphorus and excess chlorine may darken the green color.

Plant Size. Dry weather may reduce plant height and leaf size and cause the leaves to be spaced closer together, whereas adequate moisture may cause the opposite effect. Alternating periods of unfavorable and very favorable weather may cause the leaf size and spacing to be abnormal in a given part of the plant.

Leaf Angle. Generally, the angle of leaf divergence from the stalk will be greater during dry and hot weather in the growing period than during cool damp periods. The top leaves may be more upright during dry weather, especially before topping time. The angle may increase or leaves may droop as they reach maturity, increase in size, weight, and length and after suckers develop.

Brittleness. Brittleness will increase following periods of high rainfall coupled with high nitrogen and fast growing conditions. Excess chlorine will increase brittleness and thickness.

Sucker Habit. Cool weather right after transplanting will increase the development of "ground suckers". High moisture and high nitrogen rates may increase the development of suckers after topping. Heavy nematode infestation may reduce sucker growth.

Earliness of Flowering. Cold, wet weather soon after transplanting followed by prolonged dry period may hasten flowering.

Disease. Diseases that damage the root system, reduce plant size or cause yellowing.

Chemical Composition. Increased nitrogen and dry weather will increase the nicotine content and may reduce the sugar. Increased moisture will reduce the amount of nicotine and increase the amount of sugar. State of maturity will influence chemical composition.

The data presented in the following tables were obtained from the flue-cured tobacco variety tests conducted by the North Carolina Agricultural Experiment Station, Raleigh, North Carolina.

A SUMMARY OF INFORMATION FROM FLUE-CURED TOBACCO VARIETY TRIALS[1]

Varieties	General plant color at flowering	Topped plant height (Inches)	Spaces between leaves	Number of leaves	Suckers per plant		Days from transplanting to flowering
					Ground	Leaf axil	
Coker 139	Fairly yellow cast	54.6	2.6	21.1	2.1	16.8	59.0
Coker 140[2]	Slightly greener cast than C-139	55.5	2.8	20.0	2.0	16.8	57.5
Dixie Bright 244[2]	Light green cast	56.3	3.0	19.5	1.2	16.3	57.5
Coker 316	Green cast	53.6	2.6	20.3	3.8	19.5	56.2
Reams 64	Green cast	51.4	2.6	19.9	.2	15.7	56.4
Coker 187-Hicks	Green cast	51.9	2.8	18.8	2.1	18.5	57.7
Coker 319	Green	49.8	2.5	20.0	1.3	19.2	55.7
Reams 61	Light Green	57.5	2.9	20.0	2.6	18.1	59.0
Reams 266	Moderately green	53.8	3.0	18.1	6.1	17.7	56.2
McNair 12	Green cast	47.7	2.6	18.0	.4	17.0	54.3
Speight G-5	Light green	51.7	2.8	18.3	.3	15.7	53.4
Hicks	Green	48.6	2.9	16.8	.8	19.9	49.4

[1] 1962 Data. Extracted from N. C. Research Report No. 3, November, 1962. Department of Crop Science, N. C. State College, Raleigh, N. C.
[2] Comparisons made based on trials conducted during the period 1954-59.

A SUMMARY OF INFORMATION FROM FLUE-CURED TOBACCO VARIETY TRIALS[1]

Varieties	Chemical Analysis of the Cured Leaf of the Entire Plant				Measurement on the 5th, 10th and 15th Leaves from the Top of Plant									Level of Disease Resistance		
	Nicotine Percent	Reducing Sugar Percent	Total Nitrogen Percent	Ratio Total Nitrogen to Nicotine	Width of Leaves (Inches)			Length of Leaves (Inches)			Ratio Length/Width			Black Shank	Granville Wilt	Fusarium Wilt
					5th	10th	15th	5th	10th	15th	5th	10th	15th			
Coker 139	1.57	19.20	2.01	1.34	9.8	11.7	13.9	19.1	22.4	23.8	1.9	1.9	1.7	High	Mod.	Susc.
Coker 140[2]	1.52	17.29	1.89	1.24	7.3	9.0	10.0	15.9	18.6	19.7	2.2	2.1	2.0	Mod.	Low	Susc.
Dixie Bright 244[2]	1.94	19.15	1.87	0.96	7.7	9.9	11.6	14.0	17.6	19.5	1.8	1.7	1.7	High	High	High
Coker 316	1.47	20.99	2.00	1.41	9.4	11.4	14.4	18.5	22.4	24.0	2.0	2.0	1.7	High	High	Susc.
Reams 64	1.69	20.86	1.94	1.24	9.7	11.7	14.5	19.3	22.7	23.8	2.0	1.9	1.6	High	Low	Mod.
Coker 187-Hicks	1.77	19.61	2.05	1.24	9.6	12.3	15.2	20.0	23.7	23.8	2.1	1.9	1.6	High	Low	Mod.
Coker 319	2.05	19.04	2.18	1.11	8.2	10.4	13.4	20.1	23.7	25.2	2.5	2.3	1.9	Mod.	Mod.	High
Reams 61	1.96	20.97	2.00	1.06	9.8	11.9	14.5	18.8	22.1	23.9	1.9	1.9	1.6	Mod.	Mod.	Low
Reams 266	2.20	21.24	2.34	1.13	10.8	13.8	16.4	19.7	23.1	23.2	1.8	1.7	1.4	Mod.	High	Low
McNair 12	2.19	19.80	2.23	1.05	9.8	12.2	14.5	21.0	23.7	23.4	2.1	1.9	1.6	Mod.	High	Susc.
Speight G-5	1.80	20.73	2.00	1.18	9.4	12.1	15.4	21.4	25.4	25.6	2.3	2.1	1.7	Mod.	Susc.	Mod.
Hicks	2.09	21.63	2.00	0.98	8.9	12.3	14.7	23.2	25.8	24.9	2.6	2.1	1.7	Susc.	Susc.	Low

[1] 1962 Data
[2] 1954-58 Data