Characteristics of Major Dark Tobacco Varieties

Andy Bailey

Agronomic characteristics of dark tobacco varieties may vary between years and locations. The following descriptions are based on observations and results from replicated variety trials conducted under different environments across western Kentucky and Tennessee over the past several years. Yield potentials listed are an average across several trials and seasons and actual yields may vary from those listed. The disease resistance indicated can be expected if disease pressure is present. (See Figure 1.)

Little Crittenden is typically an air-cured variety but also performs well as a fire-cured variety. It has medium to late maturity with fair yield potential (3000 lbs/A) and excellent cured leaf quality. Little Crittenden has a semi-erect growth habit with long leaves that have considerable crinkle and fairly coarse texture. It has very good curing characteristics similar to the Madoles. Little Crittenden has no disease resistance.

Narrowleaf Madole LC is still the most popular dark tobacco variety grown. It can be used as a fire-cured or air-cured variety and has medium maturity with excellent yield (3200 lbs/A) and cured leaf quality. It is known for its good curing characteristics. Narrowleaf Madole has a very prostrate growth habit with long, drooping leaves and a smooth leaf texture. Narrowleaf Madole can typically remain in the field longer after topping than any other variety before harvesting. However, it is somewhat more prone to leaf breakage at harvest due to its prostrate nature. It generally does not perform well when transplanted early (prior to May 15th) when cool, damp conditions commonly occur. Narrowleaf Madole has no disease resistance.

TR Madole is typically used as a fire-cured variety. It has early to medium maturity and excellent yield (3200 lbs/A) and cured leaf quality characteristics. It has a very prostrate growth habit and is an easy-curing variety similar to Narrowleaf Madole. TR Madole has very characteristic rounded top leaves with a smooth, open textured leaf surface which makes it well suited to cigar-wrapper style markets. TR Madole has no disease resistance.

KY 160 is an air-cured variety with medium maturity and relatively low yield potential (2600 lbs/A) but excellent cured leaf quality. It has a semi-erect growth habit with long, narrow leaves and very smooth leaf texture. KY 160 has high resistance to tobacco mosaic virus.

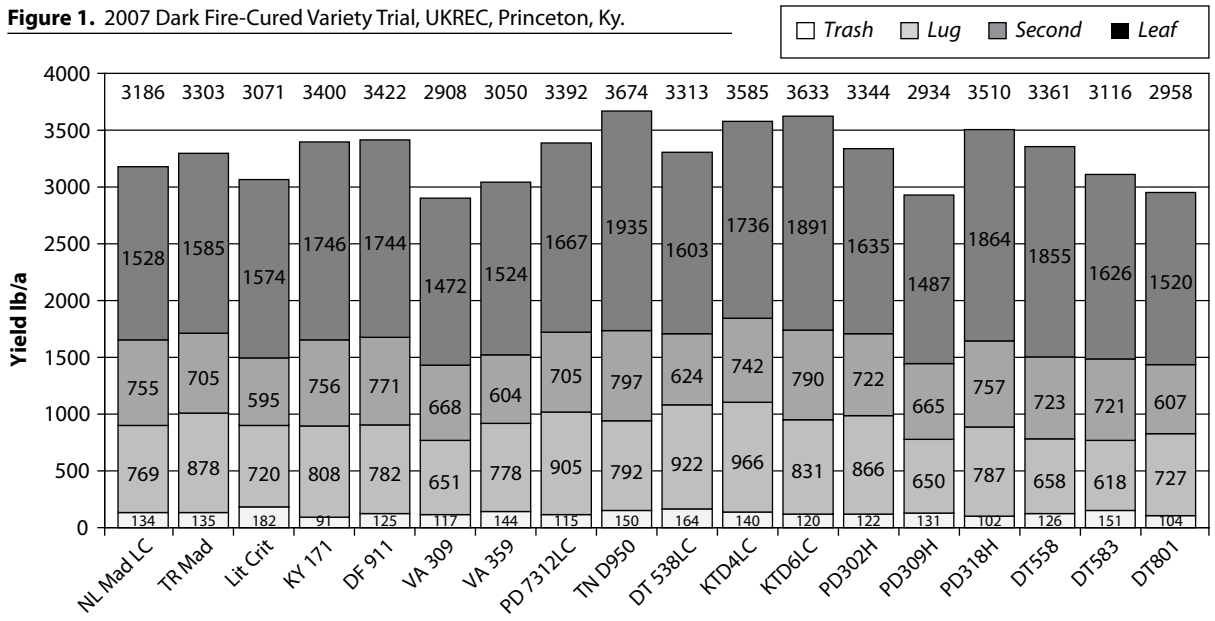
KY 171 is an air-cured or fire-cured variety with medium maturity and very good yield (3100 lbs/A) and cured leaf quality. It has a semi-erect growth habit with coarse leaf texture and good curing characteristics. KY 171 has high resistance to black root rot and tobacco mosaic virus, medium resistance to Fusarium wilt, and performs better than many other varieties when transplanted early (prior to May 15th).

DF 911 is typically used as a fire-cured variety but may also work relatively well as an air-cured variety. It has medium maturity and excellent yield potential (3300 lbs/A). DF 911 has a prostrate growth habit somewhat similar to Madoles but has a larger stalk size than most other dark tobacco varieties. Cured leaf quality is typically lower than most other varieties, as the leaf face tends to cure to a dark brown while the back of the leaf cures to a light tan. DF 911 has high resistance to black root rot, wildfire, and tobacco mosaic virus.

DT 508 is typically used as a fire-cured variety and has very good yield (3200 lbs/A) and quality characteristics. It has a prostrate growth habit with medium maturity. DT 508 has medium resistance to race 0 and race 1 black shank and medium resistance to Fusarium wilt.

DT 518 is typically used as a fire-cured variety. Similar to DT 508, it has very good yield (3200 lbs/A) and quality characteristics, prostrate growth habit, and medium maturity. DT 518 has medium resistance to black root rot and medium resistance to race 0 and race 1 black shank.

Figure 1. 2007 Dark Fire-Cured Variety Trial, UKREC, Princeton, Ky.



DT 592 is typically used as a fire-cured variety. It has good yield (3000 lbs/A) and quality characteristics and has a growth habit similar to Narrowleaf Madole. It has a larger stalk than most other varieties, with stalk size similar to DF 911. Like Narrowleaf Madole, it is somewhat more prone to leaf breakage at harvest than other varieties. DT 592 has medium resistance to black root rot and low-medium resistance to black shank race 0 and race 1.

DT 538LC is typically used as a fire-cured variety but may also work well as an air-cured variety. It has excellent yield (3400 lbs/A) and very good cured leaf quality. It has medium maturity with a semi-erect growth habit and fairly coarse leaf texture. It has good black shank resistance similar to KT D4LC (medium resistance to race 0 and race 1).

VA 309 can be used as an air-cured or fire-cured variety. It has early to medium maturity with fair yield (3000 lbs/A) and cured leaf quality characteristics. VA 309 has a semi-erect growth habit with a fairly smooth leaf texture. It has low-medium resistance to race 0 and race 1 black shank, and medium resistance to black root rot.

VA 359 can be used as an air-cured or fire-cured variety. It has early to medium maturity and good yield potential (3100 lbs/A). It has an erect growth habit with leaves lighter in color than most other varieties. VA 359 has excellent cured leaf quality characteristics and cures to a light brown color. VA 359 has low resistance to race 0 and race 1 black shank.

TN D950 is a fire-cured variety with early maturity and a very prostrate growth habit. It has excellent yield potential (3200 lbs/A) but typically produces only fair cured leaf quality. Leaves of TN D950 have a fairly smooth texture and are darker green, containing more chlorophyll (green leaf pigment) than most other dark tobacco varieties and therefore may require earlier firing and more firing to help drive green out of the cured leaf. TN D950 has medium resistance to race 0 and race 1 black shank (slightly lower than DT 538LC, KT D4LC, and KT D6LC), and high resistance to black root rot, tobacco mosaic virus, and wildfire.

KT D4LC was developed as a fire-cured variety but has also performed relatively well as an air-cured variety. KT D4LC has the highest yield potential of any dark tobacco variety currently available (3600 lbs/A). It has a very erect growth habit with medium maturity and leaves light in color similar to VA 359. Spacing between leaves is closer than most other varieties and it typically will have 3 to 4 more leaves than other varieties topped to the same height on the stalk. It has a coarse leaf texture with cured leaf quality that is usually lower than most other varieties but better than TN D950. It has medium resistance to race 0 and race 1 black shank (similar to DT 538LC). KT D4LC has no resistance to black root rot, tobacco mosaic virus, or wildfire.

KT D6LC is a hybrid of KT D4LC x TN D950. It is a fire-cured variety with medium maturity, semi-erect growth habit, and fairly smooth leaf texture. KT D6LC has excellent yield potential (3400 lbs/A) and higher cured leaf quality than KT D4LC or TN D950. It has good resistance to race 0 and race 1 black shank (medium, but slightly lower than KT D4LC or DT538LC), and high resistance to black root rot, tobacco mosaic virus, and wildfire.

KT D8LC is a new variety for 2008 released by the Kentucky-Tennessee breeding program. KT D8LC is very similar to KT D4LC, and will perform well as a fire-cured variety and may be a better air-cured variety than KT D4LC. KT D8LC has the same disease resistance package as KT D4LC, with medium resistance to race 0 and race 1 black shank but no resistance to black root rot, tobacco mosaic virus, or wildfire. KT D8LC has a very erect growth habit with medium maturity. Leaf number, color, and texture for KT D8LC are very similar to KT D4LC. KT D8LC has excellent yield potential (3500 lbs/A).

PD 7312LC is a hybrid of KY 171 x Narrowleaf Madole developed by Rickard Seed. It has medium maturity, excellent yield (3200 lbs/A), and very good cured leaf quality. PD 7312LC can be used as a fire-cured or air-cured variety, and performs well as an early-transplanted variety (prior to May 15th). It has high resistance to black root rot and tobacco mosaic virus and medium resistance to Fusarium wilt, but no black shank resistance.

PD 7302LC is a new hybrid for 2008 developed by Rickard Seed. PD 7302LC has medium maturity with excellent resistance to race 0 black shank but no resistance to race 1 black shank. It also has high resistance to black root rot and tobacco mosaic virus. PD 7302LC can be used as a fire-cured or air-cured variety. It has a slightly upright growth habit, with excellent yield (3300 lbs/A) and excellent curing characteristics.

PD 7309LC is another new hybrid for 2008 developed by Rickard Seed. PD 7309LC has medium maturity with excellent resistance to race 0 black shank. It is not resistant to race 1 black shank, black root rot, or tobacco mosaic virus. It is a slightly more prostrate variety than PD 7302LC with excellent yield (3400 lbs/A) and curing characteristics. PD 7309LC can be used as a fire-cured or air-cured variety.

Management of Tobacco Float Systems

Bob Pearce, Gary Palmer, Andy Bailey, Kenny Seebold, and Lee Townsend

What is the value of a tobacco transplant? The typical market value of finished transplants is in the range of $38–$45 per one thousand plants. However the true value of a quality transplant lies in its potential to produce a high yield at the end of the growing season. Poor field management can result in low yields from good quality transplants, but good field management cannot always rescue poor quality transplants.

Most tobacco growers have the knowledge and skills necessary to grow good quality transplants, but many do not have the time to do the job right. For some the best decision may be to purchase transplants and allow someone else to absorb the risks of transplant production. Growers who derive a significant portion of their farm income from transplant sales tend to spend more time managing their float facilities than growers who grow transplants only for their own use. This does not mean that purchased plants are always better quality than you can grow yourself. Transplant buyers should consider carefully the reputation of the transplant producer, ask questions about their management practices, and carefully inspect transplants upon delivery.

There are risks associated with transporting transplants over long distances. Transplants may be infected with a disease even though they appear healthy at the time of delivery. One example of this principle is with the potential for blue mold on transplants grown in the Deep South. Blue mold does not overwinter in Kentucky, and is typically spread into our area on wind currents from southwestern source areas. When infected transplants are brought in, blue mold "hot spots" can develop rapidly and greatly accelerate the problem, costing growers money in lost production and increased control measures. If you choose to purchase transplants consider working with a local producer to minimize the risk of introducing disease and to help stimulate the local farm economy, or buy plants produced in areas north of Kentucky (where blue mold is unlikely to be present).

For growers who choose to produce their own transplants there are three general systems to consider: 1) Plug and transfer in unheated outdoor float beds, 2) Direct seeding in unheated outdoor float beds, and 3) Direct seeding in heated greenhouses. Each of these systems has its advantages and disadvantages, but all can be used to produce quality transplants. Table 1 shows a relative comparison of these three systems. Some growers may utilize more than one system; for example seeding in a heated greenhouse and moving plants to an unheated bed after germination.

Table 1. Relative advantages and disadvantages of tobacco float systems.

Characteristic	Plug and Transfer	Direct Seed	
		Outside	Greenhouse
Labor requirement	High	Medium	Low
Cost per plant	Medium	Low	High
Target usable plants (%)	95	80	90
Management intensity	Medium	High	High
Risk of plant loss	Medium	High	Medium
Risk of introduced disease	High	Low	Low
Uniformity of plants	High	Low	Medium
Degree of grower control	Medium	Low	High
Time to usable plants (weeks)	3 to 4*	8 to 10	7 to 9

** Weeks after plugging*

Tray Selection

Most trays used in tobacco float systems are made of polystyrene and manufacturers control the density of the tray by the amount of material injected into the mold. Higher density trays tend to be more durable and have a longer useful life than low density trays, but they also tend to be more expensive. In some cases an inexpensive low density tray may be desired for those who sell finished plants and have difficulty getting trays returned, or are concerned about potential disease problems with returned trays. Some problems have been reported with roots growing into the walls of low density trays, making it difficult to remove the plants.

Some trays have been described as "glazed"; these have been manufactured by a process that seals the inner surfaces of the cells. Data from greenhouse trials with new trays have shown little difference in transplant production in glazed or unglazed trays (Table 2), although glazed trays may be slightly easier to clean and sanitize due to the sealed surface in contact with the plant roots.

Yet another choice in tray design appeared on the market in 2006. A "shallow" tray has the same length and width as a regular tray but is only 1.5 inches deep as compared to the 2.5 inch depth of a regular tray. In limited testing the shallow trays had fewer dry cells, slightly lower germination, and slightly more spiral roots than regular trays (Table 2). In the end there was no difference in the production of usable transplants. The field performance of plants produced in shallow trays has not been systematically tested so we do not know if the smaller root volume will have adverse effects on the establishment and growth of the transplants. The advantages of the shallow trays are reduced amount of soil-less media needed and reduced space needed for tray storage.

Table 2. Greenhouse performance of float trays.

Tray type	Dry Cells (%)	Germination (%)	Spiral Root (%)	Usable Plants (%)
2004 data				
Regular	--	96.0	6.1	89.8
"Glazed"	--	96.5	6.1	91.0
LSD 0.05*		NS	NS	1.1
2006 data				
Regular	0.8	97.4	1.9	91.4
Shallow	0.1	96.7	2.8	91.0
LSD 0.05*	0.3	0.5	0.6	NS

** Small differences between treatments that are less than this are not considered to be real differences due to the treatment, but are thought to be due to random error and normal variability in plant growth.*