

TOBACCO

Flue-Cured Tobacco Variety Evaluation in Georgia

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Introduction

Tobacco varieties play a discerning role in yield and quality improvement programs. Moreover, a vital part of any breeding program is the appropriate testing and evaluation of new tobacco varieties. Important characteristics of these varieties are yield, disease resistance, desirable plant qualities, ease of handling, and market acceptability. For a variety to be recommended it must be superlative in one or more and contain a balance of the remainder of the factors. For instance, for a variety to have an excellent yield and poor disease resistance or to yield well and have poor cured quality is undesirable.

The Regional Variety Test is conducted to obtain data on yield, disease resistance, quality as judged by physical appearance, and chemical analysis for quality characteristics. Once this information is analyzed, the desirable varieties and breeding lines in these tests advance to the Regional Farm Test for further evaluation under growing and marketing conditions in Georgia. As in previous years, we have included the Regional Farm Test data so that when varieties are selected from this test the Extension service will have a second data set to use in making recommendations to growers.

Once released, varieties advance to the Official Variety Test where they can be evaluated on an annual basis for yield, disease resistance and quality as judged by physical appearance and chemical analysis.

Materials and Methods

The 2009 Official Variety Test and Regional Small Plot Test consisted of 34 and 36 entries respectively while the Farm Test had 10 entries and 6 replications. These tests were conducted at the University of Georgia Bowen Farm on Ocilla loamy coarse sand. All transplants were treated with Actigard and Admire for Tomato spotted wilt virus (TSWV). The Regional Variety Test and Official Variety Test were mechanically transplanted on April 16-17 with 22 plants per field plot and replicated three times. Fertilization consisted of 480 lbs/acre of 6-6-18 at first cultivation, 510 lbs/acre 6-6-18 at second cultivation, and an additional 154 lbs/acre of 15.5-0-0 at lay-by for a total of 83 lbs/acre of nitrogen.

Cultural practices, harvesting and curing procedures were uniformly applied and followed the current University of Georgia recommendations. Data normally collected included plant stand, yield in lbs/A, value/A in dollars, dollars per hundred weight, grade index, number of leaves/plant, plant height in inches and days to flower. The chemical determinations would have consisted of total alkaloids, total soluble sugars and the ratio of sugar to total alkaloids. This data is not presented due to disease and significant growth variability.

Results and Discussion

The 2009 Variety Tests began with adverse conditions from the start. Fair weather in early March enabled the completion of all field preparations by the third week of March. Then, approximately 14 inches of rain fell between March 25 and April 6 washing out previously prepared beds and moving herbicides. As a result, the variety tests were moved to a new field out of the normal rotation in an effort to retain consistency between replications. Unfortunately, disease problems and herbicide residues from the previous crop caused inconsistencies in stand and growth. Cool, moist conditions persisted through most of April delaying further planting and cultivations. In addition, environmental conditions kept TSWV symptoms from appearing until late May. Therefore, an Actigard field spray at the labeled rate was applied on May 13 when TSWV symptoms first appeared in an adjacent field. The first TSWV count was on May 12 with subsequent counts made on a weekly basis until June 18. Overall, the treated plants in the Official Variety Test had a 4% infection with the Farm Test showing 2% as compared to 8.7% for non-treated plants.

A table is presented for the Official Variety Test (Table 1) and the Farm Test (Table 2) showing TSWV infection by June 18 at which point the tests were terminated due to significant variability. The data includes the number of TSWV infected plants in each replication, total symptomatic and percent symptomatic.

Table 1. Tomato Spotted Wilt Virus (TSWV) of Released Varieties Evaluated in the 2009 Official Flue-Cured Tobacco Variety Test at the University of Georgia, Tifton, GA.

Variety	TSWV Damage			Total Symptomatic ¹	Percent Symptomatic ²
	Rep 1	Rep 2	Rep 3		
CC 13	2	0	1	3	5
CC 15	0	2	0	2	5
CC 27	2	0	0	2	4
CC 33	0	1	1	2	7
CC 35	0	1	0	1	2
CC 37	2	1	0	3	7
CC 65	0	0	3	3	7
CC 67	0	1	0	1	2
CC 75	0	0	1	1	2
GF 318	0	0	0	0	0
GF 52	0	0	0	0	0
K 326	3	3	1	7	13
K 346	0	1	1	2	4
NC 102	2	0	0	2	4
NC 196	0	1	0	1	3
NC 291	0	0	0	0	0
NC 297	0	1	1	2	13
NC 299	0	0	1	1	3
NC 471	0	1	0	1	4
NC 55	1	0	1	2	4
NC 71	0	2	3	5	11
NC 72	0	0	1	1	2
PVH 1118	0	1	0	1	3
PVH 1452	2	0	0	2	7
PVH 1596	0	2	0	2	3
PVH 2110	1	1	0	2	7
Speight 168	0	0	0	0	0
Speight 210	2	0	0	2	3
Speight 220	0	0	0	0	0
Speight 225	0	0	0	0	0
Speight 227	0	0	0	0	0
Speight 234	1	0	2	3	5
Speight 236	1	0	0	1	2
Speight H20	1	0	0	1	2

1. Total number of TSWV symptomatic plants across 3 replications.

2. Percent of TSWV symptomatic plants across 3 replications

Researched by Stevan S. LaHue and C. E. Troxell, under project S1-71 and supported by grants from the Georgia Tobacco Commission.

Table 2. Tomato Spotted Wilt Virus (TSWV) of Varieties Evaluated in the 2009 Regional Farm Test at the University of Georgia, Tifton, GA.

Variety	TSWV Damage				
	Rep 1	Rep 2	Rep 3	Total Symptomatic ¹	Percent Symptomatic ²
CU 90	0	0	0	0	0
CU 94	1	0	1	2	3
EXP 803	0	0	0	0	0
EXP 806	0	1	1	2	3
NC 2326	1	1	0	2	3
NC 95	0	0	0	0	0
NC EX 13	0	0	0	0	0
NC EX 15	1	0	1	2	3
RJR 651	1	0	0	1	1
XP 324	1	0	1	2	3

1. Total number of TSWV symptomatic plants across 3 replications.

2. Percent of TSWV symptomatic plants across 3 replications.

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