

# Evaluation of Tobacco Varieties for Resistance to Black Shank Disease in Berrien County



Beasley, E.D.<sup>1</sup>; von Waldner, M.<sup>2</sup>; Edwards, P.<sup>3</sup>; Bertrand, P.<sup>4</sup>; Moore, J.M.<sup>5</sup>



<sup>1</sup> Extension Agent, UGA Extension, Berrien County, Nashville, GA, USA, <sup>2</sup> Extension Agent, UGA Extension, Coffee County, Douglas, GA, USA, <sup>3</sup> Extension Agent, UGA Extension, Irwin County, Ocilla, GA, USA, <sup>4</sup> Plant Pathologist, UGA Extension, Tift County, Tifton, GA, USA, <sup>5</sup> Extension Agronomist -Tobacco, UGA Extension, Tift County, Tifton, GA, USA

## INTRODUCTION:

Black shank (*Phytophthora nicotianae*), is a persistent soil born disease of tobacco in Georgia. The introduction of tobacco (*Nicotiana tabacum* L.) varieties with resistance to race 0 of *Phytophthora nicotianae* has led to an increased population of race 1 in Georgia tobacco fields. With the effect of selective pressure of resistant varieties to race 0, there has ultimately been a need for horizontal resistance, or tolerance, to race 1. The primary purpose of the 2014 trials was to evaluate variety CC 143 to other known varieties with relative resistance to black shank. Two variety trials were performed in Berrien County in 2014 at the Vickers and Hendley Farm and one in 2015 at the Hendley farm to extend and replicate results from 2014. Fungicide recommendations for each field was made according to University of Georgia recommendations and grower preference. Black shank disease ratings were variable over the course of two years. However, in 2014 disease pressure was extremely high, in 2015 it was not. The 2015 trial consisted of eight varieties in a four rep randomized complete block. Each rep was one tray of seedlings for each of the eight varieties. K 326 and NC 196 were planted as standards along with six varieties of unknown Black Shank resistance. The high disease incidence seen in NC 196 confirms the presence of race 1 of *Phytophthora nicotianae*. Berrien County Trials were conducted in cooperation with other tobacco producing counties.

Variety	Black Shank (%) - 2014	
	Vickers Farm	Hendley Farm
K 326	40a	55.4a
GL 395	19.7b	N/A
CC 143	10.3b	11.6c
NC 925	8.2b	N/A
GF 318	N/A	50.3a
NC 196	N/A	31b

## MATERIALS AND METHODS:

All experiments were conducted in a random complete block design. 2014 trials consisted of four replications with four varieties and 2015 with only one trial of eight varieties with four replications. The variety K-326 was used as a comparison since it is known to have very little resistance to *Phytophthora nicotianae* race 0,1. Disease incidence was rated every two weeks and assessed until twelve weeks after planting unless complete mortality came first. Fungicide recommendations were made according to University of Georgia standards.

Variety	Black Shank (%) - 2015
	Hendley Farm
K 326	19.8
NC 196	7.3
PVH 1452	10.6
NC 471	9.2
PVH 1600	8.2
GL 395	3.4
NC 938	3.2
SP 236	0.4

(LSD 0.05)

10.2

## RESULTS AND DISCUSSION:

Results from 2014 research provided a foundation of “newer” varieties that could compete with extremely high disease pressure. CC 143 was chosen and assumed to be a primary competitor, but still needed to be validated in Georgia soils. In the process of looking at resistance of CC 143, other varieties were evaluated as well and proved to be sufficient which included GL 395, NC 925, and moderate results from NC 196. In 2015, since black shank had aggressively caused yield loss the year before, a new set of varieties were evaluated for the same purpose. Some of the same varieties were evaluated including NC 196 and GL 395, but primarily varieties were evaluated that were exempt the year before. Unfortunately, disease pressure was extremely low in 2015, but varieties were still evaluated in “normal conditions”. In Berrien County, SP 236, NC 938, and GL 395 proved to be superior, but other varieties fell close behind in regards to disease incidence.

## CONCLUSION:

Berrien County Data in cooperation with other tobacco producing counties suggest the varieties found to show promise in 2014 (CC 143, NC 925 and GL 395) continued to look fairly good in 2015. From the 2015 results PVH 16, CC 1063, NC 938 warrant further testing. In addition NC 471, NC 606 and SP 236 showed some resistance but were only evaluated in low Black Shank pressure.