

Improving Resistance to Sclerotinia Blight in Four Selected Peanut Breeding Lines or Cultivars

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The major disease that reduces peanut yields in Oklahoma is Sclerotinia blight. Some varieties such as Southwest Runner and Tamspan 90 have been developed that have good levels of resistance, but a higher level of resistance is needed. During 2001, several transgenic lines that were developed by the USDA to have higher levels of resistance to Sclerotinia blight were field tested at Ft. Cobb. These transgenic lines were confirmed to have a higher level of resistance than Okrun, the line they were originally developed from.

The objective of this project is to develop peanut cultivars with improved levels of resistance to Sclerotinia blight. The back-cross breeding procedure is being used.

The transgenic parents used have been confirmed to have higher levels of resistance and relatively stable inheritance of the resistance. The recurrent parents were selected because of their good agronomic performance and because they have high oleic acid content.

The number of F_1 seeds harvested was 56 (Table 1) but only two F_1 plants were confirmed to have the gene or genes for resistance to Sclerotinia. This lack of stable inheritance associated with transgenic plants has also been reported in other crops. The two F_1 plants that have been confirmed to have the chitinase and glucanase genes are presently being back-crossed to UF00627 and TX 994336.

Table 1. The parents, number of F₁ seeds harvested, and the number of F₁ plants that were confirmed transgenic during 2002.

Parents		F ₁ seeds Harvested	Confirmed F ₁ Transgenic
Transgenic*	Recurrent		
654	UF 00627	2	1
654	TX 994336	6	1
654	Tamrun OL 01	2	0
87	Tamrun OL 01	6	0
87	TX 994336	6	0
87	UF 00627	11	0
87	Tamrun OL 02	3	0
540	UF 00627	4	0
540	TX 994336	10	0
540	Tamrun OL 02	6	0
Total		56	2

* 654 = OKRUN with chitinase and glucanase genes.

* 87 = OKRUN with chitinase and glucanase genes.

* 540 = OKRUN with chitinase gene.

Date Planted March 14, 2002

Date Harvested August 2002