

PEANUT (*Arachis hypogaea* 'NC V-11')  
Sclerotinia blight; *Sclerotinia minor*

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**Application time and sequence of fungicide treatments for controlling *Sclerotinia* blight of peanut, 2006.**

A commercial field located in Bertie County, North Carolina with a history of *Sclerotinia* blight was used for this experiment. Plots consisted of four 36-in. rows, 25 ft long, with 10-ft planted borders between plots. The experimental design was a randomized complete block with six replicates. Peanuts were planted on 18 May using a conventional two-row tractor-mounted planter set to dispense a minimum of four seeds per linear ft. Temik 15G at 6.6 lb/A was applied in-furrow at planting for insect control. Standard production practices as described by the North Carolina Cooperative Extension Service (NC Agric. Extension Serv. Bull AG-331) were followed throughout the growing season. Standard fungicide treatments included Omega 500F at 16 fl oz/A applied three times at 21-day intervals (positive control) and an untreated check (negative control). Thirteen experimental treatments used varying sequences of Endura, Omega 500F, or no fungicide on each of the first two out of three possible fungicide application dates as allowed by the product labels. The post harvest interval (PHI) for Omega 500F is 30 days whereas that for Endura is 14 days. Therefore, treatments on the third application date included only Endura or no fungicide. Endura was applied at 9 oz/A, and Omega 500F was applied at 24 fl oz/A in a spray volume of 13 gal/A. First application was made 61 days after planting (DAP) with subsequent applications at 21-day intervals. Incremental increase of disease incidence was monitored on the two center rows of each plot, with ratings beginning on 14 Jul when the first observation of disease was made, and continued at 1 to 2-wk intervals until the last rating on 26 Sep. Peanuts were dug on 4 Oct and harvested on 12 Oct.

Weather early in the season was warm and wet. Mid-season weather was hot and dry followed by cool and very wet conditions late in the season. Highest area under the disease progress curves (AUDPC) were observed for treatments with only one application of fungicide early or mid-season (Table 1). Treatments in which either fungicide was applied at least two times typically had less disease than the previously mentioned treatments (Table 1). When effects of both fungicides were pooled, contrasts on AUDPC data indicated that fungicide application significantly reduced the level of disease incidence over the untreated check at each application time (Table 2). Both fungicides were found to be comparable in controlling disease incidence in this experiment (Table 2). No other pooled effects were noted for AUDPC. Yields were typically greater when fungicide was applied at least twice, with the highest yields recorded when fungicide was applied at the first and last application times (Table 1). Contrasts comparing yield of treatments with Omega 500F vs. Endura and fungicide vs. no fungicide at all three application intervals were not significant (Table 2).

**Table 1**

| Treatment sequence and rate of product/A <sup>Z</sup>                             | Final AUDPC <sup>Y</sup> | Yield <sup>X</sup><br>(lb/A) |
|---|--------------------------|------------------------------|
| Untreated Check (negative control).....   | 122.3 ab                 | 4207 ab                      |
| Omega 500F 16 fl oz; Omega 500F 16 fl oz; Omega 500F 16 fl oz (positive control). | 33.6 c                   | 4358 ab                      |
| Endura 9 oz; No fungicide; No fungicide.....                                      | 100.2 abc                | 4270 ab                      |
| Endura 9 oz; No fungicide; Endura 9 oz.....                                       | 44.6 bc                  | 4786 a                       |
| Endura 9 oz; Omega 500F 24 fl oz; No fungicide.....                               | 93.5 abc                 | 4249 ab                      |
| Endura 9 oz; Endura 9 oz; No fungicide.....                                       | 65.8 abc                 | 4559 a                       |
| Endura 9 oz; Omega 500F 24 fl oz; Endura 9 oz.....                                | 53.3 abc                 | 4583 a                       |
| Omega 500F 24 fl oz; No fungicide; No fungicide.....                              | 83.2 abc                 | 3825 b                       |
| Omega 500F 24 fl oz; No fungicide; Endura 9 oz.....                               | 72.4 abc                 | 4631 a                       |
| Omega 500F 24 fl oz; Omega 500F 24 fl oz; No fungicide.....                       | 42.3 c                   | 4372 ab                      |
| Omega 500F 24 fl oz; Endura 9 oz; No fungicide.....                               | 41.9 c                   | 4481 ab                      |
| No fungicide; Endura 9 oz; No fungicide .....                                     | 65.4 abc                 | 4458 ab                      |
| No fungicide; Endura 9 oz; Endura 9 oz.....                                       | 34.7 c                   | 4161 ab                      |
| No fungicide; Omega 500F 24 fl oz; Endura 9 oz.....                               | 68.9 abc                 | 4194 ab                      |
| No fungicide; Omega 500F 24 fl oz; No fungicide.....                              | 125.0 a                  | 4179 ab                      |

<sup>Z</sup> Treatment sequences are denoted as application one; application two; application three. All treatments were initiated 61 DAP. Subsequent applications for all treatments were made at 21-day intervals.

<sup>Y</sup> Area under the disease progress curve (AUDPC) data were square root transformed for analysis and means were back-transformed for presentation. Means followed by the same letter are not significantly different according to the test of least significant difference; LSD=19.3; R<sup>2</sup>=0.30; CV=47.

<sup>X</sup> Means followed by the same letter are not significantly different according to the test of least significant difference; LSD=694; R<sup>2</sup>=0.25; CV=14.

**Table 2**

| Contrast <sup>Z</sup>                    | df  | Final AUDPC <sup>Y</sup><br><i>Contrast Estimate</i> | Yield (lb/A) <sup>Y</sup><br><i>Contrast Estimate</i> |
|--|-----|--|---|
| <b>First Application Effects</b> .....   | (4) |  |   |
| 1. Untreated Check vs. fungicide.....    | 1   | 3.24 *   | -204.29 ns  |
| 2. Omega 500F vs. Endura.....            | 1   | -1.07 ns   | -155.91 ns  |
| 3. No fungicide vs. Omega 500F only..... | 1   | 1.09 ns  | -85.60 ns   |
| 4. No fungicide vs. Endura only.....     | 1   | 0.01 ns  | -241.52 ns  |
| <b>Second Application Effects</b> .....  | (4) |  |   |
| 1. Untreated Check vs. fungicide.....    | 1   | 3.33 *   | -152.26 ns  |
| 2. Omega 500F vs. Endura.....            | 1   | 0.99 ns  | -92.53 ns   |
| 3. No fungicide vs. Omega 500F only..... | 1   | 0.45 ns  | 55.55 ns  |
| 4. No fungicide vs. Endura only.....     | 1   | 1.44 ns  | -36.99 ns   |
| <b>Third Application Effects</b> .....   | (1) |  |   |
| 1. Untreated Check vs. fungicide.....    | 1   | 4.00 *   | -244.90 ns  |

<sup>Z</sup> All treatments were initiated at 61 DAP. Subsequent applications for all treatments were made at 21-day intervals. No fungicide indicates that no fungicide was applied at a particular application time. Fungicide may have been applied at other application times. The untreated check was included only where indicated.

<sup>Y</sup> Area under the disease progress curve (AUDPC) data were square root transformed for analysis and presentation. The symbol (\*) denotes a significant contrast for  $P \leq 0.05$ ; ns = not significant at  $P = 0.05$ .