

**Evaluation of fungicides for control of downy mildew on cucumber, Cleveland 2014.**

The experiment was conducted at the Piedmont Research Station in Cleveland, NC (N35°42.065'; W080°37.267'). Plots were single beds on 5-ft centers, covered with black plastic mulch; 14-ft long with 4-ft fallow borders at each end. The previous year the field was planted with soybean followed by rye as a cover crop. Cucumber was direct seeded on 15 Aug (1.5-ft in-row spacing, 2 seed/hill) in raised beds and thinned to one plant per hill after emergence (9 plants/plot). Irrigation and fertilization were applied via drip tape. Treatments were randomized into four complete blocks. Fungicide treatments were applied using a CO<sub>2</sub>-pressurized backpack sprayer equipped with a single-nozzle handheld boom with a hollow cone nozzle (TXVS-26) delivering 40 gal/A at 45 psi. Applications were made on 3, 10, 19 and 24 Sep and 2 and 8 Oct. Disease severity was assessed on 24 Sep and 2, 8 and 15 Oct as percentage of foliage with necrosis. Data was analyzed in the software ARM (Gylling Data Management, Brookings, SD) using analysis of variance (AOV) and the Waller-Duncan test to separate means.

Downy mildew was first detected on 3 Sep at approximately 2% disease severity in the field and progressed rapidly throughout the remainder of the trial. Combination treatments with alternations of Ranman + Bravo Weather Stik with Previcur Flex + Bravo Weather Stik provided the best downy mildew control and highest marketable yield. Zampro + Bravo Weather Stik alternated with Tanos + Bravo Weather Stik also provided significant control of *P. cubensis* and marketable yield increase compared to the non-treated. None of the other treatments controlled downy mildew. No phytotoxicity was observed. In the table, treatments are sorted by disease severity on 15 Oct.

| Treatment and rate of product per acre | Application No. | Disease Severity* (%) |         |        | Mkt. Yield (lb/plot) |
|--|-----------------|-----------------------|---------|--------|----------------------|
|  |                 | 2 Oct                 | 8 Oct   | 15 Oct |                      |
| Ranman 3.33SC 2.75 fl oz               | 1, 3, 5         |                       |         |        |                      |
| Induce 90L 0.25% v/v                   | 1, 3, 5         |                       |         |        |                      |
| Bravo Weather Stik 6SC 2 pt            | 1, 3, 5         |                       |         |        |                      |
| Previcur Flex 6F 1.2 pt                | 2, 4, 6         |                       |         |        |                      |
| Bravo Weather Stik 6SC 2 pt            | 2, 4, 6         | 20.3 d**              | 39.5 d  | 61.3 c | 22.9 a               |
| Zampro 4.33SC 14 fl oz                 | 1, 3, 5         |                       |         |        |                      |
| Induce 90L 0.25% v/v                   | 1, 3, 5         |                       |         |        |                      |
| Bravo Weather Stik 6SC 2 pt            | 1, 3, 5         |                       |         |        |                      |
| Tanos 50WG 8 oz                        | 2, 4, 6         |                       |         |        |                      |
| Bravo Weather Stik 6SC 2 pt            | 2, 4, 6         | 32.0 c                | 52.0 c  | 69.3 b | 18.3 b               |
| Equation 2.08SC 11.0 fl oz             | 1-6             | 68.5 ab               | 76.8 ab | 94.5 a | 8.4 c                |
| Quadris 2.08SC 15.5 fl oz              | 1-6             | 73.8 a                | 75.8 b  | 95.0 a | 7.1 c                |
| Equation 2.08SC 15.5 fl oz             | 1-6             | 71.8 ab               | 77.3 ab | 95.5 a | 9.2 c                |
| Zonix 8.5L 30 fl oz                    | 1-6             | 70.0 ab               | 76.8 ab | 96.0 a | 7.3 c                |
| Non-treated                            | 1-6             | 73.0 ab               | 81.8 a  | 96.5 a | 7.6 c                |
| Zonix 8.5L 18 fl oz                    | 1-6             | 68.0 b                | 78.3 ab | 97.3 a | 8.7 c                |
| Zonix 8.5L 45 fl oz                    | 1-6             | 71.8 ab               | 79.5 ab | 97.5 a | 9.3 c                |

\* Disease rating scale based on percent necrotic foliage caused by *P. cubensis*.

\*\* Treatments followed by the same letter(s) within a column are not statistically different ( $P=0.05$ , Waller-Duncan  $k=100$ ).