BASIL (*Ocimum basilicum* 'Genova,' 'Thunderstruck,') 'Devotion,' 'Obession,' 'Everleaf')
Downy mildew; *Peronospora belbahrii*

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Evaluation of newly-released basil cultivars for resistance to downy mildew in the greenhouse, 2018.

'Genova,' 'Thunderstruck,' 'Devotion,' and 'Obsession' basil were seeded into 288-cell flats on 3 Jul and 'Everleaf' was seeded on 12 Jul in a greenhouse on the campus of Michigan State University. The seedlings were transplanted into 4-in. round plastic pots containing a soilless medium (Suremix MI Grower Products, Inc., Galesburg, MI) on 1 Aug. Plants were fertilized weekly with 200 ppm of Peters water soluble fertilizer (ICL Specialty Fertilizers, Dublin, OH). Greenhouse temperatures averaged 72.5°F and ranged from a low of 64.4°F to a high of 94.6°F. Ten, single-plant replicates per cultivar were arranged in a completely randomized design under 80% shade cloth. On 6 Aug, inoculum was prepared by placing basil leaf tissue sporulating with *P. belbahrii* into water and agitating to release the spores. The sporangial suspension (1.0×10^4 sporangia/fl oz) was sprayed onto the plants (0.1 fl oz/plant) using a janitorial spray bottle. Immediately after inoculation, each plant was placed into an individual metal basket enclosed in a translucent bag containing 6 fl oz of water for increased relative humidity. On 15 Aug, the bags were removed. On 22 Aug, to induce downy mildew sporulation, the basil plants were again enclosed in baskets covered in bags containing 6 fl oz of water for increased relative humidity. On 28 Aug, the bags were opened, the total number of leaves and the number of leaves with sporulating *P. belbahrii* were counted, and a disease severity rating was noted (1 to 10; 1=no sporulation observed, 2=<5% leaf area with sporulation, 3=6-20% leaf area with sporulation, 4=21-40% leaf area with sporulation, 5=41-60% leaf area with sporulation, 6=61-80% leaf area sporulation, 7=81-100% leaf area with sporulation and minor defoliation 8=81-100% leaf area with sporulation and moderate defoliation 9=81-100% leaf area with sporulation and severe defoliation, 10=plant 100% defoliated). Data were analyzed using SAS PROC GLM and statistical differences were compared using the Fisher's Protected Least Significant Differences test (P=0.05).

The large-leaf basil cultivars Everleaf and Genova, shown in previous experiments to be susceptible to *P. belbahrii*, had 65.2% and 8.0% of their leaves with the sporulating pathogen, respectively. 'Everleaf' was highly susceptible in this study and some plants were defoliated due to infection. New downy mildew-resistant cultivars Thunderstruck, Devotion, and Obsession were asymptomatic.

Basil cultivar	Leaves with sporulating *P. belbahrii* (%)	Disease severity*
Everleaf	65.2 c**	6.0 c
Genova	8.0 b	2.9 b
Thunderstruck	0.0 a	1.0 a
Devotion	0.0 a	1.0 a
Obsession	0.0 a	1.0 a

*Disease severity rating was 1-10; 1=no sporulation observed, 2=<5% leaf area with sporulation, 3=6-20% leaf area with sporulation, 4=21-40% leaf area with sporulation, 5=41-60% leaf area with sporulation, 6=61-80% leaf area with sporulation, 7=81-100% leaf area with sporulation and minor defoliation 8=81-100% leaf area with sporulation and moderate defoliation 9=81-100% leaf area with sporulation and severe defoliation, 10=plant 100% defoliated).

**Column means with a letter in common are not statistically different (Fisher's LSD; P=0.05).