

Monarda Mildew Resistance

Richard E. Bir

North Carolina State University, 2016 Fanning Bridge road, Fletcher, North Carolina
28732-9628 U.S.A.

Richard Hawke

Chicago Botanic Garden, 1000 Lake Cook Road, Glencoe, Illinois 60022

“UNDER OUR CONDITIONS” should be at the top of every plant disease-resistance trial report. We learn in our first plant pathology class that the amount of disease on a plant depends upon disease pressure. Disease pressure depends upon local growing conditions. However, it has become all too convenient to view the results of a plant disease resistance study . . . often because their results were conveniently printed in a table . . . and cite these results as if the same plant will respond the same way everywhere.

The bee balm resistance studies referred to here are the result of similar tests at two dramatically different sites, the Chicago Botanic Garden in Illinois and in the North Carolina Mountains. The tests were similar except that plants in Chicago were irrigated “as needed” while those in NC received over an inch of rainfall per week as well as almost daily morning fog during June, July and August.

Table 1. Early bloom season (8 June 1998) *Monarda* cultivar taxa ratings from North Carolina.

Highly resistant (40% to 50% defoliation)		
Claire Grace	Marshall's Delight	Stone's Throw Pink
Moderately resistant (50% to 60% defoliation)		
Beauty of Cobham	Blaustrumpf (syn. Blue Stocking)	Cambridge Scarlet
Comanche	Mahogany	Vintage Wine
Poorly resistant (over 60% defoliation)		
Cerise	Cherokee	Colrain Red
Croftway Pink	Elsie's Lavender	Gardenview Scarlet
Jacob Cline	Jean Stewart	Loddon Crown
<i>Monarda didyma</i>	Raspberry Wine	Sagittarius
Scorpion (syn. Scorpio)	Schneewittchen (syn. Snow White)	Violet Queen

Table 2. Late bloom season (27 July 1998) *Monarda* taxa mildew ratings from North Carolina.

Highly resistant (60% to 70% defoliation)		
Beauty of Cobham	Blue Stocking Blaustrumpf (syn.)	Cambridge Scarlet
Elsie's Lavender	Mahogany Vintage Wine	Marshall's Delight
Moderately resistant (70% to 80% defoliation)		
Cerise	Cherokee	Claire Grace
Colrain Red	Comanche	Croftway Pink
Gardenview Scarlet	Jacob Cline	Jean Stewart
Loddon Crown	Raspberry Wine	Sagittarius
Scorpion (Scorpio)	Stone's Throw Pink	Violet Queen
Poorly resistant (over 80% defoliation)		
<i>Monarda didyma</i>	Schneewittchen (syn. Snow White)	

Table 3. *Monarda* taxa mildew ratings from Chicago Botanic Garden.

Highly resistant (under 25% infection/defoliation)		
Blue Wreath	Colrain Red	Falls of Hill's Creek
Gardenview Scarlet	Marshall's Delight	Ohio Glow
Raspberry Wine	Rose Queen	Violet Queen
Moderately resistant (26% to 50% infection/defoliation)		
Aquarius	Blue Stocking	Thundercloud
Feuerschopf(syn. Firecrown)	Kardinal	Petite Delight
Prärienacht (syn. Prairie Night)	Schneewittchen (syn. Snow White)	Souris
Squaw	Stone's Throw Pink	Sunset
	<i>Monarda didyma</i>	
Poorly resistant (over 51% infection/defoliation)		
Adam	Beauty of Cobham	Cambridge Scarlet
Croftway Pink	Claire Grace	Granite Pink
Mahogany	Mrs. Perry	Panorama
Präriefeuer (syn. Prairie Fire)	Purpurkrone	Schneewittchen
	<i>Monarda fistulosa</i>	

Part of the difference in plant responses can be attributed to rainfall and humidity since high humidity but a lack of free water on a leaf surface favors the development of powdery mildew when temperatures are between 59 and 86°F. Temperatures rarely exceed 86°F in summer in the mountains of North Carolina while summer temperatures above 86°F are common near Chicago.

Winter temperatures are also a major factor in both survival and vigor of monarda. Cultivars that performed well under the severe mildew pressure of North Carolina which did not perform well in Chicago all sustained winter injury in Chicago, whereas, 'Marshall's Delight', which displayed excellent mildew resistance in both locations did not show winter injury.

CONCLUSIONS

On the rare occasion when similar research can be compared on different sites, pay close attention to what is being measured. The Chicago study shows a multi-year summary while the North Carolina data is from 1 year with tables showing response at different times during the growing season.

When research is similar enough, always refer to the research done where growing conditions are most similar to local conditions when choosing which cultivars to grow.

ADDITIONAL REFERENCES

- Bir, R.E. and J.L. Conner.** 1999. Powdery mildew resistance in monarda. Proc. SNA Res. Conf. 44: 463-465.
- Hawke, R.G.** 1998. Monarda and powdery mildew resistance. Chicago Botanic Garden Plant Evaluation Notes 12:1-4.
- Powell, C.C. and R. K. Lindquist.** 1992. Ball pest and disease manual. Ball Publishing, Geneva.