# Climate:
# Another Factor That Can Affect Bentgrass Cultivar Choices

*By Christopher Sann*

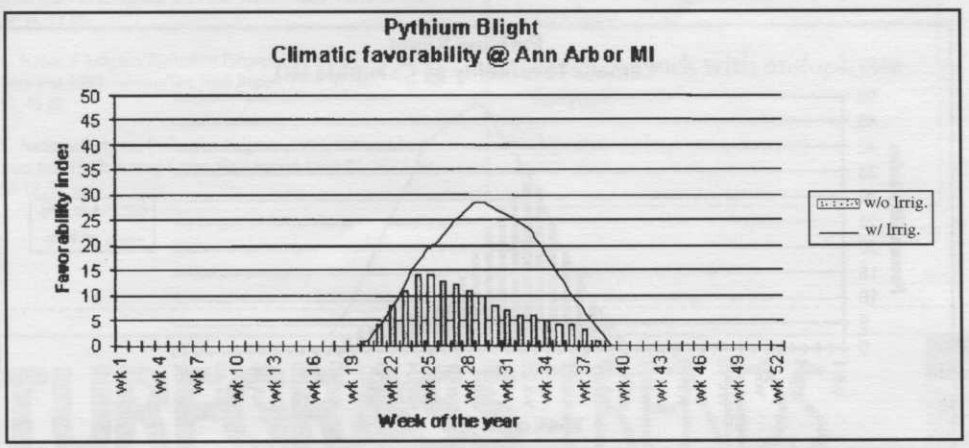
There are some areas of the country where the climatic conditions predispose closely mowed bentgrass turf to consistently high levels of a broad spectrum of disease activity. These areas require diligence, imagination, a high level of technical knowledge and some good old fashioned luck to successfully manage high quality turf. The use of disease-resistant varieties can play a significant role in tilting the scales in the manager's direction.

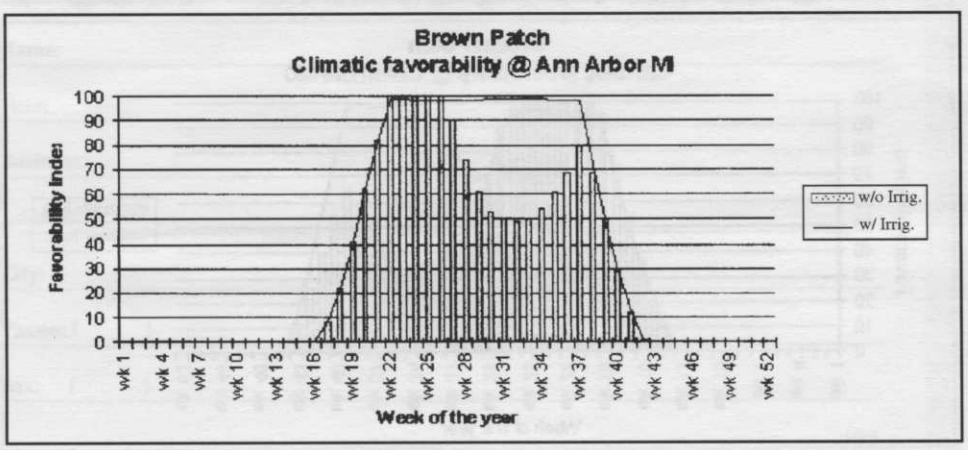
For each of these areas, there are multiple examples of growing regions where the need for a particular cultivar is less well defined; areas where disease pressure can often be high, but where heavy prolonged pressure is less common. In these regions, picking the best cultivar for the local climate and your cultural practices might take some additional work.

These areas fall within the margins of a major disease's core distribution zone — where the climate consistently provides ideal or near ideal growing conditions — or where two or more core zones overlap. In these marginal areas, one or more diseases can be present, but usually peak infestation periods are short and the turf, though suffering damage, usually recovers. Here, it is important that managers choose the cultivar that shows resistance to the pathogen that poses the greatest potential problem.

*Examples:*

The four charts show how climate and irrigation practices interact to have a significant effect on the severity and the duration of Brown Patch and Pythium Blight at Ann Arbor, MI and Columbia, MO.



In the case of these two diseases, cultural practices played a significant role in increasing the severity and duration of the disease. For Brown Patch, the use of 1.25 inches of irrigation per week at Ann Arbor during the normal 26 weeks (the bar portion of the chart) of favorability caused an increase (the line portion of the graph) in weeks at maximum disease favorability (fi > 90%) of 220% (5 wks @ ~100 fi vs. 16 wk.) and a potential increase in annual disease favorability (adf) of 21% (1569 adf vs. 1903 adf). At Columbia, the effects of the same level of irrigation for 31 weeks increased the weeks at maximum disease favorability by 88% (8 wks. vs. 15 wks.) and the annual disease favorability by 27% (1777 vs. 2256).

In the case of Pythium Blight, the results showed an increase in the annual disease favorability of 128% at Michigan and 94% at Missouri. Additionally, the maximum weekly favorability for Pythium blight increased at Michigan by 107% (from 14 to 29 fi) and 74% (from 34 to 59 fi) at Missouri.

## Conclusions

In all four cases, moisture is the controlling climatological factor, whether as rainfall or applied through irrigation. If the managed turf is grown on native or amended soils and reducing irrigation input is an option, then the best cultivar choice for both locations is a Brown Patch-resistant variety because of the number of weeks at maximum favorability that normally occur.

If reducing irrigation is not an option, because of sand based growing medium or other local conditions, then the Missouri choice should be changed to a Pythium-resistant cultivar. This is necessitated by the added moisture of irrigation raising the normally moderate favorabilty for moderate to high (34 to 59 fi). The Michigan location favorability index does go up (14 to 29), but even at the higher rate the risk is still only moderate.