**Summary:** Disease pressure is among the four major factors that influence fungicide performance (Latin, 2011). Less fungicide is normally required to achieve adequate control under conditions of low disease pressure. Host resistance to infection is an important component of disease pressure. The release of modern creeping bentgrass cultivars with measureable resistance to dollar spot infection warrants investigation into how host resistance and synthetic fungicides can be integrated for more efficient dollar spot control. Our research over two years suggest that resistant cultivars can lower disease pressure to the point where significant savings in fungicide application is quite possible, especially in fairway locations. Specifically, we found that over a four-month period, up to 83% less fungicide was used to control dollar spot on cv. Declaration (the “resistant” cultivar) than on more susceptible cultivars such as cv. Penncross and Independence.

**Materials and Methods**

The experimental site was planted and established in 2010 at the Daniel Turfgrass Research and Diagnostic Center in West Lafayette, IN. Experimental procedures were the same as reported in 2011. Fungicide applications were initiated on July 3, 2012 and were continued through the first week in October. Dollar spot severity was assessed 3 days per week by counting the number of infection centers in each plot. Treatments were applied when an average threshold of 8 spots per plot was reached.

**Results and Discussion**

With no fungicide application, disease severity in plots of all three cultivars increased during the experimental period. Resistance and susceptibility to disease are opposite ends of a continuum, and although Declaration is considered a “dollar spot resistant” cultivar, it may be more appropriately termed “less susceptible” since infection will occur, but outbreaks are regularly less severe than on more susceptible cultivars such as Penncross. Figure 1 shows an image of plots of Declaration and Penncross taken after 14 weeks with no fungicide.

Figure 2 illustrates disease progress for a 7-week period on plots of Declaration and Penncross treated with Daconil Ultrex at rates equivalent to 1.8 and 3.6 oz./1000 sq. ft., respectively. In this example, three applications were made on Penncross and only 1 spray was needed on Declaration. The resulting difference was that 6 times more fungicide was required to achieve comparable levels of control on the more susceptible cultivar (Penncross) than on the more resistant cultivar (Declaration).

This research reinforces the principle that less fungicide will be required to achieve comparable levels of control under conditions of low disease pressure. Considerable savings may be realized by exploiting the host component of disease pressure. However, it depends on the availability of cultivars with strong agronomic qualities and measureable levels of host resistance. Also, because there is a
higher tolerance for disease outbreaks on fairways compared to putting greens, most savings will occur on the taller cut grass. From a practical perspective, the notion of regrassing fairways simply to achieve savings in fungicide expenditures is questionable. However, for new construction and renovation projects, exploiting the dollar spot resistance in more modern cultivars is a reasonable option.

REFERENCES

Figure 1. Both Declaration (top) and Penncross (bottom) suffered dollar spot damage when left unsprayed for 14 weeks, but outbreaks were less severe in plots of Declaration.
Figure 2. Dollar spot progress curves for Penncross (red) and Declaration (blue) over a 7-week period. Using an application threshold of 8 spots per plot, Penncross was sprayed 3 times (red arrows) with Daconil Ultrex at 3.6 oz./1000 sq. ft., and Declaration was sprayed only once (blue arrow), with Daconil Ultrex at half the rate (1.8 oz./1000 sq. ft.)