

Leaf Wetness Sensors
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Temperature and leaf wetness are two of the most critical weather parameters that are used to drive weather-based fungicide spray Decision Support Systems. Development of temperature instruments has resulted in the current utilization of sensors where there are excellent correlations between the actual and recorded temperature values. However this is not so with leaf wetness. Historically, researchers have had to rely on relative humidity as a surrogate for leaf wetness. From “horse hairs” to wet and dry bulb psychrometers to electronic devices, researchers have used these methods to measure leaf wetness, realizing some of the inherent inaccuracies in these methods but knowing this was the best they had at the time. A new development by Weather INnovations Incorporated, WIN, of a unique cylindrical leaf wetness sensor has shown outstanding accuracy, reliability and durability in recording leaf wetness hours. Using this leaf wetness sensor the author has developed disease models for tomato foliar diseases called TOMcast and a spray advisory for the control of Cercospora leaf spot in sugarbeets. Since most foliar plant diseases are initiated by spores landing on plant leaves where they germinate and infect the immediate tissue, the spores need free water to do so. It is thus extremely important in the development of disease prediction models to be able to measure the length of time leaves are wet. Comparisons between the WIN cylindrical leaf wetness sensor and the commercially available flat plate leaf wetness sensors will be made with reference to the significance of these results in implementing plant disease management models.