# ABSTRACT

**Feasibility study to guide the development of a wet bulb globe temperature-based heat alert system aimed at heat‐related illness prevention and productivity optimization in agricultural workers**

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September 2015

Washington (WA) crop workers are at risk for heat-related illness (HRI) from exposure to hot conditions and internal heat generation from heavy physical work. Research suggests that systems that inform people about hot conditions may be effective in preventing HRI. This project sought to collaborate with growers and others in the WA agricultural community to assess the relative practicality and acceptability of heat awareness approaches using different heat indices, and to explored how best to communicate this information to the agricultural community. To accomplish this goal, we worked with Washington State University’s (WSU) AgWeatherNet Program, which provides access to weather data from WSU’s automated weather station network and a range of models and decision aids, to: 1) install special sensors on several AgWeatherNet weather stations in order to calculate Wet Bulb Globe Temperature (WBGT), a standard index of heat exposure; 2) compare WBGT with estimates of WBGT and other heat indices; and 3) conduct key informant interviews with stakeholders in the agricultural community to identify the preferred uses and features of a heat awareness system. We found that while growers are interested in heat exposure data for crop management and worker health protection, as well as for optimizing work efficiency, heat indices, sources of heat exposure data, and actions in response to heat data appear to vary. We demonstrated that WBGT can be calculated from special weather station sensors but that estimating WBGT from existing sensors using certain methods may be adequate from a worker health and safety standpoint. While estimated WBGT values could form the basis for determining when to send out information about hot conditions to the agricultural community, WBGT values should be coupled data that many growers currently prefer, such as air temperature and humidity, and communications should include or direct recipients to information on standard recommended practices to protect worker health in the heat, tailored to the WA growing community. This project identified an opportunity and specific next steps for reducing disparities in heat health practices and worker HRI risk and laid the groundwork for the development of a heat awareness system aimed at preventing HRI and heat-associated injuries, while optimizing productivity, in WA agricultural workers.