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A field experiment (part of a multistate project) will be conducted in winter wheat to investigate the effects of cultivar resistance and fungicide application programs on Fusarium head blight (FHB) and deoxynivalenol (DON) accumulation. The experiment will be located at the University of Nebraska Havelock Farm near Lincoln, Nebraska. The experimental design will be a randomized complete block (RCBD), with a split-plot arrangement of cultivar as the whole-plot and fungicide treatment program as the sub-plot. There will be four replicate blocks. Four cultivars adapted to Nebraska will be used: Overland (moderately resistant), Millennium (moderately resistant), McGill (moderately susceptible), and Overley (susceptible). The fungicides Prostaro®, Caramba®, Proline®, and Folicur® will be applied according to the following treatments: 1) Untreated, inoculated check, 2) Prostaro at anthesis, 3) Prostaro at anthesis followed by Caramba four days after anthesis, 4) Caramba at anthesis followed by Folicur four days after anthesis, 5) Proline at anthesis followed by Folicur four days after anthesis, and 6) Untreated, non-inoculated check. Fungicide applications will be made using a sprayer equipped with paired Twinjet or flat fan XR8001 or XR8002 nozzles, mounted at an angle of 30-45° from the horizontal, facing forward and backward or forward only, and calibrated to deliver at a rate of 20 gallons of fungicide-water mixture per acre. In treatments 1 to 5, plots will be spray-inoculated with spores of *Fusarium graminearum* (1×10^5 spores/mL) 24 hours after fungicide application at anthesis. To enhance inoculum buildup in the plots as well as disease development, corn kernel inoculum will be spread weekly on the soil surface starting at four weeks before anthesis. FHB incidence and severity will be assessed at the soft dough growth stage. At and following harvest, the following measurements or assessments will be made: yield, test weight, *Fusarium*-damaged kernels (FDK), and DON concentration. A weather station installed at the experiment site will record weather data starting in mid-April through harvest. Data will be forwarded to Drs. Pierce Paul and Larry Madden for meta-analysis. Results from the research will be disseminated to growers, crop consultants, stake-holders, and the public through mass media and presentations at state and national meetings.