

The interaction effects of herbicide and temperature on peanut seed germination

Experiments have been conducted in field and laboratory to evaluate the effects of herbicides by temperatures on peanut germination and emergence over multiple years and different seed lots. The interaction of temperature and herbicide effects on peanut seed germination and vigor were evaluated in Petri-dishes incubated over a thermal gradient at 21, 23, 27, and 30 C. Solutions containing flumioxazin at 0.01, 0.1, 1.0, and 10 ppm along with a nontreated control were added to the Petri dishes. All seed were allowed to incubate at the specified temperature and flumioxazin concentration for 5 consecutive days in total darkness. After 5 days, lights were turned on in the thermogradient to activate flumioxazin. Peanut seed were then counted for germination and radicle length was measured. Peanut germination was affected by temperature; however it was not impacted by flumioxazin rate. In contrast, radicle lengths at all temperatures were reduced linearly with an increase in flumioxazin rate. Average kernel biomass was negatively impacted by temperature and flumioxazin rate: with an inverse relationship for each. With increasing temperature kernel biomass increased, but with increasing flumioxazin rate kernel biomass decreased. In field experiments, early season planting reduced initial plant size when used in combination with flumioxazin, but this was transient each year.