Climate change: are there limits to UVB effects on soybean. (A03-grant081319-Poster)

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Abstract:

Does greater solar UVB radiation translate into greater UVB impacts on soybean? Much of the research into UVB effect has been based on 30-50% enhancements of ambient UVB levels. Can we use these results to interpolate or extrapolate to other UVB levels? To address this question, five soybean cultivars (Bay, Williams 82, Essex, York, and Forrest) were exposed to moderate photosynthetically active radiation and 5 times the ambient UVB in a greenhouse environment. The plant response to UVB was defined in terms of specific leaf weight (SLW), biomass production and 'sunburned' leaf area relative to the control plants receiving no UVB radiation. While SLW decreased for all cultivars under the UVB treatments, it was directly correlated with the PAR level. UVB enhancement resulted in decreased biomass production for most cultivars of similar magnitude to that reported for lesser UVB exposures. It appears that UVB effects of several cultivars do not increase linearly with increased UVB exposure, but reach an equilibrium state. Thus the majority of UVB impacts on soybean may be expected to occur mostly under relatively small changes in the stratospheric ozone amount.

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