

Responses of a constructed plant community to combinations of herbicides, a model for field tests?

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As part of its regulation of pesticides, the US Environmental Protection Agency must consider environmental risks, including impacts to non-target plants exposed to pesticide drift. Normally these risk assessments consider impacts to individual species, using greenhouse, dose-response experiments with growth endpoints. More sophisticated field tests using simulated plant communities may be required, but are rarely conducted. To provide information on possible field test procedures to indicate herbicide effects on non-target plant communities, we developed a series of small plots using species found in Willamette Valley grasslands. The studies used nine perennial species: *Eriophyllum lanatum* (Oregon sunshine), *Iris tenax* (toughleaf Iris), *Prunella vulgaris* var. *Lanceolata*, *Camassia leichtlinii* (large camas), *Festuca roemerii*, *Elymus glaucus* (blue wildrye), *Ranunculus occidentalis* (western buttercup), *Fragaria virginiana* (Virginia/wild strawberry), and *Potentilla gracilis* (slender cinquefoil). Plots were established on two Oregon State University farms and studies were conducted over two years. The nine species were studied to determine single and combined effects of glyphosate and dicamba on several response endpoints including % cover on a periodic basis, # of reproductive structures and seed production by species. These studies demonstrated a potential experimental protocol which may be suitable for testing ecological responses of plant communities to herbicides.