

*Society for Range Management and Weed Science Society of America, "Working landscapes providing for the future", February 7-11 2010, Denver, Colorado. p56 [invited].*

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Prioritizing weed management: mapping, monitoring and modeling in agricultural to wildland systems.

Recording the location of weed populations became easier with the advent of global positioning systems (GPS) but the science of using this information to improve weed management remains limited. As GPS units have become more portable and affordable the number of people mapping weeds has increased. Indeed mapping is no longer restricted to farmers, ranchers, and federal and state agencies: citizen groups are also involved and use the GPS and photographic capabilities of their mobile phones to record information. Thus, more weed maps are being generated but these data are often used "as is" with management practices being restricted to known populations. With more quantitative analysis mapping data can become a powerful tool in planning and prioritizing weed management. Such analysis can aid in the development of models to predict where populations of the same species will occur over time and space, and which populations or environments should be targeted for control. Repeat mapping or monitoring data can be used to improve the models, but probably more importantly can be used to evaluate the effectiveness of the control or other management practices. The aim of this review is to highlight different mapping, monitoring and predictive modeling approaches used in agricultural, rangeland and wildland systems and to evaluate which methods and techniques best achieve the ultimate goal of prioritizing weed management. Similarities between successful site-specific approaches and how transferrable these methods are between the different systems will also be explored.