Monitoring

Monitoring Guide

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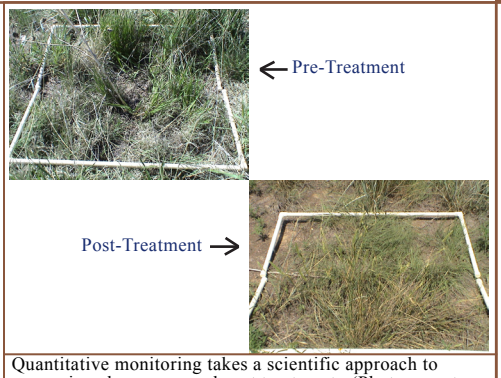


Quantitative monitoring takes a scientific approach to measuring change pre and post treatment. (Photos courtesy of Kelly Uhing CO Dept. of Ag.)

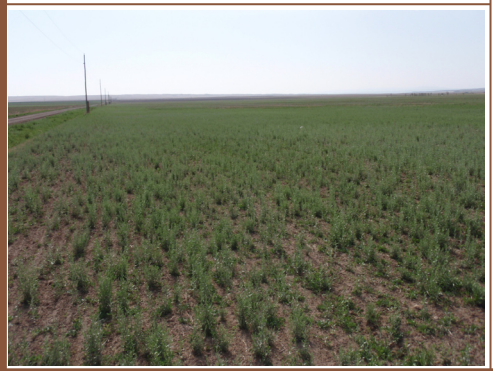
Monitoring is an important function within an integrated weed management plan. Monitoring is the measurement of change in the abundance and condition of weed and native plant populations over time. The main goal is to determine whether desired changes in the vegetation have occurred as a consequence of weed control. Monitoring occurs over an extended period of time, it can be a process that takes up to 5 - 10 years. There are two different types of monitoring when dealing with noxious weeds. The first type of monitoring is, quantitative, strictly used in the search for scientific knowledge concerning noxious weeds and the influence on native habitats. This type of monitoring is usually not practical for on the ground management of noxious weed populations. The other monitoring technique is, qualitative, used more to make managerial decisions in a shorter period of time. This technique will utilize site visits, photo-point monitoring, GPS/GIS mapping, and other techniques to monitor populations over time. This fact sheet will focus on monitoring recommendations used to make sound weed management decisions.

Monitoring for management of weed populations consist of three different types; pre-project, mid-project, and post-project. Each of these monitoring types serves as an important method in the management of noxious weeds.

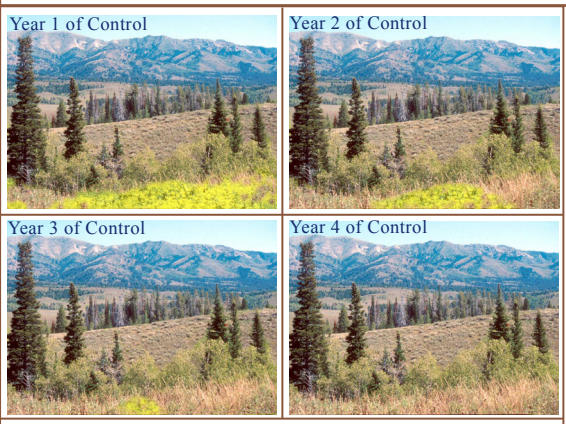
Pre-project monitoring consists of scouting for new populations and knowledge of existing noxious weed populations. Scouting for new populations, this task can be done by land managers, landowners, or the general public. If a noxious weed is identified by landowners or the public, it should be confirmed by a weed or land manager. Once the plants have been identified correctly, a GPS point or a map should be produced to identify where the population exists. If there is an existing noxious weed population, mid-project monitoring should be taking place for that population, but scouting the surrounding area for new populations should been done. Monitoring surrounding areas of existing populations, should take place in areas of water drainages, disturbed land near the site, and normal wind directions. With this step in the monitoring process, some important information about the newly discovered population can be gained. Information such as, weed(s) present, patch size, native plants, within crops, etc.; all these compiled will determine the type of management options. Once this information has been compiled, a map needs to be produced using paper maps or GPS. If possible a photo point can be taken for future management and monitoring decisions.

Mid-project monitoring consists of monitoring a weed population that has an integrated weed management plan started. Control options have been started on the population, and some form of results should be occurring (good or bad). Mid-project monitoring occurs over several years depending on control. The site is being monitored for size variation in population from previous visits, any new weed populations, and regrowth of native vegetation. The photo-points taken from previous site visits can assist with determining any variations. If monitoring results are showing that the control options are not working appropriately, revisiting the integrated weed management plan is imperative. Monitoring a project is the only way an evaluation of control methods can occur.

Monitoring can occur on small scale projects to large scale projects, such as this large infestation of Russian knapweed. (Photo courtesy of Mark Shull, NRCS Trinidad CO)



Post-project monitoring consists of monitoring the area where a successful integrated weed management plan has been completed. Some species of noxious weeds have a seed viability over ten years. That means that a weed could reappear if the conditions are conducive for regrowth. Post-project monitoring also consist of monitoring the surrounding areas for any seed regeneration that may have occurred. Also at this point in the project, monitoring the regrowth or revegetation of the native species or replacement species should be occurring. Making sure that there is enough good competition so weed species won't have favorable conditions to re-establish.



An example of Photo Point Monitoring. Taking one photograph at the same exact point to monitor effectiveness of weed control. (Photographs are computer generated, courteous of Steven Dewey, Utah State University)

Types of options for monitoring vary depending on tools available to managers and the public. The most successful monitoring technique, and should be done with every integrated weed management plan, is mapping the original weed infestation. Mapping will allow a land manager to correctly identify the site characteristics to properly manage weed populations. Mapping will also afford the land manager to monitor the correct weed population, determine the effectiveness of the control methods, and how the surrounding plant community is responding to control methods.

Once the weed infestation is located, mapped, and control measures have begun; now it is time to determine the style of monitoring to use. There are many methods to choose that fall under the qualitative monitoring aspect.

Projects can be monitored by a "drive by" or "windshield check" by land managers. This style of monitoring will give a quick reference on how the weed population is withstanding the control efforts. This does have its limits. Accuracy would be hard to determine, if only some of the plants are reacting, or if all plants are reacting to the control methods. It would also not work if the weed infestation is in a non-accessible area to casually watch the progress of the site.

Another method that can be utilized and is pretty effective, when it comes to monitoring is a Site Assessment. Site assessments are completed using a standardized form. The standardized forms, will guide the land managers to assess the site for specific characteristics and quality of the habitat. This seems to be very effective; the land manager can always see what was written previously about the site, even if they were not the person monitoring the project. A limitation to using this method include bias opinions of different land managers.

Another method that is used widely and proves to be the most effective in monitoring in Photo-points. Photo-point monitoring consist of repeatedly taking a photograph from the exact spot, with the same field of view from the original photograph over a period of time. With the assistance of GPS and proper marking this technique can be repeated by several different land managers over an extended period of time. There are some limitations to this technique, but they are minimal when working with qualitative monitoring. This technique is hard to use in areas of dense vegetation, determining weeds from native vegetation that appears similar, and photos taken at different times of the year or growth stages may show different results.

Combining the two previous qualitative monitoring techniques increases the effectiveness of the monitoring projects. Taking photo-points and completing site assessment forms can easily be accomplished while working on a project. Combining these two, will give the land manager a visual and written representation of how the weed population is being effected by control methods.

One of the key processes of monitoring in standardizing your monitor techniques. Coming up with repeatable results will allow the best monitoring to take place over extended periods of time. Developing site assessment forms, photo-point procedure forms, and mapping procedural forms to standardize the process can increase repeatable results. Monitoring and controlling weed infestations can be a long and lengthy process, but developing standardized procedures is the key to preventing large infestations of noxious weeds to take over native ranges.

If you need assistance developing an integrated weed management plan, a monitoring protocol, or for more information visit www.colorado.gov/ag/csd and click on the Noxious Weed Management Program. Or call the State Weed Coordinator at the Colorado Department of Agriculture, Conservation Services Division, 303-239-4100.

Mapping weed infestations and locating the point from where previous photo-points were taken, can be acheived through the use of a GPS. (Photo courtesy of Kelly Uhing CO Dept. of Ag.)

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