



COOPERATIVE EXTENSION

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Nevada's War on Weeds Steps to Success Step 7 – Monitor Results to Work Smarter Next Year

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Why Monitor?

Managers, who do not monitor, evaluate their results, and make adjustments for future plans and projects will repeat their mistakes as if they were successes. Most weed management requires follow-up treatment, and the rate of success depends on the level of skill and dedication to details by the operators. This applies to all parts of the weed management program and therefore to all participants in coordinated weed management. We are often our most severe critics, once we appreciate standards for excellence. The goal is to be very hard on the weed problem and very supportive of the people dedicating work to achieve the objective, goals, and vision so that the result is a landscape free of targeted invasive weeds.

Although necessary, monitoring alone does not manage weeds! It is only one necessary part of a comprehensive weed management plan. Monitoring information must only be clear and complete enough for the upcoming decisions. Because most weed management is under-funded or under-staffed, it is important to plan and prioritize monitoring tasks just like projects.

What to monitor?

Better decisions or plans as a result of monitoring, require a written record of:

1. What was done where, when, how, how well and under what environmental conditions and at what cost. The information on the Record of Action Form and the Unit Analysis Worksheet will provide this information if completed accurately and used during the planning process. (See Nevada's War on Weeds Step 4. – Prioritize Weed Management, Fact Sheet-99-77). It is important to share these records. Fortunately, in this day of photocopy machines, records can easily be copied for storage and use by more than one person or agency. They may also be centrally located with electronic access by interested parties.

2. What was the short-term effect of the treatment or project? This will require that someone, preferably the one doing the project, inspect the project soon after doing it. The inspection will document the effects and record them in written form. Usually the key information to record or map is the rate of kill or the rate of seeding success. The effect on, or competition from, surrounding vegetation may also be important. The value to the project operator from collecting this information is immediate feedback for skill building. The value of the written record for the coordinated weed management group is an ability to compare, select, and modify future treatments.

Project inspection reports should be based on project objectives. While they may take many forms, they often include:

- A. A written description of effects,
 - B. A map showing coverage, skips, success's and failures (perhaps at various levels),
 - C. Photographs of the project or representative areas within it,
 - D. Data on rate of invasive weed kill from representative sampled areas.
 - E. Data on the response of competitive native or other vegetation after the first, second, and third year.
3. What was the long-term effect of the treatment or project? This will require that someone inspect project areas every year for some time. The inspections determine if the project was successful as a durable treatment. They also determine if new weed infestations are creating the need for retreatment. Long-term monitoring provides an annual inventory, and the two tasks can be combined. In any annual inventory, areas with a history of past infestation become focus areas for inspection.

What about statistical reliability?

Statistical analysis is often not important in most well planned and timely invasive weed management programs. The first individual (every first individual) weed is either dead or alive.

Usually projects vary in their success however, there is a statistical concept that can be useful: replication. An individual project may fail or succeed at some high or low level because of many factors. Without replication (trying a treatment in a number of independent locations or plots) it is difficult to know whether the treatment would work elsewhere. The effect could be due to individual site factors or to an accident not considered part of the treatment. By applying the treatment, or each of two or more treatments, in a number of independent locations, the average response(s) become more clear. Such data will apply across the range of conditions that the treatment was applied to.

Where a treatment is needed in different kinds of situations, each kind of treatment may need replications. If one or more treatment is applied repeatedly to each of two or more different blocks (types of sites with consistently different conditions) and if the results consistently differ, then the differences can be sorted between site and treatment effects. Using replications and organizing results from many trials builds more understanding and confidence than trying a treatment only once or twice.

Differences in response between two treatments across two types of sites, may suggest that some of the weed management units used for planning should be split so that each new unit gets the planned treatment most effective for that type of site.

If you have difficulties with these statistical concepts you might want to talk with someone who is more familiar. Your local Cooperative Extension office also has available additional information.

How does Adaptive Management Save Money?

Life is full of lessons. We tend to face the same lessons over and over again until we learn from them. Then we move on to more interesting lessons. However, sometimes we face more difficult lessons because we didn't learn the easier ones.

Today we face a crisis in most of the West because we were slow to learn lessons for successful prevention of weed invasion. The crisis got worse and the lessons more difficult when we failed to learn the lessons for locating and eradicating every first weed of each invasive species. In too many places, communities now face the lessons for how to contain established and spreading populations and how to recover the tremendous economic losses after land uses are no longer possible or productive.

Adaptive management is the continual process of learning by doing and then doing better next time. People learn to become successful in invasive weed management only by engaging in it, monitoring their projects and progress, and using the written monitoring record and their personal knowledge based on experience. All the monitoring information described in this fact sheet is of no value unless it is used to better plan and actively engage in invasive weed management.

References:

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