



# COOPERATIVE EXTENSION

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## Nevada's War on Weeds Steps to Success Step 4 – Prioritize Weed Management

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Resources for weed management, including money, time, people power, knowledge, etc., are always limited even though they can potentially be much greater than what exists today. Logical methods for prioritizing issues and tasks help weed managers decide where to focus first and next. Two ideas will help us get the best return on our investments.

The first idea is one used by military medics. On a battlefield, medics practice triage. They ignore the wounded that will recover without help and they let dying patients die. They first save the wounded that can be saved only with immediate help. This is a necessary, heart-wrenching, difficult, but appropriate process. It is only when they have additional resources (in this case, time) that they go back and treat any of those not treated during the crisis period.

We in weed management practice triage, or we should when we're in crisis. Unfortunately, many of the rangelands of Nevada are in crisis because invasive weeds are present or are headed this way. Introduction of invasive weeds to rangelands will rewrite all the operating rules. Millions of Nevada acres are susceptible to these dominating weeds. They will eventually replace the plants that support native wildlife, ultimately affecting all users of our rangelands.

The second idea is a time, task and life management model presented by Covey et al. (1994) in First Things First. They suggest focusing our time to goals and tasks that are important and preferably not urgent while we assertively avoid those tasks that are unimportant even if they are urgent (Table 1). Combining these complimentary ideas helps to efficiently manage invasive weeds for optimum results.

Unfortunately, our society seldom budgets for things that are not in crisis. Furthermore, weed managers may spend their life in a crisis of urgencies because they do not focus on what's important. When in crisis, practice triage. When not in crisis, we must practice focusing on important goals that return rich rewards from persistent investment of our scarcest resource, time.

The dead patients or "dead" areas of rangeland, no longer support the processes needed to sustain themselves. This is areas where invasive weeds already are the dominant species. So, work first where transitions to unsustainable plant communities will not protect soil, will poison the land, will eliminate habitat or will devastate economies. Places where a small number of plants have been recently established is a good example. Monocultures that do not allow a diversity of plants to thrive in an assortment of niches rob the land and its communities of the diversity and flexibility needed for adjustment to normal change. Such rangelands may lose their ability to capture, store and safely release water from precipitation. Then they lose their topsoil through accelerated erosion. Weed invasion that rob the land of its potential to support a diversity of soil-protecting plant species is a terminal disease.

**Table 1. The Time Management Matrix adapted for invasive weed management (After Covey et al. 1994).**

	Urgent	Not Urgent
Important	<p><b>I (20-25% of time)</b>            Minimize seed and propagule spread            Detect every first invasive weed early            Eradicate every first occurrence of an invasive weed immediately            Control and then eradicate small weed infestations            Contain large invasive weed infestations</p>	<p><b>II (65-80% of time)</b>            Identify seed and propagule sources.            Reduce the physical movement of seed and propagules by inspections and quarantines.            Create awareness to build motivated coalitions.            Map important weeds for a living inventory.            Plan who will do what, where, when, and how.            Keep a record of what, where, when, and how treatments are applied.            Monitor results to work smarter next year.            Tell the story for those who pay the bills.            Coordinate your weed management with neighboring coalitions and states.            Revegetation of controlled sites</p>
Not Important	<p><b>III (15% of time)</b>            Spraying or otherwise treating uncontrollable and uncontainable weed infestations</p>	<p><b>IV (&lt; 1% of time)</b>            Noninvasive weed control on poorly managed or poorly vegetated land</p>

As a society, we throw money at problems only after they are so far gone that productive results are not achievable. Applying triage early is the only real opportunity to prevent a detrimental change in vegetation. If not the ecological processes may be so far along that the opportunity for prevention is long past. When this happens, society and remorseful individuals will typically and forever spend more for less results.

To protect landscapes and plant communities that invasive weeds could take over requires foresight. While Nevada is different in climate from other areas, it is not different enough to protect us from the invasive weeds that have devastated portions of surrounding states. Although only some of these weeds will displace existing perennial species, they will make it very difficult or impossible for native plants to successfully reproduce in Nevada's cold desert.

Each of the weed species will find ideal sites where they are especially adapted and quickly dominate. Then, each species will quickly invade nearby plant communities. Once established in their preferred disturbed sites, their ability to produce and distribute a plentitude of seeds dramatically increases the risk to surrounding, less vulnerable lands.

Cooperative management for shared interests and shared visions is necessary. After recognizing the risk of crossing an ecological or economic threshold, focus on what causes that change to happen. Avoid the pitfall of needlessly alienating political support, by treating symptoms rather than causes. Marginal agricultural profitability or marginal ecological resources on rangeland landscapes increase the necessity of working together.

Not all weeds represent an equal hazard. We were taught that weeds are plants growing out of place, somewhere people do not want them. We were also taught that weeds on native rangelands represent bad management. That is, they would not be a problem if only we did not blade the roadside, overgraze the range, or fail to control the weed problem on cropland. While these are true, it's only part of the truth and only the truth for some weeds. For example, native weeds move around mostly because disturbance has shifted the competitive balance. On the other hand, many exotic (non- native) weeds are so invasive that they spread rapidly into undisturbed plant communities.

Easy movement, wide adaptation, intense domination and exponential growth characterize invasive weeds. Most invasive weeds have seeds that travel far using special adaptations for hitching a ride. Historical vectors include wind, water and animals. More recently, seed sacks, hay, machines, and vehicles have taken these seeds across the oceans and across the continent. Today, all of the above speed weed spread into new states, counties, watersheds, and from one ownership to the next. The more invasive weeds were already adapted to similar climatic conditions somewhere else in the world for a long time. Their wide adaptation helps them thrive. The natives have a full assortment of diseases, insects, and competitive neighbors, but the exotics do not. The hallmark of invasive weeds is their explosive or exponential growth. They are a "wildfire in slow motion".

Exponential growth looks like the graph of your retirement account. It's so negligible for so long that you may wonder why you even bother. Another graph with the same shape plots the world's human population. It's called the "J-curve" because the mostly horizontal becomes mostly vertical. Unfortunately with invasive weeds, by the time we notice them they are already spreading rapidly. Our usual response is to wait until a weed population causes a problem, somewhere in the upward sloping part of the graph. By then it is often too late for eradication to be feasible and becomes substantially more difficult each year.

In the triage model, the dead patient represents land where the competition from weeds has removed most or virtually all the native vegetation. This comes with severe economic or ecological cost if the process cannot be reversed. The first priorities for crisis management are those invasive weeds that can be eradicated, controlled or contained.

The biggest return on an investment in a weed management program comes from killing the first weed. Killing the weeds in a small patch is also relatively easy, but the longer the patch has been removing native vegetation, the more difficult revegetation becomes. Furthermore, once the weed or patch starts producing seed, the risks to surrounding land increase. Some weeds produce long-lived seeds and the vicinity of kill sites must be inspected and often retreated for many years. As the number of patches and patch size increases, the opportunity for total eradication may slip away. Thereafter, containment or preventing the spread by eradicating the pioneering weeds in surrounding lands becomes a more costly but still necessary long-term job.

Important tasks of weed management include cooperating, planning, prevention, surveillance, (even when surveillance detects no new weeds most of the time) eradication, monitoring, record keeping, communicating and coordinating (See Table 1). For surveillance to be effective, one must be able to identify new weed threats. It is most effective when new invaders can be identified before seed set or even flowering. For this reason research and self-study are also important high-priority tasks.

Prevention focuses on keeping seeds out and keeping rangeland vegetation healthy. While invasive weeds can spread into healthy rangelands, reducing weed seed production with competition can generally diminish the rate of weed spread. Enhancing competition from natives allows fewer and more marginal safe sites for new weed plants. For each weed there may be high and low probability methods of spread. Some of the high probability methods include:

1. Importing hay, seed, or camping gear that is not weed-seed-free,
2. Moving drilling, road construction or other machinery such as recreational vehicles that are not steam cleaned,
3. Moving livestock, and
4. Wind, water, and wildfire.

All these vectors are more significant when they come from weed infested areas. While only some of these can be prevented, one should always ask if the weeds that can be are being prevented from moving. Tough rules and an aware community increase the cost to neighbors who are not controlling weed problems. They may suddenly see the light and seriously address their weed management problems.

A vision of healthy productive rangelands leads to a mission based on the principles of science and human nature. Sharing that vision and cooperating to form the mission builds the team. Through communication and personal planning we can focus time on the important tasks, before triage becomes our only option.

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