

PLANT COMPETITION – THE CORNERSTONE OF WEED MANAGEMENT PART 2

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As discussed in the last issue of Progressive Rancher, weed control should always be a means to an end, not an end unto itself. Without desirable competing vegetation, weeds will continue to invade and dominate a site. We should always begin with the end in mind: a desirable plant community that is healthy, functional, and weed resistant. If desirable vegetation is not sufficient to bounce back after weeds have been controlled, we must plant adapted species that will hold the soil and compete with weeds, keeping long-term land-use goals in mind.

In this installment, we will focus on the following key factors: 1) weed control considerations; (2) seedbed preparation; and (3) seed mixes.

Weed Control Considerations

The area to be seeded should be cleared of actively growing weeds and any debris. The specific method of weed control should be tailored to the weed species present. In addition to herbicides, some weeds can be controlled by repeated pulling, mowing, grazing by livestock, or prescribed fire. Lightly tilling an area just prior to seeding can also be used to help control weeds before planting. However, most perennial invasive weed species spread by root sprouting, and cultivation creates many small pieces of root that can produce new plants. Extensive cultivation is not recommended if desirable perennial species are present, since the desirable vegetation could be eliminated. For specific information on controlling invasive weeds, see Chapter 4 in the University of Nevada Cooperative Extension Educational Bulletin-05-02, “Fighting Invasive Weeds – a Northeastern Nevada Landowners’ Guide to Healthy Landscape” on-line at: <http://www.unce.unr.edu/publications/files/ho/2005/eb0502.pdf>.

Please note that some herbicides, like chlorsulfuron (Telar[®]), may have inhibiting effects on grass seed germination for one or more years, particularly in soils with a pH of 7.5 or more (typical of soils in much of northern Nevada). Other herbicides have only short-term effects. As an example, a landowner using a glyphosate-based herbicide (e.g., Roundup[®]) according to label instructions could seed the treated area any time after treatment. However, if tillage is required before planting, the label recommends waiting 7 days before tillage to allow translocation of the chemical to underground plant parts. Because residual effects vary with each chemical product, be sure to always read and follow the herbicide label instructions and warnings.

Seedbed Preparation

Although tilling is sometimes necessary for weed control, as mentioned above, seedbeds should be prepared with as little soil disturbance as possible in order to retain soil moisture and organic matter and maintain soil structure. Keep in mind that any

disturbance of the soil can bring more weed seeds to the surface. Seedbed preparation can be initiated with combinations of weed control methods followed by a short “fallow” period to provide time for the soil moisture to begin recharging, assuming some precipitation or irrigation occurs. Minimum till or no-till drill seeding are options. Undisturbed conditions with reduced weed competition in fine-textured soils create an excellent environment for germination and establishment of seedlings. Be aware that over-working clayey soils will result in a powdery dust that tends to crust and severely compact, inhibiting seeding success.

Seedbed preparation should be completed immediately prior to seeding to minimize the time that growth medium is subject to wind or water erosion without vegetation cover. Done properly, seedbed preparation can loosen compacted soils, provide water catchments (for plants), and create good “safe-sites” for seed germination and seedling survival. Equipment for seedbed conditioning for small landowners is often limited, but could include rippers, disk plows, etc. Methods can be combined to prepare a good seedbed.

For small areas, preparing the seedbed may be as simple as raking to provide a roughened surface. Raking creates only a small disturbance and provides a good micro-site that holds water, thus enhancing seed germination

In areas where deeper seedbed preparation is necessary to remove rocks and undesirable plants, topsoil materials should be tilled to a depth of approximately six inches. If the property includes steep terrain (greater than 20% slopes), tillage operations should be conducted on the contour (that is, moving across the slope horizontally instead of straight up and down the slope) to minimize erosion. The final seedbed will consist of a furrow-like configuration to help minimize erosion and increase available soil moisture.



Furrow-like seed beds can be created in many ways. Even the cleat marks from track-mounted bulldozers can provide “safe-sites for seed germination.

In soils that are very loose after seedbed conditioning, firm the soil before seeding to ensure that footprints made in the soil are no greater than one-half inch deep. If necessary, pack the soil with a roller or irrigate before seeding.

Seed Mixes

To compete with invasive weeds, emphasis should be placed on site-adapted rapidly establishing species. Long-term land-use goals (e.g., livestock production, wildlife habitat, esthetics, etc.) must be balanced with the necessity of conserving soil and crowding out weeds. If desired, areas can be inter-seeded with additional species after weeds are successfully out-competed. However, landowners should always keep their long-term land-use goals in mind as they make decisions about seed mixes.

Because rangeland communities are very diverse, the choice of species depends on numerous site-specific factors such as elevation, length of growing season, soil type, topographical exposure, annual precipitation, availability of irrigation water, and land-use goals as discussed above. All species selected must be adapted to the site. Landowners may also want to consider the fire resistance of seeded species. Seed availability and price will certainly affect final seed mix decisions.

Using several seed species, as opposed to single-species seeding, is best in most situations for several reasons. First, no single species will thrive in all of the varied conditions present in an area. A multiple-species mix enhances potential seeding success because it increases the likelihood that all available sites will be occupied with desirable vegetation. Secondly, for landowners with livestock production and/or wildlife habitat goals, mixtures provide a variety of forage and/or cover. Mixtures also provide increased resistance to insects and parasites, extend the grazing period, and generally increase vegetation production and soil protection. Because many native range plant species are poor competitors with weeds (particularly in the initial phases of establishment) and/or are difficult to seed successfully, introduced adapted species are often used to initially secure a site from weed invasion. After weeds have been out-competed, other species can be inter-seeded to increase plant diversity.



When planting vegetation to compete with noxious weeds, use a mixture of site-adapted, rapidly establishing desirable species.

For specific information on plant materials that establish rapidly, compete with weeds, and stabilize plant communities, refer to Chapter 3 of the same on-line Educational Bulletin cited above. This publication includes specific seed mix recommendations for common soils and plant community types of northern Nevada.

Please also feel free to contact the author at the Elko County Extension Office:
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Depending on the exact seed mix selected, seed may be purchased from local seed dealers or farm and ranch supply stores. Large commercial seed companies typically have a greater selection, but may also have minimum order requirements. Always buy “certified” seed to guarantee variety, purity (from noxious weeds), and certainty of germination.

In the next issue of Progressive Rancher, we will discuss when and how to plant, proper seeding depth, the pros and cons of applying fertilizer and mulch, and seeding success and maintenance.