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# Weeds

The dictionary definition of a weed is "any undesired, uncultivated plant." To most people, this would include half our Arizona natives. Weed scientists define a weed as "a plant that is competitive, persistent, and pernicious. It interferes with human activities and, as a result, is undesirable." This definition, is more appropriate.

Weeds are definitely an inconvenience in home gardens. This is especially true if you have only been gardening in an area for a short time. Once the area is tamed (cultivated for a couple of years), it becomes easier to manage the weeds. Ignore them for a year and look out, they come right back. What is it that causes weeds to behave like this? Many times, a disturbance is needed to open a niche for them to exploit. Garden tilling is such a disturbance. In natural settings, a drought, fire, or flood may provide the needed catalyst. In any case, once weeds are established, they are difficult to control.

Keeping up with weeds can seem like a monumental task. No sooner than you pull out most of your warm season annual weeds, the cool season annuals start germinating. Perennial weeds are even more difficult to control. Gaining ground on the war on weeds requires patience. You also need to know your enemy: annual or perennial, warm season or cool season, and even how difficult one weed is to control vs. another within the same category.

First, you must identify the weed or weeds that are interfering with your gardening objectives. Weeds are easier to identify when they are mature with flowers or seed heads. A good reference book is *Weeds of the West* by the Western Society of Weed Science and can be purchased from the University of Wyoming as well as other on-line book sources. This book has detailed descriptions of 900 weeds with color photos of mature and juvenile plants. There are copies in several of our county libraries. If you have trouble identifying your weed(s), another option is to bring them to the Cooperative Extension office. Another source is our [Yavapai County Native and Naturalized Plants](#) database.

Once identified, learn more about the weed's life cycle and what control measures are most appropriate. Annuals are easiest to control. Perennials are more difficult. Prioritize your weeds and start managing them. Don't try to solve all your weed problems all at once.

Hand pulling before seed production is a good strategy and can reduce annual weed populations significantly. Many annuals will continue to germinate in subsequent years after you have diligently pulled each one. Weed seeds can lay dormant in the soil for several years waiting for the right environmental conditions. Annual weed seeds can also have a wide variation in the levels of seed dormancy within a given year's seed crop. For instance, seeds of yellow starthistle can take as long as seven to ten years to germinate. Of course, many will also germinate the next year. Think about it from the plant's perspective: if all seeds germinated the following year, would that be a good survival strategy? Not really. Diligence is the key, just keep after them until the seed bank is exhausted.

You will have little or no success if you try to maintain bare ground. Nature abhors a vacuum. If resources are available (i.e. soil, sunlight, and some moisture), then some plant (usually a weed) is going to take advantage of the situation. A good goal is to out-compete the weed species and occupy the available habitat with a plant that is easier to control and less disruptive to your objectives. Cool season annual grasses such as rye or barley are effective at competing with cool season annual weeds. Warm season perennial grasses are good competitors for summer weeds.

Organic mulches also work well to minimize annual weed growth. Line trimmers can be very useful but should be used on annual weeds prior to seed set. Line trimmers are also used to trim grass around trees – remember not to girdle the base of trees by getting too close. It is often better to manage the grass growth near trees with mulches.

In large garden spaces, soil solarization can be employed to “cook” emerging weeds and kill some disease-causing organisms. In brief, soil solarization uses solar energy to kill weeds and seeds under a clear plastic sheet covering the soil and is buried along the edges. The soil is moistened prior to covering to create a steamy environment that kills harmful weeds and pathogens after six weeks or more under the plastic. The treated area must be in full sun. Even after using this practice, some seeds are likely to survive.

Landscape fabrics are sometimes used under inorganic mulch to prevent weed growth. This works for annuals, but established perennial weeds should be killed prior to mulching. A drawback to mulching on top of landscape fabric is that fine soil particles flow or blow into the mulch after a few years' time. This thin layer of soil allows weeds to grow on top of the fabric and defeats the purpose. Inorganic mulches also work best when combined with herbicide applications (pre- and post-emergent). Organic mulches need to be replenished every few years as they decompose, but organic mulches are cooler, increase biological activity, and add some organic matter to the soil.

Two relatively new contact herbicides are considered less toxic than some of the more traditional products. These are acetic acid-based and fatty acid-based products. Information indicates that these two products are only effective on annual weeds when they are very young (5 to 6" in height). These products are pesticides and should be handled and applied in compliance with label instructions.

Annual weeds can also be controlled with contact herbicides, killing the plant parts it contacts. Perennial weeds are often treated with translocated (systemic) herbicides. Herbicides should not be sprayed when winds are in excess of 10mph, as the drift can damage nearby vegetation.

The use of a soil sterilant such as Dicamba or Triox aka Ground Clear is not recommended. These products prevent plant growth for many years and are designed for use in industrial areas, not in home gardens or landscapes. They can also result in damage to surrounding desirable landscape plants. Many other herbicide formulations are available and much more "landscape-friendly".

Some homeowners and many commercial landscape managers choose to manage weeds with pre-emergent herbicides. These products prevent seedling survival and are usually applied twice each year, late summer to keep cool season weeds from emerging and in early spring to keep the warm season/summer weeds from emerging. Pre-emergent herbicides have no effect on established weeds.

Corn gluten meal (CGM) is a by-product of the corn milling process and marketed as a least-toxic, pre-emergent herbicide. CGM is one least-toxic product that has fallen short of advertised claims as a pre-emergent herbicide. It can have some benefits, but for direct weed prevention, it does not usually measure up. CGM is also a high nitrogen (9-10%) product which also qualifies it as a fertilizer. CGM can prevent weed seeds from successfully germinating under certain environmental conditions; CGM has no negative effect on established weeds. CGM is not selective and can inhibit germination of desirable plant seeds as well as weeds. There are no scientific data from field trials in the Western US to support the use of CGM in weed control. Other environmentally friendly weed-control treatments (such as sub-irrigation, mulch, or soil solarization) are cheaper and often more effective than CGM.

Many people want to control weeds without using herbicides. This can be done, but if the weed in question is a well-established perennial, it will require much time and labor. Johnsongrass can be removed manually, but established bermudagrass is very difficult to manage without herbicides. Most people use glyphosate herbicides to manage persistent perennial weeds like bermudagrass. Success depends on the weeds growing vigorously prior to the herbicide application. This means applying the herbicide during active growth. Translocated herbicides, such as glyphosate, will not kill weeds if applied when plants are dormant. For best results managing bermudagrass, irrigate and fertilize the area for a couple of weeks prior to a summer glyphosate treatment.

**Noxious Weeds**

A growing area of concern in wildland areas are noxious weeds. These pests are defined as "a weed specified by law or regulation to be particularly undesirable, destructive, and difficult to control". Noxious weeds are introduced to areas by vehicles, domestic animals, water, wind, and humans who unwittingly either transport the seeds on their clothing or collect the plants because they like their appearance. Once established on a new sight, noxious weeds can spread relatively slowly until the population explodes.

In Arizona, noxious weeds are divided into three classes. Regulated noxious weeds are those that are well established and generally distributed in the state. These include field bindweed, puncture vine, and burclover as well as others. Restricted noxious weeds occur in Arizona in isolated infestations or very low populations. Some of these are yellow starthistle, sweet resinbush, and scotch thistle. Prohibited noxious weeds are those not known to occur in Arizona. This list has been developed because they are found in other parts of the west and would likely be successful once they became established.

Some difficulties can be encountered when trying to control noxious weeds. First, diverse land ownership can permit control on one side of the property boundary, but not always on the other. Second, people need to know how to recognize a noxious weed with some degree of certainty. Third, agencies and other partners must develop a noxious weed plan and agree on measures to be taken. Finally, resource people must be identified that can verify reports of noxious weeds.

Currently, the US Forest Service, Arizona Department of Transportation, the Bureau of Land Management, Arizona Department of Agriculture, Arizona State Land Department, National Park Service, Nature Conservancy, Northern Arizona University, and University of Arizona have noxious weed interests and/or programs.

Each gardener will approach weed control differently – large areas of bare ground are weed problems waiting to happen. Why not establish a native or drought-adapted landscape that occupies these areas without regular irrigation? These desirable plants will effectively compete with weeds, provide a natural look that is beneficial to wildlife, and will survive on natural precipitation once established.

**Additional Resources:**

UA Yavapai County Cooperative Extension  
[Weed Management in the Landscape](#) Bulletin #23

[Soil Solarization Backyard Gardener](#) #28

Arizona Department of Agriculture  
[Noxious Weeds](#)

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