COLLEGE OF AGRICULTURE & LIFE SCIENCES
Cooperative Extension

Backyards & Beyond

RURAL LIVING IN ARIZONA

Summer 2016

FEATURED PLANT

Kim McReynolds, Area Agent, Natural Resources, University of Arizona Cooperative Extension, Cochise, Graham & Greenlee Counties

Common Name: Whorled Milkweed

Scientific Name: *Asclepias verticillata*

JOSHUA MAYER

There are about 30 species of milkweed found in Arizona. Two of the most toxic milkweeds in the western United States are of concern to livestock producers in Arizona: Whorled milkweed, Asclepias verticillata and Horsetail milkweed, A. subverticillata. These milkweeds occur throughout the state at elevations from 2,500-8,000 feet. They grow in a variety of rangeland settings from dry to moist soils, as well as weeds in cultivated fields and along roadsides.

Milkweeds get their name from the milky sap that is released when plant parts are broken. Whorled and Horsetail milkweeds are perennial forbs with creeping rhizomes. Long, narrow leaves are arranged in a whorl around the stem. The flowers are greenish-white to cream color and grouped in dense, umbrella-like heads at the tops of flowering stems. The majority of growth occurs in late spring and early summer.

All classes of livestock are susceptible to milkweed poisoning. Milkweeds are poisonous at all stages of growth and even when dry in baled hay. They contain toxic glycosides and resins. As little as 0.2% of body weight consumed in green plant material can be lethal.

Some of the signs of poisoning include: depression, weakness, difficulty in breathing, dilation of pupils, rapid, weak pulse, bloating, and respiratory paralysis. Signs of poisoning occur within a few hours and livestock may die soon after or within a couple of days.

Animals usually do not eat milkweeds as they are not highly palatable. Poisoning can occur when there is a scarcity of good forage. Animals should be removed from pastures with high densities of milkweed and poor forage conditions. Hay contaminated with milkweed should not be fed to animals. Although milkweeds are susceptible to certain herbicides, preventing animals from consuming milkweed is the most effective way to reduce losses.

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FEATURED BIRD

Dan L. Fischer - Author of Early Southwest Ornithologists, 1728-1900, University of Arizona Press

Common Name: Elf Owl

Scientific Name: *Micrathene whitneyi*

DAN L. FISCHER

One of the smallest owls in the world, the Elf Owl has been named for its diminutive size of only 5 to 6 inches in length and a weight of a mere 1½ ounces. These bantam owls lack "ear tufts" and appear grayish-brown with prominent arched whitish "eyebrows." Their large eyes have a yellow iris that controls the size of the black pupils which vary in size depending on the intensity of light. The pupils in dim light open widely and reduce in bright conditions. Their retinas are densely packed with receptor cones enabling them to spot and define objects clearly.

In southern Arizona Elf Owls occur fairly commonly among the lower saguaro forests and riparian courses, up into the elevated oak areas north to the Mogollon Rim. They may be one of the more common avian species in some areas. As nocturnal predators, Elf Owls feed primarily on invertebrates such beetles, scorpions, centipedes, grasshoppers and even moths in flight. They arrive from Mexico in mid-March on their annual northward migration. The males become quite vocal by announcing their presence with territorial and courtship songs of loud, rapid, high-pitched chirps. Both sexes utter a soft, short, whistle contact call. They return south into Mexico beginning in September.

Elf Owls select old unlined cavities usually created by woodpeckers for nesting and roosting sites during the day. Observers are often startled and suddenly surprised by a chance and rewarding experience when passing a silent adult owl peering from the entrance of their summer home at dusk. Usually 3 glossy white eggs are laid in early May and are incubated by both sexes for about 23 days. Both parents tend the young which leave the cavity in about 30 days.

Dr. James Graham Cooper (1830-1902), a surgeon, naturalist and author working under contract with the Geological Survey of California, discovered this tiny owl while serving at Fort Mojave on the Colorado River. Incidentally, this site is the extreme northwest limit of range of this bird. In 1881, Cooper named this owl in honor of Josiah Dwight Whitney (1819-1896), California state geologist. Mount Whitney (14,495'), the highest peak in the Sierra Nevada of California, is also named for him.

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Bryan Chadd, Susan Pater, George Ruyle

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COVER PHOTO CREDIT: TONDA

GROWING HERBS FOR THE HEALTH OF IT!

Jennifer Parlin, Senior Program Coordinator, The Garden Kitchen, Tucson, Arizona
Jacquine Stork, Program Coordinator, The Garden Kitchen, Tucson, Arizona
and Dan McDonald, Area Associate Agent, Pima County
University of Arizona Cooperative Extension

Do your salivary glands kick into action when you think about a juicy hamburger or a salty snack? Do sugary treats draw you like metal to a magnet? Well then, you're human! Our desire for fat, salt, and sugary foods is the result of humans evolving over many millennia. Our bodies need fat, salt, and sugar to function—only we don't need as much as we are consuming. The latest Dietary Guidelines for Americans recommend cutting down on fat, added sugars, and sodium (see box for specifics). Cutting back doesn't mean we need to take all the fun and flavor out of enjoying our favorite foods.

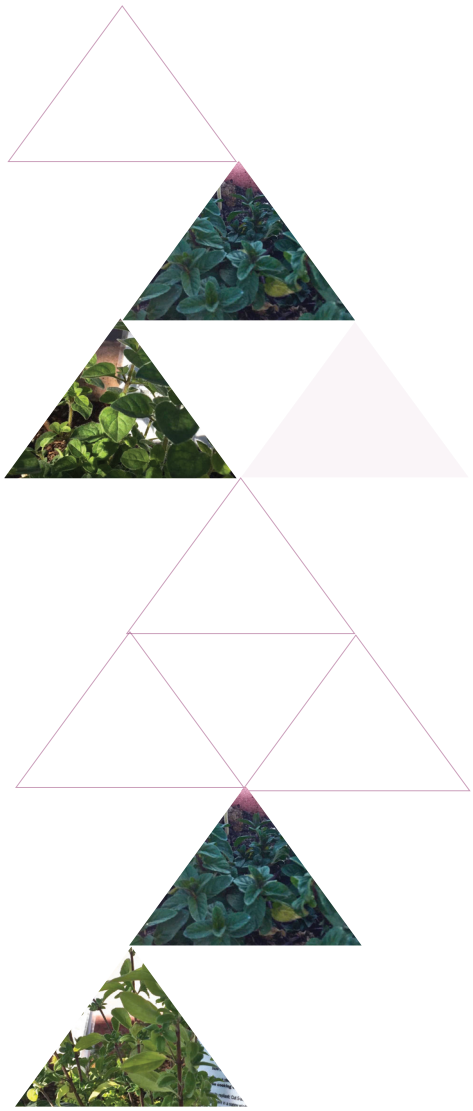
Luckily, there are ways to eat less salt, sugar, and fat without sacrificing flavor. Herbs are fragrant and flavorful plant leaves, seeds, and even stem parts that are low in calories and a good substitute for the foods that may contribute to weight gain and other potentially harmful health effects (Duyff, 2006). Herbs contain essential oils that add flavor and nutrition to our food. To activate and release these oils, herbs can be gently crushed, cooked, or cut and added to a variety of dishes. Different herbs, and even varieties of the same herb, contain different essential oils, leading to variations in fragrance and flavor (Nickoll and O'Hara, 2010). Using herbs to reduce salt, sugar, and fat is easy – just start slow! By gradually cutting down and replacing salt, sugar, and fat with herbs, you can train your taste buds to prefer these foods over less healthy alternatives (Nutrition Action, 2015).

Some key recommendations from the 2015-2020 Dietary Guidelines:

- Consume less than 10 percent of calories per day from added sugars.
- Consume less than 10 percent of calories per day from saturated fats.
- Consume less than 2,300 milligrams (mg) per day of sodium.

A great place to start is by making homemade salad dressings that feature fresh or dried herbs for flavor. Store-bought salad dressings are often high in calories and sodium. By making your own, you can choose to include some healthier alternatives. When adding herbs to salad dressings, it is best to start with a small amount and taste as you go – it's much easier to add herbs to your dressing than to remove them. For more information check out The Garden Kitchen's Buttermilk Ranch and Balsamic Vinaigrette recipes at the end of this article!

Herbs can also be used in cooked foods to add flavor. Heartier herbs, like thyme and oregano, hold up well to heat and can be added early in the cooking process. In fact, cooking helps to enhance the flavor of herbs and allows those flavors to meld with other ingredients. More delicate herbs, like basil and mint, should be added towards the end of cooking or as a garnish. Cooking causes



the leaves of more delicate herbs to become damaged and wilted, taking away from their flavor and even making them bitter (Nutrition Action, 2015). Dried herbs can be used at any point in the cooking process, but for maximum flavor add at the beginning or middle of a recipe. Remember to proceed with caution: dried herbs are more concentrated in flavor than fresh herbs. So, reduce the quantity by about two-thirds when adding dried herbs in place of fresh herbs. Also try pairing herbs with roasted or steamed vegetables to enhance the flavor.

Water and unsweetened homemade iced tea infused with fresh herbs is a way to cut down on sugary beverages. Try adding chopped mint leaves to a quart of water or tea and letting it sit over night in the refrigerator. This makes a refreshing, thirst quenching drink for hot summer days. Other combinations are tasty as well such as cilantro and lime (for a half gallon of water add one cup chopped cilantro and a quarter wedge of lime). You can also use edible flowers such as hibiscus, rose, lavender, and citrus blossoms to make a cold tea, but make sure whatever you use is 100% pesticide free!

PLANT SELECTION

In addition to helping reduce dietary salt, sugar, and fat, herbs can provide some of their own health benefits. Most herbs contain antioxidants. Antioxidants are compounds that prevent oxidation in the body and may have protective effects against inflammation and some chronic illnesses (Antioxidants: Beyond the Hype, 2016). Studies have suggested that eating foods high in antioxidants, like herbs, help support the immune system by reducing inflammation and preventing "over-response," which can damage cells (Antioxidants: Beyond the Hype, 2016). Phytonutrients, also called phytochemicals, are another class of plant compounds thought to have protective effects in the body. Phytonutrients work in various ways to protect plants from damage. You might think of them as "fighting" to defend against things that might harm the plant like germs and bugs. Those same nutrients may provide benefits to your body as well (Heneman and Zidenburg-Cher, 2008). It should be noted that protective health effects related to antioxidants and phytonutrients have not been proven, but researchers are generally in agreement that eating foods high in these compounds, like herbs, is beneficial for health (Antioxidants: Beyond the Hype, 2016).

Deciding what to plant in your summer garden and how to plant it:

BASIL

There are many different varieties of basil, most of which grow well in southern Arizona in the summertime, due to our Mediterranean-like climate. Genovese, commonly known as Italian or sweet basil, has large broad leaves with a slightly sweet taste. Thai basil has more of an anise flavor and can sustain higher cooking temperatures than sweet basil. It has small, pointed leaves with a purple tinted stem and purple clusters of flowers. Lemon basil has a wonderful citrus aroma and a delicate lemon flavor. Though less hardy than sweet and Thai basil, it is worth the effort in a summer garden for its bright flavor. During our Arizona summer you might consider planting the following varieties as well: holy basil, cinnamon basil, red or purple basil, and bush basil. The most flavorful leaves come from tender stemmed basil plants that have not produced flowers (Brenzell, 2012). Basil is particularly successful during our summers because it grows well in full sun: there is no need to shade these plants. Grow basil from seed in fertile, well-draining soil. Water until the soil is damp, usually every day in midsummer and less often in the spring and fall. Basil can be successfully planted with night shade plants, particularly sweet peppers and tomatoes. Check out this link for more information on companion planting: https://cals.arizona.edu/cochise/mg/best-friends-brief-guide-companion-planting-part-1

MINT

Consider growing a few different kinds of mint to capitalize on the culinary uses of this hardy plant. The most widely grown type of mint is spearmint, which has saw-toothed leaves and produces purple flowers that attract pollinators (Biggs, McVicar, and Flowerdew). Chocolate mint is a variety of peppermint (Brenzell, 2012) that has smaller, dark green leaves. It makes an excellent addition to fresh fruit or water on hot summer days. In addition, apple mint, pineapple mint, and orange mint all grow well in Southern Arizona. Mint can spread quickly and take over other planted areas, so be sure to keep it in a container or in an area that allows it to grow far and wide. This herb does best in medium rich soil, in partial shade or full sun and will disappear in the winter, but is likely to come back seasonally for three years. Mint can be started from runners if you wish to start additional plants (Brenzell, 2012).

THYME

Thyme can be grown for ground cover as well as used for culinary purposes. Common thyme, also known as garden or English thyme, produces small oval green leaves and small white flowers. This type of thyme lends a beautiful earthy flavor to soups, sauces, and roasted dishes. When using this herb, be cautious in its application: a little goes a long way. Lemon thyme grows taller than common thyme and can be green and yellow or silver (Brenzell, 2012). Lemon thyme adds a nice citrus note to any dish that would benefit from lemon juice or zest. Thyme grows well in the summer, in light, well-drained soil and in partial shade in the hottest months. Instead of trying to grow thyme from seed, try starting from cuttings (Brenzell, 2012). Water until the soil is damp, usually every day in midsummer, less often in the spring and fall.

OTHER HERBS OF INTEREST

Other herbs that grow well in our summer gardens include summer savory, which can be grown in full sun in light, well-drained soil (Brenzell, 2012). This herb produces narrow, tougher leaves that should be chopped fine before adding to dishes. It has a piney, spicy citrus flavor. Also consider the many different varieties of marjoram that range from slightly spicy to sweet (Brenzell, 2012). The variety most often found in this area is sweet or common marjoram (Bateman, Berton, and Doig, 2008). A softer leaved herb, marjoram is often used to spice Italian and grilled dishes. Grow it in partial shade during the heat of the summer in light, well-drained soil. Oregano also has many varieties that grow well in the summer such as Mexican or Greek oregano, which require well-drained soil in full sun.

STORAGE AND PRESERVATION

Fresh herbs should be treated like cut flowers. To store them, submerge the end of stems in water and wrap the leaves in plastic wrap. Or you can wrap fresh herbs in a damp cloth and plastic wrap to preserve them. Storing fresh herbs this way reduces the amount of water lost to evaporation while stored in the refrigerator, helping to extend their shelf life.

Dried herbs begin to lose flavor almost immediately, so store them in a cool, dark, and dry place to prevent degradation. It is a good idea to label any dried herbs with the date purchased. It is best to keep dried herbs stored for no more than a year (Duyff, 2006). Not sure if your dried herbs are still good? Pour a small amount into your hand, crush lightly, and smell – if it smells musty or stale, don't use them.

For more information about growing and using herbs, visit www.thegardenkitchen.org.

thegardenkitchen™
del jardín a la cocina

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GIANT SWALLOWTAIL

Benjamin Beal, Entomology & Insect Science Graduate Student &
Kathleen Walker, Assistant Specialist, Entomology,
College of Agriculture & Life Sciences, University of Arizona


CARL OLSON


CARL OLSON

This large distinctive yellow and black butterfly is a common sight flitting between trees and in backyard gardens throughout much of the desert southwest and eastern United States. Start looking for them in the warming months of spring and continue to enjoy them through the rest of the warm months, before the cool of fall creeps in. Here in Arizona that means we can usually see them from early March to late September. They are most often seen around citrus trees.

Most swallowtail butterflies (Family: Papilionidae) have the distinctive "tail" at the end of their hind wings which are thought to help protect the butterfly from would be predators. These tails look just enough like a false head to dupe attackers into biting a non-vital area- providing an opportunity for the butterfly to escape. Swallowtails also prefer mates with nice long as a signal of vitality.

The caterpillars of the Giant Swallowtail feed on various citrus plants and their relatives (family: Rutaceae). Females prefer to lay single yellow eggs on the underside of young, tender citrus leaves often out of sight of you and other potential predators. Tiny caterpillars emerge in about two weeks depending on temperature: the cooler the temperature, the longer it takes the caterpillar to develop. If there are too many larvae on a small plant, they can overrun and damage it, but a large plant is not harmed. If you see what looks like bird droppings on the leaves of your citrus, there is a chance you have found swallowtail larvae. Mimicking bird droppings is a special form of camouflage to fool potential predators. If this unpleasant appearance isn't enough, swallowtail caterpillars also have a smelly fork shaped defense organ, called an osmeterium, which is everted from just behind their head like a balloon when the caterpillar is threatened. The osmeterium is thought to ward off predators by its foul smell and bright orange color.

Pupae of Giant Swallowtails can match the background; sometimes they are green and sometimes they are brown. This variation allows them to hide more effectively from predators while they are transitioning from caterpillar to butterfly. This species overwinters as a pupa protected from the elements within its cocoon. In Arizona, this is a short period of time, while in cooler locales, this period of quiescence can last months.

Giant Swallowtail adults are black with a bit of yellow streaks on the wings. To complement their colors, they have a characteristic loping powerful flight especially when searching for food or mates. Watch for butterflies feeding on nectar from plants such as lantana, bougainvillea, goldenrod and citrus blossoms in addition to looking for good citrus trees to lay their eggs on. Giant swallowtails are common garden visitors, unperturbed by human activity.

Whether you are on your favorite hiking trail, on your way to work, or in the comfort of your own yard, swallowtail butterflies are an easy and rewarding insect to spot and observe.

WATERSHED BASICS

Susan Pater, Area Extension Agent, 4-H Youth Development,
University of Arizona Cooperative Extension, Cochise County

A watershed is the land that water flows across or under on its way to a stream, river, or lake. The movement of water is greatly influenced by the contour of land and geologic features such as mountains, valleys and hills. A watershed consists of uplands, floodplains, and a stream channel. Uplands often comprise more than 99% of the watershed's area, with the floodplain and stream channel making up the remaining 1%.

Watersheds exist at different scales or levels. Large watersheds like the ones for the Colorado River, Mississippi River, Columbia River, and Chesapeake Bay are made up of many smaller watersheds across several states. Watersheds come in many different shapes and sizes and have many different features. Watersheds can have hills or mountains or be nearly flat. They can have farmland, rangeland, small towns, and big cities. Watersheds exist at different scales or levels, depending on a particular point of reference. If the Colorado River is the point of reference then almost the entire state of Arizona consists of a single watershed. This is because almost all of Arizona's land eventually drains to the Colorado River. The only exceptions are certain areas draining through Mexico into the Gulf of California and a few closed basins such as the Willcox Playa.

There are approximately 2 million miles of rivers and streams in the United States, all of which contribute to one of seven major drainage systems (Fig. 1). The Atlantic Ocean receives water from New England and Mid-Atlantic states east of the Appalachian Mountains. The Gulf of Mexico is the ultimate drainage for more land mass in the United States than any other body of water. The Gulf receives water from the states west of the Appalachian Mountains to the Continental Divide, plus parts of Florida, the expansive watersheds of the Ohio River, the Tennessee River, the Upper and Lower Mississippi River, the Missouri River, and the Rio Grande. Of course, the waters of the Gulf of Mexico ultimately mix with those of the Atlantic Ocean.

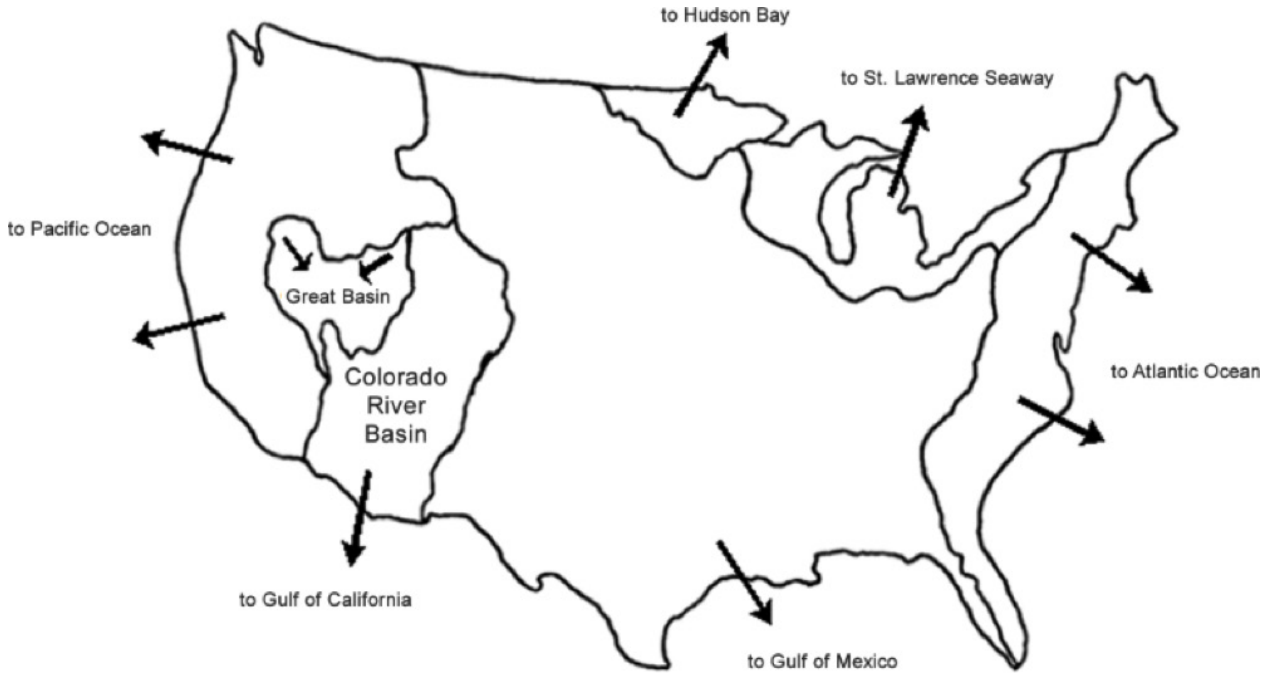

Figure 1. Major Drainage Systems of the United States.

The St. Lawrence Seaway is the outlet for the Great Lakes, which contain one-fifth of all the freshwater on earth and drain all of Michigan as well as northern portions of Minnesota, Illinois, Indiana, Ohio, Pennsylvania, and New York. The seaway flows into the Atlantic Ocean. Hudson Bay receives water from a portion of Minnesota and North Dakota.

The little water that exists in the arid lands of Nevada and western Utah flows to the Great Basin. The Great Basin is an example of a final destination of water in the United States that is not an ocean. Most of the water that flows into the Great Basin either evaporates or provides freshwater input to the Great Salt Lake in Utah.

Water that flows west of the Continental Divide created by the Rocky Mountains and that does not first drain into the Gulf of California or the Great Basin ends its long journey in the Pacific Ocean. The Pacific Ocean drains most of the land in California west of the Sierra Nevada and all land that is in the Columbia River watershed in western Montana, Idaho, Oregon, and Washington.

Lastly, and most importantly for those of us in Arizona, is the drainage into the Gulf of California. Water from southwestern Wyoming, western Colorado, eastern Utah, western New Mexico and Arizona, flows to or is drained into the Gulf, largely by the Colorado River.

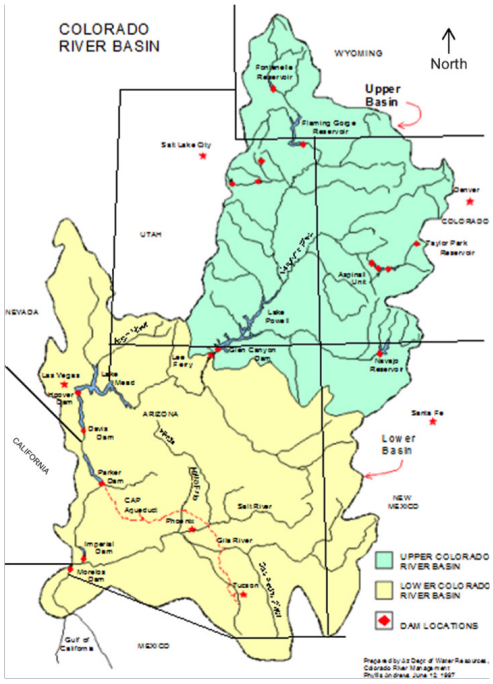

Figure 2. Colorado River Basin.

ARIZON AWATERSHEDS

Arizona shares the Colorado River watershed with six other states and Mexico (Fig. 2). Dams have been built in many areas for flood control, power generation, water storage, and /or recreation purposes. The Central Arizona Project (CAP) is a system of reservoirs, canals, and pumps that brings water from the Colorado River through Phoenix and into Tucson.

On its way to the Colorado River, water in Arizona flows through various drainage systems that are in themselves watersheds. In other words, smaller watersheds—also called subwatersheds—are nested within larger ones (Figure 3). Devised by the U.S. Geologic Survey (USGS), there are 18 - six digit watersheds (accounting units) and 84 – eight digit sub-watersheds (cataloging units) within Arizona. Each cataloging unit is a geographic area representing part of or all of a surface drainage basin, a combination of drainage basins, or a distinct hydrologic feature. Numbers assigned to each act as a "zip-code" for that particular watershed. For example: the University of Arizona campus in Tucson is located within the USGS Region 15 (Lower Colorado Region); Sub Region 1505 (Middle Gila); Accounting Unit 150503 (Santa Cruz); and Cataloging Unit 15050301 (Upper Santa Cruz). To find your watershed address go online to the US Environmental Protection Agency (EPA) "Surf Your Watershed" website at http://www.epa.gov/surf/.

ARIZONA SIX-DIGIT WATERSHEDS

- **140700** Upper Colorado-Dirty Devil
- **140801** Upper San Juan
- **140802** Lower San Juan
- **150100** Lower Colorado-Lake Mead
- **150200** Little Colorado
- **150301** Lower Colorado
- **150302** Bill Williams
- **150400** Upper Gila
- **150501** Middle Gila
- **150502** San Pedro-Willcox
- **150503** Santa Cruz
- **150601** Salt
- **150602** Verde
- **150701** Lower Gila-Agua Fria
- **150702** Lower Gila
- **150801** Rio Sonoyta
- **150802** Rio De La Concepcion
- **150803** Rio De Bavispe

Figure 3. Arizona Watersheds

WATERSHED MANAGEMENT

Watersheds catch and store precipitation, releasing the stored water to stream channels. These functions are influenced by climate, elevation, the type of soil and vegetation, steepness of the slopes, their orientation to the sun, and size of the watershed.

Although climate determines the amount of precipitation entering the watershed, man can significantly influence how well or poorly the watershed functions. Land management activities, such as forestry, recreation, grazing, agriculture and urbanization can impact the vegetation and soil which in turn affects the quantity and timing of water moving through the watershed.

Properly managed vegetation within a watershed dissipates the energy of water, slowing the flow to the stream channel and allowing more water to enter the soil and percolate down into the aquifer. Less erosion occurs on well managed uplands. In a healthy watershed less sediment enters the stream to degrade water quality. More of the precipitation falling to the ground is available to contribute to late season stream flow, and reducing high early season runoff.

Removing or altering vegetation in a watershed, such that areas of bare ground are exposed, increases the potential for erosion. Water runs off the surface before it has an opportunity to soak into the soil. Its energy is concentrated, thereby accelerating erosion. Downcutting within the stream channel may occur, resulting in lowered water tables. Runoff over bare ground carries more soil to the stream, degrading water quality by increasing sedimentation. Less water soaks into the soil so it is not available for use by vegetation.

The objective of good watershed management is to maintain desirable and abundant vegetative cover so that water enters the soil, can be stored within the rocks and soil, and slowly released into the stream over an extended period of time. Healthy watersheds will optimize long-term benefits for all uses – your actions count.

ADAPTED FROM

Pater, Susan, Kim McReynolds, & Rob Emanuel. Master Watershed Stewards Watershed Basics Part II: Hydrology & Watersheds. 1995

VETERINARY FEED DIRECTIVE CHANGES FOR ARIZONA LIVESTOCK PRODUCERS

Ashley Wright, Area Assistant Agent, Livestock
Dan Faulkner, Beef Specialist
and Peder Cuneo, Extension Veterinarian
University of Arizona Cooperative Extension


CATHERINE YEULET

WHAT IS A VFD AND HOW DOES IT AFFECT ME AS A PRODUCER?

Beginning January 1, 2017 some feed medications that were previously available over the counter will now require a VFD to obtain and use. These directives have been common in the swine industry, but now they will affect a much broader section of the livestock industry. A VFD is similar to a prescription from your veterinarian. A prescription is used for oral, topical, or injectable medications while a VFD applies to medications added to feed products. In the same way your vet would write you a prescription for certain medications indicating the animal(s), dosages, route and duration of administration your vet will now need to write a VFD for medicated feed products that fall under this new regulation.

DO I NEED A VFD TO OBTAIN INJECTABLE ANTIBIOTICS OR VACCINES?

No. Injectable antibiotics, vaccines, and other medications that are currently available for purchase over-the-counter are not included in the new VFD rule. These items will still be available for purchase by producers without the need for a VFD or prescription. The VFD rule is an effort to combat human antibiotic resistance, therefore it only applies to some types of antimicrobial feed products that are medically important to humans.

WHICH FEED PRODUCTS ARE INCLUDED UNDER THE VFD RULING?

Antibiotics that are used in feed for therapeutic uses (to treat or prevent disease) and that are considered important for human medicine will fall under the new VFD guidelines. Antibiotics that are used in feed to treat or prevent disease but are not considered important for human medicine will remain available over-the-counter without a VFD. Under the new VFD rules, antibiotics that are used in feed only for growth promoting purposes will no longer be authorized for use, and companies will be withdrawing that claim from their labels. The full list of medications that will require a VFD order can be found here:

http://www.fda.gov/AnimalVeterinary/DevelopmentApprovalProcess/ucm482107.htm

WHICH FEED PRODUCTS ARE NOT INCLUDED UNDER THE VFD RULING?

Antimicrobial drugs that are not considered medically important in human medicine are not affected by the new VFD ruling. These include:

- Bacitracin
- Bambermycins
- Carbadox
- Ionophores (monensin, lasalocid, etc.)

In addition, some drugs are not antimicrobials and therefore are also not affected. These include:

- Coccidiostats (i.e. Amprollium, Diclazuril)
- Beta agonists (i.e. Ractopamine, Zilpaterol)
- Anthelmintics (i.e. Fenbendazole, Ivermectin)

WHAT IS A "COMBINATION VFD DRUG"?

A "combination VFD drug" is an approved combination of drugs for use in animal feed to treat or prevent disease. If any one of the drugs in the combination falls under VFD rules, the entire combination will require a VFD order from a licensed veterinarian.

WHAT INFORMATION IS INCLUDED ON A VFD?

The VFD issued by your veterinarian must be written (non-verbal) and may be transmitted electronically. Blank VFD forms that meet FDA criteria are available from the American Veterinary Medical Association (AVMA) to your veterinarian. To be valid, the VFD order must contain all of the information listed below:

- Client's name, address, and telephone number
- Veterinarian's name, address, telephone number, license number, and the state issuing the license
- Location of the animals
- VFD date of issue
- VFD expiration (may be up to six months or the expiration date of the product, whichever occurs first)
- Name of VFD drug(s)
- Species and production class of animals to be fed the VFD product
- Level of VFD drug and duration of use
- Reason for VFD drug usage
- Feeding instructions with withdrawal times
- Special instructions and cautionary statements
- Number of authorized refills (determined by the drug being used)
- The statement: "Use of feed containing this veterinary feed directive (VFD) drug in a manner other than as directed on the labeling (extra label use), is not permitted."
- Affirmation of intent for combination VFD drugs
- Veterinarians signature

CAN I USE ANY VETERINARIAN TO GET A VFD?

You can use any licensed veterinarian that has a valid veterinarian-client-patient relationship with you and your livestock.

WHAT IS A VALID VETERINARIAN-CLIENT PATIENT RELATIONSHIP (VCPR)?

The state of Arizona defines a valid Veterinarian Client Patient Relationship as follows (from A.R.S. § 32-2201):

"Veterinarian Client Patient Relationship" means all of the following:

(a) The veterinarian has assumed the responsibility for making medical judgments regarding the animal's health and need for medical treatment and the client, owner or caretaker has agreed to follow the veterinarian's instructions.

(b) The veterinarian has sufficient knowledge of the animal to initiate at least a general or preliminary diagnosis of the animal's medical condition. Sufficient knowledge is obtained when the veterinarian has recently seen and is personally acquainted with the keeping and caring of the animal as a result of examining the animal, when the veterinarian makes medically appropriate and timely visits to the premises where the animal is kept or when a veterinarian affiliated with the practice has reviewed the medical record of such examinations or visits.

(c) The veterinarian is readily available for a follow-up evaluation or the veterinarian has arranged for either of the following:

(i.) Emergency coverage

(ii.) Continuing care and treatment by another veterinarian who has access to the animal's medical records

HOW DO I OBTAIN FEED PRODUCTS UNDER A VFD AND WHAT RESPONSIBILITIES DO I HAVE AS A PRODUCER?

Your veterinarian will issue three copies of a VFD: one for their records, one for the feed distributor (i.e. feed manufacturer, feed distributor, or retail store), and one for you, the producer. Once the feed distributor has a copy of a valid VFD they can distribute the product directly to you. All parties must retain records of VFD orders for a minimum of two years. Feed distributors must also retain sales receipts and distribution records for two years and present them to FDA inspectors upon request. Producers who obtain a legal VFD order are obligated to follow all label and veterinarian directions on both the product and the VFD order. This includes complying with all dosage requirements, animals to be treated, and duration of use. Extra label use of a VFD medication is not permitted, therefore a veterinarian may not write a VFD order that is not consistent with the product's labeled instructions (e.g. dosage, duration of administration, route of administration, and species).

Further information regarding VFD compliance and procedures is available at the resources listed below, or by contacting your veterinarian.

REFERENCES

Stokka, Gerald, Charlie Stoltenow, and Neil Dyer. Understanding the Veterinary Feed Directive. Publication no. V1719. North Dakota State U Extension Service, 2014. Print.

"VFD." College of Veterinary Medicine - Cornell University. Cornell University College of Veterinary Medicine, 2014. Web. 28 Mar. 2016. https://ahdc.vet.cornell.edu/programs/NYSCHAP/nysvfrp/vfd.cfm

"Veterinary Feed Directive (VFD)." U.S. Food and Drug Administration. Web. 28 Mar. 2016. http://www.fda.gov/AnimalVeterinary/DevelopmentApprovalProcess/ucm071807.htm

SCHOOL GARDEN FOOD SAFETY RESOURCES

School Garden Food Safety

School gardens are increasingly being used as hands-on tools to help students learn many core educational concepts. Not only do school gardens help produce educated students, but they also produce an abundance of fruits and vegetables. The School Garden Food Safety Program was developed to meet the needs of schools that wanted the produce from its garden to be served in the school's cafeteria.

Effective August 6, 2016, Arizona House Bill 2518 became law as Title 36-136. This basically says that school grown produce that is washed and cut onsite in the school's cafeteria for immediate consumption is an approved source. Any questions regarding this change in law and its impact on the certification process can be directed to the School Garden Program through ADHS - schoolgarden@azdhs.gov.

Microorganisms and pathogens are a natural part of the environment. It is essential to understand how these microorganisms are typically introduced into the gardening environment and the potential means by which they can contaminate fresh produce in order for school gardens to safely provide healthy foods grown by, and for, students. The UA CALS - CE free School Garden Food Safety Online Training program, http://cals.arizona.edu/agliteracy/school-garden-food-safety-training, is a way to determine if you have implemented safe practices for your school, community or even your home garden.

Arizona House Bill 2518

http://www.azleg.gov//FormatDocument.asp?inDoc=/legtext/52leg/2r/laws/0243.htm&Session_ID=115

Title 36-136

http://www.azleg.state.az.us/FormatDocument.asp?inDoc=/ars/36/00136.htm&Title=36&DocType=ARS

Arizona Department of Health Services School Gardens Program

www.azdhs.gov/phs/oeh/fses/school-garden/

University of Arizona Cooperative Extension School Garden Food Safety Resources

http://cals.arizona.edu/agliteracy/programs/school-garden-food-safety

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