



High on the Desert Cochise County Master Gardener Newsletter

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The University of Arizona and U.S. Department of Agriculture Cooperating

Value of the Green Industry in the United States

The U.S. environmental horticulture industry, also known as the “Green Industry,” is comprised of wholesale nursery and sod growers; landscape architects, designers/builders, contractors and maintenance firms; retail garden centers, home centers and mass merchandisers with lawn and garden departments; and marketing intermediaries such as brokers and horticultural distribution centers (re-wholesalers). Environmental horticulture is one of the fastest growing segments of the nation’s agricultural economy. In spite of the magnitude and recent growth and interest in the Green Industry, there is surprisingly little information that has been developed on the national level regarding its’ economic impact. Thus, the objective of this study is to estimate the economic impacts of the Green Industry at the national level. In addition, this study seeks to evaluate the value and role of forest tree species (woody ornamental trees). Economic impacts for the U.S. Green Industry in 2002 were estimated at \$147.8 billion

(Bn) in output, 1,964,339 jobs, \$95.1 Bn in value added, \$64.3 Bn in labor income, and \$6.9 Bn in indirect business taxes, with these values expressed 2004 dollars.

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In a Desert Garden

Primrose Jasmine

Jasminum mesnyi

I have written about the plants we enjoy for the Christmas season in previous years. This month I'd like to address the winter season outside in the garden. I spend a lot of time in the garden, even in winter, and I like color all year long. In our mild winter climate we can grow several beautiful shrubs and vines that give us winter color. I have chosen evergreens so as to not have too many bare spots and bare branches in my garden. We all know how rosemary blooms in the winter, especially the prostrate variety that puts out these lovely blue flowers all winter long. Actually, in my yard this plant blooms all year long. What a tough plant but there are others. For example Carolina Jasmine, *Gelsemium sempervirens*, not a true jasmine, is used a lot in our area. My plant is starting to bloom now and will be blooming on and off until the nights get really freezing and then it will start again in spring, as will most Honeysuckles – *Lonicera* species.

Another wonderful plant for winter color is Primrose Jasmine, *J. mesnyi*, a true jasmine. Unfortunately, it is seldom available in the nurseries. This is a sprawling shrub with a similar growth habit to the Tombstone Rose, *Rosa banksiae*. My plant has been blooming since the beginning of the cooler season and will have flowers on and off all winter



long, peaking in January and February. This plant is a Chinese native and needs a severe pruning from time to time, as it can grow into a huge mess if left unchecked. It is best grown by bundling up the long canes to desired heights and then let it cascade down forming a fountain of flowers. I have trained my plant over one of those simple bowed arbors. It hides one of my five 55- gallon rain barrels.

To me collecting rain water is very important. Not only does rain water do wonders for my plants, it also keeps my water bill low. I also have a container that holds 500 gallons, as well as plenty of milk jugs to empty the smaller barrels. With my ponds and water garden nursery and my love for plants, I use a lot of water. My goal is never to exceed a certain amount of water use over the period of a year and saving rain water really makes that possible. We can never forget that we live in a desert and water, even if cheap, is scarce.

Anyway, that said, back to the jasmine. This shrub has lovely flowers that remind me of yellow primroses. The only downside is that they do not have the usual fragrance of jasmine. The leaves are three-lobed and dark green.

This shrub does really well for me. I planted it next to our back porch which gives it a protected location. It is not fussy about soils and once established can take some drought. The first time I saw this shrub I went to Ft. Huachuca to attend one of the last theatre performances before they tore the building down. It was growing along one of the walls of that old building and I fell in love with it. I knew it had to come down as well, so I took three cuttings to remember a lovely evening. The cuttings rooted very easily in water. I planted one and shared the others with friends. This plant is not bothered by any pests, whether it is fungus or bugs. To really enjoy this plant give it a lot of space as it is a vigorous grower. The problem is to locate it in a nursery, but you are always welcome to take a cutting from my plant. As my shrub gets rich pond water from time to time, there is no need for me to fertilize. For everybody else I suggest you give it some fish emulsion during the growing season.

Angel Rutherford, Master Gardener



Robert E. Call

Robert E. Call
Extension Agent, Horticulture

Carolyn Gruenhagen
Editor

The Virtual Gardener—“Baby, it’s Cold Outside!”

As I started writing this, we had dodged the bullet for the coldest night of this fall so far. The predicted 21°F for Sierra Vista missed the mark by 8°, according to my thermometer, which read 29° F for this morning’s low. This morning the “official” temperature at the Virtual Gardener residence was 25°F, 4° above the predicted 21°. Of course the “official” temperature is measured by a weather station on the roof. A thermometer in a flower pot at ground level bottomed out at 20° F, a reminder that cold air like other bad things flows downhill.

It’s a good thing the predicted low temperature for yesterday morning did not materialize at my place because the covering I used to protect some of my more cold-sensitive plants blew off in the night. The breezes were a mixed blessing. Although they blew the covers off the plants, they probably also contributed to the higher than predicted temperature this morning.

Statistically, January and December are the months with the lowest minimum temperatures. December, with a 23-year average daily minimum of 33°F, edges out January (average minimum 33.5° F) by a nose. In absolute terms, the coldest temperature officially recorded for Sierra Vista to date since 1982 (11°F) occurred during the first two days of February in 1985. The year with the most record minimum temperatures is 1990 (20). Runner-ups for most record minimums are 1985, 1987, and 1990 with 10 each. Using the number of record minimums as a criterion, there is no compelling evidence to say that winters over

the last 23 years are getting either warmer or colder.

Plants respond to cool temperatures in different ways. Plants that originate in tropical or subtropical areas may be subject to chilling injury, which means they may wilt or even die at cool temperatures above freezing. Chilling injury occurs when cell membranes lose their ability to regulate the transport of chemicals into and out of cells. One of the mechanisms causing chill injury has to do with the compositions of the fats in cell membranes of cold sensitive plants. They contain a high proportion of saturated fats (the same kind of fats that clog human arteries and cause arteriosclerosis) that solidify at low temperatures. The fats in the cell membranes of hardier plants contain a high proportion of unsaturated fats that remain liquid at lower temperatures. The composition of fats used to be considered as the only mechanism for chilling injury, but recent research has found that other factors are also at work. Mother Nature never gives up her secrets easily.



In addition to chilling injury, plants are susceptible to freeze damage, which occurs when ice crystals form inside of cells and damage the delicate machinery that manages all the chemical reactions that keep the plant alive. Surprisingly, the formation of ice crystals in the areas between cells does not do serious damage. Plants native to temperate zones protect themselves from freeze damage by becoming dormant in the winter and withdrawing moisture from exposed tissues. But they can still be killed if a sudden freeze catches them before they have had a chance to get ready for winter.

The best way to insure your garden is protected against chill injury and freezing damage is to select plants that are native to the area in which you live. These plants have had a long time to adapt to their environment and have evolved ways of coping with cool temperatures. If your plant palette contains non-native plants that are native to warmer climes, you have several options to protect them—relocating them, covering them, and/or artificially heating them.

The most surefire way to protect your sensitive plants is to move them indoors or at least under a roof such as over a carport or patio. If that’s not possible, you can cover them with cloth (not plastic). Incandescent bulbs can also be placed under the covering to provide a little extra heat. Just be careful not to start a fire by allowing the cloth to come in contact with the

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The Agent's Observations

Q I am new to the desert Southwest. I understand that there are termites here. What do I need to do so that my home is not attacked. I have seen advertising for pest control operators and wonder if I need to treat my property?

A There are eighteen species of termites in Arizona. However, seven are of some economic importance. They are classified into three broad groups. They are the dampwood, drywood, and subterranean termites. A new University of Arizona Cooperative Extension publication entitled, *Arizona Termites of Economic Importance*, Publication AZ 1369, is available at Extension Offices and on-line at: <http://ag.arizona.edu/pubs/insects/az1369.pdf>. This informative and detailed 20-page document includes in depth descriptions of termite biology, ecology, identification, economic importance, detection and management.

Termite biology is interesting because “castes” perform different functions for the survival of the whole colony. This publication states: “Termites live in true social groups with a division of labor required of the different castes of individuals: reproductive adults, soldiers, and workers. Termites have a complex life cycle with the development of individuals that look and behave differently from other members of the group. There are three general developmental stages: egg, immature and adult. The primary role of winged adults is dispersal and reproduction. The actual work of the colony and

expansion of the colony’s foraging territory is performed by the caste of workers, while soldiers defend the colony.” Winged **adults** (alates or swarmers) are noticeable during the summer rainy season and lose their wings after flight. (Some ant species also swarm at the same time of year and should not be confused with termites.) Millions of alates swarm every year, but only approximately 1% survive to produce a new colony.

Workers are the primary foragers and are the form that are encountered most often. Workers perform a variety of tasks including: caring for eggs and young larvae; building and maintaining the colony foraging network; providing food for alates, soldiers, and one another; grooming and cleaning nestmates; and helping defend the colony if attacked by ants or foreign termites.

Soldiers are “terminal individuals,” meaning that once developed they can not molt and become larger. Their sole purpose is to defend the colony from invaders, using their greatly enlarged jaws or mandibles.

Termite ecology helps decompose woody plant materials in a dry environment where decomposing fungi are limited because of a lack of moisture. A worker’s gut can digest cellulose with the help of protozoa. This is known as “obligate mutualism.” Cellulose is the chief component of plant cell walls. It is an abundant substance that is both resistant to chemical and mechanical decomposition, and nutritionally poor. Cellulose is a plant produced, long chain

polysaccharide made of a large number of tightly bonded sugars. It cannot be chemically broken down without the presence of the enzyme *cellulase*. Many termites do not produce enough cellulase to survive, but flagellated protozoans in their guts aid in cellulose breakdown. Other termites form a similar relationship with bacteria and fungi. Reproductive adults and soldiers do not have the ability to feed themselves so workers cater to their needs.

Identification of termites is essential for their management.

Desert dampwood termites, *Paraneotermes simplicicornis* (Banks), are the only dampwood termite considered a pest of wooden structures in Arizona. Due to its high moisture requirement, it attacks moist wood below the ground. Nests are built in and around the food source. They may also attack living shrubs or trees in the lower deserts of the Southwest.

Drywood termites produce small nests and feed on dry wood. They are noticed because of the “fecal pellets” that accumulate below the “kick holes”. These holes are used to eliminate waste from their galleries. There are two important drywood termites. At higher elevations of Southeastern Arizona the dark western drywood termite (*Incisitermes minor*) is of concern.

Subterranean termites accounts for 66-80% of all termite cost of control. Estimates for termite
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control in the United States range from \$1.5 to 2.5 billion annually. There are four species of subterranean termites that are of concern in Arizona. The species that are most importance are *Reticulitermes tibialis* and *Heterotermes aureus*. These termites produce large underground colonies and construct above ground mud tubes in which they travel to food sources and can cause extensive damage in wooden structures.

A key on page 18 of *Arizona Termites of Economic Importance*, identifies the seven most economically important termites in the Southwest. Throughout the publication are detailed drawings and photographs to aid in the identifica-

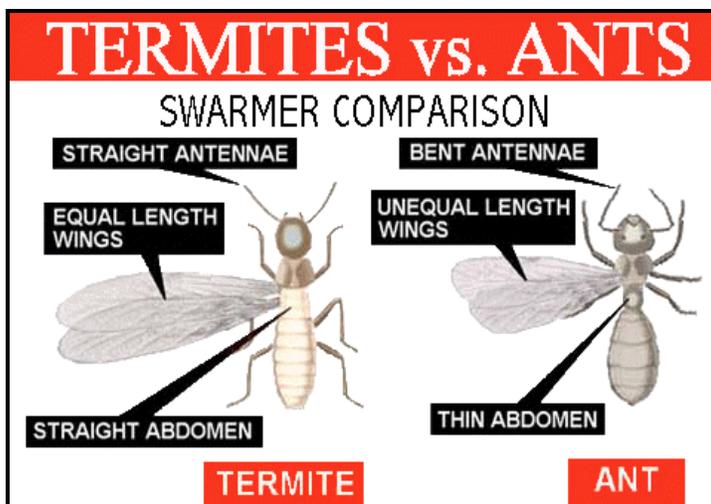
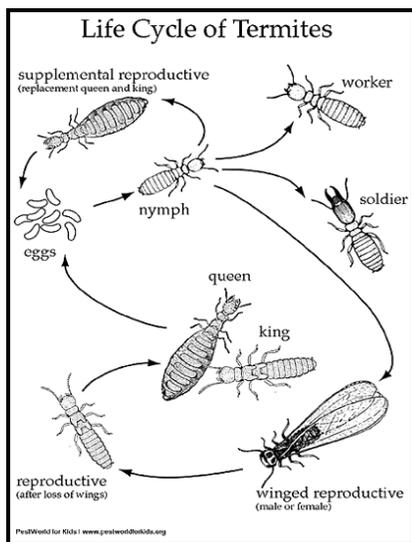
tion of different termite species. Do not confuse ants with termites. Ants have a narrow “waist,” while termites do not. Another differentiating characteristic is that ants have a bent or “elbowed” antenna, while termite antenna are straight with beaded segments. Termites have equal length wings, whereas ants do not.

Inspection is key for property owners and should be done a couple of times a year. Look for fecal pellets or mud tubes on structures. Remove stumps and large roots from within 25 feet of structures. Make sure there is adequate drainage away from structures. Insist on termiticide applications before pouring concrete pads. Avoid stucco below grade. Treatments to prevent termites, and in particular subterranean termites, are

recommended. These normally involve foundation injections and/or sprays of termiticide around the perimeter of a structure. If dry-wood termite fecal pellets are found, watch above were they were found. Perhaps you will see fecal pellets fall from the kick hole. Test the wood for galleries using a screwdriver as a probe. Remove or treat with a termiticide the wood where the active gallery is located. Tenting and fumigating the entire structure will be costly and perhaps unnecessary. In the event of signs of termite activity **do not panic!** Consult a professional for current control options.

Source: Baker, Paul B. and Ruben J. Marckosky, Jr. 2005. *Arizona Termites of Economic Importance*. University of Arizona Cooperative Extension, Pub. AZ1369, 20 pages.

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bulb. Cold-sensitive cacti with a columnar form can be protected by covering the ends of the columns. Styrofoam cups work great on small cacti.

If you would like to learn more about plants and cold temperatures, check out the following Web sites:

<http://www.plantphys.net/article.php?ch=11&id=153>

<http://ag.arizona.edu/gardening/plantgrowth.html>

<http://edis.ifas.ufl.edu/EP025>

<http://ag.arizona.edu/gardenig/news/articles/3.19.html>

Until next time, happy surfing!

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High on the Desert

The 13th annual High Desert Gardening & Landscaping Conference sponsored by Cochise County Master Gardeners Association in conjunction with the University of Arizona will be held Friday afternoon, May 5 and all day Saturday, May 6, 2006 at Buena High School in Sierra Vista. The spring Water Wise/Master Gardener Xeriscape Garden Tour will be held on Sunday, May 7 from 1 to 4:00 p.m. Watch for details.

Cuttings 'N' Clippings

* The next CCMGA meeting is 5:00 p.m. Thursday, January 5, 2006 at the University of Arizona South campus, Room to be announced. The speaker will be Jenny Duberstein of the Sonora Joint Venture.

* The January *Water Wise* workshop will be held January 7 at UAS. Watch for more information.

* Did you know . . . *The High on the Desert Cochise County Master Gardener Newsletter* has just completed its 16th year of publication!