Desert Spoon, or Sotol, is the “Desert Favorite” plant of the month. Desert Spoons are long-lived accent plants that require no maintenance. They are low water users and thrive in full sun making them excellent landscape plants. Pictured below are the two varieties of this Sonoran Desert native: on the left is the green (*Dasylirion acrotrichum*) and on the right is the grey (*Dasylirion wheeleri*). Nearly spherical, this plant grows 3-5’ high and 4-5’ wide. In Southern Nevada the Desert Spoon can tolerate winters to 10 F without any cold damage. Thin, spiky leaves with sharp, saw toothed edges and frayed, brown tips slowly form a trunk. The vase of each leaf broadens where it joins the trunk to form a long handled “spoon” used in dried arrangements. At maturity, a 9- to 15-foot stalk produces numerous flowers in summer. The dried flower stalk can be used for many things including walking sticks and fencing. Native Americans and Mexicans roasted the head in a pit to make an alcoholic beverage called Sotol. Fibers of the leaves were used to make mats and baskets. When planting the Desert Spoon in the landscape, keep in mind the eventual size and the sharp leaves to insure no pruning will be necessary. If you are looking for a maintenance-free plant that looks good all year in Southern Nevada, consider a Desert Spoon. Pictures of both varieties are on page 3.

If you have a favorite desert plant in your yard and would like to share, please do!
OXBLOOD LILY  By: Sandy Wilson, Smith County Master Gardener

Oxblood Lily, *Rhodophiala bifida*, provides an exciting burst of color in early September following a heavy August or September rain. Very refreshing after the heat of summer has taken a toll on summer blooming plants. This bulb has brilliant red blooms on foot tall stems. They resemble small red amaryllis and, in fact, are in that family.

Oxblood lily is well adapted to about all soil types and is considered a tough, resilient plant. It has been in Texas at old home sites since the early 20th century when it was brought to Texas by German settlers. It can be hard to find and would be considered a good pass along plant. Luckily, the Smith County Master Gardeners Fall Bulb Sale usually has them.

Ideally, divide and share oxblood lilies after the foliage dies back. However, it doesn't really hurt them to divide anytime. Plant the bulbs about 6”-8” apart and about 3” deep. They can be left in place for years without dividing and still keep blooming.

Oxblood lily blooms in sun or partial shade under deciduous trees. For the best effect, plant the bulbs in large drifts. The Ft. Worth [Texas] Botanical Garden has a stunning display in a lawn close to several live oak trees. Against a green backdrop like this or an all-green garden it provides that "Wow" affect you cannot ignore. In my own setting, I've planted a drift in part of the lawn where it meets the woodland edge. Dormancy of the grass in winter and little or no fertilizer to this area in spring makes it easy not to prematurely mow before the bulb foliage starts turning yellow.

Texas AgriLife Extension Service
“You know you’re a Master Gardener when you carry a shovel, a soil probe and a plastic bag in your trunk as emergency tools.”

Winter Pruning at the Orchard

Learn how to prune your fruit trees correctly for high quality fruit production at the Master Gardener Orchard in North Las Vegas. Classes start promptly at 9am and are held hourly until noon. No registration is necessary; however, they are asking for a $5 donation for the classes to help support educational research.

Saturday, January 7 – Apples, Pears and Quince
Saturday, January 14 – Fertilizing Fruit Trees and Pest Control
Saturday, January 21 – Figs, Pomegranates and Persimmons
Saturday, January 28 – Almonds and Pistachios

The Orchard is located 100 yards east of the intersection of North Decatur and Horse Drive. Take I-15 or I-95 North to the CC215 beltloop and exit North Decatur going north. Horse Drive is about 3 ½ miles north of the CC215 exit.

For more information contact Jonathan Chodack at chodackij@unce.unr.edu or call the Orchard at 702-257-5532 and leave a message for a volunteer.

Free Mulch available at the Orchard

Currently there is about 300 cubic yards of mulch available at the Orchard. Make arrangements to pick up mulch Monday – Saturday between the hours of 8 a.m. and noon. In 2011, the mulch pile at the Orchard distributed over 2,400 cubic yards of wood mulch that would have gone into public landfills.

Please call 257-5532 or 466-4267 ahead of time to make sure the gates will be open and a tractor available if you need assistance loading. Call 257-5555 to see if mulch is available before you come. Sometimes they run out! The mulch is supplied by local tree services and diverted from local landfills.

January Planting

<table>
<thead>
<tr>
<th>Vegetable</th>
<th>Minimum Temperature</th>
<th>Maximum Temperature</th>
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<tbody>
<tr>
<td>Arugula</td>
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<tr>
<td>Asparagus</td>
<td>35º-80º</td>
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<td>Beets</td>
<td>35º-80º</td>
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<td>Bok Choy</td>
<td>35º-80º</td>
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<td>Cabbige</td>
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<td>Carrot</td>
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<td>Cauliflower</td>
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<td>Celery</td>
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<td>Cilantro</td>
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<tr>
<td>Fennel</td>
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<td>Lettuce</td>
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<tr>
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<td>Rutabagas</td>
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<tr>
<td>Spinach</td>
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<tr>
<td>Cover plants</td>
<td>at night and on frosty days!</td>
<td></td>
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Biological Control of Insect Pests

Mary E. Barbercheck, Penn State University

Full article can be found at: www.extension.org/pages/18931/biological-control-of-insect-pests

Introduction

Biological control is the use of living organisms to maintain pest populations below damaging levels. Natural enemies of arthropods fall into three major categories: predators, parasitoids, and pathogens.

Predators

Predators catch and eat their prey. Some common predatory arthropods include ladybird beetles, carabid (ground) beetles, staphylinid (rove) beetles, syrphid (hover) flies, lacewings, minute pirate bugs, nabid bugs, big-eyed bugs, and spiders.

Parasitoids

Parasitoids (sometimes called parasites) do not usually eat their hosts directly. Adult parasitoids lay their eggs in, on, or near their host insect. When the eggs hatch, the immature parasitoids use the host as food. Many parasitoids are very small wasps and are not easily noticed. Tachinid flies are another group of parasitoids. They look like large houseflies and deposit their white, oval eggs on the backs of caterpillars and other pests. The eggs hatch, enter the host, and kill it. Parasitoids often require a source of food in addition to their host insect, such as nectar or pollen.

Pathogens

Pathogens are disease-causing organisms. Just as many other organisms get sick, so do insects. The main groups of insect disease-causing organisms are insect-parasitic bacteria, fungi, protozoa, viruses, and nematodes. Biological control using pathogens is often called microbial control. One very well-known microbial control agent that is available commercially is the bacterium Bacillus thuringiensis (Bt). Because not all formulations of Bt are approved for use in organic systems, it is important to check with your certifier before using this. Several insect-pathogenic fungi are used as microbial control agents, including Beauveria, Metarhizium, and Paecilomyces. These are most often used against foliar insect pests in greenhouses or other locations where humidity is relatively high. Nuclear polyhedrosis viruses (NPV) and granulosis viruses (GV) are available to control some caterpillar pests. The insect-parasitic (entomopathogenic or insecticidal) nematodes, Steinernema and Heterorhabditis, infect soil-dwelling insects and occur naturally or can be purchased. As with all biological control agents, it is especially important to match the correct microbial control agent with the correct pest in order for them to be effective.

Approaches to Biological Control

Biological control can be natural: conservation of natural enemies or applied: inoculation or inundation.

Conservation of Natural Enemies

In many cases, purchasing natural enemies to provide biological control agents is not necessary. Natural enemies are common and a grower can design production systems to attract and keep the natural enemies in the system by providing environmental conditions conducive to the enemies' survival.
Farmscaping is a term sometimes used to describe the creation of habitat to enhance the chances for survival and reproduction of beneficial organisms. For example, many adult predators and parasitoids feed on nectar and pollen, so it is essential to have these resources nearby. Having several species of pollen- and nectar-producing plants in an area will provide resources more continuously than only having one species. Many members of the Apiaceae (also known as Umbelliferae) family are excellent insectary plants. The flowers of fennel, coriander (cilantro), dill, and wild carrot are especially attractive to parasitoid wasps.

Organic mulches and crop residue moderate fluctuations of temperature and moisture and can provide hiding places for soil-dwelling insect predators such as ground (carabid) and rove (staphylinid) beetles, spiders, and centipedes. Undisturbed areas, such as windbreaks, hedgerow, or strips of perennial vegetation within fields (beetle banks), provide refuge habitat where beneficial insects can live and reproduce. Other habitats provided by farmscaping include water, alternate prey, perching sites, overwintering sites, and wind protection. Some refuge planting can harbor pests, so the success of farmscaping efforts depends on knowledge of pests and beneficial organisms.

Good soil management that returns organic matter to the soil to support an active food web can support vigorous plant growth and conditions that favor soil dwelling natural enemies, e.g., ground beetles. However, high organic matter and abundant crop residues can favor some pests, such as slugs, cutworms, wireworms, and root maggots.

Even pesticides allowed in organic production are insecticidal, and beneficial insects are often susceptible to the same pesticides used to control pest insects. If a pesticide must be used to control a pest outbreak, it should be applied in a manner to conserve beneficial insects. Application methods that result in low environmental exposure of beneficial organisms to pesticides should be used—for example, enclosed baits, low volume or spot treatment, or application at times of day when Beneficial’s are not active.

**Inoculation and Inundation**

Inoculation and inundation involve the supplemental release of natural enemies to build populations of beneficial organisms. Many biological and microbial control agents are commercially available for purchase.

An inoculative approach involves the release of natural enemies at a critical time of the season to augment natural populations already present, but in numbers too low for effective pest management.

An inundative approach involves the application of a large number of organisms much in same manner as a pesticide. The applied organisms, which may or may not become established, can be used for relatively fast-acting, short-term control. Parasitoids such as *Trichogramma* are often released in vegetable or field crops at a rate of 5,000 to 200,000 per acre per week depending on level of pest infestation. Insect-parasitic (entomopathogenic) nematodes are often applied at a rate of 1 million to 1 billion nematodes per acre.

**Microbial Control**

Microbial control of insects is achieved through the inundative application of allowable formulations of insect-pathogenic bacteria (e.g., *Bacillus thuringiensis*), insect-pathogenic fungi (e.g., *Beauveria bassiana*), or insect viruses.

Information about rates and timing of release are available from suppliers of beneficial organisms. The quality of commercially available bio control agents is an important consideration. Biological and microbial control agents are living organisms, and must not be mishandled during shipping, storage, or application.
A note from Denise

1. Practice eating what is in season locally. This will get your family accustomed to eating seasonal produce, and, therefore, what you can grow in your own garden.
2. Learn which herbs might help your family’s health issues.
3. All heirloom plants are open pollinated, but not all open pollinated plants are heirloom.
4. Try more than one variety of each vegetable to see which gives you the best results.
5. For survival, grow what the poorest farmers in third world countries grow. Sorghum, peanuts and chickpeas are three such crops.
6. High-quality tools are a must. Keep a bucket filled with sand and a bit of motor oil mixed in to clean off dirty gardening tools.
7. Solarize your garden soil to get rid of weeds a few weeks before planting season.
8. It is not legal to save seeds that have been patented.
9. Heat and moisture are enemies of seeds. Unhealthy seeds may sprout, but they may not grow anything. Stored properly, some seeds can last 5-10 years, but most will last just 2-3 years. Younger seeds will grow better.
10. Mail order companies are best when it comes to buying seeds because they store their seeds in optimal conditions.
11. Just because a nursery is selling certain plants does not mean that particular variety grows well in your area. They are selling what they know people will buy.
12. Never work the soil when it is wet or very dry and have your soil tested so you will know what amendments are needed.
13. Plan your garden so you are planting for a staggered harvest. Otherwise, you may be harvesting tons of zucchini, for example, during a single week and then have to wait several more weeks for another zucchini harvest.
14. Do not water at night, and be sure to water the soil, not the leaves.
15. The best pest control is the eyes and hands of the gardener.

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