WILD FLOWERS
by Charlie A. Lowery
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Golf course architects, golf course superintendents, landscape architects, and garden club members are becoming more interested in using wildflowers in landscapes. The main reason for this is increasing costs for fuel, pesticides, labor, and mowing equipment, and the recent tightening of water restrictions due to limited water supplies. Wildflowers create beauty while reducing these costs.

Twenty years ago, if you wanted wildflowers, you had to dig them from the wild. Ten years ago, a few seed companies were producing a limited supply. Now many companies produce hundreds of varieties of wildflowers. Let's examine why wildflowers are becoming ever more popular.

In the first place, the tremendous growth of wildflower seed companies has come as a result of the newly established requirements of both the Bureau of Land Management and the Forest Service on land reclamation areas. Companies that have excavated large land areas for mining are now required to convert these desiccated areas to natural vegetation. This is accomplished by planting native trees and grasses and wildflowers.

Secondly, an increased interest in highway beautification by various states has also helped to develop the wildflower seed business. Texas has been the leading state in wildflower usage for highway beautification. Such "natural" landscaping had its beginning in that state as far back as the year 1917, when it was discovered that the first vegetation to appear on disturbed land was wildflowers. Today, the beauty of the roadsides of Texas is unsurpassed, and has become a point of interest to tourists. The Highway Department sows seeds of bluebonnets, Lupinus texensis Benth.; phlox, Phlox drummondii Hook.; fireweed, Gaillardia pulchella Foug.; and plains coreopsis, Coreopsis tinctoria, Nutt. Minnesota and Nebraska also have wildflower projects for their roadsides, while in New Mexico the wildflowers occur naturally. The State of Florida does not sow wildflower seeds, but several Texas natives such as phlox, Phlox drummondii Hook., and calliopsis, Calliopsis (Dietr.) Blake, have naturalized in North Florida. Florida mechanically mows roadsides, avoiding any natural stands of flowers.

One of the main reasons that wildflowers are utilized to such an extent in other areas of the country is that they decrease the expense of landscaping large areas. Average seed costs per acre amount to about $125 per acre, whereas sodding costs about $4,000 per acre.

However, the largest saving occurs because wildflowers significantly reduce maintenance costs. In Nebraska, for instance, the one continuous mowing of the roadsides required the expense and labor of 13 people: a foreman, a person in charge of hauling gasoline for the tractors, and 11 people operating mowers. With the changeover from total grasses to grasses and wildflowers, Nebraska now employs only three people who mow part-time. Thirty-eight states have likewise reduced mechanized mowing in the past ten years. One way that this has been accomplished is through reducing the herbicidal rates. For example, Oust (Sulfometuron), used in Florida at a rate of one-quarter ounce per acre, does not kill grass, but rather slows down its growth. When this herbicide is applied in the springtime, mowing becomes unnecessary. In addition to this, the herbicidal application costs only $3.00 per acre, whereas mowing costs $12.70 per acre.

The trend now in golf course design is to specify the planting of wildflowers and native grasses. This move began four years ago when the American Society of Golf Course Architects held their annual meeting in Scotland. Golf courses in Scotland, which are several hundred years old, have relied heavily on wildflowers and native grasses. The reason for this became apparent when American architects learned how little was actually spent for mowing, watering, and fertilizing Scottish courses. American golf course maintenance costs as much as $250,000 per year. Early in this century many of the American courses did follow the Scottish example. However, the trend shifted dramatically when Florida's golf courses, built during World War II, began using vast areas of highly maintained Bermuda turf. Although the neatly manicured appearance is appealing to the eye, maintenance is very expensive. Inflation has sparked the interest of golf course managers in looking for other means of reducing golf course costs.

Not without problems
To say that wildflower usage is without problems would be erroneous. There have been many failures in these projects. Perhaps one of the biggest problems is grasses overtaking the wildflowers, thus inhibiting plant reproduction. Two new grass herbicides, Fusilade (Fluazflop-butyl) and Poast (Sethoxydim) have recently been released which will kill grasses without damaging wildflowers. A trial plot was established using these herbicides to determine whether or not this management tool would be instrumental in more successful wildflower stands. Results are inconclusive at this time.

Another drawback to wildflowers on golf courses and highways is the attitudes of people in accepting a non-manicured look.

It is important to remember that only ten wildflower varieties native to Florida have been found available through seed companies by this author. Forty-two varieties that will naturalize here but are not native are available through seed companies, however.

SOUTH FLORIDA WILDFLOWERS
Candidates for Cultivation
by Chuck McCartney

A lifelong Floridian, Chuck McCartney is a newspaperman and a specialist in Florida's orchids. He says, "My grandmother came to Homestead in 1918, my mother was born there, and I was raised there as well. Many of the wildflowers I use to illustrate my program and now know botanically I first knew as a child when I roamed the pinewoods and fields around my family home. I used to pick bouquets of these pretty wildflowers and take them to my mother. Now I 'pick' them with my camera and share their beauty with as many others as I can."

Every garden flower was once a wildflower somewhere. Someone fascinated by the beauty of the blooms took the plant in hand and grew it. Later, through careful clone selection and hybridization, the plant's flower size, flower pattern, color, or growth habit were "improved" to incorporate desirable characteristics, breed out negative traits, or extend the variety of plant form.

While the Northerners, Midwesterners and Southerners who populate South Florida bemoan the loss of their beloved lilacs, tulips, hyacinths, daffodils, peonies, camellias or rhododendrons, they all but overlook the wealth of beautiful natural plant material available in the subtropical southern tip of the peninsula.

In recent years, some progress has been made in raising public awareness of native trees such as paradise tree, pigeon plum, satinleaf, et al, and native shrubs such as wax myrtle or the various stoppers. However, gardeners still tend to by-pass the herbaceous wildflowers.

Some few of our wildflowers have made it into cultivation. Butterfly weed, Asclepias
tuberosa; blazing star, Liatris spp.; and black-eyed susans, Rudbeckia hirta, are offered in seed catalogs on a limited basis. Some nurseries specializing in aquatic plants offer such native species as pickerel weed, Pontedara cordata; arrow-leaf, Sagittaria spp.; and waterlilies, including Nymphaea odorata.

Some of our native tropical epiphytes, including such bromeliads as Tillandsia fasciculata and such orchids as the cow-horn orchid, Cyrtopodium punctatum, have found favor with home growers. The almost endemic onion orchid, Encyclia tampensis, is often grown and frequently used in orchid hybridization.

But other than these few examples, it's difficult to find South Florida wildflower species in cultivation. This is curious. It makes me wonder why nobody has done selective breeding with the weedy Spanish needles, Bidens alba, to develop a beautiful hot-weather alternative to the shasta daisy. I wonder why butterweed, Senecio glabellus, and flat-topped goldenrod, Flaveria linearis, aren't being utilized as the gorgeous annual potential. It's up to someone more skilled in the horticulture to prove their worth.

There is often grown and frequently used in orchid hybridization. And why aren't we growing our handsome native Iris hexagona var. savanarum, which turns the mucky depths of the Big Cypress Swamp into places of beauty each spring?

Listed below are a few of South Florida's beautiful and unusual native wildflowers which I feel have potential as cultivated plants. I am not a gardener nor am I a horticulturist, so I cannot state with certainty that selective breeding will improve or overcome negative characteristics of each species so they can become useful additions to the cultivated landscape. However, as a traveler and observer in South Florida's dwindling natural habitats, I can point the way to beautiful species which I feel have potential. It's up to someone more skilled in horticulture to prove their worth.

(The Wildflower List is available from FNPS, 1203 Orange Ave., Winter Park 32789, for $1.00 and SASE.)

INSECT PESTS AND NATIVE TREES

by Wayne N. Dixon

Dr. Dixon is a Registered Professional Entomologist with the Florida Division of Forestry, Department of Agricultural and Consumer Services.

Many causal agents regularly inflict injury and damage to trees, for example, fire, flood, weather, chemicals, diseases, and animals, to name just a few. Within the animal realm, a general list would include nematodes, mites, millipedes, slugs, snails, birds, rabbits, mice, dogs, livestock, man, and insects. Insect pests are important not only because of the damages to trees per se, but also because their high nuisance value to landowners, loss of vegetational aesthetics, and expenditures necessary to prevent or control pest insect damage.

Native Trees

Native trees are damaged by insects. So, too, are exotic trees. In the inescapable war of people and trees versus insects, the advantages lie with having native trees growing under your care and supervision. The advantages are resistance, silviculture, and information on pest biology/habits.

Resistance of a native tree to indigenous pests is more likely to be present than for an exotic tree. Generally, resistance may be expressed in one of the following categories:

1. Preference-nonpreference
2. Tolerance
3. Antibiosis

Briefly, preference-nonpreference is the interaction of tree characters and insect responses that lead to or away from the tree for oviposition, food, shelter, or a mixture. Tolerance is the tree's ability to grow and reproduce itself or repair injury in spite of a damaging insect population. Antibiosis is the tree's characteristics in preventing, injuring, or destroying insect life, for example, reduced fecundity, decreased size, abnormal length of life, and increased mortality. Not necessarily is one type of resistance present to the exclusion of another; often it is a medley of resistance mechanisms. Indeed, the factors that confer resistance are many (Fig. 1).

RESISTANCE

Environmental Factors

Host/Alternate host abundance

Insect Factors

Races

Senses

Physiology

Droop

Dilution

Feeding reactions

Conditioning from previous host

Food utilization

Environmental Factors

Temperature

Humidity

Light

Tree Factors

Race

Senses

Physiology

Droop

Dilution

Disease

Feeding reactions

Conditioning from previous host

Food utilization

Interaction

Insect-Tree Factors

Tonic materials in insect food

Synchronization of development

Hypersensitivity of tree cells attacked

Suitability of tree for insect development

Tree resistance to diseases vectored by insects

Silviculture of native trees is more likely to be available than for exotic trees. Important areas of silviculture are:

1. Site selection
2. Site adaptations
3. Maintenance programs

Briefly, many tree species have been studied that are native to North America such that the best sites are known for optimal tree growth. If the site is not optimal, however, native trees often successfully modify physiology or structure to adapt to the site. Often, proven maintenance programs are available and adequately tested to yield expected results in tree growth and appearance. The information required to grow desirable trees is extensive and intensive (Fig. 2).

Information on pest biology/habits is another area conducive to growing native trees, not exotic trees. Important categories include:

1. Base information
2. Control methods
3. Predictive capabilities

Briefly, basic information or knowledge on general interactions of tree and insect is readily available in many cases of native trees and native pests. Answers are at hand for questions such as: Who is the pest? What damage can be expected? Where will the damage appear? Control methods, tested and efficacious, are available for insect pests of native trees. And, intensive research has provided the capability of predicting insect population responses given known changes in certain parameters, for example, weather, food quality, numbers of insects. Overall, native insects have received considerably more study — as would be expected. This has led to knowledge in several areas (Fig. 3), all of which require years of intensive research, to maximize the probability of suppression of pest insect populations.

PEST BIOLOGY / HABITS