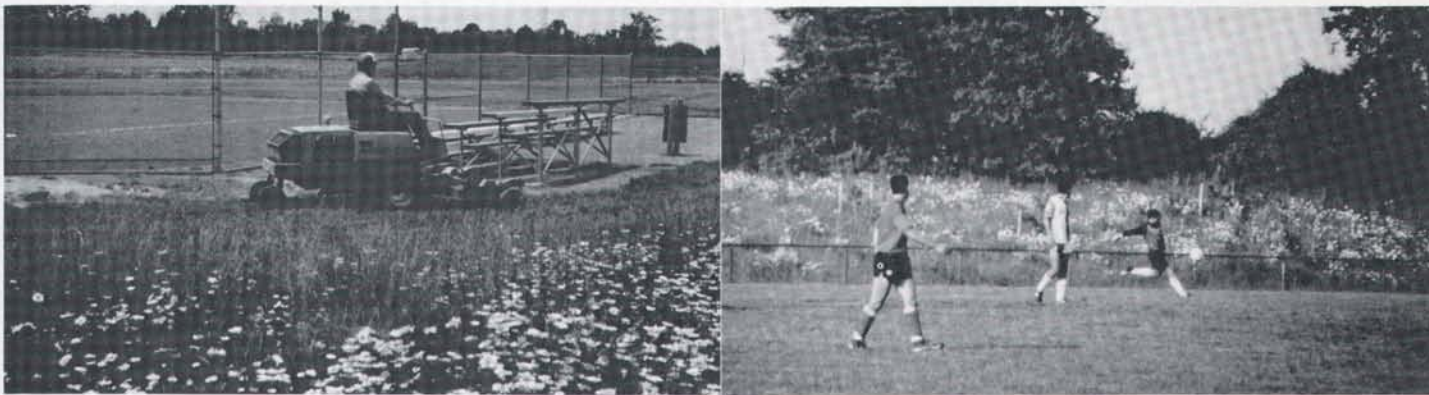


# Park Plants Wildflowers To Control Maintenance Costs



Wildflowers border fields at Howard County parks. These areas are mowed just once each year in February.

In early 1981 the Howard County Department of Recreation and Parks, through its Bureau of Parks, began to identify a potential problem in operations. Developed park acreage was expanding so rapidly that the staff envisioned a time in the near future when the overall maintenance requirements would vastly outstrip the available operating-budget dollars. The rate of development between 1975 and 1987 was more than 4,000 percent.

Various strategies to solve this problem were discussed. An overall reduction in park services was rejected as a possibility, since many functions were governed by specific health-and-safety requirements for the general public. Selective reductions would probably have to be made.

The parks bureau began looking seriously at repetitive maintenance; those highly labor-intensive tasks made up a large portion of its annual schedule.

Since the bureau had achieved a good deal of success in replacing much hand trimming with a chemical maintenance program, it was determined that some alternative to routine maintenance of large passive-use turf areas might be appropriate.

The bureau began to alter its mowing patterns, leaving large areas of tall fescue turf unmowed. Public reaction to this approach was decidedly negative. There were many complaints about poor maintenance and the generally unkempt look the parks.

The bureau had previously tried a then-popular "wildflower seed mix" with very poor results. However, this idea kept coming back as an available option. If an attractive alternative could be coupled with public education, the "naturalized" landscape could

be turned from a liability into a definite asset to the department.

The staff began to seek information on both native plantings and wildflowers. After discussions with most of the education and extension professionals in the Mid-Atlantic region, as well as private agencies and institutions, it was determined that very little information existed on the use of wildflowers in the area.

Interest has grown nationwide in wildflowers and native plantings, spurred in large part by the untiring efforts of Mrs. Lady Bird Johnson, who founded the National Wildflower Research Center. However, most of this activity was concentrated in the West.

Nevertheless, extension personnel advised that wildflowers should be an excellent alternative in the transition zone, and should do very well in poor soils under adverse conditions. They could provide a color-and-texture alternative to the limited landscaping available in the developing parks. Who could possibly object to a vibrant mass of color in a park setting?

Armed with this information, the Bureau of Parks began to gather preliminary information, hoping to develop a future wildflower-and-naturalization program. By early 1983, Mark Raab, grounds division supervisor, had organized the information gathered earlier by the bureau.

One of the first problems encountered was the lack of budget monies to establish the necessary test plots to evaluate materials for use in the parks. These test plots would be essential to any future success of this program, as no other research data existed.

Lacking information from education and extension services, Rabb hit upon the idea

of going directly to the seed producers for assistance. Approximately 20 were contacted by letter. They were informed of the bureau's intent to establish wildflower test plots on a limited basis.

It was made clear to the suppliers that the Department of Recreation and Parks was not a research agency; nor was it being supported by any extension service or university. But Rabb promised to share test results with the various suppliers, primarily in return for information and technical assistance.

Evidently the time was right. Seven of the suppliers responded with guaranteed pledges of donations—enough to establish four acres of test plots.

The department had decided that if wildflowers and a general naturalized landscape were to be successful, they would have met certain guidelines. The areas must be passive, non-use areas with extremely low levels of maintenance. Yet the plots would have to be a positive addition to the park environment.

It was important that these plots blend into the parks—on slopes, swales, and other areas on the periphery of active park facilities. These areas were selected as much for aesthetics as to test their ability to reduce labor and equipment time. Finally, the majority of the work to establish and maintain the plots had to be done in the "off season"—late fall through very early spring.

The department selected three park sites that could be divided into 13 separate plots. These plots were not the standard research plot; each was fitted into the overall park design.

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After dividing the available seed into various test batches, the staff was ready to start the actual installation. Plot development was purposely broken down into a series of different procedures, mainly involving soil preparation.

Wildflowers are very different from turfgrass in terms of planting techniques. All plot areas were treated with a nonselective herbicide about a month before work began. Ten days prior to soil preparation, these plots were again treated on a spot basis. Roundup was utilized for all vegetation control because of its high safety factor.

The plots were scalped with rotary mowers. Various preparation techniques were tried. A number of the plots were tilled with a large disk that made several passes in different directions, completely turning the soil to a depth of at least six inches.

Other areas were tilled more lightly. Plots in small, confined situations were hand-tilled with a walk-behind rototiller. Steep slopes were vigorously hand-raked after scalping, to provide seed-soil contact.

After this preparation, all plots were seeded by hand, using small rotary broadcast spreaders. This method was chosen because of the extremely small volume of seed needed to cover a large area. Many of the seed varieties were so tiny that a full pound contained up to six million seeds, with seeding rates recommended at four pounds or less per acre. This created an extremely difficult application problem, in terms of assuring consistent and even distribution.

It was necessary to use some kind of bulking agent to assure good coverage. After some experimentation, it was thought that perhaps a product called Turface, a vitrified clay similar to fine kitty litter, would work in the hand spreaders. The staff experimented with several pounds of kale seed in an unused parking lot to practice and perfect application rates.

Two special notes should be made at this point. First, the Turface product had a tendency to catch in the gear drive of the spreaders, so perhaps ground corn cobs or walnut shells could be used in the future. Secondly, the material used for the spreader's hopper is very important. Many spreaders have a canvas bag to hold the seed. Avoid using such bags because seed can get caught in the fabric, causing uneven distribution.

After the plots were seeded, all test areas were dragged with a light screen mesh. A baseball-infield drag was used for this purpose, but a piece of chain link can be substituted. It is very important that dragging be as light as possible, for it was found that many of the seeds buried more than ¼ inch deep did not germinate.

After dragging, all of the plot areas were mulched with a light application of clean straw—approximately 1,200 pounds per acre. Again, it is important to keep this appli-

cation as light as possible, to avoid reducing potential germination.

In open areas where wind was expected to create a problem with the straw, it was gently watered to provide a knitting effect on individual pieces. It is theorized that a standard application of asphalt tackifier might also affect germination, which is a possible concern even with some of the improved acrylic-based coats.

The installation process was completed in the late spring of 1984, and the bureau anticipated a positive response from the plants within a few weeks.

Immediately after seeding, temperatures soared into the mid 90s and no rain fell for month. By mid-July and August the test plots had progressed very little. There was extremely limited vegetative cover, few flowers, and a bumper crop of weeds. However, random portions of the plots, although a very small percentage, showed marginal cover and color.

As fall approached, with its cooler temperatures and additional rainfall, the plots began to come alive. These plots were still thin, but the colors were quite vibrant. The bureau entered the first winter with mixed emotions as to the success of the tests. Fortunately, some of the original information had indicated that wildflowers would be slow to establish, so a three-year evaluation schedule was set.

Much of the original literature indicated that wildflower meadows should be mowed at least once a year, in order to maintain a respectable appearance, retain the vigor of the plant material, and keep woody volunteers under control. Most of the recommendations suggested mowing at any time after the meadows went dormant.

Mowing was scheduled for late February to provide solid footing for the large tractor mowing units; to limit the amount of soil compaction; and to enhance winter cover for wildlife, overwintering birds, and small mammals. It was also decided that areas that had been extremely thin the previous season should be overseeded before mowing. The plots still held a large amount of mature seed on the stalks, and the mowing would break this seed free. The stalk residue would act as light mulch. The department performed no further work on the plots, other than regular observation, until the spring of 1985.

During the first-year review, several steep slopes had been identified as having excessive and unacceptable weed populations. These selected areas had been spot-treated with Roundup the previous fall, and were hydroseeded in mid-April. Hydroseeding was accompanied by only the barest minimum of fiber mulch, otherwise the seeds would tend to bind up in the fibers and not make good soil contact.

Throughout the spring, the wildflowers on these slopes appeared to compete well with the existing population, but by late June the weeds once again dominated one particular test site. Because this site was part of the historic district in the county seat and

had maximum visual impact, the testing here was terminated and the plot returned to turfgrass.

Most of the other plots showed varying results that could be described as ranging from marginal to truly outstanding; on a scale of 10, they ranked perhaps 5 through 9. However, by midsummer of the second year, the color in the wildflower plots started to fade.

Although there was always some color, an interesting pattern of textures, and high contrast with the adjacent turf areas, the department began to realize that plot location would be critical to any future success.

Public response to the wildflower meadows was tremendous, especially from April through June. Local magazine articles, special newspaper features, and enthusiastic calls from public groups and individuals all attested to the popularity of the program.

A classic example of public reaction to the wildflowers occurred at Long Reach Park. Director of Recreation and Parks William M. Mitchell approached several residents who were digging clumps of flowers and placing them in paper grocery sacks in the backs of their cars. When the residents were asked what they were doing, they replied, "These flowers are so magnificent, and there are so many, that we wanted to save them before the county mowed them down!"

The bureau learned a very important lesson from this experience. It had failed to anticipate the public's reaction, but the lesson was clear: When introducing an alternative landscape, it is imperative to clearly define the location and boundaries.

The public will understand and respect wildflowers and other plantings—if it is evident that they have been put there for a special purpose. Fortunately, the magazine and newspaper articles soon helped get the word out, as did the department publications and signs.

During July and August the wildflower plots took on a whole new appearance. While they still provided contrast in terms of color and texture, they became somewhat drab in comparison to the beauty they had shown in spring and early summer.

The bureau believed that with the cooler temperatures and rainfall in September, plus the abundance of late-blooming varieties among the seeds, the plots would come back as they had the previous fall. However, although there was some increase in the amount and intensity of colors, it was not as pronounced as it had been the previous year. This was probably due to the predominance of perennial varieties in later years.

The department has put together some general recommendations, primarily for its own use, that combine the best features of what has been learned to date:

**Soil Preparation**—Probably the most important factor in developing a successful plot is limiting the tilling of the soil. As more soil is turned, more dormant buried

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weed seed is brought to the surface and can germinate. Wildflowers require good seed-soil contact, but at a maximum depth of 1/4 inch.

Additional plots to be installed by the department will be prepared with a flail mower with verticutting blades. This will open the soil surface, but will disturb as little of the earth as possible.

**Species and Variety Selections**—Whenever a local native plant can be identified and used to add color and texture to a particular site, its potential for success is higher than that of an introduced plant.

**Seeding**—Many of the seed companies stressed the need to plant cover grasses

with the wildflowers. Yet no grasses were seeded in any of the original 13 plots. In some situations, the bureau's tests indicate that this may not be necessary. However, steep slopes and drainage swales in new construction would be candidates for this technique. It is important to note that normal recommendations for these grasses appear to be excessive in comparison to the amount of wildflower seed: In many instances, even non-aggressive grasses seeded at such high rates will compete heavily with the wildflowers.

**Mulch**—A light application of clean straw mulch seems to be the most effective method of completing the planting, especially for new construction. This technique provides both shade and moisture reten-

tion. It is feared that the seed will tend to bind to fiber mulch materials, or be completely buried and smothered if normal rates are used.

Many technical questions about wildflowers remain unanswered. Although the department is now somewhat confident about site preparation, seeding rates, and maintenance requirements, more testing is required in such areas as pH and organic soil content.

For instance, preliminary soil analyses indicate that there is an inverse correlation between organic content and the general success of the plots: Apparently, lower organic content produces better results.

The tests have produced some highly positive results. The department believes that the wildflowers and other native plantings can be used successfully as an alternative to turf. This principle has already been applied to several large park-development projects, and will be continued as an integral part of park landscapes in Howard County.

The department now has several "second-generation" test sites in the planning stages. These will combine the most successful varieties with the best planting techniques.

Several years ago, 40 percent of the existing park turf was identified as passive-use area. Although the department has found that not all of this acreage is appropriate for wildflowers or other naturalized plantings, it still hopes to include many portions of these areas in the program.

If the use of wildflowers reduced 30 routine mowings to one off-season winter mowing, at only the width of one pass of the equipment, the savings could be dramatic. Fully equal to that benefit is the improvement in the visual quality and wildlife habitat of these areas.

This simple program can greatly expand the ability of the Department of Recreation and Parks to meet the public's need for a great deal more than active sports programs and other high-use turf facilities. The fact that the department can provide wildflower, butterfly, and bird walks in these areas is as much a benefit to the public as is containment of maintenance costs.

Make no mistake, however—our cost containment has been considerable. Figuring in the expense of mowing, fertilizing, applying herbicides, and aerating for a typical acre of maintained turf, 1987 costs total \$690 per acre. For wildflowers, one mowing a year and herbicide spot treatment amounts to only \$31 per acre. The savings of \$659 per acre can be used to enhance the maintenance efforts in high-use areas such as athletic fields and sports turf. □

*Editor's Note: This article was adapted from a Howard County Department of Recreation and Parks report. For further information on the department's ongoing wildflower program, contact Jeffrey A. Bourne, Chief, Bureau of Parks, or Mark D. Raab, Supervisor, Grounds Division, Department of Recreation and Parks, 10,000 Route 108, Ellicott City, MD 21043.*

## Tips for Success

By Crystal Rose-Fricker

**W**ildflowers can be used to enhance the deep rough of golf courses and to add color to parks and other public facilities. They are also useful for soil erosion control, adding color to roadsides, to cover difficult to mow areas and for landscaping around structures.

When purchasing wildflowers, it is important to be aware of aggressive species which may take over your mixture and spread to unwanted areas. These species do well in difficult areas as they are quite vigorous, but in a mixture they could take over if used at a high percentage. Therefore Chicory, White Yarrow, Ox-eye daisy, Butter-n-Eggs, and Snow-in-Summer are some examples of species which should be used in small proportions in a wildflower mixture.

There are several different management schemes to choose from when growing wildflowers. A mixture of all annual species can be planted and reseeded yearly to insure a broad range of colors and textures. After flowering is completed they can be mowed and Roundup can be used to control weeds before reseeding each spring.

Annuals and perennials can be used together, achieving color with the annuals flowering the first summer after a spring planting. Cold winter temperatures vernalize the perennials so they initiate flowers the following spring, a year after planting. Herbicides can be used prior to the initial planting. After the annual species die out the bare areas will be open to weed invasion, so they should be reseeded with more annuals each spring until the perennials take over.

When using annuals in mixes it is advantageous to use those which reseed themselves each year. A few examples are Bird's-Eyes, Farewell-to-Spring, Tidy Tips, Mountain Phlox, and Bachelor Buttons. Also, if you must plant in the fall, there are annuals which can survive during moderate winters,

like those in Oregon. These would include Corn Poppy, Garland Chrysanthemums, Plains Coreopsis, Catchfly and others.

A third possibility would be to seed an all perennial mix in the spring or fall. If planted in the spring, only a few flowers will be evident until the winter temperatures vernalize the plants. At this time, herbicides can only be used before planting, followed by hand weeding for the life of the stand.

Nonaggressive bunch grasses, such as sheeps fescue, can also be used in mixtures for soil stabilization to fill in areas where annuals die out. In our tests, 15 percent sheeps fescue proved to be a good mixture with plenty of flowers plus enough grass to fill in bare areas.

Seeding rate tests with our Bloomers Mix, a mixture of both annual and perennial wildflowers, revealed that 10 to 15 pounds per acre gave better coverage than five or 20 pound rates. Higher rates provided better competition against weeds and more color the summer after seeding as well as the following summer. Twenty pounds per acre was too high with the annual wildflowers crowding out the perennials so that the following summer more weeds encroached where the annuals died out.

A National Wildflower trial of 25 annual and 25 perennial wildflowers was initiated this spring to study the performance of some of the better producing wildflowers in many locations across the U.S. Seed was sent for trials in 50 locations to be planted this past spring or this fall. Data from the trials will be summarized and used to make recommendations for the use of wildflowers in various areas.

*Editor's Note: Crystal Rose-Fricker is a plant breeder for Pure-Seed Testing and Turf Seed Inc., of Hubbard, OR. She is a nationally-recognized specialist in wildflower selection.*