

Public opinion, worker attitudes and increasing governmental regulation are forging a new path for government managers. The challenge isn't going unanswered.

The Government Dilemma: Agronomics vs. Budgets

by Maureen Hrehocik, managing editor

A whole laundry list of concerns is on the minds of government landscape managers across the country.

Frozen budgets, battling the overall economy, pesticide regulation and responsible use of chemicals, a rapidly changing industry, public and employee attitudes, professionalism and education of government landscape managers and their employees, and lack of water top the list according to a WEEDS TREES & TURF survey.

Doing more with less was the overall concern of most managers who responded.

One city landscape manager seemed to sum up the sentiments of many. "We have to consistently produce the quality product, (athletic fields, landscaping, mowing, park maintenance) which the general public and taxpayer have come to expect with increasingly dwindling budgets and crews."

And most know there are no easy answers.

Says another, "We have to be able to sell ourselves to those people in the government who control the budget and make decisions where the money goes. I think landscape management will have an even more difficult time being recognized by the government with all areas that are being cut back (from) federal support."

A profile

Most respondents to the survey were in managerial positions with an aver-

age of 11 years in the industry. Most were involved in city landscape management with state employees following a close second.

They supervise an average land-

government managers in particular. However, our respondents, on the average, managed 889 acres (a high of 10,000 acres, a low of 3). An average of 34 acres of that is devoted to athletic fields. (A few respondents noted volunteer help played somewhat of a role in the maintenance of athletic fields, but the majority were done by city and state crews as part of the regular maintenance schedule).

Intensive care

Respondents were asked to rank by importance certain maintenance areas. Athletic field maintenance, turf and tree management (tie) and indoor building maintenance ranked as "Very Important"; roadside maintenance and tree management (tie), military installations, and turf management ranked in the top three as "Important"; and airports, cemeteries and school maintenance ranked in the top three as "Not Important". (See Table 1)

Plant and landscape installation and tree trimming are the jobs that get contracted out the most.

Tree spraying, paving and asphaltting, capital improvements and large tree fertilization and removal were also jobs most government landscape managers contracted out.

The budget

Survey results show January, March and February are the months in which most budget planning is done.

About half of the respondents pre-

TABLE 1
Importance of Duties Performed

	Very Important	Important	Not Important
Roadside Maintenance	23%	43%	44%
Athletic Fields	64%	14%	22%
Buildings (Outdoor Maint.)	40%	30%	30%
Buildings (Indoor Maint.)	54%	23%	23%
Park Maintenance	48%	23%	29%
School Maintenance	34%	08%	65.29%
Turf Management	51%	39%	10%
Tree Management	51%	43%	6%
Street Maintenance	21%	34%	45%
Snow Removal	39%	.13%	60.87%
Golf Course(s)	.8%	8%	84%
Military Installation	0	41%	59%
Airport	3%	9%	88%
Cemetery	19%	11%	70%

scape crew of 11 (a high of 50, low of 1). Over the past two years the landscape crew size has pretty much stayed the same, although 20 percent said their crew had decreased (one by as much as 2/3) and only a few reported increases.

With the static crew size comes an increase in total acreage to be maintained. Results here varied greatly because of the scope of some state

dict their budgets will stay the same in 1986, with 1/4 predicting an increase. Again, the 1985 budget amounts were scattered across the board; from a high of \$8 million to a low of \$1,500. About 1/4 of that budget goes for roadside vegetation management and about 14 percent is earmarked for tree maintenance.

Funding comes from a variety of

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sources, but in a majority of cases from part of the city budget. In other cases, user fees, state agencies, special taxes, cemetery lot sales and interments, and gasoline taxes provide the funding.

Chemicals, equipment

A concern for proper chemical and pesticide use was apparent from many of the respondents. Says one, "We have to stop using as many and as much herbicides and insecticides and start finding safer and public supported alternatives."

But another laments, "I was asked not to buy or apply fertilizer for the '85-'86 fiscal year. We bought none in '84-'85 and our supply is almost gone. Our best turf areas are starting to look like our worst."

Fertilizers top the list as the chemical used the most as a regular part of most landscape maintenance programs. (In another WEEDS TREES & TURF survey of a larger reader base conducted by a national readership research firm, projections for a total expenditures in 1985 for dry-applied turf fertilizer will be \$34,200,000; for liquid-applied, \$5,340,000.) Herbicides for turf weed control are second, herbicides for total vegetation control are third. (Projected 1985 expenditures for pre-emergence her-

What is your primary source of information for new seed varieties, chemicals and equipment?

- 1 Trade Magazines
- 2 Local Distributors
- 3 Fellow Superintendents and Managers
- 4 (A combination of the above 3)

What types of jobs do you contract out?

- Plant and landscape installation
- Tree trimming
- Tree spraying
- Paving

bicides are \$7,210,000; for post-emergents, \$9,840,000.) Turf insecticides, tree insecticides, wetting agents, fungicides and growth regulators round out the list. (Projections for 1985 expenditures in these areas are: turf insecticides, \$3,710,000; tree insecticides, \$5,580,000; wetting agents, \$616,000; fungicides, \$3,970,000; and growth regulators, \$1,500,000).

A majority of respondents recommend, specify and purchase seed, chemicals and equipment. In only a few cases were the recommendation and specification responsibility left to someone else.

In 86 percent of the cases, equipment is purchased under bid. A little more than half the respondents purchased their chemicals under bid. A handful made seed purchases under bid.

Chain saws are the most common piece of equipment owned by the respondents (91 percent), small push mowers and large riding mowers are the second most important pieces of machinery owned (87 percent) and dump trucks are owned by the depart-

ments of 78 percent of the respondents.

Other equipment includes: chemical spreaders (74 percent); tree or turf sprayers (70 percent); turf aerifiers or corers (60 percent); large walk-behind mowers (49 percent); wood chippers (38 percent); and trenchers (30 percent).

Challenges ahead

It's not only the nuts and bolts of budgets, equipment maintenance, chemical purchases, and work schedules that are vying for the where-with-all of government landscape managers. They also have to be molders of public opinion.

One southeastern landscape manager said, "One of our most important tasks is getting people to understand quality landscapes take time and money."

Another concurs. "We have to educate the public about the long-term costs of landscape maintenance; specifically that landscapes are dynamic living systems which need constant care at a consistent level, plus periodic upgrade if the landscape is to be kept in top condition."

Government landscape managers have also set goals and challenges among their own ranks, acknowledging their own responsibility to their profession. Says one, "We have to keep ourselves aware of improved products suitable to be used around

One of our most important tasks is getting people to understand quality landscapes take time and money."

the public and wildlife, ie. protect the delicate balance of nature in the water, marsh and birdlife."

And closer to home, many of the managers responding said improved employee relations and work attitudes were a high priority.

"We have to educate our younger people coming into the field better to give us a better image in the eyes of the public," responds one manager. "We as an industry have to take pride in our work and pride in our profession. It starts with us." **WT&T**

A private organization joins hands with the City of New York to breath new life into Manhattan's green jewel.

Central Park...One of a Kind

by Ron Hall, assistant editor

Park maintenance problems! How about 14 million visitors a year? Or Miss Piggy doing \$1,700 damage to the plant life during the filming of her celebrated Manhattan movie a while back?

Central Park has problems that are either uniquely large, or just unique.

Solutions to these problems are equally unusual, including the unlikely marriage and cooperation of a public and a private agency. The public NY Parks Department and the private four-year-old Central Park Conservancy have joined forces in the restoration of New York's 840-acre sanctuary. Central Park is being returned to what the park's improbable creator Fredrick Law Olmsted (he had tried his hand at farming and publishing, both unsuccessfully, prior to gaining fame) envisioned some 127 years ago in his now-famous "Greenward" plan which resulted in the first public park in the country.

Olmsted wrote that he felt New Yorkers, even then with the city just 370,000 strong, needed "a sense of enlarged freedom," a place "to recreate the mind from urban oppression through the eye."

A place apart and away from the hustle of the city. That's what Olmsted sought; that's what he accomplished.

That's what was almost lost.

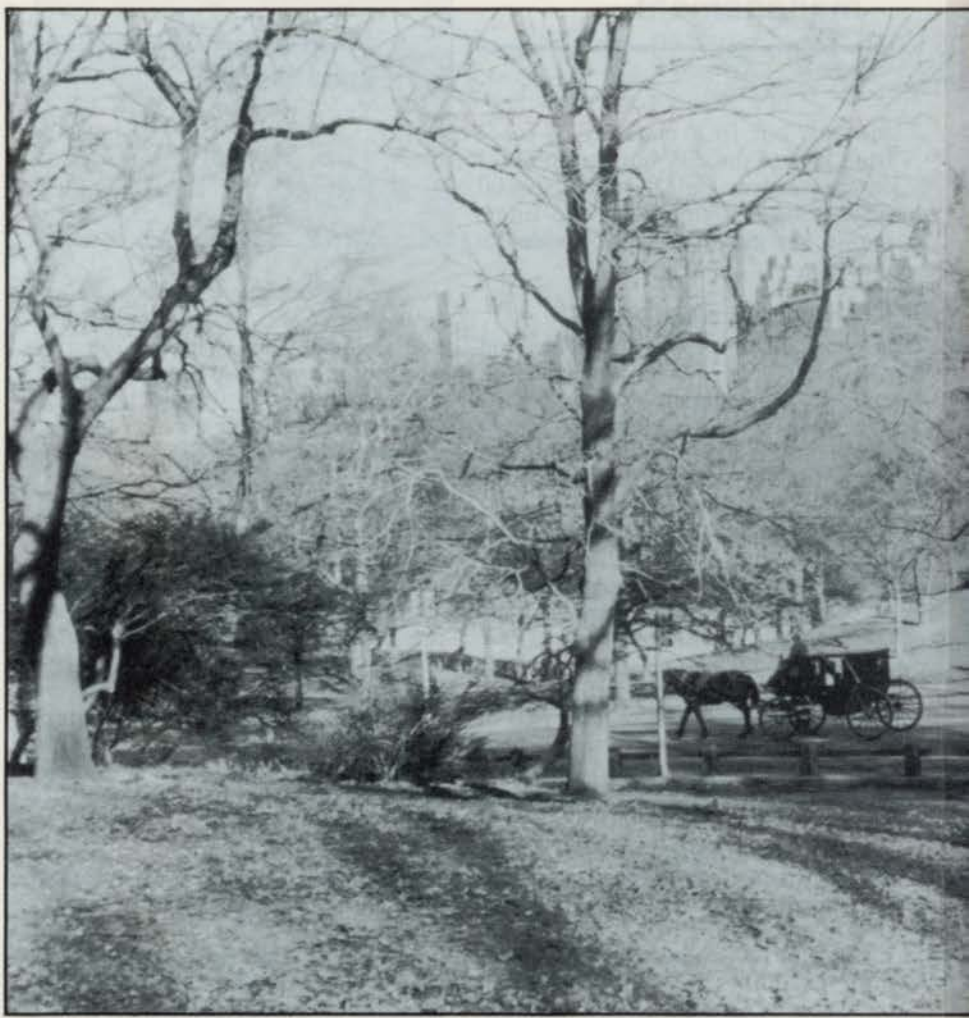
Stricter management

It's coming together nicely now, thanks to a rejuvenated NY Parks Department, the Conservancy (which convinced prestigious foundations to support the Park like other NY treasures) and young minds like Director of Horticulture Frank Serpe and his deputy John Hart, who this frigid winter day are mulling the liberties Miss Piggy (more accurately, her film crew) took with Central Park's turf and shrubs.

"We're the ones that need the say over something like that," Serpe snaps as he eases the blue van up a snow-covered path in the Park. "It's up to us to say what we're going to allow to be done in the Park. And how it's going to be done."

Serpe's stand reflects a tough new

management and maintenance philosophy in Central Park, based in part on economics. In four years the Conservancy has pumped more than \$6 million in private funds to help the Park recapture its 19th century charm. In 1984 the City spent \$6.6 million, the Conservancy added \$1.2 mil



The unmistakable skyline of Manhattan's green jewel.

lion for capital construction work.

That means stricter management of the park's resources. Surveys show that's what New Yorkers want.

To one survey, 80 percent of those polled indicate they come to the Park "for passive recreation." Although it is used by thousands of joggers and

bicyclists daily, and contains 26 baseball diamonds, 30 tennis courts, and 23 playgrounds, much of its restoration is aimed at trees, shrubs, and turf.

New Yorkers care

New Yorkers do care for the green life in the Park as evidenced by grants—

skating rinks, rustic shelters; name it and chances are it's getting fixed.

But, Serpe's speciality is plantlife and his goal is lofty, if admittedly a bit unrealistic.

"When people walk in off the streets I want to give them the feeling that they're in the Adirondacks. Hey, I know it can't be the Adirondacks but we can give them that feeling," he says. "I'm not interested in making it a botanical garden but we want to make it as naturalistic as possible, a place where people can come and enjoy all the wildlife."

Trees catalogued

New techniques aid Serpe and other park workers. Computers are used as management tools with a complete inventory of every tree in the park over 6 inches—its condition, location, size, and type—accessible at a finger tip. There are 24,000 trees in the Park, including 2,000 American elms, and use of the computer and a regulated visual inspection routine have reduced tree mortality significantly. Other cities, including Washington D.C. are using Central Park's system as a model.

Recent surveys have also catalogued animal and bird populations, but Central Park holds surprises even for the experts.

"I saw a parrot. I saw a parrot I tell ya," Serpe, a self-confessed "bird nut" says to skeptical Hart. Down goes the coffee, out the van door goes Serpe, up over a fence to the base of a naked 30-ft. black cherry tree. There it is, bright green, about the size of a 16-oz Pepsi bottle.

"Still looking for our first leopard though," Hart tosses off nonchalantly as Serpe attempts to whistle the curious parrot to his waiting arm.

Not quite an Oscar Madison-Felix Unger combination, but close enough.

Serpe is a New Yorker, a "West Chesterite," he corrects. He's been working with plants since he was a toddler (his dad's an arborist). The intense, slender Serpe, a University of Connecticut graduate, limits himself to one cup of coffee daily. ("I promised my wife") and usually swallows his lunch by mid-morning ("he's too nervous to wait," a co-worker explains).

Bewhiskered Hart, a well-travelled Kansas native who now serves



Frank Serpe and John Hart—committed to keeping Central Park "naturalistic."

like the \$1 million provided by the late John Lennon's wife, Yoko Ono, for the creation of a small wooded preserve called "Strawberry Fields"—and thousands of hours of volunteer labor,

Central Park's rebirth is sparked by the privately funded Central Park Conservancy

over 4,000 in 1984 alone.

As Serpe and sidekick John Hart coast along the Park's meandering trails in the blue van evidences of restoration are everywhere. Archways,



as deputy director of horticulture, took a circuitous route to the Big Apple, including a stint as grounds management supervisor at a South Dakota campus, five years in sunny Sarasota, and some work on a private estate in New England. Hart, the holder of a Masters degree from Michigan, is a day-at-a-time kind of guy.

They're a big part of the story. But, the rebirth of Central Park is molded

“What we lost in this park was not the trees but the understory”

—Serpe

by fascinating personalities, people like silver-haired whirlwind Lynden Miller. The Conservatory Garden, a stylized English border garden in the Park's northeast corner (right across from Harlem) is her baby. Few babies receive such attention. This garden is budgeted about \$50,000 annually.

The fashionably attractive Miller, with a park employee scrambling to keep pace behind a wheelbarrow of mulch, buzzes to clumps of sagging plantlife (it's 20 degrees and blowing like crazy), all the while keeping up a furiously animated conversation with Serpe.

“She's really something,” Hart says almost in awe.

So is the Conservatory Garden. Even in winter it's a showcase of Miller's efforts, and those of the New York committee of the Garden Club of America which began its rescue several years ago.

In the spring it's ablaze with color, first crocus, then 20,000 hybrid tulips. Summer brings the planting of pink and white geraniums and fall features the spectacle of 20,000 Korean mums. Mix in some annuals such as blue salvia, snapdragon, and cleome. Conservatory Garden is just one of Central Park's recent success stories.

Another is an area called Long Point, a finger of land sticking into a small lake popular with the rowboat set. Park workers reset all the old edging stones along the shore line while adding 5,000 pieces of plant material to the small peninsula, species such as bayberry, blueberry, and Russian

olive. Thorny ornamentals discourage foot traffic in environmentally fragile areas.

Serpe and Hart say the reestablishment of the Park's understory is cornerstone of their work. Says Serpe: “What we lost in this park was not the trees but the understory. We just lost it, the shrubs, the flowering plants, the grass. Some areas of this park were just like a desert.”

With the planting of 30,000 shrubs, 200,000 bulbs, and 400 understory trees (species such as dogwood, mountain laurel and redbud), Central Park is beginning to approach the look Serpe seeks. “We try to stay with naturalistic plant material. But, it is not necessarily native and we've had some trouble finding some of this material in the nurseries.”

Turf restoration

Popular turf areas in the park have been getting more attention too. This is where the new aggressive maintenance spirit is most evident. A former dustbowl, the Sheep Meadow is now a handsome turf area groomed for beauty and passive pursuits such as picnicking and sun bathing. Irrigation is supplied by Toro pop-up sprinklers, and fertilizer and lime are administered according to soil tests taken each spring and fall.

The success of the turf in the Sheep Meadow caused park administrators to upgrade the three-acre East Green as well. “They're calling it a revolutionary type of turf area, but it really

“It can't be the Adirondacks, but we can give visitors that feeling”

—Serpe

isn't,” Serpe says. “It's a sand concept area and a lot of athletic fields are similar, with extensive irrigation and good drainage.” Workers brought in 1,620 cubic yards of sand and laid 2,750 feet of drainage pipe in this one area.

Use of the East Green, like that of the Sheep Meadow, is going to be carefully monitored. “We can close 'em down anytime we need to,” Serpe says. Sturdy fences with padlocked gates encircle the grassy areas.

And the classy Mall, lined with stately American elms, is finally green again. The seven-acre area is regularly overseeded with Hounddog, a turf-type tall fescue. The Great Lawn (the scene of massive rock concerts and anti-nuclear demonstrations and dubbed the “Not So Great Lawn” by some critics) could be their next turf restoration project.

“They're calling it a revolutionary type of turf area, but it really isn't. It's a sand concept area.”

—Serpe

Problem areas

While the marriage of Conservancy and parks department has been a good one so far, not every project has been successful. The seeding of 10 acres of wildflower meadows hasn't lived up to expectations, but there's still hope since Serpe feels it might take three to five years to develop a good stand of wildflowers.

Serpe and Hart deal with a workforce of 12 persons year-round, 16 during the summer. Additional high school students help in the peak season. Serpe's budget breaks down to about \$300,000 for tree care, \$200,000 for horticultural maintenance, and \$124,000 for turf care.

The Park has come a long way since Frederick Law Olmsted and Calvert Vaux won a design competition in 1858, and workmen spent 16 years carting in nearly 5 million cubic yards of stone, earth and topsoil to turn a patchwork of stone quarries, fetid swamps, and pigsties into one of the world's most celebrated locations. They planted 500,000 trees, shrubs, and vines.

Olmsted's dream almost died and so did the Park in the early 1970s because of apathy, management with a laissez-faire attitude, and New York's financial woes which dried up funds for proper maintenance. That's changing in a big way.

“Everything had to be carted in to make this park,” Hart reflects. “I guess you can call it a huge flowerpot.”

Finally, it's starting to look like one again.

WT&T

Despite few disease and insect problems, the South Pacific's endless growing season poses a special mission to Jonathan Kajiwarra, entomologist at Hickam Air Force Base on the Hawaiian island of Oahu.

An Unrelenting Challenge

by Maureen Hrehocik, managing editor

If you squint as the plane touches down on the coral reef runway at Honolulu International Airport you can see golfers teeing off at Hickam Air Force Base.

The roar of commercial as well as military jets overhead doesn't seem to bother the steady stream of people waiting to line up their shot down the fairway.

It's almost as if every golf course is located right alongside one of the country's busiest airports.

The amount of play on the two courses (one is a Par 3) keeps general manager Sammy Souza and his crews busy. The courses as well as all other landscaping on the base also fall under the domain of Jonathan Kajiwarra, entomologist of the Pacific Air Command,

Air Force unit on the island of Oahu.

His responsibilities encompass bases in Hawaii, Guam, Japan, Korea, the Philippines and other South Pacific islands—seven in all.

Kajiwarra, a slight, unassuming man, acts as a consultant to the seven bases and oversees all functions "necessary to run a small city."

Based in the engineering depart-



Mowing along median strips is a contracted job.

ment, Kajiwarra says he supports the engineering function at each base, which includes the landscape work.

Extremely mild tropical temperatures all year, few disease and insect problems and breathtaking vistas of ocean and mountains would make it seem Kajiwarra was sitting in a landscaper's paradise.

Not quite.

It's the beautiful weather that, ironically, poses Kajiwarra's main agronomic problem.

"Because of our year-round almost constant warm temperatures, everything grows well here," Kajiwarra attests. "Maintenance is a year-round job. Coconut tree trimming alone is tremendously time consuming and expensive. We do it twice a year."

The climate is technically subtropical, but in reality, it's more tropical.

The "winter" season is from late September through February. The temperatures are lower in the nighttime (60s) and it rains more. Grass-growing is diminished, but turf in Hawaii never really goes dormant.

\$1 million contract

Management Technical Services, a California-based company, holds the more than \$1 million contract to maintain 400 acres of "high visibility" areas on base.

Landscaping work at the base has been contracted out for the past 20 years.

Enlisted personnel maintain non-contracted areas.

The entire base is 4,000 acres and is an Air Force major command and the principal air arm of the United States Pacific Command.

Most of the turf is bermudagrass with some St. Augustine and kikuyugrass.

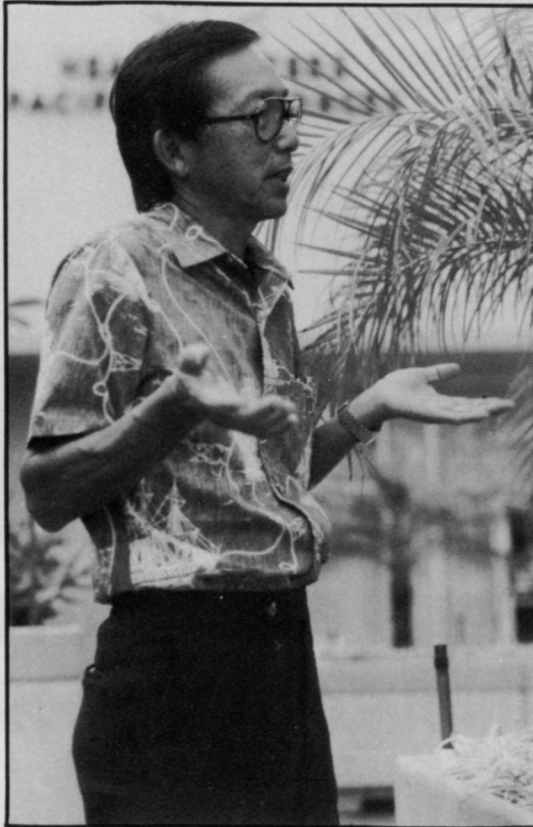
"Our disease problems are mainly on the golf course (helminthosporium was cited), and are pretty similar to those on the mainland," Kajiwarra said. "Diseases in general are not a problem."

Major weed problems come in the form of crabgrass and purple nut-sedge.

What is a problem, according to Ka-

jiwarra, is finding qualified help.

"It's not an easy thing here in the islands," he says. "We even have trouble keeping a contractor once they start working on the contract. They find the job is much more demanding than they thought it would be."



Jonathan Kajiwarra, Hickam AFB entomologist

The contractor's work is enforced by a military inspector who makes sure what needs to be done is getting done. If it's not, a fine is levied.

Tree trimming is the only maintenance job that goes out to local bid.

Underground irrigation has been installed in lawns in the high visibility areas. If the Air Force irrigation system is not sufficient for the needs of a particular area, the contractor is responsible for irrigating it.

"Water is a big problem, here," Kajiwarra says, "more so than maintenance. Some contractors use water guns and hoses. The leeward side of the island is a particularly dry area."

Every summer usually sees mandatory water restrictions on the entire island of Oahu.

The area where Hickam is located gets about eight inches of rain annually. A mere five miles toward the mountain, that figure jumps to a staggering 130 inches of rainfall a year.

Plant selection

Kajiwarra's criteria for plant selection is simple—it must survive under any condition with minimal maintenance.

Because of the structure and budgeting of the military, landscaping is not an over-endowed area of the budget. What doesn't fall under the contractor's realm the military takes care of. Often, experience and expertise in agronomy is limited.

Around the front of the base headquarters building, Kajiwarra has chosen Phoenix and MacArthur palms planted in large containers in a courtyard-like front entrance. In the planters with the palms is variegated mondo grass, Hawaiian fern and lawai fern. The self-contained planters provide a neat appearance for the front entrance while adding a touch of native green vegetation.

Grass growing (in winter) is diminished, but turf in Hawaii never really goes dormant.

entrance while adding a touch of native green vegetation.

Jim McMurtrey of B. Hayman Co., Inc., a Jacobsen distributor, says machinery in Hawaii gets a workout six to seven days a week, up to 365 days a year.

"It's a fix-it situation rather than a preventive maintenance situation," he says. "You really must inform the customer on how to get utility out of his equipment."

One of the high maintenance areas of the base are the nine athletic fields. Baseball fields, especially, are one of the most popular spots with as many as three games a day being played. All the baseball fields are bermudagrass.

"I'd say our fields get more play than most public fields," Kajiwarra says.

The majority of landscaping at Hickam is Spartan; the military has a way of cutting to the bone. In the constraints of a military setting, though, the base is well manicured.

Kajiwarra assesses the situation pragmatically.

"In Hawaii, you learn to work with what nature gives you—and then to expect surprises." **WT&T**

The Chemical Connection

The Indiana Highway Department proves in some cases chemicals can be more productive and cost effective than mowing.

by Art Edwards



John Burkhardt, landscape supervisor.

A new weed control program tested in Indiana may help reduce highway mowing in that state—and keep more cash in the maintenance budget.

“We find we can spray and get good weed control at \$12 to \$13 per acre, says John P. Burkhardt, landscape supervisor for the state’s Division of Maintenance. “This is weed control only—but it wipes out wild carrot, a most showy weed problem, and sweet clover which also is a noticeable, up-front type. Canadian thistle is another problem weed showing control at this low per-acre cost.”

The compound being tested is Du Pont’s new Telar herbicide, a dry

flowable formulation recently labeled for use on highway rights-of-way. Indiana’s highway maintenance group has been one of the leaders in extensive field work with the product, both

The present program in Indiana is a combination of mowing and spraying.

for weed control and in chemical mowing.

Two-pronged attack

The present program in Indiana is a combination of mowing and spraying.

Spraying is done in the spring for annual broadleaves and in the fall for the hardy perennials.

Spraying for the last 12 years has been on a three-year cycle: interstate highways one year; half the two-lane roads the next year; and the second half the third year.

Indiana highway maintenance has begun to phase in a two-year spray cycle: interstate one year and other highways the next. With an effective chemical spray program and two to three limited mowings per year, Burkhardt believes the new cycle will prove feasible.

With the new spray program Indiana’s Division of Maintenance may be

“We want weed control ... wild carrot, sweet clover, and canadian thistle are our key problems.”

—Burkhardt

able to eliminate one mechanical mowing per year on the acreage it maintains. This could produce big savings in any given season. The system totals 100,000 acres, although not all of the acreage is mowed each season.

The test

Telar herbicide was tested on 700 acres in the chemical mowing program and on 5,500 acres in the weed control program.

“Early spring use gives us some seedhead suppression, and very good suppression with Embark added,” Burkhardt says.

Embark is a growth regulator marketed by 3M.

But he points out that these extra benefits aren’t the primary reason for using Telar.

Art Edwards is the former publisher of WEEDS TREES & TURF.

"We want weed control," he says. "Wild carrot is our key problem, since it grows to about three feet. We are getting almost total control with Telar."

Burhardt says this control holds for other problem weeds like sweet clover and Canadian thistle as well.

The new compound has proven to be very selective. Used alone, it gives good control on those weeds for which it is labeled. If used with 2,4-D, the experience in Indiana is that the spectrum of control is broadened considerably."

Telar is used on contract acreage—that acreage sprayed by private contractors on a bid basis—at one-third ounce per acre along with one-half gallon of 2,4-D amine. Telar costs about \$12 per ounce.

"We can kill wild carrot with other chemicals but not at this low cost," Burkhardt says.

He also notes that a lesser rate, one-fourth ounce per acre in combination with 2,4-D, has also proven effective in some instances.

Other rates tried by the department's own crew have ranged up to one ounce per acre. At the higher rates, Burkhardt says the new chemical also displays some growth regulation which is commendable, but that this is not the present goal of the program. The primary goals, he stresses, are control of weeds and reduced costs—which means eliminating some mowing.

Heavy rates, three-fourth to one ounce per acre, caused some phytotoxicity which appeared as a yellowing of turf, says Ed Edwards, landscape supervisor at the Fort Wayne District of the Department of Highways. This experience was on some plots tested in cooperation with Purdue University.

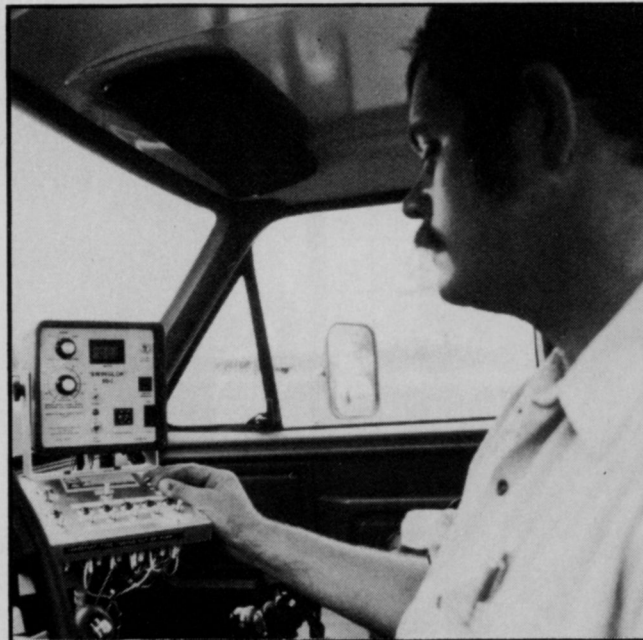
"Our key goal was to kill wild carrot without damage to grass which we have been able to do at the low, one-fourth to one-third rates," Edwards says.

Timing

Timing of spray is always a factor, regardless of the kind of spray combination being used.

Burhardt says a late, wet spring can upset timing, and is especially critical where contact work is involved. A late spring, he has found, can delay leafing of brush and germination of annual weeds, thus reducing control.

Telar has proven compatible in tank mixtures with most other non-crop chemicals. Even so, the com-



Swinglok right-of-way sprayer control box.

pany strongly recommends that small quantities be tested for compatibility before mixing field scale tank mixes. At Indiana, Telar mixed well with Embark. Not only is Telar compatible, Burkhardt believes it may even have some synergistic effect, although he points out that this

Timing of spray is always a factor, regardless of the kind of spray combination being used.

is not documented.

Embark is used at the pint per acre rate with Telar at one-fourth ounce per acre—plus one-half gallon 2,4-D amine and one-fourth percent non-ionic surfactant to the area to be treated.

Indiana is using the new Swinglok

right-of-way sprayer. Telar is mixed as a slurry in water and dumped into a 50-gallon side tank with the other chemicals. Total spray volume mix is 25 to 40 gallons per acre.

Major acreage for weed control is handled by private contract. However, the department is budgeted for spot work—primarily for brush, thistle and Johnsongrass control.

With good weed control Burkhardt says the public does not object to greater turf height. Typically, the program is to mow the full median and 18 inches to 20 inches on each side on the interstates—plus full widths on cycle 2.

Burhardt says this is true for the entire state. "We operate the entire system on a single plan—not by district," he says, "and this is a strong advantage." Allowances are made for local situations within the statewide plan.

The Indiana Department of Maintenance staff believes that a long-time testing program is now paying big dividends for the state. "Our test work and evaluation which began in the early 1970s now points to a workable mixture of chemicals. These provide accept-

able results and may even help us reduce both chemical spray use and mowing," Burkhardt says.

The evaluation will continue even as the new program is implemented.

Telar promises to be basic in Indiana highway weed control. The new product, labeled in 1983, can be used both for selective and non-selective weed control. Bluegrass, fescue and smooth brome all show good tolerance at the lower rates.

The same is true for bahiagrass and bermudagrass in southern areas where these grasses are common. At higher rates, non-selective weed control is feasible. A surfactant in all postemergence applications enhances activity and is recommended.

Telar inhibits weed growth very quickly after treatment. However, dying weeds may not be noticeable for one to three weeks following spraying.

"This is acceptable. We know that if we can get timely application, we'll have good weed control," he says.

WT&T