

a particular job . . . and trained well." He has a farm production crew and a harvest crew. Ralph W. Firebaugh is farm manager; Bill Estep is field superintendent in charge of harvesting and delivery. The normal farm work force of eight men swells to 30 in peak season, including all related services.

With the help of mechanization, turf production in the decade of the 60s quadrupled while the labor force barely doubled. The eight men were easily growing, harvesting and delivering 2,000 sq. yds. of sod per day to most localities within Virginia, Maryland, and Washington, D.C.

Yet by 1968, despite market promotion, consumer education, staff organization and specialized training, mechanization, development of a high-quality product, Kidwell could see that "our costs were eating us up. Either we had to get more volume, or cut costs."

He again turned to VPI for management advice, working with John Shoulders, Extension turf specialist, and Robert Reynolds, agricultural economist.

#### Computer Management

Together they adapted the University's computer farm management program to a turf farm.


"Our purpose was to pinpoint our costs," explained Kidwell. "We wanted to find out the cost of each piece of equipment, then decide if we still needed it to get the job done."

A code number was assigned to each person and piece of equipment and detailed record-keeping began on Jan. 1, 1969. The diligence of employees responsible for keeping records and the extraordinary ability of secretary-treasurer, Mrs. Christine Estep in compiling and reporting the information has provided Kidwell with the analytic breakdown of costs he was after.

"Our program is designed to tell us our costs per yard of sod in four major areas," Kidwell explained, "production, harvest, transportation, and installation.

"What I like about it is that we can evaluate any one item independently." But Kidwell hastens to add that the computer doesn't have the last say one whether a piece of equipment or employee stays or goes. "If the computer says the cost is high, then you have to evaluate its need. Your costs might be higher without it." In other words—use the computer, but don't quit using your head.

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# RA-PID-GRO

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There's a well-beaten path between Kidwell Turf and Virginia Polytechnic Institute. It's traveled both ways. Above, John Shoulders, center, VPI Extension turf specialist, is at the farm. With Ralph Firebaugh, left, farm manager, and Kidwell, they are checking the location of some research plots on the use of cover crops planted with grass seed.

tion that on one occasion the quarterly breakout reflected the cost of miring a tractor in a muddy field.

"A man plowing a field triples our soil preparation costs and we have records to prove it," said Kidwell. "So we're trying to get away from plowing. We're using a chisel plow instead.

As an illustration of analyzing specific equipment costs, Kidwell reported that a recent readout confirmed that "one of our tandem

trucks was costing too much for the payload it carried. It was rated a 2½-ton, but its gear ratio and engine weren't efficiently pulling a 40,000-lb. payload. We got rid of it. We're looking now for one capable of pulling 56,000 lbs."

#### How Kidwell Grows Turf

As we toured Kidwell Turf Farms before, during and after a cloudburst, the story of how Kidwell Turf is raised came out. Keep in mind its location in that difficult "transition zone" between cool-season and warm-season grasses, on rolling and occasional rocky terrain.

**SOIL PREPARATION** — According to amount of vegetative cover (he's in the process of clearing timber from a portion of his land), a conventional plow or chisel plow is used, wind permitting. With a chisel, it is cross-plowed. After plowing, a liquid 10-10-10 goes down at 1,000 lbs. per acre. Allowing enough time for weed seeds to germinate, the field is then disked, usually three times. A land leveler and rock picker are used if necessary. Rocks are removed from the top six inches and the ground is leveled so that "a car driven 50 mph across it in any direction would not indicate any bumps." Every five years, the farm is covered with granular dieldrin to eliminate the possibility of grub, or other soil insect, invasion. Lime is applied only when the pH falls below 6.0.

**SEEDING** — Begins about mid-August and continues through September. For bluegrasses, the rate is 1 lb. per thousand sq. ft. "We're interested in rhizome development, and the lighter rate is conducive to this," he explained. When seedlings are six months old, the first nitrogen goes down at the rate of ¾ lb. per

1,000 sq. ft. At 12 months, another pound per 1,000 sq. ft. is applied.

In October, Kidwell has been planting wheat on any open ground. "It's not meant to be a profit operation, but it can be," he said. The primary reason is to cover bare ground during the winter, reduce soil erosion, provide weed control, and act as a soil builder. The straw is plowed under after the grain is harvested in mid-June.

"In some experimental plots, we've tried sowing the seed with flax, sudangrass, oats and perennial rye," Kidwell said. The hope is to establish a quick cover that will reduce weed competition and provide winter protection from desiccation.

"Flax planted at 10 lbs. per acre looks good," Kidwell reported, "and our December temperatures usually are cold enough to kill it."

Normally, grass fields are sprayed in September or October with a mixture of 2,4-D and Banvel-D at the rate of ¼-lb. of Banvel-D and 1½ lbs. of 2,4-D per acre in water.

When seedlings are about one inch tall, they are sprayed with liquid Parathion to kill aphids.

**MOWING** — Unless another experiment works out, Kidwell will continue to mow about 2½ to 3 inches height and about every three days during the growing season. In Virginia, that means each square foot of grass gets mowed about 65 times a season! On one field, the grass has been allowed to grow to five to six inches. It will be maintained at that height, then groomed to lower heights just before harvest. If the plan works, the number of mowings will be reduced drastically. Sweeping is done only if clippings build up or if the grass is to be harvested soon after mowing.

**IRRIGATION**—"We don't water for appearance," said Kidwell, "only for germination, during dry spells and just prior to lifting. We want the grass tough enough to withstand the transplant shock. If it's in a semi-dormant condition, we have less of a heating problem."

A portable field irrigation unit draws water from the Rappahannock River. It is distributed with a mile of trunk and lateral lines.

At the normal end of the day, Kidwell's understatement of the day had come early: "One of my worst problems is just finding the time to manage the business . . . while I still drive a truck occasionally, do a lot of selling, and attend meetings."

At the normal end of the day, he illustrated—climbing aboard a tractor-trailer rig to deliver a load of sod.



This scale has been almost worth its weight in gold, believes Kidwell. It provides an accurate record of sod shipped, and "we don't get any more fines for overloading," he added.

# meeting dates

S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

**42nd Golf Course Superintendents Association of America International Turfgrass Conference and Show.** Denver Hilton, Denver, Colo. Feb. 7-12.

**Weed Science Society of America.** Statler-Hilton Hotel, Dallas, Tex. Feb. 8-11.

**Michigan Association of Landscape Architects** annual meeting, Sadler Lounge, Pantlind Hotel, Grand Rapids. Feb. 9.

**Michigan Association of Nurserymen** 49th annual meeting, Pantlind Hotel, Grand Rapids. Feb. 9-11.

**National Landscape Association,** Admiral Semmes Hotel, Mobile, Ala. Feb. 14-17.

**National Arborist Association,** International Inn, Tampa, Fla. Feb. 14-18.

**National Symposium on Park, Recreation and Environment Design,** Sheraton O'Hare Motor Hotel near Chicago. Feb. 15-17.

**Regional Lawn and Garden Retailers Day,** Half-Way House, Darien, Conn. Feb. 18.

**Penn State Turfgrass Conference, Keller Conference Center,** Campus, Pennsylvania State University, University Park, Pa. Feb. 22-25.

**Illinois Landscape Contractors Association** winter seminar, O'Hare-Concord Motor Inn, Des Plaines. Feb. 25-26.

**Midwest Regional Turf Conference,** Purdue University, Lafayette, Ind. Mar. 1-3.

**Ground Maintenance Conference,** University of Connecticut and Southern Connecticut Groundskeepers' Association, Waverly Inn, Cheshire, Conn. Mar. 3.

**Southern Shade Tree Conference,** Durham Hotel and Motel, Durham, N.C. Mar. 7-10.

**Iowa Golf Course Superintendents Association,** Hotel Kirkwood, Des Moines. Mar. 8-10.

**Michigan Association of Landscape Architects** management Conference, Holiday Inn South, East Lansing. Mar. 11-12.

**Western Society of Weed Science,** Denver Hilton Hotel, Denver, Colo. Mar. 16-18.

**Williamsburg Garden Silver Anniversary Symposium,** Williamsburg, Va. Mar. 21-26.

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## 'COPTER SEEDING A GOLF COURSE

An Aerial Patrols Bell G-2-A seeds a fairway of Country Club Village, near Canton, Ohio.

**G**OLF COURSE SEEDING used to be a "make hay while the sun shines" proposition for many golf course contractors. Iberia Earth Moving in cooperation with Aerial Patrols recently found a way to get around many of the weather problems associated with golf course seeding.

Last July, two fairways of a new 18-hole championship golf course at Country Club Village near Canton, Ohio, were seeded by an Aerial Patrols helicopter in about 1½ working hours. Howard Williams, the contract supervisor, said the entire course could have been seeded by helicopter in about two working days. A comparable project using standard seeding techniques normally would have taken 12 work days, even with good weather. And "good weather" was in short supply this past season, Williams reports. Not one full work week was completed

between the first of the year and seeding time without some "down time" due to bad weather conditions.

Even though seed bed preparation must be done under favorable conditions, helicopter seeding can be done when soil surfaces are too wet for conventional seeding methods.

The helicopter seeding project was directed by Terry Ewing, owner of Aerial Patrols. A Bell G-2-A helicopter carrying two seed tanks with a total capacity of 960 pounds was used to spread a slurry of water and seed. The slurry was mixed in a truck tank (900 pounds water to 60 pounds seed ratio) and then pumped into the helicopter seeding hoppers.

The actual fairway seeding rate was 60 pounds per acre. To assure even seed distribution, the helicopter seeded at a 15-pound-per-acre rate, thus requiring four passes for each fairway acre. The wind cur-

rents produced by the helicopter blades served a useful function, forcing the seed slurry into the ground in a uniform pattern. The helicopter traveled at about 35 mph while broadcasting the seed slurry. After seeding, the fairways were covered with a mulch material to retain soil moisture and assure maximum germination.

Lewis Busler, Iberia president, has high hopes for this new seeding technique. Plans are to use it in a much larger scale for some of the new golf course seeding projects now in the rough grading stages.

Not only is golf course seeding by helicopter a new technique but the seed mixtures used for this course also represent a departure from what have traditionally been accepted as the "best" turf for championship quality fairways . . . namely Astoria and Highland Bentgrass. The new Country Club Vil-



Jack Mackenzie, Aerial Patrol pilot, is getting instructions from Lewis Busler, president of Iberia Earthmoving Service, golf course contractor. Iberia construction superintendent Howard Williams has paused to take a look before dumping seed into the tank on the pickup truck. The seed was mixed with water, then pumped into the helicopter's tanks.



## SUGGESTIONS FOR TURF MAINTENANCE

The pH of the soil should be maintained between 6.0 and 7.0. Keep soil well aerated. Irrigate as necessary. Soil tests should be made periodically to determine if other fertilizer ingredients are needed to provide balanced nutrition.


The use of Nitroform promotes dense turf of excellent color without excessive clippings, resulting in

less disease, less weed infestation, and a steady, uniform growth.

## HOW TO DETERMINE EQUIVALENT NITROFORM

To determine the pounds of Nitroform that will be required to supply annual nitrogen requirements, multiply the pounds of nitrogen needed, as given in Table I, by the factor 2.6.

**TABLE I**  
**SUGGESTED**  
**RANGE OF**  
**ANNUAL**  
**NITROGEN**  
**FEEDING**  
**FOR MAJOR**  
**TURFGRASSES**

 For Southern areas only.

TURFGRASS	POUNDS OF NITROGEN PER THOUSAND SQUARE FEET PER YEAR												
	0	2	4	6	8	10	12	14	16	18	20	22	24
HARD FESCUE			■	■									
SHEEP FESCUE			■	■									
CENTIPEDEGRASS			■	■									
BAHIAGRASS			■	■									
CARPETGRASS			■	■	■	■							
ST. AUGUSTINEGRASS			■	■	■	■							
COLONIAL BENTGRASS			■	■	■	■	■						
CREeping BENTGRASS (vegetated & seaside)			■	■	■	■	■	■					
PENNCROSS CREEPING BENTGRASS (seeded)			■	■	■	■	■	■	■				
ZOYSIA (meyer, emerald, common)			■	■	■	■	■	■					
BLUEGRASS—FESCUE (mixtures)			■	■	■	■	■	■					
KENTUCKY BLUEGRASS			■	■	■	■	■	■					
PENNLAWN CREEPING RED FESCUE			■	■	■	■	■	■					
MERION KENTUCKY BLUEGRASS (and mixtures)			■	■	■	■	■	■	■				
KENTUCKY 31 FESCUE, ALTA, GOAR'S			■	■	■	■	■	■	■				
DICHONDRA			■	■	■	■	■	■	■	■			
COMMON BERMUDAGRASS			■	■	■	■	■	■	■	■			
IMPROVED BERMUDAS—(TIFLAWN, TIFFINE, TEXAS strains, U-3 SUNTURF, ORMOND)			■	■	■	■	■	■	■	■	■		
FINE LEAF BERMUDAS—(GENETIFT, UGANDA-GRASS, TIFGREEN)			■	■	■	■	■	■	■	■	■	■	

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Seeding by helicopter accomplished the same amount of work that would have taken six times longer by conventional seeding methods.

lage fairways will consist of a mixture of several new improved turfgrass varieties. Northrup, King & Co. supplied a fairway blend of 25% Prato Kentucky Bluegrass, 25% Fylking Kentucky Bluegrass, 12½% Holfior Colonial Bentgrass and 37½% Pelo Perennial narrow leaved Ryegrass. This particular mixture of turfgrass varieties was selected because it can withstand the short mowing heights demanded on championship fairways. It will also require far less maintenance than the traditional fairway grasses. This kind of blend reduces the cost involved for irrigation and mowing and reduces the danger of serious disease problems.

Use of Holfior Colonial Bentgrass is interesting in that it is a "non-creeping" bentgrass. It is instead an upright variety that does not have creeping qualities and provides an excellent fairway surface from not only a golf course superintendent's standpoint but also for even the most critical golfer. Because of Holfior's upright growth habit, leaf texture and color, it is compatible with Prato, Fylking and

Pelo, thus creating a uniform lush turf of a deep rich green color. Northrup King also supplied a 50-50 blend of Holfior and Pelo for tees and green aprons. The Pelo Ryegrass was used because it will establish fast, but with the short mowing heights it will receive on tees, it will eventually fade out leaving a low maintenance, durable tee box of Holfior Colonial Bentgrass.

Edmund Ault, the course architect of Bethesda, Md., feels this new layout will be most challenging with its 11 lakes, 60 sand traps and 7,300-yard par 72 rating. The new course should also be an excellent layout for spectators, as the 18th green will have terraced embankments for tournament viewing.

The new Country Club Village course will be irrigated by an electric-hydraulic Toro Moist-A-Matic irrigation system. All irrigation panels are centralized and can be controlled from one master board. And if all this isn't enough, the new Country Club Village club house and pro shop are part of a 12-story high rise apartment complex complete with what else . . . a helicopter landing pad.

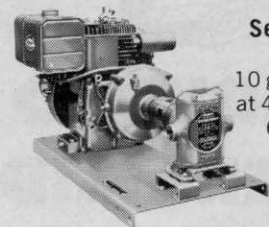


Mulch was spread after seeding to retain soil moisture and assure maximum germination.

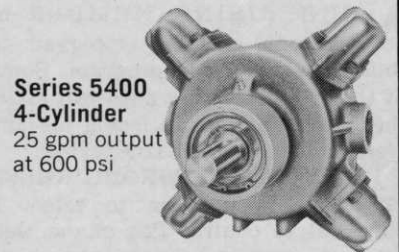
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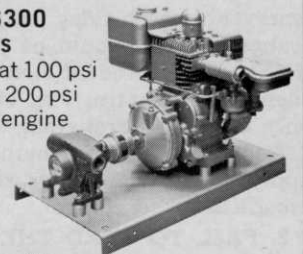
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No mistake here. Louis Miller, superintendent of the Louisville Country Club, takes satisfaction in his Penncross fairways free of *Poa annua*.

By CECIL F. KERR  
Chipco Turf Products Manager  
Rhodia Inc., Chipman Division



## HOW TO FOUL UP A HERBICIDE PROGRAM

**A** SURPRISING NUMBER of methods can be employed to foul up a herbicide program. Some of the most effective ones can assist the superintendent in losing his job. Here are 10 you can risk trying:

**1. SELECT THE WRONG CHEMICAL:** It is possible to select a chemical to control *Poa annua* that prevents overseeding as long as 16 weeks. Just imagine the superintendent's position if the fairways were 95% *Poa annua*! Many pre-emergence herbicides only control crabgrass. This would be disturbing if the superintendent had used the chemical to control *Poa annua* and only controlled crabgrass.

Another sure-fire method is to apply a chemical under shrubs for broadleaf weed control.

**2. FAIL TO READ THE LABEL:** A golf course in Michigan applied Simazine thinking the Simazine was Chlordane. Simazine is an excellent chemical for killing all vegetation. It cost this club \$50,000 to rebuild nine greens. Many industrial soil sterilants will control grass and weeds for two to three years. The worker who applied this chemical never learned how to read!

**3. SELECT THE WRONG FORMULATION:** An excellent method of killing desirable shrubbery is to apply a butyl ester formulation of 2,4-D. The high volatility of this product insures effective kill of shrubs.

**4. FAIL TO CALIBRATE EQUIP-**

**MENT:** Many individuals have successfully removed desired grass by not calibrating equipment. There are several ways of fouling up application rates. Use the wrong nozzle. Using a five-gallon-per-acre nozzle is effective. Varying the speed may bring startling results. The incorrect boom height has caused unusual patterns. Double applications or overlapping creates an interesting pattern, but not always appreciated.

Mowing the greens immediately after applying MCPP may result in no control of clover.

**5. DO NOT COMMUNICATE WITH GREENS COMMITTEE MEMBERS:** One of the surest methods of creating an unfavorable climate for the superintendent is to initiate an extensive *Poa annua* removal program without discussing the program with the greens committee.

The superintendent should warn his members that under severe weather stress, *Poa annua* can be severely weakened. This would alleviate any surprise that might result from less-than-desirable playing conditions.

**6. APPLY HERBICIDES UNDER STRESS CONDITIONS:** An application of silvex, 2,4-D, or PMA 10 at 95° temperature, usually effectively removes grass in addition to the desired weed control. This condition may be even worse if disease is present. Golf carts also will help

speed up the removal process.

**7. FOLLOW ONLY A PORTION OF RECOMMENDED PROGRAM:** Many superintendents have attempted to remove *Poa annua* with tri-calcium arsenate without eliminating phosphorus in the fertilizer program. Others have overseeded onto a heavy thatch without getting seed against soil. Some superintendents have failed to drain the low pockets. Still others have adequate tile but poor surface drainage. Any of the above factors will foul up a gradual *Poa annua* removal program.

**8. FAIL TO CLEAN OUT A SPRAY TANK:** Herbicides such as Paraquat, 2,4-D and sodium arsenite must be cleaned out of the spray tank; especially a wooden tank. These residues left in the tank may effectively remove bentgrass.

**9. NO FOLLOW-UP:** Several thousand dollars can be wasted if a superintendent controls *Poa annua* with tri-calcium arsenate and fails to apply an annual maintenance follow-up application.

**10. IMPROPERLY HANDLE AND STORE HERBICIDES:** Superintendents and workers can create problems moving leaking containers. Herbicides spilled on clothing may be most irritating to areas of the skin.

Failure to wear protective clothing and masks when handling toxic materials may cause absorption through the skin.

If a worker should swallow a herbicide it could confuse the situation if no label was available for the physician to determine the chemical ingested.

Poison pesticides stored in a food locker in the club house could possibly cause some of the club members to be rather ill.

The golf course superintendent





Bill Haven, superintendent of the Greenbrier, shows excellent control of *Poa annua* with tri-calcium arsenate to Dick White-man of Rhodia, Inc., Chipman Div., and Bill Keehne of Higgs and Young, Inc. At right is Oscar Miles, Olympia Fields, Chicago, and Roy Scherdin of the George A. Davis Co., analyzing a *Poa annua* treatment.

today must be professionally trained in order to manage a herbicide program. All factors must be kept in balance. There can be no weak link.

Manufacturing firms, universities and experienced superintendents should be contacted before selecting the right chemical for your problem. Oscar Miles of Olympia Fields, Chicago, spent months of study and analysis of his own demonstration plots before deciding to treat with tri-calcium arsenate for gradual *Poa annua* removal.

Manufacturing firms spend between \$2 and \$15 million to secure approval of a label from USDA. It is, therefore, vital that the label be read, studied, and directions followed explicitly.

The amine formulation of 2,4-D should be used around shrubs and trees. This eliminates the volatility problem from gas vapors.

One of the most important approved practices is to correctly calibrate equipment. Manufacturers and universities supply methods of calibrating equipment for every existing chemical. Spray nozzle and accessory equipment companies supply catalogs with tip numbers that have computed the gallons per acre. Gallons per acre may be calculated from the following formula:

**5.940 x Gallons per minutes**

**Miles per hour x width (nozzle spacing) in inches.**

Spray equipment for applying herbicides on golf courses should apply from 20 to 40 gallons per acre of solution at 30 pounds per square inch and a tractor speed of 4 miles per hour.

Plan your herbicide program with your greens committee and members. They should know exactly

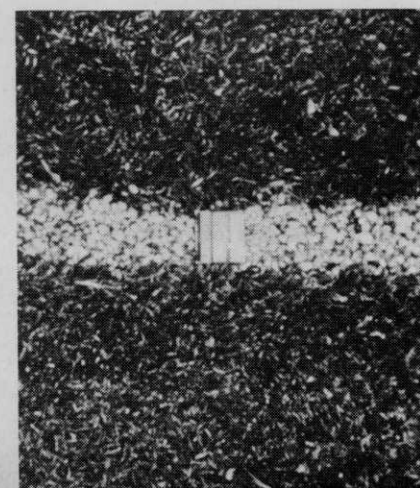
what to expect when an extensive fairway renovation program is initiated.

Bill Haven of Greenbrier prepared an attractive card for presentation to each golfer with each score card. This card explained why *Poa* fails, and warned that playing conditions may be less than ideal while removing a second-class, "failure grass" *Poa annua*. Haven emphasized the final objective was the creation of an ideal setting for future Greenbrier golfing enjoyment.

Carl G. Hopphan, superintendent of Aurora Country Club called a general meeting of the entire membership to acquaint them with his program plans for removing *Poa annua* with tri-calcium arsenate. He painted an extremely black picture of how their fairways would look before success was achieved. Carl Hopphan now has in excess of 90% bluegrass, and satisfied golfers.

Timing is important in any herbicide program. Herbicides control weeds more effectively when the weeds are young and rapidly grow-

A book of matches shows relative size of slit trench for drainage used by Supt. Ted Woehrle at Beverly Country Club.



ing. *Poa annua*'s sensitivity to tri-calcium arsenate is favored by short days, cloudy days, with low light intensity and cool weather. Never apply herbicides when the temperature is extremely high.

Complete the entire program. Louis Miller of Louisville Country Club has one of the nation's outstanding *Poa annua* removal fairway programs. This wasn't true until he completed an extensive drainage program. He kept some water soluble phosphate available as a check valve in case the *Poa* started dying too rapidly. Ted Woehrle followed this same approved practice while at Beverly Country Club in Chicago. The control level must be maintained. James W. Brandt, Danville Country Club, maintains control level with 100 lbs. per acre of tri-calcium arsenate applied alternate years for crabgrass.

Safe handling and proper storing of pesticides is essential. We must do an outstanding job of protecting wildlife and our streams or herbicides will not be available for us to use. Our economy would be in sad condition if turf experts and agriculturists were forbidden to use herbicides. We, therefore, cannot afford to foul up our herbicide programs.

Golf course superintendents should attend herbicide clinics, improve their equipment, train their workers and strive to become certified applicators.

Today's golfers are demanding fine turf. Golf course superintendents must fulfill the desires of their members. Superintendents are faced with a gigantic challenge of providing an ideal setting for the golfers enjoyment.

Wisconsinite Among the Palms Says

# LET'S PUT THE CARE BACK INTO TREE CARE

By LOU SPEER

A TRUE ARBORIST has his client's welfare at heart." Thus Bill Johnson sums up the success behind his Phoenix-based Badger Tree Service.

The brown-eyed, sun-bronzed, former Wisconsinite is now at the height of his zesty 25-year career in arboriculture. He is a champion of the artistic concept of tree trimming, an adventurer among new ideas, and a kicker of tradition.

To him, tree moving should be done as beautifully as possible. This means no topping, no "chopping" back. The arborist who isn't willing to seek out the experts and experiment a little isn't worth his saw. Each tree trimmer should consider the pruners in his hand akin to the paint brush in an artist's, trimming neatly and purposefully, leaving the tree in lacy character.

"I'm trying, perhaps, to impress the fact that an arborist, in the true sense of the word, is an artist," Johnson says, "or a doctor, or designer. When he goes to his clients' homes he helps them design their trees, and sees to it they remain in the best of health and are kept as pretty as is possible to do—with the help of God."

This, he states, is his primary objective in business. Parallel to it is his life's goal: To be of some good to those he serves, to feel worthwhile.

With his own ideals set so high, it is little wonder then, that "Badger Bill" as Johnson is often affectionately called, gets short-tempered when watching some tree service companies.

"Many seem to be in the business because it is the easiest thing they can do," he says bluntly. "But they don't know **why** they are doing it. They don't seem to care. They don't even take time to read a book to see how to do a good job. The only thing they think about is topping—whack, whack, **whack!**"

Of course, Johnson is the first to admit not everyone might possess this innate sense of tree artistry he seems to have. "But they can learn!" he says. "Beauty is beauty. It



William (Badger Bill) Johnson moved his tree care business from the cold of Wisconsin to the sunny and warm palm-lined streets of Phoenix, Ariz.

doesn't matter what part of the world you're in, a tree is a tree. Each has its own personality, its own characteristics. Good, basic pruning is the same the world over. If you're an arborist or a man who knows how to trim trees at all and have any artistic sense, you can tell right away how to trim a tree."

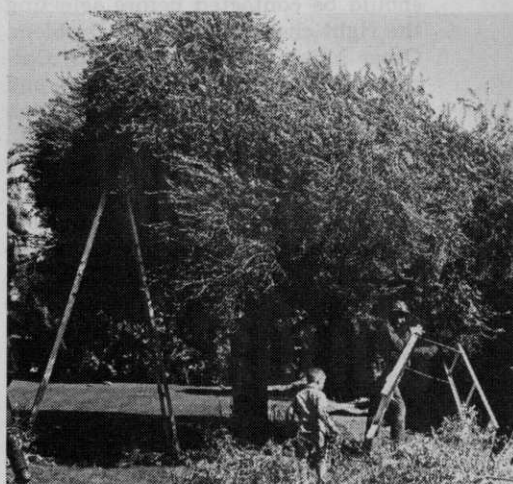
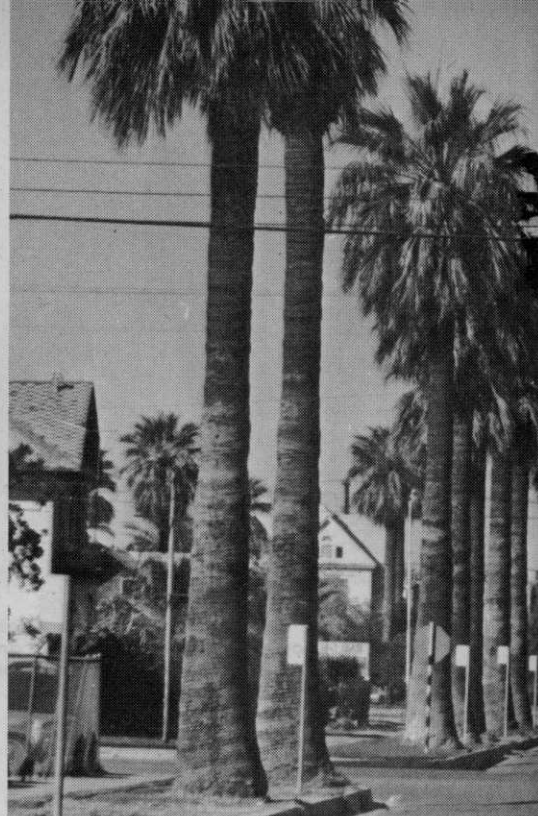
Badger Bill should know; he has been doing it long enough, and also training his own men to know what he is talking about.

In addition to proper trimming (topping is a bad word to Johnson), he stresses that good tree care includes up-to-date methods of cabling, bracing, surgical work, storm restoration, and spraying for insect and disease control.

"We have saved many trees," he says, "that have split asunder, yet haven't separated from the root system. We have pulled them together and "sewn" them with rods, so that today they are very beautiful with little, if any, sign of previous repair methods."

His passion-like persistence for quality service has led him to the successful extension of systemics to include silk oak trees, ash and citrus trees. Lowell True, Maricopa County Agricultural Department, credits Johnson with having been the first to suspect verticillium wilt might exist in Phoenix olive trees and to collect samples proving it.

Johnson's special niche in the arboriculture world has been arrived at the long way around. During his



He turned green blobs on a trunk into attractive olive trees, convincing Arizonans there was value in having a real arborist in town.