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American Sod Producers Association, 1855-A Hicks Rd., Rolling Meadows, IL 60008; (708) 705-9898.

Golf Course Superintendents Association of America, 1421 Research Park Dr., Lawrence, KS 66049-3859; (913) 841-2240.

International Society of Arboriculture, P.O. Box 908, Urbana, IL 61801; (217) 328-2032.

International Turfgrass Society, Crop & Soil Environmental Sciences, VPI-SU, Blacksburg, VA 24061-0403; (703) 231-9796.



National Arborist Association, The Meeting Place Mall, P.O. Box 1094, Amherst, NH 03031-1094; (603) 673-3311.

National Golf Foundation, 1150 South U.S. Highway One, Jupiter, FL 33477; (407) 744-6006.

Ohio Turfgrass Foundation, 2021 Coffey Rd., Columbus, OH 43210; (614) 292-2601.



Professional Grounds Management Society, 120 Cocksylvia Rd., Suite 104, Hunt Valley, MD 21031; (410) 584-9754.



Professional Lawn Care Association of America, 1000 Johnson Ferry Rd., NE, Suite C-135, Marietta, GA 30068-2112; (404) 977-5222.

Responsible Industry for a Sound Environment, 1155 15th St. NW, Suite 900, Washington, D.C. 20005; (202) 872-3860.



Sports Turf Managers Association, 401 N. Michigan Ave., Chicago, IL 60611-4267; (312) 644-6610.

Turf and Ornamental Communicators Association, 421 West Travelers Trail, Burnsville, MN 55337; (612) 894-2414.

AS WE SEE IT

JERRY ROCHE, EDITOR-IN-CHIEF



Paul Harvey: not one of my favorite radio broadcasters

BACK IN the days when I was commuting 90 minutes to work every day, I made a point of listening to Paul Harvey's news commentaries on whatever Cleveland radio station carried him then.

Actually, I liked his style. He had the unusual ability to electronically transport himself right into the passenger seat of my car. Harvey reeked of intimacy; often injecting words like "friends" ("You know, *friends*, this is something you should think about...") into his commentary.

Normally, I would have been happy to hear that Harvey won a Peabody Award—radio's equivalent of an Emmy—this year.

But I have seen the light.

Harvey, it appears, has some morbid vendetta against the specialty pesticide market and its users, particularly golf course superintendents. Why else would he tell the nation—as he did on February 8th—this?: "Not only are golf course pesticides killing the birds, but they're killing golf course superintendents also."

His comments were supposedly based on the much-talked-about study conducted by Dr. Burton Kross at the University of Iowa (our March issue). But Harvey's commentary was so far off base as to be irresponsible journalism—if you can call his act "journalism" in any sense of the word.

"Your commentary is inaccurate and misleading," Dr. Kross wrote Harvey.

Harvey, after all these years, must realize the power over popular public opinion that he grasps in his microphone every day. So why would he make these irresponsible "quantum leap assumptions" (as charged by RISE executive director Allen James), unless he wanted to deliberately and publicly debase the specialty pesticide industry?

Even after being corrected and castigated by Dr. Kross, Allen James, Joe Baidy (president of the Golf Course Superintendents Association of America) and others, Harvey has yet to issue any public correction, apology, or even a clarification.

Baidy put it succinctly in a letter to

Harvey: "The public relies on the media to accurately report findings. We can only hope that you will highlight this commitment to our members' health, instead of misrepresenting it or diminishing it."

I'VE BEEN out of the mainstream (television and daily newspaper) journalism business for 12 years now. The more I watch local television news and read major metro newspapers, the more I think something in the trade has passed me by.

The emphasis now seems to be on *grabbing* the reader, viewer or listener by the scruff of the neck rather than *attracting* him or her. The emphasis seems to be on *creating* controversy (witness television shows like "Current Affair" and newspaper coverage of Hillary Clinton's pre-election experience in the futures market) rather than simply *reporting* on it.

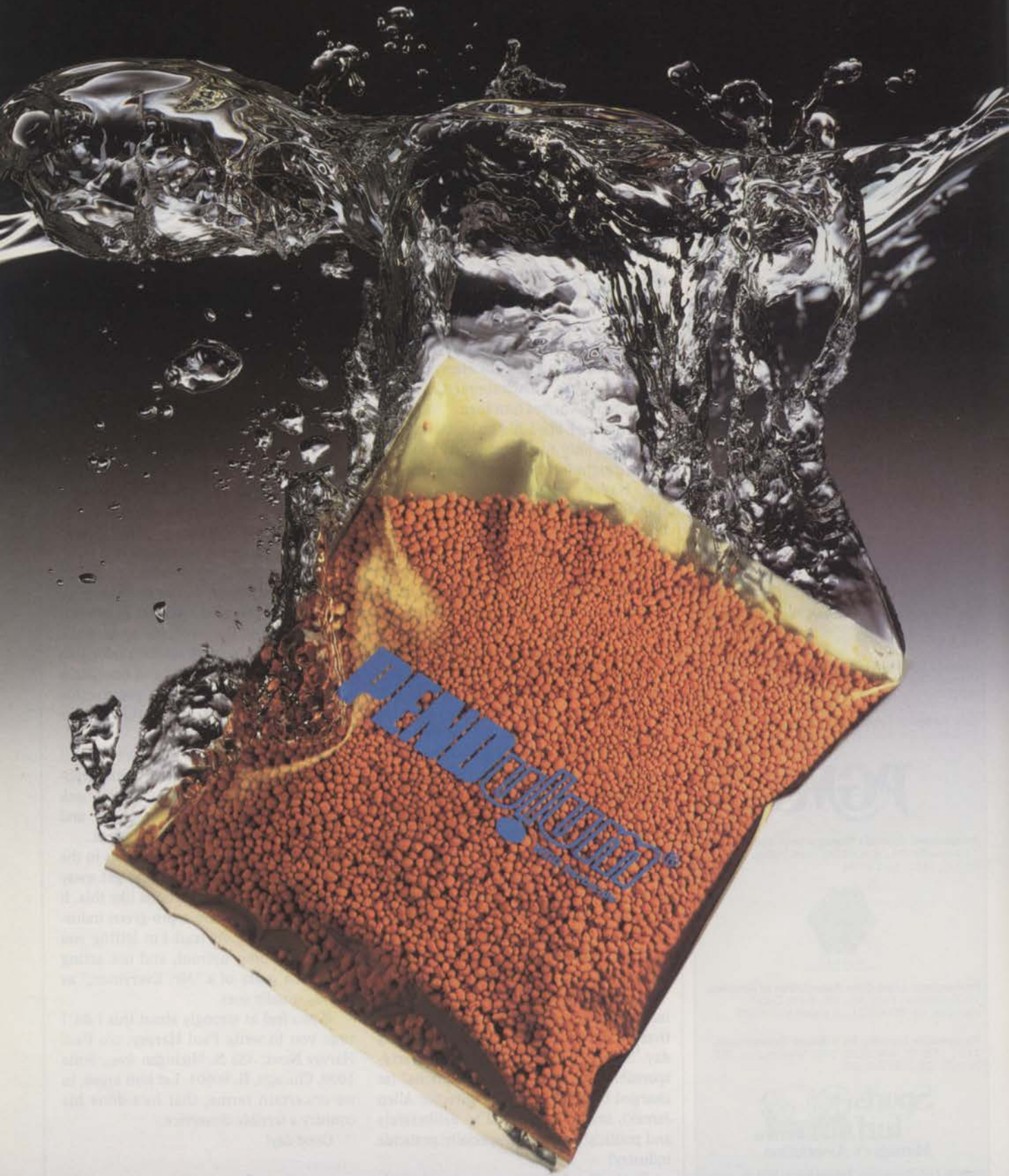
So that must have been what Paul Harvey was doing on February 8th: grabbing his listeners by the scruff of the neck with these irresponsible observations, and then painting a controversial scenario.

As an industry, and as individuals in the industry, we cannot let anyone get away with patently diabolical actions like this. If that sounds like I have a pro-green industry bias, so be it. At least I'm letting you know right now, upfront, and not acting under the guise of a "Mr. Everyman," as Harvey usually does.

If you feel as strongly about this I do, I urge you to write Paul Harvey, c/o Paul Harvey News, 332 N. Michigan Ave., Suite 1600, Chicago, IL 60601. Let him know, in no uncertain terms, that he's done his country a terrible disservice.

Good day!

Jerry Roche



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Handwritten signature or mark in the bottom left corner.

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LANDSCAPE MANAGEMENT

'WE KNOW YOUR TURF'

MAY 1994 VOL. 33, NO. 5

COVER FEATURE

8 Mowing/job costing

Adding mower and operator costs will give you a reasonably accurate estimate of how much it costs you to mow by the hour.

R. K. Reynolds, Ph.D.

FEATURES

12 LM Reports: Compact tractors

A green industry professional looking for a sturdy and versatile machine will find what he's looking for with a good compact tractor.

Terry McIver

16 Alternative plants

Jeff Jabco of The Scott Arboretum at Swarthmore College offers these ideas for alternative shrubs and trees to add color and diversity to your landscapes.

Jerry Roche

18 Equipment inventories

How many times have you had to dust off that extra equipment? Probably, not often enough. Sell it or trade it in, says our expert on green industry business practices.

Ed Wandtke

20 The symptoms of drug abuse

Employer-sponsored programs to help the afflicted can pay for themselves in no time at all.



21 Calibration time

It's springtime again. Time to remember that sprayer and spreader settings are there to guarantee accurate and prescribed product application.

Steve Griggs

TECH CENTER

26 Disease control I

New fungicides and disease prediction models highlight this year's disease control update for landscapers in the cool-season areas of the country.

Gail L. Schumann, Ph.D.

32 Disease control II

Warm-season turfgrass disease is caused by fungi, bacteria, viruses or nematodes. Balance chemical applications with cultural controls, in the interest of efficiency and economy and environmental concerns.

Bruce Martin, Ph.D.

33 Turf insects in the South

Using a variety of techniques is best for consistent control of turf insect pests in the South, including the 'big three' of grubs, mole crickets and fire ants.

Pat Cobb, Ph.D.

GOLF SCAPING

42 Aquatic weed control

Aquatic plants are a natural component of the aquatic environment, and therefore necessary. So says Robert Hesser of the Pennsylvania Fish & Boat Commission.

Jerry Roche

45 Pin rotation

Proper pin placement provides a challenge to the golfer, and helps spread foot traffic around the green. Most systems involve dividing the green into quadrants. Here are some pin placement guides sent to us from two working superintendents and the USGA.

Terry McIver

48 Knowing your wetlands

You might refer to that often-damp, low-lying patch of ground on your golf course as a swamp, but more likely it's a wetland. Treat it with respect, says Nancy Sadlon of the U.S. Golf Association.

Ron Hall

LAWN CARE INDUSTRY

52 An exhausting road

We lived the ups and downs of an applicator's life on a Columbus, Ohio, property this spring. Ten tips to lawn care applicators, as gleaned from the experiences of a writer spreading fertilizer.

Ron Hall



HOT TOPICS

56 Certifying the industry

The Associated Landscape Contractors of America has purchased rights to the California Landscape Contractors Association certification test, hoping to create a more credible, professional industry from coast to coast.

Ron Hall

DEPARTMENTS

1 As We See It...

6 Ask the Expert

57 Events

58 Info-Center

59 Product Review

63 Classified

64 Ad Index

On the cover: Chapel Valley Landscape Company, Woodbine, Md., won a Professional Grounds Management Society Grand Award in 1993 for Tysons International Plaza. (Photo by Erik Kvalsvik)

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LANDSCAPE MANAGEMENT (ISSN 0894-1254) is published monthly by Advansstar Communications, Inc. Corporate and editorial offices: 7500 Old Oak Blvd., Cleveland, OH 44130. Advertising offices: 7500 Old Oak Blvd., Cleveland, OH 44130; 1333 N.W. Norcross, Seattle, WA 98177. Accounting, advertising production and circulation offices: 131 West First Street, Duluth, MN 55802. Subscription rates: one year, \$39; two years \$58 in the U.S.; one year \$66; two years \$99 in Canada. All other countries: one year \$130; two years \$195. Current issue single copies (pre-paid only): \$4 in the U.S.; \$7 in Canada; elsewhere \$12; add \$3.50 per order for shipping and handling. Back issues, if available, \$10; add \$3.50 per order for shipping and handling (pre-paid orders only). Office of publication: Advansstar Communications, Inc., 131 W. First St., Duluth, MN 55802 and additional mailing offices. Copyright © 1994 by Advansstar Communications, Inc. All rights reserved. No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopy, recording, or any information storage and retrieval system, without permission in writing from the publisher. Canadian G.S.T. Number: R-124213133.

POSTMASTER: Send address changes to—Landscape Management, P.O. Box 6198, Duluth, MN 55806. Revised date: November 30, 1993.



Printed on Recycled Paper



Printed in the U.S.A.

ASK THE EXPERT

DR. BALAKRISHNA RAO



Soil solarization to manage diseases

Problem: Would soil solarization work against nematodes and soil-borne diseases on a small, field-grown/container nursery? (North Carolina)

Solution: Soil solarization is a simple and apparently effective alternative way to manage soil-related pests.

In solarization, radiant heat, the lethal agent from the sun, is held in the soil under a polyethylene mulch or tarp. The temperature rises, and kills many pests and weeds to depths of 6-8 inches.

Here are some diseases and nematodes controlled by solarization:

Disease	Crop
verticillium wilt.....	tomato, potato, eggplant cotton, strawberry
fusarium wilt.....	tomato, melon, onion, cotton
pink root rot.....	onion
Southern stem rot.....	peanut
rhizoctonia seedling disease.....	potato, onion, bean (sore shin/damping off)
crown gall.....	walnut
phytophthora root rot.....	ornamentals
nematodes.....	various crops (lesion, root knot, reniform, cyst, sting, ring, stubby root and dagger)

—Source: Auburn University

Solarization will not eradicate the problem, but it will help reduce the pest numbers in the top 6-8 inches of soil. Also, it will not be able to protect the treated site for the next year, or any new weed seeds entering the area.

Here's how it's done:

- 1) Prepare the soil with proper cultivation and moisture.
- 2) Use two layers of thin plastic sheeting separated by a thin layer of air which will increase soil temperature.
- 3) Use a clear, ultraviolet-stabilized plastic tarp (polyethylene or polyvinyl chloride) or sheeting 0.5-4 millimeters thick. Bury the edges to a depth of 5-6 inches for a good seal.
- 4) After solarizing for 6-8 weeks, the treated area can be used for planting and/or placing beneficial biological agents such as fungi, bacteria or nematodes. These are antagonistic agents to some soil pests. For some soils, less solarization time is needed.

Experiments in crabgrass control

Problem: Can we skip the pre-emergence application of Pre-M, applying it instead with Acclaim during the second round in the spring after the crabgrass has germinated? (Pennsylvania)

Solution: The conventional method of crabgrass management is to apply pre-emergents before crabgrass germinates. In your area it would be before May 15 in an average year.

It is possible to skip the first-round application of Pre-M. But during the second round, monitor for young crabgrass seedlings. Herbicides such as Acclaim or Dimension can be effective as early post-emergence crabgrass control products. These work best if

applied when crabgrass has germinated and prior to the two-leaf stage of development. As the crabgrass matures, the performance of these post-emergence products may decrease.

Hoechst-Roussel Agri-Vet Co. literature says that Pre-M [2.5 lb./1000 sq. ft.] plus Acclaim [10 oz./1000 sq. ft.] would provide 96 percent crabgrass control as compared to Pre-M alone (84 percent), Pre-M [2.5 lb.] plus Acclaim [1.67 lb.] (88 percent), or 15 oz. of Acclaim alone (84 percent).

According to Hoechst-Roussel literature, the combination treatment of Pre-M plus Acclaim during the second round after crabgrass germination would also have economical benefits.

If you are seriously considering this option, try using a small section of your market and get comfortable with the early post-emergence crabgrass management strategy. The idea looks good.

Besides Pre-M, other pre-emergence products are Betasan, Dacthal, Dimension, Barricade and Ronstar.

Managing black-tailed deer

Problem: Black-tailed deer cause severe browsing damage to Douglas fir. We have used Deer-Away Big Game Repellent material in the past, with some luck. We have heard of a new product, Ro-pel, for deer problems. How good are these materials? (Oregon)

Solution: Biologists at Olympia's Forest Animal Damage Research Station recently found that Deer-Away BGR-P—36 percent inedible egg solid in powder form—is more effective than Deer-Away Liquid product. These products have been used in the past for black-tailed deer problems.

Ro-pel is a bitter liquid repellent, newly-marketed in the Pacific Northwest with limited information concerning results.

In the past, deer repellent products were recommended for new growth immediately after budbreak. However, Olympia scientists found that black-tailed deer problems on Douglas fir can be better accomplished when the Deer-Away BGR-P was applied before budbreak. They got better results when 12-inch plastic flags were tied to seedlings just below the terminal bud and then dusting the material onto wet seedlings with Deer Away BGR-P.

In other tests, a yellow, blue or red ribbon around the Douglas fir before applying Deer-Away maximized repellency.

When Ro-pel was used, there is potential to cause burning of dormant needles suggesting that the product could be phytotoxic to new growth on Douglas fir.

Try on a limited scale at first, and read and follow label instructions.

(*ED. NOTE: Refer to the February, 1993 LM for more on deer control.)

Dr. Balakrishna Rao is Manager of Research and Technical Development for the Davey Tree Co., Kent, Ohio.

Mail questions to "Ask the Expert," LANDSCAPE MANAGEMENT, 7500 Old Oak Blvd., Cleveland, OH 44130. Please allow two to three months for an answer to appear in the magazine.



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MOWING/JOB-COSTING

by R.K. Reynolds, Ph.D.

COVER STORY

■ What does it really cost to mow? To begin with, no two businesses are likely to have identical mowing costs. Some may be fairly close to others, but many will be significantly different.

The detailed costs that make up total mowing cost, in all likelihood, will vary widely from one business to another.

Determining the cost to do something is difficult for many managers. There appears to be too much uncertainty, too many exceptions, too many unanticipated events to provide an accurate cost. The whole process is overwhelming.

Your job is to find an approach that works for you. I believe in biting off small pieces—I call it a building block method. It is a complete and integrated system that you can adopt and tailor to your particular needs or situation.

The elements to the system are really

ADDING MOWER AND OPERATOR COSTS WILL GIVE YOU A REASONABLY ACCURATE ESTIMATE OF HOW MUCH IT COSTS YOU TO MOW BY THE HOUR.

very simple. Most all questions involve (1) labor, (2) equipment and (3) materials. In addition, any business has something called (4) overhead, and most businesses strive to have something called (5) profit. These major five types of information can be developed using any system that works for you.

Starting out—The two major costs that make up total mowing cost are mower cost and operator cost.

Each category can be broken down into detailed costs such as (mower cost) depreciation, interest, gas and repairs; and (operator cost) wages, Social

Security and insurance.

You therefore need a method for doing the best job you can in estimating these costs for your business. If you are interested in arriving at an hourly rate for mower cost that can be used in estimating the cost of particular jobs, Form 1 will give you the means to do that.

Since operator cost is often composed of something more than straight wages—such as the employer's share of Social Security, unemployment insurance, workman's compensation insurance and perhaps fringe benefits—we need another tool that will permit a reasonably accurate estimate to be made of

continued on page 10

FORM 1. ESTIMATE OF ANNUAL MACHINE COST

LINE	AMOUNT
1. Purchase cost	\$ _____
2. Salvage value (usually 0)	\$ _____
3. Cost to be recovered (Line 1 minus Line 2)	\$ _____
4. Estimated years of life	_____
5. Hours of estimated annual use	_____
6. Cost recovery and interest factor (from accompanying table)	_____
7. Cost recovery and interest (Line 3 x Line 6)	\$ _____
8. Interest on salvage value (Line 2 x interest rate _____%)	\$ _____
9. Insurance, taxes, housing (Line 1 x 4%)	\$ _____
10. License (usually 0)	\$ _____
11. Total Fixed Cost (add Lines 7 thru 10)	\$ _____
12. Fixed Cost Per Unit (Line 11 divided by Line 5)	\$ _____
13. Fuel (gallons/hour x Line 5 x cost/gallon)	\$ _____
14. Oil, grease, anti-freeze (estimate)	\$ _____
15. Repairs including service labor, tires, etc, (estimate)	\$ _____
16. Total Variable Cost (add Lines 13 thru 15)	\$ _____
17. Variable Cost Per Unit (Line 16 divided by Line 5)	\$ _____
18. Total Annual Machine Cost (Line 11 plus Line 16)	\$ _____
19. Total Cost Per Unit (Line 18 divided by Line 5)	\$ _____

**FORM 2.
LABOR COST ESTIMATING WORKSHEET**

Name of employee _____ Title _____

LINE	COST ITEM	hrs.	COST TO EMPLOYER
1.	Regular hours (hrs./wk. x no. weeks).....	_____	_____
2.	Regular wages (Line 1 x rate/hr.).....	_____	_____
3.	Overtime hours (hrs./wk. x no. weeks).....	_____	_____
4.	Overtime wages (Line 3 x rate/hr.).....	_____	_____
5.	Cash bonuses.....	_____	_____
6.	Total adjusted cash wages (total Lines 2, 4 & 5).....	_____	_____
7.	Employer's share of Social Security (____% of Line 6).....	_____	_____
8.	Federal unemployment insurance.....	_____	_____
9.	State unemployment insurance.....	_____	_____
10.	Workman's compensation.....	_____	_____
11.	Other.....	_____	_____
12.	Total value of mandatory costs (total Lines 6 thru 10).....	_____	_____
13.	Value of insurance (life, dental, health).....	_____	_____
14.	Retirement (business contribution).....	_____	_____
15.	Uniform (purchase/rental/cleaning).....	_____	_____
16.	Educational expense.....	_____	_____
17.	Transportation (mi./day x no. days x rate).....	_____	_____
18.	Other.....	_____	_____
19.	Total value of fringe benefits (total Lines 13 thru 18).....	_____	_____
20.	Total Labor Costs (total Lines 6, 12 and 19).....	_____	_____
21.	Holiday hours.....	_____	_____
	Vacation hours.....	_____	_____
	Sick leave hours.....	_____	_____
	Total hours paid for but not worked (add above).....	_____	_____
22.	Total hours (total Lines 1, 3 and 21).....	_____	_____
23.	Total Individual Labor Costs Per Hour (Line 20 divided by Line 22).....	_____	_____

**FORM 3.
JOB COST ESTIMATE FORM**

TYPE OF MACHINE	COST/HR.	HRS. ON JOB	MACHINE COST	
1. _____	_____	_____	\$ _____	
2. _____	_____	_____	\$ _____	
3. _____	_____	_____	\$ _____	
4. _____	_____	_____	\$ _____	
5. Total machinery cost (add lines 1 thru 4)			\$ _____	
LABOR FUNCTION	COST/HR.	HRS. ON JOB	LABOR COST	
6. _____	_____	_____	\$ _____	
7. _____	_____	_____	\$ _____	
8. _____	_____	_____	\$ _____	
9. _____	_____	_____	\$ _____	
10. Total labor cost (add lines 6 thru 8)			\$ _____	
MATERIALS	QUANTITY	UNITS	\$/UNIT	MATERIALS COST
11. _____	_____	_____ x	_____	\$ _____
12. _____	_____	_____ x	_____	\$ _____
13. _____	_____	_____ x	_____	\$ _____
14. _____	_____	_____ x	_____	\$ _____
15. Total materials cost (add lines 11 thru 14)				\$ _____
16. Total direct cost (add lines 5, 10 and 15)				\$ _____
OVERHEAD AND CONTINGENCIES				
17. General overhead (15% of line 16)				
18. Other				
19. Total overhead/contingencies cost (add lines 17 and 18)				\$ _____
20. Total job cost estimate (add lines 16 and 19)				\$ _____
21. This job cost per hour (divide line 20 by number of hours)				\$ _____

**ANNUITY OR CAPITAL
RECOVERY CHART**
(Annual charge for capital
recovery and interest)

YR.	8	10	12	14
1	1.0800	1.1000	1.1200	1.1400
2	0.5608	0.5762	0.5917	0.6073
3	0.3880	0.4021	0.4163	0.4307
4	0.3019	0.3155	0.3292	0.3432
5	0.2505	0.2638	0.2774	0.2913
6	0.2163	0.2296	0.2432	0.2572
7	0.1921	0.2054	0.2191	0.2332
8	0.1740	0.1874	0.2013	0.2156
9	0.1601	0.1736	0.1877	0.2022
10	0.1490	0.1627	0.1770	0.1917
11	0.1401	0.1540	0.1684	0.1834
12	0.1327	0.1468	0.1614	0.1767
13	0.1265	0.1408	0.1557	0.1712
14	0.1213	0.1357	0.1509	0.1666
15	0.1168	0.1315	0.1468	0.1628

Illustration:

\$11,500.00	mower purchase price
-1,150.00	salvage (10%)
\$10,350.00	capital to be recovered
x .2432	from table
\$2,517.12	annual recovery (12%/6 yrs.)
138.00	12% int. on \$1,150 salvage
\$2,655.12	total capital recovery and in- terest annually

COSTS from page 8

true labor cost per hour. Form 2 will give you the means to do that.

Now, the sum of the mower and operator costs, as derived through this process, will provide a reasonably accurate hourly estimate of the mowing function.

To make reasonably accurate and reliable mowing job cost estimates requires additional cost considerations like the cost to get men and equipment to the job site and a share of the business's overhead expenses (utilities, advertising, office rent, supplies).

Factors that impact significantly on the mowing function cost:

- wages paid;
- purchase cost of mower;
- how long mower will last;
- interest rate used for capital recovery;
- fringe benefits provided labor; and
- actual hours worked per year.

Factors that impact significantly on the mowing job cost:

- all of the above;
- distance to job; and
- level of overhead costs.

The Job Cost Estimate (Form 3) provides

a way to pull all costs together to arrive at a cost estimate for a particular mowing job—which is, of course, greater than the cost of the mowing function alone.

When filling out Form 3, please note that the machinery category should be broken down by type of machine (42-inch walk-behind mower, string trimmer, pick-up truck, etc.). The labor category should be broken down by labor function (mowing, trimming, raking, etc.) and not by individual employee name. You might also note entries for overhead and contingencies. Generally, overhead costs run about 15% of direct costs, which you should add to the total.

I am appalled at the reports about people in your industry who do not know what it is costing them to do a job. Some, I'm told, don't even want to know. In the economic world, such an attitude can be fatal.

—Dr. R. K. Reynolds is associate professor emeritus in agricultural economics at Virginia Tech. This article is excerpted from presentations made at the 28th and 30th Virginia Turfgrass Conferences in January, 1988 and January, 1990.

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