

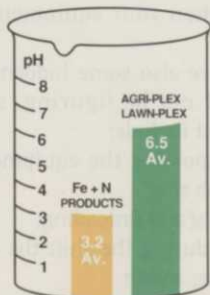
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AGRI-PLEX and LAWN-PLEX are the micronutrients golf course superintendents and lawn care operators are using. They eliminate problems and provide enhanced results. Now, isn't that a relaxing thought?

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Are rebuilds necessary?—Once a year or sometimes more often, you can do a 'power tune-up,' Radcliff advises. This consists of simply removing the cylinder heads, cleaning out carbon, and making all the basic adjustments to make sure the engine is performing at its maximum. A lot of rebuilds can be saved by simple, basic maintenance.

Let the pros do it—"I don't see any reason for an untrained person to do any more



Attendance at engine seminars gives crews engine know-how.

than remove the cylinder head of an engine," says Radcliff. "Taking a sump or side cover off to look inside of the engine will usually bring more trouble than good. Engines are becoming more and more complex as time goes on. Things that even dealers have to refer to manuals about certainly shouldn't be in the hands of someone who hasn't even read the manual. You need the understanding of the physics of an engine."

Use the specified oil—"I cannot stress it enough," Radcliff says. "(Briggs & Stratton) changed oil recommendations to a straight 30-weight as opposed to multi-viscosity oil; typically you'll get much better oil consumption numbers than you do with multi-viscosity oils. They don't burn nearly as much. With emission controls and trying to make the engine last as long as possible, we want to make sure we use the right oil and change it at frequent intervals.

Radcliff calls wrong oil or bad oil, "Probably the number one cause of engine death."

—Terry McIver

More 'extended storage' tips:

✓ Wash, clean and completely lubricate the mower. Touch up scratched and unpainted areas, and wipe down all metallic surfaces with a medium weight (SAE 30) motor oil to prevent rust.

✓ Drain fuel from the fuel tank. After fuel is drained, start the engine and run it until the fuel in the carburetor is exhausted.

✓ Drain and change engine oil.

✓ Clean the tires and check tire pressure. Jack up the mower so the load is off the tires. Protect mower tires from sunlight.

✓ Store in a dry and protected place.

Source: The Bunton Co.

Calculating mowing costs

Don't forget to add in your desired profit margin when calculating what to charge the customer!

■ Figuring out how much it costs to mow a given area is not entirely dependent on the area's size, says Howard Mees of Environmental Care Inc., San Diego, Calif.

The service provider must also take into account site considerations, as well as equipment and labor costs.

Site considerations include things like areas that are too wet or over-fertilized; small, tight locations with a lot of detail; and so on. "Picking the right piece of equipment to get optimum performance in a given location will affect production," Mees explains. "If a 21-inch mower is used on a five-acre park, the cost per acre of cutting can be quite high."

Here is the procedure Mees uses to calculate his mowing costs per property.

Equipment costs—No matter what kind of mower you choose to use for par-



Mees: average cost is \$2.61

tical projects, you are still faced with the initial purchase cost of the machine. And once you've made the purchase, you must spend money to maintain that piece of equipment.

"There are not only the standard expenses of gas, oil and rubber goods, but also your preventive maintenance functions, as well as your shop time expense," notes Mees. "You also have parts, labor and downtime expense when your equipment is in for repairs."

There are also some hidden costs that you might not be figuring, says Mees. These might include:

- transporting the equipment to and from the job site;
- loading and unloading;
- time during the shift the equipment is not in use; and/or
- cost of back-up equipment.

"The above considerations have a dollar value that you can attach to them," Mees

says. "You can then see how many hours you actually are operating the machine and this will give you an equipment cost per hour to own and operate that machine."

Some average costs of operation—as provided by experience, conversations with other contractors Mees talked to, and input from manufacturers—are:

gas and oil	54 cents/hr.
repair	46 cents/hr.
cost of purchase	55 cents/hr.
vehicle operation	13 cents/hr.

"The average cost per hour, not allowing for the size of the equipment, is about \$2.61 without profit and overhead," notes Mees.

Operator costs—Next, you figure out how much you are paying the operator per hour, including downtime and benefits.

A formula for calculating this number can be found in the June, 1991 issue of this magazine, on pages 32-33. Typically, total operator costs run about 31 percent over base hourly wages. This figure includes statutory costs like FICA and worker's comp, and voluntary costs like insurance, retirement and uniforms.

Add together equipment costs and labor costs per hour and you get the cost per hour of mowing a particular area.

This, of course, is not *what you charge!*

Other costs—The average overhead, which comes from a study done by the Associated Landscape Contractors of

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CALCULATING MOWING COSTS

Line	Description	Example	Your worksheet
1.	Sq. ft. to be mowed this property	120,000	
2.	Production rate (sq. ft. per hr.) ^a	60,000	
3.	Hrs. of production this property (Line 1 divided by Line 2)	2	
4.	Cost of equipment purchase	\$12,000	
5.	Expected equipment life (yrs.)	3	
6.	Hrs. mowed per yr. ^b	1,560	
7.	Equipment life in hrs. (Line 5 times Line 6)	4,680	
8.	Equipment cost per hr. (Line 4 divided by Line 7)	\$2.57	
9.	Gas and oil cost per hr. ^c	\$0.48	
10.	Repair costs per hr. ^c	\$0.44	
11.	Total equipment cost per hr. (Add Lines 8,9,10)	\$3.49	
12.	Labor cost per hr. ^d	\$11.00	
13.	Operating costs per hr. (Add Lines 11,12)	\$14.49	
14.	Overhead per hr. (Line 13 times 0.31 ^e)	\$4.49	
15.	Total operating costs per hr. (Add Lines 13,14)	\$18.98	
16.	Profit % desired ^f	0.20	
17.	Profit per hr. (Line 15 times Line 16)	\$3.80	
18.	Selling price per hr. (Add Lines 15,17)	\$22.78	
19.	Total selling price this property (Line 3 times Line 18)	\$41.56	
20.	SELLING PRICE THIS PROPERTY PER SQ. FT. (Line 19 divided by Line 2)	\$.00069	

or
.07 cents/sq. ft.

Footnotes

- ^a - from accompanying chart
- ^b - based on 30 hrs. actual production per week
- ^c - Howard Mees/Environmental Care research
- ^d - approximation: see LM June, 1991 issue (approximate hourly wage + 31%)
- ^e - 0.31 is average based on Associated Landscape Contractors of America survey
- ^f - arbitrary: put your profit margin here

America a few years back, is 31 percent over and above this figure. Then, add to this the profit margin you would like to see and you come up with a selling price.

"Taking these numbers further and using an \$8 per hour labor rate (including downtime and benefits), the cost to mow an average area per square foot is \$.00069 (or 7/10ths of a cent)," notes Mees.

"To come up with some more meaningful numbers," he continues, "I looked at various data to arrive at a more complete number. This included mowing, detail work, clean-up, irrigation checks and fertilization.

"The range was .013 cents per square foot for larger, easy areas to a high of .049 cents per square foot for tougher, detail-oriented sites. The average for the numbers I ran was .031 cents per square foot for turf areas needing the complete service."

Mees makes one final point: in-field conditions are infinitely more valuable than these overall averages when making true calculations of what it costs to mow.

How much lawn can you mow in an hour?

Deck size	*Square feet per hour*			
	2.5 mph	3.0 mph	3.5 mph	4.0 mph
21"	18,480	22,176	25,872	n/a
26"	22,880	26,456	32,032	36,608
28"	24,640	29,568	34,496	39,424
30"	26,400	31,680	36,960	42,240
32"	28,160	33,792	39,424	45,056
38"	33,440	40,128	46,816	53,504
42"	36,960	44,352	51,744	59,126
48"	42,240	50,688	59,136	67,584
60"	52,800	63,360	73,920	84,480

less than 1/2 acre (21,780 sq. ft.)

1/2 to 3/4 acre (32,670 sq. ft.)

3/4 to 1 acre (43,560 sq. ft.)

1 to 1 1/2 acre

1 1/2 to 2 acres

Source: The Ariens Co.

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Spring annuals for the landscape

Improved annuals have more color, uniformity and disease resistance. Your biggest concern is proper plant selection.

by Dr. Lois Berg Stack, extension specialist, University of Maine

■ In the past 40 years, since the introduction of F1 hybrids revolutionized the bedding plant industry, thousands of improved annual flowers have been introduced. Each year, annuals offer more color, greater uniformity, increased disease resistance, enhanced durability, improved growth habit and better garden performance.

The first step in creating effective and productive annual flower gardens is good plant selection. Whether you are looking for old reliables or new introductions, you can narrow the options by following these few simple rules:

1. Match the plants to the environment. There are flowers for every location,

wet or dry, sunny or shady—but there is no single annual that will adapt to every environment.

2. Choose plants that look good all season. Some annuals stop flowering in the heat of midsummer. Others are naturally short-lived. Annuals vary by species (petunias vs. marigolds, for example), but cultivars within a single species also vary ('Apricot Brandy' vs. 'Red Fox' celosia, for example). Where can you see annuals in real-life situations, in order to assess which ones will perform best? Visit public gardens, check out university and commercial trial gardens, ask other landscape professionals ask the greenhouse growers.

(Table 1 lists some annuals that adapt well and perform in a variety of environments, and under a broad range of cultural management levels.)

3. Select low-maintenance annuals. "Low-maintenance" is a relative term when applied to annual bedding plants, since the process of planting each year is a high-maintenance task.

"Low maintenance annuals" do not require frequent pesticide application, deadheading (removal of old flowers to



The *Zinnia elegans*. Zinnias can be seeded directly into gardens after frost.

promote development of new ones) or other time-consuming procedures.

Don't skimp on quality—Evaluate plant quality by looking for good green color, lack of insect and disease problems, good flower bud count (in flowering annuals), healthy root systems, thriftiness and uniformity. When any of these traits are missing, you may not be able to tell exactly what went wrong, but you know that one or more stresses were at work. A stressed plant will never achieve its full potential, and if you can't tell what the stress was, it



The silver-leaved "Dusty Miller" requires full sun, but little maintenance.

will be difficult to compensate for it after the plants are in the landscape.

Growers who produce high quality plants can provide an extra service: they can recommend colorful, high performance, low maintenance annuals for specific sites. They can even give you a projected maintenance schedule. Take advantage of the grower's knowledge resource.

The lowest-priced annuals are not always the best buy. Consider the relationship among quality, price and value. A high-quality bedding plant is worth more than a low quality one, because it will perform better. A high-quality plant requires more input (control of the production environment, pest management, proper fertilizer application, etc.), and hence may legitimately cost more money. But if that investment of additional cents per plant pays off in higher performance in the landscape, then the investment is a good one.

Planting tips—Here are some tips for planting annuals in the spring:

- Pinch back leggy seedlings at planting time. Petunias often become a bit leggy in the greenhouse. If pinched back at planting time, they may take a bit longer to flower, but they will branch more and give more color in the long run.

- If you apply a pre-emergence herbicide before planting a flower bed, rototill and rake out the bed, apply the granules and rake in lightly. Plant the young seedlings through the layer of soil containing herbicide granules, making sure the root ball penetrates slightly below the herbicide layer. Many transplants suffer root

TABLE 1

20 HIGH-PERFORMANCE SPRING ANNUALS FOR 1992

Full sun (Require minimal maintenance)

Canna x generalis ("Canna")
Catharanthus roseus ("Periwinkle")
Cleome hasslerana ("Spider Flower")
Dyssodia tenuiloba ("Dahlberg Daisy")
Gaillardia pulchella ("Annual Blanket Flower")
Petunia x hybrida ("Petunia")
Salvia farinacea ("Mealycup Sage")
Sanvitalia procumbens ("Creeping Zinnia")
Senecio cineraria ("Dusty Miller")
Zinnia angustifolia ("Narrow-leaved Zinnia")

'Tropical Rose,' 3 feet tall; grow from seed
 'Cooler' series and 'Pretty in Rose' 1.5 to 2-feet
 White, pink, lavender; 4 feet
 Free-flowering yellow daisy; 6 to 8 feet
 'Red Plume' needs deadheading
 Multiflora types best for mass planting
 'Victoria' is 24 feet tall; vibrant blue flowers
 Drought-tolerant; 8-inch spread
 All of the silver-leaved variety are excellent
 'White Star' the talk of 1991 trials

Novelty plants (Have a unique appearance)

Capsicum annum ("Ornamental Pepper")
Ocimum basilicum ("Sweet Basil")
Pelargonium species ("Scented Geraniums")
Salvia viridis (no common name)
Verbena x hybrida ("Verbena")

6-12 feet plants valued for colored fruits
 Try 'Spicy Globe' (10-inch mound) or
 'Purple Ruffles' (12-inch purple leaves)
 Many types, 12 to 30 inches tall; plant where
 pedestrians can appreciate
 An 18-inch plant with blue, pink or white
 top leaves
 'Peaches & Cream' is an 18-inch plant with
 pastel flowers

Shade plants (These annuals complement impatiens gardens)

Begonia x semperflorens-cultorum
 ("Wax Begonia")
Begonia x tuberhybrida ("Tuberous Begonia")
Lobularia x maritima ("Sweet Alyssum")
Nicotiana alata ("Flowering Tobacco")
Viola x wittrockiana ("Pansy")

10-12 inches tall; do well in shade; many
 do well in partly sunny areas
 'Nonstop' and 'Nonstop Ornament' are
 12 to 18 inches tall; vivid warm colors
 4-10 inch spreading plants; sweet-scented
 flowers
 18-30 inch upright plants; vibrant pink, white,
 red or green flowers
 8-10 inches; most newer types flower all
 season, despite heat

Source: Dr. Lois Berg Stack

CONSIDER SOIL QUALITY

Temperature	Moisture levels
Texture	Nutrient levels
Drainage	pH

CONSIDER TEMPERATURE

Daily fluctuation
Spring and fall frost dates
Proximity to temperature-altering objects such as buildings or bodies of water
Light intensity, day length and reflection
Precipitation: amount and regularity throughout the growing season
Wind and weed problems

damage when new roots grow into the soil layer containing herbicide granules.

- When planting annual seedlings, remove plants from their containers even if the containers are peat or fiber. Until these degradable pots break down, they restrict young root growth. Be sure to cover the entire root ball with soil, particularly if the plants were grown in a peat-lite mix. These soils mixes dry out more quickly than the surrounding native soil. Leaving the top of the root balls exposed at soil surface will dry out and stress young plants.

- For better root development, allow young annuals to become established for a few weeks before mulching. Do not apply mulches in the spring, as they cool the soil, which inhibits rapid plant development. Allow the seedlings to develop for a few weeks, then weed, water and mulch.

- Some annuals can be sown directly in the flower bed with excellent results.

Sweet alyssum, a low-growing edging plant, can be seeded into the garden in early spring, and will provide good color all season. Moss rose, another edging plant, develops very quickly from seed. Sow the seed after frost danger has passed.

Dwarf French marigolds can be seeded directly into the garden, producing flowers in 8 to 10 weeks. Zinnia seedlings often become quite leggy in the spring greenhouse, but when they develop quickly in the heat of summer, they are much stockier. A strong, well-branched, healthy crop of zinnias can be grown by seeding directly into the garden after all danger of frost.

—Dr. Lois Berg Stack is an extension specialist in ornamental horticulture at the University of Maine.

Finally, A High Capacity Mower That Doesn't Handle Like a Lawn Mower

For too long, high-capacity mowers have left a lot to be desired. But now all that has changed. Presenting the revolutionary new Groundsmaster® 580-D with an 80 hp turbo-diesel engine. The first large-scale rotary mower that combines the productivity of a 16-foot machine with the handling ease of a smaller mower.



Operating the 580-D is incredibly easy. Only Toro provides an adjustable tilt steering wheel and column. All controls are at the operator's fingertips, even cruise control.

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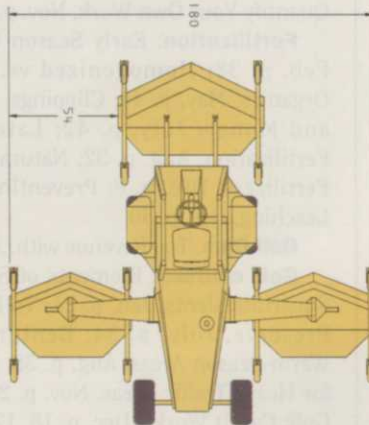
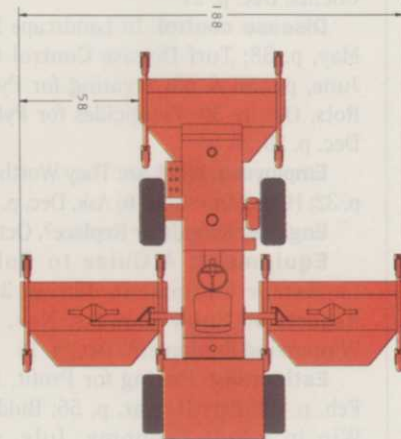
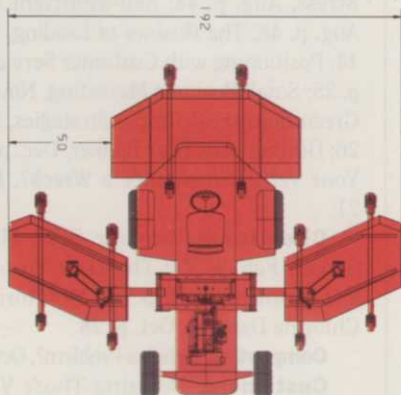


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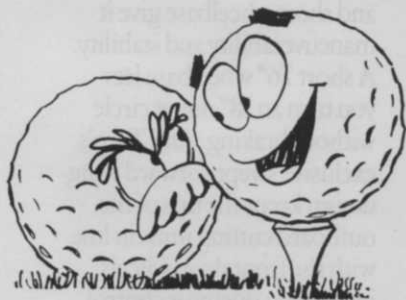
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