

## 5. SMALLER MACHINE/LESS CONSPICUOUS

The smaller units are less of a nuisance to the golfer and it is possible to work closer to him or get out of his way faster enabling the work to carry on without "too much" effect on his game.

## 6. ASTHETIC APPEAL

The striping effect from the narrower cutting machine is very noticeable and as the golfer stands on the tee, it gives him an idea of what he is up against. Definition of undulations or curves are more pronounced and this may add to the game.

## 7. UTILITY OF ONE MACHINE TO PERFORM SEVERAL FUNCTIONS

Since some lightweight machines can be utilized for cutting tees, green aprons and clubhouse grounds besides fairways, two additional advantages have been realized. Most significantly, fewer types of mowers need be purchased and maintained. Second, the idle transport time of a unit is reduced. Several superintendents commented that the smaller units can get between two points quicker since their size allows them to bypass obstacles the independent tractor units must travel around.

The biggest apprehension regarding the use of lightweight mowers is the cost. Since many items which relate to cost vary with each course, the biggest arguments have been in this area. Looking at a hypothetical situation with the listed assumptions, we see some insignificant cost differences except when disposing of clippings.

### ASSUMPTIONS:

Acres cut per year — 30 acres of fairways cut 75 times per year for a total of 2250 acres.

Fuel cost — \$1.20 per gallon.

Depreciation — Seven years for independent tractor units. Seven years for five gang units. Four years for three gang units.

Time — Seven gang units cut 7.9 acres per hour. Five gang units cut 6.2 acres per hour. Three gang units cut 2.5 acres per hour. (Allowance is made for transport.) (Clipping disposal cuts 1.2 acres from three gang units.)

Cost of operating machinery may be broken down to four factors:

### 1. COST OF UNIT

Although the list price of the unit will be readily available, the cost per year is not. Maintenance, climate and terrain all affect the eventual life of the machine. Assuming a seven year life for the independent tractor unit and the five gang unit while assuming a four year life for the three gang triplex, the cost per year of each unit would be:

7 Gang Heavy —	\$4550
5 Gang Light —	\$3550
3 Gang Triplex —	\$1900

Where clippings are collected, it is possible that two three gang units are required to serve the golf course fairways. (Note, that in practice many golf courses have purchased three or four triplexes for their course. They are utilized for multiple cutting applications. The use of one type of machine on the course allows flexible scheduling and back-up.)

### 2. MAINTENANCE COSTS

Estimated maintenance costs of the units are:

7 Gang Heavy —	\$1600
5 Gang Light —	\$1200
3 Gang Triplex —	\$ 250

### 3. LABOR COSTS

This is the most difficult item to generalize since each golf course is unique. Let us assume the worst case for lightweight mowing, i.e., very little time is saved in transport or multiple usages of the lightweight units. In such a case, the productivity of each unit is estimated as:

7 Gang Heavy —	7.9 acres per hour
5 Gang Light —	6.2 acres per hour
3 Gang Triplex —	2.5 acres per hour

Therefore, a course with 30 acres of fairways cut 75 times a year by an operator paid \$5.00/hour would cost:

7 Gang Heavy —	\$1425
5 Gang Light —	\$1815
3 Gang Triplex —	\$4500

(NOTE: Removal of clippings could reduce the lightweight productivity by 50% thereby doubling the yearly labor cost.)

### 4. FUEL COSTS

Assuming a fuel cost of \$1.20 per gallon, the yearly cost for the 30 acres of fairways would be:

7 Gang Heavy —	\$410
5 Gang Light —	\$400
3 Gang Triplex —	\$780

(NOTE: Removal of clippings will increase fuel expense. Assuming unit is left running, at worst it could double the cost.)

Our worst case assumptions would lead to the following total yearly cost:

7 Gang Heavy —	\$ 7,985
5 Gang Light —	\$ 6,965
3 Gang Triplex —	\$ 7,430
3 Gang Triplex with catchers —	\$12,650
(one unit) to \$14,800 (two units)	

### CONCLUSION

There is no doubt there are differences in cost between the different methods. However, the total difference is dependent on each individual course. It certainly takes more hours to mow the fairways with a smaller unit. Depreciation, maintenance and the cost per operator are factors that vary enough that each superintendent must evaluate his operation. The benefits of lightweight mowing are evident, however, the cost is not obvious.



4) Biological Snow Mold Control, Dr. Ward Steinstra, University of Minnesota.

5) Development of a "Pythium Predictor Model", Dr. Steinstra and Reutor Stokes Co.

6) USGA Green Section Research

All MGCSA members should be proud of the contribution they are making to turfgrass research. To quote a recent letter from William Bengeyfiel, National Director of the USGA Green Section, "The list of projects now supported by the MGCSA is impressive and meaningful...the projects are far more worthy than normally encountered. Congratulations."

The Research Committee wishes to thank all our contributors and a special thanks to our many associate members donations that helped make this another record year. We would also like to remind those of you that haven't yet donated, that it is not too late. Make your check payable to MGCSA Research and send to Warren or Anita at the M.G.A. office.

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Kerry Glader and Scott Hoffmann, Co-Chairmen Research Committee

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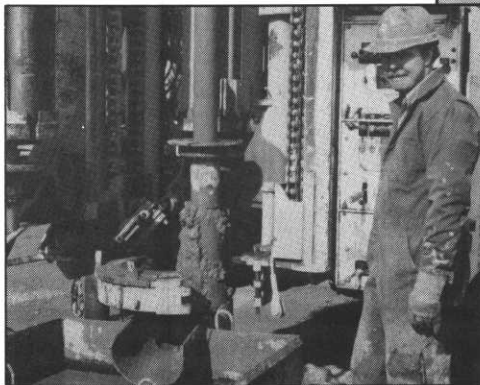
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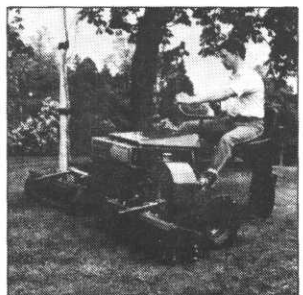
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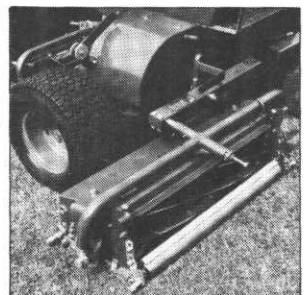
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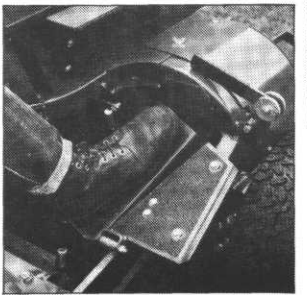
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