

To: Sugar Creek Golf Course Administrative Board
 From: Tim Miles, Golf Course Manager
 Date: January 7, 1977
 Re: Golf Course Equipment - Power Trap King

At the December 14, 1976, meeting of the Sugar Creek Golf Course Administrative Board I recommended the purchase of a motorized sand trap rake. The Administrative Board requested a report concerning the economic justification for the purchase of the trap rake. This report will focus on the procedures required for good sand trap maintenance, plus the costs and benefits derived.

1. What is necessary to have well-maintained sand traps?
 - a. Replenish sand as required on a yearly basis to have 5 to 7 inches uniformly distributed in each bunker.
 - b. Edging 3 to 5 times per year to maintain the original size of the bunker and to provide a neat, well-trimmed appearance.
 - c. Placement of sand on slopes after rain washouts.
 - d. Deseeding bunkers as required or the application of pre-emergent herbicides to eliminate weed growth. Frequent raking of the bunker dramatically decreases weed growth.
 - e. Frequent raking to remove footprints, loosen sand structure, decrease weed growth, and ultimately provide a surface which is not only attractive, but allows for the proper playing of the game.
2. What are the costs of maintaining sand traps by hand raking versus mechanical raking?

Cost for replacement of lost sand, edging, and correcting sand washouts after rains are the same using either hand raking or mechanical raking. Assuming that sand traps are raked thoroughly on the average of once every two days from April 1st through October 31st, means traps would be raked approximately 107 times per season.

To do a thorough job raking the twelve large bunkers at Sugar Creek Golf Course requires the following manhours:

Hand raking - 2 to 3 hours, which equals 6 manhours/raking or 642 manhours per year.

Trap King - 1 man for 1½ hours, which equals 1½ manhours/raking or 161 manhours/year.

- a. To calculate cost of hand raking:
 1. 642 hours to rake traps
 2. $642 \times \$3.00/\text{hr} = \$1,926/\text{yr}$
- b. To calculate cost of Trap King raking:
 1. Initial cost of machine = \$1,764, with a life of 3 years = $\$588.00/\text{yr}$

2. $161 \text{ manhours to rake traps} \times \$3.00/\text{hr} = 483.00$
 3. Gasoline to operate (2 gals/raking) = 170.00
 4. Repairs & servicing = 180.00
- \$1,421.00

- c. To calculate the difference in costs of raking by hand versus using a Trap King mechanical rake:
 1. Item a (\$1,926) less Item b (\$1,421) = \$505.00
 2. This figure (\$505) reflects the difference in cost of raking sand traps by hand versus mechanical methods with the number of rakings constant and the quality of finished product constant. It does not include the savings which would be accrued by the amount of deseeding which would be decreased using a mechanical rake.

Observations:

1. Frequency of sand trap raking, using the mechanical method could be increased by 1/3rd without exceeding hand raking costs.
2. The mechanical method on a day-to-day basis will provide more deeply-cultivated and smoother sand traps.
3. The mechanical rake can be used for transport, if necessary, to change cups and police debris.

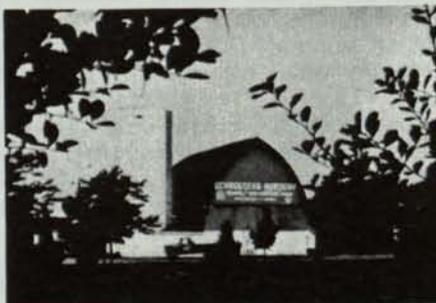


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