

velop rather rapidly. On a soil subjected to occasional trampling, 11% runoff was measured. After soil had been allowed to dry for 24 hours, it was given a fair amount of compaction by trampling. Runoff again was determined and water loss had increased from 11% to 55%.

A good sandy soil is not insurance against compaction. Employing two soils—one a clay loam and the other a sandy loam—Dr. Alderfer made determinations of non-capillary porosity, runoff and infiltration capacity. There was no appreciable difference between the two soil types—a fact that has been verified many times.

More frequent use of mechanical aerifying equipment to overcome the compacting effect on the soil is the superintendent's solution to the use of electric carts.

B. P. ROBINSON, SOUTHEASTERN DIRECTOR OF USGA GREEN SECTION, TIFTON, GA.:

Only a few clubs apparently have enough carts where there is enough traffic for one to evaluate the damage.

Damage to bermuda and ryegrass turf from automotive transportation has been largely due to continuous traffic on an area and operation on wet turf.

What Clubs Can Do About Motorized Carts

By DR. MARVIN H. FERGUSON

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Golf course superintendents have cause to be concerned about the damage which motorized carts may inflict. Carts were first used by older golfers and physically handicapped persons who had difficulty in walking. Now they are used by many golfers regardless of physical fitness or ability. Types range from "one-seater" gasoline-powered scooters to small automobiles equipped to carry six passengers.

Nearly everyone agrees that they are capable of doing a great deal of damage to the turf. There is no evidence, however, which would lead one to believe that the use of carts will be diminished, regardless of opposition.

Therefore, the superintendent who tries to keep up with new developments and

Turf producers are faced with a problem which must be solved by education of members, application of knowledge now on hand, and by additional study.

WILLIAM H. BENGUEYFIELD, AGRONOMIST, USGA GREEN SECTION, BELTSVILLE, MD.:

Golf is played on grass. Hard and fast rules cannot be adopted as to when electric carts may or may not damage turf. There are too many variables—weather conditions, soil types, grass types, soil moisture, and the past and the present seasons must be considered. For good turf it is best that such carts be not used at all.

Limited numbers, properly regulated, would cause no concern. Wide acceptance of the carts would be ruinous to the course. Once fairway turf is gone, due to disease, carts, insects or weeds, the use of electric carts would be out of the question for a year or more. Can you visualize a fairway after crabgrass has taken it over during the summer and electric carts during a wet fall?

Proper and considerate use of carts may make them acceptable under certain conditions. The more considerate of the course each operator is, the more carts each golf course could handle without undue damage.

prepare for changes in the demands upon his turf must seek ways to keep good turf despite this new development. Several approaches to the problem seem to offer some promise. Some of these approaches are not altogether under the control of the superintendent. Close cooperation between club members and the superintendent is essential if an answer to damage by buggies is to be found.

Regulation of Carts

Some clubs have banned certain types of vehicles which have objectionable features, such as narrow tread tires, single-wheel drives, or noisy engines.

The regulations which concern the superintendent primarily are those which pertain to the condition of the course.

When the grounds are wet, golf buggies will cause serious damage. The superintendent is the person most likely to be able to judge whether the condition of the course permits their use.

Because of the various plans of cart ownership and operation, however, some superintendents find that they are subject to much criticism when they make a "close decision." The person who stands to gain financially from the use of carts is quite likely to take a lenient attitude in the matter of wet grounds.



DR. MARVIN H. FERGUSON

It appears that one satisfactory plan of operation is to have the club own or lease all carts, hire someone to take care of their maintenance, and make it a function of the Board of Directors or the Green Committee to make the decisions as to when the course is in condition to accommodate wheeled traffic. Decisions of the Committee should be based on advice of the superintendent. If this plan is followed, the club profits when carts are used, but it also sustains the damage when they are used destructively.

Driver Education

Carts fitted with reasonably large tires and operated with reasonable care do no more damage than maintenance equipment. Maintenance equipment is used over the whole golf course, however, whereas operators of carts tend to steer in the same paths time after time.

TYPICAL REGULATIONS FOR MOTORIZED CARTS

When a golf course permits use of motorized carts, many new problems arise. Regulations are necessary to cover such matters as the right of a cart-user to play through slower groups, insurance, under what conditions of turf the carts may be used, etc.

The following rules adopted by the Siwanoy Country Club, Bronxville, N. Y., give an insight into some of the questions:

1. Only electric battery-driven cars will be permitted.
2. Size of machine shall be limited to accommodate not more than two people.
3. No horns, whistles, lights or noise-makers of any kind shall be permitted as attachments to carts.
4. No cart may be used for play without a caddie accompanying players.
5. In the event of rain or any acts of the elements, the Starter must check with the Golf Course Superintendent and/or the Chairman of the Green Committee, and that decision shall be final for that day.
6. Chairman of the Green Committee shall suspend the privileges of any owner of a cart for not less than 10 days for each infraction of rules.
7. Use of a cart shall not under any circumstances be construed as giving a player or players any special rights or privileges on the golf course.
8. In club tournaments based on match play, the owner of a cart shall be permitted the use thereof only if it meets with the approval of his opponent.
9. Carts shall not cut across fairways or drive on aprons surrounding the greens.
10. No carts should exceed 1,000 pounds, and tires shall be pneumatic.

Driver education is an approach that appears to have merit. Manufacturers of carts would seem to have an obligation to promote careful operation and to eliminate features which would be harmful to golf courses.

Signs may be erected to keep carts off tees and the approaches to greens and to direct traffic away from worn areas. Most members will observe these signs. The unthinking person can do more damage than the willful violator of rules.

Pictures of serious damage may be posted on the bulletin board. Club members resent flagrant disregard for the golf course and they can exert a great deal of pressure on the offender.

Condition the Course

There are numerous ways in which cart damage can be minimized by preventive maintenance.

Cultivation to relieve compaction will need more attention.

A dense, tight turf resists wear better than an open turf. This may imply a change in the species of fairway grass. Certainly, a more adequate fertilizer program will be helpful.

Watering of fairways should be thorough and infrequent. This is true whether carts are used or not, but it may be easier to show club members that wet grounds are more likely to suffer from traffic damage than it is to show them that too much water causes shallow roots.

Insofar as is possible, features that channel traffic should be eliminated.

Low spots that tend to stay wet for long periods should be drained or raised.

Where possible, steep grades that cause slipping or wheel spinning should be eased.

Pave small areas where traffic is concentrated (ends of bridges, etc.) and where turf cannot be kept.

It is believed that any club should be prepared to accept an increased maintenance budget before it decides to permit the use of motorized carts.

The far-sighted superintendent should take stock of his golf course to determine what changes will need to be made to accommodate an increased use of carts. He should present his committee with an estimate of the costs of such changes and the reasons for making them.

It is believed that golf course superintendents have the "know-how" and the resourcefulness to keep good turf in spite of this new difficulty, provided their clubs support them in the matters of regulation, education and an adequate budget for conditioning the course.

You can't help a little child up the hill without getting nearer the top yourself.

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