



Even though the green appears to have been cleaned (below), the soil probe shows a layer of ash remains (left).

It started from this. . .



And then traps had to be shoveled, parking lots and swimming pools cleaned. . .





# "The church board voted unanimously to get a John Deere because it's the best tractor for the money. With my blessings."

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*Helens from page 11*

business and that by the time the course was able to open back up, total losses would approach a quarter of a million dollars.

No one knows moreso than Mark Higgs, Superintendent at Moses Lake, what it was like to have your course covered by four inches of volcanic ash and then have to clean it up. Ed.

On May 18th, the countryside in the Moses Lake area changed drastically. What was once sand and scrub brush, turned into volcanic ash nearly four inches deep. People that are supposed to know about these sort of things estimated the material at 121 tons per acre. It sounds bad, and it is.

My assistant, Ken Tracy, and I came out to the course on the 18th at about noon to see if we could help. It was just about totally dark and by 12:45, it was as dark as any night you have ever seen. The ash was falling from the sky like a winter snow storm and it was starting to blow something terrible on the roads from the traffic.

At 1:30, we decided to try and make it home and got only as far as Ken's place, which is about nine miles from the course. We decided to spend the night there. Roads were impassible. You couldn't see out of the windshield, much less attempt to drive. Dust was absolutely everywhere.

Monday, the 19th was a day most people here will never forget. It was like walking on the moon. The sky, grass, lake, trees, and everything else was the same gray dusty color. Color vision did not exist. All the roads were closed and a full state of emergency was declared.

We finally made it through the roadblocks on the 21st and got our first look at what was once a green, lush golf course. What we saw was enough to make a guy throw up. Try to imagine a golf course completely covered in four inches of flour and that is close to what it looked like. We knew it was going to be bad, but never imagined that it was going to turn into the awesome job that it has become. Every inch of the entire facility had to be cleaned off. The 21st was spent cleaning off the roofs of buildings to keep them from collapsing from the weight. That done, we turned our attention to the painfully slow task of cleaning 60 acres of formal cut turf and 82 acres of rough.

A short explanation is needed to explain our course. The roughs here are scrub-covered sand dunes left in their natural state. They line each fairway and are close to 30 yards wide in each area. This allowed us to have a place to scrape each fairway and haul it into the roughs. Without this, I have no

idea what we would have done with nearly 8,000 tons of volcanic ash.

Back to the course—Thursday, May 22nd, and Friday, May 23rd was spent cleaning the 19 greens with a tractor and back blade, along with five people manning the shovels behind, to clean up the excess left by the blade. The greens had been mowed at 5/32-inches on the 18th and a blade running across them was not a pretty sight. However, damage done to the greens was slight compared to the awesome damage done to the fringes. Blades were never made to run over humps and bumps without taking some big bites.

The next job at hand was cleaning the fairways, by far the biggest task ever undertaken at this golf course. We begged, borrowed and rented six tractors with blades and then got after it. We ran the people in two shifts of eight hours each. Sixteen hours a day and it took 10 and a half days to complete the job. It was a lot of time to spend in the most miserable of working conditions. Dust was so thick that the majority of the time you couldn't see the front of the tractor. All you could do was pray there were no

sprinkler heads in the way and keep on going.

After the fairways were completed, it was a job of trying to put the rest of the place back into operation. The traps had to be hand-shoveled clean, the parking lot scraped and washed off with a fire truck, the swimming pool cleaned out, and the buildings all washed down. The problems with the ash never seem to end. Get it clean, the wind blows, and you have to start over again.

The crew (six people) is working but depressed. A lot of their hard work went down the drain in just one afternoon. These type of events do not happen very often—Thank God for that! The course is doing much better in the last three weeks and we are opening on the 15th of July.

I should mention that the roughs were all disked and leveled with a drag harrow and have been seeded with red wheat, rye, and fawn fescue. We are watering them with hand-moved sprinkler lines and they are looking greener than they ever have. It's still not the best place to have to play from, however. **GB**

*The following is a letter written to Jim Brooks, National Sales Manager for GOLF BUSINESS, by Richard Malpass, Superintendent at Riverside G & CC in Vancouver, Washington.*

Dear Jim:

As you probably know, you were fortunate you left Portland at 8:40 last Thursday (June 17) night. At a few minutes after 9:00 that evening, Mount St. Helens erupted up to 55,000 feet and the ash fall came our way. The airport was closed shortly after 11:00 p.m. after you left. The ash fall reduced visibility to near zero. My daughter had awakened me at about ten o'clock to report that the volcano had erupted. At 12:30 I awoke and noted no traffic sounds, which intrigued me. So I arose and looked out of the window. I could hear a noise sounding like heavy rain but the pavement was dry. I went to the back of the house and turned on an outside spotlight and ash was coming down like frozen snow. Almost one-quarter of an inch had fallen already. We turned on TV and watched the news for an hour, then went back to bed.

I didn't sleep much, worrying about the golf course. We went over at about 5:30 a.m. to find the whole course looking like it had received a sand topdressing. It had just started

to rain, but we started the sprinklers and watered most of the day — greens, tees and fairways. Between over an inch of rain and the irrigation, we pretty well knocked the sand down. We mowed greens, tees and collars of greens on Saturday, the greens again on Sunday, and fairways Sunday afternoon. It had dried somewhat by then, but the tractors and mowers were working in a huge cloud of dust arising from the grass.

We have to lap greens mowers every third day. We now have one fairway unit down to regrind the reels and bedknives. As soon as we finish it, we will have to do our other one as the sand dulls the blades in a day or so.

The ash is extremely hard to move and blows badly on the streets when vehicles stir it up. Hundreds of thousands of dollars are being spent to water down the streets and to sweep up the residue. It is more of a nuisance than a disaster. Of course the media have blown it all out of proportion, enough so that they are scaring away tourists who seem to feel that we are buried in feet of the stuff and that lava is flowing down the streets of Portland.

However, I do hope we don't get anymore.

*Dick Malpass*

# Removal and management of volcanic ash deposits in turfgrasses

By Roy L. Goss, Kenneth J. Morrison and A.L. Halvorson  
Western Washington Research & Extension Center, Puyallup, Washington

The following procedures were presented at the Turfgrass Field Day at the Western Washington Research and Extension Center in Puyallup.

The May 18, 1980 eruption of Mount St. Helens deposited over one cubic mile of ash over large portions of Washington, and to some extent in western Idaho and Oregon. This amount of ash would cover over 10,176,000 acres to a depth of four inches. Not all of the ash fell in this region since finer particles travelled around the world. The deposition was variable with some areas receiving over four inches of loose ash and some areas only a minor dusting.

## Chemical composition

There is some variability in chemical composition of the ash. Much of the ash contains useful levels of potassium, sulfur, iron, phosphorus

and calcium. Other constituents contained in the ash are generally not at levels considered injurious to turfgrasses. The pH does vary somewhat but absolutely nothing to worry about for turfgrasses. The lowest pH's recorded are somewhere around 4.7, and the highest is running up almost to 7.0.

At the time of the preparation of this article, there is little indication of the ash material being phytotoxic. The material does not have the ability to hold large amounts of nutrients; therefore, you can expect any chemical elements contained in the ash or applied fertilizers to leach rapidly below the ash layer.

## Physical composition

Composition of the ash varied with distance from the mountain in a westerly to easterly direction. The

heavier or coarser particles fell in the proximity of the mountain and in the Yakima region and became finer in the Moses Lake-Ritzville and areas east. A particle size distribution analysis of a sample collected at Moses Lake revealed the following particle sizes:

Sand-sized particles	47%
Silt-sized particles	40%
Clay-sized particles	13%

The material is gritty to touch, finer particles cling readily, and is very abrasive in nature. Finer particles, when in a dry state, are easily carried by wind and dust clouds and commonly and frequently obscure vision. The material is not considered injurious to health except for individuals who have respiratory problems or eyes sensitive to dust, although it is recommended that respirators and

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**“Greens should be mowed with old mowers without baskets for the first few mowings. . . Smooth all ridges left before they become stabilized and cannot be rolled out. . . New ash is very abrasive to moving mechanical parts. . . Follow preventative maintenance practices outlined.”**

dust protection masks be used when dust is heavy.

The waterholding capacity of the ash is quite high due to a high percentage of fine particles in many areas. Fresh material forms an unmanageable slurry when wet and cakes and crusts upon drying. Shrink cracks occur after drying and grasses will emerge through these although the stand may not be dense.

#### **Methods of handling fresh ash deposits on turfgrass**

It appears from observations and available data that gently settled, loose ash will compact to about 50 percent of its original volume from rain or irrigation. The depth of ash, mowing height of turf, and use of the turf area are factors to consider with respect to whether to remove or leave in place.

If it is deemed necessary to remove the ash, it is advisable to do so when in a loose, dry, powdery form. It is lighter and easier to handle. Respirators or dust masks should be worn for personal protection.

#### **Golf course putting greens**

1. Remove as much ash as possible when work can be resumed. Deep ash layers can smother greens and result in total grass loss, but early removal leaves the grass virtually undamaged. If the compacted depth is expected to be over 3/16 to 1/4 inch, it should be removed dry to prevent perched water tables later as well as puddled and compacted surfaces resulting in slow water infiltration.
2. Three-point hitch box scrapers, preferably outfitted with a durable, flexible rubber edge will help prevent excess damage to the turfgrasses.
3. After removal, thoroughly water the greens to wet the dry ash, provide water to the grass rootzone and wash all ash from the grass leaves.
4. Apply non-ionic organic wetting agents to green surfaces to aid in ash wetting and water penetration.
5. Mow greens with **old mowers without baskets** the first few

mowings to help stabilize ash which could not be removed.

6. Mow in the morning after night irrigation to prevent dry ash damage to equipment.
7. Aerify greens with 1/2-inch hollow tines and remove cores and topdress with six to eight cubic feet of specified sand per 1000 square feet. This will help cover the ash and reduce equipment wear. Repeat this operation three or four times if necessary, the first season if possible.
8. Maintain normal fertility and watering programs.
9. Overseed damaged or thin areas.

#### **Fairways**

1. Follow the same procedure as in Step 1 for putting greens, if practical. Size of area may influence your decision. Shallow deposits may be dragged or floated into the surface with any type of equipment practical or even a length of garden hose.
2. If ash becomes consolidated from rain or irrigation, it may be necessary to loosen the layer before attempting removal. Spring-tined harrows or even spike-toothed harrows with teeth layed well back, may be employed on large areas to bring the ash up or to sift and mix it into the turf. Power rakes make moist ash easier to rake or scape.
3. Float, drag or hand-smooth all ridges left before they become stabilized by new stem and root development. Otherwise, they will become permanently bumpy. **They cannot be rolled out.** If properly managed, the remaining ash can serve as a smoothing agent on uneven ground.
4. If ash has been scraped from the turf, it is important to loosen the matted grass by power rakes, spring-tined harrows or any other innovation that will not tear out the sod. It is important to expose the grass leaves to light as quickly as possible, especially if the temperature is warm.
5. Ash layers may interfere with

water infiltration and aerification may be essential. Wetting agents (surfactants) may be beneficial.

6. Ash removal may not be feasible or possible in some areas. If it is not, irrigate to settle and stabilize the material. Use rotary hoes (not rotovators) to scarify the surface, break crusts, and punch holes. Grass in sufficient quantity may find its way through.
7. If sufficient grass for a stand does not recover, scarify the surface for a loose seedbed and reseed with a Brillion or other acceptable grass seed drill. Use a blend of 30 to 40 percent turf-type perennial ryegrass with 60 to 70 percent Kentucky bluegrass or other adapted grasses for your area. A broadcast application of 35 pounds of available nitrogen per acre following seeding will hasten seedling growth and establishment.
8. After turf is growing normally, several hollow-tined aerifications may be helpful in root and rhizome development and water movement.

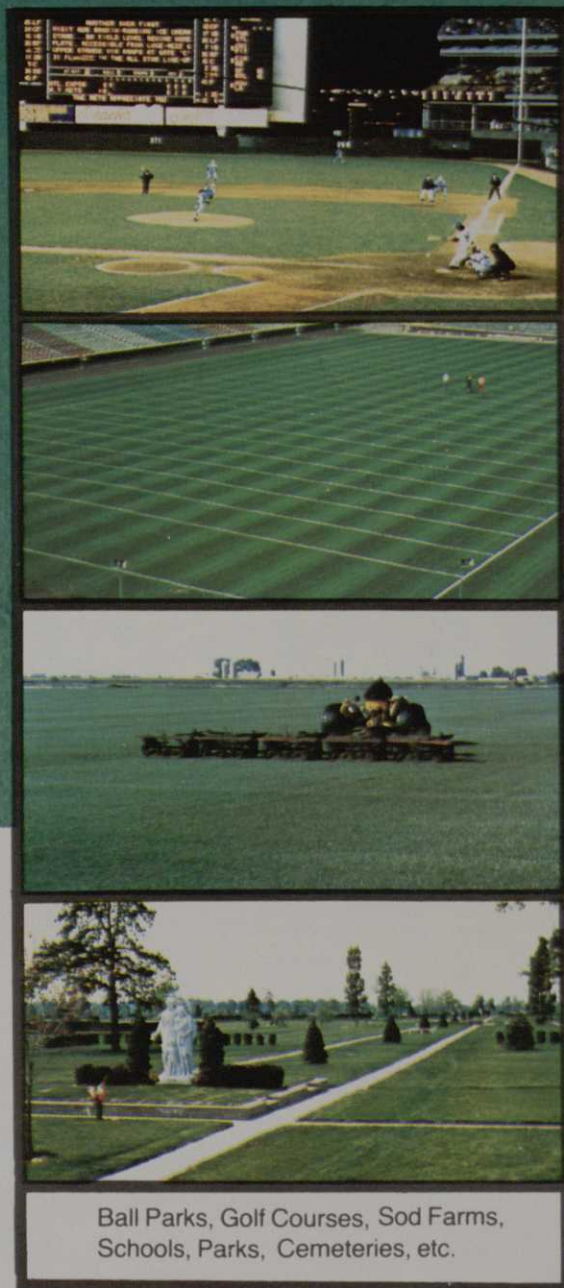
#### **Maintaining equipment**

New ash is very abrasive to moving mechanical parts. Turfgrass maintenance equipment is generally not as dirt-proof as many types of farming equipment and may sustain heavy damage. The following suggestions may be useful in preventing heavy equipment loss.

1. Grease all fittings regularly to flush out grit.
2. Change or clean air and oil filters often to minimize engine wear.
3. Obtain special filters if available.
4. Employ older equipment where possible. Do not run new and expensive equipment if possible.
5. Mow large turfgrass areas the first few times with large rotary mowers, or flail-type, to save wear on expensive reel-type gang mowers.
6. Mow turf slightly higher (1 1/4-inch). Mowing height can be lowered when ash is stabilized. **GB**

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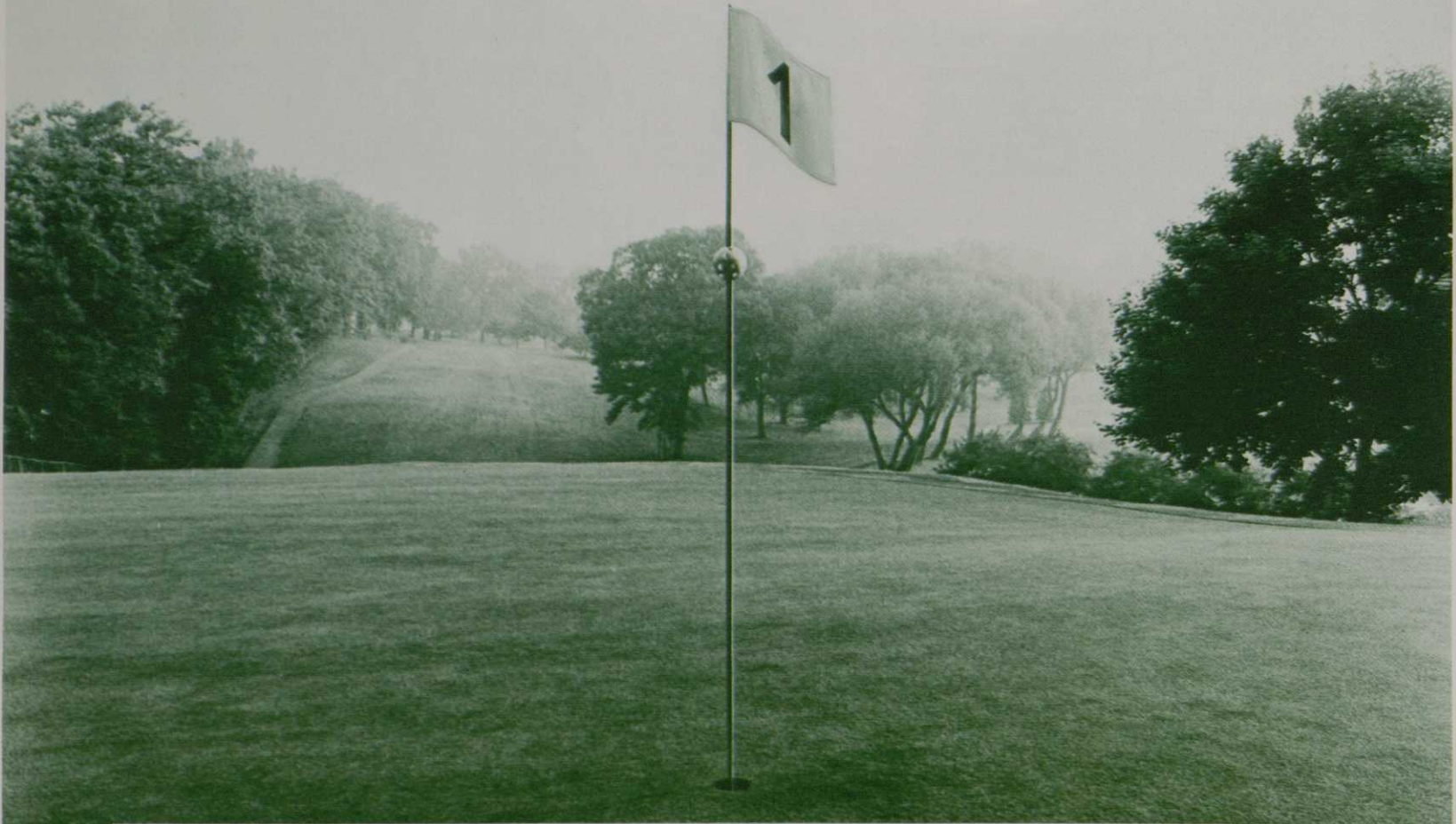
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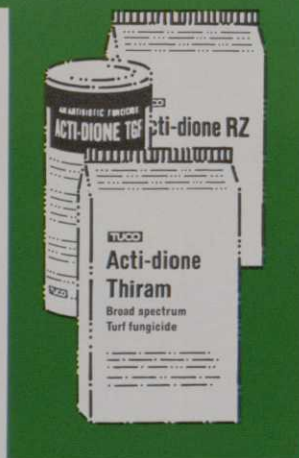
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