HURRICANE DAMAGE IN THE NORTHEAST

by

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EXPERIENCE with the hurricanes of the past two seasons has had Northeasterners reeling and on the ropes. Damage, devastation and raging floodwaters remain vividly in mind for many. As in 1954, the major portion of hurricane damage in this country in 1955 occurred in the Northeastern United States, an area formerly considered out of the hurricane belt. Damage from South Carolina southward to Florida and westward to Texas, normally considered the hurricane belt, was comparatively minor.

What will 1956 bring? Has the pattern of the devastating hurricanes changed?

In an article appearing in the "Saturday Evening Post," Dr. Hurd C. Willet, Professor of Meteorology at the Massachusetts Institute of Technology, dismissed speculation that the hurricane belt had permanently moved from the West Indies to New England. Those who have experienced the terrible fury of a hurricane cannot help crossing their fingers in the hope that it never happens again.

Total Damage

The total hurricane damage in the United States in 1955 was over one billion dollars; the total casualties numbered 218. The floods caused by rains from "Diane," following so closely after those of "Connie," did more damage to property in the United States than did any other hurricane in history.

Rainfall from "Connie" was heavy from North Carolina to New England, with amounts reported varying from about six inches at many stations to the 12.20 inches which fell on La Guardia Field, Long Island, New York, in a 38-hour period on August 12-13, 1955. Although this rain did not cause excessive damage, it did saturate the ground, fill the streams, and in general set the stage for the devastating floods which followed the passage of hurricane "Diane" a few days later. Rainfall from "Diane" in excess of eight inches was reported at many stations, while more than 18 inches fell in the highlands northwest of Hartford, Conn. The combined total of rainfall from "Connie" and "Diane" exceeded 20 inches in many places, all of the rain falling within one nine-day period.

Since hurricane damage was so widespread, it was inevitable that some golf courses in the Northeast would be severely affected. The following are representative comments from some of those who experienced disaster from hurricanes in the last two years:

Mr. Ray Dennehy, Pro-Supt., The Kittansett Club, Marion, Mass.

"The storm ('Hazel,' 1954) hit the course at 10:30 A.M. and, within an hour, nine greens, tees and fairways were inundated with salt water. Some of the fairways and greens had seven to eight feet of water over them; the rest had four to five feet of water. The course remained under water for about five hours.

"When the tide began to recede, we immediately started the sprinklers going on as many greens as possible. About an hour later the Town of Marion ordered us to shut off all sprinklers. However, that hour of fresh water really helped.

"The following week tees and fairways turned brown. We then aerated stricken greens, tees and fairways heavily. The Patron Saint of Greenkeepers

Kittansett Photo

The full fury of Hurricane Hazel was experienced by The Kittansett Club, in Marion, Mass. The Pro Shop, left, and the Clubhouse, right, were battered severely by raging flood waters. Approximately half the course was inundated by salt water, carrying and depositing large amounts of debris. Prompt action by club officials kept damage to a minimum.

must have been with us for right after aerating a nice rain fell. After the rain we applied gypsum to greens, tees and fairways at approximately 1,000 pounds to the acre.

"Fortunately, ninety per cent of the debris washed up by the hurricane ended in the rough and bushes. It took two men over three months to clean it up.

"A great deal was learned about salt tolerant native bentgrasses from prior hurricanes, and we began plugging those that appeared tolerant in our number six fairway. This fairway always bears the brunt of the floods. After 'Hazel' this fairway was in fine shape, so we are now plugging these salt tolerant bentgrass strains into our other fairways."

Mr. Ralph De Masi, Supt., Hampshire Country Club, Mamaroneck, New York.

"In September, 1955, all fairways and most greens were flooded with approximately seven feet of salt water. The amount of silt deposited measured between one-fourth to three-eighths inches. The debris washed up took 12 men two weeks to clean up.

"Flooded greens and tees were immediately washed with fresh water as soon as the flood water receded. They were also sprayed with liquid fertilizer. As soon as we could get machinery on fairways we chain-harrowed and aerated thoroughly; we then applied a light application of organic nitrogen, also gyp-

sum at the rate of 1,000 pounds to the acre. The bentgrass population took it rather well; however, some of the Kentucky bluegrass and most of the creeping red fescue were lost."

Mr. William Harding, Chairman Green Committee; Mr. James McCormack, Supt., The Dedham Polo and Country Club, Dedham, Mass.

"This past year we ferried green mowers by rowboat to mow greens. The flooding rains brought the level of the Charles River to within two inches of the all-time record flood of 1866. The water almost completely covered two fairways and roughs, and sections of fairways of five holes for about four weeks. The Charles River floodwaters contained sewerage and algae was quick to form, a severe crust forming before the water receded. Due to rigid control of the River's flow downstream and through the city of Boston, it took about four weeks to run off sufficiently to allow us to begin repair work.

"As each area became free of water we immediately treated it as follows:

1. The semi-dry scum layer was shredded with a vertical mower.
2. Intense aeration with a small unit followed—the areas were too wet for larger units.
3. Fresh water was applied as quickly as possible.
4. A harrow was used as soon as practicable to further break up the algae.
5. Dolomitic lime was applied at the rate of 1,000 pounds to the acre.
6. Some rough areas were burned.
7. Fertilizer mixed with insecticide was applied soon thereafter.

"We feel that we got out of quite a pickle at practically no expense.

"We are now grateful that we decided not to plow and begin from scratch, for a week or two after aeration new shoots from the bentgrasses began to sprout.

Hampshire Photo

This was the view across the 13th green at Hampshire Country Club, Mamaroneck, N. Y., in September, 1955. All fairways and most greens were covered with approximately seven feet of salt water. Sound turf principles, quickly applied by club officials, are credited with saving the course from crippling damage.

We are grateful, too, that the grass plant is as rugged as it proved itself to be."

Mr. W. W. Fisher, Chairman, Green Committee, and Mr. William Du Bie, Supt., Country Club of Farmington, Farmington, Conn.

"Our course is divided by U. S. Route 10. Seven holes are located on the easterly or high side, and the remaining eleven holes are located between the highway and the Farmington River. Normally the river is about 100 to 150 feet wide and shallow enough to be waded in the summer. When the flood of August 19 was at its crest, the Farmington River was so wide that it was impossible to see where the water ended —perhaps some five to five and one-half miles wide.

"On the lowest part of the course the depth of water was between 20 and 25 feet. Substantially all fairways and rough, and all but three greens on the easterly side, were flooded. A silt deposit three-quarters of an inch in depth was left on these areas.

"Immediately after the water receded, we had every available man using rakes, brooms, shovels and scrapers to remove the silt from greens. This chore took about three days, after which all affected greens were aerated, washed and partially seeded. By October 15 they made very good recovery.

"It was impossible to remove the silt deposit from fairways. We hoped that it would dry and crack, allowing the grasses to come up through it as in previous years. Unfortunately, it did not dry soon enough and the blanketing effect completely killed all fairway grass on the middle lower holes.

"Therefore, it was necessary to use a disc harrow to turn the silt in, and these fairways were reseeded in mid-September. An excellent stand was obtained and it looked as though the situation was well in hand when we were hit with the first October flood. This flood crested about six feet lower than the August flood, but brought with it about one-half inch of fine sand, the cumulative effect of which was terrific.

"As a result, we have had to sod six greens completely. We had hoped to work on these greens last fall, but the soil became so saturated each time it rained that we had what, prior to the year 1955, would have been considered a major flood. Consequently, it was impossible to get in to do the work.

"The unseasonable April snows further hampered our renovation program, throwing us about a month behind our planned operations. Spot-seeding of fairways and re-seeding of most of the rough had to be done this spring, along with the re-turfing of aprons. The approximate cost of reconditioning the course has been $15,000 to date."

From the hurricane experiences of the persons quoted above, it appears that the following practices would be most helpful in minimizing damage in the event your club should face a similar situation:

1. Remove deposits of silt, sand or soil from turf as soon as possible.
2. Water the turf as soon as possible, especially after salt water flooding.
3. Aerate the soil thoroughly, as soon as practicable.
4. If algae forms, break through the crust with convenient implements. A vertical mower can be used on greens, aprons or tees; a chain harrow on fairways.
5. Apply gypsum at the rate of 1,000 pounds to the acre; or, apply 1,000 pounds of agricultural or dolomitic limestone to the acre; or, a combination of limestone and gypsum totalling approximately 1,000 pounds to the acre.
6. Fertilize the afflicted areas.
7. Introduce salt-tolerant strains of bentgrass into areas that become flooded regularly.
8. Study and improve drainage, where possible.