

## FLYASH as a SOIL AMENDMENT for TURF GROWTH

H. H. Iurka and T. F. Paterson  
New York State Department of Public Works

The proposed routes of two arterial highways in Suffolk County, Long Island, traverse areas of sandy soils containing only a trace of silt and clay and practically no organic matter. These soils are largely the Plymouth, Lakewood, and Dukes Sand series. The existing growth is typically scrub oak and pitch pine. Soils which might be used to amend those sands to provide a better medium for turf growth are, in many cases, at such a distance that their use would be costly.

Flyash, a by-product from the incomplete combustion of bituminous coal, was found to be available in quantity from electric power plants on Long Island. As this material is largely silt in texture, its use as an amendment to sand for turf growth was considered worth investigating.

Correspondence with Drs. John Lamb of the United States Soil Conservation Service, S. J. Toth of Rutgers University, and A. M. S. Pridham of Cornell University led to the planning of a field test. Samples of the flyash were analyzed by Cornell University and the Department of Public Works Bureau of Soil Mechanics. Eighty-seven percent of the material passed the 200 sieve and 6 percent was smaller than 0.02 mm. The pH was 4.4. There were very small amounts of potassium, phosphorous, and calcium contained. The Bureau of Soil Mechanics advised further on the capillary rise of water in mixtures of flyash and typical sand and warned of the possible health hazard to personnel in handling the material because of its texture and light weight and also of the possibility of causing instability of slopes if more than 25 percent of flyash was incorporated in the soil.

The site chosen for the field test was in a typical scrub oak-pitch pine area where evaporation loss of moisture is high, because of the poor vegetative cover, and where the soils are typically sandy. The soil of the area is sand fill placed some years ago. Analysis of a sample indicated less than 1 percent passing the 200 sieve and a pH of 4.6 to 4.8.

The test area is 300 by 30 ft. and is divided longitudinally into four plots each 75 ft. long.

On August 15, 1955, about 14 cu. yd. of flyash was spread over plots 1, 2, and 3 so that about twice as much was spread on plot 2 as on plot 3 and about three times as much on plot 1 as on plot 3. On plot 4 about 12 cu. yd. of soil containing 26 percent material passing the 200 sieve and having a pH of 4.8 was spread. A 10:6:4 fertilizer was spread on all plots at the rate of about 1,000 lb. per acre. Ground Limestone was applied on the north two-thirds of all plots and hydrated lime on the other one-third of all plots at about 1 ton per acre. On August 16 all plots were disk-harrowed to mix, as well as possible under the conditions, the amendments, fertilizer, and lime with the sand to a depth of 4 to 6 inches. Because of lack of adequate tractive power, it was impossible to use equipment which would have given homogeneous mixtures. All plots were seeded as indicated in Table 1 and mulched with salt hay at the rate of about 3 tons per acre. A light tractor was driven over the lower two-thirds of all plots to give partial compaction.

Samples of soil were taken from each plot after construction and analyzed to determine the silt content. The data are given in Table 2.

On September 14 cover was poor on all plots, and no significant difference was

## ROADSIDE DEVELOPMENT 1956

TABLE 1  
SEEDS AND AMOUNTS USED

Kind	Pounds per Acre
Red fescue	30
Common ryegrass	5
Weeping lovegrass	2
Alta Fescue	20
Red top	5

TABLE 2

Plot No.	Percent Passing 200 Sieve	
	Sample 1	Sample 2
1	5.5	4.9
2	7.3	6.2
3	4.2	4.1
4	6.9	---

observed which could be attributed to the various treatments, although cover was slightly better in the plot having the soil amendment.

On October 13 cover was fair on all plots and no significant difference was observed which could be attributed to the various treatments.

COMMENTS

Frank H. Brant:

Is a comparison available of growth on the test plots with growth on the soil having neither flyash nor soil amendments?

Iurka:

No. However, some years previously the same area was used for a study of the possibility of establishing vegetation using the native soil without amendments other than fertilizer and lime. A poor cover was developed which would have required continued fertilizing to have produced a cover acceptable for highways.

**SAWDUST as a SOIL AMENDMENT for TURF GROWTH**

Torbert Slack, Roadside Development Engineer  
Louisiana Department of Highways

This report has reference to remarks made by the author at the meeting of the Committee on Roadside Development, Highway Research Board, on January 18, 1956, accompanied by color slides showing the results of the use of sawdust as a soil amend-