



Drainage ditch being cut (right) will flow into one of three reservoirs. All work except heavy excavating is done by Mercer.



Outfitting all trucks with boom loaders (left) has expedited shipments, reduced cost of unloading palletized sod.

Conservation Service, which helped plan their drainage and irrigation system.

Three Irrigation Ponds Collect Water

When the Cacavios began to grow sod back in the early '50s, they called upon Soil Conservation technicians to design several drains to get rid of excess water standing in surface depressions. Results were so impressive that the owners decided to cut shallow, V-shaped, grass-lined drainage ditches in each field, and also to perform additional shaping and grading of the land so that water readily flowed into the ditches.

"We had to rely completely on surface drainage because our soil is so heavy," Victor Cacavio says. "The S.C.S. people came up with a plan to run the ditches into one end of each of three irrigation ponds and out the other end. This way we keep as much rainwater on the farm as we can without ruining the sod. They also suggested several diversion channels to run crosswise on our 40-acre sloping field to stop the lower half from eroding after we cut sod. We now find that these diversion channels also keep water off our low, flat areas."

For the irrigation system, three ponds have been constructed and a fourth is planned. All construction on the drainage-and-reservoir system, except for the actual excavation of the ponds, was done by Mercer, which uses heavy earth-moving equipment in its landscape operations. Ponds are 70 ft. by 400 ft. by about 20 ft. deep, and are centrally located in the fields to reduce the amount of irrigation pipe required.

Shallow ditches are spaced about every 200 ft. apart in the fields. These drain into the main ditches, which in turn drain into and through the reservoirs. When the reservoirs have reached capacity, about 2 million gals., excess water overflows into ditches on the other side, preventing a backup of water in the sod fields. From reservoirs, three irrigation pumps, capable of handling 750

Reservoirs Overcome Drought For New Jersey Sod Grower

By ALBERT S. KESHEN

Only by installing a network of reservoirs and drainage ditches has an expanding New Jersey sod farm been able to overcome the serious drought condition that faces the Northeast. Mercer Sod, Inc., began to grow sod about 15 years ago on 140 acres of poorly drained land off Route 206 in Springfield Township, N. J. Today, in spite of a heavy clay soil that once supported only poor crops of soybeans, corn, and hay (and even these used to be under water for three or four months at a time), Mercer has increased its productive land to nearly 600 acres.

One of 25 or 30 sod farms in a

blossoming, \$5 million New Jersey industry, Mercer's sod operation started as an offshoot of the Mercer Contracting Co., landscape contractors. Much of the sod produced goes into Mercer's landscaping jobs, and the company considers itself one of the largest turf contractors in the state. The four brothers who own and operate the two businesses, Frank, Dominick, James, and Victor Cacavio, readily admit that their rapid expansion has been made possible by improvements in the water situation, together with increased reliance on mechanization and the advantages of conducting a diversified operation. They credit a good part of their growth to the U. S. Department of Agriculture's Soil

gals. per minute each, pump water through the main lines to portable 4-in. laterals. By the use of a "wheel move," hooked up to a series of pipes, one man can move up to 1,700 ft. of pipe without help, another of Mercer's labor-reducing innovations.

As new land is put to work cultivating sod, Mercer is continually expanding its drainage and irrigation system. More than 24,500 lineal ft. of V-shaped ditches have been constructed in the past year alone. With the continuous flow of water from ditches to reservoirs to irrigation lines, surface water is no longer a serious problem on the farm and adequate water is available for necessary irrigation. "Our sod farm is an outstanding example of what can be done with land which is affected by a serious drought situation," the four brother-owners echo with pride.

Drainage System Serves Field Grading and Roads

All the earth dug from ditches and ponds on the farm is used to shape and grade the sod fields. The grading serves a twofold purpose by permitting even distribution of irrigation water along with the drainage benefits. A factor that had to be considered when putting in the drainage system was the farm's network of well-graded roads, designed to permit heavy trucks to get as close as possible to each

Drought in the Northeast, together with a heavy clay soil and serious drainage problems threatened Mercer Sod Farm's production. Today, Mercer has quadrupled its acreage and production is booming.

sod cutting site and to permit loaded trucks to pull out without becoming bogged down.

"Our operation is geared to top efficiency and we eliminate as much hand labor as possible," Victor Cacavio explains. "We can't make a profit hand-carrying strips of sod long distances, or pulling trucks out of the mud. The Soil Conservation Service people took this into consideration when they planned the original drainage layout and also when we bought additional ground."

Some time ago, the firm decided to initiate an efficiency program calling for greater mechanization. One of the first steps was to install Side-O-Matic unloaders on their fleet of trucks, which includes both medium-size vehicles for nearby deliveries and tractor-trailers for long distance sod hauling. Trailers can handle 8,000 to 10,000 sq. ft. per load. Mercer's total delivery capacity is up to 70,000 sq. ft. of sod per day. To match this de-

livery capability, sod harvesting had to be speeded.

Ryan sod cutters are used to cut sod into 1-ft. by 4-ft. strips, which are then hand-loaded onto nearby pallets. Forklift tractors transport the pallets to delivery trucks, which can be pulled in close because of the road network. Mercer figures that four to six men are eliminated by this type of operation, and loading is much faster. By the use of unloaders, the time and labor savings also extend to delivery of the sod. Since no hand labor is involved in the unloading process, handling of sod is minimized. Drivers can now load and unload in about 20 to 30 minutes, as compared to two to three hours for handwork with four to six men per truck.

Sod Farm Geared to Diversified Operation

Mercer Contracting Co. is, quite naturally, the sod farm's best customer. The landscaping contractor purchases from outside sources all the shrubs, flowers, and other plantings needed for its projects. But, because of its sod farm, the company is often called upon for consultation when projects calling for extensive turfgrass areas are planned. Turfs of Kentucky bluegrass-fescue mix, Merion bluegrass-Kentucky bluegrass-fescue mix, and straight Merion have been sodded throughout New Jersey by the contractor. Mercer Sod Farm also retails sod and sells to other nurserymen-contractors.

In its landscaping work, Mercer is geared to perform the complete operation, starting with clearing and grading, on to placing of topsoil, sodding or seeding, planting, and mulching. Specialized equipment, such as earth borers and hydraulic seeders, gives the organization large-job capability. "Such capability for covering the entire field of landscaping enables us to take on more work, and makes us more adaptable for all phases from layout to follow-through than the split operators," James Cacavio says.

He also points out that another important advantage of such a comprehensive setup is that the



Brother-owners of Mercer Sod Farm and Landscaping divide management duties. Shown here (left to right) are Victor, Frank, and Dominick Cacavio. Missing from photo is James.

company can function throughout the entire year with minimum layoffs of personnel. During winter months, Mercer keeps all of its key men busy with snow removal and equipment maintenance, and does its project planning then so no work time is lost. As a result, it can function as a year-round working force instead of a seasonal force, as do most of the nearby contractors. A crew of 80 to 125 men is employed on projects and another 15 on the sod farm, with some exchange of personnel to meet peak requirements. Of the farm crew, eight men are employed year-round, with the others assisting during the April-to-October cutting season.

Brothers Split Management Duties

Mercer Contracting Co., parent organization of the Mercer Sod Farm, was established in 1948 by the four Cacavio brothers, who began as small nurserymen and landscape contractors and have gradually extended the scope of their operations. The managerial duties are divided among the quartet, with Dominick as project manager, Frank in charge of the sod farm and maintenance, James as general manager, and Victor as field supervisor and expeditor.

All of the company's operations

are carried out from the central yard and office building, which covers about 30 acres in Trenton, N. J. In back of their one-story office building is the garage, which houses over 100 pieces of equipment, including tillers, harrows, mulching machines, equipment trailers, graders, scrapers, hydraulic seeders, mowing equipment, dump trucks, some 15 tractors, pickup trucks for the use of supervisory personnel, loaders, and four dozers.

Mercer belongs to the New Jersey Nurserymen's Association, Landscape Information Service, Landscape Contractor's Association, and the Cultivated Sod Association of New Jersey, of which Frank Cacavio is vice president.

Experts Advise How To Ready Trees and Shrubs for Winter

Trees and shrubs will better withstand the ravages of winter if watering is discontinued until the leaves have fallen, C. M. Drage, Colorado State University extension horticulturist, advises. Late-season watering produces soft or succulent wood that is susceptible to winter injury. Conifers and the main stems of broadleaf plants are particularly vulnerable.

Conifer damage is usually ap-

parent on the southwest side of the foliage. Arborvitae are also liable to be damaged by winterburn. This problem is caused by rapid temperature changes, Drage points out. Researchers say that leaf temperatures on a sunny winter day may exceed 70 degrees even though air temperature is below freezing. When the sun sets, leaf temperature drops quickly with resulting injury. Main stems and leaves of deciduous trees often show symptoms of frostcracks and sun-scald during the winter, he adds.

Wrap Thin-Bark Trees

James Nighswonger, extension landscape architect at Kansas State University, recommends wrapping the trunks of such thin-bark trees as sugar maple, tulip, American linden, flowering dogwood, and magnolia with a commercial tree wrapping to prevent winter sun-scald. Wrapping should be removed when the weather warms in the spring. Nighswonger also suggests applying a wilt-preventative spray to broadleaf evergreens to reduce leaf drop and winter damage.

Mulches around the base of trees and ornamental plants will help get them through the cold weather in good shape, the experts say. Nighswonger suggests using wheat straw, leaves, pine needles, shredded bark, and even peat moss if the site is protected from the wind. Advising against the use of grass clippings for mulch, he adds that mulches should be about 4 to 6 in. deep and should stay where they are placed without being compacted. Mulches should not be used until after several hard freezes have occurred. Mulching reduces the loss of moisture and moderates the alternate freezing and thawing of soil that is a prime cause of winter damage, the extension landscaper concludes.

The experts advise thoroughly soaking the soil around plants with water before freezing sets in. Drage adds this hint: overfertilized trees are especially susceptible to winter injury; fertilize only in the early spring.



Broadcast pattern spray head introduced by John Bean, is shown here operating from hand-held remote controls. The attachment, called "Rotocast," is powered by a 4-cylinder, air-cooled engine, and can discharge 10 to 40 gals. of spray per minute at 40 p.s.i. Remote controls rotate the sprayer 210 degrees horizontally. Air stream is adjustable through an arc 45 degrees downwards and upwards. More complete specifications can be obtained by writing for Catalog L-1496, to John Bean Division, Box 9490, Lansing, Mich.