NEWSLETTER

May, 1981

Golf Course Superintendents Association
OF NEW ENGLAND, INC.

Sponsors and administrators of the Lawrence S. Dickinson Scholarship Fund — Awarded yearly to deserving Turf Management Students.

Water, Water...but Where?

That old saw about "water, water everywhere - but not a drop to drink" could develop into an even more complexing adage. Maybe ..."water, water everywhere - but not a drop to use on the golf course."

Ridiculous? Not really. An alarmist reaction? Ditto.

"We're not out of the woods yet," Dr. Joseph Troll of the University of Massachusetts warns of a threatening water shortage. "The Northeast is considered a critical area in the matter of encountering a possible drought. It's a wait and see situation."

There's little doubt that the water shortage, predicted by many scientists in this country, could cripple many phases of industry and would probably spill over into the beautification and recreation field.

Dr. Troll reports that some courses in the Middle Atlantic states already have been slapped with irrigation restrictions.

"Some states are taking a hard line against noneessential use of water," he tells. "For a while, we were close to that stage in Massachusetts. If that heavy rain period in February hadn't occurred, we would have been in trouble."

The source of the problem comes from the fact that increased use of water has lent itself to becoming a serious drain on its supply. Since only one percent of the earth's water is fresh (according to the viewpoint expression of Toro's Dr. James Watson), overdependence on it by several areas of industry, agriculture and individuals has influenced thoughts that a water crisis does exist.

Precipitation in certain parts of New England this past winter hit all-time lows. Dr. Troll notes that rivers and streams are not up to their usual early-spring height marks and he wonders if we ever will catch up.

"The golf industry certainly has to be conscious of the situation," he says. "I always have promoted discipline in irrigation methods. Some superintendents have gone overboard (no pun intended) in letting the flood gates run wild. In addition to chancing turf damage, they have contributed to a form of water shortage...even though their sources are private."

The proposal that superintendents not be too trigger-happy in their irrigation programs may be too late in that many cities and towns are frowning on any use of water in the greening process. Some have instituted day-on, day-off schedules in certain uses of water. Others are weighing that measure carefully while waiting for the replenishment wheels to start rolling.

The so-called "acid rain" syndrome doesn't help, either. Ecologists and environmentalists have taken up the call that pollutants in the atmosphere have made their way into upper air masses and been transmitted back to the soil by rain to instigate an irritation of the original problem.

Dr. Troll did make a spot check of rain collected in February. Although his results have been documented, he doesn't wish to have them presented as irrefutable evidence.

"There was no sign of damage, as far as I could determine," he adds. "However, this was just one isolated examination. Acid rain is not something someone dreamed up. It's out there."

The combination of water shortage and acid rain compounds the overall problem which can only be solved or rendered stable by more efficient methods of using water.

The golf course superintendent should be thinking in that direction regardless of the amount and source of the water his irrigation program consumes.

A decrease in overall outlay is a must. Certainly, cutting down areas to be watered is another. Greening of fringe rough areas and those places between tees and logical drop of the drive has to be considered a waste under the threat of a major shortage of water.

Many courses have already started the cutback by implementation of a mowing system that reduces the width of fairways and allows for the expansion of rough. It would be fairly simple to carry this approach to the irrigation program. In effect, it would mean less green and more brown.

Technical advances in developing plants that require less water and recycling of wastewater, etc. are other measures that will come into play as the awareness of the situation spreads.

A number of field experts insist that usable water will be turf's most critical problem for the next century or so. And it's a problem to be faced now. Water, water everywhere? Uh-uh. It's more like water, water...where?

Gerry Finn

MAY MEETING

Holden Hills C.C. Worcester, MA
May 11, 1981

Directors meeting: 9:30
Regular meeting: 10:30
Golf After Lunch
Host Superintendent: Mark Klimm

Directions: Take I-290 to 190 North. Take exit 2 off of 190, go through traffic light and bear right. Turn left at next light, go to second light and take another left. Go to end of that street and take a right. Club is approx. 5 miles down on the right side. Clubhouse # 829-4346 in case you get lost. **Note:** Please call the club and let them know if you are coming for lunch.

Golf Course Superintendents Association

Gypsy Moth

Clifford S. Chater

The gypsy moth **Lymantria dispar**, which is one of our more destructive forest insects, may also be one of our more serious shade tree pests. Since its accidental introduction from Europe into Massachusetts in 1869, outbreaks have occurred at intervals of a few to many years. Originally, outbreaks caused severe forest tree damage in Massachusetts but in recent years moderate forest tree weakening is the rule while shade trees suffer more stress and perhaps eventual death.

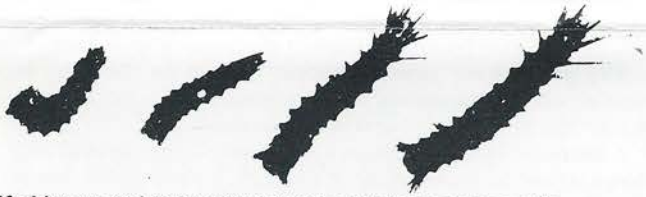
Severe infestation usually result in partial defoliation of conifers (evergreens) as well as deciduous trees. Complete defoliation of conifers may kill them in one season with the exception of pitch pine, which requires a longer period to be killed. One should do nothing for control if he or she is willing to tolerate defoliated trees, tree stress, possible tree death from the immediate defoliation, longer range injurious effects from secondary pests, a general mess of bits of chewed leaves, caterpillar excrement (pellets dropping from trees), caterpillars crawling on the trees and later on/or in the house and property for a few weeks annually over a period of three or four years. If these penalties are unacceptable then there is a wide choice of control materials available and many skilled professional-arborist applicators who may be consulted to provide relief and protect trees.

Typically, a population builds up for three or four years and, by then, the abundant caterpillars are so stressed by competition for food that, when weather conditions are suitable, they succumb to a virus disease. The disease so reduces their numbers that a troublesome build up is not seen again for a number of years. It is during these early years after a population collapse that the gypsy moth parasites, which are chiefly different species of wasps and flies, exert their greatest benefit. Eventually though, the parasites can no longer keep the increasing insect population in check and once again an expanded outbreak occurs. There seems to be no specific act that triggers an outbreak and the time interval between outbreaks remains unpredictable.

Properly planned control programs will reduce infestations and protect trees and provide relief to homeowners during peak outbreaks of the pest. No attempt should be made to eradicate gypsy moth since this is not possible, at least with present knowledge.

Description: The male gypsy moth is dark brown with blackish bands across its forewings. The female moth is nearly white and has wavy blackish bands across its forewings. The mature caterpillar is hairy and about 1 1/2 - 2 1/2 inches long. The head has yellow markings, the body is slate colored, and on the back there is a double row of five pairs of blue spots followed by a double row of six pairs of red spots. The pupae is reddish brown with a sprinkling of reddish hairs.

Distribution: The gypsy has now become established over all of New England and also parts of New York, Pennsylvania, New Jersey and Delaware. Current outbreaks (1979-1980) in Massachusetts are generally located along routes 128 and 495 in the east with some on Cape Cod and along the Connecticut River Valley in the west.

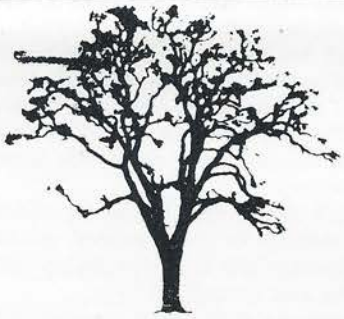


Life history and habits: The gypsy moth has one generation a year and spends the winter in the egg stage. The eggs hatch in early May about the time the shadbush **Amelanchier spp.** blooms. This occurs about May first in most of the state and about May 10 on Cape Cod. The newly hatched caterpillars sometimes lower themselves from tree branches on threads. At this time, they may be blown about by the wind. Some may be blown a few miles, but usually the distance is mostly a matter of a few hundred yards. Local and relatively long distance spread can occur in this way. Also egg masses, larvae (caterpillars) and pupae are often attached to objects such as vehicles and firewood, upon which they may then be moved long distances.

The caterpillars, hatched as above, feed until early July when they transform into pupae. Moths start to emerge from pupation about July 4th. The males are strong fliers but the females emerge, mate and lay their eggs near their place of pupation. The eggs are laid shortly after mating and may be deposited at any place or height in the tree or on numerous other nearby objects. Egg masses that are lower down, near or upon the ground are more easily seen. This fact may lead some people to believe that they are absent in the upper part of the tree. The egg masses are covered with tan colored scales from the female's abdomen and each mass may contain 100-1000 eggs.

Host plants: The gypsy moth feed on a wide variety of trees and shrubs but oak, willow, linden, apple and larch are favored. Large hungry caterpillars will also eat pine, hemlock, spruce and, sometimes, maple. For the most part, ash, locust and sycamore are not fed upon.

Tree injury: While forest trees in general in Massachusets will not be immediately killed by a typical outbreak, they will be weakened. Shade trees will be weakened and may be killed; especially, if they are already weakened by some other factors, including environmental complications. Healthy deciduous trees should be able to withstand partial defoliation for two or three successive years without being killed but they will be weakened, while conifers may be killed in one season. Once weakened, trees may then become



susceptible to attack by borers and to fungi, especially the shoe string root rot fungus (**Armillaria mellea**). Death associated with this fungus may occur many years later, after infestation with gypsy moth. Thus death is not solely attributable to the gypsy moth. Many shade trees are even now suffering from previous outbreaks of gypsy moth of many years ago. It is suggested that shade trees, especially partly defoliated ones, be given adequate water, as needed, every year and fertilizer in alternate years to aid in maintaining or improving tree vigor.

Natural control or non-chemical treatment: Gypsy moth eggs are very resistant to cold and temperatures of at least minus 25°F. are required to kill them. The eggs are also very resistant to heat. Therefore, the eggs must be burned rather than scorched, to be sure they are dead from exposure to this treatment. Intensive efforts have been made to establish introduced parasites in this country and several species are presently busily at work. Predaceous beetles are also well established in the United States and likewise, a lethal polyhedral virus is usually present. This virus causes the disease that brings about a population collapse. These agents eventually help to suppress an outbreak of gypsy moth.

Applied control: The gypsy moth is a very hardy pest. Dormant sprays of superior oil as commonly recommended for insect control (i.e. 2-3 gal/100 gal water) will not kill the eggs. Creosote applied by brush is effective for egg kill, but care should be used not to let an excess soak into the tree bark since it will kill whatever living tree tissue it touches. Scraping eggs off the bark and allowing them to remain on the ground will not kill the eggs. Usually so few eggs can be killed by any manual method that in heavy infestations this egg killing will still not prevent tree-defoliation. There will always be many eggs that are missed and small caterpillars may also be blown in by the wind. Rubbing, wire brushing, hammering, scraping, often result in only limited egg control and burning with a propane torch often does more harm to the tree bark than the caterpillars would do. None of the manual methods are practical in tall trees.

Routinely, the larger caterpillars (4th instar) crawl down the tree trunk during the day and crawl back up again at night. This allows some of them to be captured if folded burlap is wrapped around the tree trunk for a trapping place. This may help, particularly in light infestations, but the benefit may be chiefly psychological. The caterpillars often wander about prior to pupation. It is at this time that they crawl onto and/or into homes, creating an extensive nuisance. It is too late then to do anything for control but battle them with a broom as a matter of good housekeeping.

Gypsy Moth continued

If local control is desired, there are spray materials which can be applied when the caterpillars are small, about mid May. The larger they become the harder they are to kill.

Some insecticides which are registered for gypsy moth control are:

Carbaryl (Sevin), a methyl carbamate type insecticide, is registered for use on many kinds of fruit, vegetable and ornamental plants. Carbaryl labeling carries a caution signal word and spray deposits are **lethal** to insects for about five days. It is useful against many kinds of insects, including caterpillars, lacebugs, periodical cicada, earwigs, some scale crawlers, some aphids and some leaf miners. It is particularly effective against Japanese beetle adults, elm leaf beetle, and birch leaf miner. It is very toxic to honeybees and application to blossoms, particularly white clover and linden, should be avoided. Carbaryl produces severe injury or death to Boston Ivy and Virginia creeper. Repeated applications thereon may also contribute to a buildup of mites and should be avoided.

Carbaryl is available as a liquid suspension or wettable powder. If used, beekeepers, nearby, should be forewarned so that hive openings may be screened appropriately for a few hours so as to alleviate the hazard of beehive contamination.

Acephate (Orthene), an organic phosphate-type insecticide, is registered for use and is effective against a very wide range of insects on vegetables, ornamentals and flowers. It has low volatility which extends the time it remains lethal to insects. This period is 10 to 15 days. Its labeling carries the signal word of caution. It is available as a 75% crystaline powder.

Imidan a phosphate-type insecticide, is registered for use on many vegetables, fruits and ornamentals, and is active against a wide range of insects. Labeling carries the signal word **warning**, which indicates that it is of a lower order of toxicity to man and warm blooded animals than many phosphate insecticides. It breaks down quite rapidly in the soil. It is available as 12.5% and 70% wettable powders. If used, beekeepers nearby should be forewarned so that hive openings may be screened appropriately for a few hours to alleviate the hazard of beehive contamination.

Dylox (trichlorfon), a phosphorus-type insecticide, is registered for use on many vegetables, field crops, seed crops and ornamentals. It has a low order of toxicity to beneficial insects including honeybees and is very soluble in water. Its labeling carries a signal word of **warning** and it breaks down rapidly in the soil.

Bacillus thuringiensis (BT) is a microbial insecticide that is non toxic and non-pathogenic to man and warm blooded animals, fish, and honeybees, but it is capable of inducing fatal disease in certain insects, mostly caterpillars. On the basis of evidence to date, this bacillus is harmless to parasitic and predatory insects and other forms of life. It is useful against such insects as gypsy moth, cankerworm, fall webworm, elm spanworm, and linden looper. Also, it gives some control of tent caterpillar. Occasionally, it gives erratic performance. Two applications are required. **It must be applied near or during the second instar stage of the gypsy moth caterpillar development which is usually about May 20,** in most of Massachusetts. All caterpillars do not hatch at exactly the same time and therefore all of them do not reach the second instar stage at the same time so **a second application is required about June 1** for complete control.

Malathion and methoxychlor are also in use, but these materials are not considered especially effective either separately or mixed for control of gypsy moth.

Chemicals may also be applied systematically by injecting them into tree trunks, but these chemicals may be dangerous to handle and their use is limited to certified applicators. **Bidrin** is the material commonly available in capsule form for trunk injection, but in this method many wounds must be made in tree trunks. The wounds are often small but they are still many times larger in size than is required for entry by organisms which cause decay. Untreated, a relatively healthy tree may recover from defoliation but, if wounded and infected, it may harbor decay for the rest of its life.

Disparlure is registered and used for trapping. Impregnated plastic strips are used for confusing the mating process, but are significantly effective for this purpose only in very light infestations (a few egg masses per acre).

Diflubenzuron (Dimilin) is an insect growth regulator which interferes with the formation of chitin - the insects outer covering. This is a very effective control material, but it is registered only for forest use away from human habitation.

Gypcheck, a formulation of virus, is toxic only to the gypsy moth. It is registered for use only under the direct supervision of the U.S. Forest Service. It is produced only by the federal government and is not commercially available. If this material becomes available for wide-scale use we will have the ability to choose an earlier year for treatment in the population cycle. Thereby, the virus disease should be effective as a control measure, sooner than the date associated with the natural build-up of the toxic virus.

UMass. Cooperative Extension Service

TOURNAMENT RESULTS
April

1st Net (59)

Steve Chiavaroli	Mark Spaulding
Ron Kirkman	Orin Ellis

2nd Net (61)

Tom Ohlson	Jim Sullivan
Tom Schofield	Frank Higgins

Superintendent * Manager Meeting
June 8, 1981
Metacomet Country Club
East Providence, Rhode Island
Golf, Dinner and Round Table Discussion
More Information at next meeting

To be voted on next meeting
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Our treasurer has asked that those who still have not paid their dues are late (extremely). It takes a lot of time to mail out second notices. So let this serve as a not-so-gentle reminder.

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* *Contributors to the Lawrence S. Dickinson Scholarship Fund*

NEWSLETTER

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