# Students Learn Turfgrass Maintenance At Jacobsen's College Student Seminar

Thirty-eight college students from all over the U.S. recently attended a College Student Seminar at Jacobsen Divison of Textron Inc., Racine, WI.

The students were chosen from applicants who are studying Turfgrass Maintenance and Management or related fields.

During the 5-day seminar, students attended workshops on engine and machine maintenance, lectures on management, equipment selection, hydraulics, budgeting, financing and leasing, the future of municipality turf management, sports turf management and scheduling of golf course personnel and equipment.

Students gained hands-on experience with several pieces of Jacobsen turf maintenance machinery durng a field day at Racine Country Club.

A panel discussion gave students the opportunity to ask the experts many questions pertaining to the Turfgrass Management field. Panelists included: Danny Quast, Superintendent for Milwaukee Country Club in Milwaukee, WI; Dr. Kent Kurtz, Professor of Turf Management at California State Polytechnic University; Monroe Mller, Superintendent of Blackhawk Country Club in Madison, WI; Domenick Ventura, Director for Kenosha County Parks, Kenosha, WI; Woody Voight, Superintendent for Saukville Country Park System, Saukville, WI; and Dennis Wilms, Superintendent of Racine Country Club.

Students toured the Jacobsen plant facilities in Racine and participated in a demonstration of the company's CAD/CAM (computer-aided design) system which showed how new technology speeds the development of new products in the turf care industy. They also saw a demonstration of Jacobsen's REACT system which is a computer-link system between Jacobsen and its Distributors for fast, easy ordering of replacement parts.

Jacobsen has sponsored and organized the College Student Turf Seminar for the past 19 years. It is the most extensive program of its type, and has proven to be very helpful to those wishing to pursue a career in Turf Management.



The Jacobsen College Student Seminar Class of 1986 recently completed a 5-day program at Jacobsen Division of Textron Inc., Racine, WI. Thirty-eight students from around the U.S. attended the seminar which included workshops, lectures, discussions and hands-on equipment operation. All of the attending students are studying Turfgrass Maintenance and Management or related fields.

# Compatibility of Pesticides & Fertilizers and Tank Mixture Problems

By R.W. Miller and J.F. Wilkinson\*

Mixing pesticides and/or pesticides and fertilizers in spray tanks reduce labor and equipment costs and in some cases, increase the effectiveness of the products. Unfortunately, mixing chemicals also may reduce the effectiveness of some materials and may cause damage to the target plant. There are no simple guidelines to use in mixing turfgrass chemicals. Good judgment and a great amount of caution are the best methods to avoid problems from tank mixtures of chemicals.

#### LEGALITY OF TANK MIXTURES

The Environmental Protection Agency has rules that tank mixtures of pesticides and fertilizers are permissible provided that:

- The label of any produce in the mixture does not state that the pesticide should not be used in mixtures.
- 2. The use of the mixtures otherwise conforms to all other label restrictions.



The EPA has considered requiring a label for tank mixtures but wisely decided against it because of the inconvenience and unnecessary expense to consumers. It is likely that tank mixtures will remain legal unless problems develop from widespread misuse of them. Some states require that commercial applicators label tank mixtures of chemicals, however, this process seldom involves more than a simple reporting system in which the applicator registers his intent to use the mixture or mixtures, pays a small registration fee, and reports the content of the mixture on the customer invoice.

#### TYPES OF TANK MIXTURES

Today, with the vast number of pesticides and pesticide formulation, there are an almost endless number of combinations that someone may wish to use. General classifications are:

- 1. Mixtures of fungicides
- 2. Mixtures of insecticides
- 3. Mixtures of herbicides
- 4. Mixtures of fungicides and insecticides
- 5. Mixtures of fungicides and herbicides
- 6. Mixtures of herbicides and insecticides
- 7. Mixtures of fungicides, herbicides and insecticides
- Mixtures of fertilizer and any one of the above chemicals or combinations of chemicals

#### COMPATIBILITY OF TANK MIXTURES

When pesticides are used in combinations or in a mixture, numerous problems may arise. In such cases the components of a mixture are compatible if they can be used together or incompatible if problems develop from using the combination. If two or more pesticides can be used in combination without impairment of toxicity, physical properties of plant safety, they are compatible.

#### PHYSICAL OR CHEMICAL INCOMPATIBILITY

When mixing two or more pesticides reduces the effectiveness of one or all components, the mixture is chemically incompatible. Most organic fungicides and insecticides should not be combined with alkaline compounds with a pH higher than 7.0. Alkaline reactions significantly reduce the effectiveness of carbamate fungicides and the insecticidal value of some compounds.

For this reaosn, lime for the control of algae should not be used with maneb fungicides such as Fore, Manzate, Tersan LSR and Dithane M-45. This is also true for Dyrene, Zineb, Thiram, Captan and most organic insecticides.

Dinocap (Karathane), suggested for the control of powdery mildew, is chemically incompatible with Sevin and oil-base sprays.

Chemical incompatibility is frequently the cause of poor performance of multiple pesticide combinations. Other problems may be excessive foaming, salting out, unstable mixtures, and the formulation of gelatin-like materials. Before combining any pesticides, read the label on

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the package or container. If information on compatibility is not specified, it is wise to avoid combination of products until other investigations are completed.

#### PHYTOTOXIC INCOMPATIBILITY

When two or more compounds used in combination result in plant injury, they are incompatible because of phytotoxic effects. Mixing organic fungicides with emulsifiable concentrates (EC) insecticide formulations with xylene as the solvent, may cause plant injury. When combining fungicides with liquid insecticides, check the label for compatibility and avoid problems of plant injury. When combining pesticides or unknown compatibility, it is always good to try them first on an expendable turf area before use on large turfgrass areas.

#### PLACEMENT INCOMPATIBILITY

Incorrect placement of pesticides is frequently the reason for poor disease and insect control. Placement incompatibility is less obvious than some other types of incompatibility and is sometimes overlooked. When two or more chemicals are used together and applied in one operation, each must end up in the proper place if it is to do the job for which it is intended. Some fungicides are protectants and must be uniformly distributed over the leaf surfaces to protect against invasions of pathogens such as Piricularia (Gray leafspot) and Helminthosporium leafspot of turfgrasses. Failure to establish a foliar blanket of fungicide protection results in poor control of destructive turfgrass diseases. In order to be effective, insecticides for grub control must be washed off the grass into the soil. Therefore, a combination of Maneb (Tersan LSR) for the control of leafspot and Diazinon for grub control is ineffective because of placement incompatibility.

Another example of placement incompatibility is broadleaf weed control materials mixed with insecticides that should be watered into the grass or soil.

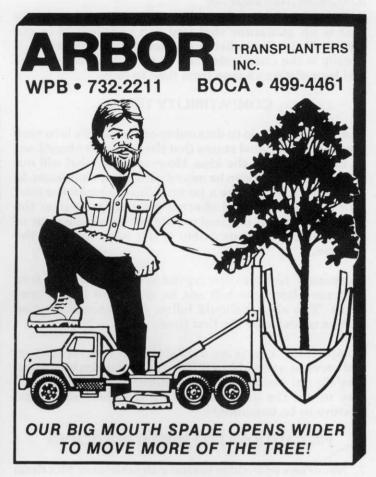
#### TIMING INCOMPATIBILITY

Another type of incompatibility sometimes overlooked is the need to apply each component of the mixture at the proper time. An example of this type of incompatibility is the use of a pre-emergence herbicide for crabgrass control and an insecticide for grub control. If the herbicide for crabgrass control is applied at the proper time, the insecticide for grub control will not be effective because the application is made too early in the year.

#### DAMAGE POTENTIAL OF MIXTURES

Although a combination of materials is compatible, its use increases the probability of turfgrass injury compared to using each component a few days apart. This additive effect occurs if each component is applied separately at one time or if they are applied in a mixture. Under adverse conditions, such as high temperatures or moisture stress, a mixture of chemicals, safe to use under good conditions, may cause injury. There is no replacement for common sense in determining when mixtures can be used without undue risks.

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Because you have successfully mixed chemicals in the past is no guarantee that you can continue to in the future. Active ingredients are seldom incompatible. It usually is the chemicals used to formulate the product and formulation change from time to time.

#### **COMPATIBILITY TESTS**

The first thing to do to determine compatibility is to read the label. If the label states that the pesticide should not be mixed, discard the idea. However, the label will not always tell you if it can be mixed with other chemicals. In these cases, first make a jar test. Simply make the mixture in a quart jar and observe what happens over the next half hour. If unusual separation or settling out of materials occur, it probably is not wise to make the mixture.

The second test is to first try the mixture on a small area of grass where you will not be disturbed if problems occur. You always should follow this procedure when using a mixture for the first time.

Compatibility charts are available from several sources and serve as a valuable aid. They are not all inclusive and they do not include all formulations of a product. It is wise to use the grass test even if the chart shows the mixture to be compatible.

#### PRECAUTIONS FOR MIXING PESTICIDES

- Never mix pesticides in concentrated form. Mix them in the tank already filled with water and with the agitation system running.
- 2. Do not mix organic fungicides with other pesticides that contain xylene as a solvent.
- When mixing pesticides of different formulation, the order of mixing should be wettable powders followed in order by flowable products, water soluble powders, surfactants and emulsifiable concentrates.
- Do not mix pesticides with materials that cause high tank pH levels without thoroughly investigating compatibility.
- When using a pesticide mixture for the first time, do a jar and a grass test before using the mixture on critical grass areas.

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6. When tank mixing pesticides and fertilizers, use urea in preference to other water-soluble nitrogen sources.

\*R.W. Miler is currently with Chemlawn Corp., Columbus, OH; J.F. Wilkinson is with Old Fox Lawn Care, East Providence, RI. ■

from Florida Turf Digest, Vol. 3, No. 5, May 1986

## Superintendents to Participate in New Championship

Golf course superintendents are pleased to be involved with PGA professionals, manager and presidents of the nation's country clubs in a national golf championship recently created by the John Deere Company.

The announcement was made by Riley L. Stottern, CGCS, president of the 7,000-member Golf Course Superintendents Association of America (GCSAA), with headquarters in Lawrence, Kan.

The event — the John Deere/PGA Professional-Superintendent Championship — will feature four-man teams competing in a scramble format at the 41 PGA Sections throughout the country.

Qualifying is scheduled between June and September, with the 36-hole Championship in November. The date and site will be announced later. Teams will be made up of the PGA Professional, the club's course superintendent, club president and club manager.

"It is gratifying, and fitting," observed Stottern, "that superintendents are recognized as among the most important people in the game of golf. It is they who make and keep our nation's golf courses playable. Many superintendents play golf frequently not only because they enjoy the game and are good, but also because they know it is the best way to understand how to keep their courses in the best possible condition. "GCSAA thanks John Deere for its development of the tournament. Our members are looking forward with great enthusiasm to playing in it with the PGA professionals, club presidents and managers, who also are so essential to the game and industry."

Gary Gottschalk, manager of John Deere's Golf and Turf Division, said the firm is "excited about the concept. This program provides an opportunity for the club professional and club superintendent to play together on a team with other club officials. I am not aware of any other competition like it."

Profanity Makes Ignorance Audible

# Turf Nematode Control Update

Namatodes commonly contribute heavily to decline of turf in Florida. On the other hand, weak turf growth is often blamed on nematodes without reason except that no other cause is recognized. Correct diagnosis is clearly necessary before deciding to apply a nematicide, since the treatments are generally noxious, expensive, or both. Nematicides vary in effectiveness against different kinds of nematodes, and not all nematicides can be used in all sites.

#### **DIAGNOSIS**

Above ground symptoms: wilting and slow recovery from wilt, chlorosis, decline, or "melting out," weed invasion, irregular shape and slow spread of affected area, usually without abrupt borders.

Root symptoms: roots shorter and with fewer branch roots than healthy roots, darker in color, sometimes with swollen root tips or short brushes of lateral roots at root tip; reduced root system does not hold soil core or plug together.

# REDUCING NEMATODE POPULATIONS IN ESTABLISHED TURF IS PRESENTLY POSSIBLE ONLY BY USE OF NEMATICIDES.

Previous history may indicate nematode problems which are apt to recur at a particular location.

Nematode sample analysis in a laboratory determines the kinds of nematodes and the relative numbers of each present per unit of soil (100 cc, pint, kilogram, etc.) present in the sample when it is processed. Most laboratories will also indicate in a general way whether the population detected is likely to significantly affect the crop for which advice was asked.

It is up to the turf professional to combine the evidence from all of these sources to assess the likely role of nematodes in a particular situation and the probability that treatments which can be used in that situation will be effective. "Threshold" or "action" levels for several kinds of nematodes on local turf species may be found from many different sources. However, NO magic numbers of any nematodes can be set as automatic cut-off levels, above which treatment is justified and below which it is not. Environmental factors, including the level of management, other pests and pathogens, and weather drastically affect how seriously nematodes stress turf. Aesthetic standards and budgets determine how much

demand will be tolerated before expensive pesticides will be applied.

Reducing nematode populations in established turf is presently possible only by use of nematicides. All those now registered for use on any turfgrass in Florida are very toxic organon-phosphate pesticides, applied to the turf in granular or sprayable liquid formulations. All are carried through the soil dissolved in soil water; a limited amount of irrigation or rain is needed to carry the active ingredients into the turf root zone from a surface application, yet too much water can leach the material too deeply to inhibit nametodes in the root zone. This wastes the cost and effort of application and may contribute to environmental pollution.

NAMCUR 10G. 2-1/3 to 4-2/3 lbs. per 1,000 square feet or 100 to 200 lbs./acre. only this formulation of Namacur will be registered for turf as soon as existing supplies of Nemacur 15G have been used. May be used on golf courses, cemeteries, sod farms, industrial grounds, parkways roadways: Do not use on residential lawns or public recreational areas other than golf courses. Nemacur products are generally the most broadly effective nematicides now available for Florida turf.

NAMACUR 15G. 1.5 to 3.0 lbs./1,000 square feet or 68 to 134 lbs./acre. Sites and limitations are as for Namacur 10G., above.

DASANIT 15G. 1.5 to 3.0 lbs./1,000 square feet or 68 to 134 lbs./acre. May be applied to commercial turf such as (continued on page 56)



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sod farms, golf courses, and cemeteries; do not use near human dwellings.

MOCAP 10G. 5 to 7 lbs./1,000 square feet or 200 to 300 lbs./acre. May be applied to commercial turf such as golf courses, sod farms and cemeteries; may be used on home lawns only by certified commercial applicators. May be applied to bermuda, zoysia, St. Augustine, centipede, and bahia grasses. Effective against sting, awl, spiral, and some other ectoparasitic nematodes, but erratic in control of lance, root-knot, and and other endoparasitic species.

MOCAP EC. 2/3 to 1 pint/1,000 square feet or 3.5 to 5 gallons/acre. Do not use on home lawns. May be applied to commercial turf such as golf course, sod farms, and cemeteries. This formulation has the same limitations of effectiveness as the 10G. Foliar application with IMME-DIATE irrigation to wash Mocap EC from the foliage may result in serious injury to foliage.

SAROLEX EC. 1.5 to 2.5 pints/1,000 square feet or 8.2 to 13.6 gallons/acre. May be used on turf and lawns, including home lawns; has limited effectiveness gainst sting and few other ectoparasitic nematodes, with little or none against lance, root-knot, and other endoparasitic species.

(Dr. Bob Dunn, Extension Nematologist, Entomology and Nematology News, Volume 10, Number 3: May, June 1984.)

# Pesticide Exposure Shown Despite Protective Clothing

Recent University of California research has shown that pesticide applicators may be getting unsuspeted levels of skin exposure to pesticides. Six workers, operating tractor-powered rigs to spray a diazinon/oil mixture in a pear orchard were studied. Each worker wore long trousers, a shirt, overalls, boots, a hat, rubber gloves, and either a respirator or a plastic mask. Despite these precautions, the detection systems showed that pesticide had penetrated the protective clothing and droplets had reached the skin through openings around the wrists and necks of the workers.

To measure the exposure, a fluorescent whitening agent was mixed with the pesticide. After the spraying was over the workers took off their clothing, the researchers then shone long-wave ultraviolet light (black light) on them.

The fluorescence glowed wherever the pesticide had reached the skin, and the researchers photographed the workers with a television camera equipped to operate in extremely low light. Then a computer translated the TV image into digital information, computing the relative exposure levels of each skin area according to the

brighteness of its fluorescence. The detection system cannot yet measure the exact quantity of pesticide that reaches each spot of skin.

The scientists, Richard A. Fenski, John T. Leffingwell, and Robert C. Spear, are with the Department of Biomedical and Environmental Health Science (sic) at U.C. Berkeley. They described their experiments at an American Chemical Society meeting recently in St. Louis, Mo. Their findings raise questions concerning protective clothing to be worn by pesticide applicators and call into question previous methods of predicting and detecting contamination. (This story is based on a story from the San Francisco Chronical by David Perlman Science Editor) The IPM Practioner vol. V1, No. 5. ■

CHEMICALLY SPEAKING September 1984



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## JUPITER HILLS: Site of U.S. Amateur Championship

By Irene Jones

DICK HERR, JUPITER HILLS AND FLORIDA — THREE WINNERS

When the United States Golf Association chose Jupiter Hills Country Club, Jupiter, Florida as the site for The U.S. Amateur Championship, August 25-30, 1987, they picked three winners. Namely: Dick Herr, Jupiter Hills and Florida. Dick Herr, Superintendent at Jupiter Hills is excited about his course being chosen to host this prestigious golfing event, in fact, this will be the first time in the 87-year-history of the U.S. Amateur Championship, that it is being held in Florida.

Dick is ready to show off his course to the 288 top rated amateur golfers who qualified for this event, as well as to the countless number of golfing fans who will be viewing the action in person or via the media coverage. "The golf course crew, as well as myself, consider our course the best."

The "very private" Jupiter Hills Club offers its members two completely different 18-hole courses; The Hills and The Village. In fact, this will be their first major tournament. And while that is true, it is also true that Dick Herr and Jupiter Hills have both achieved a vast amount of experience and recognition in our industry.

Designed by the world renowned golf architect, George Fazio, Jupiter Hills has a reputation for excellence through out the entire state of Florida. The club also ranks high in national opinion. Fazio has worked with and retained the natural intrinsic design of The Hills course by using to its full advantage the up to 80 foot elevation of the sand dune on which the course was constructed. This gives the golfers a variety of shots as they are faced with uphill, downhill and sidehill shots to the greens.

Because of the natural terrain George Fazio chose to give The Hills "a Carolinas look" rather than Florida. There isn't even one palm tree to be found on this course, which was first opened for play in 1969.

The second 18-holes at Jupiter Hills is The Village course. This course is a little flatter, but according to Dick Herr, "it is a tougher driving course." The Village is said to be reminiscent of an English inland course, with homesites blended into the rustic setting.



Hole No. 18, Par 4, 423 yards. Second shot to very elevated green.

Dick Herr will be bringing some 37 years of knowledge and involvement with the game of golf into getting Jupiter Hills ready for the U.S. Amateur Championship's 87th tournament. "I started out caddying, playing golf and mowing greens at the age of ten-years-old for The Logan Sport Country CLub, in Delphia, Indiana. When I was 17 and still a senior in high school, the professional golfer at the club was killed in a car wreck and I was offered the head professional job upon graduation." Dick stayed at The Logan Sport Country CLub for five years.

"At the end of those years I had a choice to make between joining the Pro Tour or becoming a teaching pro. I decided on teaching and accepted a position at an executive course in Delphia, Indiana. I stayed at this course for 15 years, eventually becoming a superintendent and teaching pro."

Dick first came to Florida and worked for George Fazio for one season in 1980. "I really loved Florida and I really enjoyed working for Mr. Fazio, so I moved down to become superintendent at the Jupiter Hills Club in 1981. And with my family all grown now and living up in Indiana I can put the majority of my time and effort into the Jupiter Hills Golf Course. I just love my course and that's where I usually stay."

An interesting feature at Jupiter Hills is their Bent greens. Dick said he enjoys working with Bent grass. "I always enjoyed a challenge and I believe that Bent creates the best putting surface. When we first put in the greens we would go out each morning just to see if they were still surviving. Now they are not only surviving, they are thriving and healthy. Yes, they do require more attention and careful maintenance, but to me they are worth all the extra."

Dick maintains the two courses at Jupiter Hills, The Village and The Hills, with the help of an assistant, John Sibley, Jr., who he describes as "a first class assistant." A secretary, Kim Moore, who makes all the record keeping a lot easier. A good foreman, Mark Marcmatteson and a crew of from 20 to 25 members.

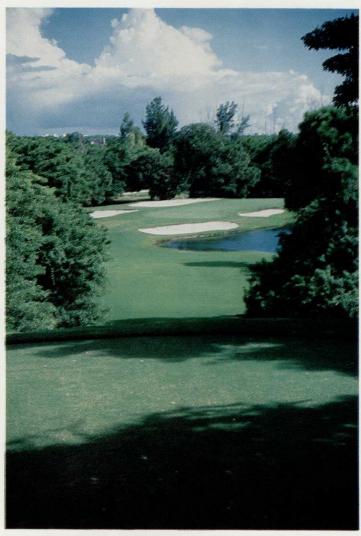
Dick's boss, and the President of Jupiter Hills Club, Mr. John "Jack" Diesel says, "If you have good people you have to pay in order to keep them." And Dick believes now that his people could not go out anywhere else and find a more liveable wage or better benefits.

What specific things will be done in preparation for the U.S. Amateur Championship? "In general it will require a lot of extra work for the crew, up to 16 hours of work per day right before and during tournament play. All golfers will go off the Hills Course, play will start at 7am on August 25th and last until almost dark. Both courses, The Village and The Hills will be used for play. The United States Golf Association, in preparation for tournament play, has requested a 6' intermediate rough cut around the fairways at  $1\frac{1}{4}$ ". The fairways will be  $\frac{5}{8}$ ", with the rough cut at 2". The greens will measure  $9\frac{1}{2}$  on the stimp meter and will be a tight  $\frac{1}{8}$ " cut.

Jupiter Hills is ranked somewhere around 41 in Golf Digest but after this tournament Dick Herr sees that ranking set at a higher position. And according to an article which *The Palm Beach Post* ran on May 26, 1987 entitled *Jupiter Hills Could Deceive In Amateur*, and I quote, "Situated on a ridge near the ocean in South Martin County, Jupiter Hills offers one of the more striking settings for a Florida golf course. The par-3 ninth hole, for example, requires a 192 yard shot that must carry over vegetation to an elevated green. A flat pitch-and-putt course, Jupiter Hills is not."

Florida courses will host 12 professional tournaments this year. In fact a major championship tournament, The PGA Championship, will be held just down the road from Jupiter Hills, at the PGA National Golf Course, where Luke Majorki is superintendent, on August 6-9, 1987.

The USGA, perhaps paid the best compliment to Jupiter Hills by not asking for any major changes to be made before the tournament. "We're sure it's going to be a good test," said P.J. Boatwright, executive director of the USGA.



Hole No. 11, Par 3, 198 yards. A beautiful sight from elevated tee to well trapped green with water along right side and back of green.

