

GRAPE RESEARCH NEWS



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BY THE NEW YORK WINE & GRAPE FOUNDATION

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A Welcome from Dr. Robert A. Plane

Director, NYS Agricultural Experiment Station, Cornell at Geneva

As Director of the New York State Agricultural Experiment Station, I am pleased to introduce the first of the grape grower newsletters. Through it, we hope to inform growers as to what is going on in grape research at Cornell. Specifically, we want to answer your questions concerning research which can benefit your vineyard. Please let us know how we can be of maximum help to New York growers.

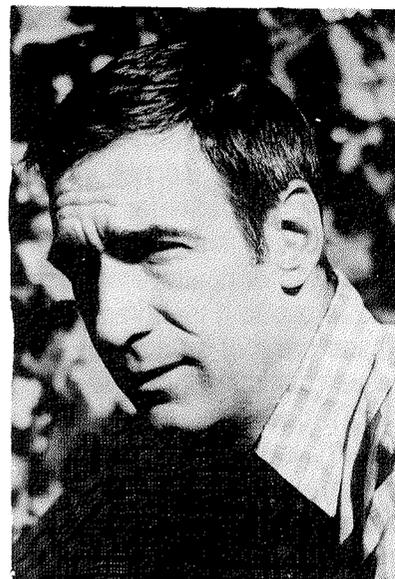
The Experiment Station at Geneva is responsible for Cornell's research programs in the production, protection, and processing of grapes. However, expertise from the Ithaca campus is utilized in the areas of engineering and economics, and this newsletter will bring together all aspects of the program. Furthermore, we are pleased to have the help of Cornell Cooperative Extension specialists in the several grape regions of the State.

Grape research at Cornell is funded from a variety of sources. First and foremost is through State appropriations to the Experiment Station. Additional funds come from the U.S. Department of Agriculture, but significant funding comes from the industry itself. These funds flow through the New York State Wine and Grape Foundation, contributed in part by your memberships.

Continuing support also comes from the New York State Grape Production Research Fund made up from processors' contributions. Recently, the Experiment Station has received an endowment from The J.M. Kaplan Fund for ongoing vineyard research. Individual grants are also received and in these newsletters such grants will be acknowledged.

These letters will be edited by Dr. Martin Goffinet, who is the Grape Extension Coordinator at Geneva.

His responsibility is the dissemination of research results. Consequently, this publication should help him serve growers. That is our aim. We need your help to make it happen.



Martin Goffinet

From the Editor

In this first issue of "Grape Research News," I will introduce you to Cornell's faculty who have major interests in grapes and tell you of the features we hope to bring to you. First, however, I should introduce myself.

Director Plane's message told you that I am the grape extension coordinator and the editor of this newsletter. I came to the New York State Agricultural Experiment Station in Geneva in 1982, after graduate training and teaching in botany. I began a research program in fruit plant structure and development, with a major emphasis on apples and grapes. Since then I have

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From the Editor

((Continued from Page One.)

cooperated with our grape researchers in investigating the problem of shoot breakage with machine shoot positioning, the seasonal patterns of shoot growth, the structural changes which relate to onset and loss of cold hardiness, grape seedling development, bud development, berry maturation, and pathological injury. If you want to know about the parts of a grapevine, just ask me.

In August of 1989, I assumed the role of Cornell's grape extension coordinator. As the coordinator it is my job to chair the Statewide Viticulture Workgroup and to see to it that grape industry needs are met by a timely flow of research information. This includes the production of educational materials which extend this information to you through a variety of media. The Workgroup meets quarterly and brings together all research and extension specialists with major interests in grapes. The Workgroup attempts to solve problems from many angles and also serves as a planning group for research and extension activities.

This newsletter has developed out of our enthusiastic obligation as researchers to provide our supporters with relevant, digestible news, announcements of upcoming events, and a forum for questions and answers about grapes. Our plan is to publish "Grape Research News" on a quarterly basis. We do not intend that this quarterly should replace the periodic newsletters sent to growers from our regional grape specialists. You will find no better place to learn of immediately useful information about grapes than in those

mailings. The two newsletters will be complementary, giving you a well-rounded picture of grape research and grape growing. Without doubt, this newsletter will evolve in content and format as time goes by.

I recently mailed out to most of you a questionnaire telling you about this newsletter and asking for your ideas on the sorts of things you would like us to put in it. All of us look forward to your ideas about how we can make this publication better attend to your needs. In future issues we will include a self-mailing "Question Box," inviting your questions about any and all aspects of grape research. I will see to it that such questions are answered by an expert by mail, telephone or in this newsletter. Direct your correspondence to me, Department of Horticultural Sciences, Hedrick Hall, New York State Agricultural Experiment Station, Geneva, NY 14456. Phone: 315-787-2392.

In this first issue Roger Pearson, our grape pathologist, will present some ideas about early season control methods for grape diseases. He is just one of many researchers at Geneva having major responsibilities in grapes. Our industry is also well served by faculty on the main Cornell campus at Ithaca. These "major players" are introduced to you in this "people" edition. I must emphasize, however, that grape research is a multidisciplinary activity which relies heavily upon the cooperation of others in several Cornell departments. These individuals may not work primarily with grapes, yet, we in mainstream grape research would fare less well without them.

Unusual Weather. How Has It Affected Bud Cold Hardiness?

By Bob Pool
and Mary Jean Weiser

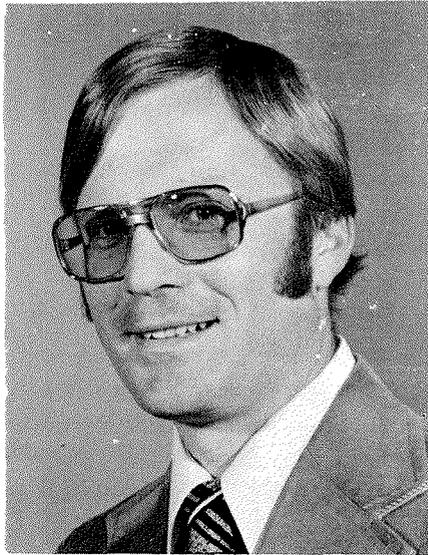
Even for New York the winter of 1989/90 has been unusual. In most locations, December, 1989, was the coldest on record and January looks like it may well be one of the warmest. Many growers are concerned about what this may mean for grape hardiness. Working with a graduate student, Dr. Tony Wolf who is now the state viticulturist for Virginia, we developed an instrumental method which accurately measures the killing temperature of buds. Under the sponsorship of the New York Wine and Grape Foundation, we have been using the technique to follow changes in grape hardiness during the winter months since the winter of 1986/87. The table shows temperatures required to kill 50% of the buds of varieties with a range in expected cold hardiness and the deviation from January values obtained in previous years. We collected these buds during the third week of January from vines growing at Geneva.

| <u>Variety</u> | <u>Killing Temp. (°F)</u> | <u>Hardiness</u> | <u>Deviation from Expected</u> |
|--------------------|---------------------------|------------------|--------------------------------|
| Concord | -16 | Hardy | -1° F |
| Aurore | -13 | Mod. Hardy | -1° F |
| Vitis riparia | -25 | Very Hardy | 0° F |
| Chardonnay | -10 | Tender | -3° F |
| Cabernet Sauvignon | -8 | Tender | -4° F |
| White Riesling | -13 | Mod. Tender | -1° F |

What does it mean? The observed killing temperatures for the more hardy varieties are not much different from those of "normal" years, but the less hardy varieties, such as Cabernet Sauvignon, have lost hardiness in response to the warm temperatures. The good news is that even following this warm weather, Cabernet Sauvignon buds should tolerate temperatures well below zero without having extensive damage.

Cornell Grape Staff Based in Geneva

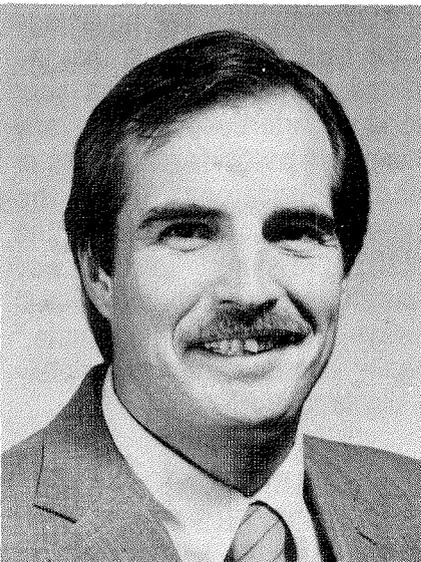
Tom Burr: Tom is a plant pathologist at the Geneva station. He has degrees in plant pathology from both the University of Arizona and the University of California, Berkeley. Since 1978 he has been housed in the station's Department of Plant Pathology where he researches diseases of fruit crops, with emphasis on bacterial diseases. Tom's grape research includes studying the biology and control of crown gall and determining factors associated with Grape Replant Disease.



48 Informative Pages

FULL-COLOR VINIFERA PUBLICATION READY FOR DISTRIBUTION

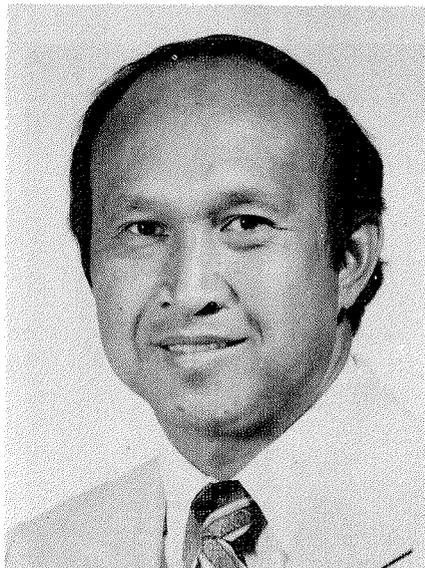
The first in a series of bulletins concerning culture of vinifera grapevines in New York was scheduled for delivery from the printer in early January. It was published by the Geneva Experiment Station under the sponsorship of the New York Wine and Grape Foundation. The bulletin reports the results of variety trials carried out by Bob Pool and cooperators across the state. Thirty-three varieties are described, and performance data is given for Long Island, the Hudson Valley, the Erie/Chautauqua area as well as for Geneva.



Tim Dennehy: Tim is in the Department of Entomology. He was trained in entomology at the University of California at Davis. Since coming to the Geneva station in 1984, Tim has been involved in biological and genetic studies of the grape phylloxera. He is also investigating grape leafhopper ecology and control, grape berry moth risk assessment and control, and other biological control strategies for vineyard pests.

Included are data for several newer cultivars from Germany which have never been grown in this country before, and data on some "minor" varieties which may be especially well suited for New York. Examples are the varieties, Siegerrebe and Cabernet franc. Siegerrebe is a German vinifera variety which was bred at the Alzey experiment station. It was produced from the cross, Madeleine Angevine X Gewürztraminer. Madeleine Angevine is a very early ripening vinifera table variety. The vine combines the spicy muscat flavor of Gewürztraminer with the earliness of its mother. At Geneva it ripens in early September and New York winemakers gave it highest marks in blind taste tests. The authors recommend that this variety be considered for trial plantings.

Dennis Gonsalves: Virus diseases are Dennis's specialty. He was trained in both horticulture and plant pathology at the University of Hawaii and in plant pathology at the University of California at Davis. From 1972-1977 he researched citrus diseases at the University of Florida. He has been at the Geneva station since 1977. He has an active research program in virus diseases of both vegetables and fruit crops. He is developing rapid methods for diagnosing virus diseases in grape rootstocks and scion cultivars.



The second example, Cabernet franc, is not a new variety, but it has not been grown much outside of its native region of Bordeaux, France. Cabernet franc is similar to its better known cousin, Cabernet Sauvignon, but appears to be much better adapted to New York growing conditions. The variety is moderately vigorous resulting in early growth cessation, reliable wood maturity, good cold hardiness and a balance between vegetative and fruit growth. Wine trials have been very satisfactory, and visitors from Bordeaux recommended expansion of its acreage.

Copies of the bulletin may be obtained from the New York Wine and Grape Foundation office (350 Elm St., Penn Yan NY 14527). The cost is \$10 plus tax.

Cornell Grape Staff Based in Geneva

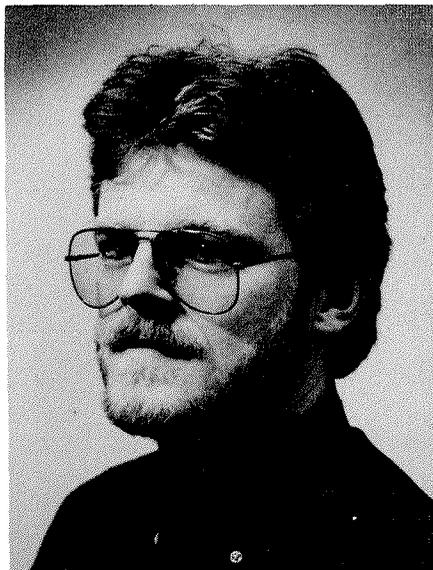
Roger Pearson: Roger is a grape pathologist in the Department of Plant Pathology. His graduate work was done in the Department of Plant Pathology at the University of California, Davis. He has been with Cornell since 1973, when he began pathology studies on apples and peaches at Cornell's Hudson Valley Laboratory. In 1977 he came to the Geneva station to begin investigations on grape fungal diseases. His special interests lie in epidemiology and control of fungal diseases, although he also has begun work on mycoplasma diseases of grapes and their insect carriers.



Alan Lakso: Alan received graduate training in plant physiology at the University of California at Davis. He came to the Geneva station to work on apple physiology and orchard management in 1973. In 1984 he assumed responsibilities for research in grape physiology in cooperation with our viticulturists. His areas of research are in vine function and fruit development as these relate to canopy microclimate and to soil and water relations.



Thomas Henick-Kling: Thomas has advanced training in fermentation microbiology at Oregon State and in microbial physiology at the University of Adelaide in Australia. While in Australia, he worked for the extension service on malo-lactic fermentation at the Australian Wine Institute. Thomas has been at the Geneva station since 1987. He has responsibilities for wine research and extension, with a major interest in wine fermentation. Thomas runs the wine analysis lab and organizes both an annual wine workshop and a biannual wine symposium.



NEW FORMAT FOR RECOMMENDATIONS 'COMPUTER FRIENDLY'

The 1990 "Pest Management Recommendations for Grapes" should be available by late winter.

The format of this publication will be changed somewhat. It will be formatted for viewing by computer. The printed version will look a little mundane because of this. The computerized version will be on CENET, the Cornell Cooperative Extension Network, and can be seen at most county co-op extension offices, or you can subscribe to CENET at reasonable subscription cost. The advantage of the dual publication is that the printed copy will serve as your working reference, while any changes in pesticide regulations or recommendations can be immediately corrected in the CENET version. In this way Cornell's recommendations will always be "up to the minute," legally correct, and immediately available to growers.

GREAT LAKES GROWERS PLAN FREDONIA MEETING

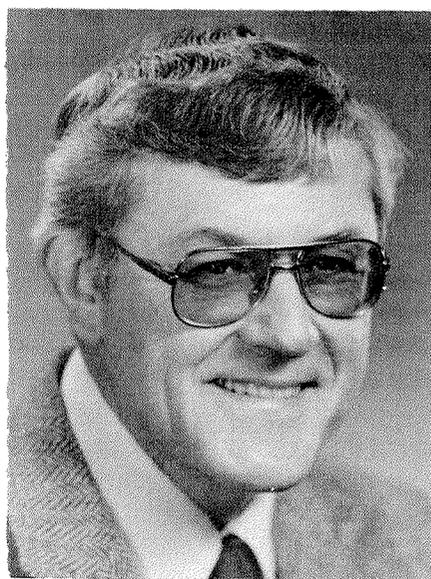
Jim Kamas, Great Lakes Regional Grape Extension Specialist, announces that this annual conference will take place on February 22, at Day's Inn, on Route 60 in Fredonia. For details call Jim at 716-672-2191.

GOOD READING

The recent Vol. 19; Number 3 issue of *NY Food & Life Sciences Quarterly* (pp31-34) carries a solid overview of the use of agricultural sprays entitled "Why We Use Pesticides," (Pimentel). A copy of the publication is available free by contacting Media Services, 1150 Comstock Hall, Cornell, Ithaca NY 14853.

Cornell Grape Staff Based in Ithaca

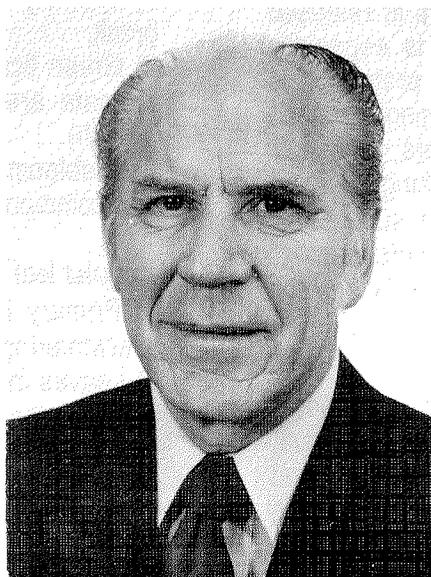
Rich Derksen: Rich arrived at Cornell in 1989. He received his graduate training in mechanical engineering at Purdue and at the University of Illinois. He is now in Cornell's Department of Agricultural and Biological Engineering, where he holds a 50% research/50% extension appointment. His specialty is chemical application technology. Rich has interests in spray efficiency and spray containment systems for grape pest management.



Wes Gunkel: Wes has been a long-time member of Cornell's Department of Agricultural and Biological Engineering. He learned about agricultural engineering at North Dakota State, Iowa State, and at Michigan State. His early work at Cornell was in chemical application technology. His recent interests include vineyard mechanization, including mechanical shoot positioning and mechanical (robotic) pruning technology.



Jerry White: Jerry was trained in agricultural economics at Virginia Polytechnical Institute and Penn State. Since 1978 he has been a member of the Department of Agricultural Economics at Cornell in Ithaca. His duties as his department's extension leader are to coordinate the department's overall extension program. His major emphasis in grapes includes farm management studies and the economics of the grape and wine industry.



Go Down in History! IDEAS SOUGHT TO NAME NUMBERED (GW9) GRAPE SELECTION

Bruce Reisch, grape breeder, is seeking your ideas on names for a grape being developed at the Geneva station. The numbered selection, GW9, will be released as a variety late this year, but it first must be named. GW9 is a Seyval x Chardonnay hybrid. It is a medium-hardy, productive vine producing an excellent white wine of good sugar/acid/pH balance. It will be named in September and should then be available from nurseries in spring 1991. Send your ideas for names to Bruce Reisch, Department of Horticultural Sciences, New York State Agricultural Experiment Station, Geneva, NY 14456.

FL GROWERS TO MEET ON KEUKA'S SHORES

This annual conference will again take place at Keuka College in Penn Yan. The date is February 10. For more information call Dave Peterson, Regional Grape Extension Specialist, County Court House in Penn Yan, phone 315-536-3381.

POPULAR WINE WORKSHOP SET FOR MID-APRIL THIS YEAR

There will be a wine workshop at the New York State Agricultural Experiment Station in Geneva on the 18th and 19th of April, 1990. For more information contact Thomas Henick-Kling, Department of Food Science and Technology, phone (315) 787-2277.

Rationale Behind Early Season Fungicide Sprays

by Roger C. Pearson

Whether you're a Concord grower or a vinifera grower, early season disease control should be a major consideration. In fact, there is increasing data to indicate that prebloom disease control is a major contributor to a disease free harvest. If diseases such as Phomopsis cane and leaf spot, powdery mildew, or black rot have been a serious problem in your vineyard, you should consider starting a spray program shortly after bud break in 1990. This approach will be especially critical if we have another wet spring, considering the amount of carry-over inoculum from 1989.

There are several reasons for proposing this control strategy. First, if susceptible tissue is protected during the period of primary inoculum availability, secondary inoculum will not be produced and will not infect susceptible tissue (including fruit) later in the season. Second, it is easier to prevent disease than it is to stop it. Third, there are fewer fungicides, due to label and processor restrictions, to fight disease after bloom. Fourth, it is harder to get good coverage of the clusters when they are hidden inside the canopy and after the berries touch within the cluster. Fifth, late season sprays add to concerns for potentially excessive residues at harvest, not to mention visible residues on table fruit.

We know all the major fungal pathogens are active in the vineyard between bud break and bloom if the weather is favorable for disease, and it usually is in New York. In fact, the fungi causing Phomopsis cane and leaf spot, powdery mildew, black rot, and angular leaf scorch are all active at bud break. The bulk of the primary inoculum for each of these fungi is released before bloom. Since immature tissue is especially susceptible to infection by these fungi, protection is needed on highly susceptible varieties beginning at bud break. Furthermore, since rainfall triggers release of spores for each of these fungi, and most fungicides are protectants, fungicides must be on the susceptible tissue before rainfall begins. Once shoots grow to approximately six inches, the downy mildew fungus can be added to the list of active pathogens.

In order for disease to develop, three components are essential: presence of the causal organism, susceptible host tissue, and favorable weather. Based on these requirements, the rationale for early season sprays to control each disease is as follows:

Phomopsis cane and leaf spot

- 1) Primary inoculum is available at bud break and spore release and infection will occur during rainfall.
- 2) Juvenile tissue is especially susceptible to infection.
- 3) Protection of the basal 6-8 internodes will reduce the amount of carry-over inoculum on retained canes in subsequent years.
- 4) The rachis is susceptible to infection from the time it is first visible (2-3 inches shoot growth) through the shatter period.
- 5) Hedged vines of highly susceptible varieties such as Concord and Delaware are especially at risk.

Powdery mildew

- 1) Primary inoculum is available at bud break and spore release will occur if it rains, although subsequent infection is not dependent on rainfall.
- 2) The first infections occur at bud break on undersides of leaves on emerging shoots.
- 3) Protection of young shoots reduces the production and spread of secondary inoculum.

Black rot

- 1) Primary inoculum is available at bud break and spore release and infection will occur during spring rains.
- 2) Juvenile tissue is most susceptible to infection, so protection needs to be applied as soon as young tissue is present.
- 3) Infected basal leaves that produce secondary spores put the clusters at risk of severe infection the remainder of the season.

Downy mildew

- 1) Primary inoculum is available shortly after bud break.
- 2) Green tissue is susceptible to infection as soon as stomata are active (approximately six inches shoot growth).
- 3) Prebloom cluster infection (yes, even in Concord) was common in 1989.

Angular leaf scorch

- 1) Primary inoculum is available and released from overwintering leaves shortly after bud break.
- 2) Leaves infected in spring provide spores for spread of disease in late summer.

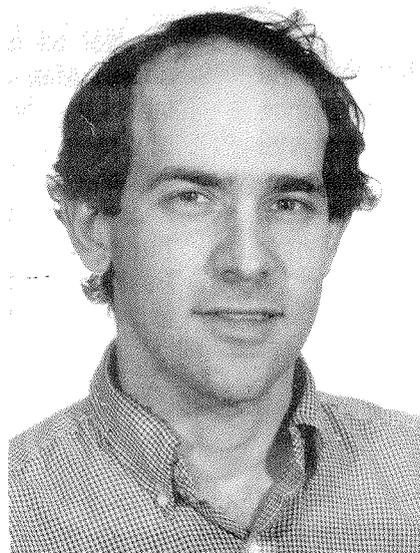
We have applied lime sulfur and copper sulfate in high volume sprays to kill the overwintering stage of

(Continued bottom of Page 7).

Cornell Grape Staff Based in Geneva

KNOW SOMEONE ELSE WHO
WOULD BENEFIT FROM
THIS NEWSLETTER?

If so, please complete and mail the
form below:



Bob Pool: Bob is well recognized as Cornell's viticulturist. He has training in enology at the University of California, Davis, where he worked as a staff research assistant. His later training was in viticulture at Cornell. He was hired as a grape breeder at the Geneva station in 1974. Since 1980 he has been the viticulturist, with major emphases on pruning systems, growth regulators and cold hardiness.

Bruce Reisch: Bruce is a New York native who received his early training in horticulture and plant breeding at Cornell University. His later training was in plant breeding and genetics at the University of Wisconsin. He came to the Geneva station in 1980. He has ongoing studies in grape breeding, genetic engineering and also runs a grape variety testing program. Currently he is developing some promising grape selections which merit our attention.

Mail to: NY Wine & Grape Foundation
350 Elm Street, Penn Yan, NY 14527

Please mail copies of future "Grape Research News" to:

Name _____
Address _____
Zip _____

Rationale Behind Early Season Fungicide Sprays

(Continued from Page 6.)

the powdery mildew fungus on the bark of dormant vines. In addition to powdery mildew control, these materials have also provided some control of Phomopsis cane and leaf spot and angular leaf scorch. In no case, however, can a dormant treatment be relied upon to provide seasonal control of all grape diseases. On Concord, for example, a dormant treatment has the potential for delaying, but not eliminating, the need to apply seasonal fungicides to control powdery mildew. On vinifera and highly susceptible hybrid varieties, eradicant treatments should be considered as a way to augment the suppression of powdery mildew by the standard protectant spray program.

The rationale behind our work on dormant sprays has been to destroy the overwintering inoculum of the powdery mildew fungus so that subsequent disease development is retarded and overall disease is reduced. However, growers can accomplish the same goal

without dormant sprays if they apply fungicides soon enough after bud break to protect new tissue before it becomes infected, and maintain fungicidal protection of susceptible tissue throughout the period of primary inoculum release, usually through bloom. Unlike the dormant sprays which have shown activity primarily against powdery mildew, this approach gives the grower the opportunity to also control Phomopsis cane and leaf spot and black rot.

Experience has shown that all vineyards, regardless of variety, should receive a broad spectrum fungicide spray just before bloom. This spray is especially crucial if no sprays were applied prior to this time.

Disease control prior to and during bloom generally reduces the need for intensive spray schedules after bloom, but it does not eliminate the need for post bloom

(Concluded on Page 8.)

Rationale Behind Early Season Fungicide Sprays

(Continued from Page 7.)

sprays. It may appear at the outset that the total number of sprays for the season will be increased when the spray program is started early. Actually, the total number of sprays may not change, since the emphasis will shift from trying to put out a "fire" (an almost impossible task without incurring some crop loss) toward prevention of it in the first place.

Not all fungicides are registered for application shortly after bud break. Please read and follow the label directions. Remember, the label is the law. Most of the information in this article is based on data collected from studies supported by the New York Wine and Grape Foundation, the Grape Production Research Fund, the Cornell IPM Program, the Northeast Pesticide Impact Assessment Program, and chemical industry grants.

Gratitude is expressed to those organizations whose support makes possible ongoing and valuable research activities for the benefit of the State's grape industry.

Major funding is provided by the
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and, the J. M. Kaplan Vineyard Research Program.

New York Wine & Grape Foundation
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