UNIVERSITY OF KENTUCKY
COLLEGE OF AGRICULTURE
Lexington, Kentucky 40546-0091

COOPERATIVE EXTENSION SERVICE

KENTUCKY PEST NEWS

ENTOMOLOGY • PLANT PATHOLOGY •AGRONOMY

On line at - http://www.uky.edu/Agriculture/kpn/kpnhome.htm

Number 871 February 7, 2000

ANNOUNCEMENT

NEW ENTFACT PUBLICATIONS
by Ric Bessin

Several new Entfact publications are available. They can be found on the UK Entomology web page. They are in both HTML and PDF format for use at county extension offices. These were issued during the summer and fall of 1999.

Entfact 127 Alfalfa weevil field sampling program
Entfact 128 Bt-corn refuges
Entfact 129 Lesser cornstalk borer
Entfact 130 Bt Corn: What it Is and How it Works
Entfact 216 Leafrollers
Entfact 218 Apple Bagging: Alternative Pest Management for Hobbyists
Entfact 315 Cabbage Webworm
Entfact 441 Insecticides for Control of White Grubs in Turf Grass
Entfact 442 Velvet Ants
Entfact 507 Lesser Mealworms and Litter Beetles
Entfact 508 Walk Through Fly Trap for Pastured Cattle
Entfact 509 Horn Flies and Cattle
Entfact 510 Face Flies and Pinkeye
Entfact 511 Horse Flies and Deer Flies
Entfact 642 Do-it-yourslef Termite Baits: Do They Work?
Entfact 643 Limitation of Home Insect Foggers ("Bug Bombs")
Entfact 644 Consumer Update: Termite baits
Entfact 645 Millipedes
Entfact 646 House Dust Mite

WHEAT

CHANGED WHEAT FOLIAR FUNGICIDE PICTURE FOR 2000 SEASON
by Don Hershman

In most years in Kentucky, a well-timed application of a foliar fungicide will result in a favorable economic outcome for a crop with an excellent yield potential. Situations where fungicides will not provide for increased profits are during extremely dry years (like 1999), when fungicide applications are poorly timed, when pests not controlled by fungicides heavily impact crop yield or when fungicides are applied to crops with a low to moderate yield potential. This latter situation is especially problematic when crop prices are low.

Tilt fungicide has been the product of choice for most farmers since it was first labeled in the late 1980's. However, the practical value of the fungicide was limited because of a label restriction which

stated that the material had to be applied prior to crop flag leaf emergence. Years of local research have shown that the most effective foliar treatments are usually made during head emergence, and this use was specifically disallowed on the Tilt federal label. This situation was addressed in 1998 and 1999 with a state 24C label which provided for application up to crop flowering. Also in 1999, but after the Tilt 24C label was granted, Quadris received a federal label which allowed application up to crop flowering. Thus, in 1999, two excellent products were available to farmers for use in fighting certain foliar and head diseases of wheat. However, because the cost of Quadris was significantly greater than that of Tilt, very little Quadris was used in 1999.

For the spring of 2000, a new picture has developed. In Kentucky, 24C labels are granted annually. Thus, the Tilt 24C label which was granted in 1999 will expire on March 13, 1999. And, because Quadris has a full label and has filled the need on which the Tilt 24C label was based (i.e., later application), it **will not** be renewed.

I hear some folks saying so what? Well, in a nutshell, Quadris at the highest and most effective use rate (10.8 fl. oz./A) is almost $17.50 more than the cost of an application of Tilt. Even the lowest labeled rate (6.2 fl. oz./A) costs $5/A more than Tilt. And most experimental evidence suggests that use rates in the upper end are required to control powdery mildew, tan spot and Stagonospora nodorum leaf blotch. The low rate is probably adequate for leaf rust control and, perhaps, glume blotch. Data are very limited on mid-range use rates of Quadris, so use them at your own risk.

The upshot of this whole situation is that in order for producers to use fungicides when they are most needed (head emergence and beyond in most years), and in order for them to stay in compliance with the label, they will be compelled to use Quadris. But because use rates and associated costs are so great, that treatment will probably difficult to justify, economically, at high use rates. Lower rates may help with the per acre cost, but disease control may suffer. To deal with the above situation, some producers may be tempted to apply Tilt later than is allowed by the label. Although the underlying rationale for making a "late" application of Tilt may seem logical to some producers, applying Tilt after flag leaf emergence is off-label and would clearly constitute an illegal activity.

APHIDS ON WHEAT IN THE COLD
by Doug Johnson

We have finally had some winter weather. In anticipation of the coming warm up, I have received several calls concerning the effect of this weather on aphids. As far as winter weather is concerned, it is good news. Whether or not it is, all good news is dependent upon what you did when the weather was warm.

First a review. Remember, back before the cold weather we had a relatively mild winter which was preceded with a warm fall. You know, of course, that warm fall and winter weather is not good for aphid BYDV management. However, preceding the fall and winter we had a summer with a severe drought. Although bad for crops, drought is also quite bad for aphids. In most cases, aphids were very late in arriving in crops. With that said, what do we do when the weather warms up?

Certainly the cold winter weather of late has much reduced any aphid movement, reproduction, and spread. Additionally, we should expect that a large proportion of the aphid population was killed. We can expect that aphid populations might be very much reduced but do not expect them to be gone all together. When deciding whether or not to make a late winter spray, you will need to know if aphids are present. There is no substitute for going out to look. If populations do not exceed the threshold (10 per row foot), then do not spray. If they exceed the threshold, then an application is indicated.

You should understand that whether or not you make this late winter application, the results you see may well be decided by what happened in the fall. For example, if you go out in late winter and do not find aphids and do not spray, you may still have BYD. This will have nothing to do with your decision not to spray in late winter. This is because the aphids could have been present in the fall and early winter and then disappeared because of the cold late winter. BYDV was spread while the aphids were present but you will not see the symptoms until much later in the spring.

The same thing may happen if you do find aphids and decide to spray. Although you may have reduced any chance of late winter / spring spread of BYDV, you will have done nothing about the earlier spread. It is very unlikely that you will find aphids in the late winter if they were not present in the late fall and early winter.

As you evaluate your pesticide management decision this spring, make sure you understand all of the conditions that could have caused the result you see.

FORAGE CROPS

DISEASE CONSIDERATIONS RELATING TO SPRING PLANTING OF ALFALFA
by Paul Vincelli

While alfalfa can be planted during either spring or late summer in Kentucky, each of these seeding windows poses significant risks from disease.

During springtime, seedling diseases favored by wet soils pose a particular threat. Many of the soils where alfalfa is grown have a somewhat heavy texture and soil horizons that impede internal drainage. Couple these soil characteristics with several days of rainfall–as often occurs during springtime in Kentucky--and new seedings can be at risk from attack by microbes that thrive in wet soils and stunt or kill the young plants.

Three types of fungal-like organisms are of concern. *Pythium* microbes that cause damping off are present in just about every agricultural soil. *Phytophthora medicaginis*, the cause of Phytophthora root rot, is present in about 10% or so of Kentucky alfalfa soils. While the odds are that any given field won't harbor this microbe, it is very destructive to seedlings and mature stands where it occurs. Finally, *Aphanomyces euteiches*, the cause of Aphanomyces root rot, is present in about two-thirds of Kentucky soils (including many that haven't had alfalfa for decades). This disease has been a common cause of stand establishment failures during wet springs in years past.

Fortunately, all of these vicious-sounding diseases can be controlled: ***use seed of alfalfa varieties resistant to Aphanomyces root rot and treat with metalaxyl or mefanoxam (Apron 50W and Apron XL).*** Although even an LR or MR rating (low resistance and moderate resistance, respectively) will provide some protection against Aphanomyces root rot, varieties with R or HR ratings (resistance and high resistance, respectively) provide the most consistent protection.

This simple rule of thumb also protects against *Pythium* and *Phytophthora*. All alfalfa varieties with R or HR ratings to Aphanomyces root rot also have adequate levels of resistance to Phytophthora root rot. The seed treatment protects against early infections by these microbes, and a few weeks after germination, the plants naturally develop their own resistance to *Pythium* and *Phytophthora*.

The alternative time to plant–from late summer into early fall–poses a different disease risk. Sclerotinia crown and stem rot can cause very severe stand loss in fall-seeded stands. In contrast to spring-seeded stands, fall-seeded stands haven't had time to develop adequate resistance by the time infectious spores are produced in late October and November.

Unfortunately, in spite of a substantial and ongoing research effort, we have no solid program yet for controlling *Sclerotinia* in alfalfa. Seeding early (mid-August) can reduce the risk, as can avoiding no-till seedings in any field where forage legumes have been produced in the last 5-10 years. However, I stress the word "reduce"–these practices can reduce the risk somewhat but the disease still can be very destructive in spite of these efforts. Certain alfalfa varieties like Interceptor, WL-332SR and Cimarron VR are marketed as having some resistance to the disease, and there have been some field studies conducted in other states to confirm this. However, our field tests in Kentucky have shown that these varieties do not have adequate resistance to prevent very damaging outbreaks if disease pressure is high.
We continue to do work at UK on Sclerotinia crown and stem rot, but for now, springtime appears to be a better time to seed alfalfa from the standpoint of disease management.

INSECTS AND SPRING-SEEDED ALFALFA
By Lee Townsend

Potentially, potato leafhoppers are a serious pest of spring- seeded alfalfa. The delayed cutting allows plenty of time for potato leafhoppers to build up in the field and injure the crop during the vulnerable establishment stage.

New stands should be sampled weekly beginning in mid- to late April, and treated with an insecticide if the economic threshold is reached. It is not uncommon to find very high populations of leafhoppers in spring seedings. Left uncontrolled, they may cause stunting and sometimes death of young plants.

A 15"-diameter sweep net is the only way to sample

for this insect reliably. The chances for damaging numbers is high, so the time spent checking for these small green insects is a good investment. Alfalfa weevils should pose no threat to these fields.

FRUIT CROPS

WINTER CULTURAL PRACTICES TO CONTROL TREE FRUIT DISEASES
by John Hartman

Fruit growers are aware that apple and stone fruit diseases are a threat to orchard productivity and fruit quality. Winter should be a busy time for fruit growers to manage diseases. Many cultural practices can be applied this winter to reduce disease in the crop next summer.

Apple and stone fruit cultural practices can reduce diseases such as apple and peach scab, stone fruit and apple, fruit rots, apple and stone fruit canker, apple and stone fruit powdery mildews, plum black knot, apple and stone fruit collar rots, apple fire blight, and cedar-apple rust. The following are cultural practices beneficial for reducing tree fruit diseases:

- Sanitation - prune out last year's infections, cankers, and any dead wood in the winter. Cut branches must be removed from the apple planting and destroyed.
- Remove nearby landscape or forest trees or tree branches which shade the fruit trees.
- Thin tree branches during the dormant pruning operation.
- Remove prunings from the area and destroy them.
- Remove and destroy mummies (shriveled fruits from last year) from the tree and from the ground.
- Rake up and destroy all fallen leaves from the previous season or chop fallen leaves into tiny pieces with a power mower in winter.
- Plant apple scab resistant trees.
- Select apple fire blight disease-tolerant varieties and rootstocks.
- For apple fire blight, remove and destroy any abandoned and unsprayed apple or pear trees near the orchard.
- Remove and destroy susceptible cedars and junipers if possible.
- Remove and destroy galls on susceptible cedars and junipers.
- If there are no cedars or junipers within 200 yards of the apples, rust disease are not likely to be a serious problem.
- Provide good soil drainage. Underground tiling will help improve internal drainage of heavy soils.
- Avoid collar rot-susceptible apple rootstocks such as MM106. Use only disease-free nursery stock when planting a new block of trees.
- Soil contaminated with the collar rot fungus should not be moved about.
- Remove and destroy weeds, undergrowth and brush from near the orchard; these plants may harbor pathogenic microbes.

For more specific information concerning diseases and control recommendations, please consult the current U.K. College of Agriculture Commercial Tree Fruit Spray Guide (ID-92) or the Midwest Tree Fruit Handbook (ID-93). More detailed information about symptoms, causal organisms, disease cycles and epidemiology, and control of tree fruit diseases can be found in the *Compendium of Apple and Pear Diseases* and the *Compendium of Stone Fruit Diseases*. These books are available from The American Phytopathological Society, 3340 Pilot Knob Road, St. Paul, MN 55121 (1-800-328-7560).

VEGETABLES

DISEASE MANAGEMENT STRATEGIES FOR TOBACCO GROWERS TURNED VEGETABLE GROWERS
by William Nesmith

Major change is occurring in Kentucky's agriculture driven by the 70% reduction in tobacco production during the past three years. Some growers are considering vegetable production as one alternative option. It will be important that growers appreciate the differences and similarities in disease control between tobacco and vegetables, and react accordingly. Also, be aware the crops may share diseases, a point that will often be missed or inadequately appreciated by advisors from outside the state.

Modern commercial vegetable production demands that techniques be deployed that will provide the desired market standards of quality, timeliness of product, and acceptable yields. Meeting such demands will require major adjustments in mind-set and practices by tobacco growers. Unfortunately, some of these approaches are not always disease-neutral for either tobacco or the vegetables. Some required production steps may favor development of certain diseases. Yet, diseases can seriously affect the economic success of a

commercial vegetable operation by negatively impacting all three of the above objectives. Be especially aware of the disease connection when using vegetable crops related botanically to tobacco, such as eggplant, peppers, tomatoes, and potatoes. Nematode management and virus disease controls will require more attention.

Managing commercial vegetables successfully will require careful decision making and execution of plans to minimize losses from infectious diseases. The strategic plan should focus on disease prevention and slowing disease development rather than curing diseased plants. Adequate tools and techniques are not available to cure plants of infectious diseases - very different from human and animal medicine. However, there are many more pesticide tools available to vegetable producers than to tobacco producers, but a quality sprayer will be essential to effective disease control. Many tobacco growers are missing this essential piece of equipment.

The best disease-prevention strategies will integrate cultural and chemical practices in a way that: keeps the pathogen populations low; slows spread and disease development; improves the plant's resistance or tolerance to diseases where possible; and reduces disease-favorable environments. Avoiding severe epidemics and early outbreaks must be given priority, because these usually cause the greatest economic impact.

Chemicals should be viewed as only one part—albeit a very important part—of a total disease-prevention program in modern production systems. A carefully managed vegetable operation combines cultural practices and selected chemical treatments to obtain prevention and achieve acceptable disease control. For those planning to not use chemical controls, it is important to appreciate that diseases can be managed with cultural approaches if adequate inputs are used and acceptable levels of control are lower.

Delaying the onset of disease is a key principle in disease management. Stopping epidemics early in the season is especially important because once infectious diseases are well established and developing rapidly under conducive weather conditions, many are nearly impossible to control. This is particularly true with bacterial diseases; antibiotics are not available to control bacterial diseases of plants as they are for bacterial diseases of humans and animals.

Consider these cultural practices and principles of disease control when developing management options in your commercial vegetable operation:

1. Resistance—Many vegetable varieties are resistant to specific plant diseases. Use them whenever possible; however, recognize that resistant varieties may not have all the other horticultural qualities of the best susceptible varieties. Remember also that reducing pesticide use or residue may have environmental and social value and may have significant market appeal. At the same time, no variety is available to all diseases, so a spray program or other control inputs will usually be needed.

2. Exclusion or Avoidance—A sure road to failure with vegetables is to start the crop with infected transplants or infested seed. Avoiding the introduction of plant pathogens into the crop and field is an essential step, yet many fail at this initial point. Growers often buy pathogens with their seed or transplants! Kentucky laws do not protect you against this, and even if legal steps were available they would not totally protect. The best approach from a disease-control standpoint is 1) to produce your own transplants using certified, disease-free seeds, 2) treat the seed to minimize escapes, and 3) grow transplants in small units in environments that prevent infection. The modern mass-market approaches to transplant production greatly increase the chances of a few infected / infested seeds contaminating a large production area. Do not transport soil or tools from diseased areas to disease-free areas. To avoid certain virus problems, do not grow vegetable transplants in greenhouses with ornamental plants. Rotate crops to disease-free fields to avoid planting into fields with high levels of pathogens. The use of barrier or border crops is also an important employment of this principle with many vegetable diseases.

   The principle of exclusion or avoidance is an important one for the float system of transplant production, widely used in tobacco production. Though it may offer certain production advantages, it also provides an ideal environment for many diseases to develop. Without off-label use of fungicides, the tobacco transplant industry could not have produced adequate transplants with this system. Understand that the tools to control diseases in float beds are not currently available. For these

reasons, Extension specialists from the Horticulture and Plant Pathology departments do not recommend the float system for vegetable transplant production. Expect society to react very differently when growers use chemicals off-label on a food crop.

3. Eradication—This principle involves destroying the pathogens in place but does not necessarily mean total destruction of the pathogen. Here, eradication measures are designed to reduce the pathogen populations to a point low enough that a crop can be economically produced. With diseases, such methods usually involve killing the pathogen during its survival phase (between disease events) and very early in the epidemic. This is accomplished through seed treatment or crop rotation long enough to starve out the pathogen or by preplant fumigation. Contrary to many growers' hopes, most foliar-applied fungicides used in vegetables have little eradication action, i.e., they cannot kill or burn out the infection. Those few that do must be used early in the epidemic for best results. However, development of pathogen strains resistant to eradicative fungicides is an ongoing risk with the curative fungicides. Removing badly diseased plants from a field and control of weedy host plants help prevent spread of disease to healthy plants. Chemical baths or hot-water treatments are used to eradicate pathogens from seed before planting.

4. Sanitation—Removal of old plant parts, weeds, and trash is important in discouraging pathogens from growing and the disease from spreading. Prevention of volunteers and prompt destruction of earlier plantings where subsequent plantings are planned involve this principle. Tools and equipment should be disinfested and free of pathogens. Establish and maintain a high state of sanitation in your vegetable operation.

5. Protection—This principle involves the use of chemical or physical barriers on or around the plant to prevent the pathogens from establishing in the plant. Fungicides are effective in prevention and control of disease only when they are present on the plants. They control the disease mainly by slowing the rate of new infections. Most disease organisms reproduce very fast—compared to other pests—so large numbers of additional pathogens occur within days or weeks of an infection. Fungicides are subject to weathering and therefore must be applied early in the disease cycle and reapplied at regular intervals during pathogen activity to keep plants adequately covered due to new growth and weathering of the pesticides. Waiting until large amounts of disease have developed seldom gives economic control and discontinued applications often results in even more disease than if no sprays were applied. Once the disease is active, delaying applications, increasing intervals, or stopping applications should be based on environmental conditions that prevent infection or spore production. Several predictive models are being developed for commercial vegetables (such as the TOMCAST system for tomatoes) that use techniques of monitoring leaf wetness and temperature to decide when to start and stop sprays.

   Changes in attitude will be needed with pesticide applications! Tobacco growers turned vegetable growers need to realize that the produce they are treating is not "blended" and "age" as with tobacco. Mistakes in chemical application mean someone will soon be eating your particular mistakes! Chemicals should be applied only in the prescribed manner as recommended by the manufacturer. This is the law. Read the label carefully and follow directions. Note the number of days required between the harvest date and the last fungicide application, and be sure that the crop being sprayed is listed on the label. When chemical formulations differ from those listed, adjust rates up or down as needed. However, the formulation in question must be labeled for the specific crop and site in question. For example, just because the material is labeled for field use on tomatoes does not mean it can be legally or safely used in the greenhouse.

6. Insect and Weed Control—Certain diseases are spread by insects and survive in weeds or insects. Where this relationship between a plant pathogen and weeds or insects exists, timely weed or insect pest control is of utmost importance. Two classic examples are bacterial wilt of cucurbits related to cucumber beetle control and mosaic virus of corn and Johnsongrass control.

PESTICIDE NEWS AND VIEWS

FINDING PESTICIDE LABELS ON THE WEB
by Ric Bessin

Here's a partial listing of chemical manufacturers that provide their pesticide labels over the web. All of the labels at these sites are retrievable as pdf documents.

AgrEvo http://www.us.agrevo.com/

Am.Cyanamid: http://www.cyanamid.com/

Aventis CropScience:
http://www.cropscience.aventis.com/crop/

BASF: http://www.basf.com/search/index.html

Bayer: http://uscrop.bayer.com/prod_crop.html

Dow AgroSciences:
http://www.dowagro.com/coastal/home.asp
DuPont:
http://www.dupont.com/cgi-bin/ag/prodsearch/start.cgi

Elf Atochem:
http://www.elf-atochem.com/newelf/searchframe.cfm?page=/newelf/prodright2.cfm

FMC: http://ag.fmc.com/ag/product/

Gowan: http://www.gowanco.com/products.htm

Monsanto:
http://www.monsanto.com/ag/_asp/monsanto.asp

Novartis:
http://www.cp.us.novartis.com/msds_general_frame.html

Rhom and Haas:
http://www.rohmhaas.com/businesses/AgChem/AgProd.html

UAP: http://www.uap.com/crop-frames.html

Valent:
http://www.valent.com/AgProducts/agprods.html

Zeneca:
http://www.zenecaagproducts.com/lblsmsds/index.asp?nav=lblsmsds

TECHNICAL BRIEFINGS SET FOR ORTHENE, DISYSTON, MONITOR

EPA has announced plans for technical briefings on three organophosphate pesticides: acephate, disulfoton, and methamidophos. The briefings for these chemicals will be held on February 3, 2000 at the Radisson Hotel, 901 North Fairfax St., Alexandria, VA (telephone: 703-683-6000). The briefing for disulfoton is scheduled from 9:30 a.m. to 11:30 a.m. The acephate and disulfoton briefings will occur concurrently from 1:00 p.m. to 3:00 p.m. This briefing will provide an opportunity for the public to learn about the data, information, and methods that OPP used in revising these risk assessments. USDA will participate in the briefing to provide ideas on risk management and transition.

The notice announcing these briefings was published on January 20, 2000 (Federal Register Volume 65, No. 13, Pages 3231-3232) and is available on EPA's web site (http://www.epa.gov/fedrgstr/). A brief summary of the revised risk assessment for each of these chemicals is available on the EPA web site (http://www.epa.gov/pesticides/op/).

The Agency will issue a Federal Register notice to provide an opportunity for public viewing of the acephate, disulfoton, and methamidophos revised risk assessments and related documents and to provide an opportunity for a 60-day public participation period during which the public may submit risk management and mitigation ideas, and recommendations and proposals for transition.

For more information, contact Karen Angulo at 703-308-8004 or angulo.karen@epa.gov via email.