TOM-CAST for Fresh Market Tomato Production in Northern NJ

Win Cowgill, Agricultural Agent and Martha Maletta, Research Assistant, Rutgers Cooperative Extension of Hunterdon County

The TOMCAST tomato disease forecasting system for tomatoes is now available from SkyBit™ Inc., the subscription E-Weather service (see accompanying article). It’s time for a reminder about this potentially valuable tomato production tool.

What is TOM-CAST?

TOM-CAST is a weather-based fungicide spray program for tomatoes. After nine years of research at the Rutgers Snyder Farm and numerous demonstrations at grower locations throughout northern New Jersey, Tom-Cast was ready for commercial use on fresh market tomatoes in northern New Jersey. TOM-CAST is available for fresh market tomato growers in northern New Jersey to use as an aid for scheduling fungicide applications for early blight and fruit anthracnose control. It is an add-on product to the regular SkyBit™ forecasting system for farmers, delivered daily to your fax machine or e-mail account.

How Does TOM-CAST Work?

The TOM-CAST forecasts for early blight and anthracnose control are based on the daily number of hours of leaf wetness and the average temperature during leaf wetness. This weather information and daily disease severity values (DSV’s) determined from it are available by subscription to SkyBit, Inc. Accumulating DSV’s are used by growers to determine timing of initial and subsequent fungicide applications.

Why Use TOM-CAST?

TOM-CAST enables growers to apply fungicide when conditions are right for disease development rather than by the calendar. Research at the Snyder Research and Extension Farm showed that disease can be controlled using TOM-CAST, usually with a reduced spray schedule. This means savings in time and materials as well as reduced chemical inputs to the crop and environment. For the six years of Rutgers research trials, a conservative TOM-CAST schedule (15 DSV) reduced fungicide applications by an average 65% without adversely affecting marketable yields.

To obtain a complete packet of information on how to use TOM-CAST, contact Martha Maletta at Rutgers Cooperative Extension of Hunterdon County <maletta@aesop.rutgers.edu>, 908-788-1339.
SkyBit™E-Weather Service for NJ Growers
Winfred P. Cowgill, Jr., Agricultural Agent and Martha Maletta, Research Assistant, Rutgers Cooperative Extension of Hunterdon County

Many of you have heard us at Rutgers refer to the SkyBit™ weather service. We utilize it in our Rutgers IPM weather-based programs and on many of our research farms to assist in making spraying decisions. We have found it to be an invaluable service that we use on a daily basis in planning our agricultural activities.

SkyBit™ E-Weather is particularly valuable in predicting wind speed and the time wind events will occur. This is extremely important to us at the Rutgers Snyder Farm in Hunterdon County, NJ, where we have constant westerly winds and many times have a very small window of time to make a research treatment or maintenance application. We also find it to be accurate with temperature predictions. Other data provided includes a 0-48 hour forecast, a 1-7 day forecast and the past 7 day’s summary. Data includes temperature, precipitation, wind speed, cloud cover, drying time, spraying forecast, soil temperature and more.

The best part is that this service is delivered to either your fax machine or E-Mail box every morning. Frost alerts are also generated when they occur.

What is E-Weather?

E-Weather is an electronic weather service from SkyBit™ that delivers (with subscription) site-specific weather information via fax or e-mail on a daily basis. E-Weather Service offers a variety of products in an easy-to-read tabular or graphical form. The E-Weather Service subscription is divided into Tiers, depending on the complexity of the product. Tier 1 includes the basic weather data forecast and observations and frost alert. Tier 2 includes weather-dependent data specialty products for decision making in commodities, such as an IPM Disease, IPM Insect modules and TOMCAST Tomato Disease forecasting. For example, the Apple Disease Product uses individual pest models to simulate and predict several parameters for a potential disease threat. These include Accumulated Wetness (AW) and Temperature (TW) of the potential threat. Also provided is a “pest window” (PW), which represents conditions associated with a particular disease development, including Apple Scab, Fireblight or Sooty Blotch.

What do you need to do to get started?

Go to the website at http://www.skybit.com and get the subscription information forms. First, fill out the “E-Weather Service Application Form.” This form provides SkyBit with subscription and billing information.

The second form is the “E-Weather Service Site Identification Form.” On this form enter state, county, location, geographic address, elevation, time zone, start and end dates for each site.

The third form to fill out is the “E-Weather Service Product Delivery and Price Form.”

You may also call SkyBit at Tel: 800-454-2266 or Email: eweather@skybit.com

Costs

In my opinion, the price is very reasonable and cost effective. The cost of products varies with the selection of the number of sites and products you wish to add, but the basic is $50.00/month for as many months as needed, i.e. you don’t need to subscribe for a full year. The basic service includes your choice of one Tier 1 product, and frost alert. Additional Tier 1 products are $5 each and Tier two products are $10 each per month.

For more details on pricing see the SkyBit website.

Tom-Cast from Page 1

SkyBit™ can be reached directly at their website at http://www.skybit.com/ or by telephone at 1-800-454-2266.

Note: See accompanying article for more information on the basic weather forecasting products from SkyBit™ Inc.

Make sure to ask for the TomCast product for New Jersey when ordering from SkyBit™.

Diseases from Page 4

✔ Parsley: Apply mefenoxam (Ridomil Gold or Ultra Flourish) shortly after seeding or just prior to emergence to prevent damping-off.

✔ Peas: Rotate to allow 4-5 years between pea plantings to reduce the severity of root rot. Apply Ridomil Gold 4E as a broadcast soil surface application following seeding for control of damping-off and root rot.

✔ Pepper: Select fields that are well drained or improve drainage in fields by establishing waterways or drainage ditches prior to transplanting this spring to reduce conditions favorable for the development of Phytophthora blight. Produce the crop on raised bed culture. Be sure to provide cross drainage ditches, and grade off the ends of the fields to allow excess water to leave the field during rain events.

✔ Potato, white: Use a seed piece fungicide treatment that contains mancozeb to protect against seed borne late blight infections. In fields where Rhizoctonia stem rot is anticipated, apply Tops MZ or MonCoat MZ as a seed piece treatment, or apply Quadris or Moncut 70DF as an in-furrow spray at planting. Moncut 70DF received a label for use on potatoes in January 2003; therefore, it is not present in the 2003 Commercial Vegetable Production Recommendations. Moncut 70DF is to be applied at 0.71 lb – 1.1 lb/A (0.79 oz – 1.18 oz/1,000 lin. ft. in fields on 3-ft centers). Apply a soil fumigant (Vapam or Telone C35) to fields with a history of early dying or a high population of lesion nematode and where ‘Superior’ potatoes will be grown to reduce damping-off.
Grape Tomato Time
Bill Sciarappa, Ph.D., Monmouth County Agricultural Agent

Grape tomato production in 2001 increased by almost 150% in volume and 133% in dollar sales. This tomato market segment is the fastest growing niche having a potentially high profit margin when retail prices range from $2.00 - 3.00 per clamshell pint. The Santa Hybrid F1 is the primary variety used and seeds are available at some home gardener based companies like Thompson and Morgan. This vigorous and indeterminate growth tomato variety presents a problem in cultural approaches and in labor costs. Last season’s study comparing five different cultural methods may help a vegetable grower decide if this crop is right for their particular farming operation.

Santa Hybrid F1 seeds were sown in the greenhouse on April 18, 2002, in 48-cell trays containing a peat-vermiculite media. The plants were maintained in the greenhouse until one week before transplanting when they were placed in a protected outside area for hardening off. Plasticulture beds on 6’ centers were prepared with drip irrigation placed down the center. The transplants were hand-planted in single rows spaced 30’ apart between plants. The five cultural methods were:
1. 4’ tomato cage
2. 4’ trellis with wooden stakes and Florida basketweave system
3. 5’ tomato cage constructed of rebar with a 30’ diameter
4. 8’ stakes with plants strung every 2’
5. Sprawl

Four replications of each cultural method were randomized throughout the test. Five harvest teams composed of two people each rotated through each culture and was timed as to harvest completion. There were four harvests timed in total – August 14, August 30, September 11 and September 19. The four harvests showed very little difference among harvest periods. The average yield per plant ranged from 8 - 9 pounds for these four harvest periods. The tall 8’ stake was significantly larger in total yield and shorter in amount of time required to harvest one pound of fruit, approximately 30 seconds. (See graphs 1 and 2.) The tall stake system also had the highest percent marketability. The 4’ conventional cage, the trellis and the 5’ hand-made columnar cage cultures were intermediate and similar in both total yield per plant and time to harvest. The sprawl method had the lowest yield, the longest time to harvest and the highest percentage of unmarketable fruit.

The grower will need to look at his labor situation to see if saving 5 to 15 seconds per pound of harvested grape tomato is important to the bottom-line. The low trellis and the sprawl method also had a disadvantage of tiring harvesters more quickly with more bending over compared to the two cage types and 6’ stake (an 8’ piece driven 2’ into the ground).

The advantages of the 8’ tall wooden stake in terms of total yield may be explained by having more vegetative growth, less crowding and shading, more sunlight intercept and more fruiting sites. The advantage in terms of quicker harvest times per pound of grape tomato may be explained by easier access to the harvester in the mid and upper reach ranges and less fruit in the lower, more time consuming harvest areas. The fruit sizes of all cultural methods were similar and similar in taste quality. The primary disadvantage of the tall stake is that it is difficult to pound the stake in easily without a small ladder or tall worker. Whatever the method chosen from these side-by-side studies, it is clear that the grower should avoid the “standard” sprawl method for grape tomato production.

Harvest Efficiency – seconds/lb.

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Total Harvest Wt. - Grams/8 plants

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Vegetable Crops Diseases
Stephen A. Johnston, Ph.D., Specialist in Plant Pathology

✔ Asparagus: Bury previous crop debris by mowing fernstalks and shallowly incorporating into the soil to remove overwintered inoculum of purple spot. For new plantings, be sure to use disease-free crowns, and plant into a field without a history of asparagus production for at least 8 years to reduce the severity of Fusarium Root & Crown Rot.

✔ Beet: Apply Ridomil Gold 4E as a soil surface application after seeding for control of damping-off. Observe fields for the presence of leaf spots. Once observed, alternate Quadris or Cabrio with a copper fungicide every 7-10 days for control.

✔ Carrot: Collect soil samples from fields to be seeded, and submit to the Plant Diagnostic Laboratory for detection of root-knot nematodes. If present, treat field with a soil fumigant (Vapam HL or Telone II) for control. Allow 2-3 weeks between treatment and seeding.

✔ Cole crops: Use the hot water seed treatment to prevent black rot if the seed company has not previously treated the seed. After seeding in the greenhouse, drench beds or flats with Terraclor for prevention of damping-off caused by Rhizoctonia. Improve the air circulation in the greenhouses used for transplant production, and apply Aliente alternated with maneb every 7 days as a foliar spray to reduce the likelihood of developing downy mildew. After seeding in the field, apply a soil surface application of Ridomil Gold 4E + Quadris 2.1F in a band over the row for control of damping-off.

✔ Corn, sweet: The Stewart’s bacterial wilt index for the 2003 season has been generated by adding the average monthly temperatures for December, January and February (see map on this page). If the total is less than 90, the disease is not expected to be serious in 2003. From Trenton northward the index is less than 90. If the sum is between 90 and 100, the disease is expected to be of moderate severity. From Trenton south to just north of Cape May the index is between 90 and 100. If the sum is greater than 100, then the disease is expected to be severe and destructive. In the southern portion of Cape May County and the coastal portion of Atlantic County the index is greater than 100. For areas where bacterial wilt is anticipated apply Counter 20CR in furrow or banded at seeding.

✔ Cucumber: Damping-off due to Pythium is present in some greenhouses at this time. Infected seedlings fall over and die shortly after emergence. Be sure that flats are not directly placed on soil in the greenhouse and do not have areas of high soil moisture present within the greenhouse to reduce conditions favorable for disease development. Following transplanting or seeding in the field, apply mefenoxam (Ridomil Gold or Ultra Flourish) in a 7-in. band over the row to prevent damping-off. The Cucurbit Downy Mildew forecasts for 2003 have begun and are available twice a week (usually Tuesday & Thursday) at http://www.ces.ncsu.edu/depts/pp/cucurbit/form/form.htm. Downy mildew is currently widespread in several counties in southern Florida. The disease will gradually progress up the coast and usually arrives in New Jersey in late July to early August. Follow the forecast system to determine when to make initial fungicide applications in advance of the disease’s arrival in New Jersey.

✔ Eggplant: Rotate away from eggplants, tomato, pepper, potato and strawberries for at least 4-5 years or fumigate with Vapam HL or Telone C17 to reduce the severity of Verticillium wilt. Soil fumigation must be done at least 3 weeks before transplanting to avoid phytotoxicity to eggplants.

✔ Leeks: Bacterial soft rot is present in overwintered fields being harvested at this time. Infected plants are stunted with a few chlorotic leaves. A longitudinal or cross section cut reveals brown, watersoaked, necrotic tissue within the bulb. There is no control for this disease.

✔ Lettuce: For transplanted fields, apply Ronilan or Rovral as a directed spray to the base of the plants once plants recover from transplanting. Repeat 10 and 20 days later for control of Drop. Avoid irrigation as much as possible in spring plantings of romaine lettuce to reduce the incidence of corky root. Some fields of romaine where row covers are used have plants along the margins of the field with necrotic blotches on the leaves. This is the result of mechanical damage and is not due to disease. When row covers are removed, apply Oxidate to reduce the bacterial population on the leaf surface that can lead to bacterial leaf spot. Repeat every 7 days.

Stewart’s bacterial wilt index 2003 season

See Diseases on Page 2
Asparagus Weed Control
Bradley A. Majek, Ph.D., Specialist in Weed Science

✔ Asparagus: Use Solicam or Devrinol plus Karmex in early spring to control weeds during the harvest season. Apply the Karmex and half the total annual rate of Solicam or Devrinol immediately after ridging and spears begin to emerge. The second half of the Solicam or Devrinol should be applied at the end of the cutting season with Sencor/Lexone.

Solicam is more effective than Devrinol, but carryover residues affect subsequent crops if the treated field is rotated out of asparagus. Use Devrinol if the field may not be maintained in asparagus production. Consult the Commercial Production Recommendations for rates and additional information.

Canada thistle Control in Asparagus: Stinger is labeled in New Jersey for use in bearing asparagus to control Canada thistle and certain other annual and perennial broadleaf weeds. Weeds in two plant families, composites and legumes, are extremely sensitive to Stinger. Weeds in other plant families are less sensitive, or may be tolerant, for example, mustards, such as shepherds purse and wild radish are not controlled.

Common asparagus weeds in the composite family include annuals such as ragweed and cocklebur, and perennials such as dandelion, Canada thistle, goldenrod, and wild aster. Legume weeds include vetch and certain clover species.

Apply Stinger when annual weeds have germinated or when perennial weeds have emerged and are 3 to 6 inches tall before, during, and/or after harvest. Observe a 12-hour PHI (PreHarvest Interval) when treating during harvest. Some crooking (twisting) of emerged spears may occur following treatment. Discard crooked spears. Do not apply if some crooking of emerged spears is unacceptable.

Apply 0.125 lb ai/a (0.33 pints/a) to control susceptible annual weeds and suppress perennial weeds. Apply 0.25 lb ai/a (0.66 pints) to control susceptible perennial weeds, including Canada thistle. Stinger is initially absorbed by the foliage of the weeds which results in fast knockdown and provides residual activity in the soil after application. Injury symptoms include wilting, twisting, and curling of stems and foliage. Split the application by applying half the maximum labeled rate when weeds emerge during harvest and half after harvest is complete to obtain optimum results. Do not apply more than 0.25 lb ai/a (0.66 pints) of Stinger to asparagus during the growing season.

Note: You must have a supplemental label for Stinger Use in Asparagus in your possession to apply the product. Obtain a copy of the label from your local cooperative Extension Office.

Vegetable Weed Control
Bradley A. Majek, Ph.D., Specialist in Weed Science

PREFAR 4EC has received a supplemental label that covers many of the crops Dacthal has been used on, including:

Cole Crops
chinese broccoli
broccoli raab
collards
chinese cabbage (boc choy & napa)
all chinese brassica crops
kale
kohlrabi
mizuna
mustard greens
rape greens

Fruiting Vegetables
tomatillo

Leafy Vegetables
arugula
cardoon,
celery
chinese celery (transplanted)
chervil
cress (garden & upland)
dandelion
endive
fennel
parsley
radicchio

The regular Prefar 4EC label continues to list many other vegetables including cucurbit crops, more common cole crops like cabbage, broccoli, etc., lettuce, carrots, onion crops, and eggplant and peppers.

Prefar should be applied preplant (transplanted crops) or preemergence (direct-seeded crops), at the rate of 1.5 gallon of Prefar 4EC per acre, and activated with about one-half inch of rainfall or irrigation. Results when Prefar is at lower rates or is mechanically incorporated have been less satisfactory.

Prefar 4EC will control annual grasses and certain annual broadleaf weeds, including pigweed species, but may only suppress common lambsquarter, and common purslane. These are the same broadleaf weeds that are controlled by Dacthal! Note that galinsoga is not controlled by either herbicide. To obtain the most effective broadleaf weed control from Prefar, use the maximum labeled rate and activate with irrigation or rainfall before weeds germinate. Mechanical incorporation may reduce broadleaf weed control!

Observe a rotational crop restriction of 120 days

See Weed Control on Page 6

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before planting crops that are not listed on the Prefar 4EC label.

Consult the Commercial Production Recommendations for rates and additional information.

✔ Sweet Corn - Use Partner, Microtech, or Dual II Magnum applied preplant incorporated or preemergence to control broadleaf weed control. Use reduced rates of atrazine, 0.66 to 0.75 lb ai/a to reduce the risk of carryover. To further reduce the risk of carryover, delay broadleaf weed control until the corn has two to three leaves and the first flush of broadleaf weeds has emerged. Apply postemergence herbicides before the corn exceeds three leaves or the broadleaf weeds exceed one inch in height. Consider spraying herbicides in a band over the row and controlling weeds between the rows by cultivating to reduce cost and/or carryover.

In early spring, when soils are cold and often wet, use Microtech or Partner, plus atrazine. This combination will control weeds without causing crop injury when conditions for germination and emergence are adverse. Beware of atrazine carryover following early corn harvest. If atrazine residue is unacceptable, rely on postemergence herbicide applications to control broadleaf weeds.

Postemergence broadleaf weed control options in sweet corn are:

Atrazine – Apply at 1.0 lb ai per acre plus oil concentrate at 1 gallon per 100 gallons of spray solution to control most annual broadleaf weeds and yellow nutsedge, except triazine resistant biotypes. When weeds are small, 1 inch or less in height, and growing conditions are good, the rate can be reduced to 0.5 to 0.75 lb ai per acre. Plantback restriction for most other vegetable crops is two years. Atrazine will not injure sweet corn. Band the herbicide over the row and control weeds between the rows by cultivating to reduce carryover potential.

Basagran – Apply at 0.75 to 1.0 quarts per acre plus oil concentrate at 1 gallon per 100 gallons of spray solution to control many annual broadleaf weeds and yellow nutsedge, but not pigweed or lambsquarter.

Laddok S-12 – This product is a tank-mix of atrazine and Basagran, using reduced rates of both herbicides. Apply 1.6 pints per acre plus oil concentrate at 1 gallon per 100 gallons of spray solution to control many annual broadleaf weeds and yellow nutsedge, of pigweed and lambsquarter. This rate is equivalent to 0.5 lb ai per acre of atrazine and 0.5 lb ai per acre of Basagran. Due to the lower atrazine rate, the plantback restriction for most vegetable crops is 1 year.

2,4-D AMINE – Apply 0.5 to 1.0 pint of the 3.8 AMINE formulation early postemergence or post directed after the weeds have emerged. The lower rate is more effective early postemergence when the weeds are small.

Use drop nozzles to direct the spray at the base of the crop when the corn is over 8 inches tall to avoid spraying the foliage or into the whorl. Warm, wet, and cloudy weather at application may increase the risk of crop injury. Use the lower rate or delay application when these conditions prevail. Delay cultivation for 10 days after application to avoid damage to the crop due to temporary brittleness sometimes caused by 2,4-D. Sweet corn varieties differ in 2,4-D tolerance. Use with caution on new varieties. Injury will be less when the minimum rate is used.

Aim – Apply 0.33 dry ounces per acre (0.008 lb ai/acre) early postemergence or post directed after the weeds have emerged. Add nonionic surfactant at 1 quart per 100 gallons of spray solution to control many annual broadleaf weeds. Aim will usually cause temporary injury to corn sprayed postemergence. The injury will appear as burned speckles or spots on treated foliage. The injury is temporary and cosmetic, and will not reduce yield or earliness when applied to corn less than six inches tall. Use drop nozzles to direct the spray at the base of the crop when the corn is over 8 inches tall to avoid spraying the foliage or into the whorl. Aim is somewhat weak when applied to control common ragweed and smooth pigweed. Tank-mix with another postemergence corn herbicide to improve the control of these weeds. Aim may be tank-mixed with the full or reduced rates of atrazine or 2,4-D to improve the of these weeds.

Consult the Commercial Production Recommendations for rates and additional information.

Potato from page 2

the severity of early dying. Allow 2-3 weeks between fumigation and planting.

✔ Spinach: Some winter planted fields have older leaves with tan, necrotic blotches present over the majority of the leaf surface. This is the result of the return of cold nights following several warm days, and is not due to a disease. Observe overwintered fields for the presence of white rust. Once observed, apply Quadris as a foliar spray. If additional applications are warranted, alternate Quadris with Actigard. Actigard is to be used at the rate of 0.75 oz/A, and there is a 7 day preharvest interval. Be sure to read the Actigard label because this information is not included in the 2003 Commercial Vegetable Production Recommendations.

✔ Tomato: For staked tomato culture, thoroughly wash reused stakes and treat with a chlorine dip to reduce overwintering inoculum of bacterial canker. Use seed that has been chlorine treated, or treat with Clorox if untreated to reduce incidence of bacterial leaf speck and spot. Once seedlings have their true leaves begin foliar applications of streptomycin, and repeat every 5-7 days until transplanting in the field to reduce bacterial diseases.
Weekly Weather Summary
Keith Arnesen, Ph.D., Agricultural Meteorologist

Temperatures averaged much below normal. Extremes were 76 degrees at Downstown, on the 3rd and 19 degrees at Charlotteburg on the 1st. Weekly rainfall averaged 0.38 inches north, 0.15 inches central, and 0.04 inches south. The heaviest 24 hour total reported was 0.21 inches at Charlotteburg on the 1st to 2nd. Estimated soil moisture, in percent of field capacity, this past week averaged 99 percent north, 97 percent central and 86 percent south. Four inch soil temperatures averaged 42 degrees north, 44 degrees central and 47 degrees south.

The following table contains meteorological information since the start of the growing season March first. The table is updated each Monday and the following is an explanation for each column.

Week=total rainfall for the previous 7 days ending Monday morning
Total=total rainfall since March 1st
Dep=departure from normal of rainfall since march 1st. A negative sign indicates below normal and no sign indicates above normal.
Mx=highest temperature for that 7 day period
Mn=lowest temperature for that 7 day period
Avg=average temperature for that 7 day period
Dep=departure from normal of the average temperature for that 7 day period
Total=total number of growing degree units since March 1st
Dep=departure from normal of growing degree units
%fc=percent of field capacity (soil moisture)

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WES KLINE — GDD BASE 40 PINEY HOLLOW
Last Week  78 (Ending 3/31/03) This Week  43 (Ending 4/7/03)
PLANT & PEST ADVISORY

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