



Georgia Extension Vegetable News

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Fungicide Considerations for Cucurbits

David Langston
Extension Vegetable Pathologist - UGA

Fungicide Considerations on Cucurbits

Lately Georgia cucurbit growers have been given the luxury of having more fungicide options for control of foliar diseases than ever before. However, with so many options available it becomes more challenging to develop cost effective spray programs that maximize the efficacy of available fungicides.

Fungicides belonging to the EBDC (Maneb, Penncozeb, Dithane, Manzate, etc.) and chlorothalonil (Bravo, Echo, Equus, etc.) groups are broad spectrum fungicides that will have fair to good control on most foliar diseases. Chlorothalonil has consistently provided good control of gummy stem blight in replicated field trials in Georgia. Ridomil Gold Bravo and Flouronil as well as Ridomil Gold MZ are

premises of mefenoxam (Ridomil) and chlorothalonil and mancozeb, respectively. These premixes are used primarily for downy mildew suppression but fungal resistance to the mefenoxam mode of action is widespread and chlorothalonil and mancozeb products alone often provide disease suppression as good or greater than the mefenoxam premixes, and at a lower price. The benzimidazole fungicides such as Benlate and Topsin M provide fair to good control of most foliar diseases except downy mildew, however fungicide resistance can be a problem with diseases such as gummy stem blight and powdery mildew. Benlate and Topsin M are most often applied as tank mixes with EBDC fungicides. Strobilurins such as Quadris and Flint are more selective and are at higher risk for development of resistance in target fungi. Quadris has a broader spectrum of activity of the two strobilurins and is effective on anthracnose, gummy stem, powdery mildew, Rhizoctonia belly rot (cucumbers) and Alternaria. Flint is effective primarily on powdery mildew. Both of these materials are marginally effective on downy mildew. Nova, a sterol inhibitor like Bayleton or Folicur, is very effective (probably the most effective fungicide) on powdery mildew. However, Nova will not control other foliar diseases and should be tank-mixed with chlorothalonil or EBDC fungicides to broaden disease suppression.

Generally, EBDC and chlorothalonil materials can be relied on for early season disease control. As fruit set begins, Flint and Quadris can be integrated into the fungicide rotation to strengthen disease suppression when plants are in this more disease susceptible stage. It is very important to rotate to non-strobilurin, broad spectrum fungicides after no more than two applications of either Flint or Quadris. Nova should be used when plants have a heavy fruit load and during hot, dry periods

when powdery mildew is most likely to become a problem.

The most common foliar fungal diseases of cucurbits by crop are as follows:

Cucumber diseases; 1) gummy stem blight, 2) anthracnose, 3) Rhizoctonia belly rot (not a foliar disease but still a consideration for foliar disease spray programs), 4) downy mildew, and 5) *Corynespora* leaf spot.

Cantaloupe diseases; 1) *Alternaria* leaf spot, 2) gummy stem blight, and 3) downy mildew.

Pumpkin and Squash diseases; 1) downy mildew, and 2) powdery mildew.

Watermelon diseases; 1) gummy stem blight, 2) powdery mildew, and 3) anthracnose.

It is important to remember that preventive sprays or sprays applied at the earliest stages of diseases onset will provide greater disease suppression than those applied once disease has already begun to cause considerable damage. Please check page 229 of the 2001 Georgia Pest Control Handbook (Commercial Edition) for efficacy rankings of cucurbit fungicides on certain diseases.

Applying Non-selective Herbicides (Glyphosate, Paraquat) Preplant Over-the-top of Plastic Mulch

Stanley Culpepper
Extension Weed Scientist - UGA

Growers often choose to apply a non-selective herbicide overtop of row middles to control emerged annual and broadleaf weeds and over-the-top of plastic mulch to suppress emerged nutsedge. Unfortunately, as growers are faced with either reducing the rate of methyl bromide or replacing methyl bromide with other fumigant products, nutsedge emergence through plastic mulch prior to transplanting is and will most likely continue to be a major issue (Figure 1).



Figure 1. Nutsedge emergence through plastic mulch.

Preplant herbicide selection in most vegetables is limited predominantly to glyphosate (Roundup UltraMax, other products) or paraquat (Boa, Gramoxone Max). Neither material is highly effective on nutsedge species with suppression often only being observed, but these herbicides effectively control small annual broadleaf and grass weeds that emerge in row middles.

Applying glyphosate or paraquat broadcast overtop of plastic and row middles is an effective weed management tool; however, rainfall or irrigation is often needed to wash both herbicides off of the plastic prior to transplanting. If wash-off does not occur prior to transplanting, injury or even death of transplants may be observed due to transplants absorbing herbicide from the plastic mulch when coming in contact or when rainfall events cause splashing of the herbicide from the plastic mulch onto the transplant. Thus, greater restrictions have been noted on herbicide labels to limit this potential injury.

For example, the Roundup UltraMax label now states “when applying this product prior to transplanting crops into plastic mulch, care must be taken to remove residues of this product, which could cause crop injury from the plastic prior to transplanting. Residues can be removed by a single 0.5 inch application of water, either by natural rainfall or via a sprinkler system.”

Similarly, the Gramoxone Max label states “Gramoxone Max used for preplant weed control over the top of plastic mulch may damage transplants which come in contact with the plastic. Sufficient rainfall or sprinkler irrigation to cause wash-off prior to planting may be

needed to prevent damage to the crop.” significant impact on vegetable disease management.

Command 3ME Labeled for Use in Squash (Yellow, Zucchini, Winter)

Stanley Culpepper
Extension Weed Scientist - UGA

Georgia squash producers recently obtained another tool to help manage weeds. Through efforts by FMC Corporation and IR-4 (Interregional Research Project No. 4), a section 24(c) label has been granted for the state of Georgia.

Command 3ME can now be used in both seeded and transplanted squash. For use in seeded squash, Command may be used as a pre-emergent soil surface application from 30 days before planting to just prior to crop emergence; seed should be placed below the chemical barrier when planting. For use in transplanted squash, Command may be utilized as a pre-emergent soil surface application from 30 days before to just prior to transplanting. Command should be applied to soil (row middles) between plastic mulched beds.

The Command 3ME label suggests use rates of 1.33 pints/acre (0.5 lb ai/A) for yellow and zucchini squash and 2.0 pint/acre (0.75 lb ai/A) for winter squash. UGA recommends a use rate of 0.67 to 1.3 pints/acre (0.25 to 0.5 lb ai/A) of Command 3ME for each type of squash until grower confidence is obtained through the experience of making several applications under varying environmental conditions.

Command effectively controls many grasses including broadleaf signalgrass, large and smooth crabgrass, green and giant foxtail, goosegrass, and Texas and fall panicum. Command also controls many troublesome broadleaf weed species such as the following: lambsquarters, prickly sida, tropic croton,

purslane, and redweed. Command used in squash will also partially control field sandbur, common ragweed, jimsonweed, and Pennsylvania smartweed.

Several restrictions are noted on the label for squash. For example, Command should not be used on the following cultivars or varieties as unacceptable whitening of the fruit may occur: NK530, NK580, Turks Turban, Golden Delicious, all Banana types, and all other Cucurbita maxima types that have a pink or burnt orange coloration at harvest. It is imperative that all growers read this label noting other pertinent information such as application precautions, rotational crop guidelines, more restrictions, and replanting instructions.

BEWARE OF VOLATILIZATION OF THIS HERBICIDE AS OFF-TARGET DRIFT. Refer to label for buffer requirements.

The Command 3ME label for squash must be in the possession of the user at the time of pesticide application. Additionally, FMC Corporation intends that this section 24(c) label be distributed to end users and/or growers who agree in writing to a waiver and release from all liability by the user and/or grower of FMC for failure to perform and crop damage from the use of Command 3ME Herbicide.

Dacthal Now Available for Sale in the U.S.

Stanley Culpepper
Extension Weed Scientist - UGA

As many growers are aware, production and availability of Dacthal has ceased over the past several years. Recently, AMVAC Chemical Corporation obtained this product and now offers a new label and a source for Dacthal. At present, this product should be moving into distributor and dealer locations. Growers seeking a source of Dacthal W-75 should call their local supplier or call AMVAC’s customer service group at 1-888-462-6822.

Dacthal is registered for use on a large number of specialty crops including broccoli, cabbage, cauliflower, collards, cucumbers, eggplant, garlic, greens, kale,

mustard, onions, peppers, potatoes, radish, seeded melons, squash, sweet potatoes, tomatoes, and turnip greens. Dacthal can be applied on many other crops as well: refer to new label.

Obtain the newest label by AMVAC for further information detailing crop uses, methods of applications, rates of applications, and restrictions.

Dacthal applied following label instructions can effectively control many common weeds such as common chickweed, Florida pusley, green foxtail, large crabgrass, purslane, smooth crabgrass, and yellow foxtail.

Weeds such as annual bluegrass, fall panicum, goosegrass, henbit, redroot pigweed, shepherdspurse, Texas panicum, and several spurge species can be suppressed with Dacthal.

Dacthal WILL NOT control jimsonweed, mustards, nutsedge, ragweed, smartweed, or velvetleaf.

Dacthal will be more costly than when previously marketed by ISK Biosciences.

Admire Use on Pepper, Tomato and Eggplant

David Adams

Extension Vegetable Entomologist - UGA

There has been some confusion over statements that have been made about the use of Admire on pepper and tomatoes, especially on spring plantings. Applications to tomatoes or pepper are not a must in the spring. Admire temporarily has a negative impact on thrips feeding behavior. This effect is overcome rapidly. For this reason, the intensive management program for TSWV in tomatoes, in its second pilot year, is only effective if close interval contact insecticides are sprayed for several weeks. Otherwise, Admire

will give some control of seedling thrips, but not before they can transmit TSWV. So, our recommendation has been that it is purely optional, but very expensive for the return on spring plantings of tomatoes unless the full program is implemented. In the fall, Admire is an excellent tool in combination with Knack for silverleaf whitefly control. In this case the whitefly viruses and irregular ripening can be suppressed.

In pepper, without scientific data to support it, casual observations indicate that Admire may increase the propensity for broad mite infestations. Outside of killing a few thrips in pepper, there is no real need to use Admire in the spring or fall. If whiteflies develop a liking for pepper, this could change. Broad mites are a non-factor in tomato thus far, so there is no concern at this juncture of exacerbating a problem.

In eggplant, Admire gives good control of flea beetles and in the fall can help suppress whiteflies.

Food Safety on the Farm

Bill Hurst and Darbie Granberry

Extension Vegetable Food Scientist and Horticulture Specialist, Respectively - UGA

While the future of Georgia's fresh produce industry appears promising, recent episodes of human illness linked to produce consumption have caused wholesalers and retailers to require their suppliers to show or certify that they are doing everything within reason to insure the safety of the produce they grow/pack. Specifically, many produce buyers are now mandating third party inspections to certify that their growers and packers are using **AGood Agricultural Practices@B GAPs B** to prevent or minimize produce contamination with human pathogens. In order for Georgia growers and packers to remain competitive and maintain market share they must be able to assure their buyers and the consuming public that Georgia produce is safe to eat.

In 2001, cooperating faculty in the Extension Food Science and Horticulture Departments received grant funds to initiate a comprehensive State Produce Safety Program for our growers and packers based on **AGood**

Agricultural Practices@ B GAPs. The first task was to increase the awareness of food safety risks to county agents who work with fresh produce and to their clientele that grow, pack and/or ship fresh produce. During the next phase we will develop the educational resources needed by agents and growers to implement and certify the use of GAPs on farms that grow/pack fresh produce. To date, over 100 county Ag and FCS agents have attended food safety training. Within the past six months, food safety training sessions have been held at the Georgia Fruit and Vegetable Growers Association Annual Conference and Trade Show and in several county and multi-county programs.

During February and March of 2001, approximately 30 Ag and FCS agents, selected based on the acreage of produce in their specific counties, and 5 extension specialists participated in one of three regional food safety-training programs. These expenses-paid, two-day shortcourses held in Ft. Worth, TX, Lake Alfred, FL, and Charleston, SC, focused on a train-the-trainer approach to intensive food safety education. Each participant received a wealth of resource materials to take home and use as they begin planning and developing on-farm food safety programs for their clientele.

We are in the process of developing additional materials for agent and grower use to facilitate timely implementation of GAPs in all produce production and handling operations. These materials, containing PowerPoint presentations, an on-the-farm food safety audit checklist and other technical resources, will be disseminated to agents in one complete package entitled **Improving Food Safety Practices on the Farm**. We appreciate the extra efforts agents took to make time for food safety training in their busy schedules. Many of those attending regional training, including a number of PDCs, had to leave in the wee hours of the morning in order to arrive at the out-of-state locations in time for the first session. Because this training was not included in the Extension 2001 Proposed Training Book, a special thanks is extended to the District Extension Heads for permitting agent travel and the Program Development

Coordinators for coordinating these agents= out-of-state travel.

Tifton Plant Disease Clinic

Jason Brock
Plant Disease Diagnostician

As anticipated, the Tifton Plant Disease Clinic received more and more samples during late February and March. The majority of the samples were the result of soil-borne pathogens, both in the greenhouse and the field. The following is a summary of the vegetable samples received during the last month.

Cabbage:	Cabbage Leaf Curl Virus No Disease
Cantaloupe:	Pythium Root Rot
Carrot:	Pythium Root Rot Rhizoctonia Root Rot Sclerotinia Blight
Collard:	Chemical Phytotoxicity
Kale:	Rhizoctonia Root Rot
Lettuce:	Tip Burn (Calcium-related)
Onion:	Chemical Phytotoxicity Purple Blotch
Pepper:	Rhizoctonia Damping-Off
Tomato:	Botrytis Stem Canker No Disease
Watermelon:	Gummy Stem Blight (2) Rhizoctonia Root Rot (3) Chemical Phytotoxicity No Disease

Two common root rot pathogens, Rhizoctonia and Pythium, caused damage to plants during this past month. Rhizoctonia lesions are usually brown, round to ovoid, and sunken. Pythium lesions are typically dark, water-soaked and soft. Hyphae of the two fungi are easily differentiated. Rhizoctonia hyphae contain cross walls,

branch at 90 degree angles with constrictions at the base, and have a light brown appearance. Pythium hyphae lack cross walls.

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Editor David B. Langston, Jr.
Production Assistant & Webmaster Paul Sumner

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