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## 24-C registration obtained for Dupont Manzate Pro-Stick Fungicide

**Bruce A. Fortnum, Francis P. F. Reay-Jones and Dewitt T. Gooden**

There has been concern among tobacco pathologists that there will be a limited supply of Dithane DF in 2008 due to changes in the source and supply levels available to dealers. A 24-C registration for Dupont Manzate Pro-Stick has been obtained. This registration provides another Manzate material for producers. DuPont™Manzate® Pro-Stick™ is recommended for use for disease suppression in tobacco production including outdoor seed beds, greenhouse, float-bed systems, and field. Target pests are: *Peronospora tabacina* (Blue Mold); *Colletotrichum gloeosporioides* (Anthracnose); *Rhizoctonia solani* and *Fusarium spp.* (Damping-off, stem rot, and target spot).

Few fungicides are labeled for disease control in tobacco greenhouse transplant production systems (see tables below). There are several potentially important disease problems that may occur in tobacco greenhouse systems on a regular basis. These include target spot (*Rhizoctonia solani*), white mold or stem rot (*Sclerotinia spp.*), and damping-off caused by *Pythium spp.* Blue mold (*Peronospora tabacina*), also can occur sporadically in tobacco greenhouses.

### Label warnings for Dupont Manzate Pro-Stick Fungicide

#### Potential Phytotoxicity Warning (Plant Injury)

Do not apply MANZATEPRO-STICK fungicide in tank mixes with sucker control chemicals.

#### Potential Phytotoxicity Warning (Plant Injury)

The potential for phytotoxicity exists when this product is used on tobacco seedlings. The user assumes all risks arising out of this labeled use. To minimize the potential for damage, 72 hours prior to large scale applications to tobacco seedlings, the user should test for potential phytotoxicity by applying the fungicide rate to a small amount of tobacco seedlings of the same age and growing under the same conditions as the planned usage. Based on experiments conducted by the Plant Pathology Department, University of Kentucky, the potential for phytotoxicity varies from season to season and from seed lot to seed lot. In general, injury is least in traditional outdoor seed beds and greatest in greenhouse float systems, especially if seedlings are heavily fertilized and highly succulent, if the float water is contaminated with spray drift, or if hot, humid conditions exist. Where serious phytotoxicity occurred, early symptoms (within 72 hours) included burning along the leaf margins and progressing, over a two week period, into severe stunting or death. Occasionally mild stunting and interveinal chlorosis occurred without obvious early symptom development.



**Rhizoctonia damping off**

## Implications for greenhouse disease control

The list below contains all materials labeled for use on tobacco seedlings produced in greenhouses. Previously, Dithane DF was the only material that was labeled for Rhizoctonia and Sclerotinia control. Terramaster 4 EC provides control of Pythium and would have little to no effect on other diseases. In addition to Rhizoctonia and Sclerotinia control, Dithane DF provided suppression of Blue Mold when used within greenhouses. Without Dithane DF, the early appearance of Blue mold within tobacco greenhouses would be disastrous. Acrobat fungicide can be used for field blue mold control but only when tank mixed with a protectant fungicide such as Dithane DF. Without Dithane DF, the Acrobat fungicide could not be used for field blue mold control. Acrobat is not labeled for use within greenhouses. Reduce availability of Dithane DF will complicate the control of blue mold both within greenhouses and in field plantings. Although Blue Mold is not normally a severe problem in South Carolina, severe losses have been observed in greenhouse and field plantings in the past and may occur in the future. Epidemics have been observed in South Carolina tobacco greenhouses that resulted in near complete loss of all seedlings within the greenhouse. It is imperative that producers take extra precautions to prevent pathogens from entering the greenhouse and to minimize environmental conditions within the greenhouse that might encourage disease development. Thus, ventilation, sanitation, monitoring, and use of good production practices are important disease management factors. Registration of Dupont Manzate Pro-Stick Fungicide provides another Manzate material that will be available to producers. Manzate pro-Stick fungicide is labeled for use in outdoor seedbeds as well as greenhouse float systems and provides an alternate material to Dithane DF.

## PESTICIDES PRESENTLY LABELED FOR USE IN TOBACCO GREENHOUSES

DISEASE	CHEMICAL	RATE/50 GAL WATER	REMARKS*
Blue Mold Damping off, Stem rot and Target spot	Mancozeb (Dithane DF)	0.25 lb/50 gal water	For greenhouse and floatbed systems, use 1/2 lb per 100 gal water (one level teaspoon per gallon). Spray every 5 to 7 days to the point of run-off. Apply 3 gallons of the fungicide spray mixture on small plants (dime size), gradually increasing the spray volume to 6 to 12 gallons per 1000 sq. ft. as plants enlarge until transplanting to the field. For stem rot, use enough volume to wet the base of plant stems. REI = 24 hr.
	Manzate (Dupont Manzate Pro-stick Fungi- cide	0.25 lb/50 gal water	<b>For greenhouse and float-bed systems,</b> use 1/2 pound per 100 gallons of water (one level teaspoon per gallon). Spray every 5 to 7 days to the point of run-off. Apply 3 gallons of the fungicide spray mixture on small plants (dime size), gradually increasing the spray volume to 6 to 12 gallons per 1000 sq. ft. as plants enlarge until transplanting to the field. For stem rot, use enough volume to wet the base of plant stems.

## Implications for field disease control

### Blue Mold

Blue mold was not observed in South Carolina during 2007. Blue mold occurs in Florida and Georgia almost every year and has the potential to cause severe losses in South Carolina if the weather is favorable for disease development. Ridomil resistant strains have been observed in other states and pose a possible threat to the tobacco crop in South Carolina. Blue mold is potentially one of the most destructive diseases of tobacco. It is caused by a fungus (*Peronospora tabacina*) that is airborne, and disease can spread very quickly, leading to epidemics, if not properly managed. Ridomil has generally given good control of blue mold when used as a preplant soil incorporation treatment.



However, **if a Ridomil G insensitive strain occurs in South Carolina other control options should be considered.** Acrobat has received a label for blue mold control but should be used in combination with another fungicide (see Acrobat label for details). Registration of Dupont Manzate Pro-Stick Fungicide provides another Manzate based material that will be available to producers. Actigard 50 WG is also labeled for blue mold control (consult label for potential phytotoxicity)

### Ridomil Gold.

Rates of 0.5-1 pt/A Ridomil Gold per acre should be used at or before transplanting. If necessary, an additional 0.5 pt can be used at layby, if no more than 1 pt/A was used at planting. Growers should be reminded that the Ridomil label does not allow foliar applications. Soil-applied Ridomil gives better control for longer periods of time and reduces the threat of resistant spores building up. The amount of Ridomil Gold used will depend on control necessary for black shank.

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## FIELD BLUE MOLD CONTROL

SOIL TREATMENTS	RATE	REMARKS
Ridomil Gold	0.5-1 pt/A	Broadcast and incorporate 2-4 inches at or before transplanting. An additional 0.5 pt/A may be used at layby if no more than 1 pt/A was applied at planting. REI = 48 hr.
FOLIAR TREATMENTS*	RATE	REMARKS
Mancozeb (Dithane DF)	1.5 - 2.0 lb/ 100 gal	Use only in the field if there is a threat of Ridomil-insensitive blue mold. Mix 1.5 -2.0 lb per 100 gallons of water, spray foliage weekly for complete coverage up to a maximum of 100 gallons per acre. <b>Do not spray after appearance of first button or within 21 days of harvest, whichever is earlier.</b> REI = 24 hr
Manzate (Dupont Manzate Pro-stick Fungicide)	1.5 - 2.0 lb/ 100 gal	<b>Use in the field if there is a threat of Ridomil-insensitive blue mold.</b> Mix 1.5 to 2.0 pounds per 100 gallons of water, spray foliage weekly for complete coverage up to a maximum of 100 gallons per acre. Discontinue sprays when the threat of blue mold no longer exists. In flue-cured, do not spray after appearance of first button or within 21 days of harvest, whichever is earlier.
Acrobat 50 WP	2-7 oz /A	Use only in the field if there is a threat of Ridomil-insensitive blue mold. Mix 2-7 oz per 10-100 gallons of water depending on crop size. Consult label for spray concentration. Spray foliage every 5-7 days for complete coverage. Do not exceed 32 oz/A per season. Begin application when the Blue Mold advisory states that conditions favor development of blue mold, and before the onset of disease. Consult the label for specific application information. <b>Do not spray after appearance of first button or within 21 days of harvest, whichever is earlier.</b> REI = 24 hr. Do not use Acrobat alone. Use in combination with other fungicides labeled for blue mold control except mefenoxam or metalaxyl..
Actigard 50 WG	0.5 oz/A	Begin application after plants reach a height of 12 inches. Apply on a preventative schedule when blue mold threatens. Another registered blue mold product should be used prior to 12 inches for early season control and after the final application if conditions are conducive for disease. Make up to 3 applications on a 10-day schedule. Apply in a minimum of 20 gals./A. Application of Actigard may result in leaf yellowing. This cosmetic yellowing normally disappears after final application. REI = 12 hr.
Quadris Flowable	6.0-12.0 oz/A	Quadris application should begin prior to disease development or at first indication that blue mold is in the area. Do Not apply Quadris as a curative application. If blue mold is present in the field, initiate application with Acrobat MZ prior to Quadris application. Apply on a 7-14 day interval with shorter intervals under conditions conducive to disease development. For ground application apply Quadris in sufficient water volume for adequate coverage and canopy penetration.  Do not tank mix with Thiodan. Check label for potential crop injury. REI = 4 hours

**REI = REENTRY INTERVAL**

**SEE ATTACHED DUPONT MANZATE PRO-STICK FUNGICIDE LABEL**

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**DuPont**  
**Crop Protection**

**SPECIAL LOCAL NEED**  
**24(c) LABELING**

**DUPONT™ MANZATE®**  
**PRO-STICK™ FUNGICIDE**  
**FOR CONTROL OF TOBACCO**  
**DISEASES IN TOBACCO IN THE STATE**  
**OF SOUTH CAROLINA**

**DUPONT™ MANZATE® PRO-STICK™ FUNGICIDE**

**EPA Reg. No. 352-704**

**EPA 24(c) Special Local Need Registration SLN**

**(For Distribution and Use Only in the State of South Carolina)**

**FOR CONTROL OF TOBACCO DISEASES IN TOBACCO**

**DIRECTIONS FOR USE**

It is a violation of Federal law to use this product in a manner inconsistent with its labeling.

DuPont™ Manzate® Pro-Stick™ is recommended for use for disease suppression in tobacco production including outdoor seed beds, greenhouse, float-bed systems, and field. Target pests are: *Peronospora tabacina* (Blue Mold); *Colletotrichum gloeosporioides* (Anthracnose); *Rhizoctonia solani* and *Fusarium spp.* (Damping-off, stem rot, and target spot).

**HOW TO USE**

For traditional outdoor seed beds, use 1.0 pound per 100 gallons of water (one level tablespoon per gallon). Make spray applications on a 5 to 7 day schedule starting when plants are about the size of a dime and continue applications until transplanting to the field. Use 3 gallons of the fungicide mixture when plants are small and gradually increase to 5 gallons per 900 sq. ft. bed as plants grow.

For greenhouse and float-bed systems, use 1/2 pound per 100 gallons of water (one level teaspoon per gallon). Spray every 5 to 7 days to the point of run-off. Apply 3 gallons of the fungicide spray mixture on small plants (dime size), gradually increasing the spray volume to 6 to 12 gallons per 1000 sq. ft. as plants enlarge until transplanting to the field. For stem rot, use enough volume to wet the base of plant stems.

Use in the field if there is a threat of Ridomil-insensitive blue mold. Mix 1.5 to 2.0 pounds per 100 gallons of water, spray foliage weekly for complete coverage up to a maximum of 100 gallons per acre. Discontinue sprays when the threat of blue mold no longer exists. In flue-cured, do not spray after appearance of first button or within 21 days of harvest, whichever is earlier. In burley, and other types, do not spray within 30 days of harvest.

**RESTRICTIONS**

- **Do not treat flue-cured within 21 days, or burley within 30 days of harvest.**
- When making applications to tobacco seedlings in float systems, prevent contamination to the floatwater by keeping trays tightly packed so no water is exposed to the spray.
- Follow different rates as indicated above for outdoor seed beds vs. greenhouse or float-bed systems. Reduced rates for the latter are necessary to prevent injury, which could occur if the higher rate is used on the more succulent greenhouse or float-bed seedlings.
- Do not apply MANZATE® PRO-STICK™ fungicide in tank mixes with sucker control chemicals.

**Potential Phytotoxicity Warning (Plant Injury)**

The potential for phytotoxicity exists when this product is used on tobacco seedlings. The user assumes all risks arising out of this labeled use. To minimize the potential for damage, 72 hours prior to large scale applications to tobacco seedlings, the user should test for potential phytotoxicity by applying the fungicide rate to a small amount of tobacco seedlings of the same age and growing under the same conditions as the planned usage. Based on experiments conducted by the Plant Pathology Department, University of Kentucky, the potential for phytotoxicity varies from season to season and from seed lot to seed lot. In general, injury is least in traditional outdoor seed beds and greatest in greenhouse float systems, especially if seedlings are heavily fertilized and highly succulent, if the float water is contaminated with spray drift, or if hot, humid conditions exist. Where serious phytotoxicity occurred, early symptoms (within 72 hours) included burning along the leaf margins and progressing, over a two week period, into severe stunting or death. Occasionally mild stunting and interveinal chlorosis occurred without obvious early symptom development.

**For product information call 1-888-6-DUPONT**

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**IMPORTANT  
BEFORE USING MANZATE® PRO-STICK™ FUNGICIDE,  
READ AND FOLLOW ALL APPLICABLE DIRECTIONS,  
RESTRICTIONS AND PRECAUTIONS ON THE EPA-  
REGISTERED LABEL.**

This bulletin contains new or supplemental instructions for use of this product which may not appear on the package label. Follow the instructions carefully.

This labeling must be in the possession of the user at the time of pesticide application.

Read the Limitation of Warranty and Liability on the section 3 Federal product label before buying or using THIS product. If terms are not acceptable, return the unopened package at once to Seller for full refund of purchase price paid. Otherwise, use by Buyer or any other User constitutes acceptance of the terms of the Limitation of Warranty and Liability on the section 3 Federal product label.

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