

# MUSKMELONS

## Varieties

Varieties <sup>1</sup>	DE	MD	NJ	PA	VA	WV
Aphrodite* (PMR1,2; FR 0,1,2)	D	M	N	P	V	WV
Athena* (FR 0,1,2; PMR)	D	M	N	P	V	WV
Eclipse* (PMR,FR 2)	D	M	N	P	V	WV
Minerva* (PMR1,2; FR 0,1,2)						WV

### Specialty Melons

Earli-Dew*	D	M	N	P	V	WV
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<sup>1</sup>Varieties listed by maturity, earliest first.

\* Indicates hybrid varieties.

Letters in parentheses indicate disease resistance possessed by varieties. See the Abbreviations" section in front portion of this publication.

## Recommended Nutrients Based on Soil Tests

Before using the table below, refer to important notes in Plant Nutrient Recommendations in Section B, Soil And Nutrient Information. These notes provide additional suggestions to adjust rate, timing and placement of nutrients depending on soil type cation exchange capacity and existing fertility levels.

Muskmelons	Nitrogen (N) Pounds per Acre	Soil Phosphorus Level			Soil Potassium Level		
		Low Pounds P <sub>2</sub> O <sub>5</sub> per Acre	Med P <sub>2</sub> O <sub>5</sub> per Acre	Opt. P <sub>2</sub> O <sub>5</sub> per Acre	Low Pounds K <sub>2</sub> O per Acre	Med Pounds K <sub>2</sub> O per Acre	Opt. Pounds K <sub>2</sub> O per Acre
	75-100 <sup>1</sup>	150 <sup>1</sup>	100 <sup>1</sup>	50 <sup>1</sup>	150 <sup>1</sup>	150 <sup>1</sup>	100 <sup>1</sup>
	25-50 <sup>2</sup>	125 <sup>2</sup>	75 <sup>2</sup>	25 <sup>2</sup>	175 <sup>2</sup>	125 <sup>2</sup>	75 <sup>2</sup>
	25 <sup>3</sup>	25 <sup>3</sup>	25 <sup>3</sup>	25 <sup>3</sup>	25 <sup>3</sup>	25 <sup>3</sup>	25 <sup>3</sup>
	25-50 <sup>4</sup>	0	0	0	0	0	0

<sup>1</sup>Total amount nutrient recommended

<sup>2</sup>Suggested method of application broadcast and disk-in

<sup>3</sup>Band-place with planter

<sup>4</sup>Sidedress when vines start to run

Apply 1-2 pounds of boron (B) per acre with broadcast fertilizer. See Table B-10 for more specific boron recommendations.

**Note:** If crop is to be mulched with plastic but not drip/trickle fertilized, broadcast 100 - 150 pounds of nitrogen (N) per acre with recommended P<sub>2</sub>O<sub>5</sub> and K<sub>2</sub>O and disk in or incorporate prior to laying mulch.

**Drip/Trickle Fertilization:** see below for drip/trickle fertilization guides.

## Seed Treatment

Check with seedsman to determine if seed has been treated with an insecticide and fungicide. If it has not been treated, use a mixture of thiram 75WP (½ teaspoon per pound or 3 ounces per 100 pounds) and an approved commercially available insecticide.

## Plant Production

Transplants should be grown in pots or cells that provide a space of *at least* 2 inches by 2 inches for each plant. Smaller pots or cells will restrict root growth and provide less protection to the newly set transplant. If the seed is of good quality with a high germination test, one seed per pot is sufficient. One ounce of muskmelon seed contains 950 to 1,250 seeds.

The required amount of seed can then be estimated using Table R-2 and knowing how many seeds make up an ounce of the desired variety. See also Table R-1 (Vegetable Seed Sizes).

## Planting and Spacing

Transplant container-grown plants through plastic mulch when daily mean temperatures have reached 60°F (15.6°C). Temperatures below 45°F can stunt plant growth. Planting dates vary from May 1 in southern regions to June 5 in northern areas. Early plantings should be protected from winds with hot caps, tents, row covers, or rye strips.

The recommended spacing for muskmelons is 5 to 6 feet between rows and 2 to 3 feet between plants in the row.

## Drip/Trickle Fertilization

Before mulching, adjust soil pH to around 6.5, apply enough farm-grade fertilizer to supply 50 pounds per acre of N, P<sub>2</sub>O<sub>5</sub> and K<sub>2</sub>O, and thoroughly incorporate into the soil.

After mulching and installing the trickle irrigation system, apply completely soluble fertilizer to supply 50 pounds (5 to 15 pounds in Pennsylvania) of N, P<sub>2</sub>O<sub>5</sub> and K<sub>2</sub>O per fertilized-mulched acre during each application. (A description of a **fertilized-mulched acre** may be found in the "Irrigation" section of this publication.) On soils testing low and low to medium in boron and that have not received any preplant boron fertilizer, include 0.5 pound of actual boron per fertilized-mulched acre in each soluble fertilizer application. **For convenience, rates of fertilizer nutrients can be converted from a mulched acre to linear foot basis. See Table C-8.**

The first soluble fertilizer application should be applied through the trickle irrigation system within 1 week after field transplanting the melons. The same rate of soluble fertilizer should be applied again when the first fruit set. The third application should be applied about 2 weeks before the first harvest.

Heavier, late yields have been achieved by applying another application at the same rate of soluble fertilizer in between the first and second soluble fertilizer applications or about 2 weeks after the first soluble fertilizer application. In Pennsylvania, do not exceed 80 pounds of nitrogen per acre per season.

## Mulching

Fumigated soil aids in the control of weeds and soil-borne diseases. Clear, plastic mulch laid before field plantings conserves moisture, increases soil temperature, and increases early and total yields. Plastic and fumigant--Vapam HL (30 to 37 gallons per acre)--should be applied on well-prepared planting beds 30 days before field planting. Plastic should be 4 feet wide (4,000-foot rolls) and laid on 5- or 6-foot centers immediately over the fumigated soil. The soil must be moist when laying the plastic. Fumigation alone may not provide satisfactory weed control under clear plastic. Herbicides labeled and recommended for use on muskmelons may not provide satisfactory weed control when used under clear plastic mulch on nonfumigated soil. Consult your county agent for latest recommendations. Black plastic or paper can be used without a herbicide. Fertilizer must be applied during bed preparation. At least 50 percent of the nitrogen (N) should be in the nitrate (NO<sub>3</sub>) form.

## Weed Control

Section 18 Emergency Label requests may be submitted to supplement weed control recommendations in melons.

Identify the weeds in each field and select recommended herbicides that control those weeds. See Tables E-2 and E-3.

Match preplant incorporated and preemergence herbicide rates to soil type and percent organic matter in each field. See "Mulching" section above for further information on weed control under clear plastic mulch.

Apply postemergence herbicides when crop and weeds are within the recommended size and/or leaf stage.

### For Weed Control Under Plastic Mulch

Black plastic mulch effectively controls most annual weeds by preventing light from reaching the germinated seedling. Herbicides are used under plastic mulch to control weeds around the planting hole, and under the mulch when clear plastic is used. Trickle irrigation tube left on the soil surface may cause weed problems by leaching herbicide away at the emitters. The problem is most serious under clear plastic. Bury the trickle tube several inches deep in the bed to reduce this problem.

1. Complete soil tillage, and form raised beds, if desired, prior to applying herbicide(s). Do not apply residual herbicides before forming beds, or herbicide rate and depth of incorporation may be increased, raising the risk of crop injury. When beds are formed and plastic mulch laid in a single pass, the herbicide should be applied after the bed is formed, as a part of the same operation.
2. Apply herbicide(s) recommended for use under plastic mulch in a band as wide as the mulch. Condensation that forms on the underside of the mulch will activate the herbicide. Use the trickle irrigation to provide moisture if the soil is too dry for condensation to form on the underside of the mulch.
3. Complete by laying the plastic mulch and trickle irrigation tubing, if used, immediately after the herbicide application. Delay punching the planting holes until seeding or transplanting.

Bensulide--5-6 lb/A. Apply 5 to 6 quarts per acre Prefar 4E preemergence in a band under the plastic, immediately before laying the mulch. Condensation that forms on the underside of the mulch will activate the herbicide. Annual grasses and certain annual broadleaf weeds will be suppressed or controlled under the mulch and around the plant hole. Use the maximum recommended rate to improve control of annual broadleaf weeds including common lambsquarter, smooth pigweed, and common purslane.

Halosulfuron--0.023-0.047 lb/A. **Labeled for use on cantaloupes, honeydew melons, and Crenshaw melons, but not labeled on muskmelons.** Apply 0.5 to 1.0 dry ounce Sandea 75WG under plastic mulch to suppress or control broadleaf weeds including common cocklebur, redroot, pigweed, smooth pigweed, ragweed species, and galinsoga. Use the lower rate on coarse-textured soils low in organic matter and higher rates on fine-textured soils and on soils with high organic matter. Condensation that forms on the underside of the mulch will activate the herbicide. Delay transplanting for seven days after application. Occasionally, slight stunting may be observed following Sandea use early

in the season. When observed, recovery is rapid with no effect on yield or maturity. Sandea is an ALS inhibitor. Herbicides with this mode of action have a single site of activity in susceptible weeds. The risk of the development of resistant weed populations is high when herbicides with this mode of action are used continuously and exclusively to control a weed species for several years or in consecutive crops in a rotation. Integrate mechanical methods of control and use herbicides with a different mode of action to control the target broadleaf weeds when growing other crops in the rotation. Do NOT apply Sandea to crops treated with a soil applied organophosphate insecticide, or use a foliar applied organophosphate insecticide within 21 days before or 7 days after a Sandea application. **DO NOT exceed a total of 0.047 pound per acre, equal to 1 dry ounce of Sandea, applied under plastic mulch.**

### For Soil Strips Between Rows of Plastic Mulch (Directed and Shielded Band Applications)

Use the following land preparation, treatment, planting sequences, and herbicides labeled for the crop to treat **Soil Strips Between Rows of Plastic Mulch**, or crop injury and/or poor weed control may result.

1. Complete soil preparation, apply herbicide(s) under the mulch (see above), and lay plastic and trickle irrigation (optional) before herbicide application between the rows.
2. Spray preemergence herbicide(s), registered and recommended for use on the crop in bands onto the soil and the shoulders of the plastic mulch before planting and weeds germinate, **OR** apply after planting as a shielded spray combined with a postemergence herbicide to control emerged weeds. **DO NOT broadcast spray over the plastic mulch at any time!**
3. Incorporate preemergence herbicide into the soil with ½ to 1 inch of rainfall or overhead irrigation within 48 hours of application.

Apply Gramoxone in bands to the soil strips between the plastic mulch before the crop emerges or is transplanted, **AND/OR** as a shielded spray postemergence to control emerged weeds. Use in combination with residual herbicides that are registered for use.

**Note.** All herbicide rate recommendations are made for spraying a broadcast acre (43,560 ft<sup>2</sup>).

### Preemergence

Bensulide--5-6 lb/A. Apply 5 to 6 quarts per acre Prefar 4E before planting and incorporate 1 to 2 inches deep with power-driven rotary cultivators, or apply preemergence and activate with one-half inch of sprinkler irrigation within 36 hours to control most annual grasses. Use the maximum recommended rate preemergence followed by irrigation to suppress certain annual broadleaf weeds including common lambsquarter, smooth pigweed, and common purslane.

Clomazone--0.094-0.188 lb/A. Apply 4 to 8 fluid ounces per acre Command 3ME as a banded directed shielded spray preemergence to the weeds to control annual grasses and many broadleaf weeds including common lambsquarter, velvetleaf, spurred anoda, and jimsonweed. Mustards, morningglory species, and pigweed species will not be controlled. Use lowest recommended rate on coarse-textured,

sandy soils low in organic matter. Higher rates should only be used on medium- and fine-textured soils and sites that have been heavily manured. Combine with Curbit 3EC to control pigweed species where Curbit is registered for use, or use Strategy, the jug-mix that contains clomazone (Command) and ethalfluralin (Curbit).

**WARNING: Command spray or vapor drift may injure sensitive crops and other vegetation up to several hundred yards from the point of application. Do not apply when wind or weather conditions favor herbicide drift. Do not apply to fields adjacent to horticultural, fruit, vegetable, or other sensitive crops (see label). Drift injury from offsite Command movement is extremely apparent; therefore, do not use Command on fields near sensitive locations.**

**Herbicide residues may limit subsequent cropping options when Command is used for weed control. See planting restrictions on the label or consult your local Cooperative Extension office for information regarding subsequent cropping options when Command is used.**

Ethalfluralin--0.38-0.75 lb/A. Apply 1 to 2 pints per acre Curbit 3E as a banded directed shielded spray preemergence to control annual grasses and certain annual broadleaf weeds, including carpetweed and pigweed sp. Control of many other broadleaf weeds, including common lambsquarter, jimsonweed, morningglory sp., ragweed sp., mustard sp., and others may not be acceptable. Dry weather following application may reduce weed control. Cultivate to control emerged weeds if rainfall or irrigation does not occur prior to weed emergence. DO NOT preplant incorporate. DO NOT apply under plastic mulch or tunnels. DO NOT use when soils are cold or wet. Crop injury may result!

Ethalfluralin plus Clomazone (jug-mix)--0.394-1.575 lb/A. Apply 1.5 to 6 pints per acre of Strategy 2.1SC as a banded directed shielded spray preemergence to control annual grasses and many annual broadleaf weeds. Use the lowest recommended rates on coarse-textured sandy soils low in organic matter. Higher rates should only be used on medium- and fine-textured soils and sites that have been heavily manured.

Strategy is a jug-mix of ethalfluralin (Curbit 3E) and clomazone (Command 3ME). Refer to the chart below to determine the amount of each herbicide at commonly used rates:

**Curbit and Command Active Ingredients (ai) in Commonly Used Strategy Rates**

Strategy pints/A	Ethalfluralin (Curbit) lb ai/A	Clomazone (Command) lb ai/A
1.5	0.3	0.094
2	0.4	0.125
3	0.6	0.188
4	0.8	0.25
5	1.0	0.312
6	1.2	0.375

Labeled for use in all the mid-Atlantic states. Read and follow all the recommendations and warnings (above) for ethalfluralin (Curbit) and clomazone (Command).

Halosulfuron--0.023-0.047 lb/A. **Labeled for use on**

**cantaloupes, honeydew melons, and Crenshaw melons, but not labeled on muskmelons.** Apply 0.5 to 1.0 dry ounces of Sandea 75WG to suppress or control broadleaf weeds, including common cocklebur, redroot pigweed, smooth pigweed, ragweed species, and galinsoga. Use the lower rate on coarse textured soils low in organic matter and higher rates on fine-textured soils and on soils with high organic matter. Rainfall or irrigation after application is necessary before weeds emerge to obtain good control. Occasionally slight stunting may be observed following Sandea use early in the season, before the vines begin to run. When observed, recovery is rapid, with no effect on yield or maturity. Sandea is an ALS inhibitor. Herbicides with this mode of action have a single site of activity in susceptible weeds. The risk of the development of resistant weed populations is high when herbicides with his mode of action are used continuously and exclusively to control a weed species for several years or in consecutive crops in a rotation. Integrate mechanical methods of control and use herbicides with a different mode of action to control the target broadleaf weeds when growing other crops in the rotation. DO NOT apply Sandea to crops treated with a soil applied organophosphate insecticide, or use a foliar applied organophosphate insecticide within 21 days before or 7 days after a Sandea application. **DO NOT exceed a total of 0.047 lb/A, equal to 1.0 dry ounce of Sandea, applied preemergence DO NOT exceed a total of 0.078 pounds per acre, equal to 1.66 dry ounces of Sandea, applied preemergence and postemergence, per crop-cycle. DO NOT exceed a total of 0.094 lb/A, equal to 2.0 dry ounces of Sandea, applied preemergence and postemergence to multiple crops in a single year.**

**Postemergence**

Halosulfuron--0.023-0.031 lb/A. **Labeled for use on cantaloupes, honeydew melons, and Crenshaw melons, but not labeled on muskmelons.** Apply 0.5 to 0.66 dry ounce Sandea 75WG as a banded directed shielded spray to suppress or control yellow nutsedge and broadleaf weeds including common cocklebur, redroot pigweed, smooth pigweed, ragweed species, and galinsoga when the crop has 2 to 5 true leaves but has not yet begun to bloom or run. Sandea applied postemergence will not control common lambsquarter or eastern black nightshade. Add nonionic surfactant to be 0.25 percent of the spray solution (1 quart per 100 gallons of spray solution). DO NOT use oil concentrate. Susceptible broadleaf weeds usually exhibit injury symptoms within 1 to 2 weeks of treatment. Typical symptoms begin as yellowing in the growing point that spreads to the entire plant and is followed by death of the weed. Injury symptoms are similar when yellow nutsedge is treated but may require 2 to 3 weeks to become evident and up to a month for the weed to die. Occasionally, slight yellowing of the crop may be observed within a week of Sandea application. When observed, recovery is rapid with no effect on yield or maturity. Sandea is an ALS inhibitor. Herbicides with this mode of action have a single site of activity in susceptible weeds. The risk of the development of resistant weed populations is high when herbicides with this mode of action are used continuously and exclusively to control a weed species for several years or in consecutive crops in a rotation. Integrate mechanical methods of control and use herbicides with a different mode of action to control the target broadleaf weeds when growing other crops in the rotation.

DO NOT apply Sandea to crops treated with a soil applied organophosphate (OP) insecticide, or use a foliar applied organophosphate (OP) insecticide within 21 days before or 7 days after a Sandea application. **DO NOT exceed a total of 0.031 pound per acre, equal to 0.66 dry ounces of Sandea, applied postemergence. DO NOT exceed a total of 0.078 pounds per acre, equal to 1.66 dry ounces of Sandea, applied preemergence and postemergence, per crop-cycle. DO NOT exceed a total of 0.094 pound per acre, equal to 2 dry ounces of Sandea applied preemergence and postemergence to multiple crops in one year.**

Naptalam--1 lb/A. Apply 2 quarts per acre Alanap 2SC as a banded directed shielded spray when the crop is ready to vine to extend residual weed control and to suppress or control smooth pigweed. Do not use Alanap early in the season when growing conditions may be cold or wet. Do not apply if rainfall is expected within 6 hours. Do not mix with liquid fertilizer.

Paraquat--0.6 lb/A. **A Special Local-Needs 24(c) label has been approved for the use of Gramoxone Inteon 2SC postemergence as a directed shielded spray in Delaware, Maryland, New Jersey, Pennsylvania, and Virginia.** Apply 2.4 pints per acre Gramoxone Inteon 2SC as a banded directed shielded spray to control emerged weeds between the rows after crop establishment. Add nonionic surfactant according to the labeled instructions. Do not allow spray or spray drift to contact the crop or injury may result. Use shields to prevent spray contact with the crop plants. Do not exceed a spray pressure of 30 psi. See the label for additional information and warnings.

Clethodim--0.094-0.125 lb/A. Apply 6 to 8 fluid ounces per acre Select 2EC with oil concentrate to be 1 percent of the spray solution (1 gallon per 100 gallons of spray solution) or 12 to 16 fluid ounces of Select Max 0.97EC with nonionic surfactant to be 0.25% of the spray solution (1 quart per 100 gallons of spray solution) postemergence to control many annual and certain perennial grasses, including annual bluegrass. Select will not consistently control goosegrass. The use of oil concentrate with Select 2EC may increase the risk of crop injury when hot or humid conditions prevail. To reduce the risk of crop injury, omit additives or switch to nonionic surfactant when grasses are small and soil moisture is adequate. Control may be reduced if grasses are large or if hot, dry weather or drought conditions occur. For best results, treat annual grasses when they are actively growing and before tillers are present. Repeated applications may be needed to control certain perennial grasses. Yellow nutsedge, wild onion, or broadleaf weeds will not be controlled. Do not tank-mix with or apply within 2 to 3 days of any other pesticide unless labeled, as the risk of crop injury may be increased, or reduced control of grasses may result. Observe a minimum preharvest interval of 14 days.

Sethoxydim--0.2-0.3 lb/A. Apply 1 to 1.5 pints per acre Poast 1.5EC with oil concentrate to be 1 percent of the spray solution (1 gallon per 100 gallons of spray solution) postemergence as a banded directed shielded spray to control annual grasses and certain perennial grasses. **The use of oil concentrate may increase the risk of crop injury when hot or humid conditions prevail.** To reduce the risk of crop injury, omit additives or switch to nonionic surfactant when grasses are small and soil moisture is adequate. Control may

be reduced if grasses are large or if hot, dry weather or drought conditions occur. For best results, treat annual grasses when they are actively growing and before tillers are present. Repeated applications may be needed to control certain perennial grasses. Yellow nutsedge, wild onion, or broadleaf weeds will not be controlled. Do not tank-mix with or apply within 2 to 3 days of any other pesticide unless labeled, as the risk of crop injury may be increased, or reduced control of grasses may result. Observe a minimum preharvest interval of 14 days and apply no more than 3 pints per acre in one season.

### For Seeding Into Soil Without Plastic Mulch (Broadcast Applicators)

Use the following land preparation, treatment, planting sequences, and herbicides labeled for the crop when **Seeding into Soil Without Plastic Mulch**, or crop injury and/or poor weed control may result.

1. Complete soil tillage, apply preplant incorporated herbicide(s), and incorporate. Use a finishing disk or field cultivator that sweeps at least 100% of the soil surface twice, at right angles, operated at a minimum of 7 miles per hour (mph), OR a PTO driven implement once, operated at less than 2 miles per hour (mph).
2. Seed and apply preemergence herbicide(s) immediately after completing soil tillage, and mechanical incorporation of preplant herbicides. Irrigate if rainfall does not occur, to move the herbicide into the soil and improve availability to germinating weed seeds within 2 days of when the field was last tilled, or plan to control escaped weeds by other methods.

**Note.** All herbicide rate recommendations are made for spraying a broadcast acre (43,560 ft<sup>2</sup>).

### Preplant Incorporated

Naptalam--2 lb/A. Apply 1 gallon per acre Alanap 2SC as a preplant incorporated (2 inches) treatment before seeding or transplanting. Weed control may not be satisfactory on sandy soils with less than 1 percent organic matter.

Bensulide *plus* naptalam--4-6 lb/A *plus* 2 lb/A. Apply 1 to 1.5 gallons of Prefar 4EC *plus* 1 gallon Alanap 2SC as a preplant incorporated (2 inches or less) treatment before seeding or transplanting. Tank-mix is approved.

### Preplant Incorporated or Preemergence

Bensulide--5-6 lb/A. Apply 5 to 6 quarts per acre Prefar 4E before planting and incorporate 1 to 2 inches deep with power-driven rotary cultivators, or apply preemergence and activate with one-half inch of sprinkler irrigation within 36 hours to control most annual grasses. Use the maximum recommended rate preemergence followed by irrigation to suppress certain annual broadleaf weeds including common lambsquarter, smooth pigweed, and common purslane.

### Preemergence

Clomazone--0.094-0.188 lb/A. Apply 4 to 8 fluid ounces per acre Command 3ME preemergence to a direct-seeded crop to control annual grasses and many broadleaf weeds including common lambsquarter, velvetleaf, spurred anoda, and jimsonweed. Mustards, morningglory species, and pigweed species will not be controlled. Use lowest recommended rate on coarse-textured, sandy soils low in

organic matter. Higher rates should only be used on medium- and fine-textured soils and sites that have been heavily manured. Combine with Curbit 3EC to control pigweed species where Curbit is registered for use. Some temporary crop injury (partial whitening of leaf or stem tissue) may be apparent after crop emergence. Complete recovery will occur from minor early injury without affecting yield or earliness. Banding the herbicide reduces the risk of crop injury and offsite movement due to vapor drift.

**WARNING: Command spray or vapor drift may injure sensitive crops and other vegetation up to several hundred yards from the point of application. Do not apply when wind or weather conditions favor herbicide drift. Do not apply to fields adjacent to horticultural, fruit, vegetable, or other sensitive crops (see label). Drift injury from offsite Command movement is extremely apparent; therefore, do not use Command on fields near sensitive locations.**

Herbicide residues may limit subsequent cropping options when Command is used for weed control. See planting restrictions on the label or consult your local Cooperative Extension office for information regarding subsequent cropping options when Command is used.

Ethalfuralin--0.38-0.75 lb/A. Apply 1 to 2 pints per acre Curbit 3E preemergence to control annual grasses and certain annual broadleaf weeds, including carpetweed and pigweed sp. Control of many other broadleaf weeds, including common lambsquarter, jimsonweed, morningglory sp., ragweed sp., mustard sp., and others may not be acceptable. Dry weather following application may reduce weed control. Cultivate to control emerged weeds if rainfall or irrigation does not occur prior to weed emergence. DO NOT preplant incorporate. DO NOT apply under plastic mulch or tunnels. DO NOT use when soils are cold or wet. Crop injury may result!

Ethalfuralin plus Clomazone (jug-mix)--0.394-1.575 lb/A. Apply 1.5 to 6 pints per acre of Strategy 2.1SC preemergence to control annual grasses and many annual broadleaf weeds. Use the lowest recommended rates on coarse-textured sandy soils low in organic matter. Higher rates should only be used on medium- and fine-textured soils and sites that have been heavily manured.

Strategy is a **jug-mix** of ethalfuralin (Curbit 3E) and clomazone (Command 3ME). Refer to the chart under Ethalfuralin plus clomazone (jug-mix) in the section **For Soil Strips between Rows of Plastic Mulch** to determine the amount of each herbicide at commonly used rates.

Read and follow all the recommendations and warnings (above) for ethalfuralin (Curbit) and clomazone (Command).

Halosulfuron--0.023-0.047 lb/A. **Labeled for use on cantaloupes, honeydew melons, and Crenshaw melons, but not labeled on muskmelons.** Apply 0.5 to 1.0 dry ounce Sandea 75WG to suppress or control broadleaf weeds including common cocklebur, redroot, pigweed, smooth pigweed, ragweed species, and galinsoga. Use the lower rate on coarse-textured soils low in organic matter and higher rates on fine-textured soils and on soils with high organic matter. Rainfall or irrigation after application is necessary before weeds emerge to obtain good control. Occasionally, slight stunting may be observed following Sandea use early in the season. When observed, recovery is

rapid with no effect on yield or maturity. Sandea is an ALS inhibitor. Herbicides with this mode of action have a single site of activity in susceptible weeds. The risk of the development of resistant weed populations is high when herbicides with this mode of action are used continuously and exclusively to control a weed species for several years or in consecutive crops in a rotation. Integrate mechanical methods of control and use herbicides with a different mode of action to control the target broadleaf weeds when growing other crops in the rotation. DO NOT apply Sandea to crops treated with a soil applied organophosphate insecticide, or use a foliar applied organophosphate insecticide within 21 days before or 7 days after a Sandea application. **DO NOT exceed a total of 0.047 pound per acre, equal to 1 dry ounce of Sandea, applied preemergence. DO NOT exceed a total of 0.078 pounds per acre, equal to 1.66 dry ounces of Sandea, applied preemergence and postemergence, per crop-cycle. DO NOT exceed a total of 0.094 pound per acre, equal to 2 dry ounces of Sandea, applied preemergence and postemergence to multiple crops in a single year.**

#### Postemergence

Halosulfuron--0.023-0.031 lb/A. **Labeled for use on cantaloupes, honeydew melons, and Crenshaw melons, but not labeled on muskmelons.** Apply 0.5 to 0.66 dry ounce Sandea 75WG to suppress or control yellow nutsedge and broadleaf weeds including common cocklebur, redroot pigweed, smooth pigweed, ragweed species, and galinsoga when the crop has 2 to 5 true leaves but has not yet begun to bloom or run. Sandea applied postemergence will not control common lambsquarter or eastern black nightshade. Add nonionic surfactant to be 0.25 percent of the spray solution (1 quart per 100 gallons of spray solution). DO NOT use oil concentrate. Susceptible broadleaf weeds usually exhibit injury symptoms within 1 to 2 weeks of treatment. Typical symptoms begin as yellowing in the growing point that spreads to the entire plant and is followed by death of the weed. Injury symptoms are similar when yellow nutsedge is treated but may require 2 to 3 weeks to become evident and up to a month for the weed to die. Occasionally, slight yellowing of the crop may be observed within a week of Sandea application. When observed, recovery is rapid with no effect on yield or maturity. Sandea is an ALS inhibitor. Herbicides with this mode of action have a single site of activity in susceptible weeds. The risk of the development of resistant weed populations is high when herbicides with this mode of action are used continuously and exclusively to control a weed species for several years or in consecutive crops in a rotation. Integrate mechanical methods of control and use herbicides with a different mode of action to control the target broadleaf weeds when growing other crops in the rotation. DO NOT apply Sandea to crops treated with a soil applied organophosphate (OP) insecticide, or use a foliar applied organophosphate (OP) insecticide within 21 days before or 7 days after a Sandea application. **DO NOT exceed a total of 0.031 pound per acre, equal to 0.66 dry ounces of Sandea, applied postemergence. DO NOT exceed a total of 0.078 pounds per acre, equal to 1.66 dry ounces of Sandea, applied preemergence and postemergence, per crop-cycle. DO NOT exceed a total of 0.094 pound per acre, equal to 2 dry ounces of Sandea applied preemergence and postemergence to multiple crops in one year.**

Naptalam--1 lb/A. Apply 2 quarts per acre Alanap 2SC when the crop is ready to vine to extend residual weed control and to suppress or control smooth pigweed. Do not use Alanap early in the season when growing conditions may be cold or wet. Do not apply if rainfall is expected within 6 hours. Do not mix with liquid fertilizer.

Paraquat--0.6 lb/A. **A Special Local-Needs 24(c) label has been approved for the use of Gramoxone Max 3SC or Gramoxone Inteon 2SC postemergence as a directed shielded spray in Delaware, Maryland, New Jersey, Pennsylvania, and Virginia.** Apply 1.5 pints per acre Gramoxone Max 3SC or 2.4 pints per acre Gramoxone Inteon 2SC as a directed spray to control emerged weeds between the rows after crop establishment. Add nonionic surfactant according to the labeled instructions. Do not allow spray or spray drift to contact the crop or injury may result. Use shields to prevent spray contact with the crop plants. Do not exceed a spray pressure of 30 psi. See the label for additional information and warnings.

Clethodim--0.094-0.125 lb/A. Apply 6 to 8 fluid ounces per acre Select 2EC with oil concentrate to be 1 percent of the spray solution (1 gallon per 100 gallons of spray solution) or 12 to 16 fluid ounces of Select Max 0.97EC with nonionic surfactant to be 0.25% of the spray solution (1 quart per 100 gallons of spray solution) postemergence to control many annual and certain perennial grasses, including annual bluegrass. Select will not consistently control goosegrass. The use of oil concentrate with Select 2EC may increase the risk of crop injury when hot or humid conditions prevail. To reduce the risk of crop injury, omit additives or switch to nonionic surfactant when grasses are small and soil moisture is adequate. Control may be reduced if grasses are large or if hot, dry weather or drought conditions occur. For best results, treat annual grasses when they are actively growing and before tillers are present. Repeated applications may be needed to control certain perennial grasses. Yellow nutsedge, wild onion, or broadleaf weeds will not be controlled. Do not tank-mix with or apply within 2 to 3 days of any other pesticide unless labeled, as the risk of crop injury may be increased, or reduced control of grasses may result. Observe a minimum preharvest interval of 14 days.

Sethoxydim--0.2-0.3 lb/A. Apply 1 to 1.5 pints per acre Poast 1.5EC with oil concentrate to be 1 percent of the spray solution (1 gallon per 100 gallons of spray solution) postemergence to control annual grasses and certain perennial grasses. **The use of oil concentrate may increase the risk of crop injury when hot or humid conditions prevail.** To reduce the risk of crop injury, omit additives or switch to nonionic surfactant when grasses are small and soil moisture is adequate. Control may be reduced if grasses are large or if hot, dry weather or drought conditions occur. For best results, treat annual grasses when they are actively growing and before tillers are present. Repeated applications may be needed to control certain perennial grasses. Yellow nutsedge, wild onion, or broadleaf weeds will not be controlled. Do not tank-mix with or apply within 2 to 3 days of any other pesticide unless labeled, as the risk of crop injury may be increased, or reduced control of grasses may result. Observe a minimum preharvest interval of 14 days and apply no more than 3 pints per acre in one season.

## Postharvest With or Without Plastic Mulch

Paraquat--0.6 lb/A. **A Special Local-Needs 24(c) label has been approved for the use of Gramoxone Inteon 2SC for postharvest desiccation of the crop in Delaware, New Jersey and Virginia.** Apply 2.4 pints per acre Gramoxone Inteon 2SC as a broadcast spray after the last harvest. Add nonionic surfactant according to the labeled instructions. Use to prepare plastic mulch for replanting, or to aid in the removal of the mulch. See the label for additional information and warnings.

**Note.** All herbicide rate recommendations are made for spraying a broadcast acre (43,560 ft<sup>2</sup>).

## Pollination

Honeybees, squash bees, bumblebees and other wild bees are important for proper set and pollination. Populations of pollinating insects may be adversely affected by insecticides applied to flowers or weeds in bloom. Apply insecticides only in the evening hours or wait until bloom is completed before application. See section on "Pollination" in the General Production Recommendations and/or Table D-6 for relative toxicity of various pesticides for hazard to bees.

## Insect Control

**NOTE:** Copies of specific insecticide product labels can be downloaded by visiting the websites [www.CDMS.org](http://www.CDMS.org) or [www.Greenbook.org](http://www.Greenbook.org). Also, specific labels can be obtained via web search engines.

### Seed Corn Maggot

To prevent maggot damage to transplants, a banded application of a soil-incorporated insecticide may be needed. Also see Chapter E – Pest Management under the heading of “Soil Pests--Their Detection and Control” Maggots. **Note:** The use of imidacloprid at planting may help to reduce seed corn maggot populations.

### Cucumber Beetle

Cucumber beetles transmit bacterial wilt, and most varieties of muskmelons are highly susceptible to this disease. Also, adult beetles can cause direct feeding injury to young plants. Insecticides should be used to control adult beetles before they feed extensively on the cotyledons and first true leaves. If foliar insecticides are used, begin spraying shortly after plant emergence and repeat applications at weekly intervals if new beetles continue to invade fields. Treatments may be required until vines begin to run.

acetamiprid (Assail 30SG or OLF)  
beta-cyfluthrin (Baythroid XL)  
bifenthrin (Brigade EC, Sniper, or OLF)  
carbaryl (Sevin 80S or OLF)  
cyfluthrin (Renounce 20WP, Tombstone or OLF)  
endosulfan (Thionex 3EC or OLF)  
esfenvalerate (Asana XL)  
fenpropathrin (Danitol 2.4EC)  
lambda-cyhalothrin (Lambda-Cy, LambdaT, Silencer, Warrior, Warrior II or OLF)  
methomyl (Lannate LV or OLF)  
permethrin (Perm-Up, Pounce 3.2EC or OLF)  
thiamethoxam (soil-Platinum 2SG or OLF; foliar-Actara 25WDG)

**Squash Vine Borer**

When vines begin to run, apply to bases of plants four times at 7-day intervals:

acetamiprid (Assail 30SG or OLF)  
 bifenthrin (Brigade EC, Sniper, or OLF)  
 endosulfan (Thionex 3EC or OLF)  
 esfenvalerate (Asana XL)  
 lambda-cyhalothrin (Lambda-Cy, LambdaT, Silencer,  
 Warrior, Warrior II or OLF)

**Cutworms** (Also see "Cutworms" section in Soil Pests-- Their Detection and Control.)

beta-cyfluthrin (Baythroid XL)  
 bifenthrin (Brigade EC, Sniper, or OLF)  
 esfenvalerate (Asana XL)  
 methomyl (Lannate LV or OLF)  
 permethrin (Perm-Up, Pounce 3.2EC or OLF)

**Pickleworm (PW), Melonworm (MW)**

Make one treatment prior to fruit set, and then treat weekly:

beta-cyfluthrin (Baythroid XL)  
 bifenthrin (Brigade EC, Sniper, or OLF)  
 carbaryl (Sevin 80S or OLF)  
 chlorantraniliprole (chemigation/foliar -Coragen 1.67SC)  
 endosulfan (Thionex 3EC or OLF)  
 esfenvalerate (Asana XL)  
 flubendiamide (Synapse WG)  
 indoxacarb (Avaunt 30WDG or OLF)  
 lambda-cyhalothrin (Lambda-Cy, LambdaT, Silencer,  
 Warrior, Warrior II or OLF)  
 methomyl (Lannate LV or OLF)  
 methoxyfenozide (Intrepid 2F)  
 permethrin (Perm-Up, Pounce 3.2 EC or OLF) (**PW only**)  
 spinetoram (Radiant 2SC)  
 spinosad (Entrust80W, SpinTor 2SC or OLF)

**Aphids**

**Note.** Aphids transmit mosaic virus. Thorough spray coverage beneath leaves is important. Reflective mulches will slow aphid colonization until canopy closure.

endosulfan (Thionex 3EC or OLF)  
 flonicamid (Beleaf 50SG)  
 imidacloprid (Admire 2F, Admire PRO or OLF)  
 methomyl (Lannate LV or OLF) (**melon aphid only**)  
 oxydemeton (Metasystox-R 2SC) (**GPA only**)  
 pymetrozine (Fulfill 50WP)  
 thiomethoxam (soil-Platinum 2SG or OLF; foliar-Actara 25WDG)

**Squash Bug**

Begin treatments if greater than one egg mass per plant is present. Sprays should target nymphal stages. Treat every 7-10 days, or as needed:

acetamiprid (Assail 30SG or OLF)  
 bifenthrin (Brigade EC, Sniper, or OLF)  
 carbaryl (Sevin 80S or OLF)  
 esfenvalerate (Asana XL)  
 lambda-cyhalothrin (Lambda-Cy, LambdaT, Silencer,  
 Warrior, Warrior II or OLF)  
 permethrin (Perm-Up, Pounce 3.2 EC or OLF)

**Leafhoppers**

High levels of leafhoppers cause leaf yellowing (chlorosis) known as hopper burn which will result in yield loss.

acetamiprid (Assail 30SG or OLF)  
 beta-cyfluthrin (Baythroid XL )  
 bifenthrin (Brigade EC, Sniper, or OLF)  
 dimethoate (Dimate 4EC or OLF)  
 dinotefuran (soil/foliar- Venom 70SG or OLF)  
 esfenvalerate (Asana XL)  
 lambda-cyhalothrin (Lambda-Cy, LambdaT, Silencer,  
 Warrior, Warrior II or OLF)  
 permethrin (Perm-Up, Pounce 3.2EC or OLF)

**Leafminers**

abamectin (Agri-Mek EC, Abba EC, Temprano or OLF)  
 chlorantraniliprole (chemigation/foliar-Coragen 1.67SC)  
 dimethoate (Dimate 4EC or OLF)  
 dinotefuran (soil/foliar-Venom 70SG or OLF)  
 oxamyl (Vydate L)  
 permethrin (Perm-Up, Pounce 3.2EC or OLF)  
 spinosad (Entrust 80W, SpinTor 2SC or OLF)

**Rindworms (Cucumber beetle larvae)**

Damage to the rinds may result from any one or a complex of insects including cucumber beetle, wireworms, and a number of "worm species", including but not limited to beet armyworm. Management of adult cucumber beetles early in the season may help reduce damage. See cucumber beetle and beet armyworm sections for labeled products.

**Beet Armyworm**

chlorantraniliprole (chemigation/foliar- Coragen 1.67SC)  
 flubendiamide (Synapse WG)  
 indoxacarb (Avaunt 30WDG)  
 methoxyfenozide (Intrepid 2F)  
 spinetoram (Radiant 2SC)  
 spinosad (Entrust 80W, SpinTor 2SC or OLF)

**Cabbage Looper**

*Bacillus thuringiensis* (Biobit, Dipel, Dipel 2X, Javelin, XenTari or OLF)  
 beta-cyfluthrin (Baythroid XL)  
 bifenthrin (Brigade EC, Sniper, or OLF)  
 chlorantraniliprole (chemigation/foliar- Coragen 1.67SC)  
 endosulfan (Thionex 3EC or OLF)  
 esfenvalerate (Asana XL)  
 fenpropathrin (Danitol 2.4EC)  
 flubendiamide (Synapse WG)  
 lambda-cyhalothrin (Lambda-Cy, LambdaT, Silencer,  
 Warrior, Warrior II or OLF)  
 methomyl (Lannate LV or OLF)  
 methoxyfenozide (Intrepid 2F)  
 spinetoram (Radiant 2SC)  
 spinosad (Entrust 80W, SpinTor 2SC or OLF)

**Mites**

Mite infestations generally begin around field margins and grassy areas. **CAUTION: DO NOT** mow or maintain these areas after midsummer since this forces mites into the crop. Localized infestations can be spot treated. Begin treatment when 10 to 15 percent of the crown leaves are infested early in the season, or when 50 percent of the terminal leaves are infested later in the season.

**Note:** Continuous use of carbaryl or pyrethroids may result in mite outbreaks.

abamectin (Agri-Mek EC, Abba EC, Temprano or OLF)  
bifenthrin (Brigade EC, Sniper, or OLF)  
bifentzate (Acramite 50WS)  
etoxazole (Zeal)  
fenpropathrin (Danitol 2.4EC)  
spiromesifen (Oberon 2SC)

**Note:** Use of dimethoate for leafminer control will reduce the mite population.

### Thrips

dimethoate (Dimate 4EC or OLF)  
dinotefuran (soil/foliar- Venom 70SG or OLF)  
lambda-cyhalothrin (Lambda-Cy, LambdaT, Silencer, Warrior, Warrior II or OLF)  
oxamyl (Vydate L)  
spinetoram (Radiant 2SC)  
spinosad (Entrust 80W, SpinTor 2SC or OLF)

### Whiteflies

bifenthrin (Brigade EC, Sniper, or OLF)  
dinotefuran (soil/foliar- Venom 70SG)  
endosulfan (Thionex 3EC or OLF)  
fenpropathrin (Danitol 2.4EC)  
pyriproxyfen (Knack)  
spiromesifen (Oberon 2SC)  
thiamethoxam (soil-Platinum 2SG or OLF; foliar- Actara 25WDG)

Pesticide	Use Category <sup>1</sup>	Hours to Reentry <sup>2</sup>	Days to Harvest <sup>3</sup>
<b>INSECTICIDE</b>			
abamectin	R	12	7
<i>Bacillus thuringiensis</i>	G	4	0
beta-cyfluthrin	R	12	0
bifenthrin	R	12	3
bifentzate	G	12	3
carbaryl	G	12	3
carbofuran	R	48	AP
dimethoate	R	48	3
dinotefuran (soil/foliar)	G	12	21/1
endosulfan	R	24	2
esfenvalerate	R	12	3
fenpropathrin	R	24	7
flonicamid	G	12	0
imidacloprid (soil only)	G	12	21
indoxacarb	G	12	3
lambda-cyhalothrin	R	24	1
methomyl	R	48	3
methoxyfenozide	G	4	3
oxamyl	R	48	1
oxydemeton-methyl	R	48	14
permethrin	R	12	0
pymetrozine	G	12	0
pyriproxyfen	G	12	7
spinetoram	G	4	3
spinosad	G	4	3
spiromesifen	G	12	7
thiamethoxam (soil/foliar)	G	12	30/0

(table continued)

Pesticide	Use Category <sup>1</sup>	Hours to Reentry <sup>2</sup>	Days to Harvest <sup>3</sup>
<b>FUNGICIDE (FRAC code)</b>			
Cabrio (Group 11)	G	12	0
chlorothalonil (Group M5)	G	12	0
copper, fixed (Group M1)	G	24	0
Curzate (Group 27)	G	12	3
Forum (Group 40)	G	12	0
Gavel (Groups 22 + M3)	G	48	5
mancozeb (Group M3)	G	12,24	5
MetaStar (Group 4)	G	48	AP
Presidio (Group 43)	G	12	2
Previcur Flex (Group 28)	G	12	2
Pristine (Groups 11 + 7)	G	12	0
Procure (Group 3)	G	12	0
Quadris (Group 11)	G	4	1
Quintec (Group 13)	G	12	3
Rally (Group 3)	G	24	0
Ranman (Group 21)	G	12	0
Reason (Group 11)	G	12	14
Ridomil Gold (Group 4)	G	48	4
Tanos (Groups 11 + 27)	G	12	3
Ultra Flourish (Group 4)	G	48	0

See Table D-6.

<sup>1</sup> G = general, R = restricted

<sup>2</sup> Chemicals with multiple designations are based on product and/or formulation differences. CONSULT LABEL

<sup>3</sup> AP = At plant

### Nematode Control

See Chapter E – Pest Management the Nematodes section under Soil Pests--Their Detection and Control. Use fumigants listed in the "Soil Fumigation" section of the same chapter, or Vydate L--1.0-2.0 gal 2L/A. Incorporate into the top 2 to 4 inches of soil or 2.0 to 4.0 pints 2L/A applied 2 weeks after planting and repeat 2 to 3 weeks later.

### Disease Control

#### Damping-Off

Apply the following in a 7-inch band after seeding. Use formula given in the "Calibration for Changing from Broadcast to Band Application" section of Chapter E for calibrating Granular Application Equipment to determine amount of Ridomil Gold, Ultra Flourish or MetaStar needed per acre.

mefenoxam (Ridomil Gold--1.0-2.0 pt 4EC/A or Ultra Flourish--2.0-4.0 pt 2E/A), or  
metalaxyl (MetaStar)--4.0-8.0 pt 2E/A

#### Viruses (CMV, WMV2, PRSV, and ZYMV)

Plant fields as far away from existing cucurbit plantings as possible to help reduce the chances of aphid transmission of viruses from existing fields to new fields.

#### Bacterial Wilt

Controlling striped and spotted cucumber beetles is essential for preventing wilt. See the preceding "Cucumber Beetle" section under Insect Control for specific recommendations. Insecticide applications made at seeding may not prevent beetle damage through the season. Therefore, additional foliar insecticide applications may be necessary.

**Fusarium Wilt**

Rotate to allow 5 years between muskmelon plantings in any given location. Use resistant cultivars when possible. The cultivars ‘Athena’, ‘Minerva’, and ‘Aphrodite’ have resistance to Race 0, 1, and 2 (predominant races present in the area). Cultivars ‘Eclipse’ and ‘Superstar’ have resistance to Race 2 only.

**Phytophthora Fruit Rot**

To minimize the occurrence of this disease, rotate away from susceptible crops (cucurbits, peppers, lima beans and snap beans, eggplants, and tomatoes) for as long as possible. Fields should be adequately drained to ensure that water does not accumulate around plants. Apply the following when conditions are favorable for disease development and always tank-mix with a fixed copper:

The following materials provide suppression only:

Forum--6.0 fl oz 4.18SC/A (must be tank mixed with another fungicide active against Phytophthora blight on muskmelon, such as fixed copper), or  
 Gavel--1.5-2.0 lb 75DF/A (**Note: some muskmelon cultivars are sensitive to Gavel**), or  
 Tanos--8.0-10.0 oz 50DF/A, or  
 Ranman--2.75 fl oz 400 SC/A (*plus* an adjuvant, see label for details)

**Powdery Mildew**

The fungus that causes cucurbit powdery mildew can develop resistance to high-risk fungicides. Resistance to strobilurin (FRAC code 11) and DMI (FRAC code 3) fungicides have been reported in the Eastern US. Proper fungicide resistance management should be followed.

Powdery mildew generally occurs from mid-July until the end of the season. Excellent resistance is available in most recommended muskmelon varieties. Scout fields for the presence of powdery mildew. If one lesion is found on the underside of 45 old leaves, begin the following fungicide program:

**Alternate one of the following tank mixes:**

Rally--5.0 oz 40 WSP/A *plus* chlorothalonil--2.0-3.0 pt 6F/A, or  
 Procure--4.0-8.0 oz 50WS/A *plus* chlorothalonil--2.0-3.0 pt 6F/A

**With:**

Quintec--6.0 fl oz 2.08SC/A *plus* chlorothalonil--2.0-3.0 pt 6F/A, or  
 Pristine--12.5-18.5 oz 38WG/A *plus* chlorothalonil--2.0-3.0 pt 6F/A

**Downy Mildew**

Scout fields for disease incidence beginning in early summer. Begin sprays when vines run or if disease is predicted for the region. Refer to the Cucurbit Downy Mildew Forecasting website [www.ces.ncsu.edu/depts/pp/cucurbit/](http://www.ces.ncsu.edu/depts/pp/cucurbit/) for current status of the disease. Preventative applications are much more effective than applications made after downy mildew is detected. The following are the most effective materials (tank-mix these products with a protectant such as chlorothalonil (1.5-2 pt 6F/A or OLF) or mancozeb (3.0 lb 75 DF/A) and rotate between fungicides from different FRAC codes:

Ranman--2.1-2.75 fl. oz. 400SC/A, or

Presidio--3.0-4.0 fl oz 4SC/A, or  
 Previcur Flex--1.2 pt 6F/A, or  
 Tanos--8.0 oz 50WDG/A, or  
 Curzate--3.2 oz 60DF/A, or  
 Gavel--1.5-2.0 lb 75DF/A (Gavel contains mancozeb, which is a protectant fungicide and therefore does not need a tank-mix partner.) **Note:** Some muskmelon varieties are sensitive to Gavel.

Materials with different modes of action (FRAC codes) should always be alternated.

Sprays should be applied on a 7-day schedule. Under severe disease conditions spray interval may be reduced if the label allows.

**Alternaria Leaf Blight**

Rotate muskmelons with unrelated crops. Begin sprays when vines begin to run, or earlier if symptoms are detected.

**Alternate one of the following:**

chlorothalonil--2.0-3.0 pt 6F/A, or  
 mancozeb--2.0-3.0 lb 75DF/A, (Muskmelon varieties, ‘Harvest Queen’, ‘Gold Star’, ‘Super Star’, ‘Sweet and Early’, and ‘Saticoy’ are sensitive to mancozeb.)

**With:**

Pristine--12.5-18.5 oz 38WG/A, or

a tank-mix containing chlorothalonil *plus* one of the following every 14 days:

Quadris--11.0-15.5 fl oz 2.08SC/A (Do not apply near apples, see label for details), or  
 Cabrio--12.0-16.0 oz 20EG/A, or  
 Reason--5.5 fl oz 500SC/A

**Scab**

Disease occurs during cool periods. Begin sprays as true leaves form. Repeat every 5 to 7 days.

chlorothalonil--2.0-3.0 pt 6F/A or OLF

**Gummy Stem Blight**

Gummy stem blight occurs primarily in the late summer. Fungicides with a high-risk for resistance development such as FRAC code 11 fungicides (Cabrio, Pristine and Quadris) should be tank-mixed with a protectant fungicide to reduce the possibility of resistance development (See Table E-8). When tank-mixing, use the minimum labeled rate of each fungicide in the tank-mix. Do not apply FRAC code 11 fungicides more than 4 times total per season. If resistance to FRAC code 11 fungicides exists in the area, do not apply them. Use fungicides from a different FRAC code.

Begin sprays when vines begin to run, apply the following:

**Under low disease pressure:**

Apply chlorothalonil every 7 days at 2.0-3.0 pt/A, or

**Under high disease pressure:****Alternate:**

chlorothalonil--2.0-3.0 pt 6F/A or OLF (Use low rate early in season)

**With:**

A tank-mix containing a protectant fungicide (such as chlorothalonil or mancozeb) *plus*  
 Pristine--12.5-18.5 oz 38W/A

**Manganese Toxicity**

This disorder occurs in acid soils (pH less than 5.8). Maintain soil pH at 6.5 to avoid toxicity.

**Harvesting and Storage**

Muskmelon hybrids should be harvested no sooner than half-slip and preferably at full-slip for optimum fruit quality. High-quality melons depend on maintaining the vines and leaves until melons are mature. Harvest daily or twice daily in hot weather. Hydrocool fruit immediately following harvest, and store at 34° F.

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