Muskmelons and Mixed Melons

Recommended Varieties

Type	Flesh Color	Variety[1,2]	Days[3]	Rind Description	lb[4]	PM[5]	FW[6]
Muskmelon	Orange	Accolade	74	Oval, medium netting, light sutures	5	1,2	0,1,2
		Aphrodite	80	Light netting, light sutures	7	1	0,1,2
		Astound	75	Oval, fine netting, light sutures	5	1,2	0,1,2
		Athena	79	Oval, medium netting, light sutures	6	1,2	0,1,2
		Atlantis	74	Oval, medium netting, light sutures	7	1,2	0,1,2
		Avatar	72	Oval, medium netting	8	1,2	0,1,2
		Goddess	68	Oval, medium netting, light sutures	5	1,2	0,1,2
		Halona	73	Round, netted, heavy sutures	4	1,2	0,1,2
		Orange Sherbet	80	Oval, medium netted, heavy sutures	7	1	0,1,2
		Rockstar	73	Oval, medium netting, light sutures	6	1,2	0,1,2
		Sarah's Choice	76	Round, netted, no sutures	3	1,2	0,1,2
		Sugar Cube	80	Mini, round, netted, no sutures	2	1,2	0,1,2
		Sugar Rush	75	Oval, netted	4	1,2	0,1,2
Canary	White	Camino Europa	84	Oval, yellow, wrinkled, no net	5	1,2	0,1,2
		Halo	75	Oval, yellow, no net	5	1	0,1
		Natal	85	Oval, yellow, wrinkled, no net	5	1,2	0, 1,2
Galia	Green	Ambassador	76	Slight oval, fine net, no sutures	7	1,2	0.1.2
		Diplomat	75	Slight oval, fine net, no sutures	5	1,2	
		Passport	75	Slight oval, fine net, no sutures	6		
Honeydew	Light green	Dewlightful	90	Round, white, smooth	7	1,2	
		Earli-Dew	80	Round, white, smooth	3		2
		Summer Dew	88	Round, white, smooth	5	1,2	0,2
	White	Snow Leopard	71	Slight oval, white/green, smooth	2		1
Christmas	Light green	Lambkin	70	Oval, smooth, green/yellow rind	3		

[1]**Listed alphabetically within type**. [2]All varieties are hybrids. [3]Relative days to harvest. [4]lb=average harvest weight (pounds per melon). [5]PM=Powdery Mildew; resistance to PM races as reported from source seed companies. [6]FW=Fusarium Wilt; resistance to FW races as reported from source seed companies.

Melon Descriptions

Ananas	Middle Eastern Melons. Oval shaped with medium-fine netting over pale green to orange rind. Very sweet, aromatic white flesh or orange-pink flesh. Average weight 3-4 pounds.
Canary	Bright yellow rinds and an oblong shape. Inside, the pale, cream-colored flesh is juicy, and the flavor is very mild.
Casaba	Oval shape with a pointy end, wrinkled yellow skin, weighing 4-7 pounds. The pale, almost white flesh is extremely sweet.
Charentais	French melons identifiable by their smooth, gray, or gray-blue rinds with sutures and orange flesh and are small in size.
Christmas	Football shape and weighing upwards of 5 to 8 pounds. They have green mottled rinds and pale orange to light green flesh depending upon the variety. Sweet flesh.
Crenshaw	Casaba cross with a slightly more oblong shape, weighing at least 5 pounds. The slightly wrinkled green rind ripens to yellow. Inside, the flesh is pale peachy orange. It has a strong, spicy aroma.
Crosses	There are a number of crosses, *e.g.*, muskmelon x Galia and Charentais x Muskmelon that produce excellent melons.
Galia	Israeli melons that have netted rinds similar to cantaloupes but paler in color. The sweet pale green to almost white flesh has the consistency of a honeydew with what has been described as a spicy-sweet or banana-like aroma. When ripe, they slip from the vine.
Honeydew	Smooth, white to greenish-white rinds (some may be yellow) and sweet flesh that may be green, white, or orange. Its texture is similar to a cantaloupe, but the flavor more subtle and sweet.
Muskmelon	The familiar American cantaloupes with orange flesh and netted skin. This includes deep sutured round to oval "Superstar" types, Eastern "Athena" types that are oval with slight sutures, and Western shipping types without sutures.
Oriental	Small (weighing a little more than 1 pound), elongated yellow melons with white sutures, and sweet, pale peach to white flesh. Because the seeds are so small and the rind is so thin, the entire melon can be eaten.
Other	Specialty melons that do not fit into the other categories are also available including those categorized as "Gourmet".
Persian	Bigger than cantaloupes, have a dark green rind with light brown netting. As it ripens, the rind turns to light green. Bright pink-orange flesh has a delicate flavor. Unlike most melons in the Reticulatus group, Persian melons do not slip from the vine when mature.
Tuscan	A category of muskmelon that is oblong with deep green sutures and netted straw-colored skin.

Recommended Nutrients Based on Soil Tests

In addition to using the table below, check the suggestions on rate, timing, and placement of nutrients in your soil test report and Chapter B Soil and Nutrient Management. Your state's soil test report recommendations and/or your farm's nutrient management plan supersede the recommendations found below.

		Soil Phosphorus Level				Soil Potassium Level				
		Low	Med	High (Opt)	Very High	Low	Med	High (Opt)	Very High	
	N (lb/A)	P_2O_5 (lb/A)				K_2O (lb/A)				Nutrient Timing and Method
Musk-melons[1,2]	75-150	150	100	50	0[3]	200	150	100	0[3]	Total nutrient recommended
	25-50	150	100	50	0[3]	200	150	100	0[3]	Broadcast and disk-in or follow fertigation schedule
	25-50	0	0	0	0	0	0	0	0	Sidedress when vines begin to run or follow fertigation schedule
	25-50	0	0	0	0	0	0	0	0	Sidedress prior to first harvest or follow fertigation schedule

For plasticulture, fertilization rates are based on a standard row spacing of 6 ft.

[1]Apply 1-2 lb/A of boron (B) with broadcast fertilizer; see also Table B-7. in Chapter B Soil and Nutrient Management.

[2]Apply 25-30 lb/A of sulfur (S) for most soils.

[3]In VA, crop replacement values of 25 lb/A of P_2O_5 and 50 lb/A of K_2O are recommended on soils testing Very High.

Fertigation Schedule Examples

This table provides examples of fertigation schedules based on two common scenarios – sandy coastal plain soils and heavier upland soils. Modify according to specific soil tests and base fertility.

Fertigation recommendations for 100 lb N and 100 lb K_2O[1,2] For soils with organic matter content less than 2% or coarse texture and low to medium or deficient K								
			Nitrogen			**Potash**		
Preplant (lb/A)[3]			**50**			**100**		
			N	**N**	**N**	**K_2O**	**K_2O**	**K_2O**
Stage and Description	Weeks	Days	lb/day	lb/week	lb/stage	lb/day	lb/week	lb/stage
1 Early vegetative	1-4	1-28	0.9	6.3	25.2	0.9	6.3	25.2
2 Late vegetative	5-7	29-49	1.3	9.1	27.3	1.3	9.1	27.3
3 Flowering and fruiting	8-11	50-77	1.5	10.5	42	1.5	10.5	42
4 Harvest[4]	12-13	78-91	0.7	4.9	9.8	0.7	4.9	9.8
Fertigation recommendations for 60 lb N and 60 lb K_20[1,2] For soils with organic matter content greater than 2% or fine texture and high or optimum K								
			Nitrogen			**Potash**		
Preplant (lb/A)[3]			**40**			**40**		
			N	**N**	**N**	**K_2O**	**K_2O**	**K_2O**
Stage and Description	Weeks	Days	lb/day	lb/week	lb/stage	lb/day	lb/week	lb/stage
1 Early vegetative	1-4	1-28	0.5	3.5	14	0.5	3.5	14
2 Late vegetative	5-7	29-49	0.8	5.6	16.8	0.8	5.6	16.8
3 Flowering and fruiting	8-11	50-77	0.9	6.3	25.2	0.9	6.3	25.2
4 Harvest[4]	12-13	78-91	0.4	2.8	5.6	0.4	2.8	5.6

[1]Rates are based on 7,260 linear bed ft/A (6-ft bed spacing). If beds are closer or wider, fertilizer rates should be adjusted proportionally. Drive rows should not be used in acreage calculations (see section C 3. Fertigation).

[2]Base overall application rate on soil test recommendations.

[3]Applied under plastic mulch to effective bed area using modified broadcast method.

[4]For extended harvest after 10 weeks continue fertigation at this rate.

Plant Tissue Testing

Plant tissue testing can be a valuable tool to assess crop nutrient status during the growing season to aid with in-season fertility programs or to evaluate potential deficiencies or toxicities. Critical muskmelon tissue test values for most recently matured leaves prior to fruit set: N 4-5 %, P 0.4-0.7 %, K 5.0-7.0 %, Ca 3-5%, Mg 0.35-0.45% and S 0.2%. For additional nutrients and other growth stages consult with a tissue testing laboratory or check the following University of Florida website: *https://edis.ifas.ufl.edu/publication/ep081*.

Seed Treatment

Seed should be treated; check with your seed company and see Disease Control below.

Plant Production, Planting and Spacing

Transplants for early plantings should be grown in pots or cells with at least 2 x 2 inches per plant (50 cell trays). Later plantings can be grown in 72 cell trays. Small cells will restrict root growth and provide less protection to the newly set transplant in colder soils. One ounce of muskmelon seed contains 950-1,250 seeds. Grow at 70-75°F.

Transplant container-grown plants through plastic mulch when soil temperature has reached 60°F (16°C). Temperatures below 50°F (10°C) can stunt plant growth. Direct seeding in plastic mulch or bare ground is also successful. First planting dates vary from May 1 in southern regions to June 5 in northern areas and successive plantings can be made to harvest through early September. Early plantings should be protected from winds with row covers, or rye windbreaks. The recommended spacing for melons is 5-6 ft between rows and 2-3 ft between plants in the row for transplants (space mini melons closer than large melons). Direct seedings should be over-seeded and thinned to a similar population.

Drip/Trickle Fertilization

Before mulching, adjust soil pH to around 6.5, apply enough farm-grade fertilizer to supply 25-50% of N and K_2O requirements and thoroughly incorporate into the soil. At least 50% of N should be in the nitrate (NO_3) form. Apply all P_2O_5 preplant and incorporate into the soil. Apply the balance of N and K_2O through the drip irrigation system throughout the season. The first fertigation application should be within a week after field transplanting or direct seeding.

Manganese Toxicity

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

Mulching

Plastic mulch laid on moist soil before field plantings conserves moisture, increases soil temperature, and increases early and total yields. Various widths of plastic mulch are available; choose a width that works with your production system and available equipment. Fumigation aids in the control of weeds and soil-borne diseases. Several fumigants can be used on muskmelon depending on what the predominant pests are. Plastic and fumigant should be applied to well-prepared soil 30 days before field planting. Fumigation alone may not provide satisfactory weed control under plastic.

Pollination (see also sections A 12. Pollination and D 6.3.1. Protection of Pollinators).

Honey bees, squash bees, bumble bees and other wild bees are important for pollination and fruit set. 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 insecticide tables for relative toxicity of various pesticides for bees and follow all label application restrictions for pollinator protection.

Harvest and Post-Harvest Considerations

Muskmelons should be harvested no sooner than at half-slip and preferably at full-slip for optimum fruit quality. Canary melons and Galia melons also slip, but Honeydews and some specialty melons do not. Pick honeydew melons when the stem end becomes slightly springy, and the skin takes on a creamy yellow appearance. Harvest daily in hot weather. Cooling to remove field heat is desired. Precooling can be done with cold water, cold air, or ice. Hydrocooling is the most efficient method, but room cooling and forced air cooling are also suitable for melons. After precooling, muskmelons should be stored at 36-41°F (2-5°C) and 95% relative humidity. A full-slip melon can be kept about 15 days at this temperature. Honeydews and other non-slip melons should not be stored below 40°F (4°C), as chilling injury will result. They will retain adequate quality for 2-3 weeks at 45-50°F (7-10°C).

Weed Control

THE LABEL IS THE LAW-see the Pesticide Use Disclaimer on the first page of Chapter F.

Recommended Herbicides

1. Identify the weeds in each field and select recommended herbicides. More information is available in the "Herbicide Effectiveness on Common Weeds in Vegetables" (Table E-3) in Chapter E Pest Management.

F. Muskmelons and Mixed Melons

2. Minimize herbicide resistance development. Identify the herbicide mode of action group number and follow recommended good management practices; **bolded group numbers in tables below are herbicides at higher risk for selecting resistant weed populations.** Include non-chemical weed control whenever possible.

Labeled Application Sites for Muskmelons

Herbicide (*=Restricted Use)	HRAC group number	Plastic mulch production					Bareground production		
		Soil-Applied		Postemergence					
		Under Plastic	Row Middles	Over Plastic	Row Middles	Post-Harvest	Soil-applied	POST	Post-harvest
Sandea	2	YES	YES	YES	YES		YES	YES	
Curbit	3		YES				YES		
Prowl H2O	3		YES						
Treflan	3		YES						
Prefar	8	YES	YES				YES		
Command	13		YES				YES		
Strategy	3 + 13		YES				YES		
Poast	1			YES				YES	
Select / Select Max Shadow 3EC	1			YES				YES	
Gramoxone*[1]	22				YES	YES			YES
Rely 280	10				YES				

[1]Supplemental Label, be sure it is registered for the specific state and for the intended use.

1. Pre-Transplant Over Plastic

Group	Product Name (*=Restricted Use)	Product Rate	Active Ingredient	Active Ingredient Rate	PHI (d)	REI (h)
10	Rely 280 2.34L	29 to 43 fl oz/A	**glufosinate**	0.53 to 0.79 lb/A	30	12
-Ammonium sulfate (AMS) can be used at 1.5 lb/A to 3 lb/A. -Control is best when applied to weeds less than 4 inches, temperatures are above 80, high humidity, and bright sunlight. -Transplants can be injured if they come in contact with herbicide remaining on the plastic. Allow at least 3 days between application and transplanting. At least 0.5 inches of precipitation is needed to wash Rely off the plastic. Do not seed or transplant within 27 days of application if no precipitation occurs. -DO NOT transplant into or within 6 inches of holes in the plastic mulch that were present at time of application. -Two applications can be made prior to transplanting. Do not apply more than 64 fl oz/A prior to transplanting; maximum number of applications is three per season. -Rainfastness is 4 h						
22	Gramoxone SL 3.0*	1.3 to 2.7 pt/A	**paraquat**	0.5 to 1.0 lb/A	--	24
-Gramoxone can be used for preplant weed control over the top of plastic mulch. Sufficient rainfall or sprinkler irrigation is needed to wash off the Gramoxone prior to planting to prevent damage to the crop. -***Restricted-use pesticide***. Only certified applicators, who successfully complete the paraquat-specific training, can mix, load, or apply paraquat. Application of paraquat "under the direct supervision" of a certified applicator is no longer allowed. Required training link (*https://campus.extension.org/enrol/index.php?id=2201*); certified applicators must repeat training every three years. -Do not exceed 8 pt/A per season. -Rainfastness is 30 min.						

2. Soil-Applied

Group	Product Name (*=Restricted Use)	Product Rate	Active Ingredient	Active Ingredient Rate	PHI (d)	REI (h)
2	Sandea 75DF	0.5 to 1 oz/A	**halosulfuron**	0.023 to 0.047 lb/A	57	12
-**Labeled for use on cantaloupes, honeydew melons, and Crenshaw melons.** -**Plasticulture**: can be applied in a band under the plastic, immediately before laying the mulch; delay seeding or transplanting for 7 days after application. Row middles: apply before or after weed emergence; apply as a shielded application to avoid contact with the crop. If weeds have emerged, use a non-ionic surfactant at 0.25% v/v or include a non-selective herbicide. -**Bareground**: apply broadcast after seeding but before crop emergence or no sooner than 7 days before transplanting. -Suppresses or controls yellow nutsedge and certain broadleaf weeds. -Sandea provides both residual and postemergence control of susceptible weed species. Effective postemergence control requires an adjuvant. Sandea is an ALS inhibiting herbicide and resistant weed populations are common in the region. -**Do not** use Group 2 herbicides repeatedly in the same field. -**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. -Maximum number of applications per year is 2 and **do not** exceed 2 oz/A during the crop season.						

2. Soil-Applied - continued next page

***2. Soil-Applied** - continued*

3	Curbit 3EC	1 to 3 pt/A	**ethalfluralin**	0.38 to 1.13 lb/A	--	24
-**Plasticulture**: row middles only: apply as a banded spray after crop emergence or after transplanting. **Do not** soil incorporate. -**Bareground**: apply broadcast after direct-seeding but prior to crop emergence; **do not** use on transplanted melons. -Controls annual grasses and certain annual broadleaf weeds, including carpetweed and pigweed sp. Use lower rate for coarse-textured soils or soils with low organic matter. Where overhead irrigation is available, activate Curbit with 0.5 inch of irrigation within 2 days after application; if no irrigation or rainfall occurs within 5 days of application, activity of Curbit can be reduced. -Available as a pre-mix herbicide Strategy. Strategy at 3 pt/A= Curbit at 26 fl oz/A (0.6 lb ai) and Command at 8 fl oz/A (0.188 lb ai) -Maximum applications per season: not specified						
3	Prowl H2O 3.8CS	2.1 pt/A	**pendimethalin**	1 lb/A	35	24
-**Plasticulture**: row middles only: apply as a banded spray before seeded crop has emerged or before transplanting. -**Bareground**: apply with shielded sprayer band between rows, leaving 6 inches of untreated area on both sides of the seeded or transplanted row. Apply before seeded crop emerges or before transplanting. -Where overhead irrigation is available, activate Prowl H2O with 0.5 inch of rainfall or sprinkler irrigation within 48 h of application; if no irrigation or rainfall occurs within 5 days of application, activity of Prowl H2O can be reduced -A second application at the same rate may be applied to row middles as a banded spray postemergence a minimum of 21 days after the first application, but before the vines begin to run. **Do not** apply over the top of the crop, or severe injury may occur. -Maximum number of Prowl H2O applications per season is 2 and **do not** exceed 4.2 pt/A during the crop season.						
3	Treflan 4EC	1 to 2 pt/A	**trifluralin**	0.5 to 1 lb/A	30	12
-**Plasticulture**: row middles only: apply as a directed spray after emergence when plants have reached the 3 to 4 true leaf stage of growth. Not labeled for bareground production. Primarily controls annual grasses with a few broadleaf weeds. -**Do not** use (or reduce the rate) when cold, wet soil conditions are expected, or crop injury may result**.** -Maximum applications per season: not specified.						
3 + 13	Strategy 2.1SC	1.5 to 6 pt/A	**ethalfluralin *plus* clomazone**	0.39 to 1.58 lb/A	45	24
-**Plasticulture**: row middles application. **Bareground**: apply broadcast just before planting or after planting but before crop emergence. -Strategy is a prepackage mixture of Curbit 3EC and Command 3ME. -Clomazone spray or vapor drift may injure susceptible crops and other vegetation, refer to Command 3ME for comments. -**Do not** apply prior to planting crop. **Do not** soil incorporate. Refer to individual products for comments. -Maximum applications per season: not specified.						
8	Prefar 4E	5 to 6 qt/A	**bensulide**	5 to 6 lb/A	--	12
-**Plasticulture** under plastic: apply in a band under the plastic, immediately before laying the mulch. Allow 7 day before making transplant holes to allow condensation to incorporate the herbicide. Plasticulture: row middles application is labeled. -**Bareground**: apply preemergence or preplant incorporated. -Preemergence applications should be followed by irrigation within 36 h (apply enough water to wet the soil at least 2 to 4 inches deep). Preplant incorporated applications should be incorporated 1 to 2 inches deep (deeper than 2 inches will result in reduced weed control). -Prefar provides control/suppression of some annual grass weeds and some broadleaves including pigweeds, purslane, and lambsquarters. -**Do not** apply more than 6 lb ai/A per season.						
13	Command 3ME	0.4 to 0.67 pt/A	**clomazone**	0.15 to 0.25 lb/A	--	12
-**Plasticulture**: row middles application only. -**Bareground**: apply broadcast just before planting or after planting but before crop emergence. Use the lower rate when used on coarse-textured soils low in organic matter, when weed pressure is light, or to minimize herbicide carryover that could affect subsequent crops. -Controls annual grasses and many broadleaf weeds including common lambsquarters, velvetleaf, spurred anoda, and jimsonweed. Carpetweed, morningglory sp., pigweed sp., and yellow nutsedge will **not** be controlled. Higher rates will improve control (or expand number of species controlled) such as common cocklebur, common ragweed, or jimsonweed (refer to label for specific weeds and rates). -**WARNINGS**: 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 adjacent to sensitive crops (see label) or vegetation, or under unfavorable wind or weather conditions. Command may limit subsequent cropping options, see the label. -Available as a pre-mix herbicide Strategy: Strategy at 3 pt/A= Command at 8 fl oz/A (0.188 lb ai) and Curbit at 26 fl oz/A (0.6 lb ai). -Maximum number of Command applications per year: 1.						

3. Postemergence

Group	Product Name (*=Restricted Use)	Product Rate	Active Ingredient	Active Ingredient Rate	PHI (d)	REI (h)
1	Shadow 3EC Select 2EC Select Max 0.97EC	4 to 5.33 fl oz/A 6 to 8 fl oz/A 9 to 16 fl oz/A	**clethodim**	0.07 to 0.125 lb/A	14	24
	Poast 1.5EC	1 to 1.5 pt/A	**sethoxydim**	0.19 to 0.28 lb/A	3	12
-**Select 2EC**: use crop oil concentrate (COC) at 1% v/v (1 gal/100 gal of spray solution). **Select Max 0.97EC**: use nonionic surfactant (NIS) at 0.25% v/v (1 qt/100 gal of spray solution). **Shadow 3EC**: use crop oil concentrate (COC) at 1% v/v (1 gal/100 gal of spray solution) for large or stressed grasses; use nonionic surfactant (NIS) at 0.25% v/v (1 qt/100 gal of spray solution) when crop safety is a concern. **Poast 1.5EC**: use COC at 1.0% v/v. -**General comments:** -The use of COC may increase the risk of crop injury when hot or humid conditions prevail. To reduce the risk of crop injury, switch to NIS when grasses are small and soil moisture is adequate. -Use lower labeled rates for annual grass control and						

2. Postemergence Shadow, Select, Select Max, Poast - continued next page

2. Postemergence Shadow, Select, Select Max, Poast - *continued*

higher labeled rates for perennial grass control. For best results, treat annual grasses when they are actively growing and before tillers are present. -Yellow nutsedge, wild onion, wild garlic, and broadleaf weeds will **not** be controlled with these herbicides. -These herbicides control many annual and certain perennial grasses. Clethodim is best on annual bluegrass; while Poast is preferred for goosegrass control. -Repeated applications may be necessary to control certain perennial grasses. If repeat applications are necessary, allow 14 days between applications. -Rainfastness is 1 h. -**Do not** apply more than 8 fl oz/A of Select 2EC in a single application and **do not** exceed 32 fl oz/A for the season; d**o not** apply more than 16 fl oz/A of Select Max in a single application and **do not** exceed 64 fl oz/A for the season. -**Do not** apply more than 5.33 fl oz/A of Shadow 3EC in a single application and **do not** exceed 21.33 fl oz/A for the season. -**Do not** apply more than 1.5 pt/A Poast in a single application and **do not** exceed 3 pt/A for the season.						
2	Sandea 75DF	0.5 to 1 oz/A	**halosulfuron**	0.023 to 0.047 lb/A	57	12
-**Labeled for use on cantaloupes, honeydew melons, and Crenshaw melons.** -**Plasticulture**: broadcast (over the top) or directed to row middles; broadcast for bareground. -**Bareground**: apply Sandea after the crop has at least 3 to 5 true leaves but before first female flowers appear and no sooner than 14 days after transplanting. If weeds have emerged, use a non-ionic surfactant at 0.25% v/v (1 qt/100 gal). -Suppresses or controls yellow nutsedge and certain broadleaf; control of weeds taller than 3 inches may not be adequate. Sandea will not control common lambsquarters or eastern black nightshade if applied postemergence; for row middle application, tank mix with a non-selective herbicide to increase spectrum of control. -Sandea provides both residual and postemergence control of susceptible weed species. Sandea is an ALS inhibiting herbicide and resistant weed populations are common in the region. -**Do not** use Group 2 herbicides repeatedly in the same field. **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. -Rainfastness is 4 h. -Maximum number of Sandea applications per year is 2 and **do not** exceed 2 oz/A during the crop season						
10	Rely 280 2.34L	29 to 62 fl oz/A	**glufosinate**	0.53 to 1.13 lb/A	30	12
-**Hooded spray application between the rows.** If the crop is planted without plastic, do not spray within 6 inches of running vines. **-Do not allow spray to come in contact with crop foliage or damage will occur.** -Ammonium sulfate (AMS) can be used at 1.5 lb/A to 3 lb/A. -Control is best when applied to weeds less than 4 inches, temperatures are above 80, high humidity, and bright sunlight. -Separate sequential applications by at least 14 days. -Do not apply more than 62 fl oz/A in a single application, do not apply more than 87 fl oz/A per season; maximum number of applications is three per season. -Rainfastness is 4 h						
22	Gramoxone SL 3.0*	1.3 pt/A	**paraquat**	0.49 lb/A	14	24
-**Supplemental Label for postemergence weed control in DE, MD, NJ, PA, and VA.** Row middles as a shielded application. -Apply as a directed spray in a minimum of 20 gal/A of spray mix to control emerged weeds between the rows after crop establishment. Include a nonionic surfactant at 0.25% v/v. Use shields or hoods to prevent spray contact with the crop and low spray pressure (maximum of 30 psi) to reduce small droplets that are prone to drift. See the label for additional information and warnings. -Rainfastness is 30 min. A maximum of 3 applications per year are allowed. -***Restricted-use pesticide***. Only certified applicators, who successfully complete the paraquat-specific training, can mix, load, or apply paraquat. Application of paraquat "under the direct supervision" of a certified applicator is no longer allowed. -Required training link (*https://campus.extension.org/enrol/index.php?id=2201*); certified applicators must repeat training every three years.						

4. Postharvest

Group	Product Name (*=Restricted Use)	Product Rate	Active Ingredient	Active Ingredient Rate	PHI (d)	REI (h)
22	Gramoxone SL 3.0*	1.5 to 2 pt/A	**paraquat**	0.56 to 0.75 lb/A	14	24
-**Supplemental Label in DE for postharvest application to desiccate the crop.** -Apply after the last harvest for bareground or plasticulture. Always include an adjuvant. -Spray coverage is essential for optimum effectiveness. See the label for additional information and warnings. -Rainfastness 30 min. A maximum of 2 applications for crop desiccation are allowed. -***Restricted-use pesticide***. Only certified applicators, who successfully complete the paraquat-specific training, can mix, load, or apply paraquat. Application of paraquat "under the direct supervision" of a certified applicator is no longer allowed. Required training link (*https://campus.extension.org/enrol/index.php?id=2201*); certified applicators must repeat training every three years.						

5. Other Labeled Herbicides

These products are labeled but limited local data are available; and/or are labeled but not recommended in our region due to potential crop injury concerns.

Group	Product Name (*=Restricted Use)	Active Ingredient
2	League	**imazosulfuron**
14	Aim (hooded or directed application only)	**carfentrazone**
14	Sulfentrazone 4L, others	**sulfentrazone**

Insect Control

THE LABEL IS THE LAW-see the Pesticide Use Disclaimer on the first page of Chapter F.

Recommended Insecticides

Note: For **premixes**, the group number (representing the mode of action) and active ingredient that contributes the most to control is generally listed first. In some cases, only one ingredient in a premix provides control.

Seed and At-Plant Treatments for Seedcorn Maggot

Farmore DI-400 as a commercially applied seed treatment which contains thiamethoxam (Group 4A).
Verimark (cyantraniprole, Group 28) applied no earlier than 72 hours prior to planting, at 10-13.5 oz/A using in-furrow spray, transplant tray drench, transplant water treatment, hill drench, or surface band.
Note: The use of neonicotinoid insecticides (Group 4A) at planting will help reduce seedcorn maggot damage. See also Maggots in section E 3.1. Soil Pests - Detection and Control.

Aphids

Note: Aphids transmit multiple viruses

Apply one of the following formulations:						
Group	**Product Name (*=Restricted Use)**	**Product Rate**	**Active Ingredient(s)**	**PHI (d)**	**REI (h)**	**Bee TR**
1B	Dimethoate 400EC	1.0 pt/A	dimethoate	3	48	H
4A	Neonicotinoid insecticides registered for use on Musk and Mixed Melons: see table at the end of Insect Control.					
4C	Transform	0.75 fl oz/A	sulfoxaflor	1	24	H
4C + 3A	Ridgeback*	5.5 to 13.8 fl oz/A	sulfoxaflor + bifenthrin	3	24	H
4D	Sivanto Prime	21.0 to 28.0 fl oz/A	flupyradifurone - **soil/drip**	21	4	M
4D	Sivanto Prime	7.0 to 14.0 fl oz/A	flupyradifurone - **foliar**	1	4	M
9B	Fulfill 50WDG	2.75 oz/A	pymetrozine	0	12	L
9B	PQZ	2.4 to 3.2 fl oz/A	pyrifluquinazon	1	12	L
9D	Sefina	3.0 fl oz/A	afidopyropen	0	12	L
21A	Torac	17.0 to 21.0 fl oz/A	tolfenpyrad	1	12	H
28	Exirel	13.5 to 20.5 fl oz/A	cyantraniliprole	1	12	H
28	Harvanta 50SL	10.9 to 16.4 fl oz/A	cyclaniliprole	1	4	H
28	Verimark	Soil, at planting: 10 to 13.5 fl oz/A Drip chemigation: 10 fl oz/A	cyantraniliprole	1	4	H
28 + 6	Minecto Pro*[1]	10.0 fl oz/A	cyantraniliprole + abamectin	7	12	H
29	Beleaf 50SG	Foliar: 2.0 to 2.8 oz/A Drip: 2.8 to 4.28 oz/A	flonicamid	0	12	L

[1]Use of a non-sticker adjuvant is required. [Insecticides with suppression on the label: Venom 70SG]

Cucumber Beetles

Both striped (*Acalymma vittatum*) and spotted (*Diabrotica undecimpuctata howardii*) cucumber beetles are found in the Mid-Atlantic states. Both species can severely defoliate young seedlings and transmit bacterial wilt pathogens, a disease that most varieties of muskmelons are susceptible to. Cucumber beetles also serve as vectors for certain cucurbit viruses. If that's not enough, cucumber beetles also may feed on fruit causing direct damage. Thus, they are a force to be reckoned with. Control adults before they feed extensively on the cotyledons and first true leaves. Seeds pretreated with a neonicotinoid such as Farmore DI-400 should provide up to 14 days of control of cucumber beetle. If foliar insecticides are used, begin spraying shortly after plant emergence and repeat applications as needed if new beetles continue to invade fields. Treatments may be required until vines begin to run. Reduced susceptibility to pyrethroids has been detected in some striped cucumber beetle populations on the Delmarva Peninsula. The neonicotinoid Assail is extremely effective on cucumber beetles, while minimizing risks to pollinators. Otherwise, apply one of the following formulations:

Group	**Product Name (*=Restricted Use)**	**Product Rate**	**Active Ingredient(s)**	**PHI (d)**	**REI (h)**	**Bee TR**
1A	Lannate LV*	1.5 to 3.0 pt/A	methomyl	1-3	48	H
1A	Sevin XLR Plus	1.0 qt/A	carbaryl	3	12	H
3A	Pyrethroid insecticides registered for use on Musk and Mixed Melons: see table at the end of Insect Control.					
4A	Neonicotinoid insecticides registered for use on Musk and Mixed Melons: see table at the end of Insect Control.					

Cucumber Beetles - continued next page

***Cucumber Beetles** - continued*

28	Exirel	20.5 fl oz/A	cyantraniliprole	1	12	H
28	Harvanta 50SL	10.9 to 16.4 fl oz/A	cyclaniliprole	1	4	H
28	Verimark	Soil, at planting: 13.5 fl oz/A Drip chemigation: 10 fl oz/A	cyantraniliprole	1	4	H

[Insecticides with suppression on the label: Torac, Voliam Flexi, Platinum 75SG, Actara 25WDG]

Cutworms See also section E 3.1. Soil Pests - Detection and Control.

Apply one of the following formulations:						
Group	**Product Name (*=Restricted Use)**	**Product Rate**	**Active Ingredient(s)**	**PHI (d)**	**REI (h)**	**Bee TR**
1A	Lannate LV*	1.5 to 3.0 pt/A	methomyl	1	48	H
3A	Pyrethroid insecticides registered for use on Musk and Mixed Melons: see table at the end of Insect Control.					

Leafhoppers

High numbers cause leaf yellowing (chlorosis) known as hopper burn, and yield loss.

Apply one of the following formulations:						
Group	**Product Name (*=Restricted Use)**	**Product Rate**	**Active Ingredient(s)**	**PHI (d)**	**REI (h)**	**Bee TR**
1B	Dimethoate 400EC	1.0 pt/A	dimethoate	3	48	H
3A	Pyrethroid insecticides registered for use on Musk and Mixed Melons: see table at the end of Insect Control.					
4A	Neonicotinoid insecticides registered for use on Musk and Mixed Melons: see table at the end of Insect Control.					
4D	Sivanto Prime	21.0 to 28.0 fl oz/A	flupyradifurone - **soil/drip**	21	4	M
4D	Sivanto Prime	7.0 to 14.0 fl oz/A	flupyradifurone - **foliar**	1	4	M
15	Rimon 0.83EC	9.0 to 12.0 fl oz/A	novaluron	1	12	M
9B	PQZ	3.2 fl oz/A	pyrifluquinazon	1	12	L
21A	Torac	14.0 to 21.0 fl oz/A	tolfenpyrad	1	12	H

Leafminers

Apply one of the following formulations:						
Group	**Product Name (*=Restricted Use)**	**Product Rate**	**Active Ingredient(s)**	**PHI (d)**	**REI (h)**	**Bee TR**
1B	Dimethoate 400EC	1.0 pt/A	dimethoate	3	48	H
4A	Neonicotinoid insecticides registered for use on Musk and Mixed Melons: see table at the end of Insect Control.					
5	Entrust SC (OMRI)	6.0 to 8.0 fl oz/A	spinosad	3	4	H
5	Radiant SC	6.0 to 10.0 fl oz/A	spinetoram	3	4	H
6	Agri-Mek SC*[1]	1.75 to 3.5 fl oz/A	abamectin	7	12	H
17	Trigard 75WSP	2.66 oz/A	cyromazine	0	12	H
28	Coragen 1.67SC Coragen eVo	5.0 to 7.5 fl oz/A 1.7 to 2.5 fl oz/A	chlorantraniliprole	1	4	L
28	Exirel	13.5 to 20.5 fl oz/A	cyantraniliprole	1	12	H
28	Harvanta 50SL	10.9 to 16.4 fl oz/A	cyclaniliprole	1	4	H
28	Verimark	Soil, at planting: 6.75 to 13.5 fl oz/A Drip chemigation: 10 fl oz/A	cyantraniliprole	1	4	H
28 + 6	Minecto Pro*[1]	5.5 to 10.0 fl oz/A	cyantraniliprole + abamectin	7	12	H
30	Incipio	2.1 to 4.1 fl oz/A	isocycloseram	1	12	H

[1]Use of a non-sticker adjuvant is required. [Insecticides with suppression on the label: Proclaim 5SG, Voliam Flexi, Endigo ZC, Endigo ZCX, Belay 2.1SC, Platinum 75SG, Actara 25WDG]

Lepidopteran Pests including Armyworms (AW), Cabbage Loopers (CL), Melonworms (MW) and Pickleworms (PW), and Lepidopteran "Rindworms"

Various armyworm species and cabbage loopers can be found feeding on melon leaves. Defoliation seldom reaches the 25% threshold that justifies control measures. However, armyworms may feed on rinds as well as other various Lepidopteran pests where they are collectively referred to as 'rindworm' on some labels. This complex also includes corn earworm, leafrollers, and webworms. Proper pest identification and fruit scouting is important because not all species that cause rind feeding damage are susceptible to pyrethroids. **Beet armyworm and corn earworm are resistant to pyrethroids (Group 3A) and there are resistance concerns with BAW to diamides (Group 28). Note:** Not all products with the above species on their label will prevent rind feeding. Cucumber beetles, wireworm,

and white grubs will also feed on rinds, the location and appearance differs from Lepidopteran rind feeders. Consult your local cooperative extension service for additional guidance.

Apply one of the following formulations:						
Group	**Product Name (*=Restricted Use)**	**Product Rate**	**Active Ingredient(s)**	**PHI (d)**	**REI (h)**	**Bee TR**
1A	Lannate LV*	1.5 to 3.0 pt/A	methomyl	1-3	48	H
1A	Sevin XLR Plus	0.5 to 1.0 qt/A	carbaryl **- MW and PW only**	3	12	H
3A[1, 2]	Pyrethroid insecticides registered for use on Musk and Mixed Melons: see table at the end of Insect Control					
5	Entrust SC (OMRI)	4.0 to 8.0 fl oz/A	spinosad	3	4	H
5	Radiant SC	5.0 to 10.0 fl oz/A	spinetoram	3	4	H
6	Proclaim 5SG*	3.0 to 4.8 oz/A	emamectin benzoate	7	12	H
11A	DiPel DF, others (OMRI)	0.5 to 2.0 lb/A	*Bacillus thuringiensis kurstaki* **- CL and AW only**	0	4	N
11A	XenTari (OMRI)	0.5 to 2.0 lb/A	*Bacillus thuringiensis aizawai* **- CL and AW only**	0	4	N
15	Rimon 0.83EC	9.0 to 12.0 fl oz/A	novaluron	1	12	M
15+4A	Cormoran	12.0 fl oz/A	novaluron + acetamiprid	1	12	M
18	Intrepid 2F	4.0 to 10.0 fl oz/A	methoxyfenozide	3	4	L
22	Avaunt 30WDG, Avaunt eVo	2.5 to 6.0 oz/A	indoxacarb	3	12	H
28[1]	Coragen 1.67SC Coragen eVo	2.0 to 7.5 fl oz/A 0.7 to 2.5 fl oz/A	chlorantraniliprole	1	4	L
28[1]	Exirel	7.0 to 17.0 fl oz/A	cyantraniliprole	1	12	H
28[1]	Harvanta 50SL	10.9 to 16.4 fl oz/A	cyclaniliprole	1	4	H
28[1]	Verimark	5.0 to 13.5 fl oz/A	cyantraniliprole - soil	1	4	H
28[1]**+3A**[1,2]	Besiege*	6.0 to 9.0 fl oz/A	chlorantraniliprole + lambda cyhalothrin	1	24	H
28[1]**+3A**[1,2]	Elevest*	5.6 to 9.6 fl oz/A	chlorantraniliprole + bifenthrin	3	24	H
28[1]**+4A**	Durivo	10.0 to 13.0 fl oz/A	thiamethoxam+ chlorantraniliprole **- MW and PW only**	30	12	H
28[1]**+4A**	Voliam Flexi	4.0 to 7.0 oz/A	thiamethoxam+chlorantraniliprole **- CL only**	1	12	H
28[1] **+ 6**	Minecto Pro* [3]	5.5 to 10.0 fl oz/A	cyantraniliprole + abamectin	7	12	H
30	Incipio	2.1 to 4.1 fl oz/A	isocycloseram **- MW and PW only**	1	12	H

[1]Resistance concerns with beet armyworm. [2]Resistance concerns with corn earworm. [3] Use of a non-sticker adjuvant is required.
[Insecticides with suppression on the label: Torac]

Mites

Infestations generally begin around field margins and grassy areas. **DO NOT** mow or maintain these areas after midsummer since this causes mites into the crop. Localized infestations can be spot treated. Begin treatment when 10-15% of the crown leaves are infested early in the season. Note: Continuous use of Sevin or pyrethroids can result in mite outbreaks.

Apply one of the following formulations. Note: Continuous use of carbaryl or pyrethroids may result in mite outbreaks.						
Group	**Product Name (*=Restricted Use)**	**Product Rate**	**Active Ingredient(s)**	**PHI (d)**	**REI (h)**	**Bee TR**
6	Agri-Mek SC*[1]	1.75 to 3.5 fl oz/A	abamectin	7	12	H
6 + 28	Minecto Pro*[1]	5.5 to 10.0 fl oz/A	abamectin + cyantraniliprole	7	12	H
10B	Zeal Miticide	2.0 to 3.0 oz/A	etoxazole	7	12	L
10B	Zeal MVP	23.0 to 34.6 fl oz/A	etoxazole	7	12	L
20B	Kanemite 15SC	31.0 fl oz/A	acequinocyl	1	12	L
21A	Magister SC	24.0 to 36.0 fl oz/A	fenazaquin	3	12	H
21A	Portal	2.0 pt/A	fenpyroximate	3	12	L
23	Oberon 2SC	8.5 fl oz/A	spiromesifen	7	12	M
20D	Acramite 50WS	0.75 to 1.0 lb/A	bifenazate	3	12	M
30	Incipio	2.1 to 4.1 fl oz/A	isocycloseram	1	12	H

[1]Use of a non-sticker adjuvant is required.

Thrips

Apply one of the following formulations:						
Group	**Product Name (*=Restricted Use)**	**Product Rate**	**Active Ingredient(s)**	**PHI (d)**	**REI (h)**	**Bee TR**
1B	Dimethoate 400EC	1.0 pt/A	dimethoate	3	48	H

Thrips - continued next page

***Thrips** - continued*

3A[1]	Pyrethroid insecticides registered for use on Musk and Mixed Melons: see table at the end of Insect Control.					
4A[2]	Neonicotinoid insecticides registered for use on Musk and Mixed Melons: see table at the end of Insect Control.					
5	Entrust SC (OMRI)	6.0 to 8.0 fl oz/A	spinosad	3	4	H
5	Radiant SC	6.0 to 10.0 fl oz/A	spinetoram	3	4	H
15	Rimon 0.83EC	12.0 fl oz/A	novaluron	1	12	M
15 + 4A	Cormoran	12.0 fl oz/A	novaluron + acetamiprid	1	12	M
21A	Torac	21.0 fl oz/A	tolfenpyrad	1	12	H
29	Beleaf 50SG	Drip: 2.8 to 4.28 oz/A	flonicamid - chemigation only	0	12	L
30	Incipio	3.1 to 4.1 fl oz/A	isocycloseram	1	12	H

[1]Resistance concerns with western flower thrips. [2]Resistance concerns with tobacco thrips.
[Insecticides with suppression on the label: Exirel, Verimark, Harvanta, Minecto Pro, Belay 2.1SC]

Whiteflies

Apply one of the following formulations:						
Group	**Product Name (*=Restricted Use)**	**Product Rate**	**Active Ingredient(s)**	**PHI (d)**	**REI (h)**	**Bee TR**
4A	Neonicotinoid insecticides registered for use on Musk and Mixed Melons: see table at the end of Insect Control.					
4C + 3A	Ridgeback*	11.0 to 13.8 fl oz/A	sulfoxaflor + bifenthrin	3	24	H
4D	Sivanto Prime	21.0 to 28.0 fl oz/A	flupyradifurone - **soil/drip**	21	4	M
4D	Sivanto Prime	10.5 to 14.0 fl oz/A	flupyradifurone - **foliar**	1	4	M
7C	Knack	8.0 to 10.0 fl oz/A	pyriproxyfen	7	12	L
9B	Fulfill 50WDG	2.75 oz/A	pymetrozine	0	12	L
9B	PQZ	2.4 to 3.2 fl oz/A	pyrifluquinazon	1	12	L
9D	Sefina	14.0 fl oz/A	afidopyropen	0	12	L
15	Rimon 0.83EC	12.0 fl oz/A	novaluron	1	12	M
21A	Portal	2.0 pt/A	fenpyroximate	3	12	L
23	Oberon 2SC	8.5 fl oz/A	spiromesifen	7	12	M
28	Exirel	13.5 to 20.5 fl oz/A	cyantraniliprole	1	12	H
28	Verimark	Soil, at planting: 6.75 to 13.5 fl oz/A Drip chemigation: 10 fl oz/A	cyantraniliprole	1	4	H
28 + 6	Minecto Pro*[1]	10.0 fl oz/A	cyantraniliprole + abamectin	7	12	H
29	Beleaf 50SG	Foliar: 2.8 oz/A Drip: 2.8 to 4.28 oz/A	flonicamid	0	12	L

[1]Use of a non-sticker adjuvant is required.
[Insecticides with suppression on the label: Torac, Harvanta, Coragen eVo, Portal, Endigo ZC, Belay 2.1SC, Besiege]

Group 3A Pyrethroid Insecticides Registered for Use on Musk and Mixed Melons

Apply one of the following formulations (check if the product label lists the insect you intend to spray; the label is the law, note: resistance concerns with beet armyworm and corn earworm):

Product Name (*=Restricted Use)	**Product Rate**	**Active Ingredient(s)**	**PHI (d)**	**REI (h)**	**Bee TR**
Asana XL*	5.8 to 9.6 fl oz/A	esfenvalerate	3	12	H
Baythroid XL*	0.8 to 2.8 fl oz/A	beta-cyfluthrin	0	12	H
Brigade 2EC*, Brigade eVo	2.6 to 6.4 fl oz/A	bifenthrin	3	12	H
Danitol 2.4EC*	10.67 to 16.0 fl oz/A	fenpropathrin	7	24	H
Declare*	1.02 to 1.54 fl oz/A	gamma-cyhalothrin	1	24	H
Fastac CS*	1.4 to 3.8 fl oz/A	alpha-cypermethrin	1	12	H
Hero*	4.0 to 10.3 fl oz/A	zeta-cypermethrin + bifenthrin	3	12	H
Lambda-Cy 1EC*, others	2.56 to 3.84 fl oz/A	lambda-cyhalothrin	1	24	H
Mustang Maxx*	1.28 to 4.0 fl oz/A	zeta-cypermethrin	1	12	H
Permethrin 3.2EC*, others	4.0 to 8.0 fl oz/A	permethrin	0	12	H
Tombstone*	0.8 to 2.8 fl oz/A	cyfluthrin	0	12	H
Warrior II*	1.28 to 1.92 fl oz/A	lambda-cyhalothrin	1	24	H
Combo products containing a pyrethroid					
Besiege*	6 .0 to 9.0 fl oz/A	lambda-cyhalothrin + chlorantraniliprole (Group 28)	1	24	H
Elevest*	5.6 to 9.6 fl oz/A	bifenthrin + chlorantraniliprole (Group 28)	3	12	H
Endigo ZC* and ZCX*	4.0 to 4.5 fl oz/A	lambda-cyhalothrin + thiamethoxam (Group 4A)	1	24	H
Ridgeback*	5.5 to 13.8 fl oz/A	bifenthrin + sulfoxaflor (Group 4C)	3	24	H
Savoy EC*	6.0 to 12.9 fl oz/A	bifenthrin + acetamiprid (Group 4A)	3	12	H

Group 4A Neonicotinoid Insecticides Registered for Use on Musk and Mixed Melons					
Apply one of the following formulations (check if the product label lists the insect you intend to spray; the label is the law):					
Product Name (*=Restricted Use)	**Product Rate**	**Active Ingredient(s)**	**PHI (d)**	**REI (h)**	**Bee TR**
Admire Pro	7.0 to 10.5 fl oz/A	imidacloprid - **soil**	21	12	H
Assail 30SG	2.5 to 5.3 oz/A	acetamiprid	0	12	M
Assail 30SC	2.1 to 4.5 fl oz/A	acetamiprid	0	12	M
Actara 25WDG	1.5 to 5.5 oz/A	thiamethoxam	0	12	H
Belay 2.13SC	9.0 to 12.0 fl oz/A	clothianidin - **soil/drip**	21	12	H
Belay 2.13SC	3.0 to 4.0 fl oz/A	clothianidin - **foliar** (note: PHI: do not make application after 4th true leaf has unfolded)	see note	12	H
Platinum 75SG	1.66 to 3.67 oz/A	thiamethoxam	30	12	H
Scorpion 35SL	9.0 to 13 fl oz/A	dinotefuran - **soil/drip**	21	12	H
Scorpion 35SL	2.0 to 7.0 fl oz/A	dinotefuran - **foliar**	1	12	H
Venom 70SG	5.0 to 7.5 oz/A	dinotefuran - **soil/drip**	21	12	H
Venom 70SG	1.0 to 4.0 oz/A	dinotefuran - **foliar**	1	12	H
Combo products containing a neonicotinoid					
Cormoran	12.0 fl oz/A	acetamiprid + novaluron (Group 15)	1	12	M
Durivo	10.0 to 13.0 fl oz/A	thiamethoxam + chlorantraniliprole (Group 28) - **soil/drip**	30	12	H
Endigo ZC* and ZCX*	4.0 to 4.5 fl oz/A	thiamethoxam + lambda-cyhalothrin (Group 3A)	1	24	H
Savoy EC*	6 to 12.9 fl oz/A	acetamiprid + bifenthrin (Group 3A)	3	12	H
Voliam Flexi	4.0 to 7.0 oz/A	thiamethoxam + chlorantraniliprole (Group 28)	1	12	H

Disease Control

THE LABEL IS THE LAW-see the Pesticide Use Disclaimer on the first page of Chapter F. Recommended Fungicides

Nematodes

Use fumigants listed in section E 1.5. Soil Fumigation, or one of the nematicides below.

Code	Product Name (*=Restricted Use)	Product Rate	Active Ingredient(s)	PHI (d)	REI (h)	Bee TR
1A	Vydate L*	1.0 to 2.0 gal/A Incorporate into top 2-4 inches of soil, ***OR*** 2.0 to 4.0 pt/A apply 2 w after planting and repeat 2-3 w later.	oxamyl	1	48	H
7	Velum Prime 4.16SC	6.5 to 6.84 fl oz/A	fluopyram	0	12	--
N-UN	Salibro	15.3 to 23 fl oz/A of product per acre pre-plant incorporated, pre-plant drip, or at-plant drip. In-season drip at 7.7 fl oz/A	fluazaindolizine	1	12	--
--	Nimitz 4EC	3.5 to 5.0 pt/A Incorporate or drip-apply 7 d before planting.	fluensulfone	n/a	12	--

Seed Treatment

If seed has not been treated with a fungicide and insecticide, use a mixture of Thiram 480DP (4.5 fl oz/100 lb seed) and an approved commercially available insecticide.

Damping-off caused by Phytophthora, Pythium, and Rhizoctonia

Code	Product Name (*=Restricted Use)	Product Rate	Active Ingredient(s)	PHI (d)	REI (h)	Bee TR
Apply one of the following at-planting (see label for application timing, methods, and restrictions):						
Phytophthora and Pythium Root Rot						
4	Ridomil Gold 4SL	1.0 to 2.0 pt/A	mefenoxam	5	48	N
4	Ultra Flourish 2E	2.0 to 4.0 pt/A	mefenoxam	5	48	N
4	MetaStar 2E AG	4.0 to 8.0 pt/A	metalaxyl	AP	48	N
49 + **4**	Orondis Gold[1]	28.0 to 55.0 fl oz/A	oxathiapiprolin + mefenoxam	AP	48	--

Damping-off - continued next page

Damping-off *- continued*

Phytophthora, Pythium, and Rhizoctonia Root Rot						
4 + 11	Uniform 3.72SC	0.34 fl oz/1000 ft row. Avoid direct seed contact, which may cause delayed emergence.	mefenoxam + azoxystrobin	AP	0	N
Rhizoctonia root rot						
11	azoxystrobin 2.08F	0.40 to 0.80 fl oz/1000 ft row	azoxystrobin	1	4	N
Pythium root rot only						
28	Previcur Flex 6F	1.2 pt/A in transplant water, drip irrigation, or direct spray at base of plant and soil	propamocarb hydrochloride	2	12	N

[1]May cause some yellowing in cucurbit leaves.

Bacterial and Fungal Diseases

Alternaria Leaf Blight

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

Code	Product Name (*=Restricted Use)	Product Rate	Active Ingredient(s)	PHI (d)	REI (h)	Bee TR
Begin sprays when vines begin to run. ALTERNATE one of the following:						
M03	mancozeb 75DF[1]	2.0 to 3.0 lb/A[1]	mancozeb	5	24	N
M05	chlorothalonil 6F	2.0 to 3.0 pt/A	chlorothalonil	0	12	M
WITH A TANK MIX of one of the following fungicides PLUS chlorothalonil 6F 2.0 to 3.0 pt/A every 14 days. Materials with different modes of action (FRAC codes) should always be alternated.						
7 + **11**	Pristine 38WG[2]	12.5 to 18.5 oz/A	boscalid + pyraclostrobin	0	12	--
3 + 9	Inspire Super 2.82EW	16.0 to 20.0 fl oz/A	difenoconazole + cyprodinil	7	12	--
3 + **11**	Quadris Top 1.67SC[3]	12.0 to 14.0 fl oz/A	difenoconazole + azoxystrobin	1	12	--
7 + 12	Miravis Prime	9.2 to 11.4 fl oz/A	pydiflumetofen + fludioxonil	1	12	--
7 + **11**	Luna Sensation 4.25SC[4]	7.6 fl oz/A	fluopyram + trifloxystrobin	0	12	--
7 + 3	Luna Flex 3.13SC	8.0 fl oz/A	fluopyram + difenoconazole	0	12	--
7 + 3	Luna Experience 3.34SC	8.0 to 17.0 fl oz/A	fluopyram + tebuconazole	7	12	--
3 + 7	Aprovia Top 1.62EC	10.5 to 13.5 fl oz/A	difenoconazole + benzovindiflupyr	0	12	--
7 + **11**	Merivon Xemium[2]	4.0 to 5.5 fl oz/A	fluxapyroxad + pyraclostrobin	0	12	N
3 + **11**	Topguard EQ 4.29SC[3,5]	5.0 to 8.0 fl oz/A	flutriafol + azoxystrobin	1	12	--
11	azoxystrobin 2.08F[3,5]	11.0 to 15.5 fl oz/A	azoxystrobin	1	24	N
11	Cabrio 20EG[2]	12.0 to 16.0 oz/A	pyraclostrobin	0	12	N
11	Reason 500SC	5.5 fl oz/A	fenamidone	14	12	--

[1]The varieties 'Harvest Queen', 'Gold Star', 'Super Star', 'Sweet and Early', and 'Saticoy' are sensitive to mancozeb.
[2]Tank mixes of additives, adjuvants, and/or other products may result in crop injury.
[3]**Do not apply** near apples. [4]A mild yellowing on leaf margins is sometimes seen following application of Luna Sensation in cucurbits.
[5]Do not tank mix with crop oil concentrates, methylated spray oil, or silicon adjuvants. Do not tank mix with Malathion, Thiodan, Lannate, MPede, or Botran.

Angular Leaf Spot and Bacterial Leaf Spot

At first sign of disease, apply the labeled rates of fixed copper plus mancozeb. Some copper-based products are OMRI listed and can be used in organic systems to help suppress Angular leaf spot and other fungal diseases. Repeat every 7 d. Avoid overhead irrigation when symptoms are present and working in field while foliage is wet.

Bacterial Wilt

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

Downy Mildew

Scout fields for disease incidence beginning in early summer. Strains of Downy mildew that infect one cucurbit crop may not affect other cucurbit crops. Unnecessary fungicide applications can be avoided by not spraying until disease is predicted in the region on melon or cucumber (check the Cucurbit Downy Mildew Forecasting website at *https://cdm.ipmpipe.org*). **Preventative applications are much more effective than applications made after**

detection. Materials with different modes of action (FRAC codes) should always be alternated. Tank mix with protectant if not included in the product.

Code	Product Name (*=Restricted Use)	Product Rate	Active Ingredient(s)	PHI (d)	REI (h)	Bee TR
The following are the most effective products. Sprays should be applied on a 7-day schedule. Under severe disease conditions spray interval may be reduced IF the label allows.						
49 + 40	Orondis Ultra 2.33SC	5.5 to 8.0 fl oz/A	oxathiapiprolin + mandipropamid	0	4	--
21	Ranman 400SC	2.10 to 2.75 fl oz/A (**do not apply with copper**; see label for details)[1]	cyazofamid	0	12	L
Other materials for use in rotation as tank mix partners with a protectant:						
M03+22	Gavel 75DF[2]	1.5 to 2.0 lb/A **contains protectant**	mancozeb + zoxamide	5	48	--
M05+22	Zing! 4.9SC	36 fl oz/A **contains protectant**	chlorothalonil + zoxamide	0	12	M
M05+27	Ariston 42SC	1.9 to 3.0 pt/A **contains protectant**	chlorothalonil + cymoxanil	3	12	M
11 + 27	Tanos 50DF	8.0 oz/A	famoxadone + cymoxanil	3	12	--
27	Curzate 60DF	3.2 to 5.0 oz/A	cymoxanil	3	12	N
28	Previcur Flex 6F	1.2 pt/A	propamocarb hydrochloride	2	12	N
40	Forum 4.17SC	6.0 fl oz/A	dimethomorph	0	12	N
40	Revus 2.08F	8.0 fl oz/A	mandipropamid	0	4	--
40 + 45	Zampro 525SC	14.0 fl oz/A	dimethomorph + ametoctradin	0	12	--
43	Presidio 4SC	4.0 fl oz/A	fluopicolide	2	12	L
49+M05	Orondis Opti	1.75 to 2.5 pt/A	oxathiapiprolin + chlorothalonil	0	12	--
29	Omega 500F	12.0 to 24.0 fl oz/A	fluazinam	30	12	N
22	Elumin 4SC	8.0 fl oz/A	ethaboxam	2	12	--

[1]Ranman should be tank mixed with an organosilicone surfactant when disease is severe, or a non-ionic surfactant or blend of organosilicone and non-ionic surfactant disease is moderate or light.
[2]The varieties 'Harvest Queen', 'Gold Star', 'Super Star', 'Sweet and Early', and 'Saticoy' are sensitive to mancozeb.

Fusarium Wilt

Rotate to allow 5 years between muskmelon plantings in any given location. Use resistant cultivars, when possible, see table Recommended Varieties. A FIFRA 2(ee) label for chemigation of Rhyme (FRAC code 3) to suppress Fusarium Wilt has been approved in DE, MD, PA, NJ. VA, and WV. See label for details.

Code	Product Name (*=Restricted Use)	Product Rate	Active Ingredient(s)	PHI (d)	REI (h)	Bee TR
Application through drip irrigation or as a post-plant drench followed by two foliar applications may reduce Fusarium Wilt early season:						
3	Proline 480SC[1]	5.7 fl oz/A	prothioconazole	7	12	--
3 + 7	Propulse	13.6 fl oz/A	prothioconazole + fluopyram	7	12	--
7	Velum Prime 4.16SC	4.0 to 6.84 fl oz/A	fluopyram	0	12	--
7 + 12	Miravis Prime	11.4 fl oz/A	pydiflumetofen+ fludioxonil	1	12	--

[1]Note: only one soil application of Proline is allowed per season.

Gummy Stem Blight

In the Mid-Atlantic regions, fungicide that only contain FRAC code 11 components are not recommended. Pristine, which contains both FRAC code 11 and 7 components, should always be tank-mixed with a protectant fungicide to reduce the possibility of resistance development. **When tank-mixing, use at least the minimum labeled rate of each fungicide. Alternate fungicides with different modes of action. Do not apply FRAC code 11 fungicides more than 4 times total per season.** Begin sprays when vines begin to run.

Code	Product Name (*=Restricted Use)	Product Rate	Active Ingredient(s)	PHI (d)	REI (h)	Bee TR
Under LOW DISEASE PRESSURE, apply the following every 7 days:						
M05	chlorothalonil 6F	2.0 to 3.0 pt/A	chlorothalonil	0	12	M
Under HIGH DISEASE PRESSURE, ALTERNATE:						
M05	chlorothalonil 6F	2.0 to 3.0 pt/A[1]	chlorothalonil	0	12	M
WITH A TANK-MIX containing a protectant fungicide (such as chlorothalonil) PLUS one of the following:						
3	Proline 480SC	5.7 fl oz/A	prothioconazole	7	12	--
3	tebuconazole 3.6F[2]	8.0 fl oz/A	tebuconazole	7	12	N
3	Rhyme 2.08SC	5.0 to 7.0 fl oz/A	flutriafol	0	12	--

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***Gummy Stem Blight** - continued*

3 + 9	Inspire Super 2.82EW	16.0 to 20.0 fl oz/A	difenoconazole + cyprodinil	7	12	--
3 + 7	Aprovia Top 1.62EC	10.5 to 13.5 fl oz/A	difenoconazole + benzovindiflupyr	0	12	--
7 + 3	Luna Flex 3.13SC	12.8 to 13.6 fl oz/A	fluopyram + difenoconazole	0	12	--
7 + 3	Luna Experience 3.34SC[4]	8.0 to 17.0 fl oz/A	fluopyram + tebuconazole	7	12	--
7 + **11**	Luna Sensation 4.25SC[4]	7.6 fl oz/A	fluopyram + trifloxystrobin	0	12	--
7 + **11**	Merivon Xemium[3]	5.5 fl oz/A	fluxapyroxad + pyraclostrobin	0	12	N
7 + **11**	Pristine 38WG[3]	12.5 to 18.5 oz/A	boscalid + pyraclostrobin	0	12	--
9 + 12	Switch 62.5WG	11.0 to 14.0 oz/A	cyprodinil + fludioxonil	1	12	L
7 + 12	Miravis Prime	9.2 to 11.4 fl oz/A	pydiflumetofen + fludioxonil	1	12	--

[1]Use low rate early in season.
[2]Note: reduced sensitivity of the pathogen to tebuconazole has been found in the Southern U.S.
[3]Tank mixes of additives, adjuvants, and/or other products may result in crop injury.
[4]A mild yellowing on leaf margins is sometimes seen following application of a Luna Experience or Luna Sensation in cucurbits.

Phytophthora Crown and Fruit Rot

Multiple practices should be used to minimize the occurrence of this disease. Grow muskmelons on raised beds and drain fields adequately so that water will not accumulate around the base of the plants. Rotate away from susceptible crops (cucurbits, peppers, lima beans and beans, eggplants, and tomatoes) for as long as possible. Apply pre-plant fumigants to suppress disease. Apply fungicides when conditions are favorable for disease development. Fruit are susceptible at all growth stages and must be protected season-long.

Code	Product Name (*=Restricted Use)	Product Rate	Active Ingredient(s)	PHI (d)	REI (h)	Bee TR
Apply one of the following fungicides and tank mix with fixed copper at labeled rates when conditions favor disease development (for suppression only). Materials with different modes of action (FRAC codes) should always be alternated to reduce the chances for fungicide resistance development:						
49 + 40	Orondis Ultra 2.33SC	5.5 to 8.0 fl oz/A	oxathiapiprolin + mandipropamid	0	4	--
49 + **4**	Orondis Gold	4.8 to 9.6 fl oz/A	oxathiapiprolin + mefenoxam	0	4	--
40	Revus 2.08F	8.0 fl oz/A	mandipropamid	0	4	--
40 + 45	Zampro 525SC	14.0 fl oz/A	dimethomorph + acetoctradin	0	12	--
43	Presidio 4SC[1]	4.0 fl oz/A	fluopicolide	2	12	L
M03+22	Gavel 75DF[2]	1.5 to 2.0 lb/A	mancozeb + zoxamide	5	48	--
11 + 27	Tanos 50DF	8.0 to 10.0 oz/A	famoxadone + cymoxanil	3	12	--
21	Ranman 400SC	2.75 fl oz/A (**Do not apply with copper**, see label details)[3]	cyazofamid	0	12	L
40	Forum 4.17SC	6.0 fl oz/A	dimethomorph	0	12	N
49+M05	Orondis Opti	1.75 to 2.5 pt/A	oxathiapiprolin + chlorothalonil	0	12	--
22	Elumin 4SC	8.0 fl oz/A	ethaboxam	2	12	--
M05+22	Zing! 4.9SC	36.0 fl oz/A	chlorothalonil + zoxamide	0	12	M

[1]Presidio may also be applied through the drip irrigation (see supplemental label).
[2]The varieties 'Harvest Queen', 'Gold Star', 'Super Star', 'Sweet and Early', and 'Saticoy' are sensitive to mancozeb.
[3]Ranman should be tank mixed with an organosilicone surfactant when disease is severe, or a non-ionic surfactant or blend of organosilicone and non-ionic surfactant disease is moderate or light.

Powdery Mildew

Excellent host resistance is available (see table Recommended Varieties). The fungus that causes cucurbit Powdery mildew has developed resistance to high-risk fungicides. In the Eastern US, resistance to strobilurin (FRAC code 11), SDHI (FRAC code 7), and DMI (FRAC code 3) fungicides has been reported. Proper fungicide resistance management should be followed to help delay the development of resistance and minimize control failures. Materials with different FRAC codes should always be alternated. Powdery mildew generally occurs from mid-July until the end of the season. Scout fields for the presence of Powdery mildew. If one lesion is found on the underside of 45 old leaves per acre, begin the following fungicide program:

Code	Product Name (*=Restricted Use)	Product Rate	Active Ingredient(s)	PHI (d)	REI (h)	Bee TR
TANK MIX one of these products with a protectant such as chlorothalonil 6F 2.0 to 3.0 pt/A:						
50	Vivando 2.5SC[1]	15.4 fl oz/A	metrafenone	0	12	--
13	Quintec 2.08SC	4.0 to 6.0 fl oz/A	quinoxyfen	3	12	--

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Powdery Mildew *- continued*

3 + 7	Luna Experience 3.34SC[2]	6.0 to 17.0 fl oz/A	tebuconazole + fluopyram	7	12	--
7 + **11**	Luna Sensation 4.25SC[2]	4.0 to 7.6 fl oz/A	fluopyram + trifloxystrobin	0	12	--
AND ALTERNATE with a TANK MIX of one of the following and a protectant such as chlorothalonil 6F 2.0 to 3.0 pt/A:						
3	Proline 480SC	5.7 fl oz/A	prothioconazole	7	12	--
3	Procure 480SC	4.0 to 8.0 fl oz/A	triflumizole	0	12	N
3	Rally 40WSP	2.5 to 5.0 oz/A	myclobutanil	0	24	N
3	tebuconazole 3.6F	4.0 to 6.0 fl oz/A	tebuconazole	7	12	N
3 + 7	Aprovia Top 1.62EC	10.5 to 13.5 fl oz/A	difenoconazole + benzovindiflupyr	0	12	--
3	Rhyme 2.08SC	5.0 to 7.0 fl oz/A	flutriafol	0	12	--
7 + **11**	Pristine 38WG[3]	12.5 to 18.5 oz/A	boscalid + pyraclostrobin	0	12	--
3 + 9	Inspire Super 2.82EW	16.0 to 20.0 fl oz/A	difenoconazole + cyprodinil	7	12	--
P05	Regalia (OMRI)	4.0 qt/A	Extract of *Reynoutria sachalinensis*	0	4	--
39	Magister 1.6SC[4]	24.0 to 36.0 fl oz/A	fenazaquin	3	12	H
7 + 12	Miravis Prime	9.2 to 11.4 fl oz/A	pydiflumetofen + fludioxonil	1	12	--
U13	Gatten 5EC	6.0 to 8.0 fl oz/A	flutianil	0	12	--
U06	Torino 0.85SC	3.4 fl oz/A	cyflufenamid	0	4	--

[1]Do not mix Vivando with horticultural oils.
[2]A mild yellowing on leaf margins is sometimes seen following application of Luna Experience and Luna Sensation in cucurbits.
[3]Tank mixes of additives, adjuvants, and/or other products may result in crop injury.
[4]Do not make more than one application per year of Magister.

Scab

The fungus that causes Scab typically occurs during periods of cool, wet weather when temperatures are below normal. Rotate away from fields with a history of Scab for at least 2 years.

Code	Product Name (*=Restricted Use)	Product Rate	Active Ingredient(s)	PHI (d)	REI (h)	Bee TR
Begin sprays as true leaves form and repeat every 5-7 days:						
M05	chlorothalonil 6F	2.0 to 3.0 pt/A	chlorothalonil	0	12	M

Viruses

The most prevalent virus in the Mid-Atlantic region is **WMV**, followed by **PRSV**, **ZYMV** and **CMV**. 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.