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, or
Inspire Super 16.0-20.0 fl oz 2.8F/A
Quadris Top 10.0-14.0 fl oz 2.75 F/A

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

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 solo products within the FRAC code 11 (Cabrio, Quadris and Flint) are not recommended in the mid-Atlantic region. 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 (See Table E-12). 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.

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) *plus*

Pristine--12.5-18.5 oz 38W/A, or
Switch--11.0-14.0 oz 62.5 W/A, or
Folicur--8.0 fl oz 3.6 F/A, or
Inspire Super--6.0–20 fl. Oz 2.8F/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.

OKRA

Okra is a tropical annual with a wide range of adaptation. It is, however, very sensitive to frost and cold temperatures and should not be planted until soil has warmed in the spring.

Varieties

Varieties[1]	
Annie Oakley II*	These varieties are recommended
Clemson Spineless	in areas of DE, MD, NJ, PA, VA, WV
Cajun Delight*	where climatic conditions are
North and South*	favorable for okra production.

[1]Varieties listed by maturity, earliest first.

* Indicates hybrid varieties.

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.

		Soil Phosphorus Level			Soil Potassium Level		
	Pounds N per Acre	Low	Med	Opt.	Low	Med	Opt.
Okra		Pounds P_2O_5 per Acre			Pounds K_2O per Acre		
	125-150[1]	250[1]	150[1]	100[1]	250[1]	150[1]	100[1]
	50-100[2]	250[2]	150[2]	100[2]	250[2]	150[2]	100[2]
	25-50[3]	0	0	0	0	0	0
	25-50[4]	0	0	0	0	0	0

[1]Total amount nutrient recommended; growers producing vegetables on soils with high clay contents should reduce the recommended nitrogen and potassium rates by 20% and increase the phosphorus rate by 25%.

[2] Broadcast and disk-in

[3] Sidedress 3-4 weeks after planting

[4] Sidedress 6-8 weeks after planting

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 225 pounds of nitrogen (N) per acre with recommended $P_2 0_5$ and $K_2 0$ and disk-in or incorporate prior to laying mulch.

Drip/Trickle Fertilization: see Chapter C under drip/trickle fertigation section.

Seed Treatment

See the Disease section for seed treatment to prevent disease.

Seeding and Spacing

Usual field seeding date is May 20 to June 1. Generally only one planting is made. For Pennsylvania, seed in the greenhouse in cells on May 5 and transplant to the field on June 5 to 10 through black plastic mulch on raised beds with drip irrigation. Okra also responds to the application of trellises and row covers or high tunnels.

For dwarf varieties, space the rows about 3½ feet apart; for medium and tall varieties, 4 to 4½ feet apart. Drill seeds ¼ to ½ inch deep, 3 or 4 per foot of row (5 to 7 pounds per acre). Thin the plants when they are 5 inches high. Dwarf varieties should be about 12 to 15 inches apart in the row; plants of tall varieties should be 18 to 24 inches apart.

Harvesting

An okra pod usually reaches harvesting maturity 4 to 6 days after the flower opens. The pods are 3 to 3½ inches long at this stage and are tender and free of fiber. Pick pods at least every second day. Large and undesirable pods should be removed to permit the plant to continue to bear over a long period. Okra should be kept at temperatures between 50° to 55°F (10° to 12.8°C) and relative humidity of 85 to 90 percent. Okra pods are subject to chilling injury below 50°F (10°C).

Weed Control

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.

There has been no research on this crop in this area. The following are suggestions taken from company labels:

Find the herbicides you plan to use in the Herbicide Resistance Action Committee's (HRAC) **Herbicide Site of Action Table E-7** and follow the recommended good management practices to minimize the risk of herbicide resistance development by weeds in your fields.

Preplant Incorporated

Trifluralin--0.5-1 lb/A. Apply 1 to 2 pints per acre Treflan 4E. Incorporate 2 to 3 inches deep within 8 hours of application by disking twice with blades set 4 to 6 inches deep.

Preemergence

Mesotrione--0.094 lb/A. Apply 3 fluid ounces of Callisto 4SC per acre. Primarily controls common lambsquarters and many other annual broadleaf weeds, including triazine resistant biotypes, but Callisto is weak on ragweed and morninglory species. Preplant incorporate Treflan 4E to control annual grasses. Temporary injury, appearing as whitening of the foliage after emergence, may occur. Rainfall or irrigation after planting and treatment, but before emergence, increases the likelihood of crop injury. Cold weather that slows crop growth will also retard recovery from injury following preemergence treatments. Varieties may differ in sensitivity to mesotrione. Crop injury may occur if an organophosphate or carbamate insecticide is applied within 7 days of Callisto. **See the Callisto label for additional use precautions.**

Postharvest

Paraquat--0.6 lb/A. **A Special Local-Needs 24(c) label has been approved for the use of Gramoxone Inteon 2SC** or OLF **for postharvest desiccation of the crop in Delaware, New Jersey and Virginia.** Apply 2.4 pints per acre Gramoxone Inteon 2SC or OLF 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.

Insect Control

NOTE: Copies of specific insecticide product labels can be downloaded by visiting the websites www.CDMS.net or www.Greenbook.org. Also, specific labels can be obtained via web search engines.

Aphids

imidacloprid (soil, drip–Admire PRO; foliar–Nuprid 1.6F, Provado 1.6F or OLF)
malathion (Malathion 57EC or OLF)

Corn Earworm

Bacillus thuringiensis (Biobit, Dipel, Dipel 2X, Javelin, XenTari or OLF)
bifenthrin (Brigade, Sniper or OLF)
chlorantraniliprole (foliar – Coragen 1.67SC)
flubendiamide (Synapse WG)
flubendiamide + buprofezin (Vetica)
indoxacarb (Avaunt 30WDG)
spinetoram (Radiant 2SC)
spinosad (Entrust 80W, SpinTor 2SC or OLF)
zeta-cypermthrin (Mustang MAX, Respect or OLF
zeta-cypermethrin+bifenthrin (Hero EC)

Japanese Beetle

bifenthrin (Brigade, Sniper or OLF)
malathion (Malathion 57EC or OLF)

Stink bugs

bifenthrin (Brigade, Sniper or OLF)
carbaryl (Sevin 80S or OLF)
zeta-cypermthrin (Mustang MAX, Respect or OLF)
zeta-cypermethrin+bifenthrin (Hero EC)

Whiteflies

imidacloprid (soil, drip–Admire PRO; foliar–Nuprid 1.6F, Provado 1.6F or OLF)
pyriproxyfen (Knack)

Pesticide	Use Category[1]	Hours to Reentry	Days to Harvest
INSECTICIDE			
Bacillus thuringiensis	G	4	0
bifenthrin	R	12	7
carbaryl	G	12	3
chlorantraniliprole	G	4	1
flubendiamide	G	12	1
flubendiamide + buprofezin	G	12	1
imidacloprid (soil/foliar)	G	12	21/5
indoxacarb	G	12	3
malathion	G	12	1
pyriproxyfen	G	12	14
spinetoram	G	4	1
spinosad	G	4	1
zeta-cypermethrin	R	12	1
zeta-cypermethrin+bifenthrin	R	12	7
FUNGICIDE (FRAC code)			
chlorothalonil (Group M5)	G	12	3
Folicur (Group 3)	G	12	7
Quadris (Group 11)	G	4	0

See Table D-6.

[1] G = general

Nematode Control

Nematode control is very important in the production of this commodity. See Chapter E, "Nematodes" section of "Soil Pests--Their Detection and Control". Use fumigants listed in the "Soil Fumigation" section.

Disease Control

Seed Treatment

Use thiram 75WP at 3 to 4 ounces per 100 pounds (2/3 teaspoon per pound) *plus* Apron XL LS (0.32 to 0.64 fluid ounce) per 100 pounds of seed for improved germination and stand.

Damping-Off

Use seed treated with thiram *plus* Apron XL LS (0.32 to 0.64 fl oz) per 100 pounds of seed.

Seedling Root Rot and Basal Stem Rot (Rhizoctonia)

Apply Quadris--0.40-0.80 fl oz 2.08SC/1000 row ft

Fusarium and Verticillium Wilts

Avoid planting in fields where either disease is present. Rotate with non-solanaceous crops.

Fruit Rot

Choanephora is a soil-borne fungal disease which attacks senescent blossoms and fruit. There are no fungicides labeled for Choanephora control. Improving air circulation is the only effective means of reducing the chances for Choanephora development. In extreme cases, some growers remove the lower juvenile leaves to improve air circulation.

Leaf Spots

chlorothalonil--1.5 pt 6F/A or OLF, or
Folicur--4.0–6.0 floz 3.6F/A or OLF, or
Quadris--6.0–15.5 floz 2.08SC/A

ONIONS

Varieties

Varieties[1]	DE	MD	NJ	PA	VA	WV
Bulb Types: Sets (Yellow)						
Candy* (Sweet Spanish type)				P	V	WV
Delgado				P		
Early Yellow Globe	D	M		P		WV
Ebenezer	D	M		P	V	WV
Bulb Types: Sets (Red)						
Southport Red Globe				P		
Bulb Types: Seed (Yellow)						
Candy* (Sweet Spanish type)	D		N	P	V	WV
Fortress (PRR)				P		
Bulb Types: Transplants (white)						
Belo Blanco*			N			
Bulb Types: Transplants Intermediate Day						
Candy* (Sweet Spanish type)			N	P	V	WV
Condor* (FT,PRT) (Sweet Spanish type)				P		WV
Expression* (Sweet Spanish type)				P	V	
Exacta			N	P	V	
Mars* (red)				P		WV
Medallion				P		
Mercury* (red)				P		
Mesquite*			N			
Prince*			N			
Super Star* (white, Sweet Spanish type)				P	V	WV
Sweet Spanish types	D	M	N	P	V	WV
Talon*			N			
Tequila*			N	P		
Bulb Types: overwintering						
T-420*			N	P		
Hi-keeper*			N			
Green or Bunching						
Beltsville Bunching	D	M	N	P		WV
Evergreen Bunching (overwinter)	D	M	N	P		WV
Kincho (summer)	D		N	P		
Southport White Globe (overwinter or early spring harvest only)	D	M	N	P		WV
Tokyo Bunching (summer)	D	M	N			WV
White Sweet Spanish	D	M		P		WV

[1] Varieties listed alphabetically

* 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.