MARYLAND COOPERATIVE EXTENSION
UNIVERSITY OF MARYLAND
COLLEGE PARK-EASTERN SHORE

Fact Sheet

Fact Sheet 455

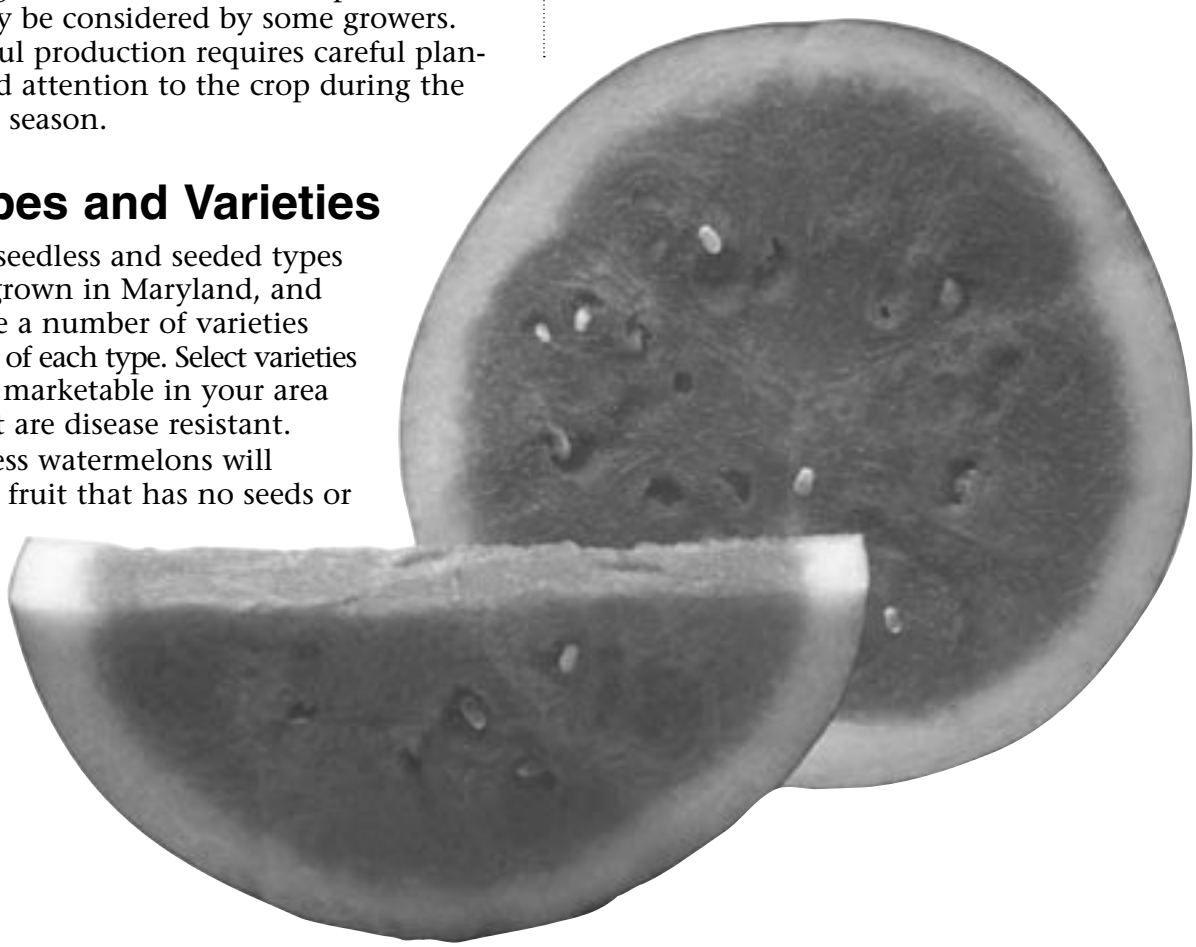
GROWING Watermelons

With the increase in population and the popularity of direct marketing, many farmers in Maryland are considering vegetable production as an additional source of income. Growing watermelon is an enterprise that may be considered by some growers. Successful production requires careful planning and attention to the crop during the growing season.

Types and Varieties

Both seedless and seeded types can be grown in Maryland, and there are a number of varieties available of each type. Select varieties that are marketable in your area and that are disease resistant.

Seedless watermelons will produce fruit that has no seeds or only a vestigial seed coat that may appear to be a small white seed. They may even occasionally produce a few true seeds. Seedless watermelons are sometimes referred to as "triploid" because of the production of



three chromosomes rather than the two of standard "diploid" seeded melons. Seed companies may have a disclaimer stating that the fruit may contain some seeds.

Seedless watermelons will require a standard seeded type as a pollinator (source of pollen) that is planted with the seedless type. Be sure the pollinator has different fruit characteristics so that the seedless and seeded fruit can be easily distinguished at harvest time. Some recommendations suggest a 2:1 ratio of triploid to diploid plants. This is accomplished by planting a row of a seeded variety, then two rows of seedless and repeating this pattern throughout the field. An adequate bee population in the field is also very important to ensure that proper pollination occurs. Maryland Cooperative Extension recommends two hives per acre.

Seedless types often have expensive seed, poor germination, and low seedling vigor, which combine to require the use of transplants, rather than direct seeding, in establishing a field. Seedless types may also exhibit more hollow heart, poor internal color, and occasional seediness—characteristics that range from very slight to severe. Production costs are high because of the special cultural requirements and the cost of the seed, but profit potential may also be high.

Currently recommended varieties are listed in Table 1. Variety and culture recommendations are also given in Extension Bulletin 236, "Commercial Vegetable Production Recommendations," which is revised annually.

Field Selection and Preparation

Watermelon grows best in well-drained, sandy, or sandy-loam soils, but it can also do well in other soil types. Watermelon should not be planted in a field where watermelon were grown the previous year, and long rotations to crops other than cucurbit crops are recommended. The *Phytophthora capsici* organism affects watermelon. Other cucurbits, peppers, eggplant, and tomato are also susceptible and should be kept out of the rotation as long as possible. Try to select fields with minimal weed pressure.

Prepare the field by plowing to incorporate crop residues, cover crops, manures, and any lime that is needed. Then work the soil with a disk to prepare a seedbed and to incorporate fertilizers that are to be broadcast prior to planting.

Fertilizing

Have the soil pH and fertility tested by a soil testing lab to determine the optimum amounts of lime and fertilizer to apply. (For a list of soil testing labs, check with your county agent or go to the web at http://www.agnr.umd.edu/soiltesting.)

Magnesium, if needed, should be added as magnesium sulfate (Epsom salts) if soil pH is adequate and no liming materials are needed. Dolomitic limestone can be used if pH is low and magnesium is also required. Ideally, this should be done at least six months before planting watermelon.

A fall cover crop, planted and plowed down before a watermelon crop is planted, gives the soil a higher organic matter content. Manures can also be applied to raise the organic matter content of the soil and to add nutrients; however, have the nutrient content of the manure tested to determine optimum application rates. Be sure to plow down the manure before the watermelon are planted.

Once you have your soil test results, use Tables 2 and 3 as guides to fertilization rates.

For Fertilization through a Trickle Irrigation System: Growers with experience may want to use trickle irrigation; this allows application of soluble fertilizers through the system. Before applying plastic mulch, raise low soil pH to about 6.5, and apply and thoroughly incorporate enough farm-grade fertilizer to supply 50 pounds per acre of nitrogen (N), phosphorus (P_2O_5), and potassium (K_2O).

After applying plastic mulch and installing the trickle irrigation system, apply completely soluble fertilizers to supply 25 pounds of N, P_2O_5, and K_2O per fertilized-mulched acre during each application (check EB 236 for more information on the fertilized-mulched acre concept and on updated fertility recommendations). On soils testing low to medium in boron, also apply 0.25 pounds of actual

boron per fertilized-mulched acre in each soluble fertilizer application.

Apply the first soluble fertilizer through the trickle irrigation system within one week after field transplanting the watermelons. Apply the same rate two weeks later. Make the third application when the first fruit set. Make the fourth application two weeks before the first harvest. Make the fifth application right after the first harvest. To maintain good production late into the season, make another application three weeks after the fifth complete fertilizer application.

Do not apply more than 125 pounds of nitrogen per acre to seedless watermelon. Higher nitrogen rates may increase the incidence of hollow heart in seedless types.

Mulching

Plastic mulch (black or clear) may be used to increase crop yield and to ensure earliness. Use clear 1½ mil plastic mulch before planting to conserve moisture and increase soil temperature. The mulch should also increase early and total yield. However, if clear plastic is used, fumigation of the soil will be needed to control weeds.

To fumigate, apply Vapam HL (30 to 37 gallons per acre) or other labeled formulations and lay plastic mulch on well-prepared plant beds 30 days before field planting. Plastic mulch should be 4 feet wide (4,000-foot rolls) and laid on 6- to 8-foot centers immediately over fumigated soil. The soil must be moist (not wet or dry) when the plastic is laid. Custom operators are normally hired to lay the plastic, although some growers with larger acreages have their own equipment and do the work themselves.

If clear plastic is used without fumigation, it is important to first treat the soil with a herbicide. However, the use of herbicides without fumigation under clear plastic often results in some weeds growing under the plastic and choking out the watermelon plants. If black plastic mulch is used, herbicides are not necessary.

Fumigation will aid in the control of soil-borne diseases but is not a cure for them. Since fumigation under black plastic is not required, fumigation should not be used in place of long rotations. However, fumigation should be used where nematodes are a problem, whether clear or black plastic is being used. Contact the local office of Maryland Cooperative Extension for more information about nematode testing and management.

It is important to apply fertilizer during bed preparation before plastic mulch is applied. At least 50 percent of the nitrogen should be in the nitrate form.

Trickle irrigation tubing can be placed under the mulch at the same time the mulch is laid to provide an even, plentiful supply of water to the plants.

Direct seeding through the mulch is recommended for maximum virus protection. Transplants should not be used with foil or other repellent mulches.

Planting

Always buy seed from a reputable supplier to ensure that the seed is true-to-type, has good germination, and is as free of seed-borne diseases as possible.

Seed Treatment

Check with the supplier 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, if desired. Growers who want to produce watermelons organically should request untreated seed at the time the order is placed.

Growing Transplants

It is beneficial to gain some experience with production of watermelons grown from direct seeding before attempting to grow and use transplants. Those who want to try growing transplants should follow these guidelines:

1. The amount of seed needed for growing transplants depends on the spacing in the field and seed germination percentage. If the seed is of good quality and has high germination percentage, one seed per tray cell or peat pellet is sufficient. One ounce of watermelon seed contains 300 to 900 seeds, depending on the variety. Use Table 4 to help determine the amount of seed needed.

2. Grow transplants in cell trays, flats, or peat pellets that provide a space of at least 2 inches by 2 inches for each plant. Smaller pots or cells restrict root growth, which limits transplant vigor. Do not allow transplants to become too large prior to planting. Transplants should have two true leaves when they are planted into the field.
3. Recommended field spacing for watermelon: rows 6 to 8 feet apart with plants 3 to 4 feet apart in the row. Traditionally, growers plant rows 8 feet apart with about 3 feet apart in the row. Plants should have a minimum of 24 square feet each for best fruit size.

Seedless Watermelon

Poor germination has long been a problem with seed of triploid watermelons. Seed should be treated with fungicides to reduce seedling losses. It is recommended that growing medium or peat pellets be soaked thoroughly and drained 24 hours before planting. Planting seed with the point up will allow seedlings to emerge more quickly but does not affect the final number of plants that emerge.

Maintain uniform high moisture and an 85°F temperature during the first 48 hours of germination. Avoid overwatering during this period—overwatering can reduce germination up to 50 percent. Once 10-percent emergence has occurred, conventional watering can begin and the temperature should be lowered to 75°F. Plants should be ready for transplanting to the field in three weeks and should not have more than three true leaves.

Direct Seeding

If the crop is direct-seeded into bare ground (without plastic mulch), seed 3 to 5 pounds of seed per acre. Many growers seed with a corn planter and then thin the plants later. Thin to about three plants for every 10 feet of row in rows 8 feet apart. Thinning is normally done when plants have two true leaves or more. Do not allow the plants to get too large before thinning as they will begin to crowd each other out.

Planting into Plastic Mulch

If transplants are used, plant them through the plastic when daily mean temperatures have reached 60°F. Planting can be done by hand or with a mechanical transplanter designed to plant through plastic mulch. Planting dates vary from May 1 to May 15.

Transplants are usually used for early plantings. Small, tender transplants should be protected against prevailing winds by small grain strips left in the field from the cover crop. Strips protect the crop a distance of 10 times the height of the small grain. (A 3-foot-tall, small grain strip will protect the watermelon crop for a distance of 30 feet.)

If the crop is grown from seed, it may be directly seeded through the mulch using jabber-type hand seeders.

Pollination

A sufficient number of pollinating insects is needed in watermelon fields to ensure an adequate distribution of pollen from male to female flowers. Local pollinators are seldom numerous enough to provide satisfactory pollination, and wild honeybee populations have dropped drastically.

Rent honeybees from a beekeeper for pollination. One or two strong hives per acre are needed in the field when female blossoms start to appear. Each hive should contain at least 1,200 square inches of brood and enough adult bees to care for the brood, regardless of weather conditions.

Also, provide a clean water supply within ¼ mile of bee hives. If it is necessary to treat the fields with insecticide during bloom, make the application in the early evening when bee activity is reduced. This protects both wild and rented bees. Beehives may also be removed from the fields if necessary. Be sure to warn the beekeeper to remove the hives if there is serious potential danger to the bees.

Watermelon, cucumber, and cantaloupe do not cross-pollinate with each other, and none of these will cross-pollinate with pumpkin or squash.

Irrigation

To help ensure a crop during droughts, the purchase and use of irrigation is usually a good investment. There are several types of irrigation systems available.

Consider cost, water supply, and water quality when a system is selected. For smaller growers, trickle, traveling gun, or movable pipe may be more economical than other systems.

Drip or trickle irrigation is a method of slowly applying small amounts of water directly to the plant root zone through a drip tube. Water is applied frequently, often daily, to maintain favorable soil moisture conditions. One of the advantages of trickle irrigation systems is that less water is used than with sprinkler irrigation systems. In many cases, drip systems require only one-half of the water applied with sprinkler systems. In addition, fertilizers that may be applied through the drip system are conserved along with water. When drip irrigation is used, growers must be equipped to monitor the moisture content of the soil in the beds to prevent yield losses from under- or overwatering.

Weeds, Diseases, and Insects

Scout fields and use IPM (Integrated Pest Management) thresholds where they are indicated. Read and follow all label directions for any pesticide used. For current recommendations for managing nematodes, weeds, diseases, and insects, check the current revision of EB 236, "Commercial Vegetable Production Recommendations."

Section 18 Emergency Label requests may be approved during a growing season to supplement pest control recommendations. Since registrations for pesticides change frequently, stay informed of currently labeled pesticides by contacting your local Extension office or supplier.

Weed Management

Herbicides for broadleaf and grass weed control are available, but they may not be 100 percent effective. Some hoeing and cultivation may still be needed. If you wish to use herbicides on watermelons without plastic mulch, refer to EB 236 for current recommendations.

Identify weeds in each field and select recommended herbicides that control those weeds.

Match preplant incorporated and preemergence herbicide rates to soil type and percent organic matter in each field. Follow recommendations for weed control under plastic mulch.

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

Banding herbicides over the row in combination with cultivation between the rows will reduce herbicide costs on fields where no plastic mulch is used.

For soil strips between rows of plastic mulch, use the following land preparation, treatment, and planting sequences to reduce the chances of crop injury:

- Complete soil preparation and lay plastic (with trickle irrigation if desired) before herbicide application.
- Spray preemergence herbicide(s) registered for use on the crop onto the soil and the shoulders of the plastic strips before weeds germinate, or combine with a postemergence herbicide to control emerged weeds. Wet the outside 3 to 6 inches of plastic but **do not spray herbicide broadcast onto plastic.** Herbicides may wash from a large area of plastic into the planting hole and result in crop injury.
- Incorporate preemergence herbicides into the soil with 0.5 to 1.0 inch of rainfall or overhead irrigation within 48 hours of application **and before planting or transplanting**.
- Apply nonselective herbicides in bands to the soil strips between the plastic mulch before the crop emerges or is transplanted.
- Apply selective postemergence herbicides broadcast or in bands to the soil strips between mulch to control susceptible weeds. All herbicide rate recommendations are made for spraying a broadcast acre (43,560 ft^2).

Disease Management

Disease control requires a great deal of management skill. Spraying with fungicides on a regular basis, often on a 7-day schedule, may be the best method of controlling fungal diseases. Shorter intervals are suggested during wet periods, and during dry weather the interval can be longer.

Following are descriptions of some of the more serious diseases and disorders of watermelon. Specific recommendations for pesticides for control of some of these are in the annual revisions of EB 236, "Commercial Vegetable Production Recommendations." Recommended materials may change from one year to the next as new products are granted labels and older products are replaced. If pesticides are used, **be sure to carefully read and follow all label instructions**. 'Melcast' and other weather-based disease prediction programs may be useful in reducing fungicide applications.

Bacterial fruit blotch: This is a serious bacterial disease that can be seed transmitted. Infected fields may suffer partial to total loss depending on environmental conditions and the crop growth stage at which fruit blotch becomes established.

The characteristic symptom of bacterial fruit blotch is the dark olive green stain or blotch that occurs on the upper surface of infected fruit. Fruit lesions rarely extend into the flesh of the melon; secondary rotting organisms are responsible for the ultimate decay and collapse of fruit. Leaf lesions are small, dark brown, somewhat angular, and generally inconspicuous. When viewed from the bottom of the leaf, the margins of the lesions appear water-soaked, especially in wet or humid weather.

As a result of this disease, seed companies may require growers to sign a waiver and release agreement before they will ship the seed.

Initial symptoms on greenhouse-grown transplants appear as water-soaked areas on the underside of infected cotyledons. Lesions on young true leaves are small, dark brown, and often surrounded by a band of yellow tissue. The infected seedlings usually do not collapse and die in the greenhouse, but foliar lesions will increase slowly under favorable environmental conditions.

In the greenhouse and in the field, bacteria produced on the surface of a lesion are splashed to adjacent plants during irrigation, and neighboring plants will likely become infected and probably will exhibit symptoms within 4 to 10 days. This pathogen apparently does not overwinter in the absence of host material. Therefore, if greenhouses are properly sanitized, affected fields are rotated out of host crops, and volunteer weeds are eliminated, the disease is not likely to present major problems in subsequent years unless the pathogen is once again introduced with the seed.

If symptoms are seen on watermelon seedlings in the greenhouse, remove those plants and those adjacent to them immediately to attempt to prevent any further infection.

Damping off: This disease is characterized by preemergence seed decay and by seedling wilting and death. Roots on affected seedlings may be discolored and rotted. Stems may be discolored and constricted at the soil line; these plants usually topple over and dry up. Some fungicides are available that can be soil-applied to reduce losses. These can be applied in a 7-inch band over the seed furrow to reduce costs.

Viruses: These diseases are generally transmitted by aphids or by field equipment. Infected plants exhibit yellowish-green leaves and fruit, and leaves may be malformed. Viruses often overwinter in perennial weeds such as pokeweed in fencerows and field margins. Control of weeds, especially pokeweed, around field borders may reduce the severity of viruses. Select resistant varieties where possible. Control aphids with a recommended insecticide until July 1. After July 1, plant watermelons in fields as far away as possible from other cucurbits.

Fusarium wilt: This wilt is caused by a soilborne fungus, which damages vascular tissues. Infected plants may be stunted, yellow, or wilted or they may die. Vascular tissue inside the stems may be discolored, and a white mold may grow on dead vines. To control Fusarium wilt, use a long rotation of at least 5 years without cucurbits. Select resistant varieties when possible.

Anthracnose: Leaf spots begin as yellowish or water-soaked areas that enlarge

rapidly, turn brown, and create ragged holes. Elongated dark spots with light centers often develop on petioles. Young fruit may be killed, but large fruit tend to develop depressed dark-bordered cankers with flesh-colored ooze in the centers. Use resistant varieties when possible. Begin fungicide sprays when vines begin to run and repeat every 7 days.

Downy mildew: This fungal disease is usually more serious from mid-July until the end of the growing season. It causes chlorotic spots on the upper surface of leaves, and a grayish mold may appear on the underside of leaves. Begin sprays of recommended fungicides when vines begin to run, and repeat every 7 days.

Alternaria leaf blight: Leaf spots begin as small concentric circles that enlarge to affect large areas of leaves. Defoliation begins with crown leaves. The disease-causing fungus overwinters on and in seed, as well as in refuse from old plants. Spores of the fungus are spread by wind, running or splashing water, workers, and implements. To control leaf blight use rotation, resistant varieties, treated seed, and fungicide sprays. Begin sprays when vines begin to run. Repeat every 7 days. Use low rates early in the season.

Gummy stem blight: Symptoms begin as long, light-colored streaks that develop on stems, and a gummy substance that appears near the streaks. Spots occur on leaves, and black fruiting structures grow on the spots. Leaves rapidly fall off infected plants. The fungus overwinters in seed and residue from diseased plants. Warm weather and moisture promote gummy stem blight, which occurs primarily in late summer. Begin fungicide applications when vines begin to run, and repeat every 7 days.

***Phytophthora* blight:** This is a soilborne fungus that can cause damping off, but injury usually does not appear until mid-season. Root rot symptoms begin to appear as plants reach fruiting stage. Plants wilt suddenly. A black or brown discoloration occurs in the lower stem at the soil line, and the stem collapses. The roots have a soft, water-soaked black to brown decay, usually odorless. Fields should be adequately drained to ensure that soil water does not accumulate around the base of the plants. In addition, when the vines begin to run, subsoil between rows to allow for faster drainage following rainfall. Too much water, inadequate drainage, and high temperatures all favor *Phytophthora* root rot. Fixed copper materials applied with each fungicide application used for downy mildew or gummy stem blight are also recommended.

Internal rind necrosis: This is a non-infectious disorder and appears to affect only watermelons. It occurs sporadically in the mid-Atlantic area. Characteristic symptoms include a corky, red-brown layer of tissue that occurs on the inside of the rind of affected fruit. Sometimes there is a subtle knobbiness on the surface of affected fruit.

Not much is known about the nature of internal rind necrosis, but it may be associated with drought or with excess nutrients. In Maryland, it has occurred on irrigated fields. It is not known whether some watermelon varieties are less prone to the problem. Since no control measures are recommended, it is prudent to apply adequate amounts of water and nutrients without under- or over-applying either.

Air pollution: Although not a disease, air pollution, especially ozone, can cause serious injury to some watermelon varieties that are very sensitive to air pollution. Exposure of plants of these varieties to ozone will result in chlorosis (yellowing) of the foliage and scorching of the upper surface, leading to defoliation. Select varieties with tolerance to air pollution.

Insect Management

Following are descriptions of some of the more serious insect pests of watermelon. Specific recommendations for pesticides for control of some of these are in the annual revisions of EB 236, "Commercial Vegetable Production Recommendations." If pesticides are used, **be sure to carefully read and follow all label instructions. Check the labels for maximum allowable material per season and for harvest and reentry intervals.** Recommended materials may change from one year to the next as new products are granted labels and older products are replaced.

Seed Corn Maggot: Fly maggots feed on seed in the soil or transplant trays. Damaged seed usually fails to sprout or, if it does, produces a weak seedling. Injury is most severe in

wet, cold soil in the spring and on soil high in organic matter. Best control is achieved by using an insecticidal seed treatment. Seed treated commercially with malathion or lindane will not control corn seed maggots.

Cucumber beetle: These are small, yellowish green insects with longitudinal black stripes or black spots. Adult beetles are about ¼ inch long. The striped beetle is the more destructive of the two. Cucumber beetles feed on young seedlings. Begin insecticide treatments when an average of two beetles per plant are found.

Cutworm: Most cutworms are night feeders that hide during the day. Weedy or minimum-till fields are attractive to egg-laying adults. Low-lying areas may be more susceptible during drought periods. Adults are attracted to lights, and eggs could be laid on transplants in lighted greenhouses at night and transported to the field with the plants. Scout fields before planting and during the early growing season. If treatment is needed, the following may help:

1. Direct sprays at the base of the plants where cutworms are actively feeding.
2. Increase the amount of water used to at least 30 gallons per acre, especially in dry weather.
3. Spray between midnight and 5 a.m., when cutworms are most active.
4. Cultivate after insecticide application to improve contact with cutworms, especially in dry weather.

Pickleworm and **melonworm:** Young larvae of pickleworms are almost colorless to greenish-white except for darker jaws, a black spot on each side of the head, and numerous small black spots scattered over their bodies. Pickleworms are about 1 inch long at maturity. Adults are moths with a 1-inch wingspan. Melonworms are less common and are slender and greenish with two thin stripes down their back. Both worms will bore into fruit at or near contact with the soil surface resulting in fruit rot. Apply a recommended insecticide prior to fruit set, and then treat weekly.

Aphids: Small, green, soft, sucking insects are often clustered on stems near tips of new growth; they are most numerous in July and August. Two types, the green peach aphid and the melon aphid, feed on melons. Correct identification is necessary for selection of the best control material. The melon aphid has black cornicles at the end of the abdomen. Aphids not only cause injury directly, they transmit mosaic virus. If insecticides are used, thorough coverage of the bottom of leaves will be necessary.

Leafminers: These are larvae of small insects. The larvae tunnel inside the leaf tissue leaving serpentine trails between the upper and lower surfaces of the leaf.

Rindworms: Rindworms are the larvae of the cucumber beetle. Direct control of rindworms is difficult. Management of adults will reduce rindworm populations.

Cabbage looper: Although cabbage looper damage to watermelon is rare, loopers will occasionally feed on the crop. Larvae are green with a white stripe on the side. They move in a characteristic looping motion. Feeding can cause defoliation.

Spider mites: Mites are just barely visible to the eye and are more easily seen with a 10X or higher magnifying glass or hand lens. They are yellow to red and have 8 legs. Spider mites are generally found on the undersides of leaves. Infestations often begin around field margins and grassy areas, although mites can float into interior sections of a field on strands of webbing. Populations may become numerous, especially during hot, dry weather.

DO NOT mow or maintain field margins after midsummer; this forces mites into the crop. Localized infestations can be spot treated with an appropriate miticide. 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. Continuous use of Furadan, Sevin, or pyrethroids may contribute to mite outbreaks.

Nematodes: Nematodes are microscopic worms that feed on the roots of plants. Certain nematodes at high population levels can severely damage a planting. Sample the soil for nematodes before planting. Sampling in the fall prior to spring planting is preferable. Rotations to nonhost crops are recommended. Soil fumigation or use of a nematicide may also be effective in reducing nematode damage.

Harvesting

Experience is important when you're learning to determine when watermelon are ready for harvest. When melons are mature, cut them from the vine; do not pull them. Handle melons carefully to avoid bruising; rotting organisms can enter through the bruised skin.

Thumping the melon is a good test to determine ripeness. If a sharp, high-pitched sound results from rapping the melon, it is not ready for harvest. A dull sound indicates that the fruit is ripe and ready to eat. This test is best done in the early morning.

Look for other signs indicating that melons are ready for harvest, such as:

Roughened skin—The skin becomes rippled as fruit matures.

Groundspot—The area of the fruit that touches the ground becomes light green or yellow as fruit matures.

Dried tendril—The tendril near the stem of the fruit dries up and becomes brown when the melon is ripe. This may depend on the variety, however. On some varieties, the tendril may dry up 10 days before fruit is ready.

Marketing

Growing watermelon as an agricultural enterprise requires skilled, intensive management and competent labor. Start with small acreage and learn production and marketing skills before expanding.

Make contacts with buyers early to establish market, price, and fruit quality standards as well as packaging, shipping, and transportation requirements. Sometimes it takes several years for seller and buyer to develop a rapport that allows both to benefit. (See Table 5 for information about costs and returns.)

Table 1. Currently Recommended Varieties Listed in Order of Maturity

Those with an asterisk are hybrids.

Seeded:

Jade Star* (FR 1)
Crimson Sweet (AR, FR 1, OS)
Royal Majesty* (FR 1, 2)
Sangria*
Fiesta* (OS)
Jamboree* (AT, FT)
Royal Star (FR 1)
Stars and Stripes* (FR 1, AR, OS)
Mardi Gras* (FR 1, AR)
StarBrite (AR, FR 1, OS)
Mirage* (AR, FR 1)

Seedless:

Triple Crown*
Millionaire* (OT)
Valdoria* (icebox)(trial)
Millennium* (FR 1, AR, OT)
SS5244* (OT)
Tri-X-313* (OT)
Revolution* (oblong) (OT)
Freedom* (oblong) (OT)
Honey Heart* (yellow)

AR=Anthracnose resistant
AT=Anthracnose tolerant
FR=Fusarium wilt resistant
FR 1=Fusarium wilt resistant to race 1
FR 2=Fusarium wilt resistant to race 2
FT=Fusarium tolerant
OS = Ozone sensitive
OT = Ozone tolerant

Table 2. Recommended Fertilization for Non-irrigated Watermelons

Recommendations	Nitrogen (lb/acre)	Soil phosphorus levels				Soil potassium levels			
		low	medium	optimum	excessive	low	medium	optimum	excessive
		(lb/acre P_2O_5)				(lb/acre K_2O)			
Broadcast and disk-in	50	150	100	50	0	200	150	100	0
Topdress when vines start to run	30-50	0	0	0	0	0	0	0	0
Total recommended	80-100	150	100	50	0	200	150	100	0

Table 3. Recommended Fertilization for Irrigated Watermelons

Recommendations	Nitrogen (lb/acre)	Soil phosphorus levels				Soil potassium levels			
		low	medium	optimum	excessive	low	medium	optimum	excessive
		(lb/acre P_2O_5)				(lb/acre K_2O)			
Broadcast and disk-in	50	150	100	50	0	200	150	100	0
Topdress when vines start to run	25-50	0	0	0	0	0	0	0	0
Topdress after first harvest	25-50	0	0	0	0	0	0	0	0
Total recommended	125-150	150	100	50	0	200	150	100	0

Note: For seedless watermelons, do not apply more than 125 pounds of N per acre. N rates above 125 pounds per acre may increase hollow heart in seedless watermelons.

Table 4. Typical Populations for Watermelon Production (plants per acre[a])

Distance between rows	Distance between plants	
	3 feet	4 feet
6 feet	2,420	1,815
7 feet	2,074	1,556
8 feet	1,815	1,361

[a] Spacings resulting in less than 24 square feet per plant may result in melons smaller than desired.

Table 5. Costs and Returns (Budget based on 8 fungicide applications)

Item	Unit	Quantity	Price	Total
Income				
Watermelon	Each	1500	$1.00	$1500.00
Variable/Operating Costs*				
Seed	Pound	4	9.80	39.20
Cover Crop	Acre	1	30.00	30.00
Nitrogen	Pound	150 [1]	.30	45.00
Phosphate	Pound	100 [2]	.30	30.00
Potash	Pound	150 [2]	.16	24.00
Lime	Ton	0.50	26.00	13.00
Alanap-Plus	Gallon	1	27.00	27.00
Prefar 4E	Gallon	1.25	38.00	59.38
Curbit	Pint	2.0	5.50	11.00
Thiodan 6.7E	Gallon	0.5	55.50	27.75
Chlorothalonil	Gallon	1.5	62.00	93.00
Quadris	Gallon	0.375	258.95	97.11
Ridomil/Bravo	Pound	2	17.50	35.00
Benlate	Pound	2	17.75	35.50
Bee Rental	Hive	2	30.00	60.00
Irrigation (sprinkler)	Acre	3	20.00	60.00
Harvesting Labor	Hour	45	7.00	315.00
Interest on Operating Capital (6 months)	1001.94	(.50)	.09	45.09
Total Variable Costs Listed Above				**$1047.03**
Fixed/Overhead Costs (Custom Rates are used as a proxy for field operation costs)				
Plowing	Acre	1.00	12.00	12.00
Disking	Acre	1.00	10.00	10.00
Fertilizer Spreading	Acre	1.00	6.00	6.00
Planting	Acre	1.00	15.00	15.00
Land Charge	Acre	1	70.00	70.00
Total Fixed Cost Listed Above				**113.00**
Total Variable and Fixed Cost Listed Above				**1160.03**
Net Income over Variable & Fixed Costs Listed Above				**339.97**

Net Income Above Variable and Fixed Costs Listed Above for Various Yields and Prices

	Prices		
Yields	$0.50	$1.00	$1.50
1,000	$ (663.03)	(160.03)	339.97
1,500	$ (410.03)	339.97	1089.97
2,000	$ (160.03)	839.97	1839.97

[1]Nitrogen—For seedless watermelon, apply 125 pounds of N per acre. Higher rates of N may increase hollow heart in seedless watermelon.

[2]Phosphorus—Apply according to a soil test; this rate is for a soil in the medium range. Potash—Apply according to a soil test; this rate is for a soil in the medium range.

*There are many variables in growing watermelon. This budget reflects costs and practices of many growers in their operations. It is not possible to predict which insecticides may need to be used or how often, but costs for insecticides have been included. Plastic mulches and drip irrigation will increase the per acre variable cost by $350 or more.

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Growing Watermelons

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