MUSKMELONS (CANTALOUPES)

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Variety Selection – There is an abundance of muskmelon varieties. However, only those varieties which can be marketed and are well-adapted to North Carolina conditions should be grown. When planting a variety for the first time, plant a small test area and evaluate prior to committing a large portion of acreage to subsequent plantings. The following varieties have grown well in North Carolina and are recommended (see table on page 3).

Seeds and Seeding – Most local seed dealers either stock or can obtain seeds of the recommended varieties. Do not accept substitutes without first consulting with someone knowledgeable about muskmelon varieties. Plant when the danger of frost has passed. In eastern North Carolina this is around March 25 to April 10. It is best to plant when the soil temperature is at least 60°F for germination. Seed about ½ to ¾ inches deep. When seeding, unless you use a precision-type seeder, about 1 lb of seed (15,000 seeds/lb) will be required per acre. One should consider a precision seeder or the use of transplants if planting substantial acreage with expensive hybrid seed. For good plant establishment, an insecticide and fumigant should be used to control seed corn maggot and seedling damping-off (consult the current *N. C. Agricultural Chemicals Manual*).

Plant Characteristics – Muskmelon *(Cucumis melo* 'reticulatus') is commonly known in the trade as a cantaloupe. However, no cantaloupes are actually grown commercially in the United States, only muskmelons. Cantaloupes (*Cucumis melo* 'cantaloupensis') are a rough warty fruit while muskmelon have the characteristic netting on the fruit rind.

Muskmelon fruit typically sets in cycles in which several fruits are set per plant in the first cycle, and additional fruit can be set in subsequent cycles. Fruit are typically harvested from the first cycle of fruit set (crown fruit) since this produces the highest quality fruit (high sugars and size). Disease pressure also is usually much less of a problem at this stage in the plant's development. If quality and markets continue to be good, subsequent harvests can be made from the second flush of fruit set.

Muskmelon contain two blossom types: perfect (having both male and female parts) and male (staminate) flowers. Usually the main stem produces 3 to 4 major branches of equal or longer length than the main stem. Additional laterals (branches) later arise from both the main stem and branches and can produce additional flushes of fruit if the vines remain healthy. Typically, fruits are harvested over a 2-week period. Longer harvest

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periods are possible where conditions are favorable and disease is controlled.

Soils – Muskmelons grow well on a wide range of soil types. Medium-textured soils (loams) will generally produce higher yields and better quality melons. In all cases the soil must exhibit good internal and surface drainage. The pH should be above 5.8 and preferably near 6.2. Rows should be raised 6 to 8 inches to facilitate soil drainage.

Fertilization – Application rates are most accurate when a soil test is taken and recommendations followed. If soil is not tested, side place 40 to 50 lb of nitrogen and phosphorus (P_2O_5), and 100 to 120 lb of potassium (K_2O) per acre at planting. At layby, an additional 40 to 50 lb of nitrogen per acre will be needed. In some soils, 40 to 80 lb of potash per acre will improve yield and quality.

Spacing – Row widths of 5 to 6 ft are desirable and in-row spacing should be 18 to 24 inches. These combinations will give you a range of about 3600 to 5500 plants/acre.

Transplanting – Some growers prefer to purchase or grow transplants as a way of reducing seed cost and/or to obtain early melons. This works well especially when growing on film mulches. When growing transplants, seed 2 to 4 weeks ahead of transplanting date. Commercial potting mixes work well since the growing medium must be sterile and drain freely. The diameter of transplant containers can range between 1.5 to 4 inches, with 3 inches being optimum for early production. If weather conditions limit time of field transplanting, transplant growth can be minimized by reducing temperature and watering.

Irrigation – Irrigation prior to and after planting should be applied to ensure seed germination, emergence and stand establishment. Overhead irrigation is most commonly used; however, drip irrigation, with plastic, is becoming more common and is highly desirable. Drip irrigation provides the plants with a more uniform application of water, placing it near the root zone and using less water. Drip irrigation also minimizes the amount of foliage and fruit disease compared with overhead irrigation. Furthermore, drip does not interfere with honeybees and subsequent pollination and fertilization.

Using Plastic Films – Plastic mulch should be used with trickle (drip) irrigation since it is very difficult to maintain proper soil moisture under the mulch using over-head irrigation. Fertilizer should also be applied through the drip tube. (See HIL 33, *Using Plastic Mulches and Drip Irrigation for Vegetable Production*, for plastic mulch use guidelines and HIL 33-D for muskmelon fertigation schedule). Again, the use of plastic mulch without irrigation *is not recommended*!

Pollination – Muskmelons require bees for pollination. For higher yields and larger melons, place one strong colony of honeybees per acre alongside or in the field at early flowering. The hive should be removed from the field when the fruits are set. Do not spray pesticide in the morning when bee activity is greatest since bees could be killed (depending on the pesticide) and activity reduced. See Extension Folder No. 302 for additional information.

Protecting the Early Crop – During spring, cold winds and wind-blown sand are serious problems for young melon seedlings. Row covers and rye strips protect the seedling and may result in one to two week earlier harvests. A rye strip (one grain drill width) every 5 to 6 rows reduces the problem. Fall-planted rye perpendicular to the wind direction is most effective. Row covers are not only more costly for crop protection than rye strips, but must be removed for pollinators and when temperatures warm.

VARIETIES

Name	Shape	Flesh Color	Netting	Seeding to Harvest (days)	Weight (lbs.)	Disease[1] Ribbing	Resistance/ Tolerance	Use[2]	Comments
Allstar	Round	Orange	Fine	85	4.0-5.0	Slight	F,DM,PM	L,S	Good sugars, good eastern-western hybrid for shipping
Ambrosia	Round	Salmon	V. Fine	86	4.0-4.5	V. slight	DM,PM	L (only)	Small cavity, high sugars
Athena	Oval	Orange	Heavy	80	5.0-7.0	Slight	F,PM	L	Less cracking than some eastern melons
Burpee Hyb.	Sl. oval	Orange	Heavy	82	4.0-4.5	Distinct	—	L (only)	A local favorite, limited shelf life, susceptible to cracking at stem end
Cordele	Sl. oval	Orange	Heavy	86	5.0-6.0	Distinct	F,PM	L,S	An eastern-western hybrid suitable for shipping
Durango	Sl. oval	Salmon	Medium	83	3.0-4.0	None	F,PM	S	High sugars, good shipper
Eastern Star	Oval	Orange	Medium	72	6.0-7.0	Distinct	PM	L (only)	Very early and large size
Gold Star	Sl. oval	Salmon	Heavy	85	3.0-5.0	Distinct	—	L (only)	Good eating quality
Primo	Sl. oval	Orange	Heavy	79	4.0-4.5	V. slight	PM	L,S	Uniform size, large western type
Summet	Sl. oval	Salmon	Heavy	78	3.5-4.5	Distinct	PM	L (only)	Early
Super-market	Oval	Salmon	Medium	84	4.0-4.5	Distinct	PM	L	Good for local markets
Super-star	Round	Salmon	Heavy	82	6.0-8.0	Distinct	F	L	Very large fruit
Tasty Sweet	Round	Salmon	Fine	85	3.0-4.0	None	F,PM	S	Very sweet, small size, western type

[1] PM = Powdery Mildew, DM = Downy Mildew, F = Fusarium

[2] L = Local, S = Shipping

Diseases – Fusarium wilt is a serious soil-borne disease of muskmelons. Planting resistant cultivars is the best way to protect the crop. Several blights, powdery and downy mildew, alternaria and gummy stem blight also are serious. They usually attack the plants at fruit-sizing time and can be controlled with fungicide sprays. Rootknot nematode can be a problem and various nematicides are available for control. The application of methyl bromide fumigation applied as part of plasticulture production also controls nematodes and most soil-borne diseases.

Insects – Cucumber beetles and aphids are the most troublesome on young plants. Fields should be scouted for these and other insects routinely (twice per week). An important part of scouting is identifying the insect(s) accurately. Once the insect(s) is identified and its numbers, the best control measures can be implemented to treat for the pest(s). Aphids are soft-bodied insects 1/16 to 1/8 inch long that are typically yellowish-green to green. If essential plant fluids are removed by aphids, young foliage may be deformed, while high populations can delay crop development. Aphid colonies are initiated in the terminals on the under-side of the leaf, thus scouting observations should be made in the plant terminal. Cucumber beetles are foliage feeding insects and symptoms include holes in the leaves. The adult cucumber beetle is yellowish-green with either black stripes (striped cucumber beetle) or black spots (spotted cucumber beetle) on the wing covers. The beetles become active early in the spring when temperatures reach 70°F. Eggs are deposited at the base of the plant and larvae may feed on the roots.

Be sure to scout fields frequently. Late crops maturing after July 15 to 20 are subject to attack by certain insects. For example, pickleworm pressure and temperature directly influence pickleworm activity and the frequency of insecticide application. These larvae burrow holes into the fruit and feed on the inside. Start control early to keep insect populations below an economic threshold. Spray applications every 3, 5, or 7 days depending on insect pest and population. Several insecticides will control these insects.

Weeds – Grasses are often a problem in spring but most often they can be controlled with Poast. Late-season broadleaf weeds are the most troublesome because most herbicides do not have enough longevity to control them. Avoid fields with high populations of hard-to-control weeds. Early in the crop production cycle, timely shallow cultivations when weeds are small (2 to 6 inches) minimizes weed interference.

Pest Control – Consult the current *N.C. Agricultural Chemical Manual* for specifics on pest control.

Harvest – Approximately 30 to 35 days are required from fruit pollination to harvest. Under average conditions in eastern North Carolina, harvest of a crop seeded March 25 to April 10 should begin about July 1 to 5. Transplanted melons and those grown on plastic mulch will likely start 7 to 14 days earlier. Muskmelons (but not most honey-dews) separate from the stem at maturity. When the stem separates completely (full slip) the fruit has achieved its maximum sugar development and if not consumed or cooled soon thereafter, its quality will deteriorate.

Some growers harvest at "one-half slip" or "one-quarter slip" to enter the market earlier and give more time for the marketing process. There is, however, a trend away from this practice as the consumer demands higher quality. The majority of melons for local sale are harvested at full slip. For shipping, fruit is most often harvested at one-half slip.

Harvests may be required each day if high temperature conditions exist at picking. Frequent picking is critical to assure melons are picked when they are the best quality. Assuming good cultural practices are followed, one can expect to harvest about 2,000 to 5,000 melons per acre when grown on bare ground and between 6,000 to 12,000 when using plastic mulch. Up to 20,000 fruit may be obtained with some of the smaller-fruited varieties (less than 3 lb).

Cooling and Packing – The buyer will usually specify packaging and shipping requirements. In general, melons are cooled by forced air or hydrocooling and packed in cartons for long-distance shipping. At temperatures of 32° to 35°F, full-slip melons can be held for about 14 days without significant loss in quality.

Steps to Successful Muskmelon Production

1. Find your markets before you plant the first seed.
2. Choose varieties that can be marketed and that yield well.
3. Test your soil for nutrient content, pH, and nematodes – and follow recommendations.
4. Use container transplants for early production.
5. Use fumigation, plastic mulch and drip irrigation with a 6 to 8 inch high bed.
6. Space 18 to 24 inches in 5- to 6-ft centered rows.
7. Use herbicide except in area covered by plastic.
8. Spray weekly with a high pressure sprayer for disease and insect control.
9. Control cucumber beetles to reduce foliage feeding and bacterial wilt.
10. Use honeybees.
11. Irrigate to maintain uniform soil moisture to reduce fruit cracking and increase size.
12. Harvest frequently (often daily) at ¼ or ½ slip. For better quality, harvest full slip for local markets or when cooling facilities are adequate to extend shelf life.
13. Pack uniform size in good quality container.
14. Cool *immediately* to extend shelf life.