

Crop Profile for Watermelon in Louisiana

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General Production Information

There are 270 growers, producing 2,600 acres of watermelons in Louisiana. Watermelons are produced in 25 parishes. The major production area is Washington Parish in the southeastern part of the state and Bienville Parish in the northwestern part of the state. Most of the melons in Louisiana are marketed through retail outlets and peddlers. A small amount of Louisiana melons are shipped to wholesale markets. Production costs run from \$1100 to \$1400 per acre depending upon the cultural practices used. All watermelons produced in the state are sold on the fresh market.

Cultural Practices

The majority of the watermelons grown in Louisiana are harvested in late June and July. A limited amount of production is done for the late summer and early fall.

Melons are generally grown on sandy hill soils with good internal drainage. Growers generally use a Bahia grass pasture that has not been use for watermelon production for a number of years to plant melons. This is due to the occurrence of fusarium diseases. Land preparation begins in early spring with liming and disking. A Bahia grass pasture requires several disking to prepare it for planting. A preplant fertilizer rate of 350 to 500 pounds of a complete fertilizer per acre is applied under the row where the melons will be planted. The rows are then mounded up 8 to 10 feet apart.

Approximately half the growers use plastic mulch and transplants on a portion of their acreage. These tools are used to enhance the maturity of the crop and take advantage of the higher prices in late June and early July. Planting is done by hand starting in late March continuing through mid April, for the June and July crop. The late summer crop is generally seeded in June and early July. The middle of the rows are cultivated to control weeds. Melons are side dressed three to four weeks after planting with 30 to 60 pounds of nitrogen. Approximately half the acreage is also side dressed with 60 to 90 pounds of potassium per acre.

Insect Pests

The majority of the melons growers in Louisiana spend little effort in pest control. The majority of melons grown in the state are grown in a low input manner. Most growers do not have adequate spray

equipment to spray melons.

CUCUMBER BEETLES

Banded cucumber beetle (*Diabrotica balteata*)

Striped cucumber beetle (*Acalymma vittata*)

Spotted cucumber beetle (*D. undecimpunctata* howardi)

The major insect problem on watermelons is cucumber beetles. Cucumber beetles feed on the foliage and are also the vectors for bacterial wilt disease.

Cucumber beetles prefer to feed on cucurbit plants like squash, cucumbers, and cantaloupe in addition to watermelons, but can also feed on a wide range of crops, including corn, beet, peas, sweet potato, okra, lettuce, onion, cabbage, potatoes, tomatoes, and others. Spotted cucumber beetle, whose larvae are known as southern corn rootworm, is the most general feeder of the three will also feed on many grasses and other weeds. Feeding damage from adult cucumber beetles results in ragged holes in the leaves, and the beetles may also feed on stems. The larvae, which are found in the soil, may feed on the roots of the vines and the underside of the watermelon fruits laying on the soil. Greatest effect on watermelon yield occurs when plants are beetles are present at the seedling stage. The older plants can withstand higher damage. When cucumber beetles are found on ten percent of seedlings, control measures should begin.

Cucumber beetles have many generations each year. The life cycle of the banded cucumber beetle may be as short as 45 days under optimal conditions. Over a period of two to eight weeks, each female banded cucumber beetle deposits between two and 15 clusters of up to 100 eggs each in soil cracks, with up to 850 eggs being deposited by each female. Striped cucumber beetle females lay approximately 100 eggs each, at the base of host plants. Five to nine days later, the larvae hatch. After passing through three instars in approximately 11 to 17 days for banded cucumber beetles (somewhat longer for striped and spotted cucumber beetles), during which time the larvae feed on roots and tunnel through stems of host plants, pupation occurs in the soil. Adult banded cucumber beetles emerge after four to six days. About 16 days after adults emerge, females begin to lay eggs. Adults live for 17 to 44 days, with average longevity of 26 days. Thirty to forty percent of the watermelon acreage is treated for cucumber beetles. Generally two to three applications of **Sevin, Thiodan/Phaser, Pounce or Asana** is used to control cucumber beetles.

APHIDS

Melon aphid (*Aphis gossypii* Glover)

Green peach aphid [*Myzus persicae* (Sulzer)]

Cowpea aphid (*Aphis craccivora* Koch)

Spire aphid (*Aphis spiraecola* Patch)

Erigeron root aphid (*Aphis middletonii*)

There are several aphids found on watermelons in Louisiana. The melon aphid (*Aphis gossypii* Glover), green peach aphid [*Myzus persicae* (Sulzer)], cowpea aphid (*Aphis craccivora* Koch), spirea aphid (*Aphis spiraecola* Patch), and *Aphis middletonii* have been found on watermelons. Aphids have been one of the principal insect pests of watermelons in Louisiana, primarily because of their role in virus transmission. Melon aphid, green peach aphid, and cowpea aphid feed and reproduce on watermelons and other cucurbits. The other aphids listed are also involved in virus transmission, but do not colonize watermelons. The most common aphid is the melon aphid, which is a major pest of cucurbits and cotton and also attacks many other plants, including eggplant, peppers, potatoes, citrus, okra, and a variety of ornamentals and weed species.

Aphids feed by piercing plant tissue with their mouthparts and sucking out water and nutrients from the vascular system of the plant. Feeding damage and injury from toxins in the saliva that are injected into the plant tissue during feeding result in thickening, crumpling, and curling of leaves. Heavy aphid attack may kill very young plants. Research in Texas has shown that direct losses from aphid feeding injury on watermelons are avoided when populations are maintained below ten aphids per leaf. Aphids also deposit large amounts of honeydew on the plant surface, which encourages the growth of black sooty mold. A short life cycle and reproduction by asexual means and by live birth allow aphid populations to increase rapidly. Although colonizing aphids have wings, populations increase by producing wingless aphids.

Aphids damage watermelon plants not only directly by feeding, but also indirectly by transmitting viruses. The three principal viruses affecting watermelons (papaya ringspot virus type W, watermelon mosaic virus 2, and zucchini yellow mosaic virus) can be transmitted not only by aphids that colonize watermelons, but also by a number of aphid species that do not reproduce on watermelons. These include *A. middletonii*, *A. spiraecola* (spirea aphid, also known as green citrus aphid), and *U. pseudambrosiae*.

These viruses are transmitted by aphids in a stylet-borne, nonpersistent manner, meaning that an aphid can pick up virus particles in its mouthparts from an infected plant and transfer them immediately to a healthy plant without the virus circulating through the body of the aphid. There is no delay time from when the aphid acquires the virus to when it can transmit it, and the aphid is able to transmit the virus for only a short period of time. An aphid determines the suitability of a plant as a food source by probing. As a result, viruses can be transmitted by aphids that do not actually feed on the plant but only land on it momentarily to probe. Aphid vectors that do not feed on watermelons will move from plant to plant within a field, probing each one and spreading the virus. Aphids that do feed and reproduce on watermelons may also move from one plant to another within the field under crowded conditions, when winged individuals are produced. Virus transmission to watermelon plants can occur within 10 to 15 seconds, and therefore both insecticides and natural enemies are ineffective in preventing virus spread.

Generally 20 percent of the acreage is treated for aphids once during the season. **Diazinon, Dimethoate or Thiodan/ Phaser** is used to control aphids on melons.

Melon worms and pickle worms

Melon worms and pickle worms are generally a pest during the late summer crop of melons. Ten to twenty percent of the acreage is treated once or twice for melon and pickle worms. The same chemicals employed for cucumber beetles are used to control the worms.

Weeds

Most growers do not spend much effort on weed control in melons. The middles of the rows are cultivated several times during the growing season. Some growers still hand hoe the weeds in between the hills on the row.

The use of plastic mulch has helped in controlling weeds in watermelons. Less than 10 percentage of the acreage is treated with the preemergent herbicide, **Curbit**. Approximately 15 to 20 percent of the acreage is treated with **Poast** over the top to control annual and perennial grasses.

Diseases

The main disease that affects the foliage of watermelons is **Anthracnose, Gummy Stem Blight and Downy Mildew**. These diseases affect the foliage which in turns limits the yield and quality of the melons. Most growers spend very little effort in disease control on watermelons. **Benlate and Bravo** are the two most commonly used fungicides in watermelons. Only 30 to 40 % of the acreage is treated two to three times to control these diseases. Bacterial wilt is also a disease of watermelons. Controlling the vector of the disease the cucumber beetle is the usual treatment for this disease.

References

1. Insect Control Guide, Ag Center Cooperative Extension publication No. 1838
2. Commercial Vegetable Production Recommendations Ag Center Cooperative Extension Publ. No. 2433

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4. Personal Communication Dr. Rick Story, Louisiana State University, Vegetable Entomologist
5. Personal Communication Dr. Dale Pollet, Louisiana Extension Entomology Specialist
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