

Getting Ready to Take Root: Strawberry Production in Southern Maryland



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Strawberries are the leading small fruit grown in Southern Maryland, both in terms of acreage and total value. Strawberries in the United States are big business with over 60,000 acres in production creating approximately \$3 billion in total revenue. California produces the most strawberries by far, followed by Florida. Maryland produces approximately 220 acres of strawberries on 187 farms (2012 NASS Ag Census). There are approximately 30 strawberry growers in Southern Maryland. Most growers in Southern Maryland are producing 1 acre or less of berries. Market channels used by growers in this region include pick your own, farmers market, direct pre-pick farm sales, produce auction, and wholesale to grocery stores or regional distributors. In addition, strawberries are often the centerpiece of spring agritourism operations for many farms.



The current drivers of strawberry profitability are market availability, labor costs and production management. The national average per pound price paid to farmers for fresh market strawberries is \$1.02 per pound. Profitability of mid-Atlantic growers is very limited at this price, thus developing markets that offer premium prices is critical for success.

There are two primary production methods for strawberry production, the first being the annual plasticulture system and the second being the perennial matted row system. The plasticulture system utilizes transplant plugs planted in September at a high density on raised beds with plastic mulch and drip. Plants are covered during the winter with row cover and harvested in May. Approximately 90% of strawberry acreage in So. Md is grown with the annual plasticulture system. The annual plasticulture system requires higher management and per acre input cost of approximately \$16,000. Yields for the annual plasticulture system are significantly higher as well at 12000-16000 quarts per acre with a concentrated harvest occurring from early May through mid-June. Matted row production is limited, but has increased in popularity over the last 5 years due to increased demand, new herbicide technologies and better variety selection. The matted row system uses dormant bare root strawberries planted in the spring on wide spacing. Plants are allowed to produce runners and fill in the row with daughter plants for harvest in June and July in the second and proceeding years. Plants are renovated after harvest and have an expected life span of 4-5 years. Matted row systems yield less than half of the plasticulture system, but have much lower establishment cost. There is also renewed interest in everbearing strawberry production which allows for later harvest in the summer and greenhouse production in the offseason.

Annual Plasticulture Production Calendar:

- May/June: Order plugs for fall planting. Chandler is the most widely used variety. Sweet Charlie is often used for early season production and Camarosa as a substitute for Chandler
- August: Prepare soil for bed laying. Fertilize with 50 lbs. N and P and K according to soil test. Form 8-10 inch raised beds, fumigate if needed, and lay embossed plastic tightly to bed.
- September: Hook up irrigation system to drip and prepare for planting. Plant disease free plugs 12 inches apart in a staggered double row. Plant on time September 10-15 at 15,000 plants per acre
- October: Prepare to apply a floating row cover. Scout for mites, aphids and crown rot or root rot diseases. Apply crop protectants as needed.
- November: Apply floating row cover. Monitor plants for blooms.
- December: Clean beds, remove runners.
- February: Uncover strawberry plants and clean beds of dead leaf material. Monitor temperature and reapply floating row cover as needed. Inject 15-25 lbs. N through drip tape. Set-up irrigation for frost protection and apply if needed.
- March: Continue to monitor temperature and blooms. At bloom, apply critical fungicide and insecticide sprays as needed. Irrigate as needed. Inject 15-25 lbs. N through drip tape.
- April: Tissue sample. Scout, spray fungicides and insecticides as needed-expect at least 4 applications. Prepare supplies for harvest.
- May: Harvest begins in early to mid-May most years. Per acre harvest labor is estimated at 1200 hours per acre. Deliver and market strawberries.
- June: Finish harvest. Kill plants with herbicide and double crop with squash, pumpkins, or other crop. May consider carrying plants for a second year, though generally not recommended due to berry size, renovation costs and disease concerns.

Matted Row Production Calendar

Establishment Year:

- Prior Year: Eliminate any perennial weeds and reduce annual weed seed bank. A major limitation of the matted row system is the ability to control weeds. Soil test and adjust pH to 6.5.
- March: Prepare soil for planting. Apply herbicide to kill existing vegetation. Order certified dormant bare root plants. Fertilize with 30 lbs. N and P and K according to soil test.
- April: Plant bare root strawberries in rows spaced 3 to 4 foot apart. In row spacing is typically 18 to 24 inches. A 3 foot row to row and 24 inch in-row spacing will require 7300 plants. Apply residual pre-emergent herbicide.
- May: Remove any flowers or fruit during the first year. Scout for insect pest and weeds. Side dress additional N fertilizer at rate of 20-30 pounds per acre.
- June-August: Irrigate as needed. Promote the establishment of daughter plants through the matted row. Daughter plants establishing in the row middles can be removed.
- September: Renovate row middles.
- December: Apply a thick layer of weed free straw over the entire planting area. Laves should just be visible under the straw.

Production Years:

- April: Pull back straw into row middles. Fertilize with 30 lbs. N and P and K according to soil test
- May/June: Prepare for harvest. Scout for mites, aphids and crown rot or root rot diseases. Apply crop protectants as needed. Bloom sprays are the most critical. Harvest fruit regularly.
- June/July: Renovate immediately after harvest. This involves applying a post emergence herbicide (2,4-D), mow closely to the ground, and narrow the bed row to a width of 8 to 12 inches. Apply 30 lbs. of N to stimulate new growth and apply a pre-emergent herbicide for weed control.
- Summer/Fall: Continue to irrigate as needed. Scout for mites, aphids and crown rot or root rot diseases. Apply crop protectants as needed.
- December: Apply a thick layer of weed free straw over the entire planting area. Laves should just be visible under the straw.

Resources for Southern Maryland Producers:

Annual Events:

Strawberry Twilight Field Days held at the WYE Research and Education Center in May of each year. Program Bulletins with production schedules, variety trial updates, research results and pest information can be found here: <http://agresearch.umd.edu/wye/extension-programs-wyerec>

Mid-Atlantic Vegetable and Fruit Conference: Held each year in Hershey, PA during the last week in January.

Virginia Strawberry Conference: Held each year in Virginia Beach, VA during the 1st week of February. Normally includes a field walk, convention and conference. Sponsored by Virginia Cooperative Extension

Southern Maryland Equipment and Supplies:

Plasticulture and Irrigation:

Westham Produce Supply: plasticulture supplies, soluble fertilizer, irrigation equipment, row covers

Zimmerman's Irrigation and Produce Supply: plasticulture supplies, soluble fertilizer, irrigation equipment, row covers

Nolts Produce and Irrigation Supplies: <http://noltsproducesupplies.net/>

Nurseries for Strawberry Plants

Commonly used nurseries for this area: Aarons Creek Nursery, Nourse Farms, Jersey Asparagus (Walker plants)

Websites listing plant nurseries:

North Carolina Strawberry Growers Association: <https://ncstrawberry.com/growers>

Cornell Nursery Guide: <https://blogs.cornell.edu/berrynurseries/strawberries/>

Chemical, fertilizer and farm supply distributors in Southern Maryland:

Southern States of Charlotte Hall (301) 884-3722

Kirby Agri in Mechanicsville, MD (301) 884 4604

R&D Cross Southern States in Brandywine (301) 888 2507

Information Sources for Strawberries

UMD Small Fruit Website: <https://extension.umd.edu/smallfruit>

North Carolina Strawberry Information Portal: <https://strawberries.ces.ncsu.edu/>

UMD WYE Research and Education Center: <http://agresearch.umd.edu/wye/extension-programs-wyerec>

PennState Strawberry Factsheet: <https://extension.psu.edu/strawberry-production>

Southeast Small Fruit Consortium: www.smallfruits.org/

Strawberry Diagnostic Key: <http://diagnosis.ces.ncsu.edu/strawberry/>

Mid-Atlantic Small Fruit Guide for Commercial Growers: <https://extension.psu.edu/the-mid-atlantic-berry-guide-for-commercial-growers>

Mid-Atlantic Commercial Vegetable Production Recommendations:
<https://njaes.rutgers.edu/pubs/publication.php?pid=e001> or hardcopies are available at county extension offices for \$15