MARYLAND COOPERATIVE EXTENSION
UNIVERSITY OF MARYLAND
COLLEGE PARK•EASTERN SHORE

Fact Sheet

Fact Sheet 471

GROWING MATTED ROW STRAWBERRIES IN MARYLAND

INTRODUCTION

Strawberries, grown in matted row or in conventional plantings, begin to bear fruit 1 year after planting and remain productive for approximately 4 years. The tasty red fruits are a favorite of "pick-your-own" customers as well as backyard and small scale gardeners. When considering a commercial planting, irrigation is a necessity, not only to supply needed water, but for frost protection. Labor must also be considered in commercial plantings. Getting berries picked in a timely fashion is critical to maintain quality, as well as prevent rot and insect damage due to overripe fruit. If "pick-your-own" is a preference, then a location that is easy for customers to get to is extremely important.

Growers must consider the need for some specific equipment when growing strawberries. Small plantings of up to one-half acre can be cultivated with a heavy duty garden rototiller, but larger plantings will need equipment pulled behind or powered by a tractor. The most helpful piece of tillage equipment is a rotovator. This is a large scale rototiller run from the power take-off of a tractor. It is used for tilling weeds between rows and narrowing the rows of plants during the renovation process. A sprayer will be needed to apply pest control chemicals. A backpack sprayer will suffice for small plantings, but larger areas will require a high pressure (150-200 lbs psi) boom-type sprayer attached to a tractor to obtain sufficient coverage, especially for fruit rot control.

It is not uncommon for temperatures to range from the high 80s to the low 90s during peak strawberry season. Because rains are not consistent during this period it is important that plants receive irrigation to prevent heat stress and loss of berry size. Overhead irrigation is suggested because it can fill the dual role of frost protection during bloom as well as providing moisture during the summer months. Strawberry plants bloom in April and May, often before the last freeze occurs. The blooms are subject to damage anytime the temperature drops below 30 °F. Sprinkling can provide protection on frosty nights as long as temperatures warm sufficiently after sunrise.

SITE SELECTION AND SOIL PREPARATION

The chosen site must drain well, because strawberries will not tolerate wet feet. Standing water or water-logged soils contribute to below ground disease problems and drive oxygen that is necessary for proper plant development from the soil. It is critical that the planting be located in an area that is not lower than that surrounding it. Low sites often have frost problems in the early spring when strawberry plants are in bloom. Strawberries prefer a loamy soil with a good mix of sand, silt, and clay. Light soils consisting mostly of sand will require frequent irrigation and a regular fertilizer program to maintain soil nutrition. Heavy clay soils, on the other hand, often hold too much moisture and can cause wet feet and root rot.

A soil test should always be run before planting to determine nutrient availability. Soil pH should be around 5.8 to 6.2 for best

results, although strawberries can tolerate a slightly higher pH. Phosphate and potassium should be corrected before planting. Strawberries respond best in medium-textured soils. Light, sandy soils dry out too easily, while heavy soils can retain too much water, particularly in the early spring. Organic matter is important for healthy plants. Soils with less than 3 percent organic matter should have material such as composted leaves, straw, or sawdust incorporated. Organic matter can also be increased by growing cover crops such as oats, barley, or sudangrass the year before and tilling in the residue.

VARIETY SELECTION

There are numerous strawberry varieties to choose from and many will perform reasonably well in Maryland. Planting at least three varieties is recommended to insure ripe berries during the entire harvest period. Most varieties of strawberry produce during the months of May and June and are known as "June bearers." These plants will produce all of their crop over a relatively short period beginning in late May and continuing for approximately 3 to 4 weeks. Other cultivars (referred to as "everbearers") will bear a light yield over most of the summer, while the June-bearing cultivars will concentrate their yield into a much shorter period. When starting a new strawberry bed, do not make the mistake of taking young runner plants from an older planting. This is a good way to transfer disease. Always buy plants from a reputable nursery. When choosing June-bearing varieties it is wise to select at least three—an early, a midseason, and a late cultivar. The varieties listed below should perform well in all areas of Maryland and are listed in order of ripening.

Mohawk: Early, medium-sized fruit with good flavor.

Earliglow: Small-fruited, bright red in color. Flavor is excellent. Thought by many to be the tastiest of all the varieties.

Allstar: Midseason, large-fruited berry. Gives high yields of high quality fruit. Pale red in color. Has become the main variety for many commercial strawberry operations.

Cavendish: Very productive variety. Fruits are very large and of high quality. Problems with uneven ripening in some years.

Primetime: Large-fruited, midseason variety. Very high yields have been reported in all areas.

Latestar: Medium-sized, high quality fruits are produced in late season. This variety is replacing Lateglow in many areas.

PLANTING AND FIRST-YEAR CARE

The recommended time of planting in Maryland is April to May, depending on the location. After the appropriate soil preparations are made, strawberry plants should be placed so that the crown is at ground level. The leaves, stems, and apical bud should be just above the soil. Plants should be set 24 inches apart in the row with 48 to 60 inches between rows. Irrigation water should be applied as soon after planting as possible to prevent newly set plants from drying out. It is very important that weeds be kept out of plantings. Weeds will rob young plants of nutrients and moisture. If an herbicide is not used (and sometimes even when it is) hand cultivation is needed to remove weeds. The use of herbicides does not guarantee that strawberry beds will be weed free. Sometime in the first few weeks after planting, the strawberry plants will produce flowers. It is important that these flowers and any others that might form during the first season be removed. This is to ensure that the plants put all their energy into plant development and runner production, not into fruit. Fruit produced in the first season is small and inadequate; it will drain energy needed by the plant to become well established.

About midsummer the plants will begin to produce runners. These small, unrooted plants can be used to fill out the space between the original plants. Runners should be moved into the space between plants and held in place with a small amount of soil or rocks. In a short time these plants (often referred to as "daughter" plants) will become rooted in place and help to form a matted row.

For the rest of the season good weed control must be maintained and irrigation applied as needed. In late November and early December (after plants are dormant), grain straw should be applied to the entire planting. If you intend to apply a pre-emergent herbicide, do it just before spreading the straw. Enough straw should be applied to cover the top of the plants. The straw provides a protective blanket that helps prevent cold injury and desiccation. Later the following season the straw provides a cushion for the berries to lay on and keeps them from becoming contaminated with soil.

SECOND AND SUBSEQUENT YEARS

Strawberry plants will begin to push through the straw as the soil warms in the spring. At this time, gently move straw off the top of plants to help the strawberry leaves emerge. It is important that the straw be disturbed as little as possible; it keeps the berries from lying directly on the ground. It is also a good time to apply a small amount of nitrogen fertilizer (1/2 lb of ammonium nitrate per 1000 sq ft, or 20 lbs per acre). Heavier fertilization should occur at renovation time. Plants will begin to bloom April to May and fruits will ripen approximately 1 month later. During the bloom period open flowers are very susceptible to freezing temperatures. Overhead irrigation, if applied properly, can protect flowers from injury when temperatures approach 32 °F. This requires starting the irrigation before temperatures reach freezing (around 35 °F), however, starting temperature will depend on wind speed, temperature, and dew point (approximately 34 °F). Once started, the water must remain on until temperatures rise above freezing. It is essential that plants receive consistent wetting during this period so that they do not dry out or freeze up. Shortly after harvest the entire planting should be renovated.

RENOVATION

All June-bearing strawberries benefit from renovation. This procedure should be followed as soon after harvest as possible to obtain maximum benefits. In situations where broad-leaved weeds have become a problem, an application of 2,4-D amine formulation should be applied. Approximately 5 days after the herbicide application, plants should be mowed to a height that will remove all stems and leaves, but leave the crown of the plant undisturbed. This gives the herbicide sufficient time to move into the root systems of undesirable plants and kill them. Mowing renews the strawberry plant while at the same time removing the flower and seed heads from undesirable weeds. The final step of renovation is narrowing the plant rows. Before this step, apply 50 to 60 pounds of actual nitrogen per acre. Then, using a tilling device such as a rotovator, narrow the plant rows to 12 inches. This is a good time to apply a pre-emergent herbicide followed by irrigation to move the material into the soil. In a short time the plants will revive and begin to grow. The new flower buds for next year will begin to form in late summer. Do not allow plants to become stressed during this period from lack of water or weed competition. Apply straw in late November, as in the previous year. Just before spreading straw, an additional application of pre-emergent herbicide can be applied. This will help keep winter weed germination to a minimum.

PESTS

Weeds

Competition from undesirable plants is one of the most serious problems faced by strawberry growers. Weeds will rob strawberry plants of water, nutrients, and the sunlight necessary to produce high quality fruit. This problem will be reduced considerably if plantings are established in weed-free soil. Because this is not always possible or practical, other solutions can be used. Soil fumigation will destroy many weed seeds. Where this is not desirable or is considered too costly, the use of certain cover crops the year before planting strawberries will help discourage weeds from becoming established. Crops such as rye, oats, wheat, barley, or canola could be grown the previous year. The residue (stems, leaves, and roots) from the plants should be plowed under at the end of the season to improve the soil.

Seasonal control of weeds in strawberry beds is essential. Neglect in this area is proba-

bly one of the greatest reasons for failure. In first-year beds, cultivation and hand weeding are absolutely necessary to allow young plants to become established. A spring planting might need a pre-emergent herbicide such as Devrinol used in the fall to prevent weed development. In the second growing season, Sinbar will give good pre-emergent weed control. However, great care must be taken not to use too much; plant injury can occur quite easily. The use of herbicides before and after mowing will help prevent the spread of weeds.

Diseases

Some diseases, such as red steele, affect the health of the strawberry plants themselves. Red steele can be prevented by selecting resistant varieties and by planting in clean soil. It is extremely important that only certified disease-free plants be used. Other diseases that affect the fruit (grey mold and leather rot) or the leaves (leaf spot) must be treated with fungicide sprays. Treatment for these diseases must be applied before seeing the symptoms. Maintaining regular fungicide sprays during the growing season is the only effective way to prevent foliar and fruit diseases. Prompt removal of diseased fruits will also help curtail the spread of certain diseases.

Insects

Spider mites can build up on strawberry leaves very early in the season. They will often increase in numbers during hot, dry weather. The damage they cause to leaves can threaten the health and vigor of the plant. Miticides will control mites if applied promptly. Spittlebug, another insect pest of strawberries, is characterized by the frothy moisture it produces on leaves. Unlike spider mites, spittlebug rarely builds up to levels where economic damage can occur. Strawberry clipper is a snouted weevil that often appears just as the new buds begin to show in the spring. This insect clips off the young bud just before bloom, preventing pollination and fruit set. An early application of insecticide might be needed to control this pest before injury occurs. This type of injury will result in severe fruit loss if not controlled. The sap beetle, a casual pest of many fruits and vegetables, can be a problem at harvesttime. Sap beetles are more of a problem in fields where fruit is overripe. They will eat large holes in the fruit and lay eggs, which will soon hatch into hungry larvae. The best control for this pest is to keep fields closely picked and remove damaged or overripe fruit.

REFERENCE

"1997 Maryland Commercial Small Fruit Production Guide," Bulletin 242, Maryland Cooperative Extension.

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