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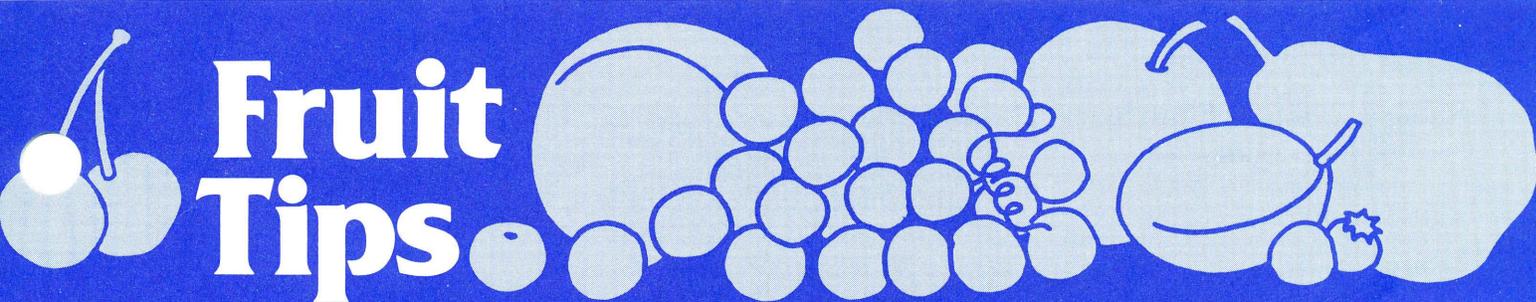
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Issued April 1986

6 pages

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Growing Strawberries in the Home Garden

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Strawberries are well adapted to home plantings in all parts of Michigan. Strawberry plants are hardy and easier to grow than most fruit crops, and they produce a good crop in less time.

With good cultural practices, each plant may yield a quart of berries. A 100-foot row should produce ample fresh fruit for a family of four, with additional fruit to be frozen, canned, preserved or dried.

Strawberries are versatile and highly nutritious. One cup of fresh strawberries supplies more than the recommended daily intake of vitamin C.

Site, Soil Selection

Site

Strawberries require direct, full sunlight for best production. Because they bloom early in the spring, they should not be planted in frost pockets — low-lying areas into which cold air drains. Areas that have been used to grow other crops may contain fewer weed seeds and insect pests, such as white grubs and root weevils, than newly cultivated areas. Avoid areas

previously planted in strawberries, raspberries, tomatoes, peppers, eggplant or potatoes — these plants all act as hosts for the soil-borne *Verticillium* fungus, which causes strawberry plants to wilt and die.

The buildup of many insect and disease problems can be minimized by rotating the strawberry patch from one site to another each time a new planting is made. Before planting strawberries, eliminate perennial weeds and grasses to reduce weed problems.

Soils

Strawberries produce well in a wide range of soils, but friable (free of clods and compaction) sandy to gravelly loam soils that are high in organic matter are generally preferred. Strawberries are not particularly sensitive to soil acidity or alkalinity, but they produce best on slightly acidic soil with a pH of 5.8 to 6.5. Soils should be well drained — strawberries cannot tolerate standing water for any period of time.

Strawberries benefit from high soil organic matter. Organic

matter improves water drainage and aeration in heavier soils and increases the water-holding capacity of light sandy soils. It also encourages growth of beneficial soil organisms and provides nutrients as it decomposes. Green manure crops, such as rye, buckwheat and sorghum, can be grown before planting berries to add organic matter to the soil. Make sure they do not mature and set seed. Manure, herbicide-free lawn clippings, chopped leaves, straw or sawdust can also be worked into the soil to increase organic matter. Additional nitrogen may be required if leaves, straw or sawdust are used to help decompose the residues.

Cultural Requirements

Variety selection

Local climatic conditions influence the performance of strawberries. Some traits of varieties that are adapted to Michigan conditions are given in Table 1. (Consult Michigan State University Extension bulletin E-839, "Strawberry Varieties for Michigan," for more specific information on strawberry

Table 1. Traits of Strawberry Varieties.

Early season:	Earliglow Sunrise Premier
Late season:	Delite Marlate
Good flavor:	Redchief Raritan Sparkle
For freezing:	Midway Redchief Guardian
Everbearers:	Gem Ozark Beauty

varieties.) Choosing two varieties that ripen at different times will extend the harvest season. Also consider how you intend to use the berries — some varieties are better adapted for freezing or fresh use.

Most strawberries are June bearers — that is, they produce a single crop in June — but there is increasing interest in everbearing varieties.

Everbearers tend to produce berries in June and again in the fall. The combined summer and fall crops of everbearers are about the same as the one crop of June bearers. Everbearers often produce small fruit with average flavor.

Varieties differ in their tolerance to certain diseases. If a particular disease is known to be a problem in the garden, choose a variety that has resistance to that disease. Consult Extension bulletin E-1728, “Strawberry Diseases in Michigan,” or nursery catalogues for more information.

Planting tips

Obtain certified disease-free plants from a reputable nursery. Beds established with disease-free plants will yield more and can be maintained for several more seasons than beds established with diseased plants. The cost of good plants is of minor importance in developing

a good strawberry bed. Healthy plants will be large and have numerous, light-colored roots. Plants with black roots are old or diseased and may fail to grow or grow very poorly. Avoid using plants from an old bed to start new beds — these plants are often diseased.

Plant strawberries in early spring as soon as the soil can be properly prepared. Plants can be set in the fall, but they do not produce higher yields or earlier berries than plants set the following spring.

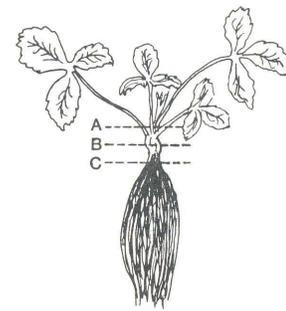
Use a spade, shovel or trowel to set plants. Dig the hole for each plant large enough so that the roots can be placed straight downward but somewhat spread. The midpoint of the crown should be level with the surface of the soil (Figure 1). If the plants are set too high, both crowns and roots may dry out. Crowns buried too deep may smother and rot. Fill the hole with soil and press the soil firmly around the roots.

Keep plants from drying out before planting. The fine roots will dry in a few minutes on a sunny, windy day if they're not covered. Plants can be dipped briefly in water to keep them from drying but should not be left to soak in it. Water the plants thoroughly after planting.

If plants arrive too early to be planted, store them in a closed package in the refrigerator or heel them in the ground for a short period of time. To “heel in” plants, dig a shallow trench in the garden that is deep enough for the roots. Place the plants in a single layer against one side of the trench with the crowns partially above the soil line, and cover the roots with soil. The soil should be gently firmed and watered in around the roots.

Training methods

The matted row system (Figure 2) is the most common training method and is especially



Strawberry Planting Depths

- A – Too deep
- B – Proper depth
- C – Too shallow

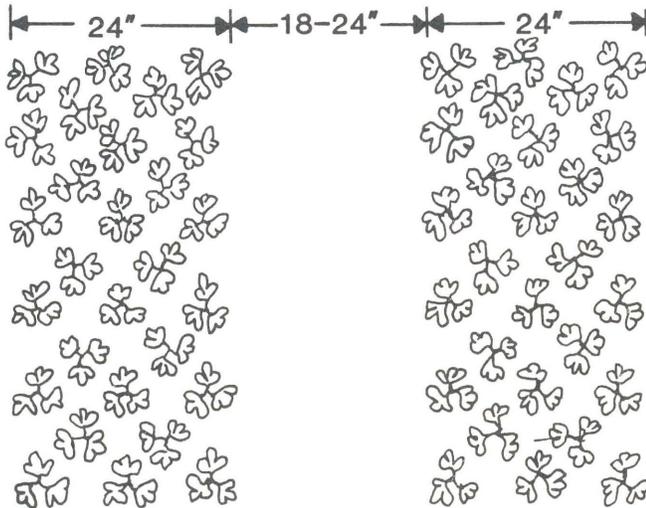
Fig. 1. The crown of the strawberry plant should be level with the soil surface (B). Planting too deep (A) may smother plants; planting too shallow (C) may cause plant crowns and roots to dry out.

good for June-bearing varieties. Set plants 18 to 24 inches apart in the row with 3 to 4 feet between rows. The runners that form from these “mother” plants root and develop a bed 1 to 2 feet wide. If the bed becomes overcrowded with plants closer than 6 inches apart, thin the bed by removing some weaker plants. This may increase berry size and quality.

A second training method is the spaced runner system (Figure 3). It is similar to the matted row system except that only a limited number of runner plants are allowed to root. Healthy runner plants are selected and positioned to give a final spacing of 6 to 8 inches between plants. Additional runner plants developing later in the summer are removed to prevent overcrowding.

The third method of planting is the hill system (Figure 4). It is useful for poor runner varieties, such as many of the everbearers. Plants are set 10 to 12 inches apart in double- or triple-wide rows. Any runners are removed as they appear.

The training method may affect yield and berry size. The matted row system is productive and requires the least labor, but berries can be small. The hill



Matted Row System

Fig. 2. The matted row training method for strawberries is productive and requires little labor.

system may result in large fruits and high yields, but it is much more labor intensive and costly than the matted row system. The spaced runner system falls between the matted row system and the hill system in both productivity and labor requirements.

Fertilizer requirements

It is a good idea to submit a soil sample to the MSU Soil Testing Lab to check soil pH and fertility levels before planting. Strawberry plants must be well fertilized during the planting year. Well rotted manure is a good fertilizer and an excellent source of organic matter. Work approximately ½ bushel of composted manure per square yard into the soil prior to planting. If manure is not used, work into the soil 1 pound of 12-12-12 fertilizer, or a similar analysis, per 100 square feet at least one week before planting.

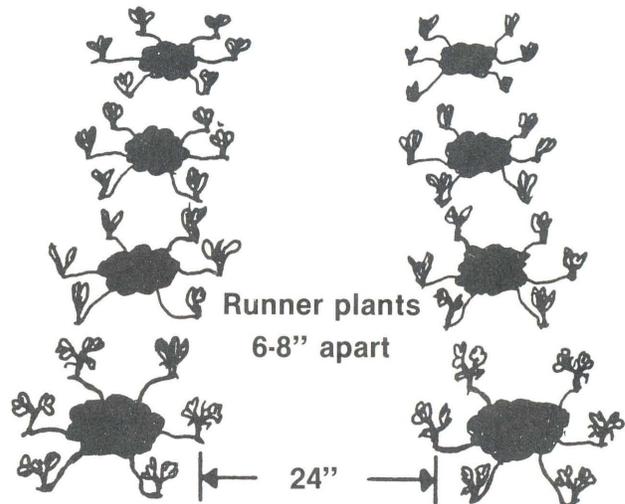
Ten days to two weeks after planting, sprinkle onto the soil ½ to 1 pound of 12-12-12 per 100 feet of row. (Use the higher rate on sandy, well drained soils.) Repeat this application in four to six weeks if the plants lack vigor. Allow the fertilizer to fall within 4 inches of the crown without

coming in direct contact with it. In addition, keep the fertilizer off damp foliage — it can easily burn the leaves. Fertilizer can be sprinkled over the tops of dry plants and gently brushed from the leaves with a broom or rake. Dry fertilizer can also be spread along the side of the row using a watering can without the sprinkler head.

After the planting year, avoid fertilizing until after harvest — spring fertilization can cause soft berries and reduce yields. Overwintering crowns have enough energy reserves to develop and produce a fruit crop if they were properly cared for the previous season. Immediately after harvest, apply 1 pound of 12-12-12 per 100 feet of row.

Cultivation and weed control

Hoe around plants often enough to keep the weeds down and the soil loose. This promotes good growth and allows runner plants to root quickly. Hoe no more than 2 to 3 inches deep around the plants — deep hoeing may injure shallow roots. Plastic mulch is not recommended for strawberries in Michigan.



Spaced Runner System

Fig. 3. With the spaced runner system, only a limited number of runner plants are allowed to root.

Chemical weed control is possible in home strawberry plantings, but the number of herbicides available for use by homeowners is limited and many are not readily available in small amounts. Roundup can be used to control grasses and broadleaf weeds before planting strawberries. Dacthal and 2,4-D amine can be used to control weeds in established beds. Consult Extension bulletin E-154, "Fruit Pesticide Handbook," for specific recommendations.

Watering

Strawberries in most of Michigan require irrigation for good yields. During the growing season, strawberries need 1 inch of water per week and up to 2 inches on extremely sandy sites or during very hot weather. If rainfall is not sufficient to supply this amount, the plants should be watered. Wet the soil to a depth of 6 to 8 inches each time you water. Make sure plants receive adequate moisture just after planting and from bloom through harvest, but avoid applying so much water that the soil remains saturated for long periods. Standing water is harmful even for a day or two.

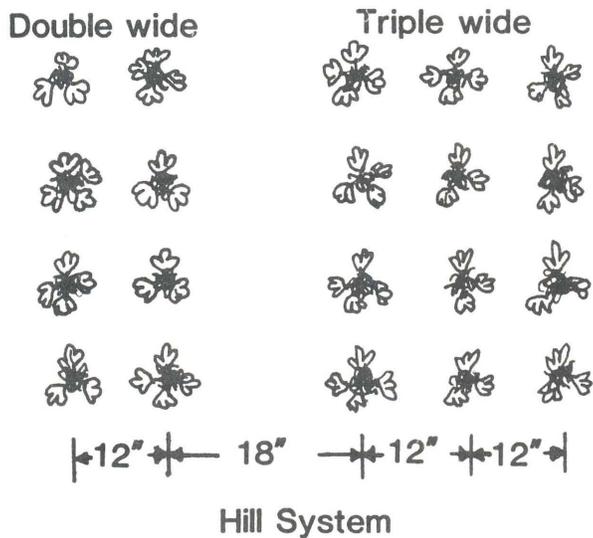


Fig. 4. The hill system may give high yields and large fruits but requires much more labor than other training methods.

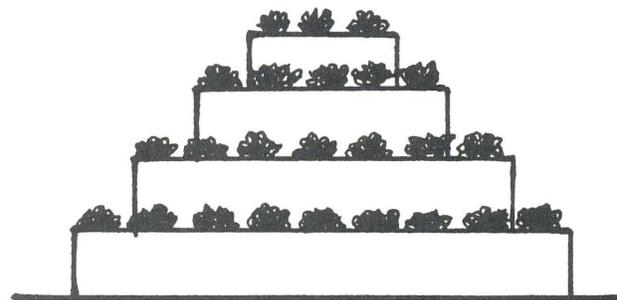


Fig. 5. Strawberries can be planted in many unconventional ways, including barrels, pyramids or hanging baskets.

Winter and frost protection

Low winter temperatures can injure roots, crowns and flower buds, and freezing and thawing of the soil can lift the plants out of the ground and break roots. This damage can be minimized by covering the plants with straw.

Spread one bale of straw per 100 square feet or to a depth of 2 to 3 inches after several light frosts but before the temperature goes below 20 degrees F (usually November). Remove the straw in the spring when new leaf growth is observed under the straw (usually late April).

Three-fourths of the straw can be raked between the rows to help smother weeds and one-fourth left on top of the plants to work its way down and keep the berries off the ground.

Strawberry flowers may be killed if a frost occurs during bloom. Frost-damaged blossoms have black centers and produce either misshapen fruit or no fruit at all. If freezing temperatures are predicted, the straw can be pulled back over the plants to protect them.

A fine sprinkler may also protect a small area from frost. Turn the water on when the

temperature at ground level drops to 32 degrees F, and keep it going until the ice disappears the next morning.

Factors affecting yield

Runner plants produced after Aug. 15 are relatively unproductive and should be removed unless the desired row width or spacing has not been obtained.

Producing strawberries during the planting year limits vegetative (leaf) growth and thus decreases yields the following season, so it is suggested that the flower clusters be removed during the first season. For everbearing varieties, the flower clusters may be left on the plant after the middle of July to produce a fall crop.

Renovation

Strawberry plantings can be maintained for several fruiting seasons if they're properly managed and renovated after harvest. If plants are vigorous and relatively free from weeds, insects and diseases, a bed of June bearers may be renovated to prepare it for the next season. After the crop has been harvested, mow the foliage 1

inch above the plant crown, and narrow the rows with a cultivator or hoe to 8 to 10 inches wide. Thin the plants, leaving only the most vigorous and healthy. Everbearers that are to be kept for another crop year do not need to be renovated.

Many insect, disease and weed problems can be avoided by fruiting a strawberry bed only two or three seasons and then starting a new one. Be aware, however, that it will be two years before you harvest the first crop from a new bed.

Novel methods of growing strawberries

Strawberries can also be planted in barrels, pyramids (Figure 5) or hanging baskets as novelties or to save space. These plantings will require close care in watering, fertilizing and other cultural requirements. Fruit production in hanging baskets may be disappointing.

Harvesting and Handling

Strawberry harvest usually extends from late May to mid-June in southern Michigan

and June to early July in northern Michigan.

The harvest season varies with the season and the varieties grown. The picking time is short if hot weather occurs and longer if moderately cool weather prevails. Generally the first ripe berries appear about 30 days after the first blossoms open.

Fruits are usually harvested every other day, but during hot weather it may be necessary to pick every day because fruit ripens more quickly. Pick berries early in the morning while they are cool, leaving the green hulls attached to the fruit. Keep the harvested fruit in a cool place until utilized.

Strawberries should be eaten or processed soon after harvest for best quality. Berries can be refrigerated for one to two days before using. Avoid washing the fruit until just before it is used to prevent softening and decay.

Insect, Disease Problems

Insects that attack strawberries include white grubs, spittle bugs, mites, strawberry clippers, slugs, root weevils, tarnished plant bugs, strawberry leafrollers, strawberry sap beetles and leafhoppers. Diseases of strawberries include stem end rot, leaf blight, leaf spot, gray mold, stem and fruit rot, black root rot and Verticillium wilt.

In most plantings, preventive measures such as mowing after harvest, clean tillage and removal of weeds and rubbish from the borders of the planting, together with the use of healthy planting stock, rotation and proper management, help minimize insect and disease problems. Resistance to many diseases has been bred into some varieties.

When using chemical control, identify the pest or problem before selecting the material to use. See Extension bulletin E-1723, "Backyard Fruit Sprays for Insects and Diseases in Michigan," for specific pesticide suggestions.



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Issued in furtherance of Cooperative Extension work in agriculture and home economics, acts of May 8, and June 30, 1914, in cooperation with the U.S. Department of Agriculture. W.J. Moline, Director, Cooperative Extension Service, Michigan State University, E. Lansing, MI 48824.

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