Growing Strawberries in Utah

Larry A. Sagers
Extension Horticulture Specialist
Utah State University
Strawberry - The Name?

• English name ‘Strebere” from “running stems strawed over the ground…”
• Children threaded berries on grass straws to sell
• Straw mulch
• Old English noun = stre “straw” and verb = “to straw” = strew, scatter, spread, disperse
Strawberries are the most popular berries raised in Utah home gardens.
Grow them in containers, in small gardens or as ornamental plants.
They are short-lived perennials

- The best production for most strawberry varieties comes in the first through fifth year
There are hundreds of strawberry cultivars

- Not all are adapted to Utah’s growing conditions
- Each cultivar has advantages and disadvantages
- Selecting the right variety insures the desired results
The three types of strawberries that grow in Utah

- They are June-bearing
- Ever-bearing
- Day-neutral
All three types grow and produce abundantly in Utah
June-bearing plants need the short fall days to initiate (set) flower buds.
The flowers that blossom the following summer are set in the fall.
They produce one early summer crop beginning in early June
Plant these types for a larger but more concentrated harvest

- Because the flower buds are produced in the fall, some cultivars need extra protection during the winter to protect the set flower buds
- Cover the plants with organic mulch, such as straw
- Once the weather warms in the spring and growth begins, remove the mulch
Ever-bearing strawberries set fall flowers that produce the next summer

- They also initiate flowers during the summer months
- This allows them to produce a second crop in late summer
- During cooler periods in the summer, they also produce occasional berries
- Most true ever-bearing plants are being replaced with day-neutral varieties
Day-neutral strawberries are different

- They do not require a short day (long night) to initiate flowers and fruit production
- They start to produce once they reach a determined maturity level, normally during the late summer of their first year
They produce a larger crop in the early summer and late fall

- They grow a sporadic crop throughout the summer
- Cooler temperatures increase production during the summer months
Day Neutral Strawberries
Site Selection
Strawberries require at least 8 hours of sunlight to produce a good crop

- They grow in shady locations but fruit production and plant vigor are reduced
- Strawberries prefer well-drained soil with abundant organic matter
- They are susceptible to root rot in heavy, wet soils
Soil Preparation
Incorporate 2-6 inches of organic material 2-4 weeks before planting.
Apply nitrogen fertilizer to insure organic matter decomposition.
Raised beds and grow boxes

- Improve drainage
- Raise soil temperatures
- Make picking easier
Raise the soil 8-12 inches and keep the beds 18 to 36 inches wide
Determine the distance between the rows

- By the cultivating equipment
- Desired working space
- Keep a minimum of 18 inches between rows
Plant Selection
Buy strawberries as bare-root plants in the spring
Purchase them at reputable garden centers or from catalogs
They are normally sold in bundles of 25
Make sure the plants have been kept moist and the roots are still healthy
Strawberries are available later in the season as potted plants.
These are more expensive and no more productive than bare root plants.
Establishment
Planting and Spacing
Strawberry plants need space to produce the most berries

- Plant them a minimum of eight inches apart in a single row
- Offset the plants by six inches in an off-set row
- This gives each plant room to grow and still have sufficient light, water, and nutrients
<table>
<thead>
<tr>
<th>Matted Row</th>
<th>Hedge Row</th>
<th>Double Hedge Row</th>
<th>Hills Single Row</th>
<th>Hills Double Row</th>
<th>Hills Double Alternate</th>
</tr>
</thead>
<tbody>
<tr>
<td>O O O O O O</td>
<td>O</td>
<td>O O O O O O</td>
<td>O O O O O O</td>
<td>O O O O O O</td>
<td>O</td>
</tr>
<tr>
<td>O O O O</td>
<td>O O O O O O</td>
<td>O O O O O O</td>
<td>O O O O O O</td>
<td>O O O O O O</td>
<td>O</td>
</tr>
<tr>
<td>O O O O O O</td>
<td>O O O O O O</td>
<td>O O O O O O</td>
<td>O O O O O O</td>
<td>O O O O O O</td>
<td>O</td>
</tr>
<tr>
<td>O O O O O O</td>
<td>O O O O O O</td>
<td>O O O O O O</td>
<td>O O O O O O</td>
<td>O O O O O O</td>
<td>O</td>
</tr>
<tr>
<td>O O O O O O</td>
<td>O O O O O O</td>
<td>O O O O O O</td>
<td>O O O O O O</td>
<td>O O O O O O</td>
<td>O</td>
</tr>
<tr>
<td>O O O O O O</td>
<td>O O O O O O</td>
<td>O O O O O O</td>
<td>O O O O O O</td>
<td>O O O O O O</td>
<td>O</td>
</tr>
<tr>
<td>O O O O O O</td>
<td>O O O O O O</td>
<td>O O O O O O</td>
<td>O O O O O O</td>
<td>O O O O O O</td>
<td>O</td>
</tr>
<tr>
<td>O O O O O O</td>
<td>O O O O O O</td>
<td>O O O O O O</td>
<td>O O O O O O</td>
<td>O O O O O O</td>
<td>O</td>
</tr>
<tr>
<td>O O O O O O</td>
<td>O O O O O O</td>
<td>O O O O O O</td>
<td>O O O O O O</td>
<td>O O O O O O</td>
<td>O</td>
</tr>
<tr>
<td>O O O O O O</td>
<td>O O O O O O</td>
<td>O O O O O O</td>
<td>O O O O O O</td>
<td>O O O O O O</td>
<td>O</td>
</tr>
<tr>
<td>O O O O O O</td>
<td>O O O O O O</td>
<td>O O O O O O</td>
<td>O O O O O O</td>
<td>O O O O O O</td>
<td>O</td>
</tr>
<tr>
<td>O O O O O O</td>
<td>O O O O O O</td>
<td>O O O O O O</td>
<td>O O O O O O</td>
<td>O O O O O O</td>
<td>O</td>
</tr>
</tbody>
</table>

O = mother plant
o = daughter plant
Strawberry culture

- Raised beds
- Spaced matted rows
- Matted rows
- Single Hill
- Double Hill
- Multiple Hill
- Spacing from 5” to 5’
The planting depth is very critical to a young plant.

- If too deep, the crown will rot.
- If too shallow, the roots will dry.
The soil level should be in the area between the crown and roots
Plant Characteristics
The original bare root plant is called the mother, or first generation plant.
It has one crown, roots, and top growth
The established mother plant grows runners that root at every other node.
Once the runners root, they are called daughter plants
Daughter plants are generally less productive than mother plants.
These daughter plants propagate new plants

- The further removed from the mother plant (in generations) daughter plants are, the less productive the plants will be
Strawberry plants also reproduce by growing additional crowns.
Propagate these by dividing the mother plant every couple of years.
The original crown produces 4 to 20 new mother plants annually
Divisions are more desirable than daughter plants and yield better

- Dividing the crowns each spring reduces competition and develops healthier, more productive plants
- As the mother plants divide and increase the number of crowns, they compete for water, light and nutrients
This reduces production and reduces plant health
Thin the crowns to five to ten crowns per plant
Early Care
Remove runners and developing daughter plants

- These take energy away from the mother plant during the first year
- Removing them encourages strong crown and root growth for better future yields
- Keep them evenly moist but not too wet
Annual Maintenance
Fertilization

• Plants do not need fertilizer the first year if planted in very fertile soil
• Add 1 cup ammonium sulfate per 10 feet of row after fruiting is finished
Strawberries normally require minimal amounts of nitrogen
Add complete fertilizer every 3-4 years if soil tests or symptoms if needed
Irrigation
Drip irrigation under plastic
Strawberries are sensitive to overwatering

- They have a shallow root system
- They require up to two inches of water per week during fruiting
- They are somewhat drought tolerant, but production drops with insufficient water
Mulches
Strawberries are not competitive and yields drop if weeds infest the planting.
The best weed control method is using organic or synthetic mulches.
Apply organic mulches in the late spring after the soil warms
These mulches break down and improve the soil

- Add extra nitrogen to break down the mulch
Plastic or weed barriers also help control weeds

- Mulches warm the soil in the spring
- Conserve moisture
- Keep daughter plants from developing and crowding the patch
Plastic Mulches
Plant Rotation
Remove and replace strawberry plantings every 4-6 years
Older plants yield less and have often developed disease and insect problems
If possible rotate to a new spot when replanting to reduce pest problems

- Remove existing plants in the fall and prepare the spring planting location
California Berry Production

- 75% of USA total
- 16% of USA acreage
- 40 to 50 tons/acre
• 60% of US crop
• 10,000 acres (US total 25,000 acres)
• New Cultivars (Breeding programs)
• Air freight
• In transit Controlled Atmosphere
• Annual planting
• Soil Fumigation
California Berry Production

- Clear plastic mulch
  - Soil heating (winter crop)
  - Clean (no dirty berries)
  - Larger fruit
  - Longer season
- White plastic mulch
  - Cools soil
  - Summer crop
Strawberry Fruit Uses

- Fresh
- Preserves
- Jams
- Jellies
- Frozen
- Juices
- Extracts
- Flavorings
Limits to productivity

- Spring freezes
- Wind
- Biological competition
  - Weeds - especially grasses and
    - Animals - birds, slugs, ants, rodents
  - Parasites - nematodes, viruses, blights
    - Insects – root weevils, mites, earwigs
F. vesca
Virus indicator plant
Virus infected plant
Strawberries in the home

- Rototilling
- Soil conditioning
- Full Sun Area
- Raised Bed
- Soaker hose
- Mulch
- Liquid fertilizer
- Net for fruit protection
Tarping and Fumigating Beds
Forming the Beds
Covering the Beds
Beds in Production
Beds in Production
Strawberry Fruits
Thanks for coming to this class