Crop Profile for Strawberries in Louisiana

Prepared: April, 1999
Revised: November, 2004

General Production Information

Louisiana strawberries are produced on 400-500 acres primarily in Tangipahoa and Livingston parishes in the southeastern part of the state. Louisiana is consistently in the top 10 strawberry producing states. In 2003, the value of strawberries produced in the state approached $8.7 million. There are several small plantings scattered in the state for the local markets. Production costs run approximately $8,500 per acre. All the strawberries produced in Louisiana are for the fresh market. Several of the larger growers deliver to the wholesale markets, while the smaller growers sell to retail outlets.

Cultural Practices

Louisiana strawberries are grown as an annual. Sandy loam and silty loam soils with good internal and surface drainage are the preferred soil types for strawberries. Plantings are generally made in an area where a good water supply is available for irrigation and frost control.

Land preparation begins after the end of harvest of the previous season crop with liming and a cover crop of cowpeas planted in June. The cover crop is turned under in August. High rates of a complete fertilizer (800-1000 lb/A) are then applied pre-plant. Growers generally wait for 1 to 2 inches of moisture before laying their black plastic mulch and fumigating with methyl bromide (100-150 pounds/acre) to control weeds and disease. This moisture is needed to prevent burning of the plants from salts in the fertilizer and to achieve the good physical condition of the soil necessary to successfully to lay the plastic.

Methyl bromide is the only fumigant that is currently used in Louisiana strawberry production. LSU researchers have evaluated vapam, basamid, and telone as alternatives, but so far, none are as efficacious as methyl bromide. If methyl bromide was to be removed from strawberry production in Louisiana, finding a comparable replacement would prove difficult.

Planting is done by hand starting in October through early November. Few plants are produced in the
Growers obtained plants from commercial nurseries in California, Michigan, Oregon and Canada. Plants are irrigated on a daily bases for 7 to 10 days after planting to ensure a stand.

Overhead sprinkler systems and row covers are used for frost control in strawberries. The start of frost control and row covers depends on the development of the crop. With a mild fall and winter, harvest can begin as early as Late December, but in the majority of the years harvest starts in February and continues to May.

**Worker Activities**

Worker activities include mostly tractor-driven related operations, such as cultivation, fertilization, pesticide spraying, operating the fumigation rig, and maintaining the irrigation system. During methyl bromide fumigation, proper PPE is worn, and no problems associated with inhalation have been reported in recent years.

Fruit are harvested by hand usually without gloves. As a general rule, there is one picker for every acre during non-peak parts of the production season, and one-and-a-half workers per acre during the peak parts of the season. Picking is finished in four to five hours each day during the non-peak parts of the season, while picking takes place eight hours a day during the peak. The shipping container is filled in the field, so very little re-handling occurs.

**Note:** All pesticides mentioned in this profile reflect the current usage by Louisiana growers. While the exact percentages of these chemicals were unable to be quantified, wherever possible, the dominant chemical used was highlighted based upon grower surveys. Whenever rotations are heavily used as in the case of fungicides, it can be assumed for this profile that there is no chemical used that would be deemed dominant.

**Insect Pests**

The major pest problem in Louisiana strawberry production is spider mites. Both European Red Mite (*Panonychus ulmi*) and the Two-spotted spider mite (*Tetranychus urticae*) are problems. Mites cause stunted plants with reduced plant vigor and fruit yields. Twenty to thirty percent of the strawberry acreage in the state is treated for mites each year.
Chemical control: Generally 2 or 3 applications of a miticide are required in March. Mites have a short, 7 to 10 day life cycle which requires two or three applications 7 to 10 days apart to achieve sufficient control. Growers generally check their fields at least once per week to determine the need for miticide application. Since mites can develop resistance to miticides, the two below are rotated in Louisiana strawberry production.

- Vendex 50WP (fenbutatin-oxide) -- 6-8 oz/50 gal
- Kelthane 50WSP (dicofol) -- 1-2 lb/A

Lesser pests of Louisiana strawberries include aphids, weevils, leaf rollers, armyworms, leafhoppers, and spittlebugs. At least 60% of the insecticide applications involve Malathion.

- Malathion 5EC -- 1.5 pt/50 gal to control aphids, leaf rollers, leaf hoppers, and spittlebugs.
- Carbaryl 50WP -- 2-4 lb/A to control weevils and armyworms.

Diseases

Leaf Spot, Angular Leaf Spot
*Mycosphaerella* sp., *Xanthomonas* sp.

Several diseases attack strawberries each year. Early in the season foliar diseases are more important. Leaf spot and angular leaf spot (bacterial leaf spot) are the most common. Seventy to eighty per cent of the acreage is infected by these diseases. If left uncontrolled, these diseases will result in losses in yield of up to 75%.

Chemical Control:

- Topsin-M (thiophanate-methyl) (0.5 lb/ 100 gal) + Captan (2 lb/100 gal)
- Fixed Copper applied two or three times in the early season before blooming.

Gray mold
*Botrytis* sp.
Gray mold (Botrytis sp) commonly occurs on strawberries. All acreage experiences some level of damage from Botrytis. Yield losses from Botrytis range from 25 to 35%.

**Chemical Control:** The following fungicides are rotated and applied when the disease is present. Multiple applications are sometimes warranted.

- Topsin-M (thiophanate-methyl) (0.5 lb/100 gal) + Captan (2 lb/100 gal)
- Elevate (fenhexamid) (1.5 lb/A) + Captan (2 lb/100 gal)
- Switch (cyprodinil+fludioxonil) – 11-14 oz/A
- Pristine (pyraclostrobin+boscalid) – 23 oz/A

**Fruit Anthracnose**

Only 25 to 35% of the acreage in Louisiana is seriously affected by anthracnose. Losses will range from 40 to 80% depending on the time of occurrence of the disease.

**Chemical Control:** The following fungicides are rotated and sprayed around flowering. Often multiple applications are necessary.

- Topsin-M (thiophanate-methyl) (0.5 lb/100 gal) + Captan (2 lb/100 gal)
- Quadris (azoxystrobin) -- 6.2-15.4 oz/A
- Switch (cyprodinil+fludioxonil) -- 11-14 oz/A
- Cabrio (pyraclostrobin) -- 14 oz/A
- Pristine (pyraclostrobin+boscalid) -- 23 oz/A

**Powdery Mildew**

*Sphaerotheca* sp.

This disease is usually a problem in the spring and early summer months. Rarely are multiple fungicide applications necessary for this disease.

- Topsin-M (thiophanate-methyl) -- 0.5 lb/100 gal
- Nova 40W (myclobutanil) -- 2.5-5 oz/100 gal
- Quadris (azoxystrobin) -- 6.2-15.4 oz/A

**Non-chemical disease control:** Non-chemical control strategies include planting certified plants, using resistant varieties, crop rotation, irrigation management, sanitation/destruction, and use of plastic mulch. However, their use alone or in the absence of fungicides would result in severe losses. Non-chemical
methods must be considered as tools that, in the presence of all other factors at a given time, add effectiveness to the overall disease management program.

Nematodes

No nematode resistant varieties exist, and there are no post-plant remediation strategies. Root knot nematodes (*Meloidogyne hapla*) and Bud nematodes (*Aphenlenchoides* sp.) can cause stunted, discolored strawberry plants. These are usually not a problem with proper fumigation.

Weeds

**Chemical Control:** Weed control in strawberries is aimed to prevent the development of winter weeds which may harbor mites. The use of a fumigant controls most of the weeds in the row of berries pre-plant. Additional chemical weed control is directed to the row middles for the control of various broadleaf, but predominately grassy weeds such as crabgrass and goosegrass. Of the chemicals used below, at least 50% receive at least one application of either glyphosate or paraquat for non-selective weed control.

- Various trade names (glyphosate) at 0.3-1.3 lb/A with shielded sprayers is used as a post-emergence directed spray only to the row middles.
- Gramoxone Max (paraquat) at 1.3 pt/A with shielded sprayers is used as a post-emergence directed spray only to the row middles.
- Poast (sethoxydim) at 1.5-2.5 pt/A is used post-emergence, over-the-top, to control perennial and annual grassy weeds.
- Goal (oxyfluorfen) at 1.25-2.5 pt/A as a pre-emergence fallow bed treatment to control winter annual broadleaf weeds.

**Non-chemical weed control:** Field workers will rarely mow the row middles as an alternative to chemical control.

**Table 1:** Restricted entry intervals (REI) and pre-harvest intervals (PHI) for the pesticides mentioned in this report.
<table>
<thead>
<tr>
<th>Product</th>
<th>REI:</th>
<th>PHI:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vendex 50WP</td>
<td>48 hr.</td>
<td>1 day</td>
</tr>
<tr>
<td>Kelthan 50ESP</td>
<td>48 hr.</td>
<td>3 days</td>
</tr>
<tr>
<td>Topsin-M</td>
<td>12 hr.</td>
<td>1 day</td>
</tr>
<tr>
<td>Captan</td>
<td>24 hr.</td>
<td>0 day</td>
</tr>
<tr>
<td>Elevate</td>
<td>12 hr.</td>
<td>0 day</td>
</tr>
<tr>
<td>Pristine</td>
<td>12 hr.</td>
<td>0 day</td>
</tr>
<tr>
<td>Quadris</td>
<td>4 hr.</td>
<td>0 day</td>
</tr>
<tr>
<td>Nova 40W</td>
<td>24 hr</td>
<td>0 day</td>
</tr>
<tr>
<td>Cabrio</td>
<td>12 hr.</td>
<td>0 day</td>
</tr>
<tr>
<td>Gramoxone Max</td>
<td>24 hr</td>
<td>21 days</td>
</tr>
<tr>
<td>Poast</td>
<td>12 hr.</td>
<td>7 days</td>
</tr>
<tr>
<td>Glyphosate</td>
<td>4 hr.</td>
<td>14 days</td>
</tr>
<tr>
<td>Goal</td>
<td>24 hr.</td>
<td>TPI: 30 days*</td>
</tr>
<tr>
<td>Carbaryl 50WP</td>
<td>12 hr.</td>
<td>7 days</td>
</tr>
<tr>
<td>Malathion 5EC</td>
<td>12 hr.</td>
<td>3 days</td>
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</tbody>
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*TPI = minimum treatment-planting interval for fallow land.

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References


