Strawberry Pre-Plant Quick Check

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Resources:

- *State-wide 2020 Pre-Plant Webinar:* https://strawberries.ces.ncsu.edu/strawberry-youtube-channel/2020-webinars-and-presentations/
- *Strawberry Production Guide:* https://smallfruits.org/files/2019/06/2005culturalguidepart1bs1.pdf
- *Strawberry 2020 Pest Management Guide:* https://smallfruits.org/files/2020/02/2020-Strawberry-IPM-Guide.pdf
- *Strawberry Fertility Guide:* https://www.ncagr.gov/agronomi/documents/StrawberryFertility-Feb2015.pdf
- *NC State Strawberry Portal:* https://strawberries.ces.ncsu.edu/

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- **Costs for Pre-plant phase (including transplants): $5,000-$7,000 per acre.** Largest costs: transplants (ca. $3,000 - $4,000/acre). Second largest cost: labor and fumigation.
- **Site Selection:** PYO (U-Pick): Location! Please consider (1) *Good drainage.* Make sure to select the row orientation to ensure a well drained field. (2) *Freeze/frost pockets:* The site should not be known to have freeze or frost pockets. Avoid a location in which your field is close to tree-line or is surrounded by elevated land. (3) *North-South Direction.* If other direction, uneven growth possible. (4) *Clean of weeds*: Pre-plant herbicides can be applied (30-45 d pre-plant) to kill this plant material. Large undecomposed debris will obstruct bed formation and fumigation. (5) *Erosion-Control* (on elevated land): Make sure that you have means to control erosion in the row middles (by planting e.g. rye grass to reduce washed off soil).

- **Soil pH:** Strawberry field sites should be rotated whenever possible. It would be ideal to rotate with a field that had been fallow or in cover crops. Subsoil the field in two directions to break up any present hardpans. Plowing the field will break up large clods. Any large stones or sticks should be removed. **Pre-plant fertility rates should be checked with a soil test 3-6 months before planting**. Lime needs to be applied if test indicates! Sufficient pH range 5.5 – 6.2.
- **Pre-plant Fertility:** Recommended rate of 60 lbs/acre of Nitrogen pre-plant. If you use compost or poultry litter for fertility, have them tested for nutrient content. If a soil test was not conducted, the standard pre-plant fertilizer recommendation for strawberry production on Phosphorus, Potassium and Sulfur are: **60lbs/acre pf Phosphate** and **120lbs/acre of Potassium** and **15 lbs/acre of Sulfur**. Typical pre-plant fertilizers can be a 6-6-18 or a 10-10-10. To supply phosphate, use a triple-superphosphate or diammonium phosphate (DAP). To supply potash, use potassium chloride. Nitrogen sources are DAP, Ammonium sulfate and potassium nitrate. Sulfur can be applied, using organic sulfur sources, K-Mag or potassium sulfate. Broadcast pre-plant fertilizer and incorporate before making beds.
- **Soil Fumigation:** To ensure an effective fumigation, soil should be cultivated about. 2-3 weeks before the application date. Soil temperatures between 50 – 80 F are desirable. On the day of fumigation, soil should be at 60-70% of field capacity. ALWAYS read the label of a fumigant and use the requires PPE.

Table 1: Overview of commonly used fumigants in strawberry production (according to the 2020 Southeast Regional Strawberry Integrated Pest Management Guide)

Name	Active substance	**Weed Activity**	**Pathogen Activity**	**Nematode Activity**
Pic-Clor 60	Chloropicrin (56,6%) 1,3 Dichloropropene (37.1%)	G	E	E
Pic-Clor 80	Chloropicrin (79.8%) 1,3 Dichloropropene (19.5%)	F	E	G
Tri-Pic 100	Chloropicrin (99%)	ND	E	P
In Line	Chloropicrin (33.3 %) 1,3- Dichloropropene (60.8%)	F	E	G
Telone C35	Chloropicrin (34.7 %) 1,3- Dichloropropene (63.4%)	F	E	E
Telone II	1,3- Dichloropropene (97.5%)	ND	P	E
Metam Potassium/Metam Sodium	See labels	VG	G	F
Paladin	Dimethyl disulfide (98.8%)	G	E	VG
Paladin Pic 21	Dimethyl disulfide (78.1%) Chloropicrin (20.9%)	G	E	VG

ND = no data; P = poor; F = fair; G = good; VG = very good; E = excellent.

- **Bed Formation:** Beds need to slope from the center, the highest point, down to the edges. If there is a depression in the center from not enough soil, water will collect there and not move through the bed correctly to the plant roots. Aim for a bed to be 6-10 inches high. Field capacity between 50-70% is recommended to successfully form a bed. It is not recommended to form beds under extremely wet or dry soil conditions.

- **Plastic Mulch:** Proper bed formation is also important to make sure the plastic mulch fits tightly to the soil beds. Air pockets need to be avoided when possible. The edges of the beds need to have the plastic mulch thoroughly covered with soil so that there are not any fumigate leaks and the wind does not get under them. The drip tape in the center of the beds needs to have the orifices facing upward not down into the soil. The drip tape should be buried 1 to 2 inches so the plastic fits tightly over this as well. If you chose to use two dip lines per bed, put the lines 3-4 inches in each side from the center. A straight bed is more important if you use two drip lines instead of one, especially if you plan to plant plug plants with a waterwheel. Several types of plastic mulch are available: **Polyethylene Plastic (PE):** PE plastic mulch is the most cost effective option, but has a poor capacity to retain fumigants. **Virtually impermeable films (VIF)** retain fumigants 200-300 times more effectively than PE. **Totally impermeable film (TIF)** is impermeable and designed to be used with fumigation. **Biodegradable plastic mulch films** can be used for plasticulture strawberries where no fumigation is used. The mulch does not always control all the weeds and starts to degrade by the end of the season.
- **Planting Windows for Plug Plants:** *Piedmont*: Mid- End of September. *Central NC:* Begin of October. *Coast:* Mid of October. Bare root plants need to be planted 1-2 weeks earlier and be watered in. If much later planting dates: floating row covers possible.