

Strawberry Pre-Plant 101

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Aims

- Update and Refresh Knowledge
- Common Questions and Answers

Southeastern Strawberry School

<https://smallfruits.org/2021/02/southeastern-strawberry-school-webinar-series/>

Two sessions on pre-plant!
Watch!!!



Basics of Strawberry Production

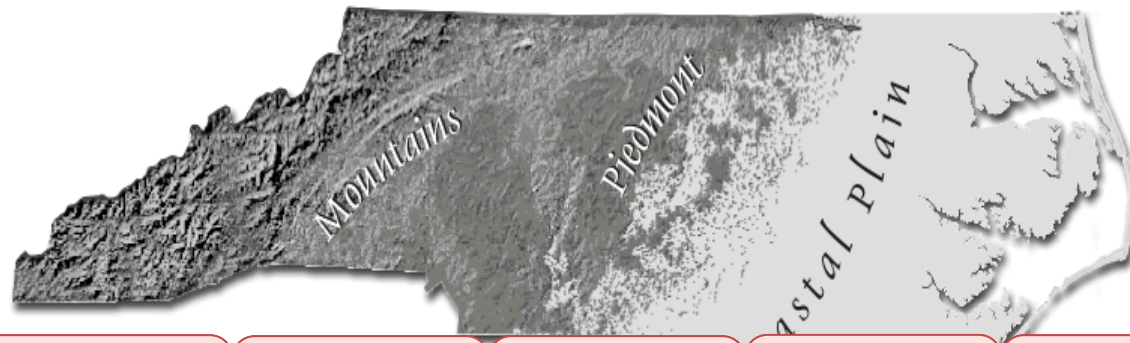
Common causes and problems

Diagnostics

- Step 1: Site Selection and Pre-Plant June – September/October
- Step 2: Transplanting September/October
- Step 3: Post Transplant Oct-Dec
- Step 4: Winter and Dormancy Dec-Jan
- Step 5: Pre-Harvest; Frost and Freeze Protection Feb/Mar/Apr
- Step 6: Harvest April/May/June
- Step 7: Crop Termination

Planting Dates for NC

- Irrigate after transplanting!
- Bare roots (cut-offs): plant 3-5 days earlier than plug plants



Mountains	Foothills	Upper Piedmont/ Tidewater	Lower Piedmont/ Coast. Plains	Lower Coast. Plains
1 st WK	3 rd WK	4 th WK	1 st WK	2 nd WK
September			October	

Site Selection

- Site Location: Windbreaks in north/northwest of field/ good visibility for PYO/close to water source
- Row Orientation: Important: Air Drainage (west), **Water Drainage (water needs a place to go)**. If possible, rows in North-South direction
- Slopes: South-facing: early/ North-facing: late

Site Selection

- Wildlife can be a large problem: Invest in fences. Deer love to eat small strawberry plants.



Soil Preparation and Fertilization

- Soil Type: sandy loam – clay loam are preferable
- Soils with high sand, clay or rock content are no preferred!
- Need to be able to form a **6-8” bed!!!**

Soil Sampling

- Sample 4-6 months prior to planting
- **Apply lime to target pH (6-6.5)**
- **Depth: 8 Inches**



Soil Preparation and Fertilization

- Plow 3-6 months prior (decreases residues)
- Remove debris, trash, work soil deep, remove rocks

Soil Preparation and Fertilization

- Apply fertilizer shortly before bed formation, according to soil test recommendations
- **Rule of thumb: 60 lbs/acre of N; 120 lbs/acre of P and K**
- Maybe Boron (if on sandy soils, see soil test)
- Maybe sulfur (if sulfur index is below 30)
- **Recommendations on strawberry fertility:**

<https://www.ncagr.gov/agronomi/documents/StrawberryFertility-Feb2015.pdf>

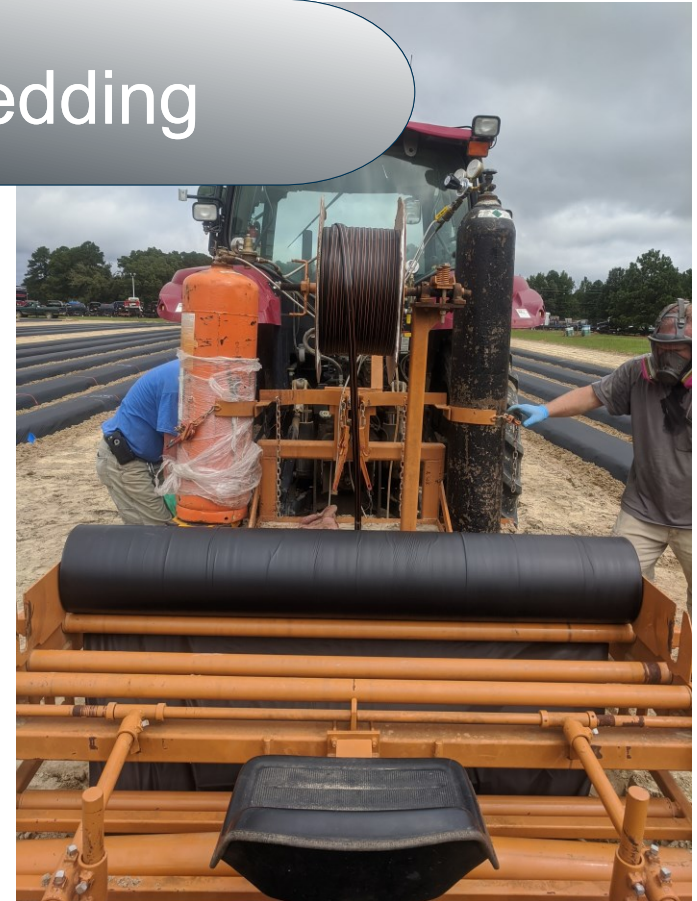
Fumigation and Bedding

Planting Space based on:
Variety, Experience and Vigor of
plant

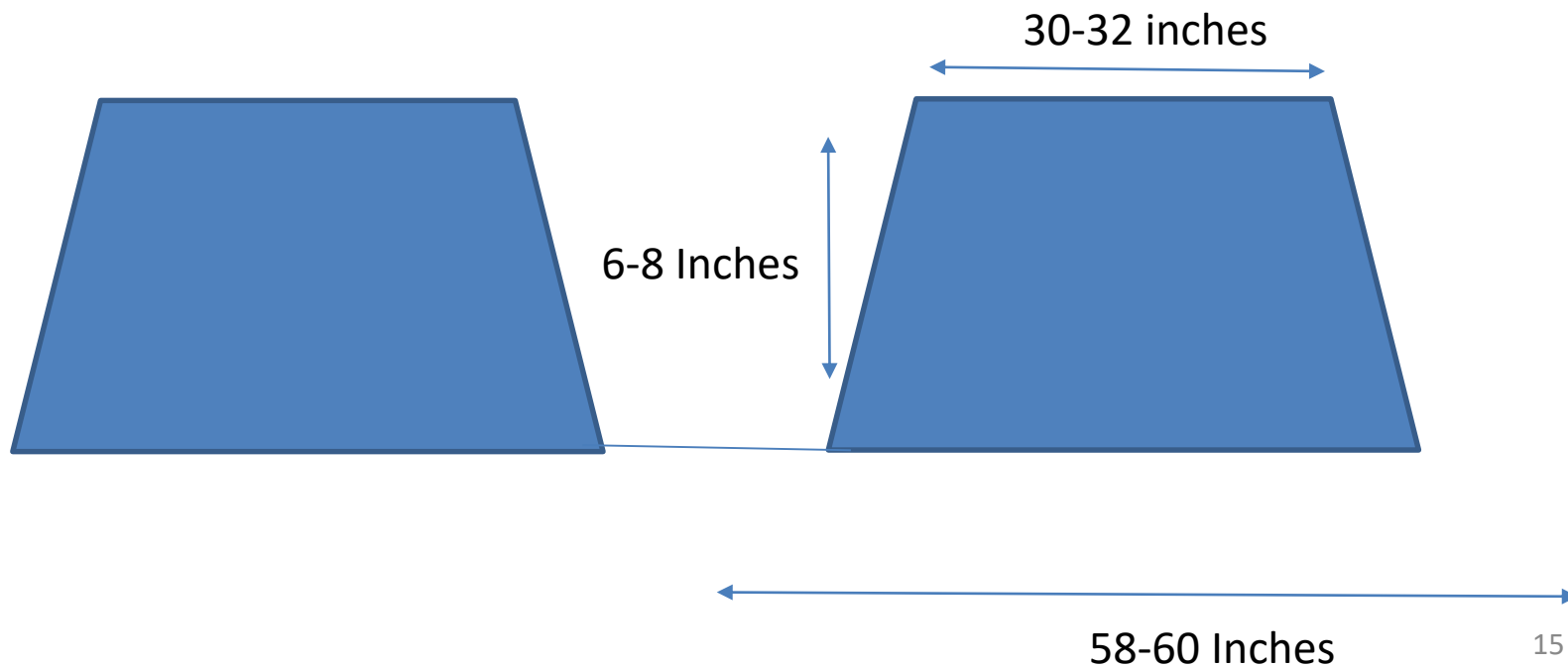
- 12 Inches = 17,500 plants/A
(small cultivars, colder sites)
- **14 Inches = 15,000 plants/A**
- 15 Inches = 14,000 plants/A



Fumigation and Bedding



Fumigation and Bedding



Fumigation and Bedding

- 60 Inch center: 8712 linear feet of plastic / acre
- Use a 64-66 inch plastic roll
- Make sure beds are minimum 6 inches high!! Better 8!

Fumigation and Plastic

Plastic	Costs	Control Efficacy
PE Films	Cheap	low
VIF	Costly	Low-medium
TIF	Costly	Medium-high

VIF and TIF have much better control efficacy. PE Film lets certain fumigants (1,3-D) escape very quickly, especially in sandy soils.

Fumigation and Plastic

- *Soil Temperature*: > 50F;
- *Soil Structure*: High OM (-); Too many clods (-); Sandy soils (+);
- *Soil Moisture*: usually ca. 70% of field capacity;
- *Plastic and sealing*: TIF/VIF. Plastic needs to be tight to bed
- *Application rate*: Don't safe on fumigant! E.g. Pic-Clor 60: usually min rates of 350-400 lbs/ac (applied area). (equals around 170 lbs/ac (total area))

Make Fumigation Plan!!!!

Fumigation and Plastic

❖ **Pic-Clor 60/80 (300-350 lbs/a, 21 days)**

Chloropicrin (60/80%) + 1,3D (40/20%)

❖ **Telone (30-40 gal/a, 21 days)**

Chloropicrin (17-35%) + 1,3-D (65%)

❖ **Paladin (14 days)**

Chloropicrin (21%) + Di-Methyl Disulfide (79%)

❖ **Vapam/Kpam/Sectagon and others (21 days)**

Metam Sodium/Metam Potassium

Fumigation and Plastic

Fumigant	Nematode	Disease	Nutsedge	Other weeds
Telone C 35 + VIF/TIF	+++++	+++++	+++	+++
Telone C 35	+++++	+++++	+	+
In-Line	+++++	+++++	+	+++
Metam Sodium	++	+++	++	+++++
Dominus	++	+++	++	+++
Pic-Clor 60	+++++	+++++	+	+++
Chloropicrin	+	+++++	-	-



Safety and PPE

- Fit Test!
- Medical Exam
- Make sure it forms a seal
- Store at dry and cool place (not in garage/shop)
- Clean regularly
- Change cartridge regularly
- Never use a cartridge AFTER expiration date

Transplanting

- **Well developed root ball!**
- Plug: Crown should be above substrate
- Bare-root: crown should be .5-1 inch thick

Picture by B. Poling

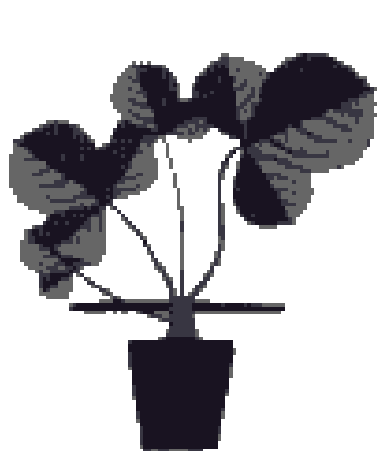


Plug Plant

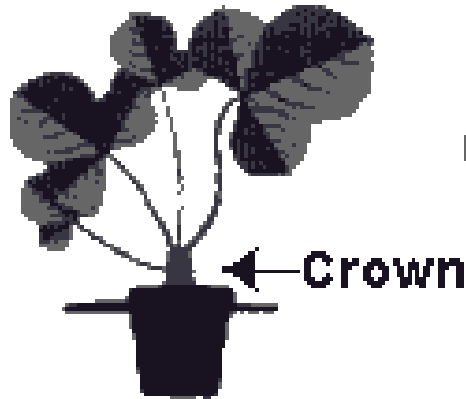
Bare Root/Cut-Off



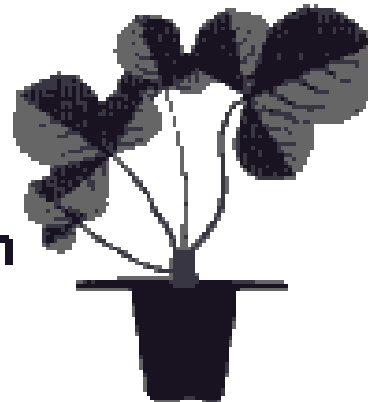
Transplanting: Plugs



TOO DEEP



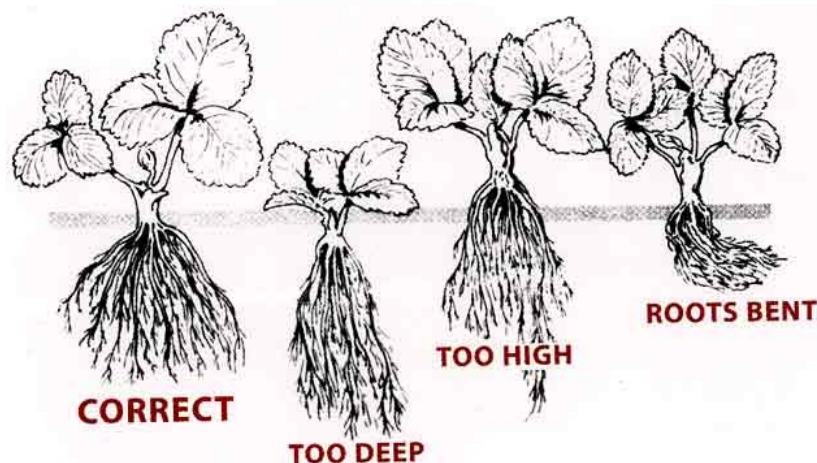
TOO SHALLOW



CORRECT

Pictures by www.strawberryplants.com

Transplanting: Bare Roots



Pictures by StarkBros Nursery



Important Tips

- **Don't walk away after planting!!!**
- Don't plant weak plants. Get 5-10% more plants than you need
- Check on plants and replant! (1-2 weeks after planting)
- Use a drip applied fungicide to control Phytophthora root rot
- Remove crispy leaves
- Control of Neo-P: apply fungicides (Thiram)
- Remove Runners before end of Fall



Important Tips

Most important reasons plants die shortly after transplanting:

- Phytophthora
- Anthracnose Crown Rot
- Neopestalopsis
- Not enough/no water (drip line is broken, no water was applied, too dry)
- Fumigation Residue
- Incorrect planting (often too shallow)
- Plug plants were weak/not very well developed

Important Tips

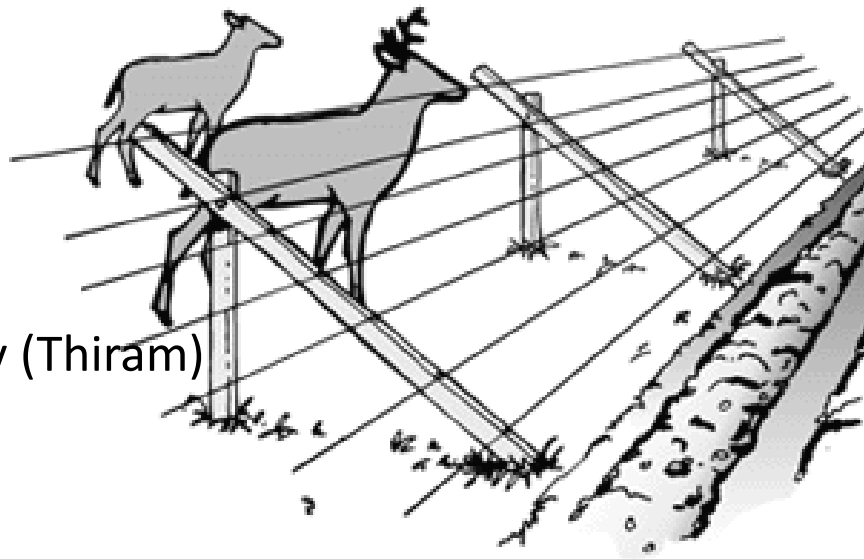
Replant (2-5%)

Disease and Pest Control:

- Ridomil Gold EC (drip system)
- Anthracnose Spray (Captan)
- Neopestalopsiosis Control if necessary (Thiram)
- Mites
- Botrytis crown rot

Deer/Bear control! Early: Best: Before Transplanting

Runner Removal (once, ca. 5-8 weeks after transplant)





Row-Covers

Function	Promote Plant development	Protection from lethal temperatures	Protection from Frost and Freezes
When?	Latest November	Winter	Spring
Which Cover?	0.5-1 oz	1-2oz (usually 1.5oz)	1-2oz (usually 1.5oz)
Duration?	2-3 weeks max	Depending on temp.	Depending on dew point and cloud cover
Required Knowledge	GDD, Weather Forecast	Min Temp and Weather Forecast	Dew Point, Weather Forecast
Goal	Increase GDD	Protect crown from Cold Temp	Protect flower from Frost

Pre-Plant Fertilizer

- Adjust pH. Take soil samples.
- Follow this guideline:
<https://www.ncagr.gov/agronomi/documents/StrawberryFertility-Feb2015.pdf>

Rule of thumb:

- Apply $\frac{1}{2}$ of total N (60 lbs/Ac)
- Apply all phosphate (120 lbs/Ac)
- Apply $\frac{1}{2}$ of potash (120 lbs/Ac)

Pre-Plant Fertilizer

- Some growers use K-Mag in combination with full spectrum fertilizer (as source for Sulfur)
- We are investigating currently Polysulfate as source for P, S, Mg and Ca as pre-plant fertilizer.



Damage











High wind can also cause damage to new plantings

Transportation of plug plants is also important. Don't transport in an open bed, if going longer distances.



[SRSFC Activities](#)[Crops](#)[Regional Experts](#)[IPM/Production Guides](#)[County Agent Training](#)[Weather](#)

IPM/Production Guides

Last updated Friday 5 January 2018 8:9 GMT

Blueberries

[Southeast Regional Blueberry Integrated Management Guide](#)
[Southeast Regional Blueberry Horticulture and Growth Regulator Guide](#)
[Southeast Regional Organic Blueberry Pest Management Guide](#)

Bunch Grapes

[Southeast Regional Bunch Grape Integrated Management Guide](#)

Caneberries

[Southeast Regional Caneberries Integrated Management Guide](#)
[Southeast Regional Caneberry Production Guide \(PDF\)](#)
[Southeast Regional Caneberry Production Guide \(Online Version\)](#)

Muscadines

[Southeast Regional Muscadine Grape Integrated Management Guide](#)

Strawberries

[Southeast Regional Strawberry Integrated Pest Management Guide](#)
[Southeast Regional Strawberry Plasticulture Production Guide](#)
[Fungicide Selection for Botrytis and Anthracnose Fruit Rot Management 2017](#)

www.smallfruits.org

- NCSU Strawberry Portal: <https://strawberries.ces.ncsu.edu/>
- NCSU Diagnostic Key: <https://diagnosis.ces.ncsu.edu/strawberry/>
 - NC Strawberry Association: <https://ncstrawberry.com/>
- Strawberry School: <https://smallfruits.org/2021/02/southeastern-strawberry-school-webinar-series/>



Thank You

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