

The “Up and Up” on Greenhouse Trellising

**How to Maximize Your Harvest in Valuable Real Estate
(i.e. Your Greenhouse)**

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Why Trellis?

Isn't it a lot of work?

- Increase yield
- Decrease disease by allowing more sunlight and airflow to the plant
- Increase harvesting efficiency and ease
- Increase planting density
- Easier “balancing” of plant between vegetative and generative growth
- It's fun.....!!?? And yes, a lot of work!



What Crops Should You Trellis?



Plus possibly eggplant, melons, green beans, peas...

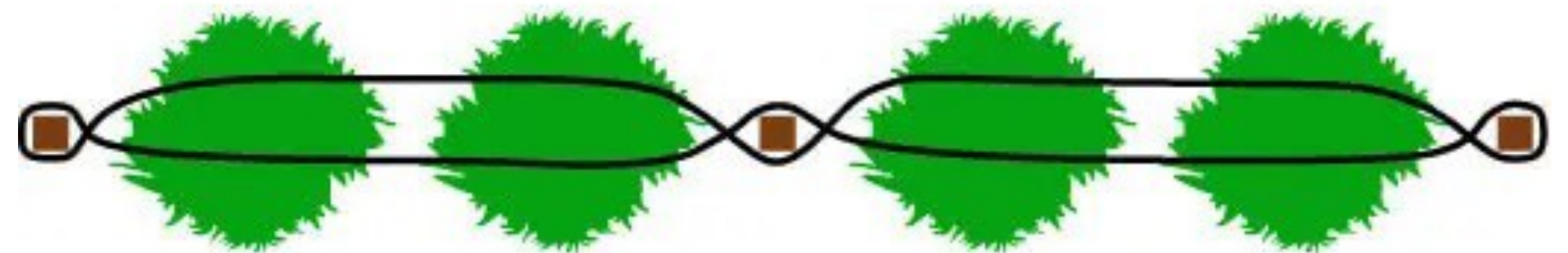
You have to look at the potential yield increases vs. the time involved in trellising and decide whether it is worth the additional effort.

Two Main Types of Trellising:

1. Stake and Weave (also called Basket Weave or Florida Weave)
 - Stakes are driven into the ground between the plants in the row (every two to five plants).
 - Twine is attached to the end stake and then run down one side of the plants (wrapping the twine around every stake), then back down the other side.
 - This is repeated every 8" to 12" up the stake as the plants grow.
 - Alternately, you can wrap the string around each plant (as in top illustration).



Aerial View of Florida Weave





1. Stake and Weave (cont.)

- It is faster and easier than string trellising, but loses some of the other trellising benefits.
- This is usually done with determinate tomatoes and other plants not requiring suckering.
- We use it mainly for peppers and eggplant.
- Also used if your greenhouse structure can't support the weight of trellising.

Two main types of trellising (cont.)

2. String Trellising (or a variant thereof)
 - Strings are attached to an overhead wire, cable or pipe (make sure your structure is strong enough to handle the immense weight of trellising).
 - Plants are trained up the strings by either twisting the plant around the string or using some kind of clip.
 - Plants are suckered (pruned) as they grow.
 - Plants are often lowered and leaned when they reach the top of the string (especially indeterminate tomatoes and cucumbers). Doesn't work so well on short greenhouses because fruit will end up on the ground (have to use wickets to keep fruit up).





2. String trellising (cont.)

5. Strings are usually hung from the top wire by either tying (if you're not going to lower and lean) or tomahooks, or rollerhooks (if you are planning to lower and lean)
6. Use a 3+” pvc pipe slid over a t-post at the end of the rows to make your lowering and leaning “merry-go-round.”

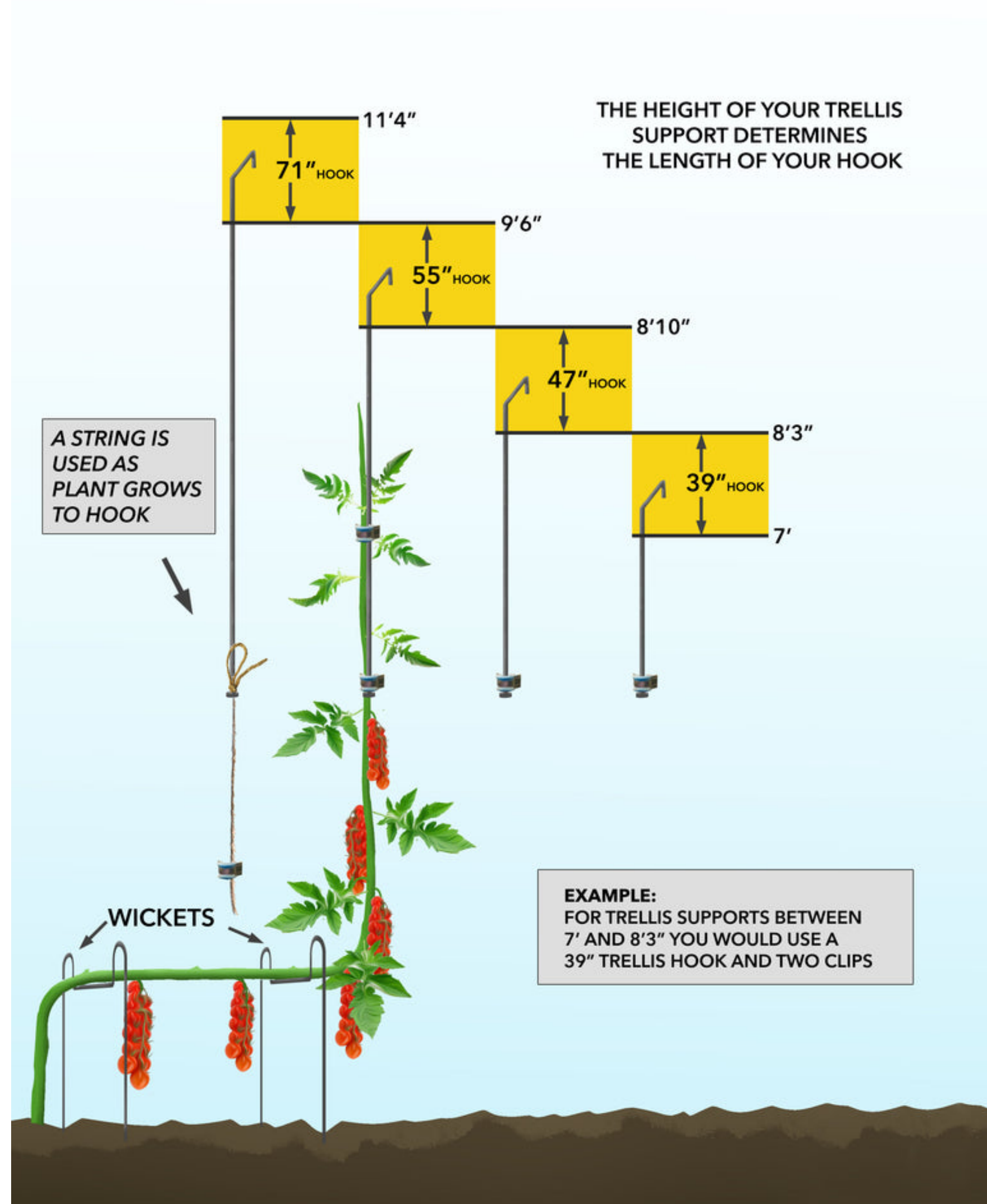
The Qlipr System

A Better Alternative

- Uses a stiff wire and two clips to trellis tomatoes and cucumbers.
- Saves time on the front end (no rolling tomahooks or rollerhooks) and on the back end (much easier to take down at the end of the season).
- Keeps the person trellising on the ground (no climbing ladders, etc.) — which is a huge labor saver!
- Easier, faster, and cheaper in the long run (no string or clips to buy yearly, and much less labor costs).



TOMATO HOOK AND WICKET



Tips for Using the Qlipr System

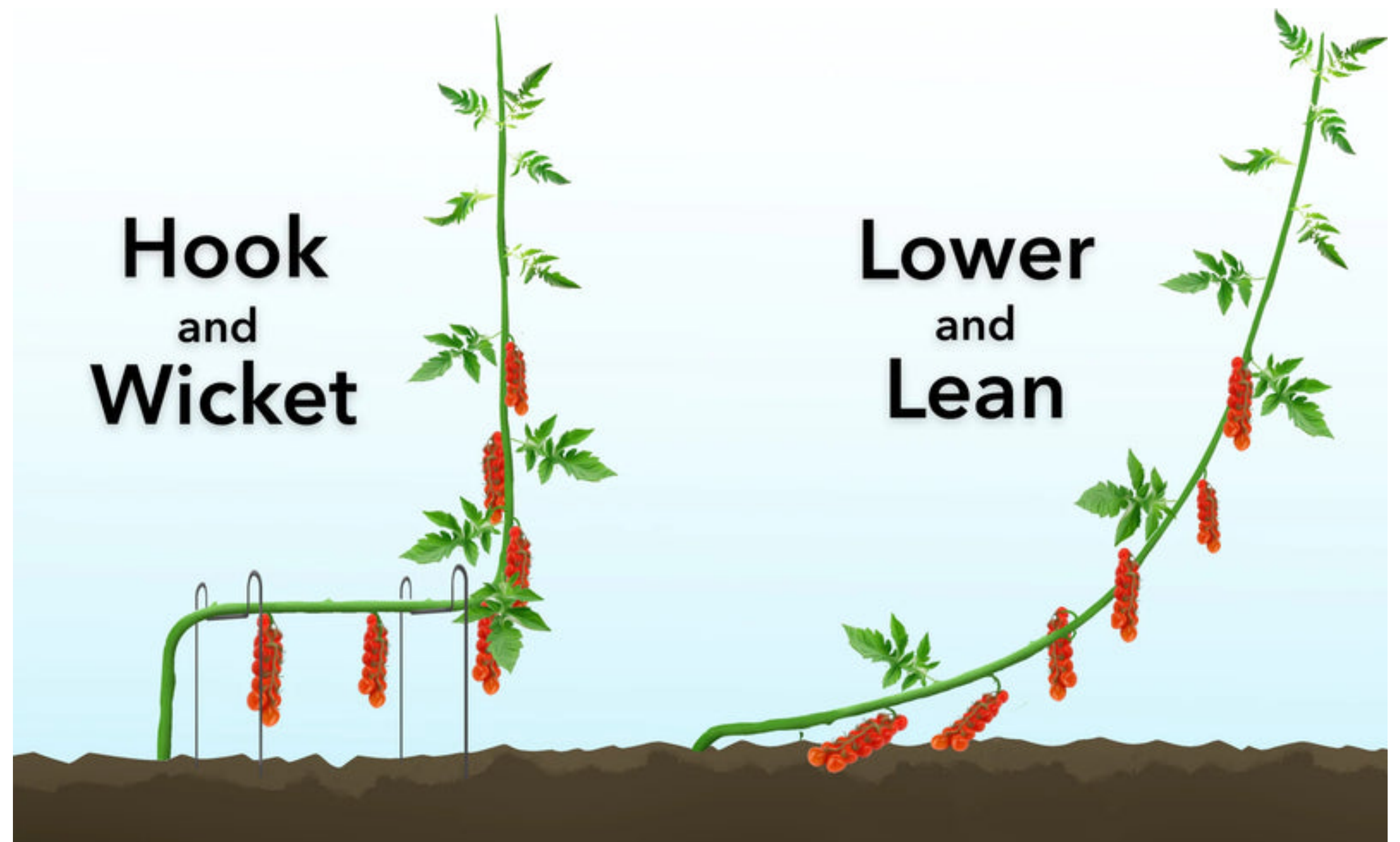
Most we learned the hard way

- Make sure you get the right length wire. You want the bottom 18" of the wire to be at a comfortable working height.
- The bottom clip should always be on the bottom knob (so it can't slide down).
- Move the clips weekly (or the stem may grow too big to get them off) — especially at the beginning of the season when plants are more vegetative!
- Use biodegradable string (untreated sisal or jute twine) to tie on the knob for getting the plant started.

Wickets

Going to the “Next Level”

- Keeps the fruit off the ground, so less waste.
- Less strain on the plant
- Easier picking
- I haven’t tried them, but would like to!
- Available from Neversink Tools



Trellising Tips for Specific Crops

Tomatoes

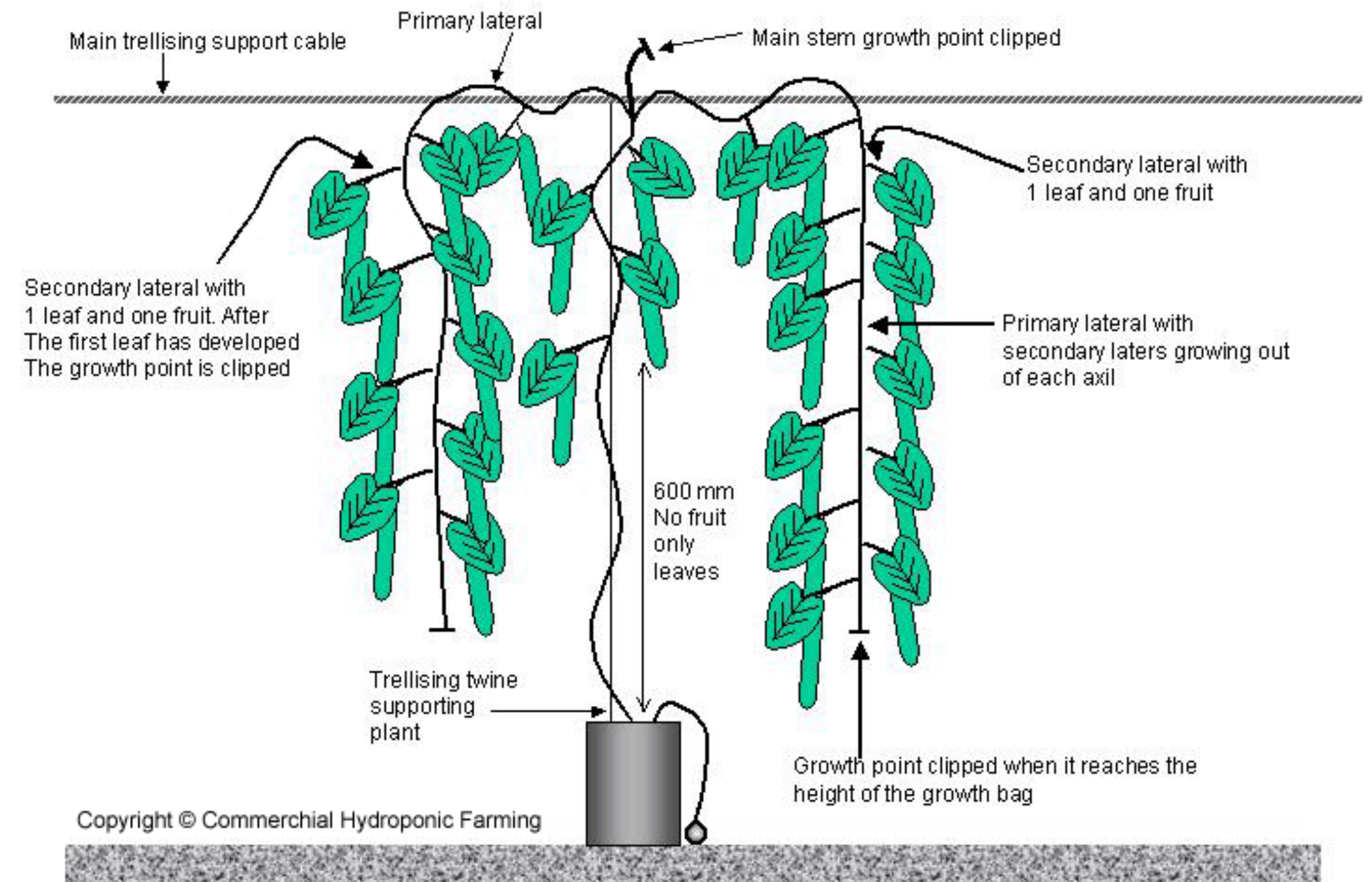
- Plant a double row in your bed (or else have every other plant leaning out from the bed in opposite directions) to make your tomato “merry-go-round.”
- I recommend using grafted plants if you are going to the work of lowering and leaning.
- If using grafted plants, you may want to use a double leader system (allowing the first sucker to become a second head).
- After determining how many leaders you want, take all additional suckers off.
- As plants grow, prune off all leaves below the lowest fruit cluster (to allow more airflow)
- Keep the top of the plant at a comfortable working height by lowering the plant as it grows (most easily done with the Qlipr system).



Trellising Tips for Specific Crops (cont.)

Cucumbers

- Typically planted with a single row down the center of the bed.
- Take all the fruit off the bottom 2' of plant to give extra energy to the roots.
- Look for gynoecious (all female flowers) and parthenocarpic (no pollination needed) characteristics — also powdery mildew resistance.
- Can use the high wire trellising method (Qlipr and wickets) or the Umbrella trellising method (see illustration).
- Plan on succession planting cucumbers.



Trellising Tips for Specific Crops (Cont.)

Peppers

- Remove the king flower when transplanting.
- Can be suckered and trained similar to tomatoes but with two to four heads/plant (preferred method in high-tech, long season production — usually hydroponic). They are not lowered and leaned.
- I recommend sticking to stake and weave trellising — with pairs of stakes (12-15” between the two stakes) every 5-10’ down the bed. You are just holding the plants in between the stakes and they hold themselves up.
- Pepper plants are brittle, so be very careful while trellising and harvesting.





Trellising Tips for Specific Crops (Cont.)

Eggplant

- Can also be suckered and trellised to multiple heads, but again I recommend the simpler stake and weave.
- Eggplants are bushier, so you can have your pairs of stakes wider apart (I tend to just stake them down the outside of the beds).
- There's a good market for the longer, Asian eggplant (Customers love the convenience of less cutting after they get used to them).
- Harvesting them immature will guard against bitterness, seeds or thick skin.

One Other Greenhouse Trellising Method

Hortonova Netting

- Can be used with 3/4" electrical conduit and 1 1/4" PVC tees on top of t-posts.
- Good for pole beans, peas, snacking or pickling cucumbers, and cherry tomatoes.
- Just keep stray vines pushed back through the netting to maintain order.
- A bit of a pain to deal with at the end of the season!



Final Trellising Tips

1. Start trellising when the plants are small — before they need it. Be proactive. Don't wait until they have fallen over! You will regret it (at least I always do :).
2. Keep on top of the trellising. “A stitch in time saves nine.” “Little attentions often repeated.” Do it before it “needs” to be done.
3. Schedule weekly time for trellising — otherwise it is too easy to put it off.

Greenhouse Trellising Resources:

- *The Greenhouse and Hoophouse Grower's Handbook* by Andrew Mefferd. Best practices for the eight most profitable greenhouse crops.
- Qlipr system available from:
 1. farmersfriend.com
 2. neversinktools.com
 3. hortamericas.com