e-GRO Edible Alert

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Tomato cluster kinking, snapping, or ripping

Tomato are the most widely-grown fruiting greenhouse crop. The types of tomatoes produced vary widely, from the beefsteak or slicer types to the smaller-fruited grape and cherry types. Regardless of which type you are growing, they all can suffer from cluster kinking (Fig. 1), snapping, or in extreme circumstances, ripping (Fig. 2). When mild kinking occurs, fruits and clusters may develop into marketable products. However, when kinking is sever, or worse, when the tissue snaps or rips, severing the vascular tissue conducting water, nutrients, and carbohydrates, fruits may not develop into the high-quality expected from greenhouse-grown tomatoes.

Figure 1. Cluster kinking can impede the growth and development of high-quality fruits and clusters.

There are different factors which can cause this. First, some varieties have a weaker pedicle (flower and fruit stem) than other varieties. It can also be influenced by the greenhouse environment. When a crop is grown warm, it steers the plant towards a more vegetative state. This doesn't mean the plant will stop flowering, but the vegetative and generative (reproductive) stages of fruiting vine crops elicit different growth habits. When a tomato is in a more vegetative state, the pedicle of the flower cluster is more upright; as a result, that vertical habit of the pedicle carries out through fruiting. Low light intensity can also result in more kinking or snapping. Tissue grown under low light is softer and weaker than under higher light and, under the weight of fruit, can bend or snap more easily.

There are a few ways to try and avoid this problem. First, if the disorder was the result of an environment that is favorable towards causing this, try to change the growing environment. For instances, if you have supra-optimal air temperatures or low light, try to cool your greenhouse or increase lighting. However, some factors cant be controlled. For instance, if you are already using all cooling stages in the summer, it is going to be a challenge to drop temperatures. Similarly, if you are suffering from low light in the winter, but do not have supplemental lights you can use to provide more light to your crop, there is really nothing you can do to prevent weak stems.

After you have modified the greenhouse environment and culture, but still find this disorder occurring, using a support for your fruiting clusters is the best way to minimizes losses from cluster kinking or ripping. While this will require additional labor inputs, in addition to the costs of the clips and supports themselves, it is the last option you have. There are a few different styles you can use (Fig. 3). One type of clip is placed on the pedicle when the flower cluster is blooming and, as the fruits form and the cluster bears more weight on the stem, an arch is formed and supported by the clip, supporting the fruits. Another type of support attaches directly to the vine twine or trellis, then the pedicle is placed in a hook; as the cluster gets heavier, these supports stop kinks from forming.

Figure 2. This cluster has ripped of the main stem- a worst-case scenario.

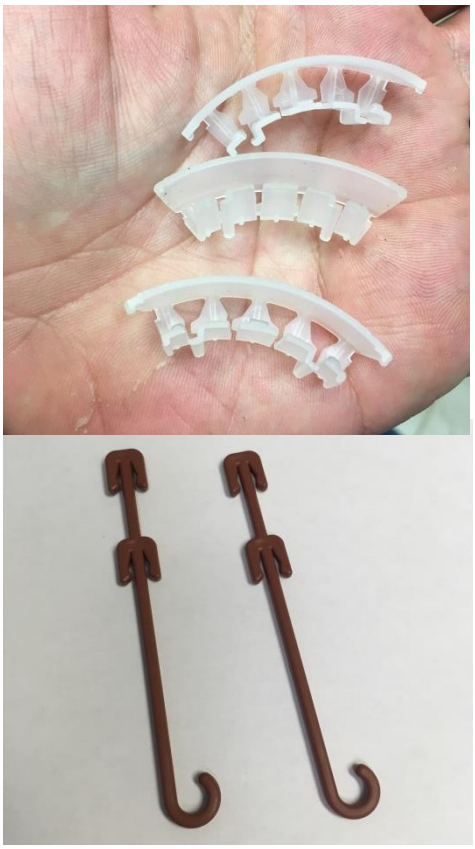

Figure 3. Cluster supports are used to prevent cluster kinking and ripping. The support on the top is placed on the pedicle of flower clusters, and the weight of the fruit is supported as the stem curves. The support on the bottom is attached directly to the vine twine or trellis, and the pedicle is placed in the hook at the bottom.

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