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#### SUMMARY

Chemical compounds produced by the cucumber plant to defend against pests can make your cucumbers bitter tasting. For best results, select less bitter varieties, grow in full sun with moisture retentive soil, and provide regular irrigation. When using the cucumbers, remove the stem end and skins, typically the most bitter parts.

## Curbing Bitterness in Cucumbers

by Chantal Guillemain, UC Master Gardener

The cucumber plant's defensive chemicals can impart a bitter taste to your cucumbers.

*Q: What causes some cucumbers to taste so bitter? What can I do to avoid this problem in my cucumbers this year?*

**A:** Cucumbers sometimes have an unpleasant, bitter taste. The bitter taste is due to the presence of terpenoid compounds called cucurbitacins, named for the cucumber and squash family of plants called cucurbits. Cucumbers produce cucurbitacins as a defense against insects, fungus and herbivores. Cucurbitacins may be found in all parts of the cucumber plant, but only lightly and unevenly in the cucumber itself. Their concentration is heavier at the stem end of the cucumber and under the skin.

#### **Researchers Explain Bitterness:**

Cucumber researchers provide some answers as to what triggers bitterness in cucumbers. They found that cucurbitacin production, which is determined by genes that express bitterness, is linked to weather conditions which are conducive

to fungus and insect infestations. They discovered that a cucumber enzyme called elaterase plays an important role in transforming cucurbitacins into non-bitter compounds. Weather affects the activation of elaterase production. Cool temperatures inhibit the release of elaterase, and encourage the formation of cucurbitacins. For this reason, gardeners are advised to raise cucumbers in the full heat of the sun and out of the cooler shade. An ideal location would be a south-facing slope.

#### **Factors Influencing Bitterness:**

Temperature, water and proper soil preparation are factors which influence the rapid, uniform growth of cucumbers and can affect the formation of bitter fruit.

Temperature fluctuations of 20 degrees can cause bitterness in cucumbers. Cucumbers grow best in temperatures from 65° to 75°F with a minimum temperature

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of 60° and a maximum of 90°. Cucumber plants are very susceptible to chilling injury which can occur when temperatures drop below 55° for an extended period of time.

**Moisture stress** is thought to be another cause of cucurbitacin production. Since cucumbers require ample and regular irrigation during their growing period, add mulches, composted green waste or manure to the soil to increase the soil’s water-holding capacity and supply nutrients to the plants.

Weather and cultural care influence the production of elaterase and cucurbitacins but **genetics** also plays a role. **New hybrids** are bred to produce cucumbers that are less bitter. Diva, Sweet

Success, Cool Breeze, Summer Dance, Improved Long Green, Eversweet, Ashley, Sunnybrook, Saticoy Hybrid and Lemon are reported to produce a very low percentage of bitter cucumbers.

The **best advice** for gardeners is to plant cucumber varieties developed to produce non-bitter cucumbers, to cultivate them in well-drained, prepared soil in full sun, and to water them regularly.

**Preparing Cucumbers:**

To test for bitterness, cut and taste a small portion from the stem end of the cucumber. Remove any bitterness by peeling off the outer flesh. Peel more deeply at the stem end as more of the bitter compounds can be found there.