

Bitterness in Cucumbers

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Many home gardeners have had the experience of tasting a nice green, home-grown cucumber and finding that the flesh was so bitter that the cucumber had to be discarded. Bitter cucumbers are also occasionally purchased unknowingly.

Description

Bitterness does not accumulate uniformly in the entire cucumber or plant. The extent of the bitter compounds will vary from fruit to fruit as well as within individual fruits. The compounds are more concentrated at the stem end than at the blossom end of the fruit. If a cucumber is bitter, the bitterness is always found in, and just under, the skin of the cucumber and not deep in the fleshy portion of the cucumber or in the seed locules.

Cucurbitacin B and Cucurbitacin C are the compounds which cause bitterness in cucumbers. These compounds are found in the entire plant, including the leaves, stems, and roots. These bitter compounds occasionally accumulate in the fruit of some varieties and cause bitterness.

Cucumbers seem to vary from year to year in the amount of bitterness they contain. There are many theories about this off-flavor, and it has been very difficult to obtain consistent information as to its cause.

Causes

Temperature appears to be one cause of bitterness; a cool growing season tends to produce more bitter cucumbers than a warm one. A lack of moisture or large fluctuations in soil moisture during the growing season have been thought to increase bitterness in some cucumbers. Fertilization practices, time of harvesting, and method of peeling are other factors suggested.

Research with the cultural practices of growing cucumbers has indicated that plant spacing and frequency of the irrigation have little consistent effect on the number of bitter cucumbers produced. Yield and quality of cucumbers generally will increase with regular irrigation and fertilization

through the picking season. The crop is a heavy user of water and mineral elements.

Different varieties of cucumbers vary widely in their tendency to bitterness. The following table indicates the percentage of bitter fruit in selected varieties of cucumbers grown in eastern Washington from 1960 to 1964.

Variety	No. of test years of location	Percent bitter fruit
Burpee Pickler	2	90
Straight "8" (Pepino)	3	81
Chicago Pickling	2	78
Burpeanna Hybrid	1	40
Early White Spine	1	36
Marketer	3	24
National Pickling	3	23
Sensation Hybrid	1	20
Improved Long Green	2	6
Eversweet	2	0
Ashley	2	0
Sunnybrook	2	0
Saticoy Hybrid	1	0
Lemon	2	0

Recommendations

When growing cucumbers, avoid large fluctuations of soil moisture. Provide adequate amounts of nitrogen, phosphorus, and potassium to obtain rapid uniform growth of the fruit. At planting time, use one cup of fertilizer such as 5-10-10 for every 10 feet of row. Every two weeks after blooming, add 1/2 cup of sulfate of ammonia or 1/4 cup of ammonium nitrate.

It is recommended that slicing varieties be selected because they have the tendency to produce fewer bitter fruits. Varieties such as Sunnybrook, Improved Long Green, and Saticoy Hybrid should be planted for fresh use. Pickling varieties such as Burpee Pickler, Straight "8", or Chicago Pickling, tend to produce more bitter fruits. Breeders are selecting continuously for bitter-free slicing cucumbers.



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The amount of bitterness that is found in the commercial pickling cucumber varieties available in the United States does not seem to be sufficient to impair flavor in the pickles made from them. No discernible differences in flavor of either sweet or dill pickles have been noticed, even if bitter cucumbers were used. This is why no major effort is made by breeders to develop bitter-free pickling varieties and why these cucumbers are often not suitable for fresh use.

If your garden seems to have the tendency to produce bitter fruits, it might be wise to taste a

small portion from the stem end of each cucumber before serving. If the fruit is bitter, the bitterness can be eliminated by removing the outer flesh with the peeling. Peel more deeply at the stem end, since this is where the bitter compounds penetrate deepest.

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