Chile Heat

Chile heat levels are the results of two factors, the plant's genetics and the environment in which it grows. Although plant breeders can produce a chile with a certain amount of relative heat, genetic control is not yet fully understood. For example, 'NuMex Joe E. Parker' was selected to produce "medium" heat pods. However, the environment, water amounts and temperature levels, in which this particular variety is grown will have great effects on the heat levels.

Methods to Determine Heat

The most common way to test chile heat is to taste the pod. This method, although quick and cost effective, may leave the tester in some pain. There are two other ways of testing heat; (1)The Scoville Organoleptic test and (2)High Performance Liquid Chromatography.

The Scoville test is a refined, systematic approach. It was the first laboratory approach used to measure heat in chiles. In this method human subjects taste a chile sample and record the heat level. The samples are diluted in the laboratory until heat can no longer be detected by the tasters. This dilution is called the Scoville Heat Unit. This procedure can be appropriate in many circumstances, as it is more accurate than a taste test. This test is also less expensive than more advanced laboratory techniques, but this method has limitations. Measuring heat with this technique is still subjective and depends on the taster's palate and sensitivity to the chemicals that are responsible for heat. In addition, there are serious limits on how many samples a taster can handle within a reasonable time.

High-Performance Liquid Chromatography

The most accurate method for measuring heat in chiles is a High Performance Liquid Chromatography (HPLC). In this procedure, chile pods are dried, then ground. Next, the chemicals responsible for the heat are extracted, and the extract is injected into the HPLC device for analysis. This method is more costly than the Scoville but much more accurate. This method measures the total heat present as well as the individual capsaicinoids present.

SCOVILLE HEAT UNITS SCALE

The following is a list of chiles, put into a scale to show the relative heat levels and their Scoville Heat Units.*

Name	Species	Scoville Units
Orange Habanero	chinense	210,000
Red Habanero	chinense	150,000
Tabasco	frutescens	120,000
Chiltepin	annuum	75,000
Thai Hot	annuum	60,000
Serrano	annuum	25,000
Long Slim Cayenne	annuum	23,000
Mitla	annuum	22,000
Santa Fe Grande	annuum	21,000
Aji Escabeche	baccatum	17,000
Long Thick Cayenne	annuum	8,500
Jalapeno M	annuum	5,500
NuMex Primavera	annuum	5,000
NuMex Sandia	annuum	5,000
NuMex Joe E. Parker	annuum	4,500
Pasilla	annuum	4,000
Mulato	annuum	1,000
Bell	annuum	0

*We would like to stress that this research was the result of combined averages taken from two different locations. This causes variation in heat levels, general heat levels are consistent for that particular variety or species. For examples, Red Habaneros are generally hotter than Orange and Jalapeño's can range anywhere from 4,000 Scoville heat units to 50,000 Scoville heat units. ‘Mitla’ is considered a medium jalapeño, while ‘NuMex Primavera’ is considered to be mild.

Chemical Structure of Capsaicin