



## Freeze Damage in Peanut

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This year's peanut harvest has been an excruciating travel through varying weather patterns all harvest season. It would seem that each time harvest gets up and running we have another weather event that throws the best laid plans into shambles. That has definitely been the case this year. After last year's issues with freeze damage on some of our peanuts recent cold weather has led to concerns about the proposition of freezing temperatures ultimately leading to freeze damage on peanuts and lowering of the value and quality of those peanuts.

With temperatures that dropped to freezing or below freezing on October 27, 2009 and for further predictions of potential freezing weather tonight there is concern over potential damage to peanut. However, there are several factors involved in this phenomenon including: ex-

posure time; and kernel moisture, maturity, and plant mass. The interaction of all these factors contributes to freeze damage.

Because of the multitude of factors involved it is difficult for anyone to make predications on the possibility that actual freeze damage will or will not occur.

Temperature obviously is a major factor in contributing to the possibility of freeze damage, but seed moisture is also a very important issue. Peanut is indeterminate in its growth habit, and therefore has kernels of varying maturity and size at harvest. Immature kernels will have higher moisture content than more mature kernels. Peanut with lower physiological development will be more susceptible to freezing temperatures. Peanut respiration will become anaerobic when exposed to freezing temperatures. This will lead to cell membrane disruption and leakage and an increased concentration of several volatile compounds. Fruity-fermented off-flavors will occur in the resulting damaged kernels.

Peanuts that have already been windrowed are much more susceptible to low temperatures than those that are in the ground. Soil temperatures will generally be much warmer than the surrounding air tempera-

ture and can provide insulation to peanuts that have not been dug. For example, while minimum air temperatures reached 30°F at Lamesa on October 27 the minimum soil temperature at a 2-in depth only reached 47°F. Unfortunately, in most cases peanuts have already been dug prior to the onset of this recent cold weather. One potential benefiting factor is that many of these peanuts had lain on the ground for a week or more so the moisture level should be lower than those that were recently dug. Sandwich dug windrows will also provide some level of protection to cold temperatures. If areas do receive a hard freeze peanuts should be dug as soon as the threat of nighttime freezing temperatures subsides. Once the vines start to deteriorate, so will the pegs attachment and delayed digging will result in an increase in yield loss.

Unfortunately, even with all of this information there is no right or wrong answer to the exact condition required for peanut to actually experience freeze damage. Therefore, our worst fears may be unfounded, but in turn unsuspecting damage may possibly occur, as well. We saw this happen with cold temperatures in 2008. If you have any additional questions please give me a shout at 940.552.9941 or [tbaughman@ag.tamu.edu](mailto:tbaughman@ag.tamu.edu)

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