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NEWS RELEASE

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Freeze Damage in Peanuts

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 is the case with the recent blue north'r that has blown in, leaving many areas with wet conditions that again have delayed harvest. Of even a bigger concern is the proposition of freezing temperatures that could ultimately lead to freeze damage on peanut and lowering of the value and quality of those peanuts.

Hourly weather records from November 1 to November 4 indicated that temperatures were at or below freezing (32°F) at the following locations: Earth – 44 hr, Lubbock - 20 hr, Wellington – 8 hr, Lamesa – 4 hr, Chillicothe – 2 hr, Munday – 1 hr (records indicate temperatures at or below freezing on the hour and not total hours of freezing temperatures). Temperatures were as low as 23° F at Earth, 26° F at Lubbock, 31° F at Lamesa, 27° F at Wellington, 30° F at Chillicothe, 31° F at Munday. These temperatures indicate that the potential for freeze damage does exist. However, there are several factors involved including: actual air temperature; exposure time; and kernel moisture, maturity, and 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 temperature and can provide insulation to peanuts that have not been dug. For example, while minimum air temperatures reached 23° F at Earth on November 3 the minimum soil temperature at a 2-in depth only reached 41°F. Unfortunately, in most cases peanuts had already been dug prior to the onset of this recent weather event. 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 limited level of protection to cold temperatures. Peanuts that were not dug prior to the onset of freezing temperatures should be dug as soon as fields dry. 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.

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