Germination and Emergence Effects on Peanut Seed Planted Directly from Cold Storage.

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Field and germinator experiments were conducted at the Texas AgriLife Research and Extension Center in Stephenville, TX to study the effects on germination and emergence when seed from cold storage (4°C) are planted before warm-up. Two years of field data were conducted in 2010 and 2011. The trials consisted of seven varieties with all four market types represented; three Runners, two Spanish, and one each of Valencia and Virginia. Two of the Runners and one Spanish were high O/L; the others had normal oil chemistry. The varieties tested were Florunner, Tamrun OL01, Tamrun OL07, Spanco, OLin, NC-7, and New Mexico Valencia C. In the field study seed were removed from cold storage and allowed to warm to 25°C over 24 hours. A second group of seed was removed from cold storage and planted immediately into the soil. Stand counts were taken at 14, 21 and 28 days. A germinator study was also conducted in a Stultz germinator with the same varieties, with a day/night cycle of 30°C day and 22°C night (16/8 hr.) and no supplemental light. Germination counts in this study were taken at 4, 7 and 14 days. All data were subjected to statistical analysis. The field study was analyzed as a split-split plot design. In the fixed effects analysis, variety and seed temperature were significant at the 5% level. The analysis of the germinator study was set up as a split-split split plot design. An additional split was introduced in order to examine the difference in replications due to seed treatments. The only significant difference between percent germination analysis and a square root transformation of the data was the variety x evaluation day interaction, thus the two years of field data for the percent germination were combined for analysis. There were a number of significant factors in the fixed effects analysis including seed treatment, variety, temperature and the three way interaction of all the variables at the 5% level. Conclusions from the data indicate that there were significant differences in emergence in the field and in germination in the laboratory between cold seed planted immediately and seed that were allowed to equilibrate to room temperature. Data would indicate that further research is need in this area, especially where the number of varieties and market types are concerned. An estimated 14 to 16 varieties are needed in a similar study to ascertain if there are real differences between market (and/or botanical) types.