

5. Relation between air temperature, relative humidity, and grain setting.

Self and cross pollinations were made at random on 17 open pollinated varieties and hybrids in two different seasons: in the spring time when the mean daily air temperature over a 15 day pollination range was 15.6°C, and in early summer when the mean air temperature over a 12-day pollination period was 21.5°C. In the summer series, further, there were two types of pollination: one using tassel paper bags, and another with the bottle method of pollination. The mean relative humidities for both seasons were 87.1%, and 77.6%. The variation in temperature was not larger than two degrees at either side of the mean in both seasons. The variation in humidity was of 5% at either side of the mean in both seasons. The number of ears studied for percentage of grain setting, attention being paid to silk age when pollinated, was of over 300 for the spring series, and 130 for the summer series.

Linear correlation coefficients were calculated between the variables mean air temperature, relative humidity and percentage of grain set on the ear for both seasons, with values shown below:

<u>Correlation between:</u>	<u>Spring (15.6°C)</u>	<u>Summer (21.5°C)</u>	
		<u>Tassel bags</u>	<u>Bottles</u>
Temperature and grain set	0.175	-0.717	-0.882
Humidity and grain set	0.335	0.069	0.079

While the air temperature was below 18°C, there was a low but positive correlation between air temperature and grain setting. As the air temperature went above 18°C, a highly significant negative association between air temperature and grain setting became established. No effect of relative humidity, at the values prevailing at the time of the study, on grain setting was apparent.

Alexander Grobman and
Antonio Manrique