

TEMPERATURE COMPARISONS IN MONITORING REPORT

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Yield reductions in numerous high yielding forms have been so severe that shocked growers find explanations difficult. There does appear to be considerable correlation between July mean temperatures and cotton yields in Maricopa County. Earlier the COTTON MONITOR reported July-August temperatures in 1970 were the hottest on record and that July was the hottest since 1933.

Research had indicated that abnormally high night temperatures may retard blooming and reduce yield. Blossom tagging records during the last five years of monitoring and reporting plant development has indicated poor boll retention during seven- to ten-day periods of high maximum temperatures in July. Since peak blossoming occurs in July and this is the hottest month, this period appears most critical in cotton fruiting.

Sixty to eighty-four percent of fruit-producing blossoms developed by July 26 under medium to wet irrigation regimes of Deltapine Smoothleaf cotton at the Cotton Research Center. Consequently monitoring reports have emphasized July temperature patterns even more than early and late season effects of temperature. Other periods do modify plant development as during 1965 when a cool spring retarded plant size to reduce yields below the 1963 level. Yields for several years in Maricopa County are compared in Table I, with mean and minimum July temperatures, when skip row regulations were similar.

Table I

Mean Temperature and Cotton Yields

<u>Yield Rank</u>	<u>Year</u>	<u>July Air Temperature</u>		<u>S/S</u>	<u>L/S</u>	<u>L/S / of S/S Yield</u>
		<u>Mean</u>	<u>Min.</u>	<u>Lbs. Lint</u>	<u>Lbs. Lint</u>	
1.	1956	(1) 87.9	(1) 75.9	1211	732	60.4
2.	1957	(2) 91.4	(2) 79.6	1149	671	58.4
3.	1958	(3) 93.6	(3) 80.2	1028	501	48.7
4.	1959	(4) 94.0	(4) 81.9	961	451	46.9
1.	1968	(1) 90.2	(3) 77.1	1319	797	60.4
2.	1962	(1) 90.2	(1) 75.3	1213	668	55.1
3.	1963	(3) 91.5	(4) 77.7	1142	560	49.0
4.	1965	(2) 91.0	(2) 76.7	1139	657	57.7
5.	1969	(4) 93.1	(4) 81.3	1042	402	38.6
6.	1970	(5) 95.0	(5) 83.3			