

Planting Method and Date	Type of Mulch Used			Mean
	Coke	None	Petroleum	
Shaped beds, Planted dry, Watered up March 18	4,130	3,635	3,735	3,833
Planted in moisture, Con- ventional method, March 25	3,825	4,054	2,793	3,557
Shaped Beds, Planted dry, Watered up March 30	3,577	3,670	3,526	3,591
Mean for Mulch Treatment	3,884	3,786	3,351	3,660

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#### MOISTURE-COMPACTION TESTS

M. D. Cannon, Agricultural Engineer

An experiment was designed to evaluate the effect of soil moisture and compaction pressure on seedling emergence. A clay loam soil was used.

Four levels of moisture, 14, 16, 18, and 20 percent were used in combination with four compaction pressures, 0, 1/2, 1, and 2 pounds per square inch. Previous tests had indicated that pressures above 2 p.s.i. would inhibit emergence.

Results from this test indicated that any combination of compaction and moisture within these ranges were optimum for emergence.

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#### COMPACTION REDUCES COTTON PRODUCTION EFFICIENCY

C. R. Farr, Agricultural Extension Agent, Maricopa County

Compaction lowers the efficiency of cotton production. Some of the yield decline in fine-textured soil areas appears to have been caused by loss of desirable soil structure.

Timeliness in field operations may reduce the amount of damage caused by compaction. Tests in a demonstration field having clay loam soil showed that waiting 10 days after an irrigation before cultivating was desirable.

### Compaction by Cultivation

	(Days After Irrigation Before Cultivating)			
	10	9	8	7
	Bulk density	1.34	1.38	1.55

Bulk density of 1.38 is favorable whereas 1.65 is unfavorable. Timing of cultivation made the difference.

#### Compaction Layer Stopped Downward Movement of Roots

A compaction layer at the 21- to 22-inch depth was identified consistently with a penetrometer and other tests revealed a very high bulk density of 1.8 to 1.9 on this layer. Cotton roots barely penetrated this layer, while water moved below the 22-inch depth. However, a semi-perched water table existed at this layer throughout the summer to limit root activity.

#### Excess Water Accumulated Above Compaction Layer

Furrow-irrigated	Sprinkler-irrigated
Field capacity to super-saturated	None

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#### COTTON IRRIGATION TEST - 1966

Lloyd L. Patterson, Research Associate in Agronomy  
 Robert E. Briggs, Associate Agronomist  
 David L. Kittock, Agronomist, USDA

Two alternate-row irrigation treatments were compared to an every-row irrigation treatment with three moisture levels on Hopicala and Delta Pine Smooth Leaf (DpSL) varieties. The two alternate-row irrigation treatments were: (1) Applying water for the same duration as the every-row irrigation treatment but applying the water twice as often; (2) Applying the water at the same frequency as the every-row treatment but running the water twice as many hours. The three moisture levels used were irrigation when 45, 60, and 75 percent of the moisture was depleted, respectively.

There were no statistically significant differences among the methods of irrigation. However, the two wettest treatments were significantly better than the driest treatment. The two varieties reacted similarly to all irrigation treatments.