

# **NARROW ROW COTTON DISTRIBUTION AND RATIONALE**

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## **Abstract**

Cotton producers in the United States have made continued attempts to grow the crop on various row spacing and row configurations. Configurations used include double rows on beds ranging from 6 inches to 14 inches and single rows ranging from 19 inches to 40 inches. Narrow row cotton culture has increased about ten-fold during the past 20 years. Most narrow row cotton currently consists of 30 inch, 32 inch, and some 36 inch systems. Increased yields is the most common rationale for narrow row cotton, but convenience of growing it with other crops which lend themselves to 30 or 32 inch rows is also important. Other benefits reported include water savings, earliness, better response to the growth regulator pix, improved lint quality, fewer pesticide applications, and better use of solar radiation.

## **Introduction**

Various row configurations have been attempted throughout the history of cotton growing in the United States. Since tractor tires were narrower than horse rumps, 40 inch rows were no longer necessary. Researchers and growers tried double rows on beds ranging from 6 inches to 14 inches and single row beds ranging from 19 inches to 30 inches. In many cases yields were increased due to the increased plants per acre, but harvesting was a problem. Conventional harvesters could only be narrowed to 36 inches. Any crop planted closer together, or on multiple row configurations, had to be harvested by a brush stripper.

## **Distribution of Narrow Row Cotton**

The number of acres planted to narrow row cotton varied from year to year in cotton growing areas throughout the cotton belt. A survey in 1973 indicated that approximately 63,500 acres were cropped to rows 30 inches or narrower (Table 1). Texas had the most narrow row cotton with about 32,000 acres planted on two rows per bed. During the same period, California had about 3,800 acres, most of which was single row 30 inch. Mississippi and Arizona also had significant acreage of cotton planted on variations of two rows per bed.

A recent questionnaire showed that acres planted to narrow rows have increased dramatically during the past 20 years (Table 2).

Reports from specialists in various states across the cotton belt indicate that approximately 8% of the cotton land is planted on narrow rows, this includes both 30 and 32 inch rows. Total acreage has increased to more than 500,000 acres since 1973.

California now has the largest percentage of their acreage planted on narrow rows, but Texas has the most total acres. All states surveyed have increased their narrow row cotton production.

## **Rationale for Narrow Row Cotton**

The most common reason for narrow row culture of cotton is due to the potential for increased yields. Summary of more than 50 replicated trials in California showed an increase of 6.9% when cotton was grown on 30 inch rows as compared to 38 inch or 40 inch rows. A 12 year summary of 30 inch cotton grown in the northern part of California's San Joaquin Valley showed a benefit of 10.0% in lint yield. These increases occurred when 30 inch cotton was grown using cultural practices in favor of 38 inch or 40 inch cotton. Therefore, the total potential for the narrow row culture was underestimated.

Rationale for cropping cotton on narrow rows in many states include the convenience of growing cotton with other crops which can also be planted to 30 inch or 32 inch rows. Crops such as corn and soybean use narrow row systems. Planters, cultivators, and tractor wheels do not need to be moved each time a different crop is grown in rotation, therefore it is less complicated and less expensive to plant all crops on the same row spacing. Irrigation water efficiency is possible with narrow rows especially where alternate furrow irrigation is used.

Higher plant populations resulting from narrow rows, help to compensate for low yield capability on sandy soils, eroded soils, or soils with saline-sodic problems. Also, in some cultivars, first position bolls, are larger and are of superior quality to second or third position bolls. In California, populations of approximately 60,000 plants per acre, on 30 inch rows, result in almost all first position bolls.

Innovative farmers try new systems based on reports of success in other areas or other states. Some continue after changing, while others abandon the new practice.

Peanut production is mostly on 36 inch rows. Producers who grow peanuts and cotton tend to plant both crops on the same row spacing. In California one finds, sugarbeet, corn, sorghum, and bean on 30 inch rows. Also, tomato

and melon can be grown on 60 inch rows, which also fits the 30 inch system.

Increased benefits from the use of the growth regulator Pix on 30 inch rows has been demonstrated. The average response was an increase of 7% in lint yield on 30 inch rows as compared with the same rates and timings of Pix on 40 inch rows.

During the late 1970's in California, researchers were listing numerous benefits to narrow row cotton culture. Claims included such benefits as earlier crop maturation, fewer irrigations, fewer pesticide applications, more opportunity for double cropping, lower energy requirements to list eight 30 inch beds than six 40 inch beds, better use of solar radiation due to foliage covering the furrow sooner, as well as increased yields.

Most of their claims can be shown to be true in some cases. Increased yields usually occur. However, earliness, fewer irrigations and less pesticides, are more difficult to measure.

**TABLE 1. Acreage of Narrow Row Cotton in Selected States in 1973.**

<u>States</u>	<u>Row Configurations</u>			<u>Total</u>
	<u>2 row per bed</u>	<u>6" to 14"</u>	<u>19" to 30"</u>	
South Carolina	-----	-----	60	60
Georgia	300	-----	200	500
Tennessee	150	-----	-----	150
Mississippi	15000	175	-----	15175
Texas	32850	1935	3865	38650
Arizona	3600	200	1200	5000
California	1550	70	2225	3845
<b>Total</b>	<b>53450</b>	<b>2380</b>	<b>7550</b>	<b>63380</b>

**Table 2. Percentages of Total Cotton Acreage Currently Planted to Narrow Rows in Selected States.**

<u>State</u>	<u>% Acreage</u>
Alabama	.13
Arkansas	3.0
Arizona	.02
California	.3 - .4
Georgia	3.1
Louisiana	2.1
North Carolina	.07
Tennessee	.05
Texas	.15
New Mexico	.05 - .1
Lubbock	.5
Mississippi	.05 - .07
Missouri	.05
Oklahoma	.05
South Carolina	.01
<u>Average</u>	<u>8.2</u>

**Table 3. Acreage of Narrow Row Cotton in California in 1973 and in 1995.**

<u>County</u>	<u>1973</u>	<u>1995</u>
	<u>Double Row / 19-30"</u>	<u>30"</u>
Fresno	50	1150
Imperial	600	-----
Kern	100	-----
Kings	-----	95
Madera	50	-----
Merced	450	-----
Riverside	300	-----
Tulare	-----	980
<b>Total</b>	<b>1550</b>	<b>2225</b>