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The 1999 Production Year

Specialists share their synopses of the 1999 production year for each of four different production regions of the U.S. Cotton Belt. Weather patterns were not the norm in most areas and greatly affected crop development, fiber quality and yields.

West (AZ, CA)

Throughout most of this all-irrigated region, the season began with a very cool, wet spring that made planting and early crop establishment difficult (Figure 1). In spite of a rough start, the 1999 crop performed relatively well overall. In Arizona *Lygus* presented the greatest challenge from a pest management perspective. In California insect pressures (aphid, silverleaf whitefly and lygus) were relatively light.

A notable shift in acreage of upland and pima cotton occurred. In recent years most of the pima acreage has been planted in the San Joaquin Valley of California. Meanwhile, pima acreage has declined in Arizona. Yields for both upland and pima varieties were good, about average, for this region.

Growers in the San Joaquin Valley were able to plant upland varieties not approved first by the San Joaquin Valley Cotton Board. Many non-Acala (standard upland) varieties were planted. Although the planting of standard upland varieties in the San Joaquin introduced many transgenic varieties, Arizona still had a greater percentage planted than California.

J.C. Silvertooth

Figure 1. Cool weather made planting and stand establishment difficult in the West.

Southwest (NM, OK, TX)

Erratic weather at planting and harvest characterized the Southwest's season. The High Plains and Rolling Plains of Texas started the year with good subsoil moisture. Initial planting was timely and stand establishment good when thunderstorms, heavy rain, and hail wiped out many acres. Continued rain prevented a lot of acreage from being replanted to cotton.

INSIDE:

The Cotton Physiology Education Program (CPEP), now in its 11th year, is funded by a grant to the Cotton Foundation by BASF, makers of Pix®Plus plant regulator. CPEP's mission is to discover and communicate more profitable methods of producing cotton.

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Most areas of this region had adequate rain during June, but July and August were extremely dry, stressing the crop and reducing yield and quality. Most irrigated production suffered some loss because of this drought. Many dryland acres were not harvested. Those that were harvested produced patchy yields.

A late fall, accompanied by rain that relieved the drought, resulted in some additional bolls being filled. Hurricane Bret hit during South Texas' harvest and damaged the cotton not yet harvested.

In general, first fruiting positions occurred normally (between nodes five and seven) or slightly higher than normal. Most irrigated cotton developed on stalks 6 to 12" shorter than usual (Figure 2). Plants were well-fruited at the top, especially in boll weevil eradication areas.

B.E. Warrick

Figure 2. Irrigated stripper cotton at harvest.

In 1999 insect pressure was lower than in previous years. All areas reported less spraying for early season insects. The biggest break in most areas was lack of bollworm pressure. The increase in Bt cotton acreage also contributed to the lower damage from bollworms. Almost half the acreage of this region is in some phase of a boll weevil eradication program.

Stress endured by the crop during bloom and fiber development was reflected in lower quality fiber. In areas affected by reduced root systems and/or lack of rain in July and August, fiber length was shorter and micronaire was higher than normal. Cotton fiber strength was high in most areas, particularly where stripper varieties were grown on the plains.

Mid-South (AR, LA, MO, MS, TN)

In 1999, cotton was planted in record time in Missouri. In Mississippi, however, planting was spread over the months of April and May. May and June brought good weather and crop development was better than normal. However, July, August and September were extremely dry. This drought hit dryland cotton hardest, producing a very short crop that cutout quite early. Bolls opened prematurely in many fields. Dryland cotton was harvested very early.

Irrigated fields performed much better (Figure 3). Cotton opened closer to a normal date. Well irrigated fields produced a very good crop. The irrigated crop was harvested slightly earlier than normal. Weather during harvest was outstanding. Ginning was completed quite early.

Many growers practiced alternative production systems as a means to reduce costs. Conservation tillage, ever-more popular, was used to reduce the cost of production for growers in much of this region. In Tennessee, 24% of the acres were not tilled. Some growers tried ultra narrow row production. However, because UNR cotton is harvested usually with a broadcast stripper, it has not been well accepted at most cotton gins.

B.J. Phipps

Figure 3. An irrigated Mid-South field at harvest.

Pests causing growers the most problem varied around the region. Thrips were unusually severe early in the growing season. In Mississippi, aphids were also bad early. Spider mites flared up in Missouri and Arkansas. Reniform nematodes harmed cotton in parts of Mississippi. A late-season outbreak of bronze wilt occurred in western Tennessee.

More than 500,000 acres were harvested in this region than in 1998. Average yield was up, but still lower than the 5-year average. Transgenic varieties were prevalent.

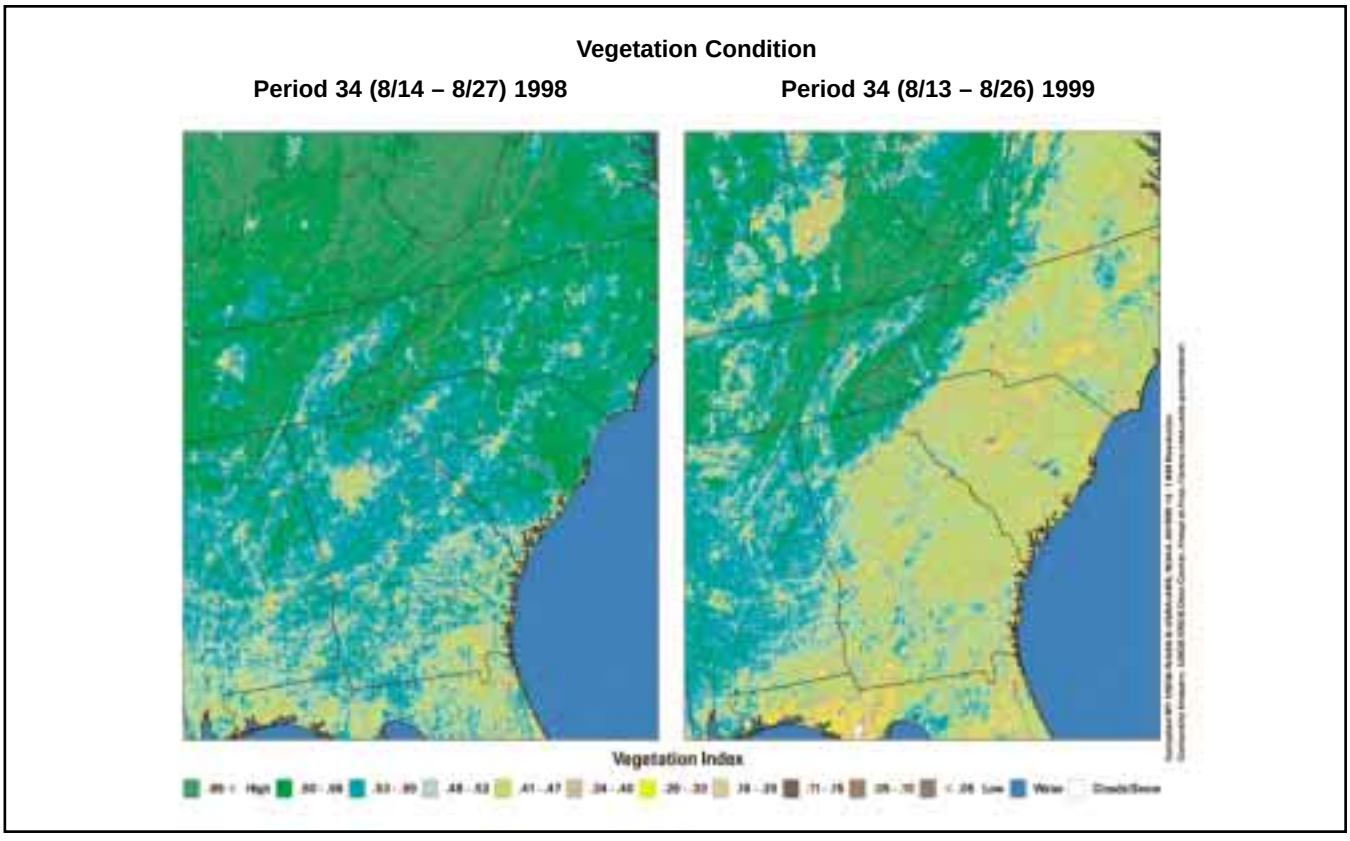
Color grades were outstanding. Trash content was low. Fiber length was unusually short (1/32 to 3/32 shorter than normal). Micronaire was much higher than normal, except in Mississippi. Many bales were discounted because of high micronaire.

Because the winter and early spring were generally dry in 1999, limited subsoil moisture was available when the crop was planted. Seed supply and quality were limited because of poor conditions in the seed producing areas in the 1998 season.

As a result of having a short supply of seed of proven cultivars, combined with an increased demand for transgenic varieties, growers had no option but to plant significant acreage in varieties with little or no local performance history. Stand establishment problems occurred with some varieties having marginal seed vigor.

Weather was the most critical factor affecting 1999 production. Moderate temperatures and occasional rains produced reasonable vegetative growth and excellent fruit set until mid-July. Cotton observers across the Southeast all agreed, "we have an outstanding crop."

Unfortunately, an extreme shift in weather hit. Drought, high temperatures, and high humidity occurred from mid-July to mid-August. This stress affected all vegetation in the Southeast, not just cotton, as clearly indicated by the vegetation indices (Figure 4). During the last two weeks of August of 1999, plants in the Southeast showed much lower vigor than they did for the same time in 1998. These stressful conditions decimated what had been an exceptional cotton crop.



USDA/ NASS/ NOAA

Figure 4. Vegetation indices for end of August in 1998 and 1999, showing effect of severe drought in 1999.

Figure 5. In some South Carolina fields seeds rotted in bolls. S.M. Brown

Figure 6. Galls on roots caused by root knot nematode. S.M. Brown

As in the Southwest, severe stress during bloom and boll maturation significantly reduced yield and staple length. Seed rot occurred in parts of South Carolina (Figure 5). More than 40% of the bales produced in Georgia in 1999 were discounted because of short staple.

Insect pressure was low across Georgia. Pyrethroid resistance was suspected in several areas of the state. Stink bugs were a serious pest in some areas, particularly southwestern Georgia.

Nematode pressure increased. In addition to root knot nematode, lance and reniform affected cotton acreage (Figure 6).

Beltwide Summary

The varieties planted to the most acreage in the different regions are listed in Table 1. Transgenics totaled about 60% of plantings (up another 15% from 1998).

Table 1. Approximate percentage of total planted acreage by region in specific cotton varieties in 1999. (Source: USDA)

Region	Company	Variety	~ % Acreage
West	CPCS D*	Acala Maxxa	29.64
	Deltapine	NuCotn 33B	13.27
	CPCSD*	Acala GTO M	9.74
	Deltapine	DP 6211 Acala	3.87
	Deltapine	NuCotn 35B	3.35
	Stoneville	BXN 47	2.56
	Phytogen	PHY 33 Acala	2.47
Southwest	Paymaster	PM 2326 RR	18.10
	Paymaster	HS 26	13.45
	Paymaster	PM 2200 RR	11.89
	Deltapine	DP 50	5.13
	Paymaster	HS 200	4.51
	Deltapine	DP 2379	2.38
	Deltapine	Acala 90	2.28
Mid-South	Stoneville	BXN 47	22.11
	Deltapine	NuCotn 33B	17.46
	Stoneville	ST 474	8.89
	Paymaster	PM 1220 BG/RR	8.25
	Deltapine	DP 20 B	4.19
	Sure-Grow	SG 125	4.14
	Deltapine	DP 458 B/RR	3.44
Southeast	Deltapine	DP 458 B/RR	13.97
	Deltapine	DP 655 B/RR	12.42
	Deltapine	NuCOTN 33B	7.64
	Deltapine	DP 5415 RR	5.12
	Deltapine	DP 5690 RR	5.02
	Paymaster	PM 1220 BG/RR	5.00
	Stoneville	BXN 47	4.41

*California Planting Cotton Seed Distributors

USDA

Harvested upland cotton acreage in 1999 increased compared to 1998 and the 5 year average, most notably in the Southwest. Only the West showed a decrease in harvested acreage compared to 1998 (Table 2). Both the West and Mid-South lost acreage compared to the 5 year averages.

Table 2. Harvested acreages of U.S. upland cotton — '99, '98, and over the last five years (5 year). (Source: USDA December figures)

Region	Acreage, million acres '99	'98	5 Year
West	0.87	0.89	1.26
Southwest	5.32	3.24	4.99
Mid-South	3.69	3.09	3.86
Southeast	3.19	2.92	2.92
TOTAL	**13.07**	**10.14**	**13.04**

USDA

Whereas pima acreage harvested dropped in Arizona, it increased markedly in 1999 compared to 1998 and the 5 year average in California (Table 3). In the Southwest (New Mexico and Texas), pima acreage has remained about the same over the last 5 years.

Table 3. Harvested acreages of U.S. pima cotton — '99, '98, and over the last five years (5 year). (Source: USDA December figures)

STATE	Acreage, thousand acres '99	'98	5 Year
Arizona	10	16	35
California	239	180	145
New Mexico	8	7	12
Texas	32	32	32
TOTAL	**289**	**235**	**224**

USDA

In 1999 yields increased over 1998 values in the West and Mid-South and decreased in the Southwest and Southeast (Table 4). Compared to 5 year averages, both the West and Southwest had higher yields in 1999, but growers in the Mid-South and Southeast had lower ones.

Table 4. Yields of U.S. upland cotton — '99, '98, and 5-year averages. (Source: USDA)

Region	Yield, pounds per acre '99	'98	5 Year
West	1246	924	1108
Southwest	477	525	456
Mid-South	667	654	717
Southeast	538	583	655
Average	596	616	641

USDA

As for pima cotton, yields increased in the West and decreased in the Southwest compared to 1998 values and 5 year averages (Table 5).

Table 5. Yields of U.S. pima cotton — '99, '98, and 5-year averages. (Source: USDA)

State	Yield, pounds per acre '99	'98	5 Year
Arizona	960	830	807
California	1245	941	1044
New Mexico	608	658	682
Texas	705	791	815
Average	608	625	646

USDA

Production in million bales increased Beltwide from 1998. However, production in 1999 compared to 5 year averages was lower in all regions except for the Southwest (Table 6).

Table 6. Production of U.S. upland cotton — '99, '98, and 5-year averages. (Source: USDA)

REGION	Production, million bales '99	'98	5 Year
West	2.26	1.73	2.91
Southwest	5.28	3.55	4.74
Mid-South	5.13	4.21	5.76
Southeast	3.58	3.54	3.98
Average	16.24	13.02	17.39

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Conclusions

An increase in harvested acreage, most notably in the Southwest, resulted in increased production compared to 1998, but not more than the 5 year average. Continuing to rapidly adopt new technologies (e.g. 60% of the 1999 crop was transgenic varieties), growers across the U.S. Cotton Belt continue to produce outstanding crops (Figure 7).

J.C. Silvertooth

Figure 7. Sunset over irrigated cotton.

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