

**PHY 78 ACALA: A NEW ACALA VARIETY FOR
THE SAN JOAQUIN VALLEY, CA**
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Abstract

Phytogen Seed Co. LLC has introduced a new Acala variety that exhibits high yield potential in the San Joaquin Valley, CA. PHY 78 Acala was developed by the Phytogen Seed Co. breeding program at Corcoran, CA since 1993 and is widely adapted in the central-west side through the northwest areas of the San Joaquin Valley, CA. The key objective in developing PHY 78 was to develop a Acala variety which would capture the full-season potential of the SJV and product consistent high yield. Over three years (2000 – 2002) of Advanced Strains Testing by Phytogen, PHY 78 yielded significantly more than Maxxa (the San Joaquin Valley Cotton Board standard Acala variety) by one hundred twenty nine pounds of lint per acre (a yield advantage of eight percent). In trials conducted by the San Joaquin Valley Cotton Board (SJVCB) and the UC Cooperative Extension, PHY 78 also yielded significantly more than Maxxa. PHY 78 fiber qualities are equal to that of Maxxa while fiber micronaire is significantly improved. The significantly lower micronaire of PHY 78 is proven to the advantage in that PHY 78 fiber is significantly finer and more mature than Maxxa. This attribute is highly desired by end users in spinning and textile manufacturing.

Introduction

The western cotton growing region of the San Joaquin Valley, California has experienced exceptional cotton production for lint yield in recent years. Production exceeding four bales per acre has dispelled an early 1990's perspective that a yield plateau may have existed and little improvement in yield would be achieved in the future. Improved farming practices have certainly contributed to the recent high production. However, breeding and research efforts continue to produce and contribute improved cotton varieties. PHY 78 Acala is a new cotton variety, developed for California's San Joaquin Valley by Phytogen Seed Company, LLC by crossbreeding and pedigree selection between 1993 and 1996 as a early-mid season maturity variety. It has been widely tested in the highly productive irrigated San Joaquin Valley, over wide soil types of sandy loam to heavy clay loams, and heat unit accumulations differing as much as 300 H.U. To introduce PHY 78, results of yield and fiber quality comparisons will be discussed.

Materials and Methods

Phytogen conducted performance tests between 1997 and 2002. PHY 78 advanced in early program testing from 1997 to 1999, at which time Phytogen Advanced Strain Testing and public testing were conducted. PHY 78 was compared to Maxxa, the San Joaquin Valley Cotton Board (SJVCB) standard Acala variety, in randomized complete block designs with four replications. Yield and fiber quality data were collected. Fiber properties were evaluated on high volume instrumentation (HVI) and individual instruments.

Results and Discussion

2000 – 2002 Phytogen Seed Co. Advanced Strains Tests (AST) results are shown in Figure 1. PHY 78 yields were significantly higher than those of Maxxa in all three years and over years with a yield advantage of 8%.

2000 – 2001 San Joaquin Valley Acala Variety Trial results are shown in Figure 2. PHY 78 yields were significantly higher than those of Maxxa in each year and over years with a yield advantage of 8%, similar to results of Phytogen tests. These public trials represented 15 test locations and were the official trials by which PHY 78 Acala was approved for release and commercialization in March of 2002.

2002 UC Cooperative Extension Approved Acala Trial results are shown in Figure 3. PHY 78 yields were significantly higher than those of Maxxa over eight locations with a 4.3% lint yield advantage.

Numerous test locations over years is revealing that PHY 78 and PHY 72 are leading varieties for high lint yield production in the San Joaquin Valley. PHY 78 has demonstrated best yield performance and adapted in central, Westside, and North-west cotton growing areas.

Fiber quality results by HVI are shown in Table 1. PHY 78 exhibited high fiber qualities equal to Maxxa while fiber micronaire of PHY 78 is significantly lower. Fiber quality results by individual instruments are shown in Table 2. Similar to HVI

fiber quality results, PHY 78 exhibited fiber qualities equal to Maxxa with fiber micronaire of PHY 78 is significantly lower. In evaluations of the inherent components of fiber micronaire, PHY 78 is proven to have an improved micronaire. Component traits of fiber fineness and fiber maturity for PHY 78 are significantly improved in comparison to Maxxa.

Summary

In Phytogen Advanced Strains trials, San Joaquin Valley Cotton Board trials, and UC Coop Ext trials, conducted over three years (2000 – 2002), PHY 78 Acala has shown a significant yield advantage over Maxxa and has exhibited wide adaptation in yield performance in the San Joaquin Valley of California. PHY 78 Acala is an early-mid maturity Acala variety developed to capture the full season yield potential of the SJV growing region. It has high quality fiber equal to Maxxa and significantly improved fiber fineness and fiber maturity. PHY 78 is expected to make an impact in the San Joaquin Valley cotton industry.

Table 1. Fiber Quality Traits (HVI, 15 Locations, 2000-2001).

	Maxxa	PHY 72	PHY 78
Length	1.16	1.20*	1.16
Uniformity	83.0	82.6	82.8
Strength T1 (g/tex)	33.6	33.5	32.3
Micronaire	4.24	4.38*	3.98*

* Indicates a significant LSD value at alpha = .05.

Table 2. Fiber Quality Traits (Individual Instruments, 15 Locations, 2000-2001).

	Maxxa	PHY 72	PHY 78
2.5% Span Length	1.17	1.17	1.18
Uniformity Ratio	48.4	47.9	48.8
Strength T1 (g/tex)	23.9	23.8	24.5*
Elongation	6.8	7.8	7.6
Micronaire	4.18	4.12	4.02*
Fineness (millitex)	165	167	160*
Perimeter (areal.)	46.7	44.0*	43.7*
% Maturity (areal.)	83.8	87.4*	86.2*

* Indicates a significant LSD value at alpha = .05.

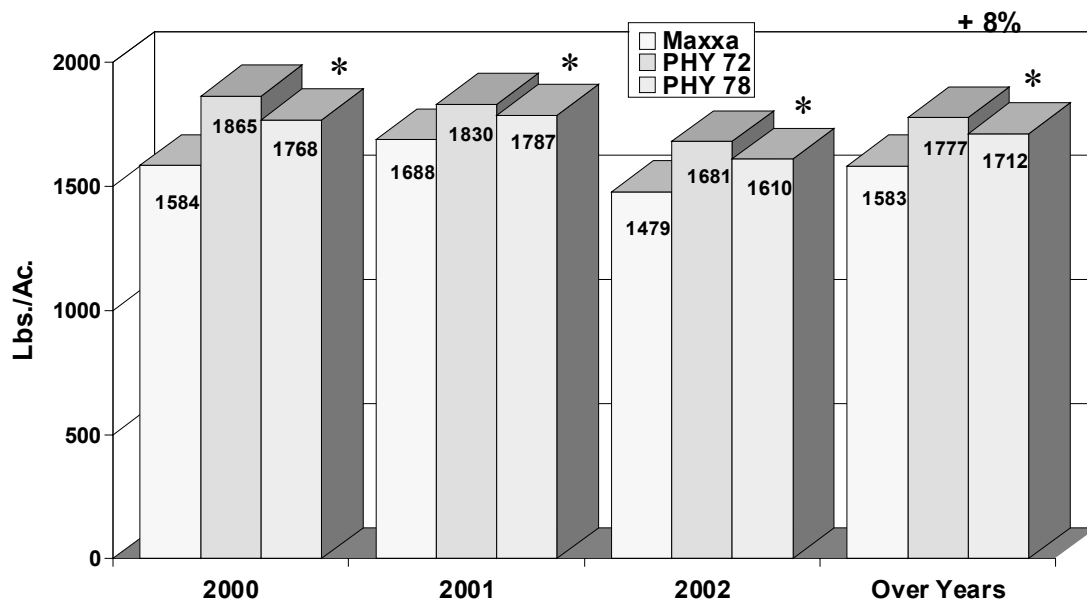


Figure 1. Phytogen Advanced Strains Trials, over years 2000 – 2002.

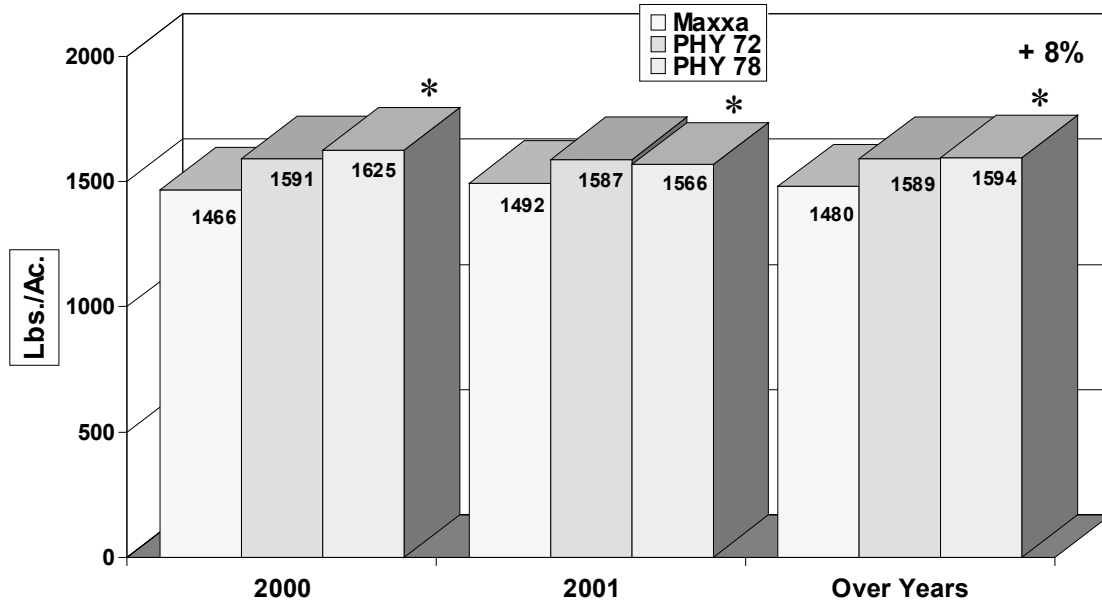


Figure 2. San Joaquin Valley Cotton Board Acala Variety Trials, over years 2000 - 2001.

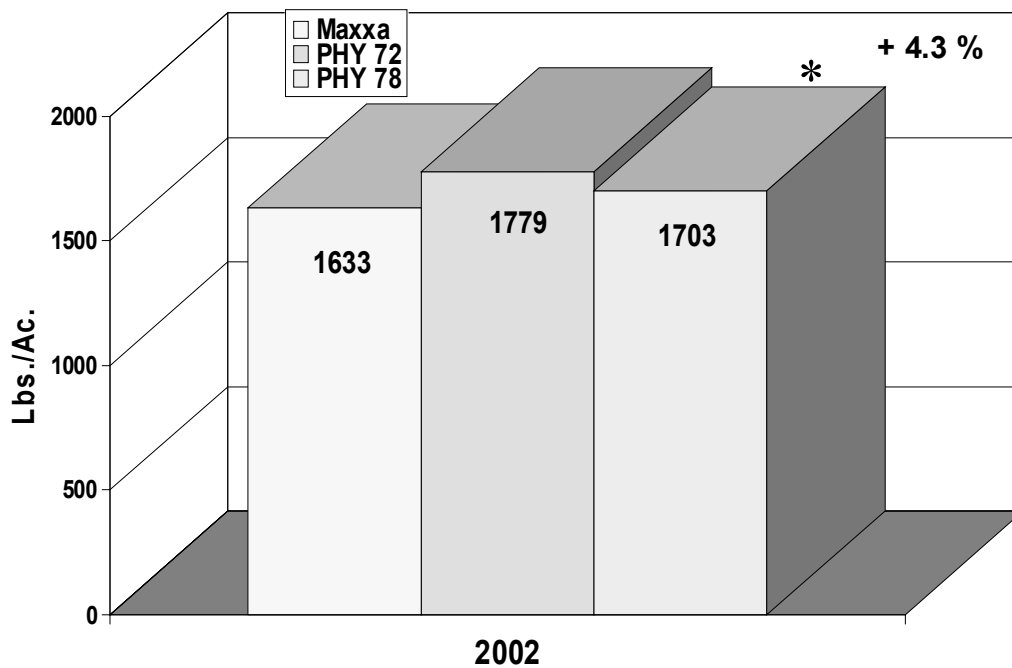


Figure 3. UC Cooperative Extension Approved Acala Trials, 2002.