

**PHY 72 ACALA, A QUANTUM LEAP IN  
LINT YIELD FOR CA GROWERS**  
**Joel F. Mahill, John W. Pellow, H. B. Cooper, Jr.,  
David M. Anderson and John C. Palmer**  
**Phytogen Seed Company, LLC**  
**Corcoran, CA**

**Abstract**

PHY 72 Acala is a new, high yielding and widely adapted Acala cotton variety for California's San Joaquin Valley. Over three years of Advanced Strains Testing by Phytogen at fifteen locations, PHY 72 yielded significantly more than Acala Maxxa (the San Joaquin Valley Cotton Board standard Acala variety) by two hundred twenty five pounds of lint per acre (an increase of fourteen percent). Over three years of testing by the San Joaquin Valley Cotton Board (SJVCB) at twenty three test locations, PHY 72 yielded significantly more than Maxxa by nearly twelve percent. PHY 72 fiber is superior to that of Maxxa with significantly longer staple length and improved fiber elongation. Micronaire for PHY 72 was significantly higher while remaining in premium ranges. PHY 72 planting seed is readily available in 2001.

**Introduction**

PHY 72 Acala is a new cotton variety, developed for California's San Joaquin Valley by Phytogen Seed Company, LLC by crossbreeding and pedigree selection between 1990 and 1995. 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 72, results of yield and fiber quality comparisons will be discussed.

**Materials and Methods**

Performance trails were conducted by Phytogen between 1997 and 2000. At each location, PHY 72 was compared to Maxxa, the 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.

PHY 72 was also evaluated by the San Joaquin Valley Cotton Board (SJVCB). A total of twenty three trials were conducted in 1998, 1999, and 2000. At each location, PHY 72 was compared to Maxxa in randomized complete block designs with four replications.

**Results and Discussion**

Results of Phytogen's 1997 Preliminary Strains Tests (PST) are shown in Figure 1. PHY 72 yields were higher than those of Maxxa at all locations with a significant over location yield advantage of 14%. It was at this juncture that PHY 72 continued in Phytogen Advanced Strains Testing (AST) program and concurrently the SJVCB Variety Tests for the years 1998 through 2000.

Results of Phytogen's 1998 Advanced Strains Tests (AST) are shown in Figure 2. PHY 72 yields were significantly higher than those of Maxxa at each of three locations with a 35% yield advantage over locations.

Results of Phytogen's 1999 Advanced Strains Tests (AST) are shown in Figure 3. PHY 72 yields were significantly higher than those of Maxxa at two of seven locations as well as over locations with a 10% yield advantage.

Results of Phytogen's 2000 Advanced Strains Tests (AST) are shown in Figure 4. PHY 72 yields were significantly higher than those of Maxxa at three of five locations with a 12% yield advantage over locations.

An over years yield comparison of PHY 72 and Maxxa tested in all Phytogen AST Trials from 1998 to 2000 is shown in Figure 5 (15 trials total). The mean yield over years of PHY 72 was significantly higher than Maxxa by 14% or 225 pounds of lint per acre with eight of fifteen trials having significant lint yield advantage over Maxxa.

An over years yield comparison of PHY 72 and Maxxa tested in all SJVCB Acala Variety Trials from 1998 to 2000 is shown in Figure 6 (23 trials total). The mean yield over years of PHY 72 was significantly higher than Maxxa by 12% or 159 pounds of lint per acre with seventeen of twenty three trials having significant lint yield advantage over Maxxa.

Fiber quality results by HVI are shown in Table 1. PHY 72 fiber exhibited significantly longer fiber length and higher fiber elongation. Micronaire was significantly higher while remaining in premium ranges.

Fiber quality results by individual instruments are shown in Table 2. Similar to HVI fiber quality results, PHY 72 fiber exhibited significantly longer 2.5% fiber span length and higher fiber elongation. Micronaire was significantly higher while remaining in premium ranges and fiber uniformity was slightly lower than Maxxa.

**Summary**

In multiple Phytogen Advanced Strains Tests and SJVCB Variety Trials conducted over three years (1998 – 2000), PHY 72 has shown a significant yield advantage over Maxxa of 12% plus. PHY 72 has exhibited wide adaptation in yield performance and is expected to make an impact in the San Joaquin Valley cotton industry. Fiber quality of PHY 72 is significantly improved over Maxxa in length and elongation.

**References**

San Joaquin Valley Cotton Board. 1998 – 2000. Acala Variety Test Results.

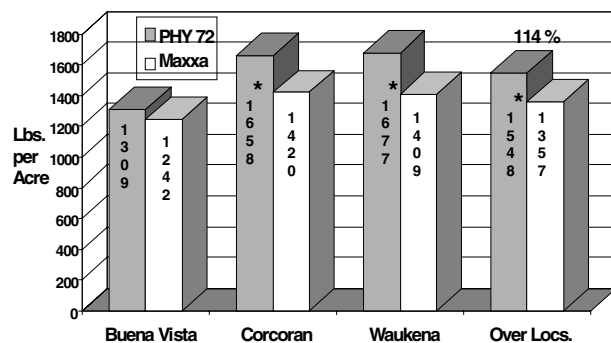


Figure 1. 1997 Phytogen Preliminary Strains Tests (PST).

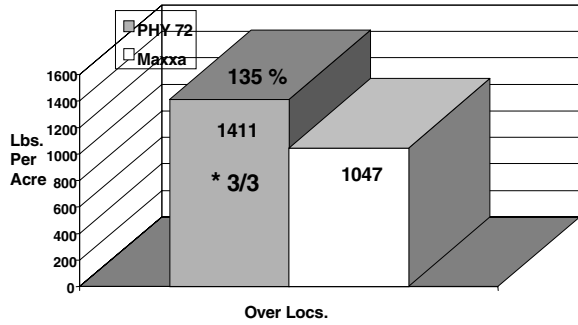


Figure 2. 1998 Phylogen Advanced Strains Trials (AST) over three locations.

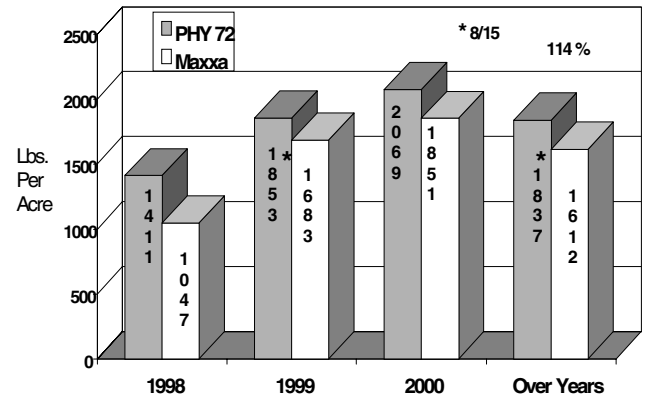


Figure 5. Phylogen Advanced Strains Tests (AST) over years, 15 trial locations.

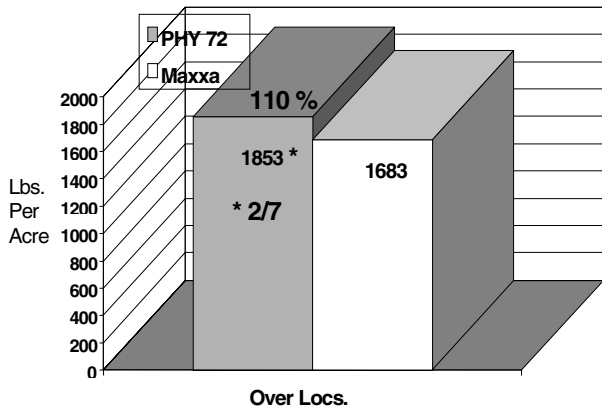


Figure 3. 1999 Phylogen Advanced Strains Trials (AST) over seven locations.

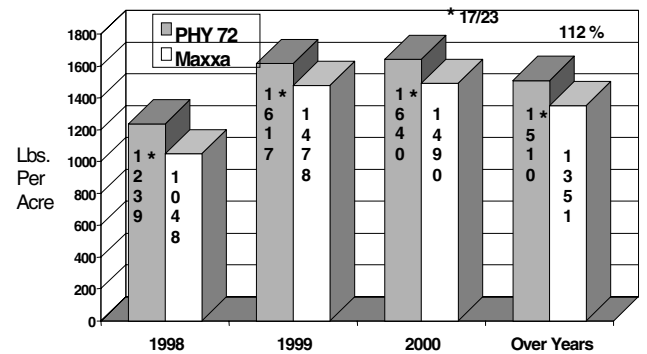


Figure 6. SJVCB Acala Variety Trials over years, 23 trial locations.

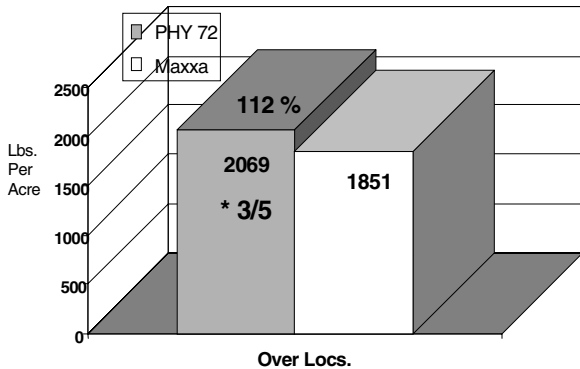


Figure 4. 2000 Phylogen Advanced Strains Trials (AST) over five locations.

Table 1. Fiber Quality Traits (HVI, 15 Locations, 1998-2000).

	Maxxa	PHY 72
Length	1.15	1.18*
Uniformity	84.4	84.0
Strength T1 (g/tex)	33.7	33.6
Elongation	6.63	7.71*
Micronaire	4.32	4.63*

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

Table 2. Fiber Quality Traits (Individual Instruments, 15 Locations, 1998-2000).

	Maxxa	PHY 72
2.5% Span Length	1.18	1.20*
Uniformity Ratio	47.3	46.5*
Strength T1 (g/tex)	24.8	24.8
Elongation	6.68	7.98*
Micronaire	4.34	4.63*

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