



Quality meets yield

By CECIL H. YANCY JR.

FRED Bourland and other cotton breeders are running what might be described as a screening service for growers.

Using a new tool called the "Q-Factor," they're weeding out the undesirables from their plots long before they're even considered to make the cut while focusing on the elusive quality factor in cotton. "The Q-Score will allow us to put

Key Points

- The "Q-Factor" helps breeders tell the good from the bad.
- It was suggested by Arkansas grower Bob McGinnis.
- The system is already paying dividends.

yield and quality into the same package," Bourland says.

The idea came from Arkansas farmer Bob McGinnis. "He realized that the defini-

tion for quality had changed," Bourland says. "He was talking about a selection index that could put all the parameters we were looking for into one measurement."

The program, developed with funding from Cotton Incorporated, now combines fiber length, micronaire, uniformity and strength of varieties into one measurement.

The problem in breeding is that we throw away things that could be useful, explains

Bourland. "It's a juggling act of deciding which one will be thrown away and which one will be kept."

The Q-Score assigns a weighted index to the selection criteria.

Finding super-performers

Sorting progeny rows in research plots, Bourland is able to quickly throw out the bottom third of the lines in a given year, and save time and money.

"It used to take hours to wrestle through thousands of lines of data, trying to weight it out which one to keep," Bourland says. "This formula allows us to quickly throw out the bad ones."

"I run Q-Scores on individual plants and throw them out early in our system if they don't make the cut," he says.

Conversely, the tool has also helped him quickly identify potential super-performers among the varieties. One of his varieties had a Q-Score of 100 last year, with an overall average of 90.

Many standard varieties have scores around 50, while some FiberMax varieties go into the 70s.

"The line that scored a 100 on the Q-Score has a fiber

Interpret the data

MAKING a decision on which cotton variety to plant these days means looking at mountains of data. If you stare at official variety trial data long enough, it might start to resemble something from the Matrix: long rows of numbers that run together.

"There's no lack of data to be found, and it can take many forms: replicated small and large plot trials and whole fields," says Sandy Stewart, Louisiana State University Extension cotton specialist.

When considering varieties, it's important to look at the relative difference between them. "Look at the average of the tests at different locations," Stewart says.

One key point to look for is a statistical difference. A statistical difference means that it's actual or repeatable, not due to chance "or Elvis' ghost," Stewart says. A rating of 0.05 means that it's 95% repeatable. "Consider how data is being presented, what methods are used. You can

length similar to Pima cotton," Bourland says. "It's preliminary testing, but it's high in the ballpark. I might not have ever found that particular one without using the Q-Score."

From a variety evaluation standpoint, Bourland can combine the Q-Score with the COTVAR program to find which varieties perform best in particular locations. Then he can take the one with the higher Q-Score. "It's one-stop shopping for quality."

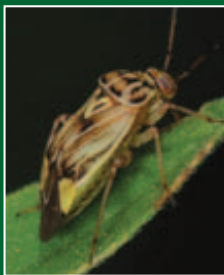
The goal is to combine quality with yield. He's looking for a variety that produces high yields and high Q-Scores.

"Q-Score is a great one-stop indicator for fiber length, mike, length uniformity and strength," Bourland concludes.

Breeders on a hunt for resistance

BREEDER Fred Bourland is looking for host-plant resistance to various diseases and insects in his program at the University of Arkansas. The priority these days is on the tarnished plant bug. Working with entomologists, Bourland reports progress by using a morphological mutant that was found in the 1950s. "One of the tools we are using is the Frego bract trait that was discovered by a Mississippi County, Ark., farmer [named Frego] in a field of Stoneville 2B," he says. "It has a twisted bract that goes away from the developing cotton boll." It's a magnet for plant bugs.

In the heyday of the boll weevil, Phil Tugwell, a retired University of Arkansas entomolo-



gist, kidding, remarked that "no self-respecting boll weevil would damage the Frego bract cotton after the plant bugs had got a hold of it," Bourland says. "Frego bract cotton provides us with a highly susceptible check."

Other possible uses for the Frego bract cotton are as a trap crop, or as an indicator of the presence and severity of insect infestations.

Other host-plant work continues toward root-knot nematode

resistance, Bourland says. Bacterial blight, verticillium wilt resistance and heat stress are also focal points. "We're now working with a plant physiologist trying to develop a method for screening for heat tolerance," he says.

Computer program compares varieties

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DALE Logan's fascination with data organization helped him develop a computer program that helps cotton growers and consultants quickly sort through the mountains of university official variety trial data to make the correct variety selections for their particular area.

"It's a way to compare all the varieties in an unbiased manner," says Logan, who is the Americot Inc. Mid-South/Southeast territory manager. "In essence, the program is a search engine for cotton varieties tested in university

official variety trials."

Logan's program takes three years' worth of university OVT data and sorts it according to the criteria that might be at play on a specific farm. The OVT variety database includes results from 150 trials a year on average, and 600 varieties, for a total of 12,000 records. The program is menu driven, and all you need is Microsoft's database program called Access.

The program gives growers what Logan calls "a 40,000-foot view of OVT data." One can then target in on a particular state and/or local test. Data can then be sorted by yield, fiber quality, soil type and irrigation

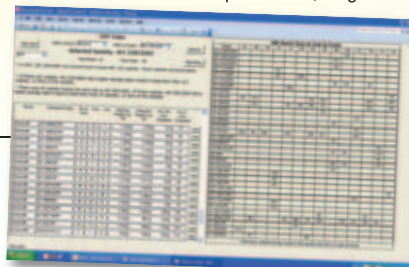
practices. Enter parameters for your particular farm, and the OVT data pops up. For somebody searching for the right variety to plant, this is a good tool to use, says Logan, who is based in Collierville, Tenn.

"This program puts every variety on a level playing field and lets the data speak for

ONLINE TOOL: A new computer program can help you wade through the mounds of variety trial data.

itself," he says. "You can make it specific to your area. For example, one variety might perform differently in north Arkansas and south Arkansas."

"I have customized reports that can be printed out," Logan



says. "There are numerous ways to look at OVT data. We're only limited by our imagination."

Logan's drive to develop the program is the desire to give growers the performance data they need to make variety decisions.

The tool becomes even more important, he says, when growers consider that the Bollgard technology will not be available after 2009. "With Bollgard going away, growers are going to have to shift to Bollgard II varieties, and this tool will help them select new high-yielding varieties."

■ For a copy of the program, e-mail dlogan@americot.com.