

Tradewinds: World Cotton Supply And Demand

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In Our Second Century

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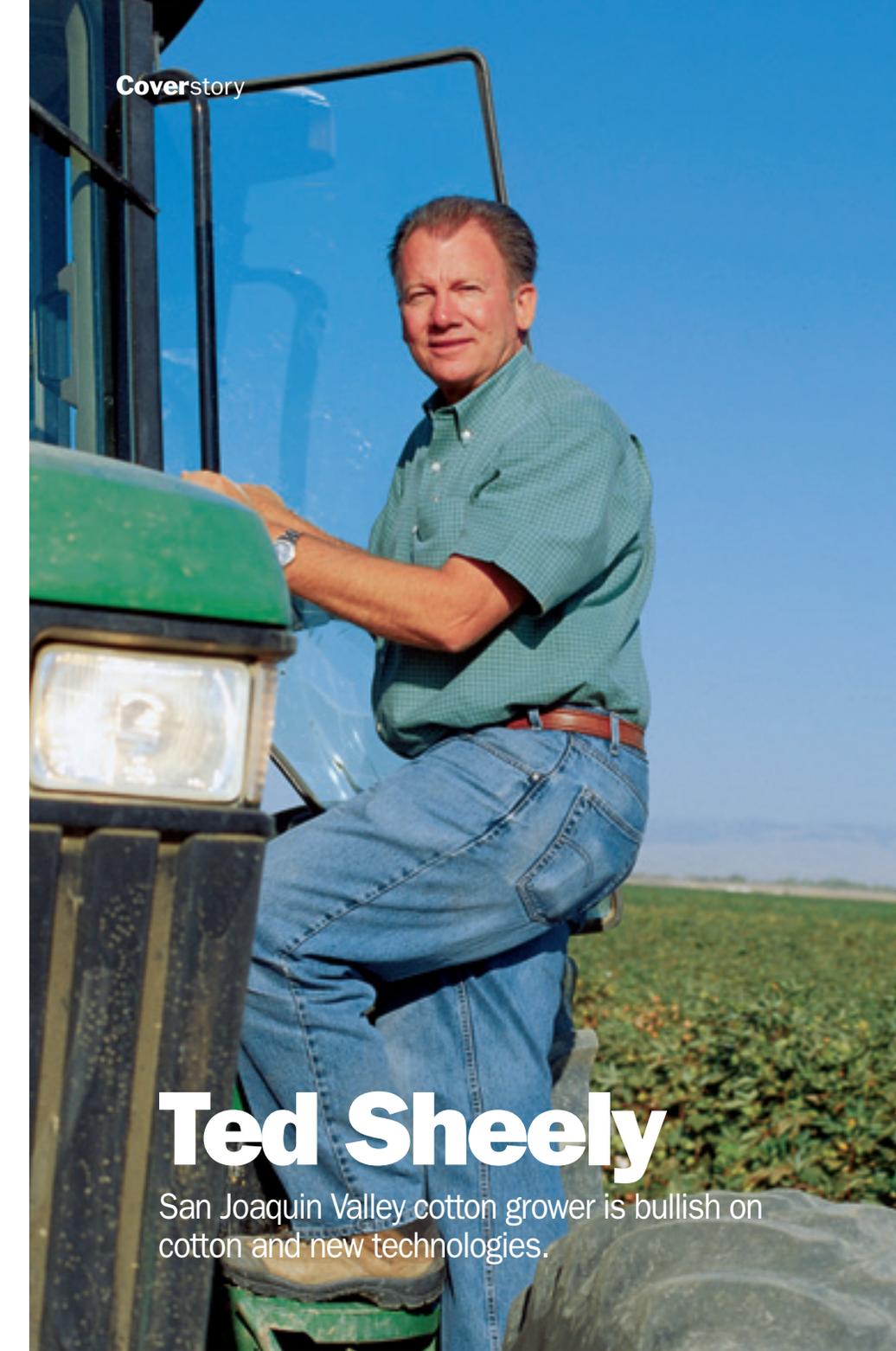
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Ted Sheely:
**Bullish
On New
Technology**

**PRECISION FARMING
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Ted Sheely

San Joaquin Valley cotton grower is bullish on cotton and new technologies.

BY MARNI KATZ

“INACTION CAUSES FAILURE,” says Ted Sheely, an innovative and actively involved cotton grower on the west side of California’s San Joaquin Valley. “Inaction is the death of more businesses, farms or towns than making the wrong decisions.”

Sheely, who is closely involved in industry organizations such as the Na-

tional Cotton Council and Cotton Incorporated, is also an early innovator and cooperator in new technology such as precision agriculture, which is revolutionizing the way cotton is produced along this unique corridor of the Cotton Belt.

It is not altruism or the quest for the spotlight, however, that fuels Sheely’s aggressive position. It’s simply good business, he says.

“I knew I could be an early innovator in technology and use it sooner than my other cotton growing friends and hopefully get an edge,” Sheely says.

He views industry activism in much the same way. “If you do not represent your interests, someone else will. And they may not think the same way you do,” he says. “Cotton Incorporated spends millions of dollars a year on research and promotions. With half my acreage in cotton, research and promotion are very important to me.”

Sheely also works a second “full-time job” as a director for the mammoth Westlands Water District, which provides surface irrigation water to major California cotton growers on the San Joaquin Valley’s west side.

“Water is our most expensive input,” he notes, adding that “We’ve got to maintain our water supply. If we don’t, we’re out of business.”

Sheely, who grows some 4,500 acres of cotton on his family’s Sheely Farms near Lemoore, CA, says it makes good business sense to be closely involved in the organizations that represent your interests. He also believes it’s critical to put his farm in a position to adopt technologies early that will help boost yield and lower the cost of production.

Precision agriculture is now an unarguable success on Sheely Farms, even though it was a challenge to invest in new technology during the lean years of the last half decade. During the last two years, Sheely says many growers have been paralyzed by declining cotton prices and are hesitant to invest in their crops or their future. “In the last two years, I’ve seen that a lot of my friends are hesitant,” he says matter-of-factly. “But we’ll see in five years who is successful and who isn’t.”

Sheely is bullish on cotton, particularly with the passage of a new Farm Bill, and believes in the power of technology to increase profits in a crop with increasingly slim profit margins.

Cotton has been the backbone of Sheely Farms and his farm management company, AZCAL, which provides custom farming services for his

family's acreage as well as outside grower customers.

California Dreamin'

Sheely grew up in a cotton farming family in Arizona, growing his first commercial crop as part of an FFA project in the mid-1960s. In 1974, after working on his family's Arizona farm, Sheely moved to the San Joaquin Valley to work for a pioneering cotton family in the region. In 1987, he started out on his own with his first 900-acre cotton operation.

"It was a real gamble," he says. "Prices were bad that year and when we went to a lender with our crop budgets our lender said, 'Why are you even considering growing cotton?'"

Over time, Sheely's family got involved and together they now farm 8,700 acres — about half to cotton and the rest to other crops, including pistachios, garlic, wheat and processing tomatoes. "Cotton has made our operation. We've tried to diversify, but everything we make we try to put back in the farm. We try to always keep a positive cash position."

Sheely is fond of the term risk management, and believes a grower has to be willing to take risks to improve op-

Sheely helped form the local Ag 20/20 group, a coalition of growers, private companies and 23 researchers from the UC Cooperative Extension, USDA and NASA, to explore the uses of GPS technology in the West.

"Variable rate technology is not new, but it hadn't been proven here," he says.

Initially Sheely was interested in exploring how remote sensing could help better manage applied water. Sheely purchased equipment and also made commercial cotton acreage available to researchers on his land for replicated study.

That investment in research and development of precision agriculture is already bringing returns at Sheely Farms, and Sheely says he is now taking that "ripe" technology and applying it to other areas of his growing operations.

Last year, Sheely Farms started using precision ag to apply nitrogen fertilizers, investing about \$30,000 to \$40,000 for guidance equipment on each of five tractors and another \$5,000 each for variable rate application equipment.



A Snapshot of Precision Agriculture on Sheely Farms

Variable Rate Seeding: First year experiment. Saved about \$10 per acre by applying higher seed rates to tougher parts of the block.

Soil Amendments: Applying sulfuric acid and gypsum in variable rates according to soil tests and types.

Nitrogen: Applying anhydrous ammonia according to yield potential of 60-acre management zones. Last year, cut per-acre fertilizer use in half while also providing increased yields in the zones.

Irrigation: Using aerial imagery maps to help schedule irrigations, applying prescription irrigations to various corners of the field according to mapped vegetation zones.

Plant Growth Regulators: Working with NASA to use aerial imagery to establish variable rate Pix applications. Four different rates kick in on-the-fly according to plant growth potential in each management zone.

Defoliation: First year study using variable rate defoliant applications according to vigor within the field. This year Sheely did the first fly-by of an airplane with variable rate application equipment on board, showing the potential of VR applications by air.

"You have to be able to go home and sleep at night."

erations while measuring that risk with what he calls "the sleep factor."

"You have to be able to go home and sleep at night," he says. "If you can't, you're taking too high a risk."

That discipline has helped Sheely weather tough marketing years, but also make capital investments in new technologies at a time when other growers were just holding their breath and trying to ride out the storm.

Four years ago when prices dropped, Sheely still was willing to take a risk on precision agriculture, gradually implementing computer technology on his farm while neighboring San Joaquin Valley farmers thought he was crazy.

The technology allows Sheely to essentially write prescription inputs based on the yield potential of 60-acre management zones. He can apply more nitrogen in high yield potential zones, and less in low yield areas, instead of taking an average and applying a fixed rate across the entire block.

The savings have been noticeable and immediate — in 2003, Sheely cut fertilizer use on precision ag blocks compared to conventional blocks by 50% and increased yield by 100 pounds of lint per acre.

"It's expensive, but we feel if we are able to get those kinds of results, all of our nitrogen will be variably applied in

the very short future," Sheely says.

This year, Sheely will expand his precision agriculture acreage by 20%, using variable rate application for soil amendments, fertilizer, seeding, plant growth regulators and defoliation. The end result, he says, should be to make growing cotton more profitable on his farm. And if he helps the industry along the way, all the better.

"Precision ag is not a fad, it's a coming thing. Satellite guided tractors are here, the technology is good, it's easy to use and it pays," he says. "And as the cost goes down and it becomes even easier to manage, more people will be using it." ■



Variable Rate (VR) application of chemicals based on remote sensing data reduces production costs and limits environmental hazards

OKSI's overall goal is to help growers reduce production costs, increase yield and produce quality, and improve compliance with environmental regulations. OKSI's technology was demonstrated under NASA's Ag.20/20 project in California's San Joaquin Valley.

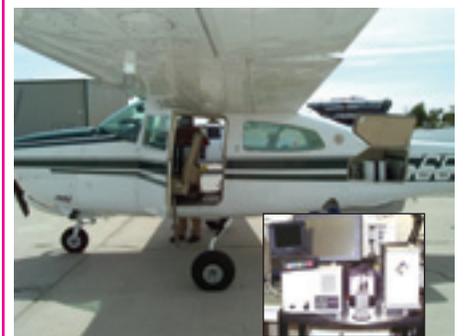
OKSI provides technology and consulting services in the use and development of remote sensing programs for precision farming and spatially variable crop management.

OKSI designs, develops, and operates the sensors and instrumentation required for the implementation of precision farming programs and plant health monitoring.



The capabilities cover the range from

- Airborne sensors and instrumentation
- Ground support instrumentation
- Spaceborne imagery analysis
- Software tools
- Prescription maps for use in ground and aerial spray controllers
- Instrumentation for instantaneous fruit monitoring before and during harvesting.

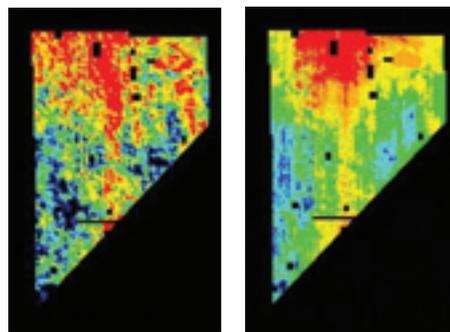


Airborne Sensors provide a georeferenced image map of a field allowing very accurate mapping of crop health stress conditions



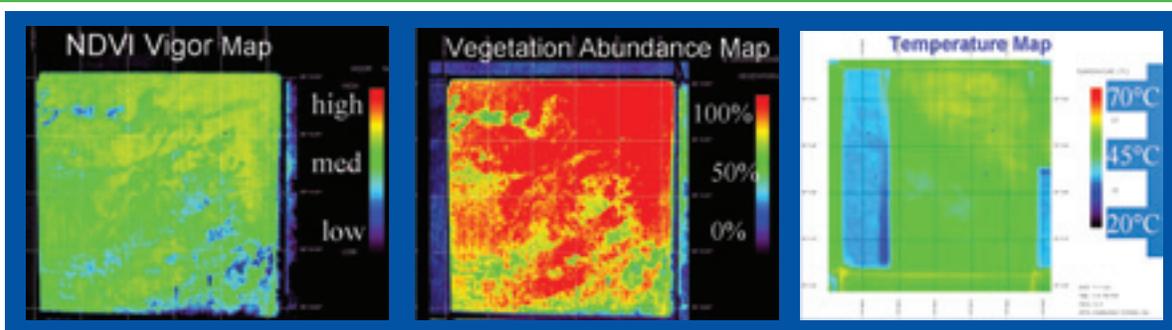
Ground Truthing Activities
 Infield research has used to calibrate & validate air-and space-borne remote sensing data

YIELD PREDICTIONS



Actual yield map (October 2001) Predicted yield map (July 2001)

Rapid Data Delivery to Growers
 Web based data delivery within 24 hours of flight. Examples of full farm management data archiving at www.ag2020.net



Irrigation scheduling by crop health mapping. A suite of data products allow growers to optimize irrigation scheduling to reduce costs and increase plant health.