

Ag in 'renaissance' with tech advances, Forbes says

By **TIM HEARDEN**
For the Capital Press

SACRAMENTO — Agriculture has always led the world in developing technology and is now in a “renaissance” driven by opportunities in automation, media magnate and former presidential candidate Steve Forbes told an audience.

High technology's budding romance with farming is still “in its infancy” and is sure to blossom in future years with advances in irrigation systems, data-analyzing software and robotics, Forbes said during a Dec. 6 speech at the annual Almond Conference.

The advances will help farms not only feed a growing world population, but also continue to offer the food choices demanded by an expanding middle class, he said.

“Agriculture has had a fantastic history when it comes to technology,” Forbes said, noting the industry has driven inventions ranging from tractors and harvesters to genetically modified foods. “But now it's experiencing a renaissance like never before.”

Forbes, the editor-in-chief of the Forbes media company who ran unsuccessfully in the 1996 and 2000 Republican presidential primaries, has been using his media platform to drive awareness and networking in the ag-tech sector.

For several years, he has worked to match innovators from the Silicon Valley with those in the Salinas and Central valleys, conference organizers noted. His company organizes an annual Ag Tech

Summit in Salinas, bringing together professionals from the two backgrounds.

Some of the most important advances aren't from new inventions but are from new applications of existing tools, he said.

For example, the mainframe computer was invented after World War II, but decades later Walmart founder Sam Walton realized he could use computers to “manage inventory better than the big guys in the supply chain,” Forbes said.

Today robots are picking lettuce in Japan, and scientists at the University of California-Santa Cruz discovered almost accidentally that they could boost solar power and production in greenhouses by applying a transparent red dye to the outside, he said.

Many people still think of agriculture as backward “even though ag has been at the front of technological advances for 1,000 years,” Forbes said. “The image has got to catch up to reality.”

Forbes noted the technological breakthroughs in Israel.

While the country's population has grown tenfold since it was founded in 1948, its agricultural output is 16 times what it was in the beginning and its industrial output is 50 times larger, he said.

The reason is its government has removed barriers to innovation, he said. For instance, desalination plants in Israel take three or four years to build, while the one in Carlsbad, Calif., took about 15 years to plan and build and



Tim Hearden/For the Capital Press
Media magnate and former presidential candidate Steve Forbes makes remarks during a luncheon at the Sacramento Convention Center. The gathering was part of the 2017 Almond Conference.

was more costly, he said. “There is no real water crisis,” Forbes said. “Water shortage doesn't come from droughts but ... from stupid politics.”

Forbes encouraged conference-goers to remain engaged with Congress on such issues as tax policy, health care reform, immigration and especially trade.

The North American Free Trade Agreement needs to be updated, “but the worst thing that could happen is if they blow the thing up,” he said.

Otherwise, other nations will be eager to seize the U.S. market share, as Brazil did in the early 1970s when then-President Richard Nixon curbed soybean exports to reduce domestic prices, Forbes said.

Today the global marketplace is “an ecosystem,” he said.

“Your hand-held has parts in it from all over the world,” he said.

Research helps Calif. almond industry through growth spurt

By **TIM HEARDEN**
For the Capital Press

SACRAMENTO — With production costs increasing and more trees coming into production, the Almond Board of California is looking to get the most out of each orchard.

The organization is using a portion of a temporary 1-cent assessment increase to research new uses for hulls, shells and woody biomass as well as opening new markets for the nut, industry leaders said.

For instance, researchers are looking into feeding hulls to insects and using their larvae as chicken feed, and using shells to firm up the recycled plastics that are used for such items as nursery flats, said board president and chief executive officer Richard Waycott.

“I think we have done a great job as an industry of taking our kernel to the stratosphere,” Waycott told nearly 4,000 attendees of the annual Almond Conference at the Sacramento Convention Center.

“With the rest of what we do in the orchard, for the co-products, there are singular markets,” he said. “There's dairy for the hulls, livestock bedding for the shells and biomass for the wood. One of the things we're really working on is taking each one of those co-products in a new direction.”

The efforts come amid a sense of urgency in the industry as new plantings continue to enter production. The nearly 2.3 billion meat



Almond Board of California chairman Mike Mason, left, and president Richard Waycott discuss a new \$4.8 million research initiative to achieve “the farm of the future” during a news conference Dec. 4 in Sacramento. The event was held during the annual Almond Conference.

pounds of almonds harvested this year is expected to grow to as much as 3 billion pounds within five years — an increase of about 30 percent, Waycott said.

Meanwhile, the cost of inputs is rising. Board chairman Mike Mason, a Shafter, Calif., producer, said his costs have tripled in the last 20 years.

“If it only doubles in the next 20 years, we're still talking about \$7,000 an acre,” Mason said, adding that none of growers' costs are expected to go down. “That's why we need to prepare ourselves with these co-products.”

A nursery survey in late 2016 reported at least 14.5 million new almond trees had been planted since June 2015.

So far, demand has been keeping pace, as domestic shipments and exports were

up 14 percent and 17 percent, respectively, for the 2016-17 crop year, according to the Almond Board.

The shipment increases have helped prices stabilize in recent months after a price slide that began in late 2015, with prices falling by nearly half from the more than \$4 a pound that was paid for some almonds during the 2014 crop year.

The USDA gave the Almond Board permission in December 2016 to raise its handler assessments from 3 cents to 4 cents per pound until mid-2019. The board already had a budget of about \$50 million.

The board is also expanding its overseas marketing, returning to Japan after having been absent from there in recent years and beginning new pushes in Italy, Mexico and South America, Waycott said.



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ONE-OF-A-KIND 4-H CLUB BUILDS ITS OWN ROBOTS

Club Clovernauts is a one-of-a-kind 4-H club in Clark County, Wash. The club focus is listed as robotics, but it is really so much more. The club began in 2010 with a dozen members ages 9 through 12. It has grown to over 80 members ages 5 through 18. Kids join the club to collaborate, design, build, test, redesign and compete within a framework of cooperation and teamwork.

Club Clovernauts is divided into 5 groups. Two of the groups are non-competitive. Jr. Builders is for members ages 5-9. Jr. Builders is designed to introduce STEM concepts to kids while exciting them through a brand they know and love — LEGO.

They build using Lego parts and motors, and focus primarily on learning about simple machines and structural integrity of their creations. Basic Programming is for members ages 8-12. They use the Lego Mindstorm set to learn basic programming. After learning some of the basics, the members get to design, build, and program their small robots to complete a variety of tasks by using sensors to interact with their environment.

Club Clovernauts has three competitive levels. FIRST Lego League teams are for members ages 9-13 with some programming background.

They use the Lego Mindstorm kit to create and program a robot to perform tasks on a tabletop competition field. FIRST Tech Challenge is for members ages 13-18. These members design, build, program, and operate robots to compete in a head-to-head challenge in an alliance format. These robots are made of metal and other materials, and they are about the size of an 18” cube.

FIRST Robotics Challenge is for members in high school. These members build a larger robot under strict rules, limited resources, and an intense six-week time limit. These members build and program industrial-size robots to play a difficult field game.



FIRST robotics teams compete around the region and earn a chance to go to the world championships.

Club Clovernauts is based out of a rural church, which allows them to meet in their spaces. But even with limited tools, space, and supplies, the competitive teams have done very well. As you enter Manor Church, there is a large display cabinet that contains trophies and awards that the various teams have earned.

The latest addition to the case includes an item that the High School team, FRC 3674 4-H CloverBots, brought back from the World Competition this past April. Though their team did not win, they made it as far as the semi-finals. It was also discovered that the 4-H CloverBots had the highest Rotor Engagement Score of qualification rounds at the entire Houston competition, which hosted over 400 teams.

All of the groups are guided by adult coaches and mentors, as members develop STEM skills and practice engineering principles. The groups have demonstrated at many venues around the county throughout the year. Club Clovernauts finish up each year by participating for 10 days at the Clark County Fair. A few members also attend the 4-H State Fair in Puyallup, Wash.



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