

SPICE OF LIFE

State's chile acreage grows

By Diana Alba Soular
DALBA@LCSUN-NEWS.COM

LAS CRUCES — New Mexico's chile acreage inched upward slightly last year, but the crop's long-term future still holds plenty of challenges.

That's according to experts Tuesday at the state's annual chile conference in Las Cruces.

In all, about 9,600 acres were harvested in 2012 — a modest 100 acres more than the previous year, according to federal numbers presented.

It's the second year in a row the crop acreage increased, after hitting a nearly 40-year low point in 2010.

"We're sort of stabilizing," said Dino Cervantes, 2013 president of the New Mexico Chile Association.

And while that may be seen by some as a positive, the problems that caused the New Mexico pepper industry's decline are still there, experts said. Among them are higher labor costs than in competitor countries, a crop that's vulnerable to plant-killing diseases and an irrigation water shortage locally.

Doña Ana and Luna counties are the top two chile-producing counties in the state.

Lou Biad of Las Cruces, who owns a chile processing company, said chile farmers in China, Mexico and Peru pay their workers a fraction of U.S. labor costs. The difference is \$8 to \$10 paid per hour domestically to \$2 per day paid in other parts of the world.

"The biggest problem we have is competition from other countries, where they can produce a product at a much lower cost," said Biad, while attending the conference. "The whole world is after this market."

Plus, Biad said farmers and processors in other nations have far fewer regulations to contend with.



SUE HARD AND HER HUSBAND, JOHN, of Westerville, Ohio and Owners of CaJohn's Flery Food browse the vendor booths Tuesday during the state's annual Chile Conference at Hotel Encanto de Las Cruces.

PHOTOS BY ROBIN ZIELINSKI / SUN-NEWS



CASA FIESTA canned products and peppers are displayed on a table in a hallway of Hotel Encanto de Las Cruces on Tuesday during the annual Chile Conference.

Genome mapping opens possibilities for peppers

By S. Darrickson Moore
DMOORE@LCSUN-NEWS.COM

LAS CRUCES — Are you ready for a vanilla dessert chile pepper? How about pepper plants with leaves and stems as brilliantly colored (and maybe even as spicy) as their spectacular fruits?

Nobody has to tell those of us in the Chile Capital of the World that our favorite pepper is something special.

But mapping the entire genome of the chile pepper has brought us new information about just how unique chiles are, along with some exciting new potentials, Paul Bosland, a New Mexico State University Regents professor and director of the Chile Pepper Institute.

"This puts NMSU and the Chile Pepper Institute on the cutting edge with a new level of research," said Bosland, a New Mexico State University Regents professor and director of the Chile Pepper Institute.

It might even be argued that chiles are more sophisticated

and complex than the humans who eat them.

"We've now determined that the chile pepper has approximately 3.5 billion base pairs, which are the building blocks that make up the DNA double helix, compared to tomatoes which have about 950 million (homo sapiens have about 3 billion). The Human Genome Project determined we have about 20,000 genes. Chile peppers have about 37,000 genes.

"Whether that means chiles are more evolved than we are, I don't know," quipped Bosland.

The chile genome project, a cooperative effort with a leading South Korea university laboratory, could have some very serious benefits.

To complete the first high-resolution draft of the chile pepper genome, the institute sent NMSU graduate student Greg Reeves to Seoul National University in South Korea last summer to work with professor Doil Choi and his Illumina



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ERICA SICHLER, The Chile Pepper Institute program coordinator, holds out a jar of Holy Jolokia Salsa, which uses the second-hottest chile in the world rated at 1-million on the Scoville scale. The university also carries Sancto Scorpion, a sauce which uses the Trinidad Scorpion chile peppers, the hottest pepper in the world.

Chile

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"I have stacks of rules and regulations that the Chinese dealers don't have to deal with," said Biad, whose company owns three plants.

Some 210 people attended the two-day event at Hotel Encanto de Las Cruces, including representatives from chile processing plants and salsa companies, chile growers and chile scientists, organizers said.

A number of vendors were present, too. David and Sharon Crawford, distributors from just north of Artesia, were advertising a crop fertilizer, called Organic Gem, made from liquified fish. They claimed it would boost growth of chile and a spectrum of crops.

"It's organic; it's not going to hurt anyone or anything," Sharon Crawford said.

Researchers from the New Mexico Chile Institute, based at New Mexico State University, announced the completion of a draft map of the chile genome — a major step toward making genetic improvements in the chile crop.

There are potential genetic modifications to chile that could combat prominent chile diseases, said NMSU Associate Professor Stephen Hanson. For instance, a gene to delay a type of pathogen, known as phytophthora, has been found in potatoes, he said.

"We're trying to see if we can move this gene into chile,"

New Mexico chile acres harvested

Year	Acreage
▶ 2012	9,600
▶ 2011	9,500
▶ 2010	9,700
▶ 2009	12,300
▶ 2008	11,100
▶ 2007	11,000
▶ 2006	13,800
▶ 2005	16,200
▶ 2004	15,400
▶ 2003	14,700
▶ 2002	16,800
▶ 2001	17,700
▶ 2000	19,000
▶ 1999	16,200
▶ 1998	21,500
▶ 1997	23,000
▶ 1996	23,300
▶ 1995	22,750
▶ 1994	27,300
▶ 1993	29,900
▶ 1992	34,500
▶ 1991	29,700
▶ 1990	28,700
▶ 1989	23,650
▶ 1988	22,210
▶ 1987	22,900
▶ 1986	22,100
▶ 1985	19,300
▶ 1984	17,000
▶ 1983	17,200
▶ 1982	14,600
▶ 1981	15,300
▶ 1980	17,200
▶ 1979	15,100
▶ 1978	11,200
▶ 1977	16,900
▶ 1976	10,400
▶ 1975	9,200
▶ 1974	9,400
▶ 1973	7,880
▶ 1972	7,150
▶ 1971	6,610
▶ 1970	5,550
▶ 1969	5,000

Source: U.S. Department of Agriculture

he said.

The research that will be needed is expensive and could take a while, Hanson said.

"Lots of this is work in progress that will bear fruit in future years, hopefully," he said.

The chile institute has reached the \$500,000 mark in raising money to pay for an endowed chair — essentially a permanently funded researcher who'll be dedicated

to chile, said NMSU Professor Paul Bosland, co-chairman of the conference. The group is aiming for \$1 million. Sales of chile products by the institute — which has a new social media presence — go toward the endowment, he said.

Diana Alba Soutar can be reached at 575-541-5443; follow her on Twitter @AlbaSoutar

Genome

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sequencer.

"It's a very expensive, incredibly advanced machine that only takes a few days to do the same amount of genetic processing work that previously took 600 machines 10 years to accomplish," Bosland reported.

The project gives researchers a map to "unlock the genetic secrets of the chile pepper, providing a powerful tool to examine previously unimagined questions and will accelerate efforts to breed improved cultivars," Bosland said.

The genome information could help researchers more rapidly develop plants that can adapt to climate change, are more resistant to insects and diseases, use less water and cultivate special characteristics that would allow more parts of the plant to be used, Bosland speculated, standing before a screen labeled "Fruit-

worked their way through a seven-course chile-enhanced banquet. The feast ended with a chocolate cake served with potent dots of "Sancto Scorpion Fudge Sauce," spiked with Trinidad Moruga Scorpion Red, announced as co-tender for the world's hottest chile pepper at the institute's 2012 Chile Leaders Dinner.

In terms of potentials and possibilities the genome project is likely the institute's hottest announcement to date.

Researchers now have tools to "change the chile peppers' own DNA without introducing foreign DNA," and the peppers "are not genetically modified organisms, or GMOs and organic farmers should be able to grow the new cultivars," Bosland said.

The new information could also help add to the growing roster of chile's documented health benefits.

"Lack of vitamin A is a public health issue in more than half of all countries in the world. Severe lack of vitamin A

of unnecessary cases of blindness in the world. Breeding chile peppers with increased levels of pro-vitamin A is one potential solution that can help end this health problem," Bosland said.

Among the first uses of the new genome data will be NMSU research on disease resistance to phytophthora (chile wilt), one of the leading problems for chile growers in New Mexico and throughout the world, and on carotenoids, which provide the red color in chile peppers and are used commercially in food coloring.

Showing a photo of multi-colored coleus plants, known for their colorful variegated leaves, Bosland speculated that the Mesilla Valley might someday have fields of entire plants, from stems and leaves to fruit, as fiery red and spicy as our chile sistras.

S. Derrickson Moore may be reached at dmoore@elstunews.com. Follow her on