

## MORE THAN MEETS THE "EYE"

### A POTATO CHIP IS NOT JUST A CHIP

A potato chip is just a chip. Right? Wrong! Just ask ASABE member Keith Tinsey, an agricultural and biological engineer who enjoys a close working relationship with potatoes. And not just ANY potatoes, but potatoes that Frito Lay turns into crispy, irresistible potato chips!

Tinsey is the storage/engineering manager for Walther Farms, a 10,000-plus acre potato agribusiness based in Three Rivers, Mich. With farms in Mexico, Florida, Indiana, and Michigan, 99 percent of Walther Farms' business is growing potatoes for Frito-Lay, Inc. to be processed into potato chips.

Tinsey's career has come full circle from growing up on a farm to his undergraduate work at Michigan State University (MSU), where he received an ag engineering degree in 1989. MSU was his first and only choice for college.

"My dad graduated from MSU with a degree in ag mechanics," Tinsey says. "Green was in the blood," he adds laughingly. "There was no question that I'd be going anywhere else."

and biological engineering at North Carolina State University (NCSU), where he minored in electrical and computer engineering. His advisor, ASABE member Roger Rohrbach, challenged him in the areas of machines and technology. One of his graduate projects was to design a machine to automate the pruning of grape vines. According to Tinsey, it was a high-tech application of computers in agriculture.

Following grad school, Tinsey made contact with J-Star Industries at a job fair held during an ASABE winter meeting and soon began working for the Fort Atkinson, Wis., farmstead equipment manufacturer. Wanting to move closer to his roots and more into automation, he landed a job with Techmark, Inc. in Lansing, Mich., designing and installing computer systems for agricultural ventilation.

"I went back to the high-tech world in agriculture," Tinsey says.

After five years at Techmark, Tinsey felt he needed a change and accepted a position as standards director for ASABE.

"I enjoyed being an integral part of the Society," says Tinsey, "working together with ASABE's awesome staff to help further the profession, and providing help to other engineers was a great opportunity."

An opportunity at MSU lured him back to East Lansing where he became director of the Michigan Agricultural Electric Council and taught senior design classes in biosystems engineering. Looming on the horizon, however, was an opportunity at Walther Farms, a company Tinsey had previously done consulting work for while employed by Techmark. When an opening became available for a storage/engineering manager, Tinsey found the challenge too difficult to resist. He discovered his love for farming and his work at Techmark had provided a great set-up for what he would be doing for Walther Farms.

His background in ag and biological engineering, as well as electrical and computer engineering, all come together in his current position. His responsibilities include making sure the potatoes in storage are held in good quality until they are needed for processing, which sometimes can be up to nine months.

"Each day we check all the storage bins using a sophisticated computer control network," says Tinsey. "We check humidity, temperature, fresh air, carbon dioxide, fans, refrigeration, heating, and any decay pathogens that may cause rot. We also check the biological condition of the potato by measuring the sucrose and glucose content. Too much glucose will cause potato chips to fry brown.



Keith Tinsey is the storage/engineering manager for an agribusiness that grows potatoes for Frito-Lay, Inc.

While pursuing his undergraduate degree, Tinsey worked on a potato storage research project. Not only did that experience get him to thinking about potatoes in a different way, but it also gave him the chance to apply what he had learned in his engineering classes. In addition, it also provided him an opportunity to use computer controls and technology for potato storage ventilation.

"That was where I gained first-hand knowledge in computing," Tinsey adds. "We were trying to store potatoes longer with new computer technology."

Tinsey then pursued a master's degree in agricultural

So, armed with as much information as possible, decisions can be made to enhance quality by altering the storage environment.”

Another aspect of his work is trying to minimize bruising during sorting, washing, grading, and loading into the semi trucks that take the potatoes to the Frito Lay plants. Tinsey is also in frequent contact with the Frito Lay processing plants across the Midwest and eastern United States to see how well the potatoes are converting into potato chips. In addition, he periodically visits the plants which helps smooth the way in solving any issues that may arise.

“We ship potatoes to Frito Lay 365 days per year and there are bound to be issues that need to be addressed,” says Tinsey. “Some plants desire specific types of potatoes, i.e. high specific gravity, larger/smaller size, or specific varieties that process differently depending upon the desired end product.”

**“I’m ... a jack of all trades ... As an agricultural and biological engineer, I have a basic understanding of many agricultural systems.”**

In addition to construction of new storages and updating anything that needs repair or improvement in the storages, Tinsey can find himself driving truck at harvest, assisting in hydraulic and electrical repairs, and figuring out how to save energy.

“I’m like a jack of all trades,” Tinsey says. “I can help wherever needed as long as the potatoes in storage are taken care of first!”

The biggest change Tinsey has seen in his career is the application of computer technology. “Computers can do many things more repetitively, consistently, and accurately than humans,” says Tinsey. “If you had to do it yourself, you couldn’t do it as well as what is demanded.”

Tinsey is glad he went into the profession of agricultural engineering. “I wanted to be a farmer, but asthma and allergies prevented that. So, I did the next best thing and combined engineering and farming.”

“Teamwork, communication and computer skills, as well as engineering skills, are all important in the work I do,” Tinsey says. “As an agricultural and biological engineer, I have a basic understanding of many agricultural systems. It’s a perfect fit for a farm. I know about the biological side, the electrical side, and the mechanical side. Applying all of my personal skills and engineering skills is fun and challenging. Plus, I’m applying engineering, not just doing one piece of engineering but doing a lot of it,” he adds.

Now, he says, he takes a different look at potatoes. He finds himself in the grocery store buying multiple bags of chips just so that he can compare quality.

“A chip is not just a chip,” he quips.

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