

# Credit: 2020 expected to ‘come out OK for farmers’

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lenders have nonetheless benefited as their own interest expenses have declined more steeply, he said.

For that reason, the network's net income has increased even as lenders have set aside more than twice as much money for potential loan losses — \$158 million during the first half of 2020, compared to \$66 million during the same

point last year, according to FFCB.

Meanwhile, the Farm Credit System's non-performing assets, such as loans that are past due on principal or interest payments, have grown from roughly \$2.35 billion to \$2.5 billion during 2020.

Though that's an increase of about 6%, loan volume has also grown, so the proportion of non-performing loans to total assets

rose only slightly, according to FFCB.

"It's difficult to say whether that's an indicator related to the issues with COVID-19," Johnson said.

Northwest Farm Credit Services — which serves farmers in Oregon, Washington, Idaho, Montana and Alaska — has actually seen its non-performing assets drop from \$79 million to \$77.7 million while loan volume has remained basi-

cally unchanged in 2020.

This decline was "somewhat surprising" given the dire effects that coronavirus has had on the broader economy, said Tom Nakano, the institutions executive vice president and chief administrative and financial officer.

"We were expecting things to be rougher than they were," Nakano said.

Farmers, ranchers and foresters in the region "were in pretty good shape heading

into the crisis" and seem to have weathered it better than many other businesses, he said.

However, consumer debt is typically faster to show adverse effects from an economic downturn than agricultural companies, Nakano said.

"It really doesn't show up in those non-performing numbers that quickly," he said. "It may take a couple of quarters to show up."

Due to the strong financial support from the federal government, 2020 is expected to "come out OK for farmers" but it's unknown whether such assistance will continue, said Van Hoose of the Farm Credit Council.

"Our folks are probably more worried about 2021," he said. "The ability to project a profit is tough and it's weighing on a lot of farmers."

## Light: ‘We’ve seen a large difference in production’

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that farmers manipulate light in many ways: giving plants more light, managing day length, changing plants' structure and using colored lights to improve coloration and flavor.

Matthew Jones, photobiologist at the University of Glasgow in Scotland, told the Capital Press that in general, blue light makes plants shorter, while red light makes them taller.

"I think it's all very exciting," said Jones, whose accent betrayed his British origins. He was sitting in his Glasgow office, jammed all around with books, papers and a scribbly white board. "The challenge is figuring out how it works in the real world."

### Global innovators

In the Netherlands, farmers have rapidly adopted controlled-environment agriculture, or CEA. They grow high-value specialty crops year-round in illuminated greenhouses.

In Scotland a few years ago, a company called Intelligent Growth Solutions announced the world's most technically advanced indoor vertical farm.

And in South Korea, farmers have grown strawberry plants indoors using colored lights. With the right color ratios, they were able to alter the flavor and make the berries grow faster or slower.

Lloyd Nackley, an assistant professor at Oregon State University's Nursery Crops Research Facility, told the Capital Press he sees "enormous potential for urban food production" in greenhouses with artificial lighting.

Even those who prefer traditional agriculture say there is untapped potential in light research.

### Material meets light

Enveloped by hills in Grants Pass, Ore., Greenleaf Industries, a nonprofit nursery that hires developmentally disabled adults and donates produce to charities, is known for its colored lights and materials.

Nick Smith, Greenleaf's director, said the nursery uses not only colored lights, but also colored plastic poly mulch sheeting that interacts with light.

"We've seen a large difference in production," said Smith.

He said his nursery uses black, green, silver and red poly mulch cloths for different purposes.

Black and green cloths are standard, he said; they retain heat in the soil.

Red mulch cloth lets in more light. The downside is more weeds grow, but Smith said red cloth increases pepper and tomato production.

Silver poly mulch cloth, Smith said, reflects light upward, keeping away aphids and thrips. But because of its reflective properties, silver cloth can stunt plants if it's used in intense sunlight.

Greenleaf Industries uses some LED lights, but mainly relies on plant aquarium bulbs. Smith said as each old bulb dies, it is replaced by a new LED, one at a time rather than all at once.

That's because the specialized LEDs are expensive. Smith recalls spending \$934 on his last four-foot LED.

Many growers and researchers told the Capital Press LED lights are preferable because they can be "tuned" to emit precise wavelengths, are energy-efficient, don't generate as much heat and are long-lasting.

But the cost of LEDs is just one challenge with light-controlled agriculture.

### ‘Can’t beat the sun’

Some researchers criticize indoor farming. For one, they say, how can growers compete when the sun is free? Even enthusiastic CEA proponents say the sun can't truly be replicated.



Photos by Sierra Dawn McClain/Capital Press

### Tyler Meskers of Oregon Flowers



A worker welds in a solar panel manufacturing facility.



Tyler Meskers and two of his kids head into a greenhouse.



John Jacob, beekeeper and owner of Old Sol Apiaries, holds a panel of honeycomb and bees in front of solar panels.

"Natural light is still best," said Jones, the Glasgow researcher. "You can't beat the sun."

But beating the sun at its own game isn't the point. McAllister of the University of Michigan said indoor farms can be closer to urban areas, grow reliable crops despite unreliable climate and weather, allow farmers to grow at a time of year when they otherwise couldn't and offer a high degree of control.

CEA still has critics. Indoor farming racks up high energy costs. Critics say this hurts growers' profits and emits carbon. Jones, the photobiologist, said researchers are still finding ways to make CEA more efficient.

One remarkable innovation, he said, involves tricking plants into "thinking" they've received more hours of daylight than they actually have.

Jones said that, like animals and humans, plants have an internal biochemical circadian clock regulating sleep-awake cycles.

Many plants need a long period of daylight — which can be expensive to emulate inside a greenhouse. A recent experiment, Jones said, found growers can turn off lights earlier in the evening, then give plants a one-hour pulse of light in the middle of the night, which makes plants behave as though they'd received a full day of light, saving energy costs.

With knowledge and technologies like LEDs, Jones said he expects the field will grow.

### Glass dreams

But not every innovator uses LEDs.

At Oregon Flowers, the Meskers family grows some 8 million flowers a year in elephantine glass greenhouses decked with roll-up shades, sunroofs that tilt open and high-pressure sodium lights.

The Meskers' business model is built on providing fresh-cut, American-grown flowers when most people aren't growing them and demand is high, such as around Valentine's Day.

According to a 2019 report from USDA's National Agricultural Statistics Service, the wholesale value of domestically produced cut flowers was \$374 million, 77% of which is from California.

"We live and breathe our flowers," said Tyler Meskers.

He was walking down the aisle of a greenhouse, one son perched on his shoulders and the other tagging alongside. This was the same aisle where Meskers had learned to ride his bike as a boy, the same aisle his father had built as a young immigrant.

Meskers' father, Martin, the company's CEO and president, is a third-generation Dutch bulb farmer. In his early 20s, he moved to the U.S. for a job and later started a business.

Martin always loved flowers. "I don't know anything else. As kids we worked on the farm," he said.

He still carries his Dutch accent. When he started his business, he asked his then-sweetheart and now-wife Helene to join him. She was also from Dutch flower stock; her family was in the bulb business, too.

"I wasn't sure if I wanted to come. But I love it here," said Helene, now the CFO of Oregon Flowers.

When the Meskers family started the business, they dreamed of building greenhouses with glass, which allows more sunlight to filter through than plastic.

But glass is expensive, and securing a loan wasn't easy.

Martin Meskers said banks turned him away.

"I told them, 'I want to grow flowers.' Nobody got it," he said.

At age 26, the day after his baby girl was born, he went to a bank again asking for a loan. The bank staff was so amazed he'd left his newborn to seek their backing that they finally took him seriously.

The Meskers say the cut flower industry has faced ups and downs, but because of the company's innovations, their markets have remained strong.

### Common ground

Outdoor producers are also innovating with light.

One such experimental field is called "agrivoltaics," also known as "solarculture."

At the intersection of farming and solar energy, historically a place of conflict, renewable energy leaders and farmers are developing partnerships and finding, quite literally, common ground.

Dual-purpose solar sites — for agriculture and energy production

— are gaining popularity in Italy, Germany and Japan, but are still a rarity in the U.S.

Chad Higgins, professor of biological and ecological engineering at Oregon State University, is one of the nation's leading agrivoltaics experts.

In one study, Higgins found the shade created by solar panels tripled water use efficiency in a sheep pasture.

This summer, Higgins' research team completed another study with sheep grazing among panels. Early results show the lambs drank less water in the shade, preferred to graze underneath the panels, appeared less stressed and the pasture had a higher stocking rate.

Higgins said landowners can also benefit from lease payments from energy companies; experts told the Capital Press they have seen lease rates range from \$800 to 1,500 per acre per year.

Solar energy companies want to use farmland because it tends to be flat, pre-disturbed and deep-soiled. Solar panels actually "prefer" temperate farm conditions because panels are usually made of silicon, the same material computer chips are made of, that doesn't perform well if too hot or wet.

But agrivoltaics has its challenges.

Higgins said the "biggest impediment" is liability; there aren't yet many laws in place to govern what happens when a farmer damages a panel or a panel injures a farmer.

Another challenge is that in some states, particular counties allow solar panels on high-quality farm soil classes, while others do not.

Also, Higgins said, most companies build panels with energy production as the primary goal and overlook landowners' needs. Higgins said he believes panels should be designed with the farmer's needs in mind — such as being able to pass underneath with a tractor.

Higgins said a company called STracker is making solar panels with agriculture in mind.

"It's like Yoda: 'I learn what you've learned.' These solar arrays don't look anything like what you've seen before," said Higgins.

### Raised solar panels

One hot afternoon at STracker's solar panel manufacturing shop

in Ashland, Ore., blue and gold sparks flew from the welding table. The shop buzzed. Jeff Sharpe, the company's engineer, dismantled his yellow bike and strode across rust-colored iron shavings to a pile of equipment.

Sharpe is a second-generation solar business owner. After spending a decade farming in Montana, Sharpe saw the need to bridge the gap between agriculture and energy.

He invented a towering dual-axis solar panel with 14-foot ground clearance. Raised panels, he said, work better for farms.

Some producers, however, need panels raised, but only a few feet off the ground.

### A sweet habitat

John Jacob, CEO of Old Sol Enterprises and president of the Oregon State Beekeepers Association, said managing his beehives near solar panels has been a game-changer.

Jacob keeps some of his hives in White City at a solar site owned by Pine Gate Renewables. The ground under the panels is carpeted with native plants and flowers for the bees.

Jacob said because the shade from the panels keeps things blooming, his bees at this site produce twice as much honey as those elsewhere. The hives also produce stronger queen bees. And working with Pine Gate Renewables, Jacob said, allows him to lock more land into long-term agricultural use.

"I know not everybody thinks solar panels are pretty, but from my point of view, beauty is in the eye of the bee-holder — pun intended," he said.

### Light-bearers

Both indoors and outdoors, more farmers are innovating with light. Researchers predict that as knowledge and technology grow, the next generation of agriculturalists will push the boundaries of light even further.

In his largest glass greenhouse — 107,639 square feet — Tyler Meskers stood beside his two boys and his wife, Megan, who was pregnant with their third child.

"I'm glad they get to grow up this way," he said. "And who knows how agriculture and technology will change for them."