2019
NORTHEAST AGRICULTURE

INSIGHTS & PERSPECTIVES

ECONOMIC ANALYSIS & PAPERS
ON AGRICULTURE,
COMMERCIAL FISHING &
THE FOREST PRODUCTS INDUSTRY

Farm Credit East

Dear Farm Credit East Customer:

As we head into 2019, many Northeast producers are taking a close look at their operations to position them for the future. Many are innovating in order to grow their businesses, cut costs, take advantage of new market opportunities, or some combination of all three.

While there are a variety of challenges facing producers, Farm Credit East customer-owners continue to think strategically about their businesses and are making the necessary adjustments to withstand the challenges facing their businesses and their industry.

Farm Credit East strives to be a steadfast partner as your businesses grow and evolve by providing the capital and the financial services to help you achieve your business objectives. As part of our commitment to Northeast agriculture, forest products and commercial fishing, Farm Credit East also seeks to provide the knowledge and expertise business owners need to inform business decisions.

That's why we are pleased to share the 2019 edition of **Insights and Perspectives.** Our 2019 report provides outlooks and insights from both industry experts and Farm Credit East's knowledgeable staff. Our internal reports include a discussion on how to prevent "fires" in your business, a summary outlook for the many industries Farm Credit East serves, and a crop insurance overview.

We are also pleased to provide seven papers developed by external academic and industry experts covering a number of sectors and topics.

- Grain and Oilseed Outlook, Pat Westhoff, University of Missouri
- Dairy Outlook, Ben Laine, CoBank
- Greenhouse and Nursery Outlook, Charles Hall, Texas A&M
- Vegetable Crops Outlook, Brad Rickard, Cornell University
- Apple Industry Outlook, Desmond O'Rourke, Belrose, Inc.
- Northeast Forest Products Outlook, Eric Kingsley, INRS, Maine
- Lobster Industry Outlook, Hank Soule, Sustainable Harvest Sector, Maine

In addition to this report, our Knowledge Exchange program provides content throughout the year, including monthly Knowledge Exchange Partner (KEP) e-newsletters and webinars on economics topics, market outlooks and regulatory issues. This value-added information provides producers with additional insights in running their businesses. In conjunction with credit and financial services experts, Farm Credit East business consultants can help farm, forestry and fishing businesses identify opportunities for improvement.

We hope that the information in this report will provide insights and perspectives to assist you in business planning for the year ahead.

Sincerely,

William J. Lipinski
Chief Executive Officer

CONTENTS

"FIRE FIGHTING" - or - "FIRE PREVENTION"?

Focusing Your Efforts on Preventing Fires Instead of Fighting Them

MIKE REYNOLDS
CHIEF BUSINESS OFFICER
FARM CREDIT EAST

At Farm Credit East, we have the privilege of working with farmers, fishermen and forest product producers across the Northeast. During my nearly 30 years at Farm Credit East, I have been fortunate to work with customers across all parts of our territory. Many have been in business for multiple generations and are well established in their local communities, while others are first generation operators who see new opportunities for agriculture that may be different from the traditional view.

Over the years, agriculture has continued to evolve and grow. Regardless of whether a business started in 2017 or 100 years ago, most start as family operations with the owners wearing many hats. In addition to being the owner, they are also the bookkeeper, crops and/or livestock manager, head of maintenance, chief problem solver, and generally putting out the figurative fires that pop up at any given point in time.

As businesses grow, business owners need to adjust their roles and limit themselves to wearing fewer hats like those of CEO, CFO or COO. Don Rogers, a long-time Farm Credit business consultant, once said that if you double the size of your business, your management and leadership responsibilities quadruple. Successful business owners need to delegate some things on their long list of responsibilities so they can focus their time and energy on other priorities.

Several years ago, I was a loan officer for a customer who had started out with a small herd of dairy cows on a rented farm. Each year, he added a few more cows, planted a few extra acres of corn and eventually started a small hay business, each time with the support of a well thought-out plan of how to make the next move successful. By the time the business owner was in his early 40's, the operation had grown and diversified into a variety of successful farm and non-farm business ventures.

I happened to be meeting with him when one of his employees popped into the office with an issue that needed immediate attention. He made note of the issue on a notepad, but then politely reassured the employee that they knew what to do and to team up with another employee to handle the situation. When I offered to come back at another time so he could assist his employees, his response is something I still remember today:

> *"If I spend the day fighting fires, that means I am putting all of my energy into just keeping my business from going backwards. If I want to move forward, I need to spend my time preventing fires, not putting them out."*

Many of our most successful business owners share a similar mindset with that customer. Not every business will be big enough to justify a dedicated management team, but successful businesses always make room for enough dedicated management time to review progress, identify lessons learned and plan for the future.

In reality, the occasional fire will still pop up and need an owner's attention. When it does, we may need to ask "why" more often than we usually do. Smoothing things over with an upset customer is something that shouldn't be neglected, but it rarely addresses the real problem. It fixes what broke, but not why it broke.

And if you don't keep asking "why?" you'll probably have to put out that fire again. Sometimes this is referred to as the "5 whys?" because that's often how many times it takes to get to the root cause of something.

Here's an example:

- Customer ABC Enterprises is upset. – Why?
- Their order wasn't delivered as specified. – Why?
- Whoever prepared the order didn't do it properly. – Why?
- They didn't understand the specifications. – Why?
- Whoever took the order didn't write things down in adequate detail. – Why?
- Root: Our sales systems and procedures are deficient in some way.

In this example, smoothing things over with ABC enterprises is essential, but fixing the underlying problem may be even more important so that you don't have to fight that fire again. While a typical problem might be different for a wholesale or commodity-oriented business, it's equally important to get to the root cause so that top quality agricultural, horticultural, forest or seafood products get shipped on time, every time.

A big part of being able to spend more time planning is successfully empowering and training staff to handle the issues that arise. Otherwise, the growth of many companies often plateaus at the limit of what owners can manage themselves. Developing teams and systems to build capacity as an organization is one of the keys to growing the business beyond a single individual's limitations. ♦

The Northeast FARM

CHRIS LAUGHTON

DIRECTOR OF
KNOWLEDGE EXCHANGE
FARM CREDIT EAST

Net Farm Income Projection

Net farm income for 2019 is expected to improve over 2018's results and come in at roughly the same level as 2017, according to Farm Credit East estimates. Leading the way for this improvement is continued good performance from many greenhouse, nursery, vegetable and ag retail businesses. Higher milk prices will also contribute somewhat.

The Farm Economy

OVERALL TRENDS

Inflation is starting to show up in many input costs. One of the major areas of cost increases is labor and wage expense. Average U.S. hourly earnings increased by 3.2 percent during 2018[1], and a tight labor market means that finding and retaining workers has grown more costly.

Another area of rising costs has been energy and related expenses. While crude oil prices have fallen in recent weeks, oil still averaged $65.18/bbl for 2018[2], an increase of 28 percent over 2017. This brought average gasoline prices to their highest level in four years, before declining late in the year. Anecdotal reports indicate that prices for supplies from plastics to cardboard boxes have increased.

Transportation costs (and availability) are a factor as well not just because of fuel costs, but also because of a continuing nationwide driver shortage, and the implementation of electronic driver logs for long-haul truckers, which has driven expenses higher.

Continued tough rhetoric between the U.S., China, and other nations about trade and tariffs has had a major impact on the agriculture industry. Many sectors of U.S. agriculture, forestry and commercial fishing are highly dependent on exports. Even for those producers whose products are not directly exported, the price they receive domestically may be heavily influenced by international trade. In addition, prices for some imported goods from China as well as Europe have already started to reflect import tariffs.

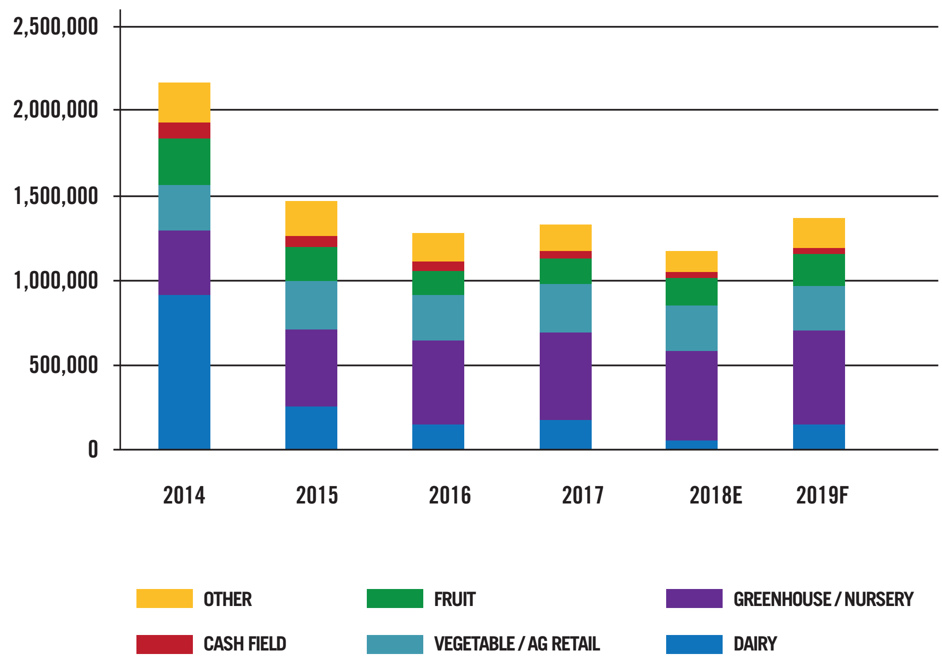
DAIRY

Milk prices were quite low during much of 2018, dropping below $14/cwt for many farms in February 2018. Since then, prices have modestly improved, and are projected to further increase somewhat in 2019. Milk prices usually hit a seasonal low in late winter, when they are typically $1.00 to $1.50/cwt lower than in the fall.

[1]US Bureau of Labor Statistics; [2]US Energy Information Administration, West Texas Intermediate Crude Oil

ECONOMY

NET FARM INCOME
FARM CREDIT EAST STATES



States Included: CT, ME, MA, NH, NJ, NY, RI
Source: Farm Credit East Knowledge Exchange Estimates

- U.S. milk production grew 0.8 percent year-over-year in November, due to increased production per cow. Comparing November 2018 vs. November 2017, there were gains in California, Idaho and Texas, and reductions in New York, Pennsylvania, Vermont and Michigan.
- National cow numbers decreased year-over-year (-38,000 head). New York was down 5,000 head from last year, at 620,000[3].
- Despite ongoing trade issues, U.S. dairy exports have been remarkably strong. Overall, total U.S. dairy exports for the first three quarters of 2018 came to $4.25 billion, four percent above one year ago. Exports were led by very strong buying of powder by Mexico, but partially offset by a large decrease in imports by China. Exports to China were the lowest in two years, in response to new tariffs that have taken effect.
- With the passage of the 2018 Farm Bill, improved risk management tools will be available to producers. The Dairy Margin Coverage (DMC) program, available through the USDA Farm Service Agency, represents the new version of the Margin Protection Program or MPP. Margin coverage is now available

[3]USDA / NASS

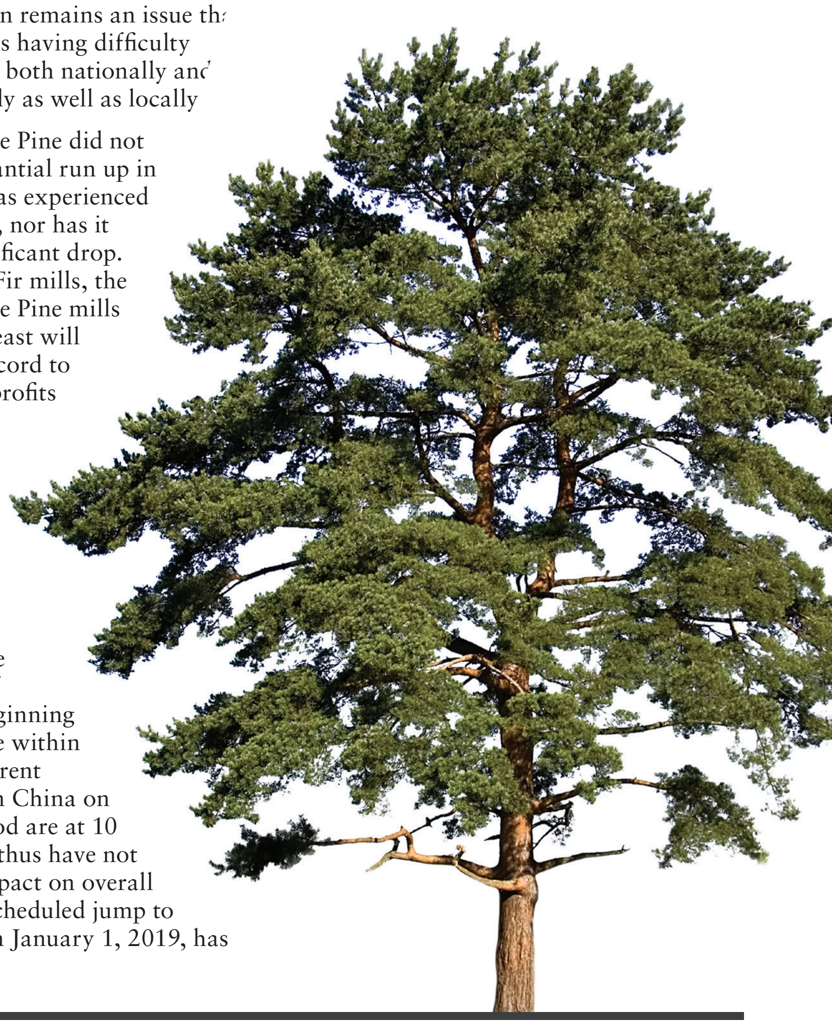
up to $9.50/cwt, and premiums for the first five million pounds of production have been substantially reduced. From the Risk Management Agency, Livestock Gross Margin (LGM) is now joined by the Dairy Revenue Protection program (DRP). The DRP provides protection against an unexpected decline in milk revenues. Additionally, producers can now participate in both DMC and LGM or DRP at the same time.

- It is believed that the new USMCA trade deal, which still requires ratification by lawmakers in each of the three countries, will benefit U.S. dairy, although the impacts may be fairly modest. Mexico represents the largest buyer of U.S. dairy products, accounting for about 25 percent of exports. After the U.S. placed tariffs on aluminum and steel imports, Mexico retaliated with a percent tariff on many U.S. dairy products, and even with USMCA, those tariffs remain.

- Regarding Canada, the agreement would remove Canada's "Class 7" pricing, which made it cheaper for Canadian processors to purchase ultra-filtered milk domestically, and effectively shut down a burgeoning specialty market for the U.S. The agreement will also restrict Canada from exporting certain products at prices below U.S. prices. The U.S. will also be able to export the equivalent of 3.6 percent of Canada's dairy market, an increase from the existing levels.

TIMBER AND FOREST PRODUCTS

- **LUMBER**
  - 2018 was a great year for most Spruce/Fir sawmills in the Northeast. While Spruce/Fir lumber prices have significantly declined from their historic highs in early summer, pricing remains solid, providing ample margins for most mills. The other positive aspect in this market is that the demand/capacity ratio will likely continue to stay in the 90 percent range as capacity gains are being offset by improving demand.
  - Of continuing concern is that housing starts aren't moving beyond the 1.3 million annual rate. Without much improvement in housing starts, pricing in the Spruce/Fir sector will be constrained, and the forecast for lumber margins is becoming more guarded.
  - Transportation issues that helped to fuel the substantial climb in lumber prices earlier in the year have subsided to some extent, especially the rail issues in Canada. That said, transportation remains an issue th the industry is having difficulty dealing with, both nationally anc internationally as well as locally
  - Eastern White Pine did not see the substantial run up in prices that was experienced in Spruce/Fir, nor has it seen the significant drop. Like Spruce/Fir mills, the Eastern White Pine mills in the Northeast will likely post record to near-record profits in 2018.
  - Hardwood lumber prices have been much more problematic. Recent trade issues and the imposition of tariffs are beginning to reverberate within markets. Current tariff levels in China on U.S. hardwood are at 10 percent, and thus have not had much impact on overall prices. The scheduled jump to 25 percent on January 1, 2019, has been paused while the two countries negotiate, although little progress has been made to date. With China being the largest export market for U.S. hardwood, many are concerned about the impact on markets in 2019.
- **PULP AND PAPER**
  - Improving paper markets, especially containerboard and tissue, along with strong pulp markets have supported capital projects being undertaken at various Northeast pulp and paper mills.
  - Pulp markets are strengthening and harvest levels increasing in all species in the Northeast.
  - Stumpage prices in most species and products have been moving upward, with further improvement expected.
  - Sector-wide capacity improvements in North America may overshoot demand and so some observers remain cautious about the outlook for most paper products.
- **LOGGING**
  - Loggers in Northern Maine have



faced substantial challenges in recent years, but ongoing improvement in pulp and paper markets has helped the industry. Those contractors that remain are seeing more opportunities to increase harvest levels, which will positively impact their profitability.

» While the Northeast has been spared some of the transportation challenges faced in other regions, it has not been immune from trucker shortages and the impact of electronic driver logs. Some producers report that transportation bottlenecks have cut into production capacity. This is true throughout the Northeast region, as loggers in Southern New England report difficulty sending loads north.

CASH FIELD CROPS

It was a great growing year for much of the U.S., which means abundant supplies of grains and oilseeds. USDA estimates the national average corn yield at 178.9 bu/acre, a record that exceeds last year's yield by more than two bushels. This is expected to result in a national corn crop of 14.6 billion bushels. Soybean yields are also projected to break records, estimated at 52.1 bu/acre, which would yield 4.60 billion bushels, 189 million more than last year.[4]

- Both domestic and foreign demand for corn has been strong, but long supplies will likely limit price increases. World corn production increased by 23.7 million tons, or 2.2 percent, largely due to major increases in Ukraine and the EU.
- Weak ethanol margins are reducing demand for corn from that sector.
- The record soybean crop comes at a time of escalating trade disputes with China, the U.S.'s largest export customer. This has resulted in a loss of billions of dollars of value for the crop, with prices at or near decade lows. Soybean exports to all customers fell by 28 percent in the third quarter. Some feel that given China's large dependency on American soybeans, markets may have over-corrected, and their buying will either come back, or U.S. growers may find new customers as China consumes South America's crop. China has options to draw down stocks, however, by adjusting animal rations to reduce soybean meal content. This may limit U.S. price recovery and could disrupt soybean exports to China well into the future.
- Recent talk of an informal agreement with China made at the G-20 summit to buy more U.S. soybeans caused a rally in futures markets, but it is unclear whether actual shipments have taken place.
- USDA forecasts corn prices for the 2018/19 market year at $3.25-3.95 (2017/18: $3.36), and soybeans at $7.85-9.35 (2017/18: $9.33).
- Reports from New York indicate that it was a good growing year and yields were good, however, wet fall conditions caused quality concerns and some problems harvesting the crop.

LIVESTOCK

- 2018 average prices for Choice Steers are estimated at $117/cwt., slightly below 2017. 2019 prices are forecast relatively flat at $114-122/cwt. However, many Northeast beef producers serve specialty markets and receive significantly higher prices than national averages.
- Dairy cull cows have averaged $40-55/cwt at auction depending on quality and grade. Bull calves are fetching extremely low prices or even nothing depending on the market. Cow and cull prices have fallen by at least 25 percent, year-over-year, causing reduced earning potential of the sector.
- The number of beef cattle on feed is the highest recorded since data collection began in 1996. 2018 beef production came in at 2.9 percent greater than last year. However, beef exports were 4.6 percent above last year, helping to support domestic prices. Thus far, growing demand, largely from exports, has kept pace with increased supplies, but continued production increases or trade disruptions could impact the domestic supply-demand equation.
- Most livestock product prices for 2018 averaged below prior year levels due to larger supplies. Eggs were an exception, which received relatively high prices, compared to year-earlier lows, but their prices are expected to fall in 2019.

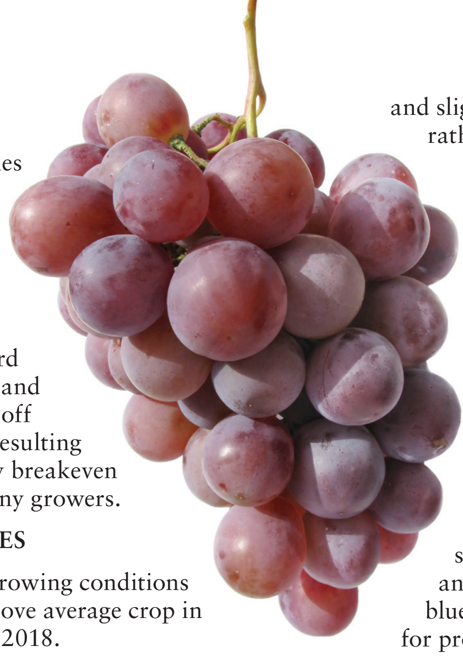
- Recreational equine markets are supported principally by local recreational demand and nonfarm income, and have been tracking upward along with the general economy.

FRUIT

- **APPLES**
  - » New York's 2018 apple production is estimated at 31 million bushels, or 1.3 billion pounds, slightly over last year, and roughly on par with the state's 5-year average.[5] Yield and fruit size has been good. Overall grower mood is positive.
  - » USDA estimates overall U.S. apple production at 11.5 billion pounds, less than one percent larger than last year's crop. Washington's production came in at roughly 12 percent less than the prior year, while Michigan rebounded from 2017's poor harvest, with a 40 percent increase.
  - » A smaller Washington crop and strong demand should support higher prices through 2019.
  - » In the processing apple market, prices have improved slightly, but have not kept pace with rising costs of production. There is some

[4]USDA / WASDE, [5]New York Apple Association

increased interest in cider varieties due to growth in that sector.



- **PEACHES**
  - » Following 2017's record year, yields and prices were off somewhat resulting in a roughly breakeven year for many growers.
- **JUICE GRAPES**
  - » Favorable growing conditions led to an above average crop in the east for 2018.
  - » Juice grape prices have been low for years, but major processors seem to have balanced inventory more closely with demand, which should lead to higher pay prices this year.
- **WINE**
  - » 2018 was a good year for grape yield, but wet conditions brought significant disease pressure. Storage tanks are mostly full from last year's bumper crop, so juice and bulk wine will have to find markets, probably at lower prices.
  - » Reports indicate that visitor counts continue to decline slightly, but overall retail spending is keeping pace or slightly higher than last year. This means visitors are spending more at each winery which could be due to overall improved economic conditions in the general economy. The increase in retail sales is mainly in increased tasting fees, non-wine sales and slightly increased wine prices rather than increases in cases sold.
- **SMALL FRUITS**
  - » New Jersey highbush growers reported reduced yields and average prices, resulting in a mediocre-to-average year. Meanwhile, in Maine, the wild blueberry market is struggling with prices at a 10-year low and reduced yields. Highbush blueberries are often sold on the fresh market, and lowbush, or "wild" blueberries are generally sold for processing, which explains the price disparity.
- **CRANBERRIES**
  - » The cranberry market continues to struggle with low prices for both independent growers and cooperative members. USDA/NASS estimates 2018 U.S. cranberry production at 8.63 million barrels, three percent higher than 2017. Massachusetts' crop is estimated at 1.90 million barrels, one percent lower than last year.
  - » Continued ample production will limit upward price movement. The industry's Cranberry Marketing Committee projects that supply will exceed demand in the coming year by 66 percent. In an effort to manage supply, USDA passed a 25 percent marketing order reduction for the 2018 crop, an increase from last year's 15 percent handler withholding.

AQUATIC/FISHING

- **LOBSTER**
  - » Reports indicate that it was a "good, but not great" year for the Maine lobster industry. Prices and catch levels were good, but trade issues with China and Europe have been significant. Exports to China dropped by more than half after China's 25 percent tariff took effect on July 6.[6]

- **SCALLOPS**
  - » Prices are down from last year, due to exceptional catch levels and flat demand. Permit values, however, are holding strong. The wild stock remains ample.
- **GROUNDFISH**
  - » Although the stocks of many protected species of groundfish are rebuilt, regulations and quotas remain limiting for the industry.
    - › Permit trading continued to be limited in 2018 as regulations continued to ratchet down quotas and days-at-sea.
    - › Prices have held steady, and the catch has been good on the species vessel owners are allowed to land.

VEGETABLES

- In the New York processing market, vegetable acres appear to remain stable for the coming year. Yields were generally good across New York in 2018, though there were reports of soft prices.
- In New England, a wet summer into fall across much of the region affected yields and growers' ability to get into fields. This may result in some sales decreases for those affected.
- New Jersey results were mixed. Prices were generally good but did not always make up for lower yields. The weather was difficult for many growers, with a very dry start to the summer, followed by surplus moisture for the remainder of the season and into fall.
- The availability of seasonal farm labor continues to be an issue for many vegetable growers.
- **POTATOES**
  - » The 2018 Maine potato crop is estimated to have produced 15.84 million cwt, which is an increase of 640,000 cwt from 2017. Average yields for 2018 are estimated to be the same as the 2017 crop at 320 cwt per acre. Harvested acreage increased by 2,000 acres to 49,500 acres. Chipstock production appears to be higher, while usable supplies for french fry processing, tablestock and seed are in line with the previous year.

[6]Undercurrent News / NOAA

» Market conditions continue to be favorable for all industry sectors. All increased chipstock production will be needed due to shortages in other growing regions. Overall quality of the processing crop is slightly below the previous year, which could decrease per cwt returns for some growers, but all supplies will be utilized and any open production has been locked up by processors, some of which has moved to PEI, Canada.

» Global demand for french fries continues to be strong and with potato crops in Europe being down nearly 20 percent, supplies for french fry processing are in a tight balance.

» Tablestock prices are at or slightly higher than the previous year and should remain at profitable levels throughout the shipping season. Seed supplies are in high demand which is leading to increased seed prices, particularly for varieties shipped to the southern U.S. states for chipstock production.

GREENHOUSE AND NURSERY

2018 was generally a good year for greenhouse and nursery growers, tracking along with the general economy and increased consumer spending. Revenues are slightly higher compared to last year, but many growers had hoped for an even greater increase than what was realized. Meanwhile, costs are increasing, causing margin pressure.

- Wholesale nursery growers reported a good 2018 season. Landscapers have been very busy.
- Shortages of some plant materials, particularly larger-sized trees, are being experienced, however this situation will largely resolve itself over the next couple of seasons as new plantings come up to size.
- As with other agricultural sectors, labor supply continues to be a major issue.
- Interest in new technologies in Controlled Environment Agriculture (CEA), primarily for vegetable production, such as roof top structures, vertical greenhouses, etc., continues to develop, particularly in metropolitan areas, which has attracted some venture capital type funding. However, questions remain about the profit potential of many of the more high-tech operations.

CROP INSURANCE

An Important Risk Management Tool

The passage of the 2018 Farm Bill maintained a reliable, affordable and sustainable crop insurance program for American farmers during a time of volatile markets and weather risks. The Farm Bill also delivered on providing the dairy industry with improved risk management options to mitigate the risk of market fluctuations.

JEREMY FORRETT

VICE PRESIDENT
CROP GROWERS, LLP

For Northeast producers, planning for the upcoming year includes developing a risk management plan that prepares their business for weather and market volatility. Having a sound risk management plan in place allows producers to protect input costs, yields and market risks.

In 2018, Northeast producers purchased over 20,000 crop insurance policies, protecting 2.6 million acres with $1.3 billion of protection in force. These are the same Northeast producers that during 2013-2017 received over $525 million in claim payments due to weather and market-related crop losses. Crop insurance payments stabilize farm income and help provide confidence to reinvest in the future.

Crop insurance has evolved significantly over the past 10 years. With the development of the Whole Farm Revenue Program, Pasture Rangeland Forage, Dairy Revenue Protection and county program expansions, the USDA Risk Management Agency is committed to meeting the needs of all producers. Crop insurance has also been enhanced to provide benefits to beginning farmers and to organic producers as well, by expanding organic pricing options so that it more accurately reflects their value of production.

An important step in preparing for the coming year should be to develop or review your risk management plan with your local Crop Growers crop insurance agent. Utilize your local agent's expertise by reviewing with them your business goals, business risks and marketing plan. An agent can help you put together a plan that meets your business's needs.

Pasture, Rangeland and Forage

The Pasture, Rangeland and Forage (PRF) program, protects forage and livestock producers against losses due to drought. PRF is an effective and affordable tool for producers who need to offset losses caused by reduced forage and grazing due to lack of rainfall.

Producers can insure all or part of a pasture, rangeland or field used for haying or grazing. Producers choose which months to insure (minimum of two two-month "index intervals"). In any selected interval that rainfall is less than 90 percent of the historical average, the producer will receive a payment to offset their losses. The sales closing date for Pasture, Rangeland and Forage (PRF) Rainfall Index is November 15 each year for the following year.

Dairy Revenue Protection Program

Another new program, the Dairy Revenue Protection Program (Dairy-RP) insures producers against drops in milk revenues on a quarterly basis as it relates to coverage levels selected by the producer. It is broken down into two different pricing options: the Class Pricing Option or the Component Pricing Option. The first option uses a combination of Class III and IV prices as a basis for determining coverage and indemnities and the second option uses component prices like butterfat, protein and other components for determining coverage and indemnity levels.

These values, either ending milk price or component values, are determined by the monthly average price as recorded by USDA AMS in the milk production report.

This table shows the premium subsidy as it relates to coverage level. A producer can cover from 70 to 95 percent of expected quarterly revenue.

DRP PREMIUM SUBSIDIES

COVERAGE LEVEL PERCENT	70	75	80	85	90	95
PREMIUM SUBSIDY LEVEL	59	55	55	49	44	44

Dairy-RP coverage selections are available daily on a rolling basis based on futures prices of class prices or components, as applicable. Generally, coverage options can be selected by quarter up to five quarters in advance. As the beginning of a new calendar quarter approaches, sales for the immediately preceding quarter end, and a new quarter one year out opens.

Whole-Farm Revenue Protection

Whole-Farm Revenue Protection (WFRP) provides a risk management safety net for all of a farm's agricultural commodities under one insurance policy and is available in all Northeast counties. WFRP is suitable for farms with up to $8.5 million in insured revenue, including farms with specialty or organic commodities (both crops and livestock), or those marketing to local, specialty or direct markets.

WFRP uses a producer's five-year historical farm average revenue, as reported on IRS Schedule F, and an annual farm report as a base to provide a level of guaranteed revenue for the insurance period. This protection establishes revenue as a common denominator for the insurance of all agricultural commodities on the farm. The sales closing date for Whole Farm Revenue Protection (WFRP) is March 15.

For more information about PRF, Dairy-RP and WFRP, contact your local Crop Growers agent. ◆

2017 NORTHEAST CROP INSURANCE STATISTICS

	POLICIES	ACRES COVERED	POLICY LIABILITY	PRODUCER PREMIUM	INDEMNITY PAYMENTS
CONNECTICUT	279	17,962	$ 30,464,952	$ 1,983,887	$ 2,412,862
MASSACHUSETTS	525	25,732	$ 41,047,750	$ 20,182	$ 2,594,232
MAINE	723	109,370	$ 78,406,949	$ 3,575,110	$ 2,993,793
NEW HAMPSHIRE	74	7,488	$ 4,048,159	$ 1,552	$ 341,867
NEW JERSEY	1,486	154,816	$ 75,044,533	$ 1,749,831	$ 1,239,348
NEW YORK	6,125	1,081,395	$ 548,878,861	$ 18,195,811	$ 70,808,363
PENNSYLVANIA	11,472	1,183,592	$ 489,884,976	$ 19,041,220	$ 24,760,632
RHODE ISLAND	35	1,097	$ 1,173,051	$ 26,420	$ 182,642
VERMONT	429	70,882	$ 24,520,816	$ 25,971	$ 4,567,001

Source: USDA Risk Management Agency

2019 DAIRY OUTLOOK

BEN LAINE
SENIOR ECONOMIST, COBANK

The dairy industry was treated to a crash course in international relations and global trade in 2018. A loss of export sales due to various trade barriers led to heavy domestic inventories, which weighed on prices in the later part of the year. Looking ahead to 2019, relief from some of the trade barriers that have been in place for much of 2018 should provide some improvement, but it is far from guaranteed and will not happen immediately.

March 2018 began with tariffs imposed by the U.S. on steel and aluminum imports. What followed was months of back and forth retaliatory tariffs from China, Mexico and other nations that eventually dragged dairy into the spotlight. By September, all eyes were on dairy as the one stubborn sticking point in the renegotiation of NAFTA until Canada eventually agreed to open a small share of its market to U.S. dairy. For 2019, there is hope that the trade situation will improve and have a positive impact on prices. The biggest long-term growth opportunities for the dairy industry as a whole continue to be in export markets, but that comes with risk and an increased susceptibility to disruptions and competition worldwide.

On the supply side, a slowdown in milk production should provide a lift to milk prices. Although milk production is not expected to decline in 2019 on a national basis, growth should slow to below one percent year-over-year and may be closer to flat in some months. In certain months, production will likely turn negative in regions from the Northeast westward through the Upper Midwest, offset by growth in the West and Southwest.

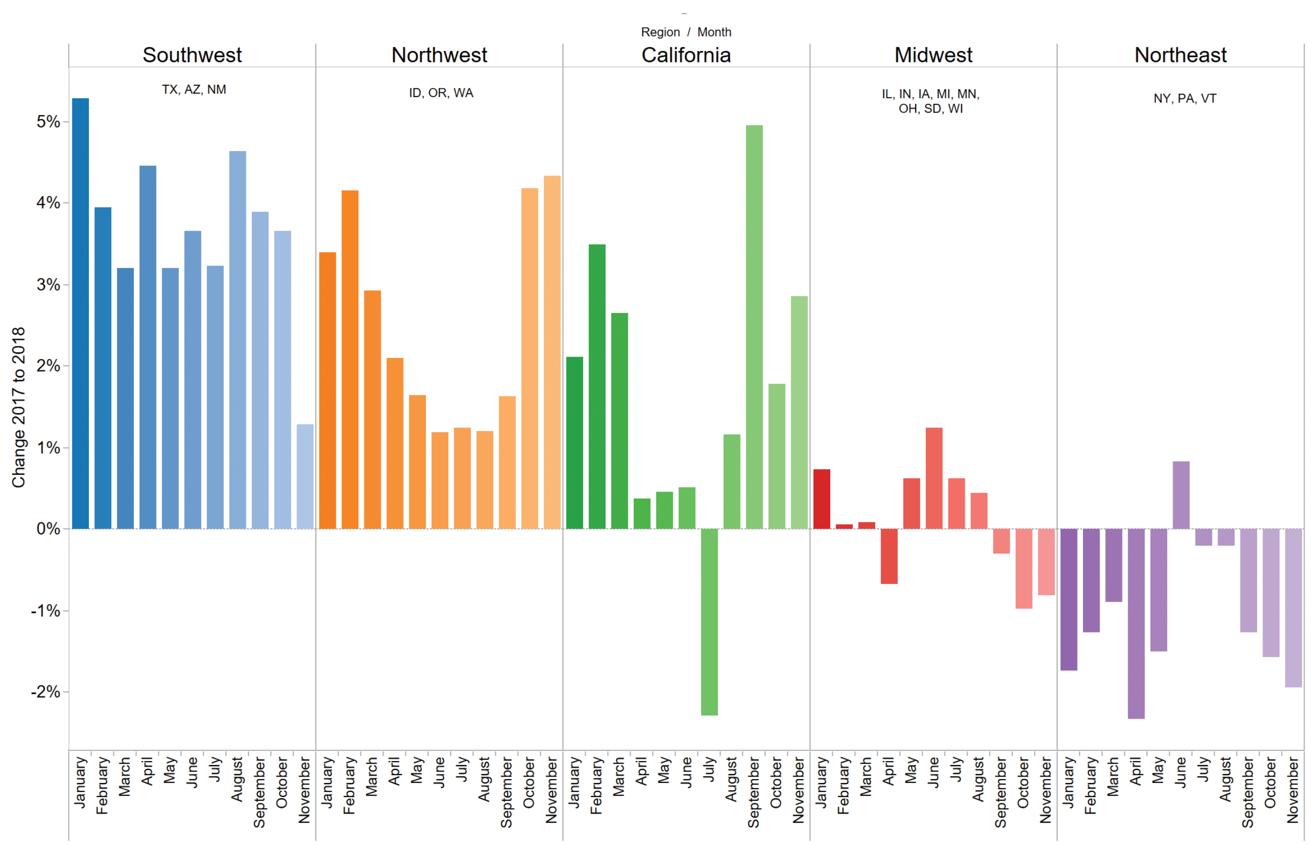
The slowdown in production is a double-edged sword. It will have a positive impact on milk prices, but at the expense of dairy farms liquidating herds and exiting the business under difficult conditions. On a national basis, the increases in production will come from increased milk per cow rather than an increase in cow numbers. Large-scale farms continue to look for expansion opportunities in the Southwest and areas of the Great Plains. The Northeast and Upper Midwest, meanwhile, have had declining cow numbers combined with minimal growth or minor decreases in milk per cow during 2018.

The slowing production growth will eventually give demand an opportunity to catch up. In the meantime, expansions and new plants around the country are positioning themselves to meet this demand. Additional cheese processing capacity is being built and is expected to become available in 2019 in the form of expansions in the Midwest and a new large-scale cheese plant in Michigan expected in 2020. While processing capacity gains in the Northeast will be modest, the additional outlets to the west will likely relieve some of the need to dump milk during the spring flush.

For now though, cheese inventories are unseasonably high, partly due to lost export sales. This has a near-term impact of putting downward pressure on the class III milk price,which ended the year below $14 per cwt., but there are signs that the lower cheese price is making the U.S. competitive on the global market once again, offsetting some of the headwinds of tariffs and a strong dollar.

2019 will not be the year that will mend the wounds of the last several, though it should be an improvement over 2018. The 2018 average Northeast federal order uniform price came in close to $16 per cwt., and 2019 is expected to be above $17. Low prices should linger through the winter, but improvement closer to late spring and summer should bring the average milk price up. The sooner trade disruptions are resolved, the sooner improvements will be seen in the milk price.

MONTHLY MILK PRODUCTION CHANGE 2017 TO 2018 / SELECT REGIONS



Grain & Oilseed

DR. PATRICK WESTHOFF

DIRECTOR
FOOD AND AGRICULTURAL
POLICY RESEARCH INSTITUTE
THE UNIVERSITY OF MISSOURI

Outlook

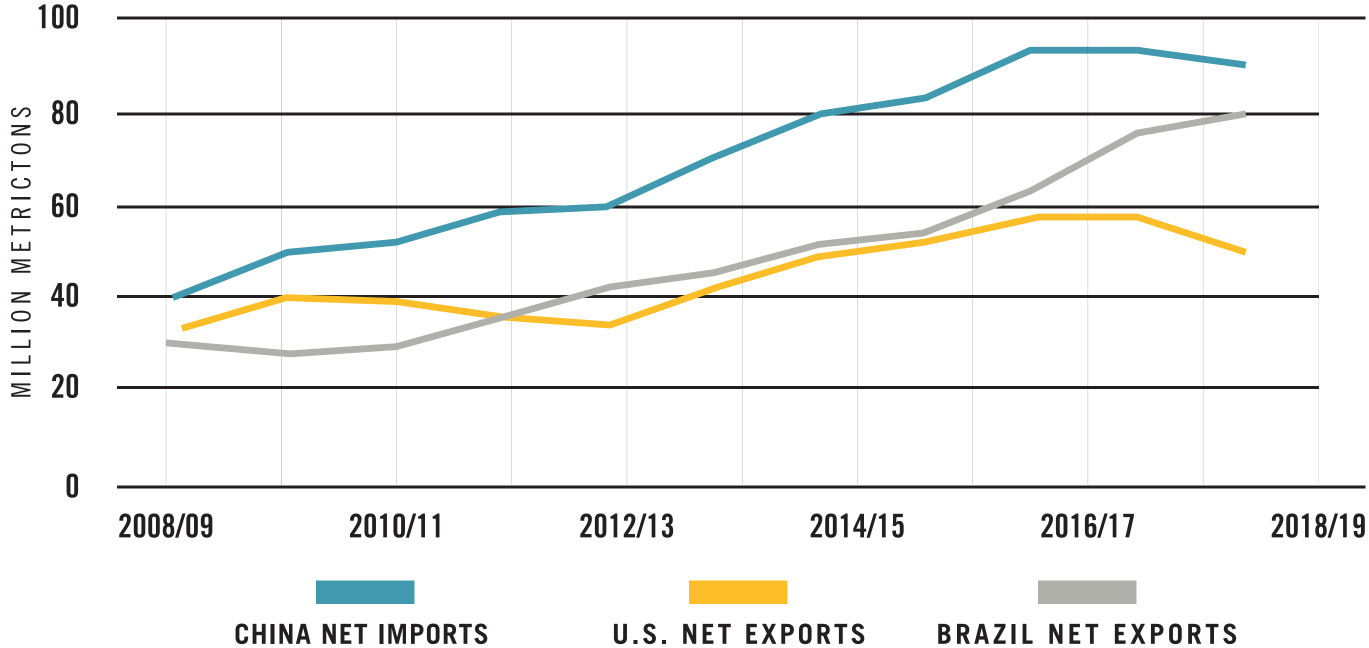
The big story in grain and oilseed markets is that large global supplies continue to weigh on prices. With stocks at or near record levels, it will take a significant reduction in production or an unexpected boost in demand to see a major price recovery.

A new farm bill was signed into law on December 20, 2018, but for grain and oilseed markets, that was not the top policy story of 2018. Instead, trade disputes with China and other countries have weighed heavily on commodity markets and introduced a major source of uncertainty.

In the summer of 2018, China imposed a 25 percent retaliatory tariff on imports of U.S. soybeans and many other farm commodities. The consequences follow basic economic logic. The tariff increased the wedge between domestic prices in China and the United States and sharply reduced U.S. sales to China. Brazil and other exporters increased their sales to China. While U.S. exports increased to other markets no longer supplied by South American soybeans, total U.S. exports dropped well below previous estimates.

Soybean prices have gyrated in response to the latest rumors about U.S.-China trade relations. If this uncertainty continues, it will add to the normal market volatility caused by the weather,

FIGURE 1. **SOYBEAN TRADE**



Source: USDA Foreign Agricultural Service, PSD Online, December 2018.

exchange rates, oil prices, economic growth and other factors.

To put things in perspective, it can be helpful to focus on three key variables: total soybean imports by China, and total soybean exports by Brazil and the United States (Figure 1). China's soybean imports more than doubled between 2008 and 2016, but then leveled off in the 2017/18 marketing year and were projected to decline in 2018/19. Both U.S. and Brazilian exports increased between 2008 and 2016 to take advantage of the growing Chinese market. In the 2017/18 marketing year, however, Brazilian exports increased sharply while U.S. exports declined slightly. USDA projected another large increase in Brazilian exports in 2018/19, and early-season sales are consistent with USDA's projected steep decline in U.S. exports.

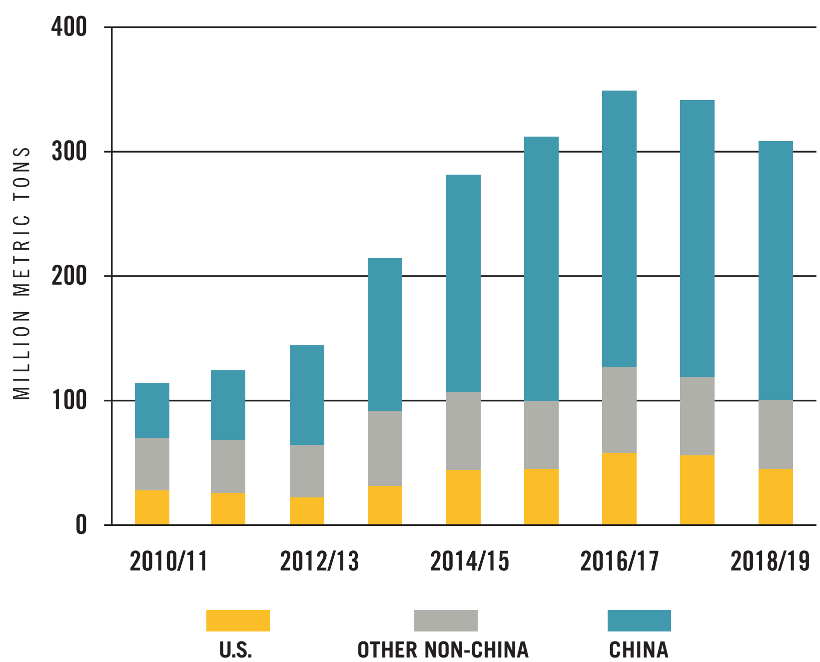
If there is no resolution of the trade dispute, these trends are likely to continue. China will import fewer soybeans in total than it would have otherwise, and most of those imports will be supplied by Brazil and other non-U.S. exporters.

Meanwhile, China is also playing an unexpected role in the corn market. Data about China's corn supply and use are unreliable and subject to large revisions. Such a revision was made recently, suggesting China's corn production was much greater than previously estimated.

Even with an upward revision in estimates of China's corn consumption, the implication was that China's stocks of corn were much larger than previously thought. Indeed, USDA estimates now suggest that China holds most of the world's carryover stocks of corn (Figure 2).

In a certain sense, these changing estimates are unimportant. All that really matters to U.S. producers is how much corn China trades, and China's imports have remained in a relatively narrow range in recent years. However, the previous reports that China's stocks were much smaller and were rapidly declining

FIGURE 2. **WORLD CORN STOCKS**



Source: USDA Foreign Agricultural Service, PSD Online, November 2018.

had led me and some other analysts to hope that China might become a larger corn importer in the not-too-distant future. That hope now seems unlikely to be fulfilled.

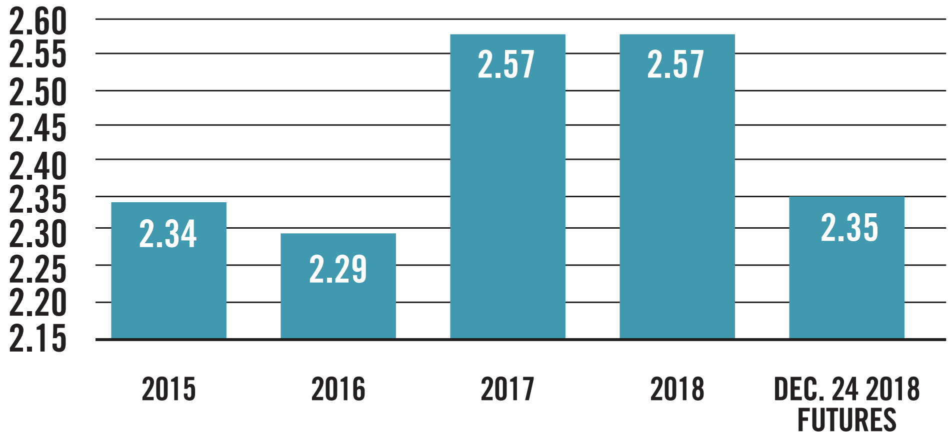
U.S. and other non-Chinese stocks of corn are significantly reduced from their recent peak levels. While the estimated stock levels are high enough to allow corn prices to remain below $4 per bushel, a drought or unexpected boost to global demand could result in significantly higher prices.

In wheat markets, a smaller global crop in 2018 is resulting in a modest decline in world stocks and slightly higher U.S. prices. One important development is the emergence of Russia as the single largest exporter of wheat in years with favorable weather. As a result, the country has become a major source of uncertainty in global grain markets, given wide annual swings in yields and in export policies.

Looking ahead, most analysts expect an increase in corn acreage and a reduction in soybean acreage in 2019. On December 24, 2018, the ratio of December 2019 corn futures contracts to November 2019 soybean contracts was 2.35 (Figure 3). That's well below the ratio that prevailed when planting decisions were made for the 2017 and 2018 crops, and only slightly above the ratio in 2016. While this ratio is not a perfect predictor of planting decisions, it should be noted that U.S. farmers planted 94 million acres of corn in 2016 and just 89 million acres in 2018. Meanwhile, soybean area increased from 83 million acres in 2016 to 89 million acres in 2018.

Finally, note that the new farm bill continues crop insurance and basic commodity programs with relatively few and minor changes.

FIGURE 3. **SOYBEAN / CORN PROJECTED PRICE RATIO**



Source: Author calculations, based on RMA projected prices for soybeans and corn for 2015-2017 and the corresponding futures prices (December 2019 corn and November 2019 soybeans) on December 24, 2018.

NORTHEAST LOBSTER INDUSTRY OUTLOOK

HANK SOULE
MANAGER
SUSTAINABLE HARVEST SECTOR

Expect New England's lobster fishery to be above the fold news in 2019, and much of it will be bad. The industry faces threats on several fronts, some unique to the fishery and others more common across the business spectrum.

Lobstering now ranks as the nation's third most valuable fishery, trailing only the varied salmon and crab fisheries largely concentrated on the West Coast. American lobster landings were valued at $550 million in 2017. Maine's 75 percent market share dominates the fishery, with Massachusetts a distant second at nearly 20 percent. Maine's 2017 landed lobster value of $430 million has more than doubled over the last two decades, even after adjusting for inflation. It is a lucrative fishery and its revenues – from both fishing and shoreside support services - have become increasingly important to communities in Downeast Maine.

However, despite this tremendous success, there are reasons for concern. Last year's $550 million region-wide catch – though among the highest ever – actually dropped sharply in value from 2016's record-crushing $660 million. It was almost entirely a result of fewer pounds landed, and though no one can say with certainty that the slide will continue, history suggests there is more downside catch risk than upside opportunity (Figure 1).

Fisheries are often interdependent, and the lobster fishery is highly dependent on the tiny herring used as bait for its traps. Once largely a food fish, over the last few decades, herring has transformed into a cheap, abundant, and locally sourced baitfish. But for 2019, concerns over population growth of that species have led the government to recommend a more than 50 percent reduction in the amount of herring allowed to be caught and made available for bait.

Cutting bait use by 50 percent is not likely to increase your catch of lobster, and the industry is already scrambling to establish new sources of supply. Alternatives do exist – alewives caught from Maine to the mid-Atlantic, skates from southern New England, even frozen redfish carcasses imported from overseas. But they are rarely as local, often more expensive, and usually less enticing to a crustacean effectively weaned on herring bait for a generation or more.

A much different, but no less significant, problem is the unintended catch of the not-so-tiny Atlantic right whale. Yes, lobster gear can, in a fashion, catch those too, though lobstermen are often scapegoated for what is a multifaceted problem. Of course, these 50-ton behemoths can't possibly squeeze into a trap, but they are prone to entanglement in the vertical lines which connect buoys on the ocean surface to traps resting on the seafloor. Once entangled, it becomes difficult or even impossible for the whale to shed the fishing gear, and death can result.

Right whale populations were devastated in centuries past by whaling, and perhaps 400 of the Atlantic stock remain alive today. It is a slow-growing, endangered species, which has shown little evidence of reproduction over the last few years. Over the same period, perhaps five percent of the remaining population succumbed to a combination of large ship strikes (the most common source of human-caused mortality) and entanglements with American and Canadian fishing gear – including lobster and crab traps, and stationary netting designed to catch finfish.

Each of these industry segments which pose a risk to right whales has implemented mitigation measures. Ships reduce speed in some zones to provide the whales more time to detect and evade the traffic. Lobster and finfish gear has for years been deployed with "weak link" joints, designed to break apart if a whale swims into it, thus decreasing the chance of entanglement. Most recently, the Canadian government required crab-pot fishermen to remove all traps from an area the whales were congregating in for a time.

That last step is a draconian possibility for the Northeast's half-billion dollar lobster fishery. But Maine fishermen alone set out nearly three million lobster traps annually. Though more than one trap can be affixed to a single line, there's something akin to a roped obstacle course for whales deployed in the water column throughout the Gulf of Maine.

The industry is working on solutions – better weak links, reductions in lines used, even experimenting with rope-less, radio-activated traps that bob to the surface when electronically summoned. But the federal government is under increasing legal pressure to preserve the remaining right whale population no matter the cost, and New England lobstermen will inevitably have to invest large sums in that preservation effort.

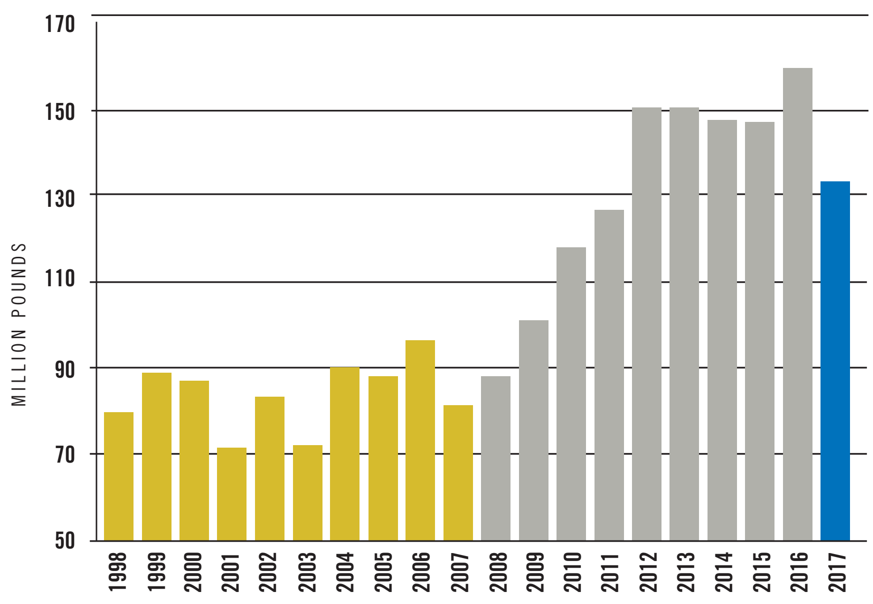
Aside from these unique challenges, the industry faces other issues common to employers across the country. The opioid epidemic has been acute for some time in fishing communities. Oxycodone and cheap heroin are prevalent on the waterfront to the point that many vessels carry the overdose antidote Narcan on board. In Massachusetts, fishermen are about five times more likely to die from an overdose than other workers in the state – not while on the job, but mixing narcotics with hydraulics on the high seas is never a good idea.

Back on land, lobster wholesalers find it increasingly difficult to secure qualified labor, to the point that the Maine Lobster Dealers' Association recently partnered with that state's Department of Corrections to pitch about 50 interested inmates on employment opportunities upon their release. Not just a job fair, the Association has developed a training and certification program in lobster handling, equipment safety and other topics to prepare candidates in advance of employment.

Maine Corrections Deputy Commissioner Ryan Thornell said, "Preparing these individuals for meaningful work is our duty. We recognize the unique position we are in, that helping those in custody prepare for in-demand Maine jobs has a direct and positive impact on Maine's economic and labor outlook."

And so, the table for 2019 and beyond is being set: While the lobster fishery is likely to continue to deliver significant revenue for the region, there is some uncertainty about the volume of lobster to be landed, yet virtual certainty that costs of goods used to catch them – bait and labor – will be less plentiful and thus more expensive. The burden of preserving right whale populations will increasingly fall on lobstermen in both the regulatory and legal arenas, which ultimately means more money out-of-pocket. The fishery isn't going bust, but the recent and comfortable spread between revenues and expenses could be narrowing in coming years. ♦

FIGURE 1. **TWO DECADES OF AMERICAN LOBSTER LANDINGS**
1998-2017



GREEN INDUSTRY ECONOMIC OUTLOOK for 2019

DR. CHARLES R. HALL
TEXAS A&M UNIVERSITY

For businesses in the "green industry" (nurseries, greenhouses, landscapers and garden retailers), there are three things that seem to matter most: weather, the overall economy and consumer spending.

If the economic recovery from the Great Recession of 2008-09 was not at its peak in 2018, it certainly seemed close. We are only a few months away (we will hit it in June 2019) from the current expansion being the longest in U.S. history.

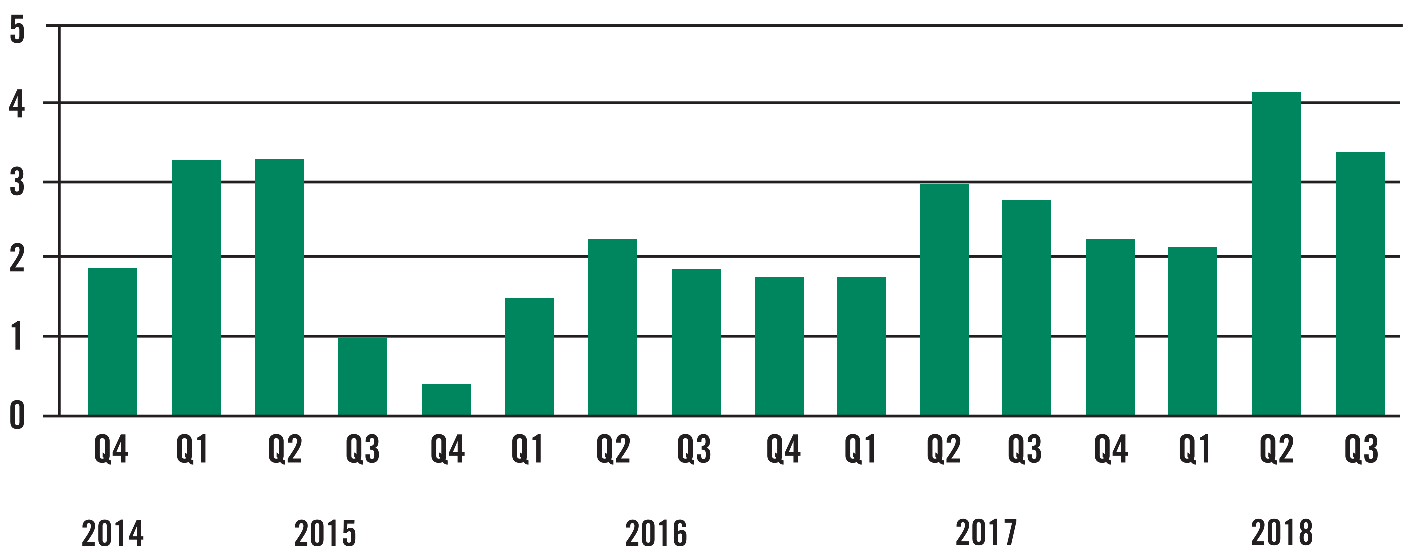
After expanding at a mediocre 2.2 percent pace in the first quarter, the economy grew 4.2 percent in Q2 and 3.4 percent in Q3, with second quarter GDP growth being the best in nearly four years.

Unemployment dropped further, with the headline jobless rate dipping below four percent in the first half of the year, then declining from four percent to 3.7 percent for the remainder of the year. The good economic news for the green industry was mixed, however, as weather and regional economic differences once again were influential.

Households were especially confident in 2018, as the two most well-regarded monthly consumer sentiment indices pointed out. For example, the University of Michigan index topped 100 twice (March and September) and fell below 96 only once (January); its historical average reading is 86.4.

However, I care little about how people feel; I care about how they spend their money. This year, both were correlated, and personal spending affirmed the strength of the economy. In the first three

REAL GDP: PERCENT CHANGE FROM PRECEDING QUARTER



U.S. Bureau of Economic Analysis. Seasonal adjusted at annual rates.

quarters of the year, it contracted just once (by 0.1 percent in February). From March through November, consumer spending rose by 0.4 percent or better every month.

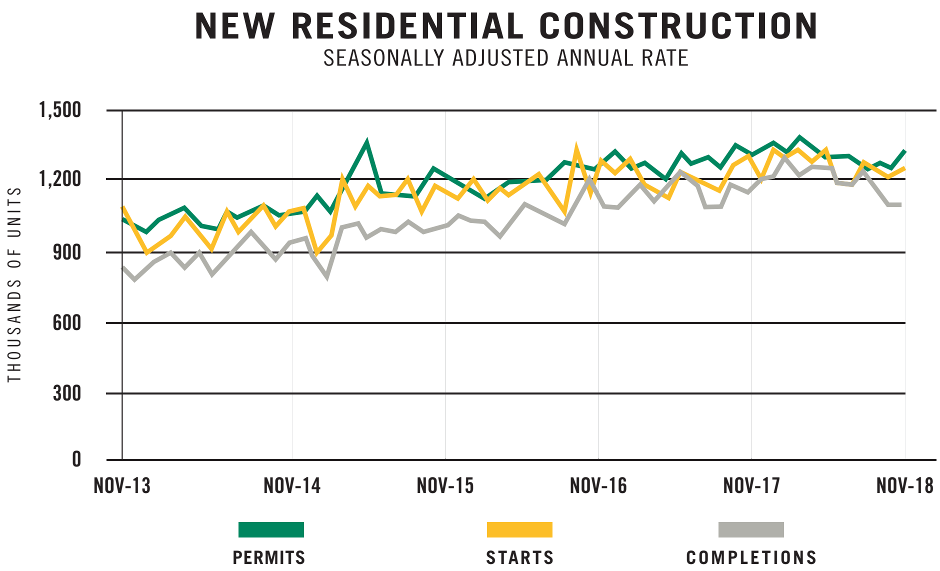
This spending was also evidenced in the green industry, with 95 million households (HH) participating in lawn and gardening (L&G) activities, averaging $503 in expenditures per HH. While spending in the South, West and Northeast regions was higher, the Midwest and Mid-Atlantic regions suffered from poor weather conditions in the spring. Retail L&G spending (and transaction count) was about four percent higher and there was about a 13 percent increase in do-it-for-me landscaping expenditures. While married 45-to-64-year-olds spent the most, expenditures among the 18-34 millennial cohort was at an all-time high, a hopeful L&G trend for the future.

The green industry is strongly influenced by housing markets. Expectations of home sellers and buyers differed in 2018, and that difference affected the pace of existing home sales. Prospective buyers found few affordable properties and went to the sidelines. In other words, many sellers decided to hold firm on their prices and waited a little longer for their homes to move. Existing home sales in November were about seven percent lower year-over-year (YOY), while new home sales were almost nine percent lower YOY.

> “**13% increase** in do-it-for-me landscaping expenditures.”

Additionally, mortgage rates on a 30-year home loan closed the year at around 4.5 percent compared with 3.95 percent last year. In December, the federal funds rate was between 2.25 percent and 2.50 percent, a full percentage point higher than it was a year earlier. The Federal Reserve, now in the Jerome Powell era, is widely expected to make two more rate hikes in 2019, which will also affect housing affordability and, accordingly, derived-demand green industry sales.

While these are obvious signs of growth slowing down in the residential real estate market, other economic gauges are still strong, which gives green industry firms something to be bullish about for 2019. The Consumer Price Index showed yearly inflation at 2.1 percent in January; in June and July, it reached 2.9 percent. Falling fuel costs had helped moderate annualized inflation to a rate of 2.2 percent by the close of the year. This could change depending on the trade outlook, however.



Currently, there is a temporary truce in the US-China trade war, but if the trade situation is not resolved by March, tariffs will be placed on another $200 billion of Chinese imports. According to a report from the Tax Foundation, existing tariffs will cost every middle-class family $146 — and the threatened tariffs could push that to $453 in a year. The United States-Mexico-Canada Agreement (USMCA) could also have mixed effects on the economy. Bottom line, there is greater uncertainty in the global marketplace and input costs for many green industry firms will likely rise, exacerbating the cost-price squeeze already being experienced as input prices are 22.7 percent higher than they were pre-recession.

While 2018 was a good year, it also marked the return of significant volatility. For example, the S&P 500 saw three corrections (February, October and December), yet it also reached all-time peaks. I am always quick to point out that stock market performance does not equal economic performance, but it is a good measure of uncertainty and volatility.

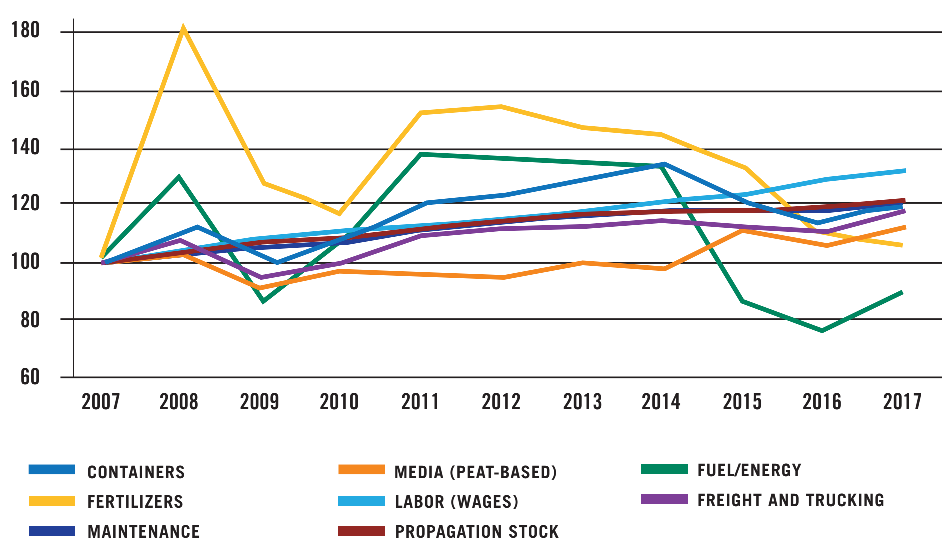
Speaking of uncertainty, when will the next recession hit? There is tremendous divergence of opinion, of course, but my own forecast is that it is unlikely to occur in 2019, based on several basic indicators. First, the St. Louis Fed financial stress index reflects a historically-low level of risk in that sector with banks being in a much better liquidity position than they were prior to the last recession. Second, the Chicago Fed's national activity index (which combines 85 economic indicators) shows the economy currently growing at a rate above the long-run historic average.

Third, while the pace of improvement has slowed for the Conference Board's leading economic index (LEI), it has shown improvement for the last 12 months and the LEI is a good predictor of the economy in the short-term. Lastly, the yield curve reflecting the difference between the Federal Funds Rate and 10-year Treasury Bonds is still positive, but the aforementioned market uncertainty behooves us to key an eye on it. Some economists believe that a flat or negatively sloping yield curve indicates a coming financial slowdown or recession.

Bottom line, I would say there is only a 25 percent chance of recession occurring in 2019, a 50 percent chance of one occurring in 2020, but an 80 percent chance of a recession in 2021. This means that green industry firms should continue to have an overall favorable market to sell to in 2019 but will experience increased costs due to trade and inflationary effects. However, it is imperative for green industry firms to begin contingency planning for the impending downturn when it does occur. ♦

INDEX OF PRICES PAID BY GROWERS

2007-2017 (2007=100)



ERIC KINGSLEY
INNOVATIVE NATURAL RESOURCE SOLUTIONS LLC

The Northeast forest industry is in the middle of a once-in-a-generation transformation. After a decade that was riddled with pulp mill closures and near constant market uncertainty, we appear to be entering a time of re-investment, consolidation and (hopefully) innovation.

For paper mills, the headlines and sentiment have turned. Since the turn of the 21st century, Maine, New Hampshire and New York have lost eleven paper mills as demand shifted and mills failed to reinvest. For the first time in a while, the outlook has shifted to positive. A pulp mill is being re-started in Old Town, Maine, after years of being idle; the Woodland mill in Baileyville, Maine, has started production on two new tissue machines; and a mill in Skowhegan, Maine, invested nearly a quarter billion dollars in a paper machine rebuild and a new wood yard. Across the Northeast, the mills that remain are re-investing in efficiency, diversifying product lines to meet consumer demands and positioning themselves for stability over the next decade.

Biomass electricity plants – large consumers of low-grade wood – continue to face some very real challenges. As an abundance of natural gas has driven wholesale electricity prices down in New England and New York, biomass plants have had a hard time competing. Alone among renewables, biomass plants need to continually buy fuel to generate electricity. That's great (and necessary) for the loggers, mills and landowners that supply the plants, and accounts for almost all of the significant economic benefit these plants provide. It also makes it tough to compete on a dollar per megawatt hour basis, and is at the core of the biomass industry's challenges.

FOREST INDUSTRY IN THE NORTHEAST

We have seen Maine and New Hampshire take steps to support the biomass industry. Maine's support, now expiring, supported operations at four of the state's biomass plants. One of those plants is now mothballed, and two operate only sporadically due to a support system (the plant designed) that didn't fit market conditions. In New Hampshire, one plant just received what looks like a multi-year extension on its power purchase agreement, and six more plants are scheduled to receive state-mandated support through contracts with electric utilities.

This public support has been controversial, as lawmakers weigh the very real economic and forestry benefits these plants provide against the impact to businesses and residents of higher electricity costs. It's probably time for the forest industry to do some hard thinking about the appropriate size, geographic distribution and funding mechanisms that make sense for biomass going forward.

One bright spot in wood energy is heating, and combined heat and power. I am seeing more and more community institutions – schools, hospitals, universities, factories – move away from oil and install either chip or pellet heating systems. Wood fuel is consistently cheaper than oil, and both the market and public policy are starting to recognize that fact. I'm involved in two projects that seek to heat large regional universities with wood, and I expect this trend to continue.

Solid wood – where landowners make most of their money – appears headed for another strong year. While 2018 saw lumber prices skyrocket and then fall, demand has seen relatively steady growth. With some monthly dips, housing starts have been on an upward climb since 2009, and there is lots of room for this to grow. This is important not only for structural lumber markets (in this region that means spruce-fir), but also for anyone that sells into the growing housing markets – hardwood for flooring and furniture, oriented strand board (OSB) panels and more. We are seeing some mill consolidation and can expect more of this as the industry is mature and fragmented, as well as some expansion activity.

In the woods, we're starting to see a real concern about workforce. The (observed) average age of a logger is nearing what we often think of as retirement age, and while there are new entrants to the industry, there aren't enough to make up for what we're sure to lose in the next five years.

In addition, new firms often have trouble financing the high cost of new logging equipment; innovations in equipment has made logging more efficient and safer, but it's had the side effect of serving as a barrier to entry for many aspiring loggers. New training programs in New York and Maine are having some success in developing the next logging workforce, but it's time for the industry – regionally and nationally – to get creative on how it is going to make sure the logging infrastructure – human, intellectual and equipment – is in place to serve the future industry.

Finally, we're starting to see new products enter the mix, providing expanded opportunities for those that grow and harvest wood. Mass timber products – like cross-laminated timber – promise to make wood viable in mid-rise construction. I have heard there are credible pitches from wood-based insulation companies – a market with significant growth opportunities as we improve the region's aging housing stock. There is also a growing number of proposals that will convert wood into liquid energy products, such as bio-oil, ethanol and jet fuel. It is still not clear if these technologies are ready to move to full commercial scale – and there are some policy incentives working against us in the Northeast – but it is promising to see how much progress has been made in the lab over the past decade. These innovations may hold promise for our forests and the people and communities that rely upon them.

Operating in the forest industry is not easy and will probably never be. However, it is ripe with opportunities. As markets change, the region's forests continue to grow. We are well positioned to build upon our existing industries and seize emerging markets. In doing so, we can assure that forests and the forest industry remain a cornerstone of the Northeast's rural economy going forward.

Apple Industry Outlook

2019 and Beyond

DESMOND O'ROURKE
PRESIDENT, BELROSE, INC.
WORLD FRUIT MARKET ANALYSTS

The apple industry in the United States has engineered a remarkable transformation over the last two decades that has greatly increased its productivity and its profitability. This transformation has sped up in the last decade (See Table 1.) The industry has positioned itself for continued success in the future. However, it will need to continue to adapt as national and international conditions change.

Changing External Environment

Export markets for fresh apples have been an important safety valve for the U.S. industry for many years. While most of these exports originate in Washington State, all other states are affected when Washington exports are diverted to their markets.

During the worldwide recession of 2008-2010, many major importing countries erected temporary barriers to fresh fruit imports. Countries like China, Taiwan, Indonesia and Brazil blocked U.S. exports for several seasons. More recently, the EU's low minimum residue level (MRL) mandate hit Eastern exports of the Empire variety hard. A weakened World Trade Organization (WTO) has been unable to resolve these disputes quickly. In August 2014, Russia, once the world's largest fresh apple importer, imposed an embargo on fruit

Tableau: Spirit of Innovation Flourishing in East and Central Region

In the 1980s and 1990s, many apple producers in the East and Central regions feared that they would be excluded from innovative new varieties from the Southern Hemisphere and West Coast states. This despite the fact that the University of Minnesota's Honeycrisp was reshaping retailer pricing and consumer tastes in the U.S. Since then, New York growers have formed Crunch Time Apple Growers to produce and market SnapDragon and RubyFrost from the Cornell University breeding program. The Midwest Apple Improvement Association has continued to expand production of the new EverCrisp variety. The Next Best Thing Cooperative has been promoting additional cultivars from the University of Minnesota program, including SweeTango and First Kiss. Leading integrated companies have been participating in new variety consortiums; Rice Fruits from Pennsylvania with Kiku® Fuji from the Tyrol; Applewood Orchards from Michigan with Kanzi from Belgium; New York Apple Sales with Koru® and Smitten® from breeders in New Zealand. More new varieties are in the pipeline. The spirit of innovation is flourishing in East and Central U.S. apple businesses.

from the European Union, North America and Australia. That embargo is entering its fifth year, with no end in sight.

In the U.S., the current administration has acted aggressively against many countries and trading blocks that it deems to have been competing unfairly. In response to U.S. tariffs and other trade restrictions, many of these countries have threatened retaliation, often against fresh apples. At the same time, many U.S. competitors are entering new trade agreements, such as the Canada-EU Trade Agreement (CETA) and the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP). These will give competitors like Canada, Chile, Australia and New Zealand preferential access to numerous Asian markets, and further disadvantage Eastern apple exporters relative to Canada in EU markets.

Changing U.S. Food Retailing

The apple industry's main access route to U.S. consumers is through giant food retailers. The retail food system has been in turmoil since the 1980s after the entry of club warehouses like Costco, mass marketers like Walmart, limited assortment stores like Aldi, specialty stores like Trader Joe's, and, most recently, online giant Amazon through its acquisition of Whole Foods. Many large, traditional retail chains have merged or gone out of business. Spot market sales have declined as many marketers have switched to program selling with major retailers. To entice retailers, marketers offer new varieties, branded products like Kiku® Fuji or organic offerings that retailers can use to differentiate their produce sections and bring excitement to their stores. Breeders around the world have responded by developing new apple varieties that they hope will win the hearts of retailers and consumers. Innovation has been particularly notable in breeding programs in New York, Minnesota and the Midwest Apple Improvement Association.

Changing Apple Industry Structure

In response to these new demands, the U.S. apple industry has come to be dominated by integrated grower-packer-marketers. These, in turn, have been getting larger through mergers and acquisitions. Many also belong to national or international networks that can provide supplies of the most desirable varieties to domestic and foreign customers twelve months a year. They are becoming increasingly involved in consumer packaging, branding, promotion, store demos and social media that will "add value" to the normally boring apple category. These trends are proving to be challenging for traditional, independent, smaller apple growers.

Performance of Major Apple Producing States

Table 1 summarizes some of the changes that have taken place in major apple producing states as they seek to prosper under changing conditions. Bearing acreage has continued to decline (except in Washington) as older, smaller orchards exit the industry. Average yields have risen in every state, leading to increased apple production in Michigan, New York, Pennsylvania and Washington. Most major producing states have increased the share of their production going to the fresh market. They have been rewarded with substantially higher average prices and increased real returns per acre, most notably in Virginia, Pennsylvania and Michigan, providing them with the capital to modernize their orchard and packing facilities and strengthen their marketing programs.

Conclusion

Apple marketers, and their grower and packer suppliers, are entering a new world where their ability to add value for their retail customers will determine which companies survive, and which disappear. More established apple varieties will fade away, and many new varieties will compete to replace them.

Growing, packing and marketing fresh apples will become more complex, and more expensive, and will involve increased risk. Only the firms that are best at identifying emerging opportunities and adapt their organizations accordingly will continue to prosper. ♦

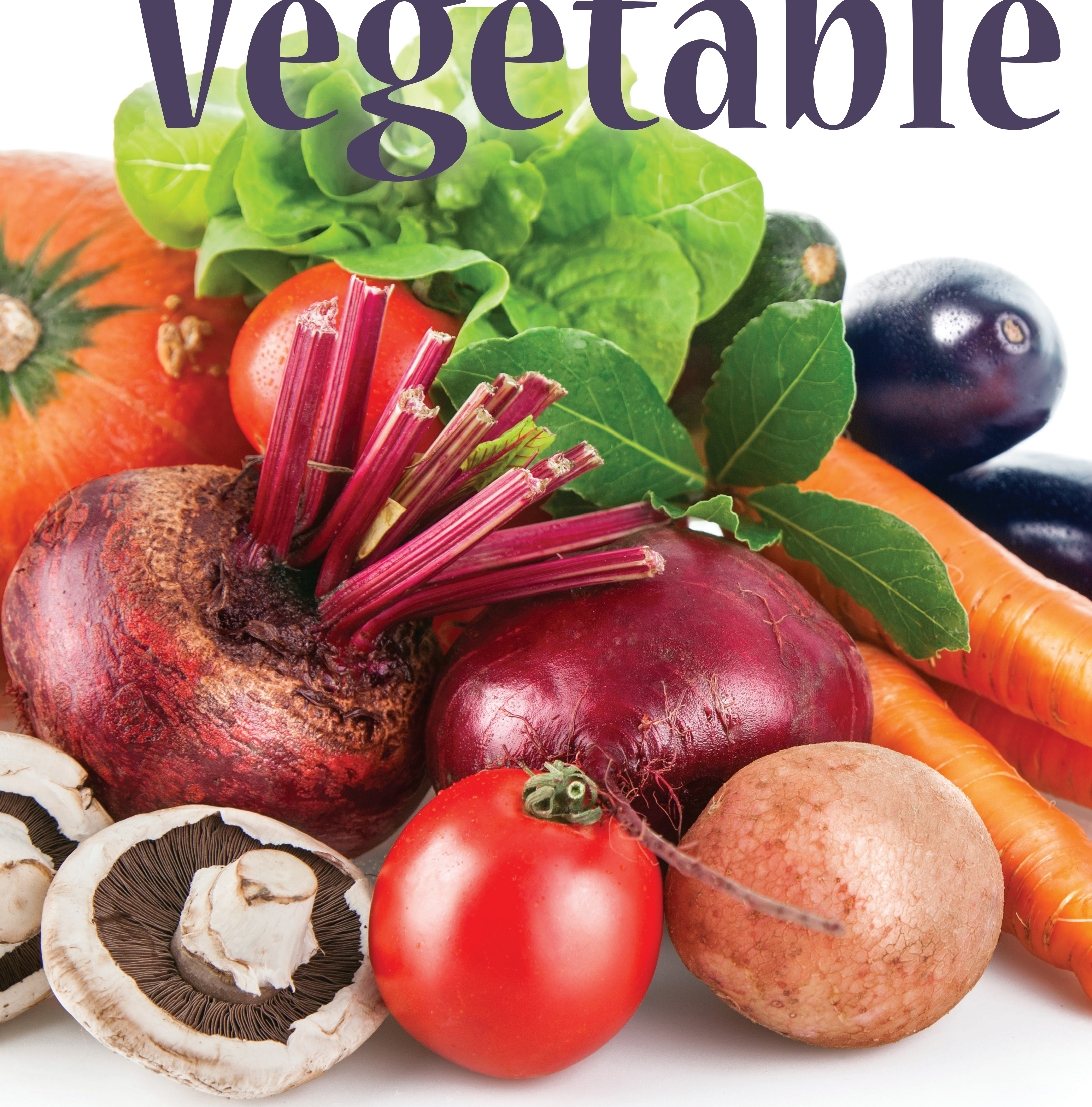
TABLE 1. CHANGES IN KEY METRICS FOR MAJOR U.S. APPLE PRODUCING STATES

(PERCENT CHANGE, 2005-07 TO 2015-17)

	BEARING ACRES (#)			PRODUCTION (M. LBS)			AVERAGE YIELD (LBS/ACRE)			FRESH USE (% OF TOTAL)			PRICE (CENTS PER LB)			DEFLATED VALUE ($/ACRE)		
			(%)			(%)			(%)			(%)			(%)			(%)
CALIFORNIA	21,833	13,667	- 37.4	351.7	227.0	- 35.5	16,107	16,610	+ 3.1	44.5	45.3	+ 1.8	23.8	26.0	+ 9.3	4,459	4,191	- 6.0
MICHIGAN	38,000	33,000	- 13.2	803.3	1,036.7	+ 29.0	21,140	31,414	+ 48.6	34.2	49.2	+ 43.7	14.5	26.1	+ 79.6	3,566	7,950	+123.0
NEW YORK	44,000	40,000	- 9.1	1,205.0	1,280.0	+ 6.2	27,386	32,000	+ 16.8	51.7	53.9	+ 4.2	19.5	24.9	+ 27.6	6,261	7,720	+ 23.3
PENNSYLVANIA	21,200	20,000	- 5.7	480.0	496.3	+ 3.4	22,642	24,817	+ 9.6	27.5	41.1	+ 49.5	12.3	20.4	+ 65.8	3,219	4,918	+ 52.8
VIRGINIA	12,333	10,167	- 17.6	228.3	200.1	- 12.4	18,514	19,679	+ 6.3	17.8	38.2	+114.2	10.5	19.9	+ 89.7	2,240	3,807	+ 70.0
WASHINGTON	154,667	162,000	+ 4.7	5,483.3	6,916.7	+ 26.1	35,453	42,695	+ 20.4	79.6	77.3	- 2.9	25.9	35.5	+ 37.3	10,485	14,692	+ 40.1
OTHER STATES	70,450	44,793	- 36.4	987.6	773.1	- 21.7	14,018	17,259	+ 23.1	58.1	63.7	+ 11.4	26.1	38.6	+ 47.9	4,173	6,458	+ 54.7
UNITED STATES	362,483	323,627	- 10.7	9,539.2	10,929.8	+ 14.6	26,316	33,773	+ 28.3	64.7	68.0	+ 5.1	23.0	32.4	+ 41.2	6,968	10,615	+ 52.3

NORTHEAST

Vegetable



Crops OUTLOOK

DR. BRADLEY RICKARD
DYSON SCHOOL OF APPLIED ECONOMICS & MANAGEMENT
CORNELL UNIVERSITY

Northeast farms have had a long history of producing a variety of fresh and processing vegetables, and these crops are an important component of the region's agricultural economy. In the nine states that comprise the Northeast region[1], vegetable crops (not including potatoes) have been planted on approximately 110,000 acres with an annual total farm value of between $525 and $575 million. Given the heterogeneous landscape of vegetable production across the Northeastern states, we observe a wide range of average revenues per acre of vegetable production with an average revenue of approximately $5,000 per acre across the states. In recent years, potatoes have been grown on an additional 80,000 acres in the Northeast with a total value of nearly $220 million.

In 2017, the overall value of vegetable production in the United States was up six percent relative to 2016. However, regional production patterns do not always mirror general national conditions and, in some cases, we saw decreases in the value of vegetable production in the Northeast in 2017. For example, the value of production for sweet corn and cabbage decreased in 2017 relative to 2016.

When the final results for 2018 are received, we expect to see mixed results for changes in total revenue for the key vegetable crops due to the wet conditions experienced in the early spring and summer months. For those vegetable crops that are particularly sensitive to fungal pressures during these time periods, we expect to see a decrease in yields and crop values. Early data suggests that prices and the value of production for cabbage and spinach will be up in 2018, and will be down for squash, cucumbers and sweet corn. Figure 1 illustrates producer price indices in 2017 and in 2018 for selected vegetable crops that are important in the Northeast United States.

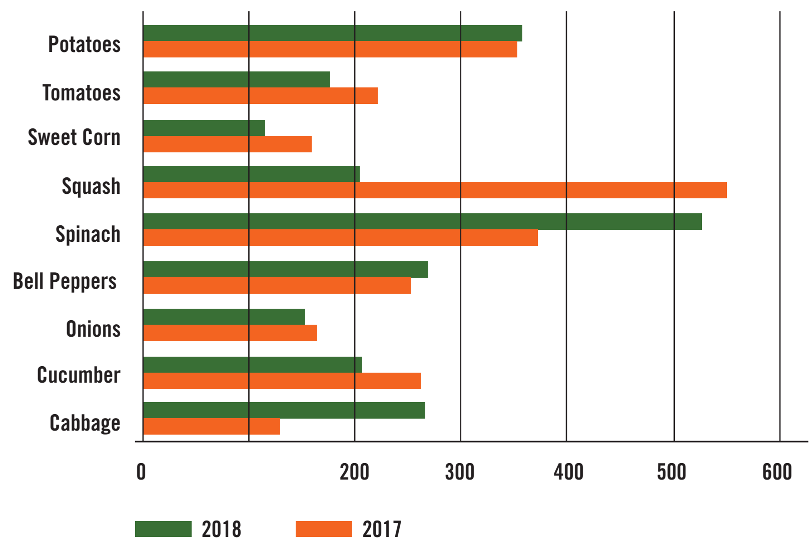
Policies Impacting Vegetable Production in 2019

According to results from the American Vegetable Grower's 2019 State of the Vegetable Industry Survey, the top concerns for growers include labor, pest pressure, unexpected weather events, food safety issues and rules, crop prices, and new government regulations. A sufficient labor supply in the U.S. horticultural market continues to be the top concern among growers and this is particularly true in the vegetable industry. In recent years, including in 2018, we have witnessed several proposals that seek to expand or adjust the current H-2A Guest Worker Program, but none have become legislation. Immigration policy is widely expected to be one of the top issues for the 116th U.S. Congress.

In late 2018, the Agricultural Improvement Act (the Farm Bill) was passed by the U.S. Congress and signed into law. Stakeholders in the industry received renewed support for a series of provisions aimed to improve

[1]Northeast states include NY, MA, ME, CT, RI, NH, PA, NJ and VT

FIGURE 1. **PRODUCER PRICE INDEX FOR SELECTED**
VEGETABLES (1982 = 100)



Source: U.S. Department of Labor, Bureau of Labor Statistics

markets for U.S. vegetables. Trade programs including the Market Access Program (MAP) received $200 million per year, the Pest and Disease Program received $80 million per year and the Food Insecurity and Nutrition Incentive Program will receive $285 million over five years. The two specialty crop research programs (Block Grant Program and the Specialty Crop Research Initiative) will receive $160 million per year due, in part, to industry enthusiasm for these programs. Figure 2 outlines how expenditures from the 2018 Specialty Crop Research Initiative were allocated; slightly more than half of the funds were used to support research that focuses on some of the most pressing production and marketing issues in vegetable markets in the United States.

In addition, we expect that trade and free trade agreements will continue to be an important policy issue in 2019. The United States-Mexico-Canada Agreement (USMCA) was signed by the three nations in late 2018, but it has not yet been ratified by the legislatures of the three countries. It is expected that the U.S. automobile industry will be most affected by USMCA, but there are implications for agricultural markets, including the tomato market, given the ongoing U.S.-Mexico Suspension Agreement. Furthermore, in 2019, we will observe the outcome of the ongoing retaliatory tariffs by China, Brazil and potentially India on U.S. agricultural products, including specific fruits and vegetables.

Market Trends and Vegetable Consumption in 2019

Reports on U.S. consumption patterns for vegetables are often confusing, and can be misleading. In the U.S., there has been a long-term decline in the average per capita consumption of total vegetables; the average per capita consumption of vegetables has fallen from 113.27 pounds per person in the 1994-98 period to 104.86 pounds per person in the 2007-08 period. However, changes in consumption are not uniform across different vegetables and across different market segments.

Figure 3 shows the changes in average per capita consumption across 15 vegetable groups. It becomes clear that per capita consumption has fallen substantially for potatoes and to a lesser extent for tomatoes, sweet corn and carrots; it has remained relatively stable or increased for the other vegetable categories. If we remove potatoes from the data, the change in the average per capita consumption rate from the 1994-98 period to the 2007-08 period is much smaller, and the change in the most recent periods is trivial.

As part of this change in consumption of vegetables over time, there has also been an increase in the demand for fresh vegetables and there are strong indicators that consumption in these categories will continue to increase over the next decade. For certain market segments, and notably for adults with higher levels of education and incomes above 185 percent of the poverty level, this increase is expected to be close to three percent per year. Producers in many areas of the Northeast that are growing a variety of nutrient dense vegetables for the fresh market are well positioned to take advantage of these market trends. ◆

FIGURE 2. **NEW SCRI FUNDED PROJECTS IN 2018**
(THOUSANDS DOLLARS)

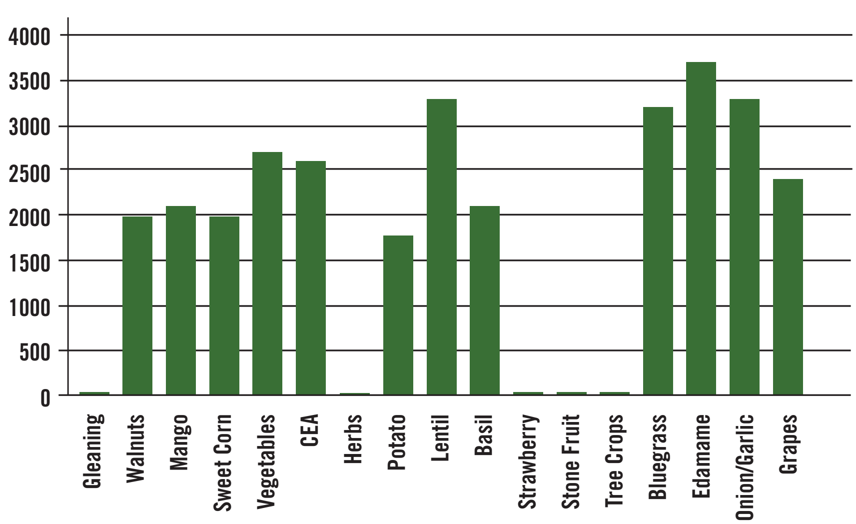
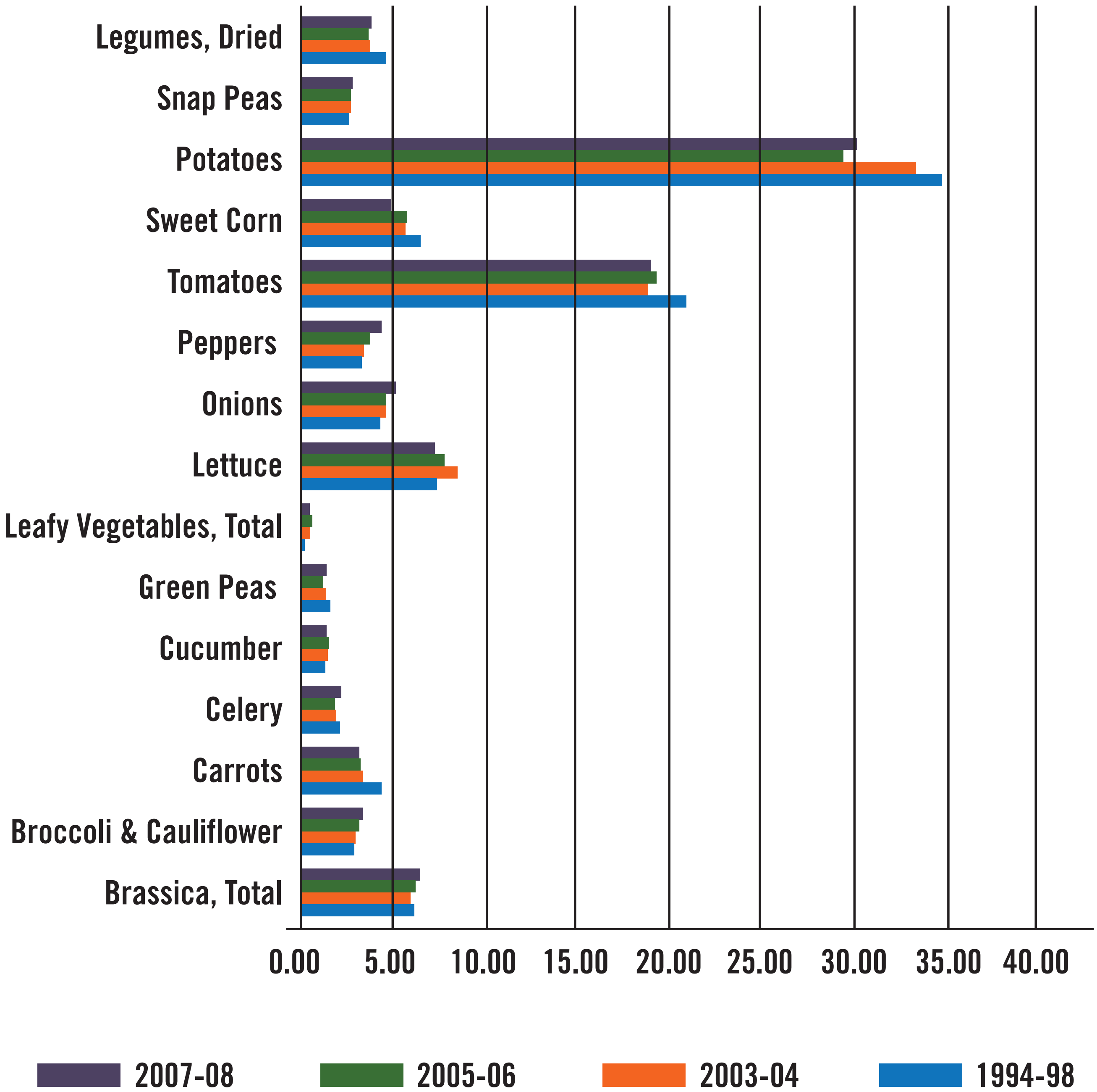


FIGURE 3. **U.S. VEGETABLE CONSUMPTION PATTERNS**

(LBS PER PERSON PER YEAR)



Source: ERS, Economic Research Report #221

NOTES

On the Farm, in the Office or on the Internet, Our Entire Farm Credit East Team is Ready to Help Your Business be More Profitable

AUBURN, ME
David Bishop, Manager
615 Minot Avenue
Auburn, ME 04210-4052
800.831.4230 / 207.784.0193

BATAVIA, NY
Ed Urbanik, Manager
4363 Federal Drive
Batavia, NY 14020-4105
800.929.1350 / 585.815.1900

BEDFORD, NH
David Bishop, Manager
2 Constitution Drive
Bedford, NH 03110-6010
800.825.3252 / 603.472.3554

BRIDGETON, NJ
Scott Andersen, Manager
29 Landis Avenue
Bridgeton, NJ 08302-4396
800.219.9179 / 856.451.0933

BURRVILLE, NY
Kathryn Canzonier, Manager
25417 NY Route 12
Watertown, NY 13601-5730
800.626.3276 / 315.782.6050

CLAVERACK, NY
Tim Slavin, Manager
190 State Route 9H
Hudson, NY 12534-3819
800.362.4404 / 518.851.3313

COOPERSTOWN, NY
Rob Yurkewecz, Manager
7397 State Highway 80
Cooperstown, NY 13326-3307
800.762.3276 / 607.282.3002

CORTLAND, NY
Jan Bitter, Manager
One Technology Place, Suite 2
Homer, NY 13077-1526
800.392.3276 / 607.749.7177

COUNTRY LIVING
Dave Pugh, Director
7397 State Highway 80
Cooperstown, NY 13326-3307
800.762.3276 / 607.282.3002

DAYVILLE, CT
Lynn Weaver, Manager
785 Hartford Pike
Dayville, CT 06241-1739
800.327.6785 / 860.774.0717

ENFIELD, CT
Keith Stechschulte, Manager
240 South Road
Enfield, CT 06082-4451
800.562.2235 / 860.741.4380

FLEMINGTON, NJ
Steve Makarevich, Manager
9 County Road 618
Lebanon, NJ 08833-3028
800.787.3276 / 908.782.5215

GENEVA, NY
Stephen Tudhope, Manager
1450 Route 14
Phelps, NY 14532-9542
800.929.7102 / 315.781.7100

GREENWICH, NY
Chris Truso, Manager
394 State Route 29
Greenwich, NY 12834-2650
800.234.0269 / 518.692.0269

HORNELL, NY
David Van Lieshout, Manager
1155 Airport Road
Hornell, NY 14843-9144
800.929.2025 / 607.324.2020

MAYVILLE, NY
Jenny Montalbano, Manager
28 E. Chautauqua Street
Mayville, NY 14757-0163
800.929.2144 / 716.753.2144

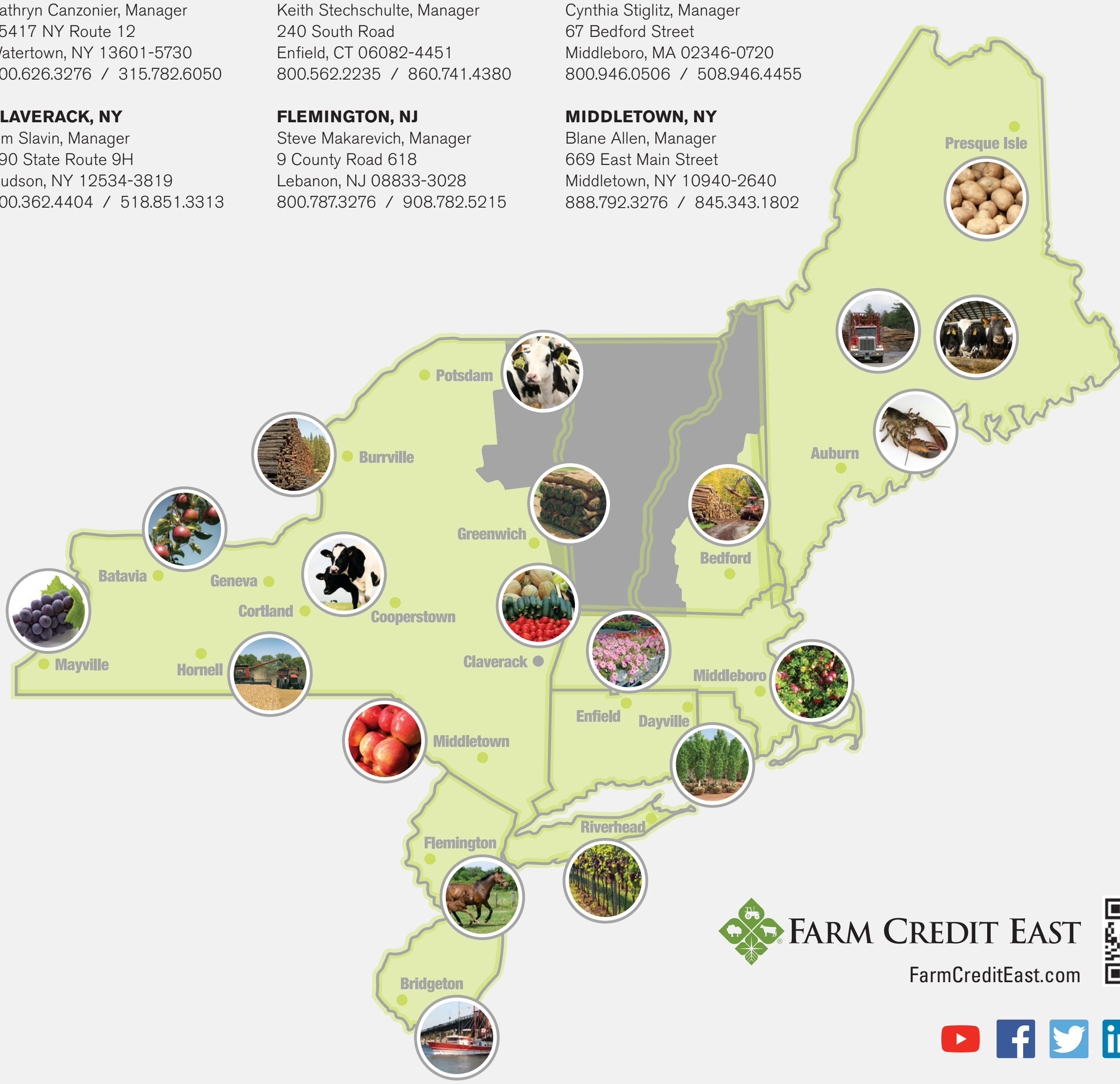
MIDDLEBORO, MA
Cynthia Stiglitz, Manager
67 Bedford Street
Middleboro, MA 02346-0720
800.946.0506 / 508.946.4455

MIDDLETOWN, NY
Blane Allen, Manager
669 East Main Street
Middletown, NY 10940-2640
888.792.3276 / 845.343.1802

POTSDAM, NY
Mike Haycook, Manager
One Pioneer Drive
Potsdam, NY 13676-3273
800.295.8431 / 315.265.8452

PRESQUE ISLE, ME
Peter Hallowell, Manager
26 Rice Street
Presque Isle, ME 04769-2265
800.831.4640 / 207.764.6431

RIVERHEAD, NY
Keith Stechschulte, Manager
1281 Route 58
Riverhead, NY 11901-2097
800.890.3028 / 631.727.2188



FARM CREDIT EAST
FarmCreditEast.com