

IOWA SOYBEAN review

March 2018

BIODIESEL BOOM IN THE BIG APPLE

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On the Cover: Industry leaders gathered in New York City recently to learn about biodiesel technology in the Big Apple.



Kirk Leeds

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New York, New York

In the song recognized around the world, and made famous by Frank Sinatra, all are encouraged to:

**Start spreading the news
You're leaving today,
I want to be a part of it
New York, New York**

Soybean farmers and their soybean checkoff have been "spreading the news" about Bioheat® – a traditional heating home oil blended with biodiesel made from soybean oil and other vegetable and animal fats – for many years. In this issue of the *Iowa Soybean Review*, we have included a special section on efforts to build demand for this important "new use" for soybeans.

Due to concerns about the impact of traditional heating oil on air quality in New York and many other areas in the Northeast region of the U.S., Bioheat has continued to gain market share and now uses 300 million gallons of B100 biodiesel each year.

For those of us who had kids that grew up watching the PBS TV series, *Sesame Street*, it was interesting to learn that the facility in Queens,

New York, that houses the set for the show made the switch to Bioheat. Today, that facility uses 80,000 gallons of Bioheat annually. Why did they make the change? To improve the environment, while having little impact on their overall heating costs. So, the better question is, why not make the change? And, so they did, along with many other others in New York City.

This past February, Iowa soybean farmers joined other industry partners to celebrate the 25th anniversary of the forming of the National Biodiesel Board and the successes in creating and expanding the use of biodiesel. As someone who was there when these efforts began, the blending of biodiesel with heating oil as a potential new use for soybean oil was not envisioned. But as often happens, success opens additional doors, and that has certainly been the case with biodiesel and Bioheat.

This month, we also use these pages to update you about ongoing developments in technology and the potential impact on Iowa farms. If you are like me, although I appreciate and embrace emerging technology,

I'm also a bit overwhelmed by the pace of change and am challenged by the task of trying to decide what new tool is worth the cost, in both dollars and the time it might take to convert to the "new and improved."

Finally, I hope you take the time to read about the four Iowa farmers who are currently representing you as directors on the United Soybean Board (USB). The USB is the national checkoff board responsible for investing 50 percent of the dollars collected in the soybean checkoff program in Iowa and the rest of the states growing soybeans. These farmers are volunteers, appointed by the U.S. Secretary of Agriculture, who devote countless hours to make sure that the investments of these checkoff dollars have the biggest impact on soybean farmers. Biodiesel and Bioheat are two great examples of those investments.

Enjoy the magazine and as always, let me know if you have thoughts or suggestions.





BIODIESEL

BLOSSOMS IN THE BIG APPLE

By Matthew Wilde

NBB Big Apple Tour

The National Biodiesel Board held its annual Big Apple Tour in mid-December. Farmers and industry officials from across the country attended the three-day event, which highlighted current and future biodiesel and Bioheat® use in New York City and how soybean checkoff initiatives and education programs helped increase biofuel use in the nation's largest city.

Representing the Iowa Soybean Association (ISA) was Chief Operating Officer Karey Claghorn and Dave Walton, At-Large Board member.

The following stories provide an overview of New York's biodiesel use and support of biofuels, the trust emergency services have in biodiesel and training the next generation of heating technicians and BioHeat advocates.

New York City is supporting biodiesel when the industry and farmers need it the most.

The nation's largest municipal vehicle fleet and home heating oil market continues to scale up use of biodiesel and Bioheat®, respectfully. After another record soybean harvest and added demand for soybean oil is needed, producers say.

When the Environmental Protection Agency (EPA) considered rolling back the Renewable Fuels Standard (RFS) last year, New York City lobbied against it. The EPA backed down after pressure from biofuel advocates and policymakers.

It's no wonder why farmers and Iowa Soybean Association (ISA) leaders love the city that never sleeps.

"The enthusiasm and commitment to increase volumes goes beyond the political rhetoric around the biofuels industry," says Karey Claghorn, ISA chief operating officer. "There's

tangible evidence of the good biodiesel is doing in New York City such as improving air quality."

Soybean checkoff education programs and initiatives spurred biodiesel use in the nation's largest city — more than 8.5 million residents — and helped farmers in the process, according to Donnell Rehagen, National Biodiesel Board (NBB) CEO.

He believes New York City's love for biodiesel will likely spread throughout the East Coast, creating more demand. That's good news for farmers since soybean oil is the most widely used feedstock.

"For biodiesel, the coasts are where the most growth is happening," Rehagen says. "You will find a passion for biofuels exists in New York City, which is infectious.

"The ultimate goal is to increase the value of soybean oil," Rehagen continues. "Biodiesel has done a remarkably good job at that."

Soybean oil prices increased by 11 cents per pound, on average, from 2006-07 to 2014-15 due to biodiesel, according to a study prepared for NBB. Biodiesel increased soybean prices by nearly 63 cents per bushel, on average, and lowered soybean meal prices by \$21 per ton, the study shows.

Bioheat

As of Oct. 1, the city increased its Bioheat mandate from a 2-percent blend to 5 percent. That will increase demand for B100 from 20 million gallons to 50 million, according to NBB.

The market share for heating oil is 30 percent in New York City.

New York City Councilman Costa Constantinides, head of the council's environmental committee, says

requiring cleaner-burning B5 is like taking 40,000 cars off the road. The standard will increase to B20 in 2034, the equivalent of taking 175,000 vehicles off the streets.

Even though New York's air quality has greatly improved, Constantinides says biodiesel is making it better.

"Those benefits are tangible. They are real," he says. "My 8-year-old son has asthma. His life is better because of it. The partnership we (New York/ biodiesel industry/farmers) have is special."

NBB and the United Soybean Board utilize checkoff funds to partner with fuel retailers to educate consumers and heating industry officials about the benefits of Bioheat. One avenue is www.mybioheat.com.

Chuck White, an ISA Board member from Spencer, says there's a direct correlation to checkoff work and increased popularity of the fuel.

"New Yorkers are very pleased biofuel heats their homes," says White, past Big Apple Tour participant. "They are very supportive of cleaning up the city's air and like that it's a renewable product."

"The same goes for biodiesel use in city vehicles and airport equipment," he continues. "As farmers, we need to continue to promote biodiesel in the city of New York to increase demand and our bottom line. It's a tremendous return on the checkoff dollar investments."

Biodiesel

New York City has more than 30,000 vehicles in its municipal fleet, which includes 5,145 off-road units like backhoes, city officials say.

Biodiesel is a big part of the fuel supply and use is on the rise.



New York City Councilman Costa Constantinides

Fiscal year 2017 was a record year for biodiesel use in the fleet at 16 million blended gallons; that's equivalent to 2 million B100 gallons. Diesel accounts for

60 percent of all fuel used.

"Biodiesel use in city vehicles began with a donation of B100 in 2005 to the parks department," says Keith Kerman, chief fleet officer City of New York/ Department of Citywide Administrative Services. "We operated a fleet of garbage trucks on it and it worked beautifully. It has to be reliable and it is."

Today, the city requires biodiesel in all its diesel vehicles. Only the fire and police departments are exempt from the rule, but each burns it anyway.

Biodiesel blends range from B5 to B20, depending on the time of year. Some departments are testing B20 in the winter.

NYC fights for RFS

New York City stood behind biodiesel and when the EPA suggested rolling back the RFS.

In a letter to the agency, Mayor Bill de Blasio asked for a more robust biodiesel standard to benefit the city and farmers.

Rehagen says New York City is a powerful and valuable biodiesel ally.

"New York City has adopted and embraced it," he says. "The ability to reach out to constituents and policymakers there wasn't possible 10 years ago. We can engage a whole group of new people to move biodiesel issues forward."

White adds New York City sets an example for others to follow.

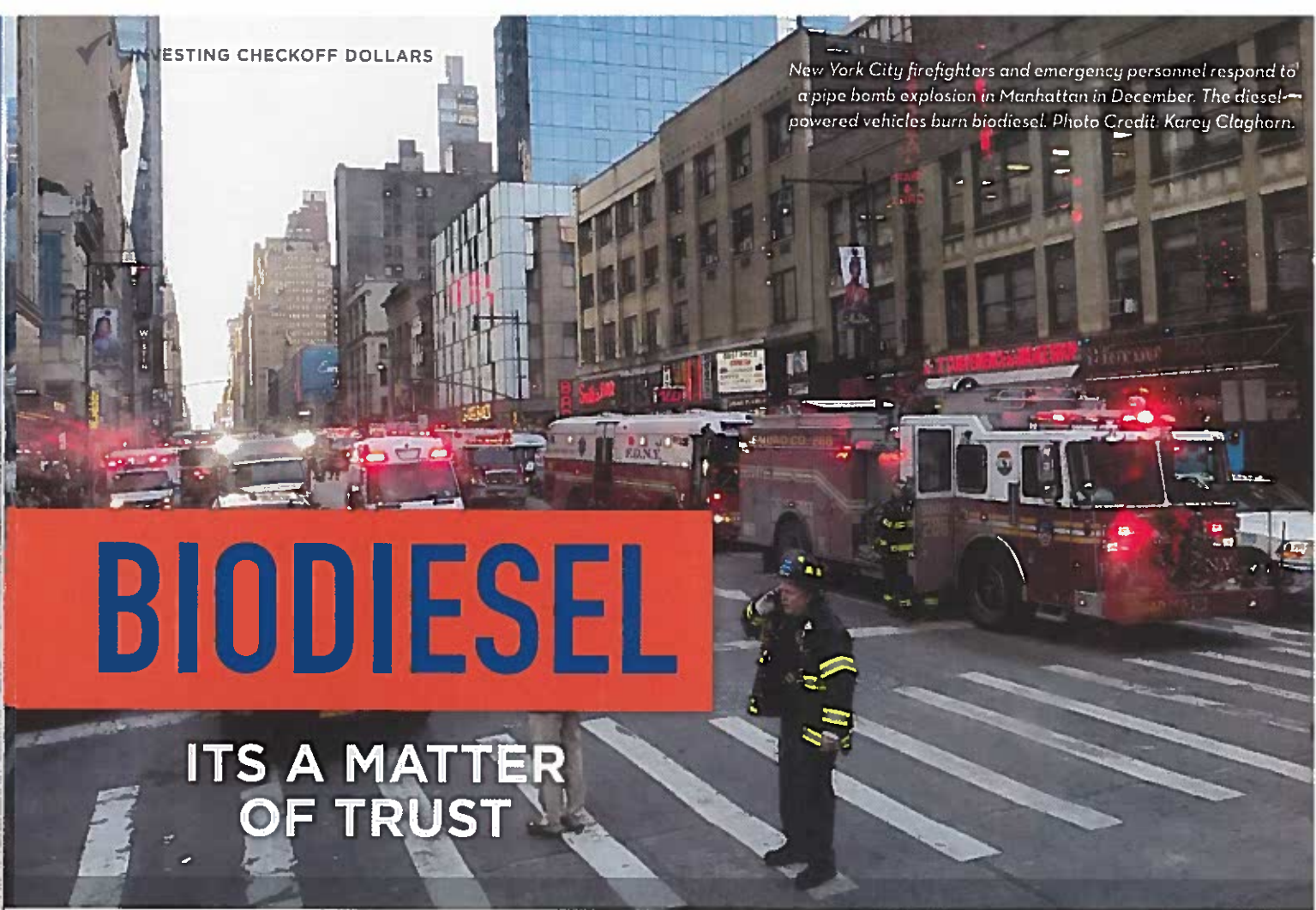
"The city is a great promoter of biofuels to the rest of the cities and citizens of the U.S.," he says. "The experience and testimony of biofuel use is exemplary."

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A truck delivers Bioheat, a combination of petroleum and biodiesel for oil-burning furnaces in December, to homes and business in New York City. Photo Credit: Matthew Wilde.

New York City firefighters and emergency personnel respond to a pipe bomb explosion in Manhattan in December. The diesel-powered vehicles burn biodiesel. Photo Credit: Karey Claghorn.



BIODIESEL

ITS A MATTER OF TRUST

By Matthew Wilde

New York City fire trucks and ambulances, with sirens blaring and lights flashing, rushed to Times Square Dec. 11 after a terrorist detonated a homemade bomb.

Iowa Soybean Association (ISA) leaders, farmers and biodiesel industry officials were only blocks away when the attack occurred in a passageway under 42nd Street in Manhattan that connects a subway station and the Port Authority Bus Terminal. None of the group was hurt and only a handful of people, including the bombing suspect, sustained minor injuries from the explosion.

New Yorkers depend on the fire department and emergency responders to save lives and property. Biodiesel powers hundreds of diesel vehicles to do it.

Dave Walton, an ISA Board member from Wilton, says the prompt response and the magnitude of the emergency further proves biodiesel is a dependable product.

“If emergency services in New York City trust it, it must be a reliable product,” Walton says.

Andy Diamond, executive director of fleet operations bureau of fleet services for the New York City Fire Department, says it is. The department hosted tour goes at its vehicle maintenance facility in Long Island City.

Emergency vehicles are exempt from the city’s mandate to burn biodiesel in all municipal diesel vehicles and engines to reduce air pollution and use green energy sources. But Diamond says the department wanted to do their part.

In the summer of 2016,

diesel-powered police vehicles started to use B10 (10 percent biodiesel and 90 percent petroleum diesel) in the summer and B5 in the winter. The Fire Department utilizes B5 year-round, and a few ambulances are testing B20.

Diamond admits he was skeptical about using biodiesel in the city’s nearly 350 fire engines and trucks and 300 ambulances due to reliability concerns. The longtime vehicle maintenance expert was worried about gelling in the winter and clogged filters.

The transition to biodiesel, Diamond says, has been seamless.

“There haven’t been any issues,” he says. “I would be the first to complain; I’m not shy.



"When we started to burn ultra-low sulfur diesel, we had problems. But not with biodiesel," he continues. "For us it's all about keeping trucks and ambulances in service ... we can't have a failure. It's all about keeping people safe."

The nation's largest municipal fire department — only the Tokyo Fire Department is larger worldwide, according to the city — knows all about that. It serves more than 8 million residents within a 322-square-mile area.

Whether it's working around-the-clock rescuing people from the World Trade Center or responding to the latest terrorist attack in Times Square to a four-alarm apartment fire or an ambulance call for a health problem, Diamond says every emergency is important.

"We truly thank God for firefighters every day," he adds.

New York City's 4,400 emergency medical technicians and paramedics (fire inspectors are included in that number) responded to 1.75 million calls last year, according to department data. More than 11,000 firefighters went out on about 590,000 emergency and nonemergency calls.

Big Apple, Big Biodiesel Numbers

- **30,000 municipal vehicles, which include 5,145 off-road units like backhoes**
- **16 million blended gallons of biodiesel, or the equivalent of 2 million gallons of B100**
- **Biodiesel blends range from B5 to B20**
- **1 billion gallons of heating oil burned a year.**
- **B5 BioHeat mandate equals 50 million gallons of B100**



Andy Diamond, left, executive director of fleet operations bureau of fleet services for the New York City Fire Department, talks about the reliability of biodiesel during the National Biodiesel Board Big Apple Tour in December. Photo Credit: Matthew Wilde.

All fire trucks, engines and ambulances — almost 1,000 pieces of equipment in all — are serviced in-house. No mechanical problems or vehicle downtime has been attributed to biodiesel, Diamond says.

"For us, no news is good news," he adds. "There's no reason not to trust it."

Walton hopes more Iowa farmers will.

Most Iowans have a positive opinion of biodiesel and 86 percent say they would use or probably use the biofuel if they had a diesel vehicle, according to research commissioned by the Iowa Biodiesel Board.

However, only 16.5 percent of the 211.7 million gallons of dyed (non-taxed) diesel fuel — off-road agricultural, construction, railroad and school bus use — sold in Iowa was blended with biodiesel, according to the latest state statistics. Nearly 55 percent of taxed diesel sales statewide contained a biodiesel blend two years ago.

Walton, a longtime user of biodiesel on his farm, says he's talked to school districts, towns and farmers about the

benefits of biodiesel (helps farmers, good for the state economy, improves engine lubricity, etc.). But he often gets pushback due to a lack of trust.

"Now, I can say to them if New York trusts it to protect their citizens, then it's good enough for your tractor, bus and truck," Walton says. "Fire department mechanics here will see more use in one piece of equipment than a farmer will see in a lifetime. We're talking fire trucks and ambulances going on calls and idling for hours on end every day."

Since biodiesel can have a cleansing effect on engines, performance problems for new users can be greatly reduced or eliminated by changing filters more regularly, at least initially, and abiding by storage tank best maintenance practices.

National Biodiesel Board CEO Donnell Rehagen says New York City leads by example by using biodiesel in emergency vehicles.

"I'm not sure we can find a better advocate," he adds.

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BIOHEAT BELIEVERS:

THE NEXT GENERATION

By Matthew Wilde

Flames flicker in an oil-burning furnace, one of many, in a classroom at the Bronx Design and Construction Academy in mid-December.

With a hand-held tester, high school students determine the furnace is operating at 87 percent efficiency fueled by B50 Bioheat®, a blend of 50 percent biodiesel and 50 percent petroleum oil. It's just one of many things students learn as they prepare to be heating, ventilation and air conditioning (HVAC) technicians in New York City.

"That's quite nice for B50," Paul Nazzaro, an East Coast Bioheat industry consultant, tells biofuel experts, industry officials and farmers visiting the class.

Not only is the furnace operating efficiently, it's producing less harmful greenhouse gas emissions compared to using 100 percent petroleum oil, experts noted. That's not a surprise to students, who've been testing various Bioheat

blends and learning about the renewable fuel for years — all part of their daily studies.

"It's a good fuel," says Matthew Byam, a senior at the academy, with aspirations to be a HVAC tech. "I'll share its benefits (with future customers)."

It's a statement that could pay dividends for biodiesel producers and farmers for years to come.

The academy, a public high school geared to prepare graduates for advanced entry into competitive construction and other trade careers or post-secondary education, offers a multiyear HVAC Program. The New York Oil Heating Association (NYOHA) is working with the school to educate future technicians on the benefits of using Bioheat in commercial and residential applications.

Students learn life skills and a valuable trade — starting pay in the HVAC field in New York City is about

\$80,000 a year, officials say — and the importance of renewable fuels, which they can pass along to future employers and customers.

"The student will be great ambassadors for Bioheat," says Rocco Lacertosa, NYOHA CEO. "They know about it, how it works and that it's good for the environment."

That could increase demand for heating oil blended with biodiesel, advocates say. Since the Big Apple is the nation's largest home heating oil market, the potential impact on biofuel producers and soybean farmers — soybean oil is the most widely used biodiesel feedstock — is immense.

Bioheat is an integral part of New York City's green initiatives to reduce air pollution and greenhouse gases.

The nation's largest city — more than 8.5 million residents, according to the latest U.S. Census Bureau data —

increased its Bioheat mandate from 2 percent to 5 percent last October. That will increase demand for B100 from 20 million gallons to 50 million, according to National Biodiesel Board (NBB). Soybean checkoff-funded education and promotion initiatives contributed to increases in biodiesel use in the city, industry officials say.

The Bioheat standard will increase to B20 in 2034. New York City Councilman Costa Constantinides said requiring cleaner-burning B5 is like taking 40,000 cars of the road and B20 equates to 175,000 vehicles.

As more young technicians and ambassadors of Bioheat enter the workforce and interact with customers, Dave Walton says biodiesel inclusion rates in heating oil may exceed minimum requirements

"I was impressed how the students were working with B25 and B50 blends," says the Iowa Soybean

Association Board member and Wilton farmer. "The push for the future will be higher inclusion rates, which will create instant demand.

"Any increase in biodiesel use likely means more demand for soybean oil, which adds value to soybeans," he continues. "The heating oil market is huge here."

New Yorkers burn more

than 1 billion gallons of heating oil annually, government statistics show. The market share for heating oil has eroded over the years to about 30 percent.

Bioheat is the future of the industry, heating oil officials say, as customers demand cleaner-burning alternatives. Technicians, which are in short supply, who believe in it are essential as well.

Lacertosa convinced a dealer to donate about 150 gallons of biodiesel to the school three years ago so HVAC students could become familiar and work with the product.



Bioheat: A STATE of Mind

In September, New York Gov. Andrew Cuomo signed into law that a B5 Bioheat blend will be mandated for much of the rest of the state beginning in 2018.

Paul Nazzaro, a Bioheat industry consultant, says the potential for Bioheat is staggering on the East Coast. Currently, an estimated 200 million gallons of Bioheat are used.

Eight billion gallons of heating oil is burned annually in New England and the Mid-Atlantic states. If every gallon was a B5 blend, that would equate to 400 million gallons of B100.

"This is the epicenter of the home heating oil market," Nazzaro said. "I'm excited about the potential."



Peter Gonzalez, second from right, HVAC instructor at the Bronx Design and Construction Academy, tells participants of the NBB's Big Apple tour that students learn about the value of Bioheat as a fuel source. Photo Credit: Matthew Wilde.

The heating oil association has been involved ever since.

HVAC Instructor Peter Gonzalez, a licensed technician and owner of Gonzalez Heating Co., is teaching burner and furnace/boiler maintenance, combustion, fuel storage, piping and other aspects of the job. Bioheat is often part of the curriculum.

About 28 students typically start the program as sophomores. Graduates have enough skills to enter the workforce as entry-level technicians.

"Companies are begging for workers," Gonzalez told the group. "The future of the industry is the biofuel you produce."

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