The Mulvaney Pipeline

Mulvaney MECHANICAL, INC.
Mechanical Contractors
April-June 2018

HAPPY MEMORIAL DAY

GROWING FUEL FOR COMMERCIAL AND MILITARY JETS

The aviation industry has been looking for renewable sources of jet fuel. Military and commercial aircraft already use renewable energy sources, but need a year-round supply. Carinata oil is an excellent source of oil with properties that allow for easy, cheap conversion to jet fuel. Carinata is a cool-season crop grown in the Dakotas during the summer, but a winter source of the fuel is needed. Compared with diesel, carinata-based biofuel has a 35% reduction in carbon monoxide emission and 27% reduction in smoke emission. Dr. Michael Mulvaney (yes, he used to work at MMI) at the University of Florida is part of a team of agronomists tasked with figuring out how to grow carinata commercially in the Southeast as a winter crop. Carinata oil burns more efficiently, cleaner and reduces wear on engines compared to fossil fuels. You may already be flying on jets that use carinata!

Dr. Michael Mulvaney, Cropping Systems Specialist
Assistant Professor
University of Florida

Scientists are using Sunflowers to Clean Up Nuclear Radiation

Sunflowers are what environmental scientists call hyperaccumulators, which are, plants that have the ability to take up high concentrations of toxic materials in their tissues. After the Hiroshima, Fukushima and Chernobyl nuclear disasters, fields of sunflowers were planted across the affected landscapes to help absorb toxic metals and radiation from the soil. Like all land-based plants, flowers have root systems that evolved as extremely efficient mechanisms for pulling nutrients, water, and minerals out of the ground, among them: zinc, copper, and other radioactive elements that are then stored in their stems and leaves. While the sunflower-radiation link would seem like a slow-gestating cure-all for modern environmental disasters, the research is still inconclusive as to the efficacy of all sunflower varieties to help stave off environmental pollution. Post-tsunami clean-up efforts in Fukashima, however, demonstrate a promising application of this discovery. After a decade of field and greenhouse tests, a variety of techniques have emerged to shed light on the most effective application of sunflowers' capacity to clean up nuclear radiation. Perennial sunflowers have historically not been as popular as the domesticated sunflower, H. annuus, because of their tendency to become invasive. In the case of a nuclear cleanup, however, the flower's capacity to spread rapidly is an asset: with a little assist from nature, an entire field can be neutralized (or at least, significantly remediated) within three years of planting. The flower grows best in woodlands and moist soils, like those near a waterway– another feature of every ecosystem that is categorically vulnerable to pollution. Like any other crop, sunflowers must be adapted for local conditions– but because spreading seeds is cheap and almost universally accessible, planting sunflowers is an ideally suited strategy for rapidly-industrializing parts of the developing world to mitigate the effects of pollution. The extent of the sunflowers role as the most effective, means to cleanup nuclear radiation remains yet unknown, but the promise and possibilities inherent to the plant's biology are constantly revealing themselves. The sunflower is incidentally an international symbol for nuclear disarmament— yet another subtle indication that nature can indeed change the world.

Did you know.....




-The word "run" has 645 different meanings in the English language.
-At 150 billion dollars, the International Space Station is the most expensive structure ever built.
-The word "Utopia" comes from a Greek word meaning "no place".
-Betty White is literally older than sliced bread.
-It snows metal on Venus.
-When properly sealed, honey will stay edible for thousands of years .
-The time difference between when the Stegosaurus and the Tyrannosaurus Rex lived is longer than the time difference between when the Tyrannosaurus Rex lived and today.
-Alaska is the farthest north, farthest west, and the farthest east state in the United States. (google it!)
-Harvard recently discovered that three books in its library were bound in human flesh.
-Oxford University (1096) is older than the Aztec Empire (1430)
-Mr. T started wearing gold chains as a club bouncer. The chains were either lost by customers or left behind by them after a fight.
-"Lead" rhymes with "read" and "Lead" *also* rhymes with "read"
-France was still executing people by guillotine when the Star Wars movie hit theatres in 1977.
-A strawberry is not a berry. A banana is a berry.
-People spend more time sitting on the toilet each week than exercising. Moreover, we end up with 1.4 years on the toilet during a lifetime.
-If Grand Central Station were a nuclear power plant, it would be shut down for exceeding the maximum allowable annual dose of radiation for employees due to the amount of granite in its construction.
-Under extreme high pressure, diamonds can be made from peanut butter
-People in Victorian Britain who couldn't afford chimney sweeps dropped live geese down their chimneys instead
-When the Mona Lisa was stolen from the Louvre in 1911, one of the suspects was Picasso
-Harry Houdini could pick up pins with his eyelashes and thread a needle with his toes
-Thomas Edison's last breath is held in a vial at the Henry Ford museum in Detroit
-The word 'time' is the most commonly used noun in English
-Jimmy Carter once sent a jacket to the cleaner's with the nuclear detonation codes still in the pocket
-It costs more to make the cardboard box that Shredded Wheat comes in than it does to make the cereal itself
-The katzenklavier ("cat piano") was a musical instrument made out of cats. Designed by 17th-century German scholar Athanasius Kircher, it consisted of a row of caged cats with different voice pitches, who could be "played" by a keyboardist driving pins into their tails.

NATURAL REFRIGERANTS ON THE RISE

Manufacturers are replacing the old classes of refrigerants that emit potent greenhouse gases, such as hydrofluorocarbons (HFCs) hydrochlorofluorocarbons (HCFCs) and chlorofluorocarbons (CFCs), with less damaging, green refrigerants that do not deplete the ozone layer and have a low impact on global warming. These alternative types of refrigerants are naturally occurring, non-synthetic substances that can be used as cooling agents in refrigerators and air conditioners and include hydrocarbons (propane, butane and cyclopentane), CO2, ammonia, water and air. These options bring more challenges; not only for selecting the best type of refrigerant for the given application, but also for selecting components that can handle the specific refrigerant's technical challenges and performance characteristics. The last five years have shown significant progress in this evolution as countries phase out the use of harmful synthetic refrigerants. The U.S. has already banned R22, an ozone depleting refrigerant and moved to the next generation of R410A. While R410A is still not a natural refrigerant, it is an important first step towards a cleaner, greener direction. Some natural refrigerants are more efficient for air conditioning while others are more efficient for refrigeration. Natural Refrigerant Types and Characteristics of **Hydrocarbons** include Propane (R290) and Isobutane (R600a) which are typically for use in small appliances. ***CO2*— Carbon Dioxide:** CO2 operates at almost twice the pressure of hydrocarbons in a typical air conditioning system, making it much more difficult to manage but also has a Global Warming Potential (GWP) of only one where hydrocarbons have three times more. **Ammonia is** not used as frequently because of its extreme alkalinity. However, it measures a zero for GWP. These natural refrigerants all have no ozone depleting properties and low GWP. However, this new generation of hydrocarbon refrigerants is highly flammable, and therefore requires different and safer technologies for refrigeration and cooling systems and components. Each type of natural refrigerant comes with challenges that component manufacturers must still overcome with technological innovation.

Go to Heaven for the climate, Hell for the company.
- Mark Twain

The Highest Point on the U.S. Interstate System Is…Underground?

Loveland Pass is a twisty, often treacherous road across the Continental Divide an hour west of Denver, Colorado. Despairing of building an interstate highway along the pass's hairpin turns, engineers decided to tunnel under the Continental Divide instead. The Eisenhower Tunnel now bypasses Loveland Pass at a height of 11,158 feet, making it the highest point on the U.S. interstate system—both above and below the ground.

WHAT THE HECK IS IT?

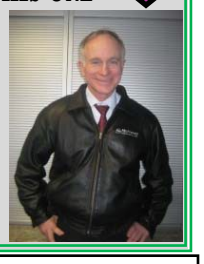
WIN A MULVANEY MECHANICAL LEATHER JACKET

JUST LIKE THIS ONE

When e-mailing your entry, please write **"Newsletter Contest"** in the subject line to avoid our SPAM filter.

Send to: MMI@mulvaneyinc.com

If multiple correct answers are received, one winner will be selected at random.



Last Quarter's Puzzle: Shot Gun Shell Reloader

Antique reloading tools can be defined to encompass such things as bullet molds, powder dispensers, powder cans, primer tins and patent reloading devices paraphernalia.

WE HAD NO WINNERS THIS TIME !!!
GOOD LUCK ON THIS QUARTER'S MYSTERY GADGET...

WHAT'S GOIN' ON?

Jun. 21-23	AIA Conference	New York City
Jun. 23-26	BOMA International Expo	San Antonio, TX
Jun. 23-27	ASHRAE Annual Conference	Houston, TX
Jun. 23-27	CFMA Annual Conference	Miami, FL
Sept. 28-Oct. 3	ASPE Convention	Atlanta, GA
Oct. 3-5	IFMA World Workplace	Charlotte, NC
Nov. 14-16	Greenbuild Expo	Chicago, IL

Want us to email the Pipeline to you instead?
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Expertise, Efficiency, Integrity, Quality and Service

"When you need us most, you can depend on Mulvaney Mechanical to be there for you."

OUR MISSION

To be a customer driven,
cost effective, adaptive
company continually
striving to provide a single
source solution for our
clients' needs.