



Introduction.

Welcome to the second 2021 edition of our newsletter!

It's November 2nd as I write this and fall is certainly upon us as evidenced by the first noticeable frost in Fulton County this morning. Combines are finally running again as we say goodbye to the wettest October on record in our part of the world. While fall tillage and anhydrous application will be delayed at best, we have much to be thankful for as a result of the overall favorable growing season and robust commodity prices. I hope you'll take a break to read and enjoy our newsletter.



Mike Battefeld,
Western Region President

It can do what?

Worms... their preferred mode of transportation is a squirm, slither, crawl or whatever you want to call it, right?
Not necessarily.

The jumping worm evidently has the ability to move rather quickly and even jump when excited but that's where the entertaining part of this creature, a member of the Amyntas and Metaphire genera, ends. Agronomists and soil scientists are watching the jumping worm closely because of its invasive nature and detrimental impact on soil structures.

Not native to North America, these worms have been sold in the United States for vermiculture (growing worms in controlled structures) and as fishing bait where they are commonly referred to as crazy worms or the Alabama Jumper. Visually these demons look much like the more common earthworm but



with slightly different coloring and significantly different behavior.

The jumping worm's ability to reproduce without mating, proliferate quickly and lay eggs that resemble the soil are a few qualities that make the worm extremely invasive. The creature's appetite is said to be insatiable and the resulting excrement is loose and granular with a coffee grounds like texture. The altered soil cannot retain moisture or nutrients and can erode rapidly.

Though thus far the worm's impact has been limited to landscaping and timber floors, the fact that they are confirmed 15 states and in 23 Illinois counties, including Peoria County earlier this year, is alarming. Impacts on soil structure are said to have a ripple effect so one has to ask if this will become an issue in row crop production land as well.





Old technology who's time may have come

Those who know me understand that I have a thing about engines. I always have.

This past summer I had the opportunity to visit a drainage district pumping station on the Mississippi in Pike County, IL. As is true with many of these facilities up and down the major rivers in the midwest, most of the technology was both rugged and aged. However even though the machinery lacks modern sophistication and precision, the ageless iron continues to serve a critical purpose decades beyond its expected useful life.

At first glance what I saw didn't seem that unusual.... a massive battle ship gray Fairbanks Morse diesel coupled to a pump, standing ready for the next big rainfall. I'd seen those before but this thing was different and to be honest, until my tour guide told me what it was I had no clue that engine architecture like this even existed. This particular Fairbanks was of the Opposed Piston (OP) design and bore the model number 38-8 1/8. Turns out that this engine was developed in the 1930's and the design is still on the radar today but for slightly different reasons.

The OP engine employs, as the name suggests, two pistons operating in a common cylinder and traveling on opposite directions. Piston controlled transfer ports handle the intake

induction and exhaust chores (so it's a two-stroke) and because the pistons travel in opposite directions, there is no cylinder head. An injection nozzle positioned between the two pistons introduces fuel as they approach top-dead center. The power stroke forces the two pistons apart which in turn drive two separate crankshafts at either end of the engine (or top and bottom in this case). The separate crankshafts are joined together to turn one common output shaft.

The 38-8 1/8 Fairbanks OP was a reasonably successful military power plant, seeing use in WWII diesel-electric submarines and other marine applications along the way as well as stationary power sources. Though attempted in locomotives the OP met with much less success given the difficulty in maintenance and engine overheating with a captive cooling system.

The OP engine may be an old design, but perhaps not be done yet. Fairbanks Morse continues to champion the cause of the OP engine with its Trident family. By adapting modern technology to an old basic design, the OP seems to be moving toward an efficient, environmentally friendly and durable power source that could serve us for years to come.



Emphasis on renewable energy's potential upside for agriculture

It's certainly no secret that the current political environment is placing an enormous emphasis on climate change and, in turn, clean and renewable energy. Before moving on let me issue this disclaimer... this article is not to debate or take a stand on the issue. Rather, let's look at what's happening in the petroleum industry and the potential impact on agriculture. Soy biodiesel is not new by any means, but the emphasis on renewable energy certainly merits another look at the numbers and perhaps gives us in agriculture a feeling of optimism.

It would seem that one of the most important facts here is the life cycle analysis on producing diesel fuel from soybeans. A 2009 analysis by the USDA found that soy biodiesel yields 4.56 times the fossil energy needed to produce it. Compare that to petroleum diesel with a ratio of .84. One bushel of soybeans yields about 1.5 gallons of diesel fuel so in turn, one acre at 60 bushels per acre would be 90 gallons. Not hard to understand how the math works on this.

Soybeans originated in Southeast Asia and were first domesticated in the 11th century BC in China. Planting in North America began around 1765, spreading to the corn-belt in the 1800's, eventually expanding to a major oilseed crop in the 1940's. Soybeans, at 20% oil content, would not be top of the line when compared to canola at 40% and sunflower seed at 43%. Conversely, soybeans are a viable crop on a much larger portion of row crop acres and the production infrastructure obviously already exists.

Positive indicators

The USDA currently predicts 12 billion pounds of bean oil will go to biofuel production in 2021-2022, up 26% from 2020-2021 and 38% from 2019-2020. Econ 101... product demand is a good thing if you are a producer.

Going back to the clean energy concept, biodiesel is said to produce fewer particulates and less carbon monoxide, sulfur dioxide, hydrocarbons and air toxins than diesel fuel refined from crude oil. Further the US government considers biodiesel to be carbon neutral.

Big oil appears to be now more willing to invest in biodiesel as well, perhaps in response to the administration's push for a lower carbon energy future. Phillips 66 has announced plans to invest \$350 million to construct a crushing and refining facility in South Dakota that is touted to have the capacity to process 150,000 bushels daily. Love's truck stops, in conjunction with Cargill, have made a similar announcement. Locally, ADM plans a \$25 million expansion at its Quincy facility with production to be ready early in 2022.

All of this is encouraging news for soybean producers and seems to be a shift from somewhat unstable foreign export markets to more domestic demand.



Coleman Engelkes, Charleston Market

In this edition we turn the spotlight on Coleman Engelkes from our Charleston office.

Coleman is truly a native son, having grown up in Charleston and attending school there before moving on to Lake Land Community College, ultimately earning his degree in ag business from Illinois State University in Bloomington. Though his farming background is limited, his desire to live in a more rural community made ag business a natural fit. Coleman and his wife Allie (newlyweds as of July 2021) continue to make their home in Charleston.

You're likely to find Coleman outdoors where he enjoys deer and waterfowl hunting and boating on Lake Shelbyville. A civic minded person, he donates his time serving on the Lake Land Community College Alumni Board, the Coles County 4-H Extension Foundation Board and Coles County Ducks Unlimited Board.

Coleman has proven himself as a quick study in the ag lending business and in his 3 years with Prairie State Bank & Trust has taken on the management of numerous farm customer relationships as well as working hard to grow the bank's market share.

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