Survey Says...

The 2017 Census of Agriculture was finally released. Taken every 5 years, this 820 page report is based on data that you provided, so you know how accurate it is. Nevertheless, it does point to some trends that I’m sure will be fodder for future Policy. The introduction tells why the census is taken. It provides demographics and financial information, it identifies trends for rural policy, it’s used to develop new methods to increase ag production, and so on. To be defined as a farm merely requires $1000 of ag products to be produced and sold. Farms of less than 10 acres grew by over 20% since the last census. Farms over 2000 acres grew by 4% while all other farms between 10 and 2000 acres shrunk in numbers. In addition, the only legal status of farms that grew in number were corporations and estates. While the value of ag products sold and the machinery to grow it have risen by 300% from 30 years ago, the value of land and buildings have risen 450% from 30 years ago, almost doubling from just 5 years prior; the average farm value now pushing $1.3 million per farm.

The average size of a farm in the U.S. today is 441 acres, roughly unchanged for the last 30 years. That makes some sense if you consider the value of the products coming off those 441 acres is up 300%, but so are the expenses. Land prices have outpaced its net output by 150% over the last 30 years. Buying more land doesn’t make economic sense on the surface and just like buying stock, you are investing in what you believe to be the future earnings potential of that investment. The odds on that bet today look to be very poor compared to just 5 years ago as gross profits and expenses have grown equally.

Missouri once again ranks second to Texas in the number of farms reported, a testament to a large diversity of crops grown from Christmas trees to elderberries to potted plants. Livestock versus row crop remains about a 50/50 split. And yes, you are still getting older with an average age of 59.

There’s only 788 cattle feeding operations in the State with an average head count of 100. That’s much lower than what you’d think while there’s 48,000 cow operations that average 45 head. There are now 328 hog operations of 1000 or more and 2600 hog operations in total. Most types of animal units increased in MO...except for cattle which was mostly flat.

There’s two census data points I found interesting. One is net income per size farm. If you wonder why farms are getting bigger, you can infer that there’s less farmers, and equipment produced today, only caters to bigger farms. But, I think the net income is really the driving force. It takes more land to make a living today and it takes more land if you are going to compare the occupation of farming against a town job.
34% of farmers are now of retirement age. That should grow to 45% in 5 years and 60% in 10 years.

The 45-55 year old category fell by 18%, approximately 50% moving up to the next age bracket while 50% no longer farm. We have seen evidence of that in the last 5 years, many simply cashing in on recent years inflation of land and equipment that they already owned and securing their early retirement. This was the smartest group of business people farming; probably. New farmers are entering from the age of 55-75 as they, compared to young people, are the only ones who can afford to purchase land and equipment to entry and view it as an investment shelter to their existing business or as their retirement as they move away from their existing business. That further quickens the pace of farm consolidation in future. If there is any data in these 820 pages worth alarm and in need of a new policy and a plan...this is it. Farming has the oldest work force with the exception of Church and WalMart greeters.

<table>
<thead>
<tr>
<th>Year/Age</th>
<th>Under 25</th>
<th>25 - 34</th>
<th>35 - 44</th>
<th>45 - 54</th>
<th>55 - 64</th>
<th>65 - 74</th>
<th>75+</th>
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<tbody>
<tr>
<td>2002</td>
<td>344</td>
<td>3113</td>
<td>7855</td>
<td>12094</td>
<td>14340</td>
<td>23289</td>
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<tr>
<td>2007</td>
<td>307</td>
<td>1900</td>
<td>4018</td>
<td>8074</td>
<td>11285</td>
<td>19447</td>
<td></td>
</tr>
<tr>
<td>2012</td>
<td>2401</td>
<td>10202</td>
<td>17559</td>
<td>35108</td>
<td>40813</td>
<td>28248</td>
<td>16183</td>
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<tr>
<td>2017</td>
<td>2713</td>
<td>12061</td>
<td>18522</td>
<td>28633</td>
<td>43628</td>
<td>34938</td>
<td>20220</td>
</tr>
<tr>
<td>Change</td>
<td>312</td>
<td>1859</td>
<td>963</td>
<td>-6475</td>
<td>2815</td>
<td>6690</td>
<td>4037</td>
</tr>
<tr>
<td>% 12 to 17</td>
<td>0.13</td>
<td>0.18</td>
<td>0.05</td>
<td>-0.18</td>
<td>0.07</td>
<td>0.24</td>
<td>0.25</td>
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<tr>
<td>Proj 2022</td>
<td>3066</td>
<td>14259</td>
<td>19538</td>
<td>23352</td>
<td>46637</td>
<td>43212</td>
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<td>16857</td>
<td>20609</td>
<td>19045</td>
<td>49854</td>
<td>53446</td>
<td>31566</td>
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</tbody>
</table>
I heard on the radio, I think reporting from the MO FFA convention, about the increase in young farmers. Yes, it is increased. No, it nowhere near enough to combat the overall aging trend. And, those young farmers are entering the animal segment, not the row crop farming.
Here is another look at the number of younger farmers coming in compared to older farmers about ready to move out. When you retire, your land will only be worth what someone can produce from it and then, only worth what the next leasor is asking for their comparable land. Older farmers need to invest in young, smart farmers, to insure the value of their assets upon retirement. According to the above, it could become a ballooning problem.
Hobby farms continue to grow as everyone wants to live in the country. But, midsize farms continue to erode, yielding to larger corporate and multi-family style farming. If you consider those that make their entire living from farming operations used to live in the 180 to 999 acre range, you could infer that about 3300 gave it up or scaled back to hobby size farms. That leaves the farm size of 50-179 that either leased or sold to the mega farms. Overall, we lost 3850 “farms”.

![Missouri Farm Size Changes 2012-2017](image)
The drought years brought almost 100,000 acres out of CRP. Since then, commodity prices are much cheaper and these lands have returned largely to pasture. Those in row crop are predominately beans.
Farm numbers are down by 1172 farms in these counties. In these counties, there are 585 fewer corn farmers than 5 years ago. 3545 farmers now average 261 acres of corn each, up 38 acres from 5 years ago. That’s a rough supply of 130 million bushels. Poet does business with roughly two thirds of these farms. Of those farms we buy from, we buy roughly one half of their corn.
Ethanol Blends

We’ve seen some local pumps advertising the Premium, NO Ethanol label. For the record, NO Ethanol is not a premium product and here’s why.

![Ethanol Blends Diagram]

“TREAT YOUR ENGINE RIGHT
HIGH OCTANE. HIGH PERFORMANCE.

Ethanol is a fuel that is the highest performance fuel on the market, with a 126 octane rating when used as a blend component. High octane means increased horsepower and cooler engines, which is why NASCAR® has used E15 (a 15% ethanol blend) in all national racing series since 2011.

Ethanol performs just as well off the track. E15 is approved by the EPA for use in all cars manufactured after 2001. And E10 is approved for use in all cars, no matter the make, model or year.

“We needed performance without compromise, and we’ve ended up with all the good things and no negative tradeoffs.”

Dr. Mike Lynch
Managing Director of NASCAR® Green Innovation

![Average of 41 HP and 52 ft lbs of Torque more]

Average of 41 HP and 52 ft lbs of Torque more

Peak of 62 HP and 42 ft lbs of torque more

![Dynojet Research]

2011 Ford F150 3.5L

<table>
<thead>
<tr>
<th>Engine Speed (RPM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2500</td>
</tr>
<tr>
<td>Power (hp)</td>
</tr>
<tr>
<td>250</td>
</tr>
<tr>
<td>E30 Torque</td>
</tr>
<tr>
<td>E10 Torque</td>
</tr>
<tr>
<td>E30 Horsepower</td>
</tr>
<tr>
<td>E10 Horsepower</td>
</tr>
</tbody>
</table>

*When used as a blend component.*
Fuel economies of mid level blends have proven to be par or higher than no lead. E20 seems to be optimal in many vehicles.

![Graph showing mileage change for 40 vehicles (E10 to E30).]

Figure 12. 2007 Chevrolet Impala (flex fuel), 3.5-L engines highway fuel economy.

Is ethanol an aggressive solvent?

Many say ethanol is a solvent, but ethanol is not the most aggressive solvent in gasoline. Instead, a common solvent sold at Lowe's or Home Depot called Xylene (toluene sold in the past) is often more damaging – and it generally makes up to 25 to 30 percent of consumer gasoline.
Ethanol used in small engines continue to get bad press. While some small engines are not fully designed to take advantage of ethanol blends, typical small engine issues are largely related to storage and non-use. Where small engines are used routinely, ethanol blends perform similarly.

New DOE Study: Gasoline becomes stale before ethanol phase separation occurs
September 25, 2016 | Jim Lane

In Colorado, a study conducted by DOE’s National Renewable Energy Laboratory (NREL), found that the petroleum components of ethanol-blended gasoline become degraded and unfit for use in an engine long before the ethanol portion takes up enough water to cause phase separation in the fuel tank. “Phase separation” occurs when an excessive amount of water is introduced into the fuel tank leading the ethanol and water to mix and sink to the bottom of the tank. In other words, gasoline becomes “stale” and unusable before water uptake by the ethanol component becomes a concern.

As part of the study, NREL scientists stored gasoline-ethanol blends ranging from E0 (0% ethanol) to E85 (83% ethanol) in actual lawn mower fuel tanks over several months in a climate-controlled chamber meant to replicate hot, humid environments like Houston and Orlando. The samples were tested at regular intervals for evidence of gasoline weathering and water uptake. In every case, the hydrocarbon components of the fuel became unfit for use in an engine before water uptake became a concern.

For gasoline-ethanol blends, it often took more than three months for phase separation to occur, meaning the fuel had already weathered to a point it was unusable. “In a small engine fuel tank in a constantly high-temperature, high-humidity environment, it takes three months or longer for E10 and other ethanol blends to take up enough water for phase separation,” the study found. “This confirms the statement by Mercury Marine that water uptake in E10 blends ‘…does not happen at a level or rate that is relevant.’”

President and CEO Bob Dinneen offered the following comments on the new study:

“Simply put, critics who continue to suggest E10 is a problem for small engines and boat motors are all wet. This research from NREL clearly demonstrates that gasoline goes bad long before the ethanol in the tank could cause any problems due to moisture uptake.

“Every manufacturer of small and off-road engines has approved the use of E10 in their equipment for many years. If owners of this equipment simply follow the manufacturers’ recommendations for fuel, maintenance, and winterization, they won’t have any issues at all. But, as this study shows, letting gasoline sit in your tank for extended periods of time is likely to cause some issues—irrespective of whether the gasoline contains ethanol or not.”

Ten Million Miles on E85: Who Says Small Engines Can’t Run on Ethanol?
by Chuck Beck

Small business owner Al Novstrup has heard it all when it comes to running ethanol in small engines.

“Here it is, about 10 years in to the industry, and it’s still amazing the number of people who firmly believe that if you put ethanol in a small engine it will be destroyed,” Novstrup said. “You can have any opinion you want, but we’ve got the facts right here.”

Those “facts” consist of 135 go-karts at his four Thunder Road Family Fun Park locations, each running on E85.

The Novstrup family owns and operates Thunder Roads in three South Dakota communities – Aberdeen, Sioux Falls and Watertown – and one in Fargo, North Dakota. Each of the 135 go-karts runs an average of 500 hours per year, and in the seven years Novstrup has run the go-karts on ethanol, the E85 has fueled the karts for nearly 10 million miles – 9,450,000 miles, to be exact.

Air quality was a key reason Novstrup made the switch away from running gasoline in his go-kart engines.

“If you have ever had gasoline in your face or exhaust from a car or a go-kart running on gasoline, you definitely know it’s a pollutant,” he said. With the smell from the gasoline-powered go-karts hanging in the air, the health of the children and families waiting in line became a concern for Novstrup, as well as the health of his employees working in the pit area.

He reports that after switching from gasoline to E85 in the go-karts, the air quality immediate improved and customer complaints came to an abrupt stop. Employees said that it was easier to breathe and the pit area was cleaner.

“On a regular basis people notice and thank us, and I think they do that because they enjoy the air quality, but also because they know the money stays in South Dakota and in the United States,” Novstrup said.

Critics of ethanol often claim that ethanol blends can have a devastating effect on small engines, but Novstrup says these on-track demonstrations are a great counter to that argument.

“We’ve got 135 engines that run constantly on E85, and we put in more wear and tear in a week than you would put on a lawn mower within 20 years,” he said.

Thunder Road uses two types of stock motors: a 6.5 horsepower Honda and a 9.0 horsepower Honda. Novstrup says the larger Honda motor in his go-karts is very similar to that which could be found in a lawnmower, except the go-kart engines are made to last longer.

To accommodate the switch from gasoline to E85, the go-karts engines were re-jetted to allow more fuel in to the cylinders. A new jet is a three- or four-dollar item, plus about 10 minutes of installation. No changes were to any metals or rubber seals, and Novstrup says that no unusual wear has occurred.

If these go-karts can run hard and operate well on E85, would an average-use small engine be able to handle E15 instead of E10? He believes the answer is yes.