Midwest Corn and Soybean Crop Tour Report: 8/21/17 – 8/24/17

Better than expected and broad agreement with USDA corn numbers is how I would summarize last week’s crop tour. I still expect revisions of the USDA’s corn yield to 167/168 area, but reality is that a couple of bushels doesn’t change the market. Corn crops across the Midwest are behind last year having struggled with wet cool weather, prolonging planting dates. Water saturated soils which then turned dry has produced a very heterogeneous crop that varies significantly from plant to plant and field to field. Yield ranges between the high and the low across the Midwest were wide and veteran crop scouts described 2017 as the most immature crops seen. Travelling just 20 miles across the same county, produced crops of varying maturity, disease, population and yield potential.

Historically immature crops are harder for Crop Tour methods to accurately calculate yield. 2012 drought stricken year was the closest Crop Tour measured yield got to final USDA yields. We only measured grain length, ear population and kernels around keeping 25 years of consistency in methodology, a system originally generated by the University of Illinois. No consideration for ear weight was taken, but given the immaturity and number of corn ears still blistering, this wouldn’t have helped.

The potential threat to yields from frost will be talked about a lot over the next 6 weeks thanks to the immaturity and current conditions of crops. End of season weather will be critical for ears still in milk and blistering stage, with rainfall, sunshine and warm weather needed to deliver the yield potential we measured.

Soybeans I am a little more skeptical over and estimate yield potential at 47.9 bpa. August USDA forecasts of 49.4 was a 5 percent decline from last year’s forecast of 52.1 which I feel isn’t enough. Pod counts across the Crop Tour show on average a 5.14 percent decline this year and based on the poor crop establishment, low plant populations,
low pod counts, quarter inch pods counted and varying bean counts per pod, I expect an 8 percent yield penalty. We measured a lot of small pods that need to fill out, with 2 bean pods common and 4 bean pods rare. Crops are immature and behind last year, with July and August seeing behind average precipitation across the Midwest not helping yield potential.

There is also a general expectation that Oil content will be lower this year and that Soybeans need warm weather and 7 to 10 inches of rain to help grain fill. We measured a lot of ‘potential’ in pod counts last week which in my opinion needs a kind finish for beans to fill out. The late maturity in beans will be at risk to frost damage and so late season weather will be very influential to final crop yields.

Soybeans are however a bit of a wild card and so hence my yield estimates are trimmed to an 8 percent decline and not 10 percent. Yields have accelerated over the last several years and plants have a remarkable ability to cope with conditions. Pro Farmer estimates over the past 12 years have under estimated Soybeans yields by an average of 1.89 bpa. This year’s forecast of 48.5 is a 7% decline and my forecast of 47.9 bpa is an 8 percent decline. Based on a yield of 47.9, US soybeans production is 4.249 billion bushels (USDA acres) with Pro Farmer number at 4.331 billion bushels.

Ahead of last week’s crop tour, I had thought the story would be in Corn and that USDA’s yield number of 169.5 would be quashed. What became evident was that Corn acres really are as the USDA say at 90.9 vs Soybean acres at 89.5 million, and their yield estimates pretty close to the mark. My take away from last week is that regardless of price, US farmers will grow Corn, and in reality Soybean yields ask the biggest questions, depending on how plant genetics stand up to current conditions.

Below is commentary and detail from my journey through Ohio, Indiana, Illinois and Iowa.

George
August 30, 2017
Ohio route map

Day One of the crop tour through Ohio was surprising in many ways thanks to the variability and immaturity of crops. Veteran scouts commented that never before had they seen the crop as late as they had this year with some scouts on other routes to me, even reported seeing corn still pollinating. This picture below taken in Wyandot County, Ohio, shows the difference in maturity and pollination delays in two ears side by side. Corn ears to the right show silks blackened as expected for the third week in August, compared to the ear on the left which was still white by comparison.

![Delaware County, District 5 Ohio. 165 bpa](image)

As with most of the Midwest Corn belt, planting conditions from April 16th started well and ahead of the five year average. Very wet and cold conditions arrived end of the month and through into May, which not only delayed planting progress, but severely impacted the early development of planted corn. Crop establishment struggled with plant populations measured across 60ft row at 93.31 plants vs 3 year average of 98.67 plants.

Throughout Ohio, it is estimated that 20 to 25 percent of corn acres were re-planted where some growers ripped up entire sections of fields. Others however simply just re-seeded over existing seed beds hoping to restore populations. March to May precipitation maps from NOAA show rainfall across the Midwest Corn Belt significantly above average with Ohio in particular, one of the wettest of the Midwestern states. Ponding and patches of drown-out plants were therefore a common sight as we drove from field to field, with anything from 28 to 40 inches of rain since April 10th.

![Statewide Precipitation Ranks March-May 2017](image)

Despite the tough conditions of this year’s planting, the biggest surprise in Ohio, was the improvement in measured yield from last year’s tour of 164.62 bushels per acre (bpa). While below August USDA’s yield count of 171 bpa, Crop Tour measurements of 164.62 bpa vs last year’s 148.96 bpa showed a 10.5 percentage improvement which broadly supported the USDA’s 7.5 percent yield increase from last year at 159 bpa. Specifically my route, took 10 samples...
heading North West out of Columbus, measured average yield of 170.2 bpa, in line with Augusts USDA corn number of 171 bpa.

Across Ohio, state wide Crop Tour data showed average grain length of corn, 15 percent longer than last year, offsetting lower plant populations. This below picture taken in Allen County measured a yield of 172.9 bpa with blister stage ears and immaturity a common sight across the state.

Immature plants, and variable maturities produced the widest range in yields seen across all 7 states. Yield lows of 150 bpa were measured versus highs of 242 bpa. Historically crop tour yields in Ohio lag USDA final yield numbers by 2.4 bpa. Whilst this suggests there could be some growth in the Crop Tour yield of 164.62 bpa, measuring immature crops is notoriously difficult and inaccurate. The closest yield estimates ever recorded by crop scouts to final USDA yields in Ohio, was in 2012 when crops were sampled virtually in front of combines thanks to a very early harvest that year.

According to veteran scouts, there was a visible increase in Soybean acres in Ohio, making it easier to find suitable fields to measure. As with corn, plant maturity of soybeans was behind previous years with some plants still showing some small but late blooming. Overall though plant health generally looked better than that seen in corn fields with plant health impressing and appearing to survived the wetter start.

Ohio was the only state where pod counts surpassed last year’s crop tour results of 1,107 pods, up 4.9 percent from last year’s 1,055 pods per 3ft square. USDA August estimates showed a lower soybean yield for all seven states covered by the crop tour with Ohio in particular down 2.75 percent at 52 bpa vs 54.5 bpa. Data collected however from my route showed a higher pod count of 1,449 pods per 3 ft square suggesting an even higher pod count and yield.
population. This is slightly misleading however as crop tour sampling procedures count all pods over quarter inch long, regardless of any visible evidence of bean filling.

Soybeans with quarter inch pods are said to have late season yield potential which is why they are included in surveys. Across my route I estimate that approximately 10 percent of pods counted were small quarter inch pods at the top of the plant with four pod beans rare. Soil moisture was reported significantly down on last year as per the previous 30 day percentage of average precipitation map. Given the immature nature and potential counted in beans, rainfall, heat and sunlight is needed to maintain current conditions and potential.

**Indiana**

Crop maturity was notably higher in Indiana with most corn in the dough to dent stage rather than the milky grains seen in Ohio. Yield measurements were a little more consistent between fields, with the range narrowing to 93 bpa from the high at 226.8 and the low at 133.1 on my route and an average of 174.08bpa.

Crop maturity in Indiana ahead of Ohio (Clinton County, 210 bpa)

Heterogeneous plant health and general crop variation continued into Indiana although crops on the whole look better than in Ohio. Excessive rains and cooler temperatures from the 26th of April and throughout May, disrupted the early planting progress reducing the ear count and early plant vigor. Replanting of corn was evident across 2 of the 7 fields sampled in Indiana but overall, thought be less than...
Ohio. Corn plant populations at 95.31 ears in a 60 foot row were therefore down from last year’s 98 ears but still an improvement over Ohio 93.31 ear count.

Indiana lag final USDA yields by 1.9 bpa, with August USDA yield unchanged from last year at 171 bpa.

As corn in Indiana improved, Soybean counts and crop conditions generally declined and disappointed. Crop height was on the whole shorter than fields seen in Ohio, with more disease and variation across the field. Lower soil moisture (down 6.3 percent from last year) and the previous 30 days warm and dry conditions were in particular impacting crops and resulting in uneven growth.

Pod counts across the 4 districts I sampled in Indiana counted 989 pods in 3 foot square, with overall state-wide pod counts of 1,168.78 pods, down 0.82 percent from last year. Small quarter inch pods were again common across Indiana as too were 2 bean pods.
Heart of the US Corn Belt, my route through Illinois took me from East to North West, exposing some of the very worst and best crops seen during the tour.

Containing some of America’s best farm land, black silty soils in districts 5 and 4, as we entered Illinois from the east massively disappointed. Land that should be producing 220 plus bushels year after year averaged just 158.77 bpa with evident crop stress and ‘firing up to the ears’ as soon as we crossed the Indiana/Illinois boarder.

My route through Illinois over two days.

Troubled planting conditions from the same rains seen across Ohio and Indiana followed by hot and dry conditions in June, have caused stress and shutting down of lower plant foliage as the plant fights to keep main leaves healthy. Emergence was variable with not all of the planted seeds coming through, recording two row ear counts along a 30’ plot from 63 ears to 103 ears. Late emergence and variable plant maturity increased competition during pollination, exposing the first sign of pollination problems seen on this trip so far.
Further examples in Ford County again showed how dry conditions had impacted the crop. Rains of up to 5 inches over 24 hours as we scouted came too late for this crop, witnessing very low ear populations and yields of just 142 bpa.

This first sample proved to be the best and most advanced field, suggesting it was planted in the third week of April, prior to the rains and in the ground in good shape. Heading just 20 miles north in the same county, more replanted corn was seen following on from previous states.

Heading north in Illinois, crop maturity varied as we had seen elsewhere with crops between the milking and dough stages. Further pollination issues were also visible and with comments from an agronomist, that from a crop that we had expected to have seen in eastern districts 4 and 5. Crop health was exceptional and uniformed, producing an ear with a kernel width of 20 and 18 kernels around, offsetting tip back yield loss.
much of Illinois pollinated first week of July in dry and hot conditions. Generally plant health was very good and disease low, which will help the maturing and final stages. Ear counts were a respectable count at 96 to 118.

Overall my tour samples showed that north western Illinois averaged 189.66 bpa with a more consistent crop of between 145 bpa to 221 bpa. Growers in this area will be disappointed though, given that last years final USDA yield average was 197 bpa.

Combined Crop Tour data from 205 samples, recorded Illinois yield at 180.72, down 6.61 percent from last year. Across the state a triple whammy of ear counts, grain length and kernels around contributed to losses. Historically, crop tour data since 2001 lags final yields by just 0.1 bpa and compares to the USDA’s August 1st estimate of 188 bpa which was down 4.57 percent from last year.

Whilst Corn crops in eastern Illinois were struggling, Soybeans impressed demonstrating that a little bit of crop stress helps plants to thrive. Average pod counts here were 1,289 and all over 1,000 showing greater consistency in plants across the field. Closer inspection of plants however revealed that whilst pod counts per plant were high, two pod beans however were still a common sight and continued rainfall would be needed to fulfil potential.

In true Soybean fashion, improvement in Corn yields in north western counties of Illinois, saw Soybeans disappoint to initial findings in eastern areas. Across my route, pod counts declined to an average of 1,049.5, thanks largely to pods per plant averages that weren’t anything special. Plant populations were good, and crop health was good too with plants consistent across the field.

Overall, Crop Tour data for Illinois, measured average soybean pod counts at 1,230.77, down 6.6 percent from last year’s Crop Tour count of 1,318.09. Disappointingly, average pod counts per plant were lower due to weather related stress on plants, with a slightly later maturity thanks to later and variable emergence this season. August USDA numbers by comparison showed just a 1.69 percent decline in yield to 58 bpa for 2017.

Iowa

USDA’s latest drought monitor shows 46% of the state suffering from some degree of drought conditions. Our route took us directly through south eastern, central and northern counties where crop conditions were some of the worst we’d seen all week.

Planting conditions in Iowa described by agronomists at the evening Profarmer meeting in Iowa City as one
of the longest and most difficult. Dragged out over 45 days thanks to continued rain interruptions, cool temperatures ensured slow crop emergence impacting on yields and plant to plant variability.

Knowing that our route was taking us through some of the worst drought impacted areas of the state it was no surprise that the average corn yields taken throughout the day measured 153.5 bpa. First samples taken in Keokuk County was nothing special measuring 154 bpa. Plant health was poor with discolouration from disease and very obvious crop stress. From three ears pulled, maturity varied from milky stages right through to doughy / dent stages, thanks to the slow and variable plant emergence as mentioned. Ears showed uneven kernel formation from pollination problems with grain length in particular at 5.5 inches, impacting yield.

Travelling east across southern Iowa, we saw for the first time numerous fields that had been foraged for cattle feed. Mainly just headlands or low spots had been whole cropped, due to deteriorating conditions and dry weather.

94 bpa corn yield in Mahaska County was a memorable stop and second lowest seen. Having seen us in the field, the grower came and spoke to us. Tough and sandy soil types, this land at best was only capable of producing 150 bpa. Thin crop with low ear counts and general crop stress although disappointing, wasn’t of any surprise to him.
Corn 'firing up to the ears' taken in Marion County and Polk County as we headed through central Iowa.

‘Firing up to the ears’ and visible crop stress where lower plant health and vegetation was sacrificed by the pant to preserve nutrients, was a common sight as we continued through central Iowa. The ability to see through and down the rows an easy barometer of crop stress measuring yields around the 130 bpa area.

Heading north into the northern district of Iowa where rainfall has been evident through the past month, yields picked up to 190’s bpa. That was short lived however as we reached the County of Hancock where an estimated area of 38,000 acres had been totally decimated by golf ball sized hail storms earlier this month. Driving for 10 minutes along a 6 mile stretch that was said to be 10 miles deep, all you could see was flattened corn and soybean fields. The damage so bad that we recorded this area which represents 12 percent of Hancock’s planted Corn and Beans area, as zero yield.
Despite what I saw in Iowa, conditions across other districts in the state showed better than expected results. Generally speaking, Western and north eastern districts showed better than anticipated yields, showing the unpredictability of summer thunderstorms across the Midwest.

Overall Crop Tour scouts measured Iowa yield at an average 190.79, down just 4.45 percent from last year. Ear count amazingly was up overall, thanks to near normal rainfall during the planting season. Grain lengths were 2.4 percent shorter and kernels around 1.62 percent lower, just trimming yield. USDA August yield forecast of 183 bpa is comparable, albeit a bigger decline of 7.39 percent from last year’s final yield number.

Across my route, Soybeans lacked maturity and in the most part, hadn’t yet closed up the 30 inch rows between plants. It was reported that some soybeans were still being planted in June due to earlier delays with crops in south eastern and south central Iowa thigh high at very best.

Plant populations were generally lower, than that seen in other states as late planting date’s impacted emergence of plants across fields. Average pod counts per plant was also low at 39, not helping overall pod counts in a 3 foot square plot. Average pod counts on my route disappointed at 844.78.
As we had seen across all states on the tour, beans per pod count varied massively from 2 beans to rare sightings of 4 beans, quarter inch pods, and the potential for pods to add further beans. The picture above from Marion County is a classic example of this showing a 3 bean pod that could potentially add a fourth, next to a 2 bean pod, that maybe could add a third. Soybeans therefore are a wild card with September weather critical. Most plants are roughly 35 to 40 days away from maturity during which time it is said that they need up to 7 to 10 inches of rain and plenty of sunshine and heat.

Crop Tour pod counts in Iowa averaged 1,092 which was down 10.7 percent from last year’s tour. Given that my route measured an average of 844 pods from a lot of smaller and less populated plants, the year on year reduction wasn’t a massive surprise. Beans remain a wild card though with no consideration for the number of beans per pod taken. Crop Tour findings of 10.7 percent reduction argue though for a bigger decline in August USDA yields from last year than the current 56 bpa, down 7.4 percent.
USDA:

USDA officials came under repeated fire from growers at the evening Farm Journal / DU Point Pioneer conferences. Upset and bemused by August’s numbers, growers on two occasions vented frustration at USDA officials. Taking aim, officials were called out for miss-representing crop conditions in their August estimates and criticized for the accuracy of their data.

Across the week the USDA was well represented on the tour with a number of officials including head economist on the eastern leg with me, Jeff Lemmons. Jeff is the lead soybean analyst, responsible for overseeing and signing off final US soybean numbers and he gave me a valuable insight into the process of putting the numbers together.

For soybean’s the most accurate and perfect count comes a year after the crop is grown. Exports are known, crush use data is collected and with little to no farm feed use, all consumption can accurately be calculated. USDA make several revisions year round, based on objective yield surveys and consumption, improving the accuracy of realized yields.

Augusts report is the starting point for new crop yield estimates. Forecasts are made basis August 1st and rely heavily on grower yield surveys sent out middle of July. Economists also take objective yield forecasts across all states but given the early growth stages of plants during this time, field data is largely unreliable. USDA surveys aim for 80 percent response rate, but it’s widely been reported that this year, field surveys received a 72 percent response. Surveys of this nature exponentially benefit from mass participation, placing a direct duty on growers to respond accurately. Grower yield surveys receive rare protections and exemptions from the freedom of information act meaning that grower’s responses remain private.

From September onwards, the weighting to objective field data increases with the number of samples taken doubling. Consistency is ensured by conducting field surveys from August, to September and to October from the exact same fields with final surveys taken directly in front of the combine. Harvested yield data is collected along with combine loss calculations; I am told economists can be seen on their hands and needs counting losses behind combines... Through the year the accuracy of surveyed data therefore increases, improving the precision of forecasts.

I had the chance to speak to Jeff in length about putting the numbers together and his take on the response to August figures. Whilst aware of the ramifications and general market sentiment that numbers were too high, Jeff is a pure economist and statistician in that his only focus is on what he sees in front of him. He outwardly rejects any suggestion of bias or manipulation from the department with no vested interest or gains to be made. Having seen a large proportion of the US Corn Belt, what strikes me the most has been the accuracy of USDA numbers to the surveyed data from the tour. A lot can change in a month since previous forecasts were put together but when you drill into the detail behind the overall number, tour data showed high correlation to USDA numbers.