WASHINGTON, Mar. 15, 2017 – America’s farmers and ranchers will soon have the opportunity to strongly represent agriculture in their communities and industry by taking part in the 2017 Census of Agriculture. Conducted every five years by the U.S. Department of Agriculture’s (USDA) National Agricultural Statistics Service (NASS), the census, to be mailed at the end of this year, is a complete count of all U.S. farms, ranches, and those who operate them.

“The Census of Agriculture remains the only source of uniform, comprehensive, and impartial agriculture data for every county in the nation,” said NASS Administrator Hubert Hamer. “As such, census results are relied upon heavily by those who serve farmers and rural communities, including federal, state and local governments, agribusinesses, trade associations, extension educators, researchers, and farmers and ranchers themselves.”

The Census of Agriculture highlights land use and ownership, operator characteristics, production practices, income and expenditures, and other topics. The 2012 Census of Agriculture revealed that over three million farmers operated more than two million farms, spanning over 914 million acres. This was a four percent decrease in the number of U.S. farms from the previous census in 2007. However, agriculture sales, income, and expenses increased between 2007 and 2012. This telling information and thousands of other agriculture statistics are a direct result of responses to the Census of Agriculture.

“Today, when data are so important, there is strength in numbers,” said Hamer. “For farmers and ranchers, participation in the 2017 Census of Agriculture is their voice, their future, and their opportunity to shape American agriculture – its policies, services, and assistance programs – for years to come.”

Producers who are new to farming or did not receive a Census of Agriculture in 2012 still have time to sign up to receive the 2017 Census of Agriculture report form by visiting www.agcensus.usda.gov and clicking on the ‘Make Sure You Are Counted’ button through June. NASS defines a farm as any place from which $1,000 or more of agricultural products were produced and sold, or normally would have been sold, during the census year (2017).

For more information about the 2017 Census of Agriculture and to see how census data are used, visit www.agcensus.usda.gov or call (800) 727-9540.
Whole-Profile Soil Health in Long-Term Corn Residue and Tillage Management  
Rintaro Kinoshita, Lindsay Fennell, Michael Davis, Aaron Ristow, Bob Schindelbeck, and Harold van Es  
Soil and Crop Sciences Section, School of Integrative Plant Science, Cornell University  

Background  
Deep soil layers can be a significant sink of soil organic carbon and an important source of soil moisture and nutrients for crop growth. Distinct soil microbial communities may also be present in subsoil layers compared to topsoil due to nutrient dynamics, soil physical properties and drainage. In addition, the ‘transition layer’ between topsoil and subsoil layers may form a plow pan, resulting in compaction, and restricted root growth. With concerns about crop production under changing climate and weather patterns, we need to better understand how soil management practices impact these deeper soil layers.  

Traditional soil testing on grower fields has been limited to topsoil nutrients (typically 0-6 inches in depth). Shallow soil sampling has been justified due to the challenges of sampling to deeper depths and also the relative importance of topsoil when adequate growing conditions are met. More recently, the Comprehensive Assessment of Soil Health approach, which includes analysis of soil physical, biological and chemical properties, has gained acceptance in providing information on crop growth constraints, but these assessments have also only been applied to surface soil layers. The objective of this study was to investigate the impacts of crop and soil management on soil health conditions throughout the entire soil profile.  

Procedures  
The soil health impacts of 40-year long continuous corn cropping under two tillage systems (plow-till vs. no-till) crossed with two residue management practices (removed vs. returned) were assessed at different soil depths. (0-to-24 inches; Fig. 1). The unique history of this experiment — conducted at the Miner Institute near Chazy, NY with four replications for each treatment — allowed us to look at the long term effects from reduced tillage, which generally improves soil aggregation, enhances soil biota, and changes rooting patterns. It also allowed us to evaluate whether reduced tillage has more or less benefits than returning corn stover as residue, which feeds the soil microbiota and provides macro-nutrients like potassium.  

Using the Cornell Comprehensive Assessment of Soil Health (http://soilhealth.cals.cornell.edu/) approach, we analyzed aggregate stability in addition to the soil biological indicators of soil organic matter, active carbon, soil respiration and protein. The chemical indicators phosphorus (P) and potassium (K) were also analyzed.  

Results and Discussion  
Table 1 shows mean values measured for each treatment in various soil layers. We used a color scheme to help interpret the numbers from best to worst (blue-green-orange-red). For biological and physical indicators the order of the measured indicators was generally: No-till-Residue Returned > No-till-Residue Removed > Plow-till-Residue Returned > Plow-till-Residue
The pattern was consistent, although the effects were statistically significant only in the topsoil layer. This shows that eliminating tillage had greater benefits for soil health throughout the soil profile than returning residue, though stover return was shown to be important in avoiding the depletion of macro- and micro-nutrients, especially potassium, under No-till below the surface layer.

Interestingly, the continuous No-till-Residue Returned maintained soil conditions closest to a benchmark comparison sample from continuous mixed sod, compared to Plow-till or Residue Removed treatments. It is noteworthy that, under No-till-Residue Removed, subsoil nutrient values were the lowest. This demonstrates possible nutrient mining when crop residue is removed for other uses and emphasizes the importance of full soil profile nutrient budgeting for long-term management decisions (Note: fertilizer applications were uniform across treatments).

Finally, we found unique soil conditions in the transition layer (7-to-12 inch depth, Table 1) where the relative benefits from the treatments were different from the other layers, because the surface residue is placed at this depth under Plow-till. This seems to benefit the transition layer only and not the layers above or below. In deeper soil layers, Plow-till had lower soil organic matter content and related soil physical, biological and chemical properties due to a lack of transfer from the topsoil to subsoil layers.

These are interesting results as they show that No-till benefits soil health not only in the surface layer but also deeper into the soil, especially when corn stover is left in the field. Conversely,

<table>
<thead>
<tr>
<th>Soil depth (inches)</th>
<th>Tillage System</th>
<th>Stover Management</th>
<th>Organic Matter</th>
<th>Active Carbon</th>
<th>Soil Respiration</th>
<th>Soil Protein</th>
<th>Aggregate Stability</th>
<th>P (ppm)</th>
<th>K (ppm)</th>
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<tbody>
<tr>
<td>0-2.5</td>
<td>No-till</td>
<td>Returned</td>
<td>3.69 a</td>
<td>674 a</td>
<td>0.257 a</td>
<td>3.33 a</td>
<td>49 a</td>
<td>14.81 a</td>
<td>132.0 a</td>
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<td></td>
<td>No-till</td>
<td>Removed</td>
<td>2.99 b</td>
<td>487 b</td>
<td>0.219 b</td>
<td>6.01 a</td>
<td>39 b</td>
<td>12.15 a</td>
<td>66.3 b</td>
</tr>
<tr>
<td></td>
<td>Plow-till</td>
<td>Returned</td>
<td>2.04 c</td>
<td>340 c</td>
<td>0.190 bc</td>
<td>4.35 c</td>
<td>24 b</td>
<td>8.38 b</td>
<td>82.9 b</td>
</tr>
<tr>
<td></td>
<td>Plow-till</td>
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<td>2.04 c</td>
<td>299 c</td>
<td>0.157 c</td>
<td>4.02 c</td>
<td>21 b</td>
<td>8.76 b</td>
<td>57.9 b</td>
</tr>
<tr>
<td>2.5-7</td>
<td>No-till</td>
<td>Returned</td>
<td>3.20 a</td>
<td>496 a</td>
<td>0.216 a</td>
<td>6.78 a</td>
<td>75 a</td>
<td>10.74 a</td>
<td>65.8 a</td>
</tr>
<tr>
<td></td>
<td>No-till</td>
<td>Removed</td>
<td>2.86 a</td>
<td>429 a</td>
<td>0.203 a</td>
<td>5.35 b</td>
<td>69 a</td>
<td>5.83 b</td>
<td>44.7 a</td>
</tr>
<tr>
<td></td>
<td>Plow-till</td>
<td>Returned</td>
<td>2.02 b</td>
<td>320 b</td>
<td>0.180 ab</td>
<td>4.43 bc</td>
<td>40 b</td>
<td>5.96 b</td>
<td>69.5 a</td>
</tr>
<tr>
<td></td>
<td>Plow-till</td>
<td>Removed</td>
<td>1.89 b</td>
<td>285 b</td>
<td>0.149 a</td>
<td>3.94 c</td>
<td>33 b</td>
<td>7.10 b</td>
<td>47.0 a</td>
</tr>
</tbody>
</table>

* Active carbon measurements at these depths were below detection limits so are unavailable.
Plow-till places organic residues at the bottom of the plow layer (transition layer), but does not show benefits in other layers. Why is this the case? We hypothesize that the main benefits come from greater and deeper biological activity under No-till, especially when residue is left in the field (Fig. 1). We now have a better understanding of how critical decreasing soil disturbance through reduced tillage enhances biological activity, which may extend deep into the soil with worm species like night crawlers. They transport organic material from the surface deep down into the profile. The continuous deep soil pores may also transport dissolved organic carbon deeper into the soil with percolating water. We also generally see more vertical and deeper roots with No-till, which additionally helps transfer organic material down to deeper layers.

Figure 1. Experimental design. A transition layer between the topsoil and subsoil can potentially form a plow pan and lead to compaction resulting in restricted root growth. In contrast, the absence of the plow pan may facilitate the transport of organic material from the surface deeper into the profile.

Conclusions
This study found that combinations of tillage and residue management affect soil health at different depths, which can in turn affect the overall availability and accessibility of soil moisture and nutrients from the soil system. The direct impacts of tillage and residue management occur mostly near the soil surface, but also have effects on soil properties deep in the profile, where no-tillage and residue return positively influence subsoil conditions. The long term yields from these plots have followed the same pattern as the soil health measurements, where plots with no-tillage and residue return out yield those with plowing and residue removal.

Acknowledgements
This article is based on a paper titled “Quantitative soil profile-scale assessment of the sustainability of long-term maize residue and tillage management” (Kinoshita et al., 2017; accepted in Soil and Tillage Research).

Utilizing Corn Silage Hybrid Trial Results
Joe Lawrence, Tom Overton, Allison Lawton, Margaret Smith
Department of Animal Science, PRO-DAIRY; Plant Breeding and Genetics

A number of independent Corn Silage Hybrid Testing Programs, including the New York (NY) Corn Silage Hybrid Trials, offer valuable information on hybrid performance. But what if the hybrids you’re looking at are not found in individual trials? Hybrids in the trials are a subset, and on the surface may seem limited in their usefulness. However, the results can offer a wealth of information beyond the ranking of participating hybrids.

In fact, just looking at the top performing hybrids from a single year, while interesting, has limited value. Trial data for an individual hybrid is most useful with multiple locations and multiple years to understand how the hybrid performs across a wide range of conditions. This level of data can be hard to come by in the independent trials but may be available from seed companies.

In the absence of data on a specific hybrid, independent trials offer the opportunity to study:
- how participating hybrids performed relative to their peers at each location,
- which characteristics, among the participating hybrids, resulted in the most consistent performance, and
• the expected range in results for important values, such as starch content and fiber digestibility.

With this information, you are equipped to ask individual companies for data on these important characteristics and values in their hybrids. While the specific hybrid may not be in the trial, a company should have information on other hybrids that share the same lineage or have similar performance to a hybrid that exhibited desirable characteristics in the trials.

Comparing to the Location Mean
The mean for a location is the average value of the measured parameter (yield or % starch). Since several localized factors, such as weather and soil type, influence the performance of the hybrids at a particular location, studying the absolute values (yield per acre, % starch or fiber digestibility) is not suggested. It is much more helpful to study the trial mean and compare hybrid performance relative to this mean to gain a better understanding of how it performed under the conditions at that location.

Whole Plant Dry Matter (DM) Considerations
In any testing program, the goal is to harvest all hybrids as close to the same stage of maturity (whole plant DM) as possible. In practice it is recognized that there will be variation in DM at harvest. Yields are corrected to a uniform DM for reporting. They are generally reported at 35% DM. However, it is also important to acknowledge the effect of DM on forage quality. It is recommended to only compare the forage quality results of hybrids that are within three percentage points of DM to each other.

Impact of Location
When data for multiple locations within the same trial are available or data on the same hybrids grown under slightly different management in other testing programs are available, it can be very useful to understand the effects that weather patterns, planting dates, seeding rates and other differences can have on the hybrid. This insight helps to address questions regarding the ability of a hybrid to perform consistently across conditions or if there are specific conditions where it performs best that match the conditions typical of your farm. Again, utilizing company data in conjunction with other trials can be very powerful for this.

It is also important to note that differences in growing conditions does not just impact yield, it can have large impacts on forage quality. While we commonly look at important factors such as whole plant dry matter and starch content, the effect of growing conditions on fiber digestibility was very apparent.

Fiber Digestibility
In recent years several advances in ruminant nutrition have increased our understanding of fiber digestibility, how this drives how much a cow will eat and the implications on her potential to produce milk. The measurement of undigested neutral detergent fiber (uNDF) is being reported by more hybrid testing programs and was an integral piece of data in the new approach to predicting potential milk yields in the NY Corn Silage Testing Program.

Starting in 2016, the NY trials used new methods to evaluate the milk producing potential of corn silage. The Cornell Net Carbohydrate & Protein System (CNCPS) model was used to predict the expected milk yield (in pounds per day) of a typical, Northeastern high lactating ration with each of the participating corn hybrids entered into the same total ration. Again, the relative ranking of the hybrids is more useful than the absolute values, but this approach uses a much more in depth analysis to assess how each hybrid may perform in an actual ration compared to previous approaches. It is evident in the report how the uNDF content of each hybrid may affect the potential dry matter intake of the ration and the subsequent effect on projected milk yield.

Starch Content & Digestibility
Starch content is a popular number to look at and justifiably so. At the risk of excessive repetition, this is another case where it is critical to look at these values in the context of the location mean, rather than absolute values as growing conditions and stage of harvest (whole
plant dry matter) can affect this value.

Starch digestibility is more challenging. We know this value changes as the silage ferments, and laboratories continue to refine their ability to accurately predict starch digestibility using NIR methods, compared to the more intensive wet chemistry laboratory testing methods. It is also recognized that results from green (unfermented) samples, as are often used in Hybrid Testing Programs, are less consistent. It is generally accepted that a hybrid with good starch digestibility before fermentation will remain incrementally better after fermentation when compared to a hybrid that starts with lower digestibility before fermentation. Inquiring with a company about their data is quite beneficial, especially if they have wet chemistry data on fermented samples. It is always best to compare results from the same laboratory. However, if the results available are from different labs, ask for data from multiple hybrids to establish the relative differences in like datasets.

Yield and Agronomic Characteristics
While yield often receives too much attention in silage hybrid selection, you do want strong hybrids that have a competitive yield and are able to handle potential stressors. Some of these stressors may be more broadly driven by weather, while others may be typical of the micro-climate you farm, such as soil drainage, air drainage (disease prevalence) or elevation driven temperature trends.

This is another instance where rather than focusing on actual yield numbers, pooling data from multiple locations and sources and matching this with weather data from those locations will help you understand if a hybrid’s performance is consistent across conditions or if it excels and falters in certain situations that may be applicable to your area.

Results for the 2016 NYS Corn Silage Hybrid Trials can be found at: http://scs.cals.cornell.edu/extension-outreach/field-crop-production/variety-trials#corn-silage

Tips for Feeding Cows with Milking Robots
Source: March 2017 Farm Report — Heather Dann

Automatic milking systems (AMS) also known as milking robots are becoming more common in the US and Canada. Growth in AMS is driven by improved performance of newer generation AMS, a better understanding of facility design and management that considers cow behavior, and less labor needed for milking.

New opportunities and challenges with AMS are present for producers regardless whether they transitioned from a tiestall with a pipeline milking system or a group housed facility with a conventional milking system. Last year a Wisconsin led research team evaluated 635 North American farms with AMS to determine factors related to increased daily milk production either on a cow or robot basis. They found that free-flow traffic that allows each cow to decide when to be milked and move freely among the AMS, stalls, and feeding area resulted in greater milk production than forced traffic (e.g. AMS before the feeding area). Most likely the forced traffic system decreases each cow’s feed intake, through negative effects on number of visits to the feedbunk and time spent eating. This altered feeding behavior can potentially increase the risk of rumen acidosis (SARA). In addition, too much concentrate (grain) provided in the AMS was related to lower milk production. A recent survey by Canadian researchers found
that 90% of AMS producers are using a free-flow traffic system to maximize performance.

The feeding system is often changed when a producer transitions to an AMS. There is a learning curve for producers that fed TMR before an AMS as well as producers that component fed cows. Typically, cows in herds with an AMS receive a portion of their daily ration in the form of concentrate while milking. The concentrate is used as a way to attract cows to the AMS. The remaining ration (partial mixed ration; PMR) is supplied in the feed bunk.

A recent Journal of Dairy Science review by researchers from Spain and Wisconsin suggested that the ideal AMS situation is one that allows free traffic and nutritional approaches that reduce variation in the number of daily visits to the AMS. They pointed out that cows need to eat and be individually milked, which is an unnatural behavior since cows are social and like doing similar activities as the rest of the herd. Therefore, consideration should be given to feeding patterns of cows when designing the nutritional program for an AMS. Delivering a PMR twice daily vs. once daily seems to be a strong stimulus for a cow to visit an AMS.

The ideal quantity of concentrate to provide in an AMS is evolving. Researchers from Spain and Wisconsin indicated that a cow will not consume all the concentrate when it exceeds ~8.8 lb (4 kg) per day. Higher amounts will increase the risk of SARA, decrease intake of PMR, as well as contribute to inconsistent milking frequency. Usually, a cow visits an AMS fewer than 3 times per day. Therefore, each cow has a limited number of times to eat the concentrate and a limited time during each visit (~7 minutes). In addition, a cow can only eat ~0.55 to 0.88 lb of pelleted concentrate per minute so concentrate should be limited to 2.2 to 3.3 lb per visit. A pelleted concentrate is preferred over a mash or meal form. In some situations, addition of flavoring to the concentrate has increased visits to an AMS. The researchers conclude that approaches that depend on greater than 17.6 lb of concentrate intake per day will fail. Approaches that keep the concentrate allowance less than 8.8 lb per day will likely benefit from precision feeding approaches.

Here are the key points to consider when feeding cows in herds with AMS:
- Provide a free-flow traffic system
- Consider the feeding patterns of cows and feed a PMR more than once per day
- Restrict pelleted concentrate allowance in the AMS to less than 6.6 to 8.8 lb/d

**Housefly's Love of Manure Could Lead to Sustainable Feed**
This story originally appeared in the Cornell Chronicle.
By Krishna Ramanujan

Could the common housefly, which has evolved to recycle nutrients from waste products, help address the Food and Agriculture Organization of the United Nations’ warning that food production will need to double by 2050 to feed a growing world population?

An interdisciplinary team of Cornell researchers in animal science, entomology, nutritional sciences, business, microbiology, and immunology is investigating a system for using housefly larvae to biodegrade manure and harvest the larvae for use as protein-rich animal feed. Their research is published in the Feb. 7 issue of the journal PLOS One.

Larva meal could address a pressing need to replace fishmeal in aquaculture. The massive demand for fishmeal to feed all kinds of livestock has led to overfishing of fish stocks worldwide. Larva feed is proving to be a sustainable alternative; it contains the right nutritional ingredients for feeding fish, poultry, and other livestock.

“I think feed from insects is the future of animal farming,” said Vimal Selvaraj, associate professor of integrative physiology in the Department of Animal Science and a senior author of the study. “We are talking about something that has been untapped. Insects are
very rapid biomass generators, and they do not have negative impacts when used as meal, as far as we know.”

The researchers – for the first time – analyzed how efficiently housefly larvae recycled nutrients from dairy cattle manure, and they measured the nutritional value of the resulting larva meal as a feed ingredient.

“We concluded from the study that the overall composition of larva meal with respect to all nutrients, including amino acids and minerals, is comparable to fishmeal and would be a good alternative for use as a protein-rich feed ingredient for livestock,” Selvaraj said.

Their analysis showed that fly larvae lessened the overall mass of the manure and reduced total nitrogen by nearly 25% and phosphorus by more than 6%. Reducing levels of these nutrients in manure makes a more suitable compost. Otherwise, untreated manure used as fertilizer leads to runoff of excess nitrogen and phosphorus into streams and rivers, which causes eutrophication in lakes and oceans, contaminates groundwater, and can spread disease.

When researchers measured the nutritional values of the larva meal, they found it rivaled the highest protein feed ingredients, including widely used fishmeal. The larva meal contained 60 percent protein, had a well-balanced amino acid profile, and 20% fat that was high in monounsaturated fats. The meal was also found to be a good source of calcium and phosphorus.

Fly larvae yields equal about 2% of manure weight, which has led some economists to question the profitability of fly larva meal. Yet the U.S. livestock industry generates some 335 million tons of dry manure per year.

“In farming-dense regions there is enough manure available to have a substantial impact on larva meal production,” Selvaraj said, adding, “This paper is a first step toward realizing this potential.”

Mahmoud Hussein is a post-doctoral associate in Selvaraj’s lab and is the paper’s first author. Co-authors include Jan Nyrop, professor of entomology; Patricia Johnson, professor of animal science; Mark Milstein, director of the Center for Sustainable Global Enterprise and clinical professor of management and organizations in the Samuel Curtis Johnson Graduate School of Management; Helene Marquis, professor of microbiology; Thomas Brenna, professor of nutritional sciences; Quirine Ketterings, professor of animal science; and Josh Goddard ’18, an undergraduate studying animal science.

The study was funded by the Atkinson Center for a Sustainable Future at Cornell University and a College of Agriculture and Life Sciences Charitable Trust Undergraduate Research Grant.

Getting Serious About Grain Drill Calibration
Source: Miner Farm Report, March 2017—E.T.

Most forage seed doesn’t represent a large percentage of crop input cost, but the advent of reduced-lignin alfalfa, some priced at $6 per pound, should have farmers thinking more seriously about grain drill or seeder calibration. Over the years I’ve seen some huge mistakes made in seeding rates, including planting half as much alfalfa seed as the farmer intended. You probably have a fair idea of your drill or seeder calibration, often via the “by guess and by gosh” method: Put a known weight of seed in the seed box and then find out how many acres it does. However, you can — and should — do better. Alfalfa averages 220,000 seeds per pound, but some seed lots only have 200,000. Seed coatings also have an effect: You’d think that because of the weight of the coating, at a particular setting coated seed would result in fewer seeds per acre. However, coated seed tends to flow faster than uncoated seed, and the amount of coating on seeds varies considerably. When deciding on a seeding rate, be sure to account for the weight of the coating.
Calibration kits are available for most modern grain drills and seeders, but a quick way to determine calibration is to spread a tarp on level ground, then drive over the tarp at normal planting speed and count the seeds in several one square foot areas. For alfalfa, 75-90 seeds/sq. ft. is a seeding rate of 15-18 lbs/acre. If you have two or more varieties of alfalfa, check the rate for each since there may be significant differences. Determining the seeding rate of alfalfa-grass is somewhat trickier. My suggestion: Premix the alfalfa and grass seed and put it in the seed box, then drive over the tarp and only count the alfalfa seeds in the one foot squares. If you have 65-75 alfalfa seeds/square foot and the grass seed is included at the typical 4-5 lbs/acre, this should result in enough alfalfa seed for high yields plus enough grass seed to increase both yield and forage quality.

New York State
Corn Silage Hybrid Trials-2016
Joseph Lawrence¹, Thomas Overton¹, Margaret Smith², Michael Van Amburgh¹, Allison Lawton¹, Sherrie Norman², Keith Payne², Dan Fisher²
¹Department of Animal Science, PRO-DAIRY; ²Plant Breeding and Genetics

In 2016, we were pleased to be able to reinstate the corn silage hybrid testing program at Cornell. The reinstatement of the New York trials was made possible with support from dairy producers, participating seed companies, Cornell University, the New York Farm Viability Institute, and the Cornell University Agricultural Experiment Station.

Twenty-nine corn silage hybrids (ranging from 84 day to 107 day relative maturity [RM]) were tested at two locations in NY in 2016. Hybrids were planted at the Musgrave Research Farm in Aurora (Cayuga Co.) and at Greenwood Farms in Madrid (St. Lawrence Co.). Seed companies were invited to submit hybrids for both sites for a fee. The purpose of this trial is to provide unbiased, local data to aid in producers’ decision making and consultants’ recommendations. Detailed results can be found in the full report at (https://scs.cals.cornell.edu/extension-outreach/field-crop-production/variety-trials#corn-silage). Here we will discuss the main points of the 2016 trials.

All hybrids were planted at 34,000 plants/acre. The Aurora site was planted on May 12th and the Madrid site was planted on May 17th. Hybrids were planted in a randomized complete block design, with 4 replications, by 5-day maturity groups.

The Aurora site was harvested on three dates, according to maturity group. Early (90-95 day) corn was harvested on August 29th, medium (96-100 day) corn was harvested on September 1st, and late (101-105 day) corn was harvested on September 7th. At the Madrid location, all maturity groups were harvested on September 13th. The goal was to harvest all hybrids at about 65% (+3%) moisture.

Overall growing degree day accumulation was above average across the state while rainfall was extremely variable. Both locations in this trial were below average in total rainfall (Table 1) but the patterns in the rain events made significant differences in the crop’s performance.

A significant change to the program in 2016 was the way in which hybrids were evaluated for forage quality. For each hybrid, the forage analysis results (four replicates) were applied to a typical New York higher corn silage-based diet utilizing the Cornell Net Carbohydrate and Protein System (CNCPS v. 6.5.5; Cornell University, Ithaca, NY) biology and dynamic model and were averaged by site. The diet was developed for a second lactation dairy cow to produce 100 pounds of milk per day with forage at ~60% of diet dry matter (DM) and corn silage

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Table 1. NYS Corn Silage Trials, 2016 Weather Data

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<thead>
<tr>
<th>Month</th>
<th>Precipitation (Inches)</th>
<th>Accumulated GDD (degree days)</th>
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<tr>
<td>10 yr Mean</td>
<td>14.10 14.89</td>
<td>2094 1831</td>
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<tr>
<th>Month</th>
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<tr>
<td>Seasonal</td>
<td>13.68 13.47</td>
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</tbody>
</table>

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~70% of forage DM in a software platform (NDS Professional version 3.9.2.03, RUM&N Sas, Reggio Emilia, Italy), which utilizes the CNCPS biology.

This novel approach to hybrid evaluation allowed us to account for differences in dry matter intake (DMI) potential of the total ration based upon hybrid selection and is a more biologically robust representation compared to evaluating hybrids on a constant DMI basis. The predictions made by the CNCPS biology were used to evaluate differences in intake potential and subsequent metabolizable energy (ME) and metabolizable protein (MP) allowable milk yield based upon the nutrient and digestibility characteristics of each hybrid. Only the ME allowable milk yield is reported as it was more limiting than MP allowable milk yield for all hybrids.

A season such as this provides an opportunity to evaluate hybrid performance under variable growing conditions. While more locations are always beneficial, the difference in growing conditions and performance at these two locations provided some valuable insight into hybrid performance. Figures 1 and 2 identify hybrids that performed above average in both crop yield and milk yield (top right quadrant) at each location. The hybrids performing above average at both locations are more likely to maintain a high level of performance across varying growing conditions.

Due to very different growing conditions experienced at the two sites, there was a large difference in the undigested neutral detergent fiber (uNDF) overall mean values, which translated into large differences in the predicted milk yield when corrected for uNDF at the 240 hour time point (uNDF240). The predicted ME allowable milk yield on a DMI equivalent was not as variable as the predicted ME allowable milk yield on an uNDF240 equivalent. This would be expected when DMI of the total ration is allowed to vary to meet a constant uNDF240 intake. We also need to acknowledge that while this approach offers a sound method for comparing relative hybrid performance, the absolute differences in predicted milk yield are predicted values from the model and are likely greater than the actual differences in milk yield expected in a herd of cows.

Based on the overall mean for predicted milk yield on an uNDF240 equivalent, corn silages performed exceptionally better at the Aurora site than at the Madrid site. However, the overall mean corn silage yield, when adjusted to 65% moisture, was drastically lower at Aurora than at Madrid. Due to higher fiber digestibility content in the hybrids grown at Aurora, it is predicted that dairy cows will consume more feed compared to the feed produced at Madrid, as reflected in the adjusted total mixed ration (TMR) DMI. With lower yields and higher predicted DMI at Aurora, dairy farmers feeding corn silages grown under these environmental conditions are more likely to be constrained by inventory for the following year compared to farmers feeding corn silages grown at Madrid.
The locations of our trials underlined the highly variable rainfall patterns experienced across NY state in 2016 and highlighted how critical timing of rainfall can be, rather than solely total rainfall.

In general, the eastern part of NY state experienced adequate rainfall with amounts diminishing as you moved west across the state, though there were large variations within regions. Producers in areas with adequate rainfall reported average to well above average yields, while other areas ranged from below average yields to complete crop failure. As was the case at our Aurora location, August rains in some locations helped save the crop from complete failure, though it was clearly still below average.

The impact of weather patterns and growing conditions on key factors, notably fiber digestibility and starch, influencing forage quality and milk producing potential on these hybrids was very evident when comparing the differences in crop yield and predicted milk yield across the two trial locations (Figures 1 and 2).

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Figure 1. Relationship between silage yield and milk production potential at Madrid, NY. Hybrids located in the top right quadrant were above the overall mean for both crop yield and milk production potential and are considered good performers. Hybrids located in the bottom left quadrant were below the mean for yield and milk production potential. Hybrids in the top left quadrant were below the mean for yield and above the mean for milk production potential and hybrids in the bottom right quadrant were above the mean for yield and below the mean for milk production potential. Hybrids that were above average for crop and milk yield at both locations are marked and noted in the legend.
Predicting milk yield with the use of the CNCPS model provides dairy farmers and dairy nutritionists in NY with a more applicable approach for evaluating different corn silage hybrids. The predicted ME allowable milk yield on an uNDF240 equivalent reflects how much DMI the cow might be able to consume based on rumen fill and passage rate. These results demonstrate how crucial it is to adjust rations based on the predicted DMI rather than replacing corn silages on a DM equivalent basis.

Acknowledgements
We thank the seed companies that participated in 2016 for their collaboration. We urge all seed companies to participate in our corn silage testing program in 2017 so we can provide the best information under New York growing conditions to our New York dairy producers.

We thank Greenwood Dairy for their ongoing collaboration and support of the program; Paul Stachowski and Jeff Stayton at the Cornell Musgrave Research Farm, Aurora for their efforts during field operations; Greg Godwin, Kitty O’Neill, and Mike Hunter for assistance at harvest and Buzz Burhans and Ermanno Melli for providing us with the NDS software and technical assistance. We appreciate the guidance of Dr. Bill Cox, Dr. Jerry Cherney, Phil Atkins, and Ken Paddock in implementing the 2016 trials.

Additional financial support was provided by New York Farm Viability Institute and the Cornell University Agricultural Experiment Station.
Ranchers May Benefit From Meat Scandal
Cattle & calves are worth about $3.3 billion to Oklahoma each year
Published on April 3rd, 2017

Brazil's meat export shipments collapsed this month as several countries halted deliveries from the South American country in the wake of a meat inspection scandal. (U.S. Department of Agriculture, Flickr/Creative Commons)

OKLAHOMA CITY (AP) — A scandal about government meat inspections in Brazil has shaken the market worldwide and created opportunity for Oklahoma ranchers, agriculture industry watchers said.

But the openings will be small initially, said Jim Robb, economist for the Livestock Marketing Information Center in Denver, Colorado.

“These types of things don’t happen very often,” Robb said. “We don’t import much beef from Brazil, really, but it’s the reverberations from around the world that are going to be interesting to watch.”

“For example, how China responds and how Brazil tends to manage the situation, those are still unknowns. In terms of the U.S. marketplace, we would not expect the changes to be huge, but it’s too early to know yet,” he said.

Brazil’s meat export shipments collapsed this month as several countries halted deliveries from the South American country in the wake of a meat inspection scandal. That country’s agricultural investigators said health inspectors were bribed to overlook expired meats and chemicals and that other products were added to product to improve appearance and smell, The Journal Record (http://bit.ly/2mQDtdn) reported.

The result has been dramatic. On average, Brazil exported more than $60 million worth of meat each day in March, according to government officials. That figure fell to $74,000 by Tuesday, just a few days after the probe was revealed. The government suspended exports from 21 companies and officials said only a handful of 4,000 plants were involved.

South Africa was the latest this week to join the list of countries banning Brazilian meat. Others include the European Union, China, Japan and Mexico.

Derrell Peel, an agricultural economist at Oklahoma State University, said the scandal has scared off China as well, which could have implications on trade policy negotiations with the U.S. as that country seeks its meat elsewhere.

China remains the fastest-growing consumer market for beef, reflecting the reopening of its market to Argentina and Brazil, according to the U.S. Department of Agriculture’s most recent livestock and poultry study on world markets. Brazil was the world’s top exporter of veal and beef in 2016 at 1.85 million metric tons, compared with 1.12 million from the United States.

“In the span of five years, China became the world’s second-largest beef importer,” according to the USDA report. “Chinese beef imports are forecast to expand an additional 15 percent in 2017.”

The report was released in October, so predictions about China don’t really hold up now, said Lane Broadbent, president of KIS Futures in Oklahoma City. Investor movement suggests others share that perspective.

“This market is viewing the news favorably,” Broadbent said. “People assume we’re going to get more business out of the Brazil situation unless it’s quickly (alleviated). We’re seeing this as nothing but good news for us because it means more demand for U.S. beef.

“You’ve got to remember, we’re the only game in town when it comes to corn-fed beef, the only country that does it on a large scale. Once another country starts doing business with us and they get the advantage of corn-fed livestock, they’re going to stay around with us for a while,” he said.

According to the state Agriculture Department, cattle and calves are worth about $3.3 billion to Oklahoma each year. The second and third most valuable ag commodities to the state’s economy are swine and poultry at about $1 billion each. Winter wheat is worth about $300 million annually.
**Dairy Market Watch**

<table>
<thead>
<tr>
<th>Milk Component Prices</th>
<th>Milk Class Prices</th>
<th>Statistical Uniform Price &amp; PPD</th>
<th>MPP</th>
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**February Utilization (Northeast):** Class I = 32%; Class II = 24%; Class III = 25%; Class IV = 19%.

Class I = fluid milk; Class II = soft products, cream, and yogurt; Class III = cheese (American, Italian), evaporated and condensed products; Class IV = butter and milk powder.

*At a milk margin minus feed costs of $8 or less, payments are possible depending on the level of coverage chosen by the dairy producer.

**Cheese:** Milk continues to be readily available to U.S. cheesemakers. However, contractual and internal milk supplies are meeting most cheese production needs. Cheese production is steady to strong across the country. Northeastern food service demand is lower with many schools on spring break. The market tone is uncertain. Average weekly barrel cheese prices on the CME increased from the previous week’s average after five weeks of decreasing average prices. Weekly average block prices also increased, after six weeks of declining weekly averages.

**Butter:** Throughout the United States there are heavy cream supplies clearing to butter producers, who are churning at full swing. In the Northeast, butter output is in excess of producers’ present needs. The United States butter demand is fair to strong. A few Northeastern producers’ holiday orders have been placed and interest for both bulk and print butter is good to mixed, as more orders are placed for the upcoming celebrations.

**Fluid Milk:** Milk production has steadied a bit in some areas of the Eastern region. In the Midwest and East, spring break continues to constrain Class I sales. Spot sales into Class III range from flat to $3 under Class. Cream demand is trickling up across the nation. Ice cream manufacturers’ interests in cream vary from contact to contact. Some cream producers are getting regular inquiries from ice cream makers, while others expect more interest after the spring holidays.

**Dry Products:** Low/medium heat nonfat dry milk (NDM) prices decreased this week in the Central and East, but prices were mixed in the West. Eastern low/medium heat NDM manufacturers are seeing some movement into Mexico and Canada. Condensed skim is available to meet NDM manufacturing needs across the country. Overall, the low/medium heat NDM market tone is mixed. Low/medium heat NDM inventories are adequate. High heat NDM production is light, but increasing. High heat NDM prices have decreased across the country. High heat NDM inventories are adequate for contractual obligations. Demand for dry buttermilk is light to moderate across the country. Dry buttermilk production is generally active. Inventories of dry buttermilk vary from balanced in the West, to growing in the East and Central U.S. Dry whole milk prices are steady to lower. Domestic dry whole milk values are currently priced above the international market. Sales of dry whole milk on the spot market have been infrequent, and inventories vary by region.
Weekly Average CME Cash Price - 2012 to Present

Excerpt from “Dairy Situation and Outlook, March 20, 2017”

by Bob Cropp, Professor Emeritus, University of Wisconsin Cooperative Extension

Dairy product prices have declined during March with the exception of butter and dry whey. Butter has remained well above $2.00 per pound ranging from $2.2325 to $2.11 and is now $2.13. Dry whey has held steady in the $0.48 to $0.50 pound range. But, 40-pound cheddar blocks started the month at $1.49 per pound, fell to a low of $1.36 and is now $1.4025. The cheddar barrel price started the month at $1.465 per pound, fell to a low of $1.35 and is now $1.36. Nonfat dry milk which was in the $90’s in February has been in the $0.80 to $0.81 range during March. With lower cheese prices the March Class III price will be near $15.70, down from $16.88 in February. While butter prices have held the lower nonfat dry milk price will push the March Class IV price to about $14.40, down from $15.59 in February.

Butter and cheese sales have soften as buyers are not building inventories and waiting to see if prices fall further. Fluid (beverage) milk sales continue their downward trend. Fluid sales declined 0.7% last year and January sales this year were 0.8% lower than last year. Dairy exports continue to improve. January exports compared to a year ago were up 13% for nonfat dry milk/skim milk powder, 3% for cheese, 24% for total whey products and 1% for lactose. Butter exports however were 26% lower.

Milk production will increase during the spring flush and likely will push milk prices lower. We can expect the Class III price to be in the low $15’s and the Class IV price in the low $14’s for the months of April and May. But, with continued favorable butter and cheese sales along with continued improvement of dairy exports milk prices should trend back upward after that. The Class III price could be back to the $16’s by June and reaching into the high $17’s by fourth quarter. The Class IV price could reach the $15’s by June and the higher $15’s by fourth quarter. Currently, dairy futures are not that optimistic. Class III futures don’t reach the $16’s until July and stay well below the $17’s for the remainder of the year. Class IV futures don’t reach the $15’s until August.

As we move ahead we will get a better since of how domestic sales, milk production and exports will turn out in 2017. Any change in these factors could result in quite different milk prices. USDA is forecasting a 2.4% increase in milk production for 2017 from 52,000 more cows, an increase of 0.6% and 410 more pounds of milk per cow, an increase of 1.8%. This is a lot of milk. Good domestic sales and continued improved exports will be necessary to reach the high $17’s for Class III and high $15’s for Class IV.
COMING EVENTS:

April 19 – 6:30-7:30pm-Sustainable Lawn Care, Steele Memorial Library (IT Room), 101 E. Church St., Elmira, NY. Is the green in your lawn weeds or grass? Do you know how and when to plant grass seed? Join Cornell Cooperative Extension of Chemung County to learn about essential lawn maintenance tips. For more information or to register: call Chemung CCE at 607-734-4453 or jy758@cornell.edu

April 19 – 6:30-8:30pm-Make a Bee Hotel for Native Pollinators, CCE-Tompkins Education Center, 615 Willow Avenue, Ithaca, NY. Help increase populations of native bees in your yard and garden with a handmade bee hotel! For more information or to register please call: 607-272-2292 or email cab69@cornell.edu

April 22 – 7am-3pm-Household Waste Collection Day, Ontario County Landfill Casella Recycling Facility, Routes 5 & 20 between Canandaigua and Geneva. Free to Ontario County residents! Safely dispose of hazardous household items.

April 28 – 6-8:30pm-Beginner Sheep and Goat Production, Chemung County Fairground 4-H Building, 170 Fairview Drive, Horseheads, NY. Are you interested in raising sheep and goats? For more information and to register call: Shona Ort at CCE Chemung, 607-734-4453, ext. 227 or email sbo6@cornell.edu

May 6 – 12pm-3pm-Summit in the Valley: Creating Climate Connections, Naples Community Park, Naples, NY. This festival will host scientific speakers and local organizations sharing information on how climate change is impacting our small corner of the world.

May 6 - 8:30am-4:30pm-Cultivate Buffalo: How to Create a profitable Urban Farm (Market Garden) Market Arcade, 617 Main Street, Buffalo, NY. Cornell Cooperative Extension of Erie County (CCE Erie) and the Massachusetts Avenue Project (MAP) invite you to Cultivate Buffalo: How to Create a Profitable Urban Farm (Market Garden), a workshop for anyone currently farming in a city or exploring opportunities to farm in an urban setting. For more information or to register: online at erie.cce.cornell.edu or contact Megan Burley, msb347@cornell.edu or 716-652-5400, Ext. 138

May 13 – 9am-11:30am-Ontario County Master Gardener Plant Sale, CCE Ontario, 480 N. Main St., Canandaigua, NY. Find plants for your garden with gardening advice from Master Gardeners.